

# CPC COOPERATIVE PATENT CLASSIFICATION

## Y GENERAL TAGGING OF NEW TECHNOLOGICAL DEVELOPMENTS; GENERAL TAGGING OF CROSS-SECTIONAL TECHNOLOGIES SPANNING OVER SEVERAL SECTIONS OF THE IPC; TECHNICAL SUBJECTS COVERED BY FORMER USPC CROSS-REFERENCE ART COLLECTIONS [XRACs] AND DIGESTS

(NOTES omitted)

### Y10 TECHNICAL SUBJECTS COVERED BY FORMER USPC

### Y10T TECHNICAL SUBJECTS COVERED BY FORMER US CLASSIFICATION

#### NOTE

This subclass has been introduced in January 2015 in view of the CPC to accommodate for technical subjects formerly covered by USPC

#### Former US Class 16 series

<b>16/00</b>	<b>Miscellaneous hardware [e.g., bushing, carpet fastener, caster, door closer, panel hanger, attachable or adjunct handle, hinge, window sash balance, etc.]</b>	16/191	. . Detachable
16/05	. Bushing	16/193	. . Leg elevators
16/063	. . Providing a restricted or insulated environment [i.e., sealable] for internal elements	16/1937	. . . Sliding
16/075	. . Bung or tap	16/1943	. . . Swinging
16/082	. . . Threaded	16/195	. . Locked
16/088	. . Providing strain relief	16/196	. . . Shimmy dampening
16/10	. Carpet fasteners	16/197	. . Lubricators
16/104	. . Combined fasteners and stretchers	16/199	. . Pintles
16/109	. . Hook	16/201	. . Pintle retainers
16/113	. . Moldings	16/202	. . . Frame
16/118	. . Rug	16/203	. . Frame
16/122	. . Stair	16/204	. . . Single leg frame or fork
16/124	. . . Risers	16/205	. . Rigid wheel supports
16/125	. . . Rods	16/207	. . Scrapers
16/126	. . . . Catches	16/209	. . Sliding
16/1263	. . . . . Sliding	16/21	. . . for tubular leg
16/1267	. . . . . Swinging	16/211	. . Sockets
16/127	. . Sliding	16/212	. . Spring supported
16/131	. . Strips	16/214	. . Inclined axle
16/134	. . Swinging	16/216	. . Caster guard
16/14	. Carpet stiffener or anti-slip device, <u>per se</u>	16/218	. . Obstruction climbing aid
16/18	. Casters	16/22	. Thermally released check or closer
16/182	. . Adjustable	16/27	. Checks and closers
16/184	. . Wheels	16/276	. . Liquid
16/1847	. . . Antifrictionally mounted	16/2766	. . . Concentric spring chamber
16/1853	. . . Multiple	16/2769	. . . . Cam
16/1857	. . . . Antifrictionally swivelled	16/2771	. . . Hinge
16/186	. . Antifrictionally swivelled	16/2774	. . . . Floor pivot
16/1867	. . . Ball	16/2777	. . . Multiple piston
16/1873	. . . Cylinder	16/2782	. . . Oscillating cylinder
16/1877	. . . . Pivoted	16/2788	. . . Oscillating piston
16/188	. . Ball	16/2793	. . . Side spring chamber
16/1887	. . . Antifrictionally mounted	16/2796	. . . . Cam
16/1889	. . . . Ball	16/2799	. . . Spring and flexible link
16/1891	. . . . Cylinder	16/2804	. . . Spring and gear
16/1893	. . . Pivoted	16/281	. . Pneumatic
16/19	. . Bracket supports	16/282	. . . Flexible link
		16/283	. . . Hinge
		16/285	. . . Spring and gear
		16/286	. . . Spring and lever
		16/287	. . Spring and flexible link
		16/293	. . Spring and gear

16/299	. . Spring and lever	16/462	. . Drawer pull
16/304	. . Hinge	16/4628	. . . Lift
16/31	. Gate hangers	16/4636	. . . Knob type
16/33	. . Sliding and swinging	16/464	. . . . Swinging
16/35	. Panel hangers, travelers and/or tracks	16/4644	. . . Loop type
16/353	. . with flexible panel attaching means	16/4652	. . . Ring type
16/354	. . . Covered, hollow or slotted track	16/466	. . Handle having mounted grip means [e.g., bicycle handlebar grips, etc.]
16/3543	. . . . with antifriction means	16/469	. . Detachable handle
16/3545	. . . . . Wood track	16/4696	. . . for battery
16/3547	. . . . . Wood track	16/4701	. . . for casket
16/355	. . . with antifriction means	16/4707	. . . for container
16/356	. . Ball	16/4713	. . . Auxiliary handle
16/359	. . Cylinder	16/4719	. . . Extension
16/361	. . Guide brackets	16/4724	. . . Cord or rope related
16/364	. . Guide rollers	16/473	. . Extensible handle
16/367	. . Link and lever	16/476	. . Handle with ergonomic structure [e.g., finger engagement structure such as indents, grooves, etc.] and handle user-interaction [human engineering] enhancements such as improved handle dimensions and handle positioning
16/37	. . Sliding shoe	16/48	. Insulated handle
16/372	. . . Drapery supports	16/484	. . Handwheel
16/373	. . Track and bracket	16/487	. . Knob type
16/375	. . . Drapery supports	16/491	. . Wire type
16/376	. . Covered, hollow or slotted track	16/495	. . Unshaped or unattached pad
16/377	. . . Wood	16/498	. . Bar-type handle
16/378	. . . Drapery supports	16/499	. . . for lawnmower
16/3785	. . . . Wood	16/50	. . . Swinging
16/379	. . Tracks	16/501	. . . . Casket handle
16/3797	. . . Drapery supports	16/502	. . Braced handle
16/3803	. . . Laminated	16/506	. . Knob-type handle
16/381	. . Wheel mounts	16/508	. . . with flexible suspending means
16/3813	. . . Antifrictionally mounted wheels	16/509	. . Lift
16/3816	. . . Door elevating	16/513	. . Loop-type handle
16/3819	. . . Floor	16/515	. . . Swinging
16/3822	. . . Reciprocating track	16/516	. . Ring-type handle
16/3825	. . . Traveling wheel	16/52	. Hinge
16/3828	. . . Swinging	16/521	. . including frangible or fusible portion
16/3831	. . . Swiveling	16/522	. . with diverse art portion or attachment
16/3834	. . . Vertically adjustable	16/524	. . Ball and socket
16/3837	. . . Wheel and guide roller	16/525	. . Pliant or elastic hinge
16/384	. . Wheels	16/5253	. . . Metallic
16/387	. . Overlapping doors, common track	16/5257	. . . Snap or X hinge
16/39	. Ferrules, rings, and thimbles	16/526	. . Eyeglass hinge
16/42	. . Ring ferrules	16/527	. . Retractable pintle
16/44	. Handle, handle component, or handle adjunct	16/5275	. . . Latch hinge
16/444	. . having receptacle within	16/528	. . Latch hinge
16/447	. . for plow	16/5285	. . . Resilient securing means
16/451	. . Length adjustable pull handle for luggage or luggage cart [e.g., wheeled suitcase handle, etc.]	16/529	. . including lever for shifting one member of hinge relative to another
16/455	. . Luggage-type [loop style] handgrip for carrying [e.g., suitcase, handbag, briefcase, shopping bag, package, etc.]	16/531	. . having staggered leaves
16/4554	. . . Extensible handle	16/532	. . including adjustment for changing relative orientation of hinged members
16/4559	. . . Detachable handle	16/5321	. . . having plural independent adjustments
16/4563	. . . Welded or adhesively attached handle	16/5322	. . . . All rectilinear
16/4567	. . . Swinging handle	16/53225	. . . . . including screw-operated means to move hinged members
16/4569	. . . . with means permanently connecting the handle to a carried article	16/5323	. . . Pivotal adjustment
16/4571	. . . with means permanently connecting the handle to a carried article	16/53235	. . . . including screw-operated means to move hinged members
16/4576	. . . with carrier handle including a user enhanced grip attachment	16/53238	. . . . . About hinge axis
16/458	. . Door handle		
16/459	. . . Detachable handle		
16/46	. . . Knob type		

16/5324	. . . including means to move hinged members	16/53833	. . . . . Four or more axes
16/53247	. . . . Along or parallel to hinge axis	16/53834	. . . . to counterbalance weight of hinged member [e.g., closure biased to open position]
16/5325	. . . . . including threaded hinge pin	16/53835	. . . . . including pivoted coaxial spring retaining bar
16/53253	. . . . . Screw-operated	16/53836	. . . . . Over-center spring or linkage travel [e.g., "holdback hinge"]
16/53257	. . . . . to shift plate toward or away from hinged member	16/53838	. . . . . having means to hold hinged members against pivotal movement about hinge axis [i.e., catch]
16/5326	. . . having adjustable spacer between leaf and hinged member [e.g., shim]	16/5384	. . . . Over-center spring or linkage travel [e.g., "holdback hinge"]
16/5327	. . . Adjustable along or parallel to hinge axis	16/53843	. . . . . Plural hinge axes
16/5329	. . . having interdigitated surfaces or slot for hinge-to-member fastener	16/53845	. . . . . Coil spring having axis along or parallel to hinge axis
16/533	. . having cover	16/53848	. . . . . including camming or sliding surface to deflect spring perpendicularly to the hinge axis
16/5335	. . . Leaf cover	16/5385	. . . having means to hold hinged members against pivotal movement about hinge axis [e.g., catch]
16/534	. . having clamp for attaching hinge to hinged member	16/5386	. . . having force adjustment
16/5345	. . . Circumferential clamp	16/53862	. . . . . Rotatable spring-engaging collar
16/535	. . having means to facilitate assembly and disassembly of hinge sections to join or disjoin hinged members	16/538627	. . . . . having detention aperture or protuberance
16/5353	. . . Resiliently biased hinge	16/538633	. . . . . having tool-receiving aperture
16/5355	. . . . having helical spring along hinge axis	16/53864	. . . Plural hinge axes [e.g., multiple pintle]
16/5357	. . . Resiliently biased retaining means	16/5387	. . . having axially biased camming surface
16/5358	. . . . having discrete latch and spring to slide or pivot latch	16/5388	. . . Coil
16/5359	. . . . Discrete retaining means for pivotal contacting surfaces	16/53883	. . . . Plural coils
16/536	. . . Separation of pivotal contacting surfaces	16/53885	. . . . to counterbalance weight of hinged member [e.g., horizontal closure biased to open position]
16/53605	. . . . having movable or removable connector	16/53888	. . . . . On pintle
16/53607	. . . . . Pintle removable from remainder of hinge	16/5389	. . . torsion spring
16/536075	. . . . . and additional connector for pintle or separate pintle sections	16/539	. . Gravitating hinge having vertical axis
16/53608	. . . . . Screw-threaded connector	16/5393	. . . having lift rod
16/5361	. . . . Axially shifting hinge sections	16/5395	. . . having plural spaced hinge axes
16/53613	. . . . . At specific angular orientation of hinge sections	16/5398	. . . including cam surface and follower
16/53615	. . . . Hook and pin	16/53984	. . . . and rolling element
16/5362	. . . . Hook in aperture	16/53985	. . . . . Between opposing surfaces
16/53625	. . . . Hook to hook	16/53987	. . . . . and detent in cam surface
16/5363	. . . and discrete movable or removable connector to fasten one hinge section to another	16/53988	. . . . . On axially twisted or helically fluted element
16/5367	. . . by relatively sliding connection [e.g., dovetail]	16/53992	. . . . . including means to hold hinged members against pivotal movement
16/5369	. . . . including receiving connector attachable to hinged member	16/53996	. . . . . having aperture for slidably receiving pintle [e.g., camming knuckle]
16/537	. . having means to reduce friction between hinge parts	16/54	. . including means to hold or retard hinged members against pivotal movement [e.g., catch]
16/5373	. . . by fluid lubricant	16/5401	. . . Magnetic
16/5377	. . . Ball or roller bearing	16/5402	. . . Resiliently biased catch
16/5379	. . . . Circularly distributed balls or rollers	16/54021	. . . . having spring force adjustment
16/538	. . Resiliently biased hinge	16/54023	. . . . including toggle linkage
16/5381	. . . including means to render spring ineffective through all or a portion of swing	16/54024	. . . . having discrete manipulatable release means [e.g., lever]
16/53815	. . . . comprising manipulatable element or portion	16/540243	. . . . . including cam or eccentric
16/5382	. . . Biased from either direction toward neutral position [e.g., double acting]	16/540247	. . . . . Sliding release means or lever-actuated sliding catch
16/53822	. . . . Helical spring transverse to hinge axis	16/54025	. . . . Sliding
16/53824	. . . . Plural hinge axes [e.g., multiple pintle]	16/540253	. . . . . Movement along or parallel to hinge axis
16/53825	. . . . . and barrels for helical springs on separate axes	16/540254	. . . . . Interdigitated or plural sockets
16/53826	. . . . Resiliently biased rolling or sliding cam surface	16/540255	. . . . . Opposed interdigitated sliding collars on hinge axis
16/53828	. . . . by helical spring along hinge axis	16/540256	. . . . . and catch receiving socket
16/5383	. . . having transverse helical spring or elastic strip	16/540257	. . . . . and catch receiving socket
16/53832	. . . . Plural hinge axes [e.g., multiple pintle ]		

16/54026 . . . .	Pivoted	16/555 . .	Specified material
16/54028 . . . .	Plural alternately useable detents	16/557 . .	Specific pintle structure
16/54029 . . . .	Spring arm	16/558 . .	Specific leaf structure
16/540295 . . . . .	Plural opposed arms	16/559 . .	having prongs or cooperating structure on leaf
16/5403 . . . .	by friction	16/5595 . . .	Angular leaf sections
16/54033 . . . .	Screw-threaded adjustment	16/55963 . . . .	Parallel sections
16/54034 . . . . .	Along or parallel to hinge axis	16/55975 . . . .	Coplanar sections
16/540345 . . . . .	Threaded pintle	16/55988 . . . .	including planar section perpendicular to hinge axis
16/54035 . . . .	Cam or wedge actuator		
16/54038 . . . .	On hinge pin or between surfaces surrounding hinge axis	16/56 . .	Closers
16/5404 . . . .	Pivoted	16/568 . .	Spring and flexible link
16/54044 . . . .	Plural alternately useable detents	16/577 . .	Spring and gear
16/54048 . . . .	and sliding	16/585 . .	Spring and lever
16/54052 . . . .	Serially connected pivoted arms between leaves [e.g., brace]	16/593 . .	Spring
16/54056 . . . .	About axis along or parallel to hinge axis	16/595 . . .	Bow
16/5406 . . . .	by transversely moving pin in slot	16/597 . . .	Rubber
16/5407 . . . .	having discrete manipulatable release means [e.g., lever operated]	16/599 . . .	torsional
16/5408 . . . .	by shifting hinged members	16/5995 . . . .	Coil
16/54085 . . . .	Along hinge axis	16/60 . . .	Volute
16/5409 . . . .	Sliding	16/602 . .	Weight
16/54095 . . . .	Along or parallel to hinge axis	16/61 . .	Closure checks
16/541 . . . .	including toothed gear	16/615 . .	Inertia
16/542 . . . .	comprising nested open curved portions attached to hinged members	16/62 . .	Pneumatic
16/543 . . . .	including hinge pin	16/625 . .	Spring
16/544 . . . .	including transversely moving pin in slot	16/628 . . .	Rubber
16/5443 . . . .	Plural noncollinear pins and slots	16/6285 . . . .	Rubber cushioned
16/5444 . . . .	Parallel slots	16/629 . . . .	Multiple or opposed buffer surfaces
16/5445 . . . .	having pin fixed to pivoted arm or plate	16/6295 . . . .	Link type
16/5448 . . . .	Hinge pin movable along slot	16/6298 . .	Sash balances
16/545 . . . .	including sliding surfaces to permit relative translation of hinged members	16/63 . .	Cord and counterweight
16/5453 . . . .	and stop or abutment for pivotal movement	16/635 . .	Sash and cord
16/5457 . . . .	Movement transverse to hinge axis	16/64 . .	Spring
16/546 . . . .	Three-hinged members	16/641 . . .	Drum and cord
16/547 . . . .	having plural hinge axes [e.g., multiple pintle]	16/642 . . .	Friction roller
16/5472 . . . .	having transverse or skewed axes	16/643 . . .	Lever
16/5474 . . . .	Connected by serially arranged pivoted links between hinged members	16/644 . . .	Rack and pinion
16/5475 . . . .	Plural sets of serially arranged pivoted links	16/645 . .	Rack and pinion
16/5476 . . . .	Four or more axes	16/65 . .	Sash-cord fasteners
16/5478 . . . .	including stop or latch	16/655 . .	Bendable
16/548 . . . .	including laminated leaf	16/66 . .	Chain
16/549 . . . .	Wire hinge	16/665 . .	Clamps
16/551 . . . .	having stop or abutment	16/67 . .	Hooks
16/5513 . . . .	Adjustable or resilient	16/675 . .	Knot
16/5515 . . . .	comprising relieved axially opposed relatively rotating surfaces	16/68 . .	Slack-cord holders
16/5518 . . . .	comprising platelike bearing portion curved about hinge axis	16/685 . .	Weight
16/552 . . . .	Hinge axis passes through hinged member [e.g., floor hinge]	16/69 . .	Sash-cord guides
16/5525 . . . .	Pintle or pivot concealed in hinged member	16/698 . .	Wheel and casing
16/553 . . . .	including means to retain pintle in hinge [e.g., tamper proof, nonrising pintle, etc.]	16/706 . .	Casings
16/5535 . . . .	Threaded or slotted pintle or knuckle	16/71 . . .	Sheet metal, single piece
16/554 . . . .	including means to fasten leaf to member	16/714 . .	Multiple wheel
16/5543 . . . .	by expandable connector	16/722 . .	Sliding
16/5547 . . . .	Self-penetrating fastener	16/73 . .	Sash weights
		16/743 . .	Composite
		16/755 . .	Sectional
		16/767 . .	Weight and wheel
		16/78 . .	Window-bead fasteners
		16/82 . .	Counterbalance device, <u>per se</u>
		16/84 . .	Spring
		16/86 . .	Door escutcheon or similar element
		16/90 . .	Paper weight
		16/95 . .	Miscellaneous element or attachment

**Former US Class 24 series****24/00 Buckles, buttons, clasps, etc.**

- 24/10 . Miscellaneous
- 24/11 . Album fasteners
- 24/12 . Gun band type
- 24/13 . Article holder attachable to apparel or body
- 24/1303 . . Chatelaine safety hooks
- 24/1306 . . Flower
- 24/1309 . . . Pin attached
- 24/1312 . . Napkin
- 24/1315 . . . Hook
- 24/1318 . . . Neck enclosing
- 24/1321 . . Pencil
- 24/1324 . . . Clasp attached
- 24/1326 . . . . Finger ear, belt attached pencil holder
- 24/1329 . . . . Pencil holder with paper clip
- 24/1332 . . . . Combined and convertible pencil holder
- 24/1335 . . . . Container type pencil holder
- 24/1338 . . . . Separate pencil holder and pocket engaging clip
- 24/1341 . . . . Sliding jaw pencil holding clip
- 24/1344 . . . . Wire pencil holder
- 24/1347 . . . . Flexible shank pencil holder
- 24/135 . . . . with movable catch [e.g., pin pivoted lever, roller, etc.]
- 24/1353 . . . . Pivoted jaw pencil holder
- 24/1356 . . . Pin attached
- 24/1359 . . . Rule holder
- 24/1362 . . Sleeve holder [e.g., for inner coat]
- 24/1365 . . Pin attached
- 24/1368 . . Arm or leg carried holder
- 24/1371 . . Eyeglass holder including retaining means
- 24/1374 . . Neck supported holder
- 24/1376 . . Holder contains pocket engager [e.g., antitheft device, wallet protector]
- 24/1379 . . Key ring holder
- 24/1382 . . Receptacle type holder
- 24/1385 . . . Eyeglass or spectacle case
- 24/1388 . . Open-ended holster type holder
- 24/1391 . . Article held by clip with spring [e.g., leaf, coil] member
- 24/1394 . . Article held by clip
- 24/1397 . . Article held by flexible connector [e.g., chain]
- 24/14 . . Bale and package ties, hose clamps
- 24/1402 . . Packet holders
- 24/1404 . . . Cord
- 24/1406 . . . Adjustable bands
- 24/1408 . . . Closed loops
- 24/141 . . . Plastic bands
- 24/1412 . . . with tighteners
- 24/1414 . . . Wedge
- 24/1416 . . . Winder
- 24/1418 . . . Self-locking [dead center or snap action]
- 24/142 . . . . Adjustable girth
- 24/1422 . . . . . Rack bar
- 24/1424 . . . . Lever
- 24/1427 . . . . Worm and tooth
- 24/1429 . . . . Pivotal worm band clamp
- 24/1431 . . . . Radial worm band clamp
- 24/1433 . . . Integral thread
- 24/1435 . . . . External thread
- 24/1437 . . . . . Both ends threaded
- 24/1439 . . . Radial screw
- 24/1441 . . . Tangential screw
- 24/1443 . . . . Adjustable girth
- 24/1445 . . . . . Step adjustment
- 24/1447 . . . . . Plural separable parts
- 24/1449 . . . . Wire
- 24/1451 . . . . Plural separable parts
- 24/1453 . . . . Pivotal strap parts
- 24/1455 . . . . Plural wrap
- 24/1457 . . Metal bands
- 24/1459 . . . Separate connections
- 24/1461 . . . . One piece
- 24/1463 . . . . . Sheet metal
- 24/1465 . . . . . Buckle band connection
- 24/1467 . . . . . Swedged sheet metal band connection
- 24/1469 . . . . . End-to-end integral with band connecting means
- 24/1471 . . . . Pivoted parts
- 24/1473 . . . . Wedging parts
- 24/1476 . . . . Wire
- 24/1478 . . . Circumferentially swagged band clamp
- 24/148 . . . End-to-end integral band end connection
- 24/1482 . . . Ratchet and tool tightened band clamp
- 24/1484 . . . Spring closed band clamp
- 24/1486 . . . Screw locked band clamp
- 24/1488 . . . Swedged to lock band ends
- 24/149 . . Wire
- 24/1492 . . . Separate connections
- 24/1494 . . . . Wire
- 24/1496 . . . Wooden bands
- 24/1498 . . . Plastic band
- 24/15 . . Bag fasteners
- 24/152 . . Swedged bag tie
- 24/153 . . Plastic band bag tie
- 24/155 . . Resilient slot bag tie
- 24/157 . . Twist-to-close bag tie
- 24/158 . . Slides to lock bag end within housing
- 24/16 . . Belt fasteners
- 24/1604 . . Tighteners
- 24/1608 . . Hinged
- 24/1612 . . . Ring connected belt ends
- 24/1616 . . . Bent over flanged ends
- 24/162 . . . Pintle pin connected belt ends
- 24/1624 . . . V and round belts
- 24/1628 . . . Overlapped belt ends
- 24/1632 . . . Sheet metal knuckles, common pintle
- 24/1636 . . . Wire knuckles, common pintle
- 24/164 . . . Knuckle integral with belt material
- 24/1644 . . . Multiple pintles interconnected V-belt type
- 24/1648 . . Lacing
- 24/1652 . . One piece
- 24/1656 . . . Deflecting prong
- 24/166 . . Screw clamp
- 24/1664 . . Splices
- 24/1668 . . Wire
- 24/1672 . . Butt connected belt ends
- 24/1676 . . V, round, trapezoidal belts
- 24/168 . . Flanged belt ends, connector hold ends
- 24/1684 . . Lapped ends of endless belts
- 24/1688 . . Hinged ends of endless belts

24/1692	. . Wire strands reinforce belts	24/2115	. . . . Jewelry
24/1696	. . Hook and loop type fastener and zipper belt end connection	24/2117	. . . Strap tighteners
24/17	. Buttoners	24/2119	. . . Tie chain tighteners
24/18	. Cuff holder	24/2121	. . . Cargo tie down
24/181	. . Adjustable	24/2123	. . . Cover fasteners
24/183	. . Sleeve clasp and button for cuff	24/2125	. . . Chain tighteners
24/184	. . Sleeve clasp and clasp for cuff	24/2126	. . . Strap tightener machine
24/185	. . Sleeve clasp and hook for cuff	24/2128	. . . toggle actuated sliding jaw
24/186	. . Sleeve clasp and pin for cuff	24/213	. . . Jewelry
24/188	. . Sleeve pin and button for cuff	24/2132	. . . Split ring with tightener
24/189	. . Pin fastener	24/2134	. . . Concrete form panels
24/19	. Necktie fastener	24/2136	. . . Seat belt buckles
24/1903	. . Bands	24/2138	. . . Chain, cable, wire tighteners, and anchors
24/1907	. . . End-securing pin	24/214	. . . Envelope fasteners
24/191	. . . Gripping	24/2142	. . . Ski boot and garment fasteners
24/1914	. . . Depressors	24/2143	. . Strap-attached folding lever
24/1917	. . . . Button engaging	24/2145	. . . toggle latch
24/1921	. . . . Pin or spur	24/2147	. . . Strap tightener
24/1924	. . Button engaging	24/2149	. . . Tire antiskid strap tightener
24/1928	. . . Adjustable	24/2151	. . . Seat belts
24/1931	. . . Cord loop	24/2153	. . . Split ring fasteners
24/1934	. . . Pivoted or sliding jaw	24/2155	. . . Jewelry-watch straps
24/1938	. . . Pin attached	24/2157	. . . Tie downs [covers, articles]
24/1941	. . Collar button combined	24/2158	. . . Cable, wire, rope tightener
24/1945	. . . Clasp attached	24/216	. . . Ski boot and garment fasteners
24/1948	. . . Pin attached	24/2162	. . . Dress hem raisers
24/1952	. . . Separable fastener	24/2164	. . Midline
24/1955	. . Tie, attached hook	24/2166	. . Jewelry
24/1959	. . Magnetic, adhesive, or snap type fastener connects tie to shirt	24/2168	. . Seat belt
24/1962	. . Tie engaging loop with shirt engaging fastener	24/217	. . Accordion straps
24/1966	. . Tie knot engaging and collar attaching	24/2172	. . Parallel poles clamp
24/1969	. . Tie clip and shirt clasp attaching	24/2174	. . form panels for walls
24/1972	. . Tie clip and fastening pin	24/2175	. . Cargo tie down
24/1976	. . Tie pin with shirt fastener	24/2177	. . Chain tighteners
24/1979	. . Tie stiffener with shirt fastener	24/2179	. . Split band with tightener
24/1983	. . with pivotal jaws having spring means	24/2181	. . Tire chain tighteners
24/1986	. . Slider	24/2183	. . Ski, boot, and shoe fasteners
24/199	. . Ornamental	24/2185	. . Fixed jaw with sliding or pivoted jaw
24/1993	. . . Key shaped	24/2187	. . Rack and pinion and circular tighteners
24/1997	. . Resilient clasp	24/2189	. . Circular flange container clamp
24/20	. Paper fastener	24/2191	. . Strap stretching tools, tighteners, and sealers
24/201	. . with screw threaded or notch engaging securing means	24/2192	. . Buckle type
24/202	. . Resiliently biased	24/2194	. . Integral piece
24/203	. . . including means to open or close fastener	24/2196	. . toggle
24/204	. . . . Pivotaly mounted on pintle	24/2198	. . Stocking top
24/205	. . . One piece	24/22	. Trouser guards, clips, straps [e.g., above shoetops]
24/206	. . . . Mounted on support means	24/23	. Bedclothes holders
24/207	. . Adhesive	24/24	. T-head nongripping, fabric engaging type
24/208	. . Corner fastened	24/25	. Zipper or required component thereof
24/209	. . Paper-penetrating	24/2502	. . Plural zippers
24/21	. Strap tighteners	24/2504	. . . Zipper chain
24/2102	. . Cam lever and loop	24/2505	. . . having surface sealing structure
24/2104	. . . Step adjusted	24/2507	. . having slider or interconnected sliders with access opening for diverse-art member
24/2106	. . . . Ski boot and garment fasteners	24/2509	. . Plural independently movable sliders
24/2108	. . . . Split ring tightener	24/2511	. . with distinct, stationary means for anchoring slider
24/2109	. . . . Chain and rope tighteners	24/2513	. . . and for aligning surfaces or obstructing slider movement
24/2111	. . . . Tire chain tighteners	24/2514	. . with distinct member for sealing surfaces
24/2113	. . . . Strap tighteners	24/2516	. . with distinct separable-fastener

- 24/2518 . . . having coiled or bent continuous wire interlocking surface
- 24/252 . . . with stringer tape interwoven or knitted therewith
- 24/2521 . . . with stringer tape having specific weave or knit pattern
- 24/2523 . . . with core encircled by coils or bends
- 24/2525 . . . with mounting portion having structural formations complementary to stitching
- 24/2527 . . . Attached by stitching
- 24/2529 . . . . String or stringer tape having distinctive property [e.g., heat sensitive]
- 24/253 . . . with stringer tape having distinctive property [e.g., heat sensitive]
- 24/2532 . . having interlocking surface with continuous cross section
- 24/2534 . . . Opposed interlocking surface having dissimilar cross section
- 24/2536 . . having interlocking surface formed from single member with varying cross section
- 24/2538 . . . Opposed surface having dissimilar cross section
- 24/2539 . . Interlocking surface constructed from plural elements in series
- 24/2541 . . . having either noninterlocking element in, interrupted, or unequal length series
- 24/2543 . . . with element structural feature unrelated to interlocking or securing portion
- 24/2545 . . . Dissimilar opposed elements
- 24/2546 . . . Wire element
- 24/2548 . . . Preattached to mounting cord
- 24/255 . . . having interlocking portion with specific shape
- 24/2552 . . . . including symmetrical formations on opposite walls for engaging mating elements
- 24/2554 . . . . including complementary formations on opposite walls for engaging mating elements
- 24/2555 . . . . . Mating elements having reversed orientation of formations
- 24/2557 . . . having mounting portion with specific shape or structure
- 24/2559 . . . . including embracing jaws
- 24/2561 . . Slider having specific configuration, construction, adaptation, or material
- 24/2563 . . . including relatively movable spaced wings [i.e., restraining walls]
- 24/2564 . . . including converging channel and relatively movable separator island
- 24/2566 . . . including position locking-means attached thereto
- 24/2568 . . . . Protrusion on pull tab directly engaging interlocking surfaces
- 24/257 . . . . having surface engaging element shifted by reorientation of pull tab
- 24/2571 . . . . . Resilient or spring biased element
- 24/2573 . . . . . Selectively shifted by either of two pull tabs
- 24/2575 . . . . . with relatively movable link
- 24/2577 . . . . . Biased by distinct spring
- 24/2579 . . . . . having aperture cooperating with guide post
- 24/258 . . . including means preventing bunching of structure-to-be-secured or stringer
- 24/2582 . . . having specific contour or arrangement of converging channel, separator island, or wing
- 24/2584 . . . . Spaced segments of each wall of channel supported by different wings
- 24/2586 . . . including pull tab attaching means
- 24/2588 . . . including means for attaching components of slider together
- 24/2589 . . . with ornamental slider
- 24/2591 . . with means for concealing surfaces
- 24/2593 . . including complementary, aligning means attached to ends of interlocking surfaces
- 24/2595 . . . having specific mounting connection or reinforcing structure at connection
- 24/2596 . . including means attaching interlocking surfaces together
- 24/2598 . . including means for obstructing movement of slider
- 24/26 . . Slit closing means including guides on opposite edges of slit and slidable bridging component
- 24/262 . . with hand-actuated lever for shifting bridging component
- 24/264 . . including structure linking and allowing variations in separation between opposite-guide-contacting portions of component
- 24/266 . . having bridging components attached in series along carrying element
- 24/268 . . having separate, independently movable, bridging components
- 24/27 . . including readily dissociable fastener having numerous, protruding, unitary filaments randomly interlocking with, and simultaneously moving towards, mating structure [e.g., hook-loop type fastener]
- 24/2708 . . Combined with diverse fastener
- 24/2717 . . with distinct structure for sealing securement joint
- 24/2725 . . with feature facilitating, enhancing, or causing attachment of filament mounting surface to support therefor
- 24/2733 . . having filaments formed from continuous element interwoven or knitted into distinct, mounting surface fabric
- 24/2742 . . having filaments of varied shape or size on same mounting surface
- 24/275 . . with feature facilitating or causing attachment of filaments to mounting surface
- 24/2758 . . . Thermal or adhesive
- 24/2767 . . having several, repeating, interlocking formations along length of filaments
- 24/2775 . . having opposed structure formed from distinct filaments of diverse shape to those mating therewith
- 24/2783 . . having filaments constructed from coated, laminated, or composite material
- 24/2792 . . having mounting surface and filaments constructed from common piece of material
- 24/28 . . Freight container to freight container fastener
- 24/29 . . Drum or can spacer fastener
- 24/30 . . Trim molding fastener
- 24/301 . . having externally threaded attaching means
- 24/302 . . . and laterally extending biasing appendage
- 24/303 . . having laterally extending biasing appendage
- 24/304 . . Resilient metal type
- 24/306 . . . Strip formed
- 24/307 . . . Sheet metal formed
- 24/308 . . . Wire formed
- 24/309 . . Plastic type

24/31	. Plural fasteners having intermediate flaccid connector	24/3467	. . Pin
24/312	. . Chain connector	24/3468	. . . and pin
24/314	. . Elastic connector	24/3469	. . . . and disconnect means
24/316	. . . Strap connector	24/3471	. . . . . Hook and eye type
24/318	. . Strap connector	24/3472	. . . . and hook
24/32	. having magnetic fastener	24/3473	. . . . . having connector allowing movement
24/33	. having adhesive fastener	24/3475	. . . . having intermediate connector allowing movement
24/34	. Combined diverse multipart fasteners	24/3476	. . . and hook
24/3401	. . Buckle	24/3477	. . . . having intermediate connector allowing movement
24/3403	. . . and buckles	24/3479	. . . . . and adjustment means
24/3404	. . . . having separate material adjustment means	24/348	. . . . Hook having locking means
24/3405	. . . . having separate disconnect means	24/3481	. . . including a button fastening element
24/3407	. . . . . Pivotal lever type	24/3483	. . . and penetrating prong
24/3408	. . . . having disconnect structure	24/3484	. . Hook
24/3409	. . . . . Resilient cooperating means	24/3485	. . . and hook
24/3411	. . . . and pin	24/3487	. . . . having biasing spring
24/3412	. . . . Crossed belt accommodating	24/3488	. . . . Separately connected
24/3413	. . . and clasp	24/3489	. . . . having securing means
24/3415	. . . and pin	24/3491	. . . . . Sliding
24/3416	. . . and hook	24/3492	. . . . . Snap type
24/3417	. . . . having disconnect means	24/3493	. . . . . Pivoted
24/3419	. . . . having penetrating prong	24/3495	. . . having penetrating prong
24/342	. . . . Buckle having plural receiving slots	24/3496	. . . including a button fastening element
24/3421	. . . including a button fastening element	24/3497	. . Button fastening element including another fastener element
24/3423	. . . and separable fastening means for attached fastener	24/3499	. . Penetrating prong
24/3424	. . . . Snap fastener	24/35	. Interchangeable button loop and pin
24/3425	. . . having roller means	24/36	. Button with fastener
24/3427	. . Clasp	24/3602	. . Loss-preventing devices
24/3428	. . . having pivoted members	24/3604	. . Adjustable
24/3429	. . . . Cam type member	24/3606	. . Cloth shanks and covers
24/3431	. . . . Plural clasps	24/3609	. . Multiple attachment
24/3432	. . . . . and toggle operator	24/3611	. . Deflecting prong or rivet
24/3433	. . . . . Spring biased	24/3613	. . . Anvil or plate
24/3435	. . . . . . Coil	24/3615	. . . Integral
24/3436	. . . . . and cam	24/3617	. . Hinged leaf
24/3437	. . . . Coil spring biased	24/3619	. . . Axially rotating
24/3439	. . . Plural clasps	24/3621	. . . Double
24/344	. . . . Resilient type clasp	24/3623	. . . Sliding
24/3441	. . . . . and cam	24/3626	. . Sliding bar
24/3443	. . . . . Spring biased jaw	24/3628	. . Integral or rigid stud
24/3444	. . . . . Circular work engageable	24/363	. . . Bent sheet metal [integral]
24/3445	. . . . . and pin attachment	24/3632	. . Link
24/3447	. . . . . and disconnect means	24/3634	. . . Integral rubber button, extendable shank
24/3448	. . . including a button fastening element	24/3636	. . . Extendably connected
24/3449	. . . and hook	24/3638	. . . Pivoted leaf
24/3451	. . . . having intermediate connector allowing movement	24/364	. . . Releasably locked
24/3452	. . . . . and adjustment means	24/3643	. . . French cuff
24/3453	. . . . having gripping configuration on clasp jaw	24/3645	. . . Tufting
24/3455	. . . . . Penetrating type	24/3647	. . . Integral piece
24/3456	. . . . having cam	24/3649	. . Pin attached
24/3457	. . . . having separable jaws	24/3651	. . Separable
24/3459	. . . and penetrating prong	24/3653	. . . Screw
24/346	. . . and pin	24/3655	. . . Spring
24/3461	. . . . having separate pin loss prevention means	24/3657	. . . . Resilient head
24/3463	. . . . . Pin coextensive, coplanar, and contiguous with clasp jaw	24/366	. . . . Resilient socket
24/3464	. . . . Pin coextensive, coplanar, and contiguous with clasp jaw	24/3662	. . . . Rotating head
24/3465	. . . . Pin forms part of clasp jaw	24/3664	. . . . with operating devices
		24/3666	. . Separate thread bar



24/3668	. . Spiral fastener	24/3789	. . having means covering tip of lacing
24/367	. . Covers	24/3792	. . . Tasseled
24/3672	. . . Metal or plastic caps	24/3795	. . . with plural components
24/3674	. . Pads	24/3797	. . . with permanently deformed mounting structure
24/3677	. . Flexible button	24/38	. Strap cable or pipe button
24/3679	. . Swivel button	24/39	. Cord and rope holders
24/3681	. . Tufting type	24/3902	. . Chain
24/3683	. . Button with cavity for friction grip fastener	24/3904	. . . Bead chain fasteners
24/3685	. . Button with shank for friction grip fastener	24/3907	. . Sheathed strand
24/3687	. . Heat or adhesive secured type	24/3909	. . Plural-strand cord or rope
24/3689	. . Thread or wire through apertured button	24/3911	. . Friction disk
24/3691	. . Eye shank type button	24/3913	. . Knot engaging
24/3694	. . Ornamental type	24/3916	. . One-piece
24/3696	. . for cuff or collar	24/3918	. . . Wedge slot
24/3698	. . Fabric embracing	24/392	. . . Wire
24/37	. Drawstring, laced-fastener, or separate essential cooperating device therefor	24/3922	. . . . Cord runs through center of coil
24/3703	. . Includes separate device for holding drawn portion of lacing	24/3924	. . . Sheet material
24/3705	. . . Device engages tie in lacing	24/3927	. . . Slack adjuster
24/3708	. . . . and fully covers tie	24/3929	. . . Rubber
24/3711	. . . Device engages element or formation on lacing	24/3931	. . . Wire
24/3713	. . . having relatively movable holding components or surfaces	24/3933	. . . Swagged, deformable
24/3716	. . . . with pivotal connection therebetween	24/3936	. . Pivoted part
24/3718	. . . . with integral resilient linking structure therebetween	24/3938	. . . Lever tension
24/3721	. . . . . formed from wire	24/394	. . . Cam lever
24/3724	. . . having lacing wound thereabout or wedged therein	24/3942	. . . . Laterally shifted rope
24/3726	. . with holding means fixedly mounted on lacing	24/3944	. . . . Cam engaging or disengaging
24/3729	. . . and forming lacing tips	24/3947	. . . . Fixed and movable jaws, movable jaw pulled
24/3732	. . Includes lacing holding structure within directing means therefor	24/3949	. . . . Link-connected parallel jaws
24/3734	. . having diverse shaped directing means for lacing	24/3951	. . . . Dual cam
24/3737	. . having lacing directing means in particular pattern	24/3953	. . . Pivotal means with plate aperture
24/3739	. . Includes lacing guiding roller within directing means	24/3956	. . . Jaws locked together by cam, wedge, lever, or screw
24/3742	. . having eyelet type directing means	24/3958	. . Screw clamp
24/3745	. . . with permanently deformed mounting structure	24/396	. . . Screw clamp with snubber
24/3747	. . . . Mounting structure formed from different material than directing passage	24/3962	. . . Tangential bolt
24/375	. . having hook shaped directing means	24/3964	. . . J-shaped bolt
24/3753	. . . and movable component or surface for closing throat	24/3967	. . . Bolt perpendicular to cable axis
24/3755	. . . Mounted by structure allowing bodily movement thereof	24/3969	. . Sliding part or wedge
24/3758	. . . formed from wire	24/3971	. . . Rope looped about movable member
24/3761	. . . with mounting structure formed from different material	24/3973	. . . Rope clamped between cone and socket
24/3763	. . . with permanently deformed mounting structure	24/3976	. . . Sliding ball
24/3766	. . . . Expanding stud	24/3978	. . . Screw actuated
24/3768	. . having loop or sleeve shaped directing means	24/398	. . Bendable, ductile
24/3771	. . . Entirely formed from flaccid material	24/3982	. . Safety release
24/3774	. . . Mounted by structure allowing bodily movement thereof	24/3984	. . Alignable aperture and spring pressed moving element
24/3776	. . . formed from wire	24/3987	. . Loop, adjustable
24/3779	. . . with permanently deformed mounting structure	24/3989	. . Snubbers, cleats by dielectric loss
24/3782	. . . . Loop or sleeve closed when mounted	24/3991	. . Loop engaging
24/3784	. . . . Expanding stud	24/3993	. . Ball or roller
24/3787	. . having elastic segment in lacing	24/3996	. . Sliding wedge
		24/3998	. . Helical preform
		24/40	. Buckles
		24/4002	. . Harness
		24/4005	. . . Combined buckles and snap hooks
		24/4007	. . . Lock
		24/4009	. . . . Key
		24/4012	. . . Clamping
		24/4014	. . . . One-piece
		24/4016	. . . . Pivoted part or lever
		24/4019	. . . . Sliding part or wedge

24/4021	. . . Cross bails	24/4412	. . . . with separate, cavity-blocking gate on receiving member
24/4023	. . . . Pivoted stud plate	24/44128	. . . . Resilient inserted or receiving member
24/4026	. . . . Rigid stud	24/44137	. . . . . Inserted or receiving member substantially covered or coated for protection or to promote gripping
24/4028	. . . Penetrating tongue	24/44145	. . . . . Resilient inserted member
24/403	. . . . Guarded	24/44154	. . . . . having engaging face formed from nonmetallic material
24/4033	. . . . One-piece	24/44162	. . . . . having head and neck type engaging face
24/4035	. . . . Multiple	24/44171	. . . . . having internal supporting or reinforcing element
24/4037	. . . . Pivoted	24/44179	. . . . . Circular head or neck
24/404	. . . . . Lever actuated	24/44188	. . . . having wedge shaped, inserted and receiving members
24/4042	. . . . . Stud	24/44197	. . . . with specific means for attaching to flaccid strap or supporting strap
24/4044	. . . . Sliding part or wedge	24/44205	. . . . . On the inserted member
24/4047	. . . Strap loops and attaching devices	24/44214	. . . . having necked button sliding along length of closed, variable width loop
24/4049	. . . Loop shields	24/44222	. . having flaccid gripping member
24/4051	. . Garment shielded	24/44231	. . . formed from elastic material
24/4053	. . Combined pressure bar and guard	24/44239	. . Encircling gripping member including semirigid band and operator for tightening
24/4056	. . . Hook attached	24/44248	. . Encircling gripping member including semirigid band and means for adjusting girth
24/4058	. . Penetrating prong	24/44256	. . with specifically shaped, nongripping, rigid structure for connecting independently operable clasps, clips, or support-clamps
24/406	. . . One-piece	24/44265	. . Gripping member face integral with or rigidly affixed to screw-driving portion
24/4063	. . . . Hook attached	24/44274	. . having either discrete flaccid or thin, nonbiasing, integral, connecting hinge
24/4065	. . . Pivoted	24/44282	. . having equally spaced or continual gripping faces revolving about central axis
24/4067	. . . . Hook attached	24/44291	. . including pivoted gripping member
24/407	. . . Slide	24/44299	. . . Pivoted member also slides
24/4072	. . Pivoted lever	24/44308	. . . . Tapered face
24/4074	. . . Hook attached	24/44316	. . . Pivoting gripping member either supports or coacts with sliding engaging face
24/4077	. . . Looped strap	24/44325	. . . having three or more pivotally connected gripping members
24/4079	. . Sliding part of wedge	24/44333	. . . having toggle operator for moving
24/4081	. . . Hook attached	24/44342	. . . having rigid linking arm pivotally connected to each gripping member
24/4084	. . . Looped strap	24/4435	. . . . with extended lever portion
24/4086	. . Looped strap	24/44359	. . . . having lever end modified for attachment to support
24/4088	. . One-piece	24/44368	. . . Pivoted gripping member applies camming force
24/4091	. . . Hook attached	24/44376	. . . Spring or resiliently biased about pivot
24/4093	. . . Looped strap	24/44385	. . . . Distinct spring
24/4095	. . Fabric covered	24/44393	. . . . . Attached solely by spring
24/4098	. . Ornamental and/or object supported	24/44402	. . . . . with operator for moving pivoted member
24/41	. Pierced earring fastener	24/4441	. . . . . Camming or wedging element
24/42	. Independent, headed, aperture pass-through fastener	24/44419	. . . . . Pivoted or rotated element
24/43	. Fastener with revolving component wrapping structure-to-be-secured about fastener	24/44427	. . . . . with position locking-means for gripping members
24/44	. Clasp, clip, support-clamp, or required component thereof	24/44436	. . . . . including pivoted arm
24/44009	. . Gripping member adapted for tool actuation or release	24/44444	. . . . . having specific surface material or irregularity on or along engaging face
24/44017	. . with specific mounting means for attaching to rigid or semirigid supporting structure or structure-to-be-secured	24/44453	. . . . . having specific handle structure
24/44026	. . . for cooperating with aperture in supporting structure or structure-to-be-secured		
24/44034	. . Dissociable gripping members		
24/44043	. . . Channel and inserted bar		
24/44051	. . . . having operator or locking means		
24/4406	. . . . Resilient channel or bar		
24/44068	. . having gripping member actuated by fluid force		
24/44077	. . having inserted and receiving interlocking members connected by bendable, nonbiasing strap		
24/44085	. . . Discrete flaccid strap		
24/44094	. . . . with distinct means for preventing separation of members		
24/44103	. . . . . Slidably mounted		
24/44111	. . . . with separate flaccid flap or pocket for protecting structure-to-be-secured		

24/44462 . . . . .	Coil spring	24/44786 . . . . .	Opposed faces located in and bias towards common plane in nonuse position
24/4447 . . . . .	having coil portion coaxial or parallel with pivotal axis	24/44795 . . . . .	Resilient gripping member having tightly twisted portion
24/44479 . . . . .	Flat or leaf spring	24/44803 . . . . .	Resilient gripping member having coiled portion
24/44487 . . . . .	Closed by gravity or weight of structure-to-be-secured	24/44812 . . . . .	Convolutions of coil form faces
24/44496 . . . . .	with operator means for moving pivoted member	24/44821 . . . . .	Relatively movable segments of resilient gripping member contact and cross in nonuse position
24/44504 . . . . .	Threaded cylindrical rod and mating cavity	24/44829 . . . . .	Segments form opposed engaging faces
24/44513 . . . . .	Camming or wedging element	24/44838 . . . . .	having specific handle structure
24/44521 . . . . .	Pivoted or rotated element	24/44846 . . . . .	having specific handle structure
24/4453 . . . . .	with position locking-means for gripping members	24/44855 . . . . .	Terminal end of resilient member having engagement or disengagement enhancing structural modifications
24/44538 . . . . .	Integral locking-means	24/44863 . . . . .	having specific surface irregularity on or along engaging face
24/44547 . . . . .	having inserted and receiving interlocking engaging faces	24/44872 . . . . .	having specific handle structure
24/44556 . . . . .	Resilient gripping member	24/4488 . . . . .	Movably attached to gripping member
24/44564 . . . . .	having specific surface material or irregularity on or along engaging face	24/44889 . . . . .	Interlocking faces
24/44573 . . . . .	including track or way guided and retained gripping member	24/44897 . . . . .	with reinforcing member
24/44581 . . . . .	Biased by distinct spring	24/44906 . . . . .	having specific surface irregularity on or along engaging face
24/4459 . . . . .	with operator for moving guided member	24/44915 . . . . .	Corrugated or toothed face
24/44598 . . . . .	Threaded cylindrical rod and mating cavity	24/44923 . . . . .	Clasp, clip, or support-clamp cut or shaped from a single sheet of resilient, uniformly thick, planar material
24/44607 . . . . .	Track or way oblique to path of gripping member	24/44932 . . . . .	having specific surface material or irregularity on or along engaging face
24/44615 . . . . .	with position locking-means for gripping members	24/4494 . . . . .	having specific handle structure
24/44624 . . . . .	Integral locking-means	24/44949 . . . . .	including resilient biasing wire
24/44632 . . . . .	with specific mounting means for attaching to flaccid supporting structure or structure-to-be-secured	24/44957 . . . . .	Coiled wire
24/44641 . . . . .	having gripping member formed from, biased by, or mounted on resilient member	24/44966 . . . . .	having gripping member shifted by operator
24/4465 . . . . .	Integrally combined, independently operable, diverse clasps, clips, or support-clamps	24/44974 . . . . .	Threaded cylindrical rod and mating cavity
24/44658 . . . . .	with specific means for mounting to flaccid supporting structure or structure-to-be-secured	24/44983 . . . . .	formed from single rigid piece of material
24/44667 . . . . .	Mounting means made entirely from integral wire portion of resilient gripping member	24/44991 . . . . .	having specific surface irregularity on or along engaging face
24/44675 . . . . .	Wire coiled about flaccid supporting structure	24/45 . . . . .	Separable-fastener or required component thereof [e.g., projection and cavity to complete interlock]
24/44684 . . . . .	with operator for moving biased engaging face	24/45005 . . . . .	with third detached member completing interlock [e.g., hook type]
24/44692 . . . . .	Camming or wedging element	24/4501 . . . . .	Quick connect or release [e.g., spring and detent]
24/44701 . . . . .	Encircling sleeve type element	24/45016 . . . . .	for jewelry
24/44709 . . . . .	Pivoted or rotated element	24/45021 . . . . .	including eyelet [e.g., shoes]
24/44718 . . . . .	Element pivots or rotates in plane parallel to plane bisecting opposed engaging faces	24/45026 . . . . .	for key holder
24/44726 . . . . .	Elongated element with pivot between cam and handle portions	24/45031 . . . . .	for tire chain, strap, etc. [e.g., rotatable or sliding spring gate]
24/44735 . . . . .	for moving engaging face of U-shaped gripping member	24/45037 . . . . .	for apparel and related accessories
24/44744 . . . . .	with position locking-means for engaging faces	24/45042 . . . . .	Button, button related
24/44752 . . . . .	Integral locking-means	24/45047 . . . . .	Snap [e.g., key hole type]
24/44761 . . . . .	Pivoted lock member	24/45052 . . . . .	Post and receiver [e.g., pin and slot]
24/44769 . . . . .	Opposed engaging faces on gripping member formed from single piece of resilient material	24/45058 . . . . .	Hook [e.g., within cavity]
24/44778 . . . . .	Piece totally forms clasp, clip, or support-clamp and has shaped, wirelike, or bandlike configuration with uniform cross section throughout its length	24/45063 . . . . .	Belt, strap, etc. [e.g., buckle or snap fastener]
		24/45068 . . . . .	Glove
		24/45073 . . . . .	Purse, wallet, etc.
		24/45079 . . . . .	Belt, strap, harness, etc.
		24/45084 . . . . .	for safety belt buckle, strap, harness, etc.
		24/45089 . . . . .	Sliding or rotating element
		24/45094 . . . . .	Element having key slot
		24/45099 . . . . .	Resilient element [e.g., snap type]

24/45105 . . . . for upholstery, panel, trim strip, etc. [e.g., spring biased]  
 24/4511 . . . . Link with pivoted gate  
 24/45115 . . . . Hook  
 24/4512 . . . . Snap with spring bias [e.g., gate]  
 24/45126 . . . . for connecting chains [e.g., opposed pivoted hook]  
 24/45131 . . . . for heavy load bearing device [e.g., chain, rope, cable, etc.]  
 24/45136 . . . . . Haim, harness, whiffletree, rein, etc.  
 24/45141 . . . . for chain, rope, cable, etc.  
 24/45147 . . . . Coupler with sliding socket to complete interlock  
 24/45152 . . . Each mating member having similarly shaped, sized, and operated interlocking or intermeshable face  
 24/45157 . . . . Zipper-type [e.g., slider]  
 24/45162 . . . . for garment [e.g., with ribs and grooves interlocking elements]  
 24/45168 . . . . for container [e.g., bag]  
 24/45173 . . . . Resilient element  
 24/45178 . . . . Snap [e.g., identical elements]  
 24/45183 . . . . Clasp [e.g., spring type]  
 24/45188 . . . . for jewelry [e.g., buckle type]  
 24/45194 . . . . for belt or strap  
 24/45199 . . . . Hook  
 24/45204 . . . . for belt, strap, etc. [e.g., with pivoted gate locking member]  
 24/45209 . . . . for apparel  
 24/45215 . . . . Slot and tab or tongue  
 24/4522 . . . . Sliding or rotating element  
 24/45225 . . . including member having distinct formations and mating member selectively interlocking therewith  
 24/4523 . . . . Hook  
 24/45236 . . . . Multiple catch [e.g., with pivoted gate]  
 24/45241 . . . . Slot and tab or tongue  
 24/45246 . . . . having teeth or serrations [e.g., sliding with respect to each other]  
 24/45251 . . . . Resilient element [e.g., with spring]  
 24/45257 . . . . Snap with cavity  
 24/45262 . . . . Pin, post and receiver  
 24/45267 . . . . Notched clasp [e.g., with receiving slot]

24/45272 . . . . Projection passes through cavity then moves toward noninserted portion of its member to complete interlock [e.g., snap hook]  
 (Frozen)

### **WARNING**

Groups [Y10T 24/45272](#) - [Y10T 24/45455](#) are no longer used for the classification of documents as of May 1, 2021.

The content of this group is being reclassified into groups [F16B 45/00](#), [F16B 45/002](#), [F16B 45/005](#), [F16B 45/008](#), [F16B 45/012](#), [F16B 45/015](#), [F16B 45/02](#), [F16B 45/021](#), [F16B 45/022](#), [F16B 45/023](#), [F16B 45/024](#), [F16B 45/026](#), [F16B 45/027](#), [F16B 45/028](#), [F16B 45/029](#), [F16B 45/031](#), [F16B 45/032](#), [F16B 45/033](#), [F16B 45/034](#), [F16B 45/035](#), [F16B 45/036](#), [F16B 45/037](#), [F16B 45/04](#), [F16B 45/043](#), [F16B 45/045](#), [F16B 45/047](#), [F16B 45/049](#), [F16B 45/051](#), [F16B 45/053](#), [F16B 45/055](#), [F16B 45/057](#), [F16B 45/059](#) and [F16B 45/06](#).

All groups listed in this Warning should be considered in order to perform a complete search.

24/45277 . . . . Entire projection member forms loop or ring when interlocked  
 (Frozen)  
 24/45283 . . . . . Includes slidable gate closing entrance throat  
 (Frozen)  
 24/45288 . . . . . Hook type projection member  
 (Frozen)  
 24/45293 . . . . . Plural hooks entering opposite sides of same cavity  
 (Frozen)  
 24/45298 . . . . . Hooks formed solely from wire  
 (Frozen)  
 24/45304 . . . . . Noninserted portion of projection member includes movably connected gate for closing access throat  
 (Frozen)  
 24/45309 . . . . . Threaded gate  
 (Frozen)  
 24/45314 . . . . . Revolvably mounted disc shaped gate  
 (Frozen)  
 24/45319 . . . . . Pivotally connected gate  
 (Frozen)  
 24/45325 . . . . . Gate swings transversely to plane of hook  
 (Frozen)  
 24/4533 . . . . . Gate also slides relative to pivot  
 (Frozen)  
 24/45335 . . . . . having means biasing gate about pivot  
 (Frozen)  
 24/4534 . . . . . and position locking-means for gate  
 (Frozen)  
 24/45346 . . . . . Includes distinct biasing spring  
 (Frozen)  
 24/45351 . . . . . Coil type spring  
 (Frozen)  
 24/45356 . . . . . Coiled about pivotal axis of gate  
 (Frozen)  
 24/45361 . . . . . having position locking-means for gate  
 (Frozen)  
 24/45366 . . . . . Locking-means pivotally connected  
 (Frozen)  
 24/45372 . . . . . Locking-means slidably mounted  
 (Frozen)

24/45377 . . . . .	Gate closes when structure-to-be-secured is tensioned (Frozen)	24/45555 . . . . .	having separate mounting means inserted into area
24/45382 . . . . .	Track or way guided gate (Frozen)	24/4556 . . . . .	Plastic deformation of means or surface required for mounting
24/45387 . . . . .	having means biasing gate (Frozen)	24/45565 . . . . .	having separate mounting means encompassing cross section of projection
24/45393 . . . . .	Guide of gate encircles shank (Frozen)	24/45571 . . . . .	having dome-shaped head and expansion slit along side
24/45398 . . . . .	Cavity in shank forms track or way (Frozen)	24/45576 . . . . .	and connected surface at tip of head
24/45403 . . . . .	with position locking-means for gate (Frozen)	24/45581 . . . . .	having inserted end formed by oppositely biased surface segments
24/45408 . . . . .	Resilient, self-biased gate (Frozen)	24/45586 . . . . .	Constructed from wire
24/45414 . . . . .	with position locking-means for gate (Frozen)	24/45592 . . . . .	having both resiliently biased and rigid components forming external surface of projection
24/45419 . . . . .	Gate and hook formed from plastic (Frozen)	24/45597 . . . . .	Projection member including noninserted spring for engaging and pushing against receiving member
24/45424 . . . . .	Gate and hook formed solely from wire (Frozen)	24/45602 . . . . .	Receiving member includes either movable connection between interlocking components or variable configuration cavity
24/45429 . . . . .	Gate and hook formed from single piece of sheet metal (Frozen)	24/45607 . . . . .	with additional cavity for engaging different projection
24/45435 . . . . .	Projection pivotally attached to shank or mounting structure (Frozen)	24/45613 . . . . .	having common means actuating or releasing interlocking components or surfaces
24/4544 . . . . .	Projection slidably mounted to shank or mounting structure (Frozen)	24/45618 . . . . .	and interlocking with independently associated or dissociated projection members
24/45445 . . . . .	Projection self-biased towards shank or mounting structure (Frozen)	24/45623 . . . . .	and operator therefor
24/4545 . . . . .	and formed solely from wire (Frozen)	24/45628 . . . . .	for plural, oppositely shifting, similar interlocking components or segments
24/45455 . . . . .	Cooperating with relatively stationary wire gate (Frozen)	24/45634 . . . . .	Operator includes camming or wedging element
24/45461 . . . . .	Interlocking portion actuated or released responsive to preselected condition [e.g., heat, pressure]	24/45639 . . . . .	including pivotally connected element on receiving member
24/45466 . . . . .	having electric or fluid powered, actuation or release, of interlock	24/45644 . . . . .	for shifting pivotally connected interlocking component
24/45471 . . . . .	Projection having movable connection between components thereof or variable configuration	24/45649 . . . . .	Element and component pivot about same axis
24/45476 . . . . .	with additional, similar projection for engaging different cavity	24/45654 . . . . .	for shifting slidably connected and guided, nonself-biasing interlocking component
24/45482 . . . . .	and operator therefor	24/4566 . . . . .	including slidably connected and guided element on receiving member
24/45487 . . . . .	including camming or wedging element on projection member	24/45665 . . . . .	for shifting pivotally connected interlocking component
24/45492 . . . . .	Pivotally attached element	24/4567 . . . . .	for shifting slidably connected and guided, nonself-biasing, interlocking component
24/45497 . . . . .	including pivotal connection between projection components	24/45675 . . . . .	having pivotally connected interlocking component
24/45503 . . . . .	Component slides relative to connection	24/45681 . . . . .	Blocking removal of formation on projection from complementary formation on side wall of cavity
24/45508 . . . . .	and spring or resilient extension biasing about pivot	24/45686 . . . . .	and position locking-means therefor
24/45513 . . . . .	including slidably guided connection between nonself-biasing projection components	24/45691 . . . . .	and relatively movable handle therefor
24/45518 . . . . .	and distinct spring biasing component	24/45696 . . . . .	Requiring manual force thereon to interlock or disengage
24/45524 . . . . .	including resiliently biased projection component or surface segment	24/45702 . . . . .	Plural, oppositely shifting, similar interlocking components
24/45529 . . . . .	Requiring manual force applied against bias to interlock or disengage	24/45707 . . . . .	having aperture therein alignable with parallel access opening
24/45534 . . . . .	having connected leading edge and separated trailing arms		
24/45539 . . . . .	Cooperating with cavity having side walls and axially biased component capping end		
24/45545 . . . . .	forming total external surface of projection		
24/4555 . . . . .	and encircling hollow central area		

24/45712	. . . . .	having interlocking portion thereof housed continuously within cavity	24/4589	. . . . .	About pivotal connection
24/45717	. . . .	having cavity with side walls and axially biased component capping end	24/45895	. . . . .	Includes resilient component separate from portion
24/45723	. . . .	having slidably connected, nonself-biasing interlocking component	24/45901	. . . .	Allows relocation of portion
24/45728	. . . . .	Blocking removal of formation on projection from complementary formation on side wall of cavity	24/45906	. . . .	having component of means permanently deformed during mounting operation
24/45733	. . . . .	and position locking-means therefor	24/45911	. . . . .	and formed from or fixedly attached to projection or cavity portion
24/45738	. . . . .	and relatively movable handle therefor	24/45916	. . . . .	Cooperates with detached component of means
24/45743	. . . . .	Requiring manual force thereon to interlock or disengage	24/45921	. . . . .	having shape facilitating impaling of mounting surface
24/45749	. . . . .	Plural, oppositely shifting, similar interlocking components	24/45927	. . . . .	and inserted into or through cavity or projection
24/45754	. . . . .	having closed aperture therethrough alignable with parallel access opening	24/45932	. . . . .	and encircling cavity or projection
24/45759	. . . .	having flaccid component defining access opening of cavity	24/45937	. . . .	Consisting of thermally fusible substance
24/45764	. . . . .	Component formed solely by flaccid cord	24/45942	. . . .	having threaded formation
24/4577	. . . . .	with nonflaccid component	24/45948	. . . .	having specific structure for cooperating with stitching
24/45775	. . . .	having resiliently biased interlocking component or segment	24/45953	. . . .	having shape facilitating impaling of mounting surface
24/4578	. . . . .	Cavity or projection rotates about axis of cavity to dissociate	24/45958	. . .	Plural distinct cavities or projections
24/45785	. . . . .	Requiring manual force applied against bias to interlock or disengage	24/45963	. . . .	Hook type
24/45791	. . . . .	and partially blocking separate, nonresilient access opening of cavity	24/45969	. . .	Hook-shaped projection member passing through cavity
24/45796	. . . . .	and closed elongated access opening for guiding transverse projection travel after insertion	24/45974	. . . .	formed from single piece of sheet metal
24/45801	. . . . .	Nonresilient walls define opening	24/45979	. . . .	formed solely from wire
24/45806	. . . . .	formed from wire	24/45984	. . .	Cavity having specific shape
24/45812	. . . . .	and access opening with gapped perimeter for allowing movement of noninserted projection support therepast	24/4599	. . . .	including closed elongated access opening for guiding transverse projection travel after insertion
24/45817	. . . . .	Cavity constructed solely from wire	24/45995	. . . .	having access opening with gapped perimeter for allowing movement of noninserted projection support therepast
24/45822	. . . . .	Partially blocking separate, nonresilient, access opening of cavity	24/46	. .	Pin or separate essential cooperating device therefor
24/45827	. . . . .	and bodily shifted into or out of interlock location by manual force thereon	24/4602	. .	with separately operable, manually releasable, nonpenetrating means for mounting [e.g., drapery hook]
24/45832	. . . . .	formed from wire	24/4604	. .	having distinct guiding, holding, or protecting means for penetrated portion
24/45838	. . . . .	having curved or bent engaging section conforming to contour of projection	24/4605	. . .	Means detachable from or flaccidly connected to pin [e.g., hatpin type]
24/45843	. . . . .	Similar, distinct sections	24/4607	. . . .	for pin having plural penetrating portions
24/45848	. . . . .	having distinct sections engaging projection at spaced points	24/4609	. . . .	including relatively movable guiding, holding, or protecting components or surfaces
24/45853	. . . . .	including separate, nonprojection-engaging spring for biasing	24/4611	. . . . .	having operator for moving holding component or surface
24/45859	. . . . .	Biased component or segment entirely formed from wire	24/4613	. . . . .	Moves pivoting holding component
24/45864	. . . . .	having portion of cavity deformed during mounting	24/4614	. . . . .	Moves slidably guided, nonself-biasing, holding component
24/45869	. . . . .	and cooperating with separate mounting component	24/4616	. . . . .	having pierceable [e.g., cork] or naturally resilient [e.g., rubber] surfaces
24/45874	. . . . .	having axially extending expansion slit along side of cavity	24/4618	. . . . .	with pivotal connection therebetween
24/4588	. . .	Means for mounting projection or cavity portion	24/462	. . . . .	with slidable connection between nonself-biasing components
24/45885	. . . .	Allows bodily movement facilitating interlock	24/4621	. . . . .	having resiliently biased component or surface
			24/4623	. . . . .	Coiled about longitudinal axis of held portion
			24/4625	. . . . .	and aperture therein alignable with another spaced aperture of means
			24/4627	. . . . .	and nonresilient structure for guiding portion thereto

- 24/4629 . . . including structure for cooperating with formation [e.g., cavity] formed on penetrating portion
- 24/463 . . . for pin having plural penetrating portions
- 24/4632 . . . Each independently movable towards and into cooperation with means
- 24/4634 . . . including relatively movable guiding, holding, or protecting components or surfaces
- 24/4636 . . . with connection allowing component to revolve about axis of held penetrating portion
- 24/4638 . . . with pivotal connection therebetween
- 24/4639 . . . having position locking means therefor
- 24/4641 . . . Spring or resiliently biased
- 24/4643 . . . with slidable connection between nonself-biasing components
- 24/4645 . . . Component slides parallel to axis of held penetrating portion
- 24/4646 . . . Means engages formation formed on penetrating portion
- 24/4648 . . . having nonresilient and resilient components
- 24/465 . . . Means formed from single resilient wire
- 24/4652 . . . Means formed from resilient sheet metal
- 24/4654 . . . with independent, spaced, intermediate connections, or formations [e.g., coils], about which portion or means move
- 24/4655 . . . Includes slidable connection
- 24/4657 . . . with pivotal connection between penetrating portion and means
- 24/4659 . . . Connection also permits sliding movement
- 24/4661 . . . Resiliently biased about connection
- 24/4663 . . . with slidable connection intermediate penetrating portion and means
- 24/4664 . . . having resilient bridging structure between portion and means
- 24/4666 . . . Means includes structure for cooperating with formation [e.g., cavity] formed on portion
- 24/4668 . . . and penetrating portion formed from wire
- 24/467 . . . Bridging structure includes elongated nonwire element
- 24/4671 . . . Wire also forms coiled bridging structure about which portion moves
- 24/4673 . . . including distinct device for cooperating with coil
- 24/4675 . . . having means also formed from same wire
- 24/4677 . . . with cavity for guiding structure-to-be-secured towards penetrating portion [e.g., stocking support]
- 24/4679 . . . having penetrating portion retractable or of changeable length
- 24/468 . . . having interconnected distinct penetrating portions
- 24/4682 . . . Connection allows movement therebetween
- 24/4684 . . . Slidable connection
- 24/4686 . . . Resilient connection
- 24/4688 . . . formed from common wire
- 24/4689 . . . and pointing in same direction
- 24/4691 . . . Penetrating portion includes relatively movable structure for resisting extraction
- 24/4693 . . . having specific wire penetrating portion
- 24/4695 . . . Wire curved or bent

- 24/4696 . . . having distinct head structure
- 24/4698 . . . Movably connected to penetrating portion
- 24/47 . . . Strap-end-attaching devices
- 24/4709 . . . Bendable sheet material
- 24/4718 . . . Watch pintle connected
- 24/4727 . . . Webbing to tube [lawn chair]
- 24/4736 . . . Buckle connected
- 24/4745 . . . End clasp
- 24/4755 . . . Hook
- 24/4764 . . . Ring-loop

**WARNING**

Group [Y10T 24/4764](#) is impacted by reclassification into groups [F16B 45/00](#), [F16B 45/002](#), [F16B 45/005](#), [F16B 45/008](#), [F16B 45/012](#), [F16B 45/015](#), [F16B 45/02](#), [F16B 45/021](#), [F16B 45/022](#), [F16B 45/023](#), [F16B 45/024](#), [F16B 45/026](#), [F16B 45/027](#), [F16B 45/028](#), [F16B 45/029](#), [F16B 45/031](#), [F16B 45/032](#), [F16B 45/033](#), [F16B 45/034](#), [F16B 45/035](#), [F16B 45/036](#), [F16B 45/037](#), [F16B 45/04](#), [F16B 45/043](#), [F16B 45/045](#), [F16B 45/047](#), [F16B 45/049](#), [F16B 45/051](#), [F16B 45/053](#), [F16B 45/055](#), [F16B 45/057](#), [F16B 45/059](#) and [F16B 45/06](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 24/4773 . . . Cargo tiedown
- 24/4782 . . . Watch strap
- 24/4791 . . . Enlarged end epoxy
- 24/48 . . . Pivoted edge stays
- 24/49 . . . Fastener destructively secured by reshaping distortion force [e.g., ductile fastener]
- 24/492 . . . Distorted structure having shape facilitating impaling
- 24/493 . . . and distinct fastener structure cooperating with impaled structure
- 24/495 . . . Detached cooperating structure
- 24/497 . . . including plural impaling elements
- 24/498 . . . Elements form single aperture [e.g., split shank type]
- 24/50 . . . Readily interlocking, two-part fastener requiring either destructive or tool disengagement
- 24/505 . . . including additional fastener structure linking parts
- 24/51 . . . Hanger on portable article support for manual attachment thereof to overhead support [e.g., drapery hook]

**Former US Class 29 Series****29/00 Metal working**

- 29/10 . . . Battery-grid making
- 29/11 . . . Bias [i.e., helically] cutting of tubular stock
- 29/1106 . . . including orbital cutter
- 29/1113 . . . within stock support
- 29/1119 . . . with orbiting strip accumulator
- 29/1125 . . . including means to inflate stock
- 29/1131 . . . with means to feed stock along support or mandrel
- 29/1138 . . . Single means produces compound motion
- 29/1144 . . . Endless belt drive means
- 29/115 . . . Axially

29/1156	. . . Rotatably	29/446	. . Reciprocating type
29/1163	. . with means to rotate and store stock supply	29/448	. . File-blank stripper
29/1169	. . . Axis of rotation parallel to support or mandrel	29/45	. Scale remover or preventor
29/1175	. . with means for arcuate shift of mandrel	29/4506	. . for hollow workpiece
29/1181	. . including means to handle produced strip or web	29/4511	. . . Interior surface
29/1188	. . . with common adjustment for cutter	29/4517	. . Rolling deformation or deflection
29/1194	. . Method	29/4522	. . . for wire or rod
29/12	. Buckle making	29/4528	. . with rotary head
29/13	. Button-fastener making	29/4533	. . Fluid impingement
29/14	. Shredding metal or metal wool article making	29/4539	. . . with heater
29/142	. . Metal wool making	29/4544	. . . Liquid jet
29/143	. . . Shaving or longitudinal cutting	29/455	. . . Airblast
29/145	. . . . Soap-pad making	29/4556	. . Chainer
29/147	. . Metal wool bundling	29/4561	. . Scraper or scalper
29/148	. . . Soap-pad making	29/4567	. . Brush type
29/15	. Cord heddle making	29/4572	. . Mechanically powered operator
29/16	. Cotter-pin making	29/4578	. . . Tack or needle type
29/17	. Crankshaft making apparatus	29/4583	. . . Hammer
29/18	. Expanded metal making	29/4589	. . . Blade or chisel
29/185	. . by use of reciprocating perforator	29/4594	. . Hand tool
29/19	. Eyebolt or hook making	29/46	. Burning in, wearing in, or oil burnishing
29/20	. Fence barb making	29/47	. Burnishing
29/203	. . by use of reciprocating cutter or die	29/471	. . of water laid fibrous article [e.g., paper]
29/207	. . by use of rotary cutter or die	29/473	. . . Heated burnishing member
29/21	. Finger-ring forming or sizing	29/474	. . . . Burnishing tool reciprocates across work surface
29/22	. Fishhook making	29/476	. . Continuous feed
29/23	. Gem and jewel setting	29/477	. . of gear article
29/24	. Hinge making or assembling	29/479	. . by shot peening or blasting
29/25	. Lacing-stud making	29/48	. Upholstered article making
29/26	. Paper-fastener making	29/481	. . Method
29/27	. Plow or cultivator iron making	29/482	. . Tufting
29/28	. Puddlers balls making	29/483	. . . with means to clench fastener
29/29	. Railway-chair making	29/484	. . . with means to insert guide pin or fastener
29/30	. Foil or other thin sheet-metal making or treating	29/486	. . Cover stretching
29/301	. . Method	29/487	. . Edge-roll forming
29/302	. . . Clad or other composite foil or thin metal making	29/488	. . form or holder
29/303	. . . with assembling or disassembling of a pack	29/489	. . . with follower
29/304	. . . . Using transitory solid cover material	29/49	. Method of mechanical manufacture
29/305	. . . . including bond prevention treatment	29/49002	. . Electrical device making
29/306	. . . . Disassembling of a pack	29/49004	. . . including measuring or testing of device or component part
29/307	. . . by shaving or longitudinal cutting	29/49005	. . . Acoustic transducer
29/308	. . . Using transitory material	29/49007	. . . Indicating transducer
29/309	. . Means for opening or separating a pack	29/49009	. . . Dynamoelectric machine
29/31	. Spectacle-frame making	29/49011	. . . . Commutator or slip ring assembly
29/32	. Spiral cutting of flat stock	29/49012	. . . . Rotor
29/33	. Stereotype-plate finishing	29/49014	. . . Superconductor
29/34	. Means for forming clench-tongue [eg, for tieband]	29/49016	. . . Antenna or wave energy "plumbing" making
29/35	. Tire upsetting, with cutting, punching, etc.	29/49018	. . . . with other electrical component
29/36	. toothed-cylinder making apparatus [e.g., texture working cylinder]	29/4902	. . . Electromagnet, transformer or inductor
29/37	. Impeller making apparatus	29/49021	. . . . Magnetic recording reproducing transducer [e.g., tape head, core, etc.]
29/38	. Type finishing and grooving	29/49023	. . . . including disassembly step
29/39	. Venetian blind assembling	29/49025	. . . . Making disc drive
29/40	. Umbrella-frame making	29/49027	. . . . Mounting preformed head/core onto other structure
29/42	. Piezoelectric device making	29/49028	. . . . . Mounting multitrack head
29/43	. Electric condenser making	29/4903	. . . . . with bonding
29/435	. . Solid dielectric type	29/49032	. . . . . Fabricating head structure or component thereof
29/44	. Filing	29/49034	. . . . . Treating to affect magnetic properties
29/442	. . of key article		
29/444	. . Continuous band type		



29/49036 . . . . .	including measuring or testing	29/4913 . . . . .	Assembling to base an electrical component, e.g., capacitor, etc.
29/49037 . . . . .	Using reference point/surface to facilitate measuring	29/49131 . . . . .	by utilizing optical sighting device
29/49039 . . . . .	with dual gap materials	29/49133 . . . . .	with component orienting
29/49041 . . . . .	with significant slider/housing shaping or treating	29/49135 . . . . .	and shaping, e.g., cutting or bending, etc.
29/49043 . . . . .	Depositing magnetic layer or coating	29/49137 . . . . .	Different components
29/49044 . . . . .	Plural magnetic deposition layers	29/49139 . . . . .	by inserting component lead or terminal into base aperture
29/49046 . . . . .	with etching or machining of magnetic material	29/4914 . . . . .	with deforming of lead or terminal
29/49048 . . . . .	Machining magnetic material [e.g., grinding, etching, polishing]	29/49142 . . . . .	including metal fusion
29/4905 . . . . .	Employing workholding means	29/49144 . . . . .	by metal fusion
29/49052 . . . . .	by etching	29/49146 . . . . .	with encapsulating, e.g., potting, etc.
29/49053 . . . . .	Multitrack heads having integral holding means	29/49147 . . . . .	Assembling terminal to base
29/49055 . . . . .	with bond/laminating preformed parts, at least two magnetic	29/49149 . . . . .	by metal fusion bonding
29/49057 . . . . .	Using glass bonding material	29/49151 . . . . .	by deforming or shaping
29/49059 . . . . .	with work positioning means	29/49153 . . . . .	with shaping or forcing terminal into base aperture
29/4906 . . . . .	Providing winding	29/49155 . . . . .	Manufacturing circuit on or in base
29/49062 . . . . .	Multilayered winding	29/49156 . . . . .	with selective destruction of conductive paths
29/49064 . . . . .	by coating	29/49158 . . . . .	with molding of insulated base
29/49066 . . . . .	Preformed winding	29/4916 . . . . .	Simultaneous circuit manufacturing
29/49067 . . . . .	Specified diverse magnetic materials	29/49162 . . . . .	by using wire as conductive path
29/49069 . . . . .	Data storage inductor or core	29/49163 . . . . .	with sintering of base
29/49071 . . . . .	by winding or coiling	29/49165 . . . . .	by forming conductive walled aperture in base
29/49073 . . . . .	by assembling coil and core	29/49167 . . . . .	with deforming of conductive path
29/49075 . . . . .	including permanent magnet or core	29/49169 . . . . .	Assembling electrical component directly to terminal or elongated conductor
29/49076 . . . . .	From comminuted material	29/49171 . . . . .	with encapsulating
29/49078 . . . . .	Laminated	29/49172 . . . . .	by molding of insulating material
29/4908 . . . . .	Acoustic transducer	29/49174 . . . . .	Assembling terminal to elongated conductor
29/49082 . . . . .	Resistor making	29/49176 . . . . .	with molding of electrically insulating material
29/49083 . . . . .	Heater type	29/49178 . . . . .	by shrinking of cover
29/49085 . . . . .	Thermally variable	29/49179 . . . . .	by metal fusion bonding
29/49087 . . . . .	with envelope or housing	29/49181 . . . . .	by deforming
29/49089 . . . . .	Filling with powdered insulation	29/49183 . . . . .	of ferrule about conductor and terminal
29/49091 . . . . .	with direct compression of powdered insulation	29/49185 . . . . .	of terminal
29/49092 . . . . .	Powdering the insulation	29/49187 . . . . .	with forming eyelet from elongated conductor
29/49094 . . . . .	by oxidation	29/49188 . . . . .	with penetrating portion
29/49096 . . . . .	with winding	29/4919 . . . . .	Through insulation
29/49098 . . . . .	Applying terminal	29/49192 . . . . .	with insulation removal
29/49099 . . . . .	Coating resistive material on a base	29/49194 . . . . .	Assembling elongated conductors, e.g., splicing, etc.
29/49101 . . . . .	Applying terminal	29/49195 . . . . .	with end-to-end orienting
29/49103 . . . . .	Strain gauge making	29/49197 . . . . .	including fluid evacuating or pressurizing
29/49105 . . . . .	Switch making	29/49199 . . . . .	including deforming of joining bridge
29/49107 . . . . .	Fuse making	29/49201 . . . . .	with overlapping orienting
29/49108 . . . . .	Electric battery cell making	29/49202 . . . . .	including oppositely facing end orienting
29/4911 . . . . .	including sealing	29/49204 . . . . .	Contact or terminal manufacturing
29/49112 . . . . .	including laminating of indefinite length material	29/49206 . . . . .	by powder metallurgy
29/49114 . . . . .	including adhesively bonding	29/49208 . . . . .	by assembling plural parts
29/49115 . . . . .	including coating or impregnating	29/4921 . . . . .	with bonding
29/49117 . . . . .	Conductor or circuit manufacturing	29/49211 . . . . .	of fused material
29/49119 . . . . .	Brush	29/49213 . . . . .	Metal
29/49121 . . . . .	Beam lead frame or beam lead device	29/49215 . . . . .	by impregnating a porous mass
29/49123 . . . . .	Co-axial cable	29/49217 . . . . .	by elastic joining
29/49124 . . . . .	On flat or curved insulated base, e.g., printed circuit, etc.		
29/49126 . . . . .	Assembling bases		
29/49128 . . . . .	Assembling formed circuit to base		

29/49218 . . . . .	with deforming	29/49316 . .	Impeller making
29/4922 . . . . .	with molding of insulation	29/49318 . . .	Repairing or disassembling
29/49222 . . . . .	forming array of contacts or terminals	29/4932 . . .	Turbomachine making
29/49224 . . . . .	with coating	29/49321 . . . .	Assembling individual fluid flow interacting members, e.g., blades, vanes, buckets, on rotary support member
29/49226 . . .	Electret making	29/49323 . . . .	Assembling fluid flow directing devices, e.g., stators, diaphragms, nozzles
29/49227 . . .	Insulator making	29/49325 . . . .	Shaping integrally bladed rotor
29/49229 . .	Prime mover or fluid pump making	29/49327 . . .	Axial blower or fan
29/49231 . . .	I.C. [internal combustion] engine making	29/49329 . . .	Centrifugal blower or fan
29/49233 . . . .	Repairing, converting, servicing or salvaging	29/4933 . . .	Fluid coupling device
29/49234 . . . .	Rotary or radial engine making	29/49332 . . .	Propeller making
29/49236 . . .	Fluid pump or compressor making	29/49334 . . . .	Utilizing hollow tube blank
29/49238 . . . .	Repairing, converting, servicing or salvaging	29/49336 . . .	Blade making
29/4924 . . . .	Scroll or peristaltic type	29/49337 . . . .	Composite blade
29/49242 . . . .	Screw or gear type, e.g., Moineau type	29/49339 . . . .	Hollow blade
29/49243 . . . .	Centrifugal type	29/49341 . . . . .	with cooling passage
29/49245 . . . .	Vane type or other rotary, e.g., fan	29/49343 . . . . .	Passage contains tubular insert
29/49247 . . .	Valve lifter making	29/49345 . .	Catalytic device making
29/49249 . . .	Piston making	29/49346 . .	Rocket or jet device making
29/4925 . . . .	Repairing, converting, servicing or salvaging	29/49348 . .	Burner, torch or metallurgical lance making
29/49252 . . . .	Multi-element piston making	29/4935 . .	Heat exchanger or boiler making
29/49254 . . . . .	Utilizing a high energy beam, e.g., laser, electron beam	29/49352 . . .	Repairing, converting, servicing or salvaging
29/49256 . . . .	with assembly or composite article making	29/49353 . . .	Heat pipe device making
29/49258 . . . . .	with thermal barrier or heat flow provision	29/49355 . . .	Solar energy device making
29/49259 . . . . .	with fiber reinforced structure	29/49357 . . .	Regenerator or recuperator making
29/49261 . . . . .	by composite casting or molding	29/49359 . . .	Cooling apparatus making, e.g., air conditioner, refrigerator
29/49263 . . . . .	by coating or cladding	29/49361 . . .	Tube inside tube
29/49265 . . . .	Ring groove forming or finishing	29/49362 . . .	Tube wound about tube
29/49266 . . . .	Gudgeon pin, wrist pin, piston pin, or boss therefor	29/49364 . . .	Tube joined to flat sheet longitudinally, i.e., tube sheet
29/49268 . . . .	with other attaching provision for connecting rod	29/49366 . . .	Sheet joined to sheet
29/4927 . . .	Cylinder, cylinder head or engine valve sleeve making	29/49368 . . . .	with inserted tubes
29/49272 . . . .	with liner, coating, or sleeve	29/49369 . . . .	Utilizing bond inhibiting material
29/49274 . . .	Piston ring or piston packing making	29/49371 . . . . .	with subsequent fluid expansion
29/49275 . . . .	including forging or hammering	29/49373 . . .	Tube joint and tube plate structure
29/49277 . . . .	including casting or molding	29/49375 . . . .	including conduit expansion or inflation
29/49279 . . . .	including rolling or die forming, e.g., drawing, punching	29/49377 . . .	Tube with heat transfer means
29/49281 . . . .	including coating or plating	29/49378 . . . .	Finned tube
29/49282 . . . .	including grinding or honing	29/4938 . . . . .	Common fin traverses plurality of tubes
29/49284 . . . .	including machining or angular cutting	29/49382 . . . . .	Helically finned
29/49286 . . .	Crankshaft making	29/49384 . . . . .	Internally finned
29/49288 . . .	Connecting rod making	29/49385 . . . . .	Made from unitary workpiece, i.e., no assembly
29/4929 . . . .	including metallurgical bonding	29/49387 . . .	Boiler making
29/49291 . . . .	including metal forging or die shaping	29/49389 . . .	Header or manifold making
29/49293 . . .	Camshaft making	29/49391 . . .	Tube making or reforming
29/49295 . . .	Push rod or rocker arm making	29/49393 . . .	with metallurgical bonding
29/49297 . . .	Seal or packing making	29/49394 . .	Accumulator making
29/49298 . . .	Poppet or I.C. engine valve or valve seat making	29/49396 . .	Condenser, evaporator or vaporizer making
29/493 . . . .	Valve guide making	29/49398 . .	Muffler, manifold or exhaust pipe making
29/49302 . . . .	Repairing, converting, servicing or salvaging	29/494 . .	Fluidic or fluid actuated device making
29/49304 . . . .	Valve tappet making	29/49401 . .	Fluid pattern dispersing device making, e.g., ink jet
29/49306 . . . .	Valve seat making	29/49403 . .	Tapping device making
29/49307 . . . .	Composite or hollow valve stem or head making	29/49405 . .	Valve or choke making
29/49309 . . . . .	including forging	29/49407 . . .	Repairing, converting, servicing or salvaging
29/49311 . . . . .	including extruding	29/49409 . . .	Valve seat forming
29/49313 . . . . .	including casting	29/4941 . . .	Valve stem or tire valve making
29/49314 . . . .	with assembly or composite article making		

29/49412 . . . with assembly, disassembly or composite article making	29/49515 . . . . . Joining spokes to rim and hub
29/49414 . . . . . Joining plural semi-circular components	29/49517 . . . . . Joining spokes to rim
29/49416 . . . . . with material shaping or cutting	29/49519 . . . . . Joining spokes to hub
29/49417 . . . . . including molding or casting	29/4952 . . . . . Making plural spokes from a single blank
29/49419 . . . . . including machining or drilling	29/49522 . . . . . Individual spoke making
29/49421 . . . . . including metallurgical bonding	29/49524 . . . . . Rim making
29/49423 . . . . . including metal deforming	29/49526 . . . . . with assembling
29/49425 . . . . . including metallurgical bonding	29/49528 . . . . . Demountable rim making
29/49426 . . . including metal shaping and diverse operation	29/49529 . . . . . Die-press shaping
29/49428 . . Gas and water specific plumbing component making	29/49531 . . . . . Roller forming
29/4943 . . . Plumbing fixture making	29/49533 . . . . . Hub making
29/49432 . . . Nozzle making	29/49535 . . . . . with assembling
29/49433 . . . . . Sprayer	29/49536 . . . . . Hub shaping
29/49435 . . . Flexible conduit or fitting therefor	29/49538 . . . . . Tire making
29/49437 . . . Flue connector device making	29/4954 . . . . . Wheel trim making, e.g., wheel cover, hubcap
29/49439 . . . Trap making	29/49542 . . . . . with means for retaining trim member on wheel
29/4944 . . . Return connector device making	29/49544 . . . Roller making
29/49442 . . . T-shaped fitting making	29/49545 . . . Repairing or servicing
29/49444 . . . Elbow or L-shaped fitting making	29/49547 . . . Assembling preformed components
29/49446 . . . Ferrule making or reforming	29/49549 . . . . . Work contacting surface element assembled to core
29/49448 . . Agricultural device making	29/49551 . . . . . Work contacting surface wound about core
29/49449 . . . Traction apparatus, e.g., for tractor	29/49552 . . . . . with prestressing of component by heat differential, e.g., shrink, fit
29/49451 . . . Harvester guard	29/49554 . . . . . Work contacting surface having annular axial sections
29/49453 . . Pulley making	29/49556 . . . . . Work contacting surface element assembled to end support members
29/49455 . . . Assembly	29/49558 . . . . . Includes securing removable cover on roller
29/49456 . . . . . with shaping	29/4956 . . . . . Fabricating and shaping roller work contacting surface element
29/49458 . . . Disc splitting to form pulley rim groove	29/49561 . . . . . toothed roller
29/4946 . . . Groove forming in sheet metal pulley rim	29/49563 . . . . . with coating or casting about a core
29/49462 . . Gear making	29/49565 . . . One-piece roller making
29/49464 . . . Assembling of gear into force transmitting device	29/49567 . . Dental appliance making
29/49465 . . . Gear mounting	29/49568 . . . Orthodontic device making
29/49467 . . . Gear shaping	29/4957 . . Sound device making
29/49469 . . . . . Worm gear	29/49572 . . . Hearing aid component making
29/49471 . . . . . Roll forming	29/49574 . . . Musical instrument or tuning fork making
29/49472 . . . . . Punching or stamping	29/49575 . . . including diaphragm or support therefor
29/49474 . . . . . Die-press shaping	29/49577 . . . Phonograph component making
29/49476 . . . . . Gear tooth cutting	29/49579 . . Watch or clock making
29/49478 . . . . . Gear blank making	29/49581 . . . having arbor, pinion, or balance
29/4948 . . . . . with specific gear material	29/49583 . . . having indicia, face, or dial
29/49481 . . Wheel making	29/49584 . . . having case, cover, or back
29/49483 . . . Railway or trolley wheel making	29/49586 . . . having crown, stem, or pendent
29/49485 . . . . . Multiple part or composite	29/49588 . . Jewelry or locket making
29/49487 . . . . . with axle or hub	29/4959 . . . Human adornment device making
29/49488 . . . Steering wheel	29/49591 . . . . . Bracelet making
29/4949 . . . Material winding, e.g., reel, spool	29/49593 . . . . . Finger ring making
29/49492 . . . Land wheel	29/49595 . . . Latch, clasp, or fastener component making
29/49494 . . . . . Assembling tire to wheel body	29/49597 . . . Ornamental stock making
29/49496 . . . . . Disc type wheel	29/49599 . . Knob or knob shank making
29/49497 . . . . . Assembling wheel disc to rim and hub	29/496 . . . Multiperforated metal article making
29/49499 . . . . . Assembling wheel disc to rim	29/49602 . . . Coil wound wall screen
29/49501 . . . . . with disc shaping	29/49604 . . . Filter
29/49503 . . . . . Integral rim and disc making	29/49606 . . Turnbuckle making
29/49504 . . . . . Disc shaping	29/49607 . . Spring-head clip making
29/49506 . . . . . Tensioned spoke type wheel making	29/49609 . . Spring making
29/49508 . . . . . Tensioning all spokes simultaneously	29/49611 . . . for vehicle or clutch
29/4951 . . . . . Tensioning spokes in series	
29/49512 . . . . . Tensioning spokes individually	
29/49513 . . . . . Compression, e.g., nontension, spoke type wheel making	

29/49613 . . .	for human comfort	29/49709 . . .	Specific metallic composition
29/49615 . . .	Resilient shock or vibration absorber utility	29/4971 . . .	Nonmetallic bearing element
29/49616 . .	Structural member making	29/49712 . .	Ball making
29/49618 . . .	Restoring existing member, e.g., reinforcing, repairing	29/49714 . . .	Hollow ball
29/4962 . . .	Grille making	29/49716 . .	Converting
29/49622 . . .	Vehicular structural member making	29/49718 . .	Repairing
29/49623 . . .	Static structure, e.g., a building component	29/49719 . . .	Seal or element thereof
29/49625 . . . .	Openwork, e.g., a truss, joist, frame, lattice-type or box beam	29/49721 . . .	with disassembling
29/49627 . . . .	Frame component	29/49723 . . . .	including reconditioning of part
29/49629 . . . .	Panel	29/49725 . . . .	by shaping
29/49631 . . . .	Columnar member	29/49726 . . . .	Removing material
29/49632 . . . .	Metal reinforcement member for nonmetallic, e.g., concrete, structural element	29/49728 . . . .	and by a metallurgical operation, e.g., welding, diffusion bonding, casting
29/49634 . . . .	Beam or girder	29/4973 . . . .	Replacing of defective part
29/49636 . .	Process for making bearing or component thereof	29/49732 . . .	by attaching repair preform, e.g., remaking, restoring, or patching
29/49638 . . .	Repairing	29/49734 . . . .	and removing damaged material
29/49639 . . .	Fluid bearing	29/49735 . . . .	Mechanically attaching preform with separate fastener
29/49641 . . .	Linear bearing	29/49737 . . . .	Metallurgically attaching preform
29/49643 . . .	Rotary bearing	29/49739 . . . .	Mechanically attaching preform by separate fastener
29/49645 . . . .	Thrust bearing	29/49741 . . . .	Screw threaded fastener
29/49647 . . . .	Plain bearing	29/49742 . . . .	Metallurgically attaching preform
29/49648 . . . .	Self-adjusting or self-aligning, including ball and socket type, bearing and component making	29/49744 . . . .	Screw threaded preform
29/4965 . . . . .	Deforming socket to secure ball	29/49746 . . .	by applying fluent material, e.g., coating, casting
29/49652 . . . . .	Die-press shaping	29/49748 . . .	by shaping, e.g., bending, extruding, turning, etc.
29/49654 . . . . .	having liner	29/4975 . . . .	including heating
29/49655 . . . . .	having liner	29/49751 . .	Scrap recovering or utilizing
29/49657 . . . . .	Socket making	29/49753 . . .	Metalworking to consolidate scrap
29/49659 . . . . .	by molding or casting	29/49755 . . .	Separating one material from another
29/49661 . . . . .	Nonmetallic socket	29/49757 . . . .	by burning or heating
29/49663 . . . . .	by assembling	29/49758 . .	During simulated operation or operating conditions
29/49664 . . . . .	Ball making	29/4976 . . .	Temperature
29/49666 . . . . .	with metallurgical bonding	29/49762 . .	Center locating and shaping
29/49668 . . . . .	Sleeve or bushing making	29/49764 . .	with testing or indicating
29/4967 . . . . .	Nonmetallic	29/49766 . . .	torquing threaded assemblage or determining torque herein
29/49671 . . . . .	Strip or blank material shaping	29/49767 . . . .	Determining relative number of threaded member rotations
29/49673 . . . . .	Die-press shaping	29/49769 . . .	Using optical instrument [excludes mere human eyeballing]
29/49675 . . . . .	having inner lining layer	29/49771 . . .	Quantitative measuring or gauging
29/49677 . . . . .	having liner	29/49773 . . . .	by radioactive tracing
29/49679 . . . .	Anti-friction bearing or component thereof	29/49774 . . . .	by vibratory or oscillatory movement
29/4968 . . . . .	Assembling of race, cage, and rolling anti-friction members	29/49776 . . . .	Pressure, force, or weight determining
29/49682 . . . . .	Assembling of race and rolling anti-friction members	29/49778 . . .	with aligning, guiding, or instruction
29/49684 . . . . .	with race making	29/4978 . . . .	Assisting assembly or disassembly
29/49686 . . . . .	Assembling of cage and rolling anti-friction members	29/49782 . .	of a slide fastener
29/49687 . . . . .	with cage making	29/49783 . . .	of slider
29/49689 . . . . .	Race making	29/49785 . . .	of interlocking element
29/49691 . . . . .	Cage making	29/49787 . .	Obtaining plural composite product pieces from preassembled workpieces
29/49693 . . . . .	Roller making	29/49789 . .	Obtaining plural product pieces from unitary workpiece
29/49694 . . . . .	Ball making	29/4979 . . .	Breaking through weakened portion
29/49696 . . .	Mounting	29/49792 . . .	Dividing through modified portion
29/49698 . . .	Demounting	29/49794 . . .	Dividing on common outline
29/497 . . .	Pre-usage process, e.g., preloading, aligning	29/49796 . . .	Coacting pieces
29/49702 . . .	Lubricating		
29/49703 . . .	Sealing		
29/49705 . . .	Coating or casting		
29/49707 . . .	Bearing surface treatment		

29/49798 . . .	Dividing sequentially from leading end, e.g., by cutting or breaking	29/49883 . . .	Ribbing
29/49799 . .	Providing transitory integral holding or handling portion	29/49885 . . .	with coating before or during assembling
29/49801 . .	Shaping fiber or fibered material	29/49886 . . . .	to roughen surface
29/49803 . .	Magnetically shaping	29/49888 . . .	Subsequently coating
29/49805 . .	Shaping by direct application of fluent pressure	29/4989 . . .	with spreading of cable strands
29/49806 . . .	Explosively shaping	29/49892 . . .	Joining plate edge perpendicularly to frame
29/49808 . .	Shaping container end to encapsulate material	29/49893 . . .	Peripheral joining of opposed mirror image parts to form a hollow body
29/4981 . .	Utilizing transitory attached element or associated separate material	29/49895 . . .	Associating parts by use of aligning means [e.g., use of a drift pin or a "fixture"]
29/49812 . . .	Temporary protective coating, impregnation, or cast layer	29/49897 . . . .	Registering mating opposed tool parts [e.g., registering a punch and a cooperating die]
29/49813 . .	Shaping mating parts for reassembly in different positions	29/49899 . . . .	by multiple cooperating aligning means
29/49815 . .	Disassembling	29/49901 . . . .	Sequentially associating parts on stationary aligning means
29/49817 . . .	with other than ancillary treating or assembling	29/49902 . . . .	by manipulating aligning means
29/49819 . . .	with conveying of work or disassembled work part	29/49904 . . .	Assembling a subassembly, then assembling with a second subassembly
29/49821 . . .	by altering or destroying work part or connector	29/49906 . . .	Metal deforming with nonmetallic bonding
29/49822 . . .	by applying force	29/49908 . . .	Joining by deforming
29/49824 . . . .	to elastically deform work part or connector	29/49909 . . . .	Securing cup or tube between axially extending concentric annuli
29/49826 . .	Assembling or joining	29/49911 . . . . .	by expanding inner annulus
29/49828 . . .	Progressively advancing of work assembly station or assembled portion of work	29/49913 . . . . .	by constricting outer annulus
29/49829 . . . .	Advancing work to successive stations [i.e., assembly line]	29/49915 . . . .	Overedge assembling of seated part
29/49831 . . . .	Advancing station	29/49917 . . . . .	by necking in cup or tube wall
29/49833 . . .	Punching, piercing or reaming part by surface of second part	29/49918 . . . . .	At cup or tube end
29/49835 . . . .	with shaping	29/4992 . . . . .	by flaring inserted cup or tube end
29/49837 . . . . .	of first part	29/49922 . . . . .	by bending over projecting prongs
29/49838 . . .	by stringing	29/49924 . . . .	of parallel side-by-side elongated members
29/4984 . . .	Retaining clearance for motion between assembled parts	29/49925 . . . .	Inward deformation of aperture or hollow body wall
29/49842 . . . .	Between tube-forming helical coils	29/49927 . . . . .	Hollow body is axially joined cup or tube
29/49844 . . . .	Through resilient media	29/49929 . . . . .	Joined to rod
29/49845 . . . .	by deforming interlock	29/49931 . . . . .	Joined to overlapping ends of plural rods
29/49847 . . . . .	by folding part into plural ears	29/49933 . . . . .	After thinning
29/49849 . . . . .	by wrapping around	29/49934 . . . . .	by axially applying force
29/49851 . . . . .	of link closure	29/49936 . . . .	Surface interlocking
29/49853 . . . . .	of sphere, i.e., ball, in socket	29/49938 . . . .	Radially expanding part in cavity, aperture, or hollow body
29/49854 . . . . .	Ball point pen making	29/4994 . . . . .	Radially expanding internal tube
29/49856 . . . . .	Allowing assembled sphere to move in single plane only	29/49941 . . . . .	Peripheral edge joining of abutting plates
29/49858 . . . . .	of flange into tubular socket	29/49943 . . . . .	Riveting
29/4986 . . . . .	Outwardly deforming internally fitted rod	29/49945 . . .	by driven force fit
29/49861 . . .	Sizing mating parts during final positional association	29/49947 . . .	by applying separate fastener
29/49863 . . .	with prestressing of part	29/49948 . . . .	Multipart cooperating fastener [e.g., bolt and nut]
29/49865 . . . .	by temperature differential [e.g., shrink fit]	29/4995 . . . . .	Nonthreaded
29/49867 . . . .	of skin on frame member	29/49952 . . . . .	At least one part is nonmetallic
29/49869 . . . . .	by flexing	29/49954 . . . .	Fastener deformed after application
29/4987 . . . .	Elastic joining of parts	29/49956 . . . . .	Riveting
29/49872 . . . . .	Confining elastic part in socket	29/49957 . . . . .	At least one part nonmetallic
29/49874 . . . .	Prestressing rod, filament or strand	29/49959 . . . .	Nonresilient fastener
29/49876 . . . .	by snap fit	29/49961 . . . . .	At least one part nonmetallic
29/49877 . . .	of flexible wall, expansible chamber devices [e.g., bellows]	29/49963 . . . .	Threaded fastener
29/49879 . . .	Spaced wall tube or receptacle	29/49964 . . . . .	At least one part nonmetallic
29/49881 . . .	of separate helix [e.g., screw thread]	29/49966 . . . .	with supplemental joining
		29/49968 . . . . .	Metal fusion joining
		29/4997 . . . . .	At least one part nonmetallic
		29/49972 . .	with separating, localizing, or eliminating of as-cast defects from a metal casting [e.g., anti-pipe]

29/49973	. . . Compressing ingot while still partially molten	29/5141	. . . . and means to stake electric wire to commutator or armature in assembling of electric motor or generator
29/49975	. . . Removing defects	29/5142	. . . . and means to sever work from supply
29/49977	. . . . From center of ingot to leave hollow blank	29/5143	. . . . and means to machine product
29/49979	. . . . After deforming	29/5145	. . . . . to sever product to length
29/4998	. . Combined manufacture including applying or shaping of fluent material	29/5146	. . Common reciprocating support for spaced tools
29/49982	. . . Coating	29/5147	. . including composite tool
29/49984	. . . . and casting	29/5148	. . . including severing means
29/49986	. . . . Subsequent to metal working	29/5149	. . . . to sever electric terminal from supply strip
29/49988	. . . Metal casting	29/515	. . . . to trim electric component
29/49989	. . . . Followed by cutting or removing material	29/5151	. . . . . Means comprising hand-manipulatable implement
29/49991	. . . . Combined with rolling	29/5152	. . with turret mechanism
29/49993	. . . Filling of opening	29/5153	. . . Multiple turret
29/49995	. . Shaping one-piece blank by removing material	29/5154	. . . tool turret
29/49996	. . . Successive distinct removal operations	29/5155	. . . . Rotary tool holder
29/49998	. . Work holding	29/5157	. . . . Sliding tool holder
29/50	. Convertible metal working machine	29/5158	. . . . Fluid operated
29/505	. . Vise type	29/5159	. . . . Cam operated
29/51	. Plural diverse manufacturing apparatus including means for metal shaping or assembling	29/516	. . . . . Longitudinal turret axis
29/5101	. . Slide fastener or slide fastener element	29/5161	. . . . . Transverse turret axis
29/5102	. . Binding or covering and cutting	29/5162	. . . . Lever operated
29/5103	. . . Cutting covering material only	29/5163	. . . . Rack-and-pinion operated
29/5104	. . Type of machine	29/5164	. . . . Screw operated
29/5105	. . . Drill press	29/5165	. . . including rotating and/or locking means
29/5107	. . . . Drilling and other	29/5166	. . . . Frictional and positive
29/5108	. . . . Portable	29/5167	. . . . Lock means for tool or work turrets
29/5109	. . . Lathe	29/5168	. . Multiple-tool holder
29/511	. . . . Grinding attachment	29/517	. . . Laterally movable stock holder
29/5111	. . . . Pulley or wheel	29/5171	. . . Axial tool and transversely movable slide rest
29/5112	. . . . Convertible	29/5172	. . . . Rotary tool spindle
29/5113	. . . . Commutator	29/5173	. . . Longitudinally and transversely movable
29/5114	. . . . Lathe and tool	29/5174	. . . . Rotary tool spindle
29/5115	. . . Planer	29/5175	. . . Oscillating tool
29/5116	. . forging and bending, cutting or punching	29/5176	. . including machining means
29/5117	. . . Fastener [zipper]	29/5177	. . . and work-holder for assembly
29/5118	. . . Riveting	29/5178	. . Attachment
29/512	. . . Ball making	29/5179	. . Speed controller
29/5121	. . . Wire working	29/518	. . Carriage stop mechanism
29/5122	. . with means to feed work during tool contact	29/5182	. . Flash remover
29/5123	. . . including nonrotary flying tool	29/5183	. . Welding strip ends
29/5124	. . with means to feed work intermittently from one tool station to another	29/5184	. . Casting and working
29/5125	. . . Stock turret	29/5185	. . Tube making
29/5126	. . . . Swiss type	29/5186	. . Covering
29/5127	. . . Blank turret	29/5187	. . Wire working
29/5128	. . . . Rotary work - vertical axis	29/5188	. . Radiator making
29/5129	. . . . Rotary work - horizontal axis	29/5189	. . Printing plate
29/513	. . . . Stationary work	29/519	. . Turret
29/5132	. . . . Belt drive	29/5191	. . Assembly
29/5133	. . . . Crankshaft	29/5192	. . Armature
29/5134	. . . . Collapsible tube	29/5193	. . Electrical connector or terminal
29/5135	. . . Endless belt	29/5195	. . Tire valve or spark plug
29/5136	. . Separate tool stations for selective or successive operation on work	29/5196	. . Multiple station with conveyor
29/5137	. . . including assembling or disassembling station	29/5197	. . Multiple stations working strip material
29/5138	. . . . and means to machine work part to fit cooperating work part	29/5198	. . Continuous strip
29/5139	. . . . and means to sever work prior to disassembling	29/5199	. . Work on tubes
29/514	. . . . . comprising means to strip insulation from wire	29/52	. Plural diverse manufacturing apparatus
		29/53	. Means to assemble or disassemble
		29/53004	. . with means to regulate operation by use of templet, tape, card or other replaceable information supply

29/53009 . . . with comparator	29/53217 . . . . . Means to simultaneously assemble multiple, independent conductors to terminal
29/53013 . . . . Computer input	29/53222 . . . . . Means comprising hand-manipulatable implement
29/53017 . . . Web or strand-carried information supply	29/53226 . . . . . Fastening by deformation
29/53022 . . with means to test work or product	29/5323 . . . . . Fastening by elastic joining
29/53026 . . with randomly actuated stopping or disabling means	29/53235 . . . . . Means to fasten by deformation
29/5303 . . . Responsive to condition of work or product	29/53239 . . . . . Means to fasten by elastic joining
29/53035 . . . Responsive to operative [e.g., safety device, etc.]	29/53243 . . . . Multiple, independent conductors
29/53039 . . with control means energized in response to activator stimulated by condition sensor	29/53248 . . . . Switch or fuse
29/53043 . . . including means to divert defective work part	29/53252 . . . Means to simultaneously fasten three or more parts
29/53048 . . . Multiple station assembly or disassembly apparatus	29/53257 . . . Means comprising hand-manipulatable implement
29/53052 . . . . including position sensor	29/53261 . . . Means to align and advance work part
29/53057 . . . Responsive to timer	29/53265 . . . with work-holder for assembly
29/53061 . . . Responsive to work or work-related machine element	29/5327 . . . Means to fasten by deforming
29/53065 . . . . with means to fasten by deformation	29/53274 . . Means to disassemble electrical device
29/5307 . . . . Self-piercing work part	29/53278 . . . Storage cell or battery
29/53074 . . . . with means to fasten by elastic joining	29/53283 . . . Means comprising hand-manipulatable implement
29/53078 . . . . with means to fasten by frictional fitting	29/53287 . . Means to place traveler on ring or ring on bobbin of a textile machine
29/53083 . . . . including means to apply magnetic force directly to position or hold work	29/53291 . . Slide fastener
29/53087 . . with signal, scale, illuminator, or optical viewer	29/53296 . . . Means to assemble stop onto stringer
29/53091 . . . for work-holder for assembly or disassembly	29/533 . . . Means to assemble slider onto stringer
29/53096 . . including means to provide a controlled environment	29/53304 . . . Means to assemble teeth onto stringer
29/531 . . Nuclear device	29/53309 . . . Disassembly means
29/53104 . . Roller or ball bearing	29/53313 . . Means to interrelatedly feed plural work parts from plural sources without manual intervention
29/53109 . . . including deforming means	29/53317 . . . Box or pallet assembly means
29/53113 . . Heat exchanger	29/53322 . . . Means to assemble container
29/53117 . . . including means to manipulate heat exchanger tube bundle	29/53326 . . . . Handle to container
29/53122 . . . including deforming means	29/5333 . . . . Label to container
29/53126 . . Means to place sheath on running-length core	29/53335 . . . . Pressurized dispensing container
29/5313 . . Means to assemble electrical device	29/53339 . . . . Hypodermic syringe
29/53135 . . . Storage cell or battery	29/53343 . . . . including fluid component
29/53139 . . . . including deforming means	29/53348 . . . Running-length work
29/53143 . . . Motor or generator	29/53352 . . . . Means including orbiting running-length work supply
29/53148 . . . . Means to assemble commutator	29/53357 . . . . Pipe section
29/53152 . . . . Means to position insulation	29/53361 . . . . Assembled to article
29/53157 . . . . Means to stake wire to commutator or armature	29/53365 . . . Multiple station assembly apparatus
29/53161 . . . . including deforming means	29/5337 . . . including assembly pallet
29/53165 . . . Magnetic memory device	29/53374 . . . including turret-type conveyor
29/5317 . . . Laminated device	29/53378 . . . including converging conveyors
29/53174 . . . Means to fasten electrical component to wiring board, base, or substrate	29/53383 . . . and means to fasten work parts together
29/53178 . . . . Chip component	29/53387 . . . . by deforming
29/53183 . . . . Multilead component	29/53391 . . . . by elastic joining
29/53187 . . . Multiple station assembly apparatus	29/53396 . . . . by friction fit
29/53191 . . . Means to apply vacuum directly to position or hold work part	29/534 . . Multiple station assembly or disassembly apparatus
29/53196 . . . Means to apply magnetic force directly to position or hold work part	29/53404 . . . including turret-type conveyor
29/532 . . . Conductor	29/53409 . . . including converging conveyors
29/53204 . . . . Electrode	29/53413 . . . . and primary central conveyor
29/53209 . . . . Terminal or connector	29/53417 . . . Means to fasten work parts together
29/53213 . . . . . Assembled to wire-type conductor	29/53422 . . . . by deforming
	29/53426 . . . . by elastic joining
	29/5343 . . Means to drive self-piercing work part
	29/53435 . . including assembly pallet

- 29/53439 . . including provision to utilize thermal expansion of work
- 29/53443 . . Means to assemble or disassemble container and fluid component
- 29/53448 . . Vehicle wheel
- 29/53452 . . . Railway wheel
- 29/53457 . . Tumbler lock
- 29/53461 . . toy doll
- 29/53465 . . Film or tape cartridge
- 29/5347 . . Crystal to watch or clock
- 29/53474 . . Means to insert or extract pen point
- 29/53478 . . with magazine supply
- 29/53483 . . . and magnetic work-holder or positioner
- 29/53487 . . . Assembling means comprising hand-manipulatable implement
- 29/53491 . . . . One work part comprising living tissue
- 29/53496 . . . . comprising driver for snap-off-mandrel fastener; e.g., Pop [TM] riveter
- 29/535 . . . . One work part comprising nut or screw
- 29/53504 . . . . One work part comprising paper clip
- 29/53509 . . . . Means to assemble tire stud into tire tread
- 29/53513 . . . . Means to fasten by deforming
- 29/53517 . . . . . Fastening sinker to fishing line
- 29/53522 . . . Means to fasten by deforming
- 29/53526 . . Running-length work
- 29/5353 . . . Assembled on core
- 29/53535 . . including means to vibrate work
- 29/53539 . . including work conveyor
- 29/53543 . . . including transporting track
- 29/53548 . . . . and work carrying vehicle
- 29/53552 . . Valve applying or removing
- 29/53557 . . . Engine valve unit puller or applier
- 29/53561 . . . Engine valve spring compressor [only]
- 29/53565 . . . . Plural spring engagement
- 29/5357 . . . . Screw operated
- 29/53574 . . . . . Parallel or tong type, side entrance
- 29/53578 . . . . . Lever operated
- 29/53583 . . . . . Single jaw or valve engagement
- 29/53587 . . . . . Plier type
- 29/53591 . . . to or from wheel rim of resilient tire or tube
- 29/53596 . . . Removal tool
- 29/536 . . Piston ring inserter or remover
- 29/53604 . . . Plier-type operation
- 29/53609 . . . . with ring encirclement
- 29/53613 . . Spring applier or remover
- 29/53617 . . . Transmission spring
- 29/53622 . . . Helical spring
- 29/53626 . . . Flat spiral spring [e.g., watch or clock type]
- 29/5363 . . . Circular spring
- 29/53635 . . . Leaf spring
- 29/53639 . . Means to stake watch or clock
- 29/53643 . . . Plier type
- 29/53648 . . Brake lining to brake shoe
- 29/53652 . . Tube and coextensive core
- 29/53657 . . to apply or remove a resilient article [e.g., tube, sleeve, etc.]
- 29/53661 . . . Nipple to nursing bottle
- 29/53665 . . . Well protector to sucker rod
- 29/5367 . . Coupling to conduit
- 29/53674 . . Loose-leaf sheet binder
- 29/53678 . . Compressing parts together face to face
- 29/53683 . . Spreading parts apart or separating them from face to face engagement
- 29/53687 . . by rotation of work part
- 29/53691 . . . Means to insert or remove helix
- 29/53696 . . Means to string
- 29/537 . . tool handle and tool
- 29/53704 . . tool chuck and tool
- 29/53709 . . Overedge assembling means
- 29/53713 . . . Belt-hook attacher
- 29/53717 . . . . Annular work
- 29/53722 . . . . . with radially acting tool inside annular work
- 29/53726 . . . . . with second workpiece inside annular work one workpiece moved to shape the other
- 29/5373 . . . . . comprising driver for snap-off-mandrel fastener; e.g., Pop [TM] riveter
- 29/53735 . . . . . including near side fastener shaping tool
- 29/53739 . . . . . Pneumatic- or fluid-actuated tool
- 29/53743 . . . . . . Liquid
- 29/53748 . . . . . . . and gas
- 29/53752 . . . . . . having rotary drive mechanism
- 29/53757 . . . . . . having allochiral actuating handles
- 29/53761 . . . . . . having repositionable annulus engaging tool
- 29/53765 . . . . . including near side fastener shaping tool
- 29/5377 . . . Riveter
- 29/53774 . . . . Single header
- 29/53778 . . . . . Pipe joiner
- 29/53783 . . . Clip applier
- 29/53787 . . . Binding or covering
- 29/53791 . . . . Edge binding
- 29/53796 . . Puller or pusher means, contained force multiplying operator
- 29/538 . . . Hubcap and hub
- 29/53804 . . . Battery post and terminal
- 29/53809 . . . Cotter pin and cooperating member
- 29/53813 . . . . Plier type means
- 29/53817 . . . Valve stem pin or key and another member
- 29/53822 . . . Machine key and another member
- 29/53826 . . . Arbor-type press means
- 29/5383 . . . having fluid operator
- 29/53835 . . . having wedge operator
- 29/53839 . . . having percussion or explosive operator
- 29/53843 . . . . Tube, sleeve, or ferrule inserting or removing
- 29/53848 . . . having screw operator
- 29/53852 . . . . C-frame
- 29/53857 . . . . Central screw, work-engagers around screw
- 29/53861 . . . . . Work-engager arms along or parallel to screw
- 29/53865 . . . . . . with arm connecting engaging means
- 29/5387 . . . . . Pivotal arms
- 29/53874 . . . . . Pivotal grippers on screw
- 29/53878 . . . . . Tubular or tube segment forms work-engager
- 29/53883 . . . . . . Screw threaded work-engager
- 29/53887 . . . . . . Movable grippers on screw
- 29/53891 . . . . . . Plate or bar forms work-engager
- 29/53896 . . . having lever operator
- 29/539 . . . . Plier type means
- 29/53904 . . Means comprising piston ring group contractor or holder
- 29/53909 . . Means comprising hand manipulatable tool
- 29/53913 . . . Aligner or center



29/53917 . . . . Tube with tube  
 29/53922 . . . . Auto wheel with auto chassis  
 29/53926 . . . . Clutch plates  
 29/5393 . . . Means comprising impact receiving tool  
 29/53935 . . . . C-frame  
 29/53939 . . . . Thread protector [e.g., wheel axle type]  
 29/53943 . . . Hand gripper for direct push or pull  
 29/53948 . . . . Centrifugal separator  
 29/53952 . . . . Tube sleeve or ferrule applying or removing  
 29/53957 . . . . Thread-tapping grip  
 29/53961 . . with work-holder for assembly  
 29/53965 . . . for assembling a luminescent mantle  
 29/5397 . . . and assembling press [e.g., truss assembling means, etc.]  
 29/53974 . . . having means to permit support movement while work is thereon  
 29/53978 . . including means to relatively position plural work parts  
 29/53983 . . Work-supported apparatus  
 29/53987 . . Tube, sleeve or ferrule  
 29/53991 . . Work gripper, anvil, or element  
 29/53996 . . by deforming  
 29/54 . . Miscellaneous apparatus

#### Former US Class 70 series

##### 70/00 Locks

70/10 . Miscellaneous  
 70/20 . Attack-actuated defeating mechanisms  
 70/25 . . With reset mechanisms  
 70/30 . Hasp  
 70/308 . . Combination lock  
 70/317 . . . Hasp-carried  
 70/325 . . . Keeper-carried  
 70/333 . . Key lock  
 70/342 . . . Hasp-carried  
 70/35 . . . . Keeper-encasing  
 70/358 . . . . . Dead bolt  
 70/367 . . . . . Latching bolt  
 70/375 . . . . Dead bolt  
 70/383 . . . . Latching bolt  
 70/392 . . . Keeper-carried  
 70/40 . Portable  
 70/402 . . Fetters  
 70/404 . . . Manacles and cuffs  
 70/407 . . . . Nippers  
 70/409 . . . Shackles  
 70/411 . . Clamps  
 70/413 . . Padlocks  
 70/415 . . . Combination and/or key-controlled  
 70/417 . . . Combination-controlled  
 70/42 . . . . Non-shackle type  
 70/422 . . . . Rigid shackle  
 70/424 . . . . . Sliding  
 70/426 . . . . . Removable  
 70/428 . . . . . Pivoted  
 70/43 . . . . . Sliding detent  
 70/433 . . . . . Swinging detent  
 70/435 . . . . Flexible shackle  
 70/437 . . . Key-controlled  
 70/439 . . . . Non-shackle type  
 70/441 . . . . . Housing extension and cooperating detent

70/443 . . . . . Single stem or shank  
 70/446 . . . . Rigid shackle  
 70/448 . . . . . Divided shackle  
 70/45 . . . . . Divided jaw type  
 70/452 . . . . . Sliding  
 70/454 . . . . . Removable  
 70/457 . . . . . Arcuate locus  
 70/459 . . . . . Both legs engaged  
 70/461 . . . . . Short leg engaged  
 70/463 . . . . . Long leg engaged  
 70/465 . . . . . Pivoted  
 70/467 . . . . . Sliding detent  
 70/47 . . . . . Free end only engaged  
 70/472 . . . . . Pivoted end only engaged  
 70/474 . . . . . Swinging detent  
 70/476 . . . . . Free end only engaged  
 70/478 . . . . . Pivoted end only engaged  
 70/48 . . . . . Arcuate locus  
 70/483 . . . . Flexible shackle  
 70/485 . . . With seal  
 70/487 . . . Parts, accessories, attachments and adjuncts  
 70/489 . . . . Housings  
 70/491 . . . . Shackles  
 70/493 . . . . Protectors  
 70/496 . . . . . Sheaths  
 70/498 . . . . . Shields or canopies  
 70/50 . Special application  
 70/5004 . . For antitheft signaling device on protected article  
 70/5009 . . For portable articles  
 70/5013 . . . Canes, umbrellas, apparel  
 70/5018 . . . Robes  
 70/5022 . . . Tools  
 70/5027 . . . Supporting stands  
 70/5031 . . . Receptacle  
 70/5035 . . . . Bag  
 70/504 . . . . . Collapsible throat  
 70/5044 . . . . . Pivoted rigid jaw  
 70/5049 . . . . . Attache or briefcase, portfolio  
 70/5053 . . . . . Interengageable slide fastener type  
 70/5058 . . . . Trunk and/or suitcase  
 70/5062 . . . . . Projecting fixed or movable lug type  
 70/5066 . . . . . Bolt type  
 70/5071 . . . . . Hasp controlled  
 70/5075 . . . . . Link and lever of hasp type  
 70/508 . . . . . Hasp type  
 70/5084 . . . . . Hasp-carried lock  
 70/5089 . . . . . Loop type  
 70/5093 . . For closures  
 70/5097 . . . Cabinet  
 70/5102 . . . . Projecting lug type  
 70/5106 . . . . . External catch  
 70/5111 . . . . Projectable bolt  
 70/5115 . . . . . Multiple bolts  
 70/5119 . . . . . Multidirectional displacement  
 70/5124 . . . . . Swinging and hooked end  
 70/5128 . . . Drawer  
 70/5133 . . . . Dead bolt  
 70/5137 . . . . Till  
 70/5142 . . . . . Combination  
 70/5146 . . . Window  
 70/515 . . . . Sliding sash

70/5155	. . . . Door	70/5407	. . . . . Related dogging means for latch-bolt
70/5159	. . . . Emergency exit	70/5412	. . . . . Dog and dog actuator always interconnected
70/5164	. . . . Links to limit opening	70/5416	. . . . . Exterior manipulator declutched from bolt when dogged
70/5168	. . . . Braces	70/542	. . . . . Manual dog-controller concentric with bolt manipulator
70/5173	. . . . Sliding door	70/5425	. . . . . Shiftable rollback serves as dog
70/5177	. . . . . Extending keeper	70/5429	. . . . . Additional dog-controller key actuated for dogging and undogging
70/5181	. . . . . Rigid or fixed	70/5434	. . . . . Dog-controller axially slidable and axially rotatable
70/5186	. . . . . Extensible	70/5438	. . . . . Dog-controller rotatable
70/519	. . . . . Projecting or extending bolt	70/5442	. . . . . Key-actuated lock releases dog
70/5195	. . . . . Projectable bolt	70/5447	. . . . . Manual bolt-manipulator operation releases dog
70/5199	. . . . Swinging door	70/5451	. . . . . Manual bolt-manipulator operation releases dog
70/5204	. . . . . Interfitting lock housing and keeper	70/5456	. . . . . Interior manual bolt-manipulator serves as dog-controller
70/5208	. . . . . Multiple dead bolts	70/546	. . . . . For both dogging and undogging
70/5212	. . . . . Sliding dead bolt	70/5465	. . . . . Manual dog-controller
70/5217	. . . . . Swinging dead bolt	70/5469	. . . . . With additional lock actuated dog-controller
70/5221	. . . . . Locking latch bolt, biased	70/5473	. . . . . Additional dog-controller controls both dogging and undogging
70/5226	. . . . . Combined dead bolt and latching bolt	70/5478	. . . . . Accessible at door edge
70/523	. . . . . Multiple dead bolts	70/5482	. . . . . Slidable only
70/5235	. . . . . Multiple latch bolts	70/5487	. . . . . Manual bolt-manipulator is slidable only
70/5239	. . . . . Dead bolt, dogged latch bolt	70/5491	. . . . . Manual bolt-manipulator is lever
70/5243	. . . . . Manually dogged latch bolt	70/5496	. . . . . Freely movable external manipulator
70/5246	. . . . . Dead bolts	70/55	. . . . . Dogged bolt or connections
70/5248	. . . . . Multiple	70/5504	. . . . . Automatic
70/5252	. . . . . Sliding and swinging	70/5509	. . . . . Snub bolt
70/5257	. . . . . Combination operable only	70/5513	. . . . . By manipulator
70/5261	. . . . . Key operable only	70/5518	. . . . . Connections only
70/5265	. . . . . Sliding and rotary	70/5522	. . . . . Gravity projected
70/527	. . . . . Sliding	70/5527	. . . . . Projecting mechanism is lock controlled
70/5274	. . . . . Combination operable only	70/5531	. . . . . Combination and/or key operable
70/5279	. . . . . Key operable only	70/5535	. . . . . Trip release
70/5283	. . . . . Swinging	70/554	. . . . Cover, lid, cap, encasing shield
70/5288	. . . . . Combination operable only	70/5544	. . . . Pivoted
70/5292	. . . . . Key operable only	70/5549	. . . . . Cover-carried lock
70/5296	. . . . . Single	70/5553	. . . . . Dead bolt
70/5301	. . . . . Sliding and swinging	70/5558	. . . . . Latching bolt
70/5305	. . . . . Combination operable only	70/5562	. . . . . Removable
70/531	. . . . . Key operable only	70/5566	. . . . . External locking devices
70/5314	. . . . . Sliding and rotary	70/5571	. . . . . Freely movable when locked
70/5319	. . . . . Sliding	70/5575	. . . . . Directly seating
70/5323	. . . . . Multidirectional displacement	70/558	. . . . . Cover-carried lock
70/5327	. . . . . Keeper interlocking	70/5584	. . . . . Dead bolt
70/5332	. . . . . Curved	70/5589	. . . . . Latching bolt
70/5336	. . . . . Combination operable only	70/5593	. . . . . Movably seating
70/5341	. . . . . Key operable only	70/5597	. . . . . Cover-carried lock
70/5345	. . . . . Swinging	70/5602	. . . . . Dead bolt
70/535	. . . . . Keeper and housing interlocking		
70/5354	. . . . . With hooked end		
70/5358	. . . . . Combination operable only		
70/5363	. . . . . Key operable only		
70/5367	. . . . . Screw		
70/5372	. . . . . Locking latch bolts, biased		
70/5376	. . . . . Keeper interlocking		
70/5381	. . . . . Projectable beyond normal biased position		
70/5385	. . . . . Spring projected		
70/5389	. . . . . Manually operable		
70/5394	. . . . . Directly acting dog for exterior, manual, bolt manipulator		
70/5398	. . . . . Related dog for interior, manual, bolt manipulator		
70/5403	. . . . . Dog having a dog		

70/5606	. . . . . Latching bolt	70/5876	. . . Anchors
70/5611	. . For control and machine elements	70/5881	. . . Stands
70/5615	. . . Valve	70/5885	. . . Drive
70/5619	. . . . Locked stationary	70/5889	. . For automotive vehicles
70/5624	. . . . . Externally mounted locking device	70/5894	. . . Plural point
70/5628	. . . . . Valve encasing	70/5898	. . . . With switch
70/5633	. . . . . Housing-carried lock	70/5903	. . . Hood
70/5637	. . . . . With padlock	70/5907	. . . . With switch
70/5642	. . . Rod	70/5912	. . . Fuel valve
70/5646	. . . Rotary shaft	70/5916	. . . . With switch
70/565	. . . . Locked stationary	70/592	. . . . Cap combined
70/5655	. . . . . Housing-carried lock	70/5925	. . . Transmission
70/5659	. . . . . Dead bolt	70/5929	. . . . Cover combined
70/5664	. . . . . Latching bolt	70/5934	. . . . Selective-type shift rod, fork or block
70/5668	. . . . . Shaft-carried lock	70/5938	. . . . . With switch
70/5673	. . . . Freely movable when locked	70/5942	. . . . Planetary type
70/5677	. . . . . Shaft-carried clutch	70/5947	. . . . . With switch
70/5681	. . . Gear	70/5951	. . . . With switch
70/5686	. . . . Planetary	70/5956	. . . Steering mechanism with switch
70/569	. . . Lever	70/596	. . . Pilot wheel control or linkage
70/5695	. . . . Guide	70/5965	. . . Control levers with switch
70/5699	. . . . . Quadrant	70/5969	. . . Other element with switch
70/5704	. . . . . Lever-carried lock	70/5973	. . . Remote control
70/5708	. . . . . Fixed lever-receiving keeper	70/5978	. . . . With switch
70/5712	. . . . . Lever-carried lock	70/5982	. . . Accessories
70/5717	. . . . Multiple	70/5987	. . . . Spare or mounted wheel or tire
70/5721	. . . . . Externally mounted locking device	70/5991	. . . . . Tire or rim only
70/5726	. . . . . With padlock	70/5996	. . For seats
70/573	. . . . Single	70/60	. Systems
70/5735	. . . . . Externally mounted locking device	70/625	. . Operation and control
70/5739	. . . . . With padlock	70/65	. . . Central control
70/5743	. . . . . Disconnectable	70/675	. . . Serially operable
70/5748	. . . . . Foldable	70/70	. Operating mechanism
70/5752	. . . . . Universal mounting	70/7006	. . Predetermined time interval controlled
70/5757	. . . Handle, handwheel or knob	70/7011	. . . Positively initiated delay interval
70/5761	. . . . Retractable or flush handle	70/7017	. . . . Interval terminating
70/5765	. . . . Rotary or swinging	70/7023	. . . . Repeating interval
70/577	. . . . . Locked stationary	70/7028	. . . Electric
70/5774	. . . . . Externally mounted locking device	70/7034	. . . Clockwork control
70/5779	. . . . . With padlock	70/704	. . . . Continuously operating once initiated
70/5783	. . . . . Combination lock	70/7045	. . . . . Emergency release
70/5788	. . . . . Push pin or button	70/7051	. . Using a powered device [e.g., motor]
70/5792	. . . . . Handle-carried key lock	70/7057	. . . Permanent magnet
70/5796	. . . . . Coaxially mounted	70/7062	. . . Electrical type [e.g., solenoid]
70/5801	. . . . . Axially movable bolt	70/7068	. . . . Actuated after correct combination recognized [e.g., numerical, alphabetical, or magnet[s] pattern]
70/5805	. . . . . Freely movable when locked	70/7073	. . . . . Including use of a key
70/581	. . . . . Combination lock	70/7079	. . . . . Key rotated [e.g., Eurocylinder]
70/5814	. . . . . Push pin or button	70/7085	. . . . . Using a dial having indicia or pointer and indicia
70/5819	. . . . . Handle-carried key lock	70/709	. . . . . Plural interdependent or plural independently operable tumbler sets
70/5823	. . . . . Coaxial clutch connection	70/7096	. . . . . With mechanism having rocker arm or linked bars
70/5827	. . . . . Axially movable clutch	70/7102	. . . . And details of blocking system [e.g., linkage, latch, pawl, spring]
70/5832	. . . . Lock and handle assembly	70/7107	. . . . And alternately mechanically actuated by a key, dial, etc.
70/5836	. . . Wheel	70/7113	. . . . Projected and retracted electrically
70/5841	. . . . Rotation blocking	70/7119	. . . . Projected electrically only
70/5845	. . . . Spoke gap traversing type	70/7124	. . . . Retracted electrically only
70/585	. . . . Brake type		
70/5854	. . . Bolt, nut, stud, stud-cap		
70/5858	. . . . Locked stationary		
70/5863	. . . . Freely movable when locked		
70/5867	. . . . Encased		
70/5872	. . For cycles		

70/713	. . . . .	Dogging manual operator	70/7475	. . . . .	Submaster- and change-key
70/7136	. . . . .	Key initiated actuation of device	70/748	. . . . .	Change-key shutout
70/7141	. . . . .	Combination and key	70/7486	. . . . .	Single key
70/7147	. . . . .	Combination or key	70/7492	. . . . .	Tumblerless push or pull key
70/7153	. . . . .	Combination	70/7497	. . . . .	Tumblerless warded
70/7158	. . . . .	Individual blocking elements	70/7503	. . . . .	Tumbler and ward type
70/7164	. . . . .	Selectively operable	70/7508	. . . . .	Tumbler type
70/7169	. . . . .	Complex movement or puzzle type	70/7514	. . . . .	Sliding and rotary or swinging tumblers
70/7175	. . . . .	Labyrinthian passage	70/752	. . . . .	Sliding tumblers
70/7181	. . . . .	Tumbler type	70/7525	. . . . .	Longitudinal
70/7186	. . . . .	Plural interdependent sets	70/7531	. . . . .	Transverse
70/7192	. . . . .	Plural independently operable sets	70/7537	. . . . .	Rotary or swinging tumblers
70/7198	. . . . .	Single tumbler set	70/7542	. . . . .	Single set
70/7203	. . . . .	With ball or roller	70/7548	. . . . .	Directly key engaged
70/7209	. . . . .	Intersect sliding tumblers	70/7554	. . . . .	Cylinder type with auxiliary tumblers or wards
70/7215	. . . . .	Individually set sliding tumblers	70/7559	. . . . .	Cylinder type
70/722	. . . . .	Manually operable	70/7565	. . . . .	Plural tumbler sets
70/7226	. . . . .	Associated movable operator	70/7571	. . . . .	Concentric tumblers
70/7232	. . . . .	Removable	70/7576	. . . . .	Sliding and rotary plug
70/7237	. . . . .	Rotary or swinging tumblers	70/7582	. . . . .	Sliding plug
70/7243	. . . . .	Intersect tumblers	70/7588	. . . . .	Rotary plug
70/7249	. . . . .	Tumblers released	70/7593	. . . . .	Sliding tumblers
70/7254	. . . . .	Fence held spaced from tumblers	70/7599	. . . . .	Transverse of plug
70/726	. . . . .	Individually set	70/7605	. . . . .	Pin tumblers
70/7266	. . . . .	Movable selector	70/761	. . . . .	Rotatable pins [e.g., MEDECO lock]
70/7271	. . . . .	Associated movable operator	70/7616	. . . . .	Including sidebar
70/7277	. . . . .	Removable	70/7621	. . . . .	Including sidebar
70/7282	. . . . .	Pin or rod and slot	70/7627	. . . . .	Rotary or swinging tumblers
70/7288	. . . . .	Spindle operator	70/7633	. . . . .	Transverse of plug
70/7294	. . . . .	Concentric spindles	70/7638	. . . . .	Cylinder and plug assembly
70/7299	. . . . .	Axially shiftable spindle	70/7644	. . . . .	Key- and tool-controlled
70/7305	. . . . .	Manually operable	70/765	. . . . .	Key only controlled
70/7311	. . . . .	Step-by-step	70/7655	. . . . .	Cylinder attaching or mounting means
70/7316	. . . . .	Combination upsetting	70/7661	. . . . .	Detachable or removable cylinder
70/7322	. . . . .	Permutation	70/7667	. . . . .	Operating elements, parts and adjuncts
70/7328	. . . . .	Compound tumblers	70/7672	. . . . .	Cylinder
70/7333	. . . . .	With fastener or holder	70/7678	. . . . .	Adjustable
70/7339	. . . . .	Pin and socket	70/7684	. . . . .	Plug
70/7345	. . . . .	Removable change element	70/7689	. . . . .	Tumblers
70/735	. . . . .	Operating elements	70/7695	. . . . .	Plate
70/7356	. . . . .	Fences	70/7701	. . . . .	Pin
70/7362	. . . . .	Bolt or lock housing supported	70/7706	. . . . .	Operating connections
70/7367	. . . . .	Tumbler structure and position	70/7712	. . . . .	Rollbacks
70/7373	. . . . .	Nested	70/7718	. . . . .	Intermediate
70/7379	. . . . .	Variant diameter	70/7723	. . . . .	Cylinder rings
70/7384	. . . . .	Mounts	70/7729	. . . . .	Permutation
70/739	. . . . .	Motion-restraining means	70/7734	. . . . .	Automatically key set combinations
70/7395	. . . . .	Friction holder	70/774	. . . . .	Adjustable tumblers
70/7401	. . . . .	Spindles	70/7746	. . . . .	Removable change element
70/7407	. . . . .	Operating indicators	70/7751	. . . . .	With ball or roller
70/7412	. . . . .	Portable combination setting guide	70/7757	. . . . .	Push or pull key operation
70/7418	. . . . .	Dials	70/7763	. . . . .	Key ejecting
70/7424	. . . . .	Tampering prevention or attach defeating	70/7768	. . . . .	Key-removal preventing
70/7429	. . . . .	Resonance type	70/7774	. . . . .	False or picking key trapping
70/7435	. . . . .	Hidden or covered dial	70/778	. . . . .	Operating elements
70/7441	. . . . .	Key	70/7785	. . . . .	Tumblers
70/7446	. . . . .	Multiple keys	70/7791	. . . . .	Keys
70/7452	. . . . .	Selective shutout type	70/7797	. . . . .	Picking
70/7458	. . . . .	Interdependent	70/7802	. . . . .	Multi-part structures
70/7463	. . . . .	Master- and change-key			
70/7469	. . . . .	Change-key shutout			

70/7808 . . . . . With foldable shank or stem  
 70/7814 . . . . . With extensible shank or stem  
 70/7819 . . . . . With slidable bit portion  
 70/7825 . . . . . With pivoted or swinging bit portion  
 70/7831 . . . . . Nested second key  
 70/7836 . . . . . Plural shanks, stems or bit wings  
 70/7842 . . . . . Single shank or stem  
 70/7847 . . . . . Round rigid  
 70/7853 . . . . . Tubular  
 70/7859 . . . . . Flat rigid  
 70/7864 . . . . . Cylinder lock type  
 70/787 . . . . . Irregular nonplanar or undulated  
 70/7876 . . . . . Bow or head  
 70/7881 . . . . . Bitting  
 70/7887 . . . . . Frangible  
 70/7893 . . . . . Permutation  
 70/7898 . . . . . Threaded  
 70/7904 . . . . . Magnetic features  
 70/791 . . . . . Ejecting feature  
 70/7915 . . . . . Tampering prevention or attack defeating  
 70/7921 . . . . . Armoring  
 70/7927 . . . . . Anti-jimmy  
 70/7932 . . . . . Anti-pick  
 70/7938 . . . . . Guard ward  
 70/7944 . . . . . Guard tumbler  
 70/7949 . . . . . Yielding or frangible connections  
 70/7955 . . . . . Keyhole guards  
 70/796 . . . . . Portable  
 70/7966 . . . . . Combination-controlled  
 70/7972 . . . . . Portable  
 70/7977 . . . . . Key-controlled  
 70/7983 . . . . . Portable  
 70/7989 . . . . . Key securers, fasteners or retainers  
 70/7994 . . . . . Portable  
 70/80 . . . . . Parts, attachments, accessories and adjuncts  
 70/8027 . . . . . Condition indicators  
 70/8054 . . . . . With recorder  
 70/8081 . . . . . Electric  
 70/8108 . . . . . Padlock  
 70/8135 . . . . . With register  
 70/8162 . . . . . Padlock  
 70/8189 . . . . . Contactual feeler  
 70/8216 . . . . . Tampering detector  
 70/8243 . . . . . With seal  
 70/827 . . . . . Attention-directing  
 70/8297 . . . . . For combination-operated mechanism  
 70/8324 . . . . . Housings  
 70/8351 . . . . . Operating attachments  
 70/8378 . . . . . Knobs, hand grips, etc.  
 70/8405 . . . . . Combination finders  
 70/8432 . . . . . For key-operated mechanism  
 70/8459 . . . . . Housings  
 70/8486 . . . . . Cylindrical  
 70/8514 . . . . . Face plate  
 70/8541 . . . . . Mounting arrangements  
 70/8568 . . . . . Escutcheons  
 70/8595 . . . . . Key guides, internal  
 70/8622 . . . . . Key insertion guides  
 70/8649 . . . . . Keyhole covers  
 70/8676 . . . . . Key holders  
 70/8703 . . . . . Flexible

70/873 . . . . . One-piece  
 70/8757 . . . . . Releasable catches  
 70/8784 . . . . . Parallel key loops, coaxially mounted, individually movable  
 70/8811 . . . . . Key identification  
 70/8838 . . . . . Adjustment provisions  
 70/8865 . . . . . Reversible structures  
 70/8892 . . . . . Silencers or mufflers  
 70/8919 . . . . . Antifriction provisions  
 70/8946 . . . . . Emergency unlocking or release arrangements  
 70/8973 . . . . . Mounting aids, guides and assistors

#### **Former US Class 74 Series**

<b>74/00</b>	<b>Machine element or mechanism</b>
74/10	. High frequency vibratory devices
74/11	. Tripping mechanism
74/111	. . Speed controlled
74/113	. . . Valve gear trips [e.g., steam engine "Corliss" type]
74/114	. . . Retarded
74/115	. . . Plural, sequential, trip actuations
74/116	. . . Clock train
74/118	. . . Winding knob trip [e.g., alarm mechanism]
74/119	. . Hit and miss
74/12	. Gyroscopes
74/1204	. . with caging or parking means
74/1207	. . . Rotor spin and cage release type
74/1211	. . . and resetting means
74/1214	. . with gimbal lock preventing means
74/1218	. . Combined
74/1221	. . Multiple gyroscopes
74/1225	. . . with rotor drives
74/1229	. . Gyroscope control
74/1232	. . . Erecting
74/1236	. . . . by plural diverse forces
74/1239	. . . . by jet
74/1243	. . . . by weight
74/1246	. . . . by friction
74/125	. . . . by magnetic field
74/1254	. . . . by motor torque
74/1257	. . . Damping
74/1261	. . with pick off
74/1264	. . . Optical
74/1268	. . . Pneumatic
74/1271	. . . Conducting liquid
74/1275	. . . Electrical
74/1279	. . . Electrical and magnetic
74/1282	. . with rotor drive
74/1286	. . Vertical gyroscopes
74/1289	. . Horizontal gyroscopes
74/1293	. . Flexure hinges for gyros
74/1296	. . Flywheel structure
74/13	. Machine starters
74/131	. . Automatic
74/132	. . . Separate power mesher
74/133	. . . Holders
74/134	. . . Clutch connection
74/136	. . . Worm and wheel
74/137	. . . Reduction gearing
74/138	. . Radial meshing
74/139	. . Cam operated

74/14	. Rotary member or shaft indexing, e.g., tool or work turret	74/1566	. . . . Power pawl lifter
74/1406	. . with safety device or drive disconnect	74/1568	. . . . . Automatic
74/1412	. . with locating point adjusting	74/1569	. . . . . Idle stroke
74/1418	. . Preselected indexed position	74/1571	. . . . . Cooperating holding pawl
74/1424	. . . Sequential	74/1573	. . . . . Power stroke
74/1429	. . . . Skip position	74/1574	. . . . . Cooperating holding pawl
74/1435	. . . . Held by torque	74/1576	. . . . Holding pawl lifter
74/1441	. . . . Geneva or mutilated gear drive	74/1577	. . . Gripper mountings, lever
74/1447	. . . . Velocity control	74/1579	. . . . Reversible
74/1453	. . . . Interlocked rotator and brake	74/1581	. . . . Multiple acting
74/1459	. . . . . Diverse-type brakes	74/1582	. . . . . Single ratchet or clutch
74/1465	. . . . . with axially acting friction brake	74/1584	. . . Gripper mountings, slide
74/1471	. . Plural operators or input drives	74/1585	. . . . Multiple acting
74/1476	. . with means to axially shift shaft	74/1587	. . . Grip features
74/1482	. . Single revolution input effects desired fractional output	74/1589	. . . . Driving band
74/1488	. . Control means	74/159	. . . . . Clamping
74/1494	. . Locking means	74/1592	. . . . . Driven band and gripper
74/15	. Intermittent grip type mechanical movement	74/1594	. . . . . Positive grip
74/1502	. . Escapement	74/1595	. . . . . Driving ratchet-bar or rack
74/1503	. . Rotary to intermittent unidirectional motion	74/1597	. . . . . Multiple acting
74/1505	. . . Automatically controlled	74/1598	. . . . . Driven ratchet-bar and power dog
74/1506	. . . . Speed	74/16	. Alternating-motion driven device with means during operation to adjust stroke
74/1508	. . . Rotary crank or eccentric drive	74/1608	. . Constant length stroke with means to displace end limits
74/151	. . . . Adjustable	74/1616	. . . Cyclical displacement responsive to the alternating-motion
74/1511	. . . . Lever transmitter	74/1625	. . Stroke adjustable to zero and/or reversible in phasing
74/1513	. . . . . Adjustable leverage	74/1633	. . . Plural driving means to jointly drive the driven device
74/1515	. . . . Rack and pinion transmitter	74/1642	. . . Device driven from selected points on oscillating link
74/1516	. . . . . Adjustable throw	74/165	. . . Driving lever with adjustable pivot point
74/1518	. . . . Rotary cam drive	74/1658	. . . Eccentric and strap drive, shiftable eccentric
74/1519	. . . . . Adjustable throw	74/1667	. . . . Changing the extent of eccentricity
74/1521	. . . . . Radial cam	74/1675	. . . Crank pin drive, shiftable pin
74/1523	. . . . . Radial cam	74/1683	. . . Cam and follower drive
74/1524	. . . Intermittently engaged clutch	74/1692	. . . . Axial-type cam [e.g., wabblers type]
74/1526	. . Oscillation or reciprocation to intermittent unidirectional motion	74/17	. Rotary driven device adjustable during operation relative to its supporting structure
74/1527	. . . Screw and nut devices	74/173	. . Screw and nut adjusting means
74/1529	. . . Slide actuator	74/177	. . Rack and pinion adjusting means
74/1531	. . . . Multiple acting	74/18	. Mechanical movements
74/1532	. . . Rack actuator	74/18008	. . Oscillating to reciprocating and alternating rotary
74/1534	. . . . Multiple acting	74/18016	. . Oscillating to reciprocating and intermittent rotary
74/1535	. . . . . Inwardly facing racks	74/18024	. . Rotary to reciprocating and rotary
74/1537	. . . . Oscillating	74/18032	. . . Rotary to reciprocating or rotary
74/1539	. . . . . Multiple acting	74/1804	. . Rotary to reciprocating and alternating rotary
74/154	. . . . . Inwardly facing racks	74/18048	. . Rotary to reciprocating and intermittent rotary
74/1542	. . . Strap actuator	74/18056	. . Rotary to or from reciprocating or oscillating
74/1544	. . . . Multiple acting	74/18064	. . . Head motions
74/1545	. . . . . Spring or weight return	74/18072	. . . Reciprocating carriage motions
74/1547	. . . . Single acting	74/1808	. . . . Phonograph type
74/1548	. . . . . Engine starter type	74/18088	. . . Rack and pinion type
74/155	. . . . . Spring or weight return	74/18096	. . . . Shifting rack
74/1552	. . . . . Spring or weight return	74/18104	. . . . Shiftable pinion
74/1553	. . . Lever actuator	74/18112	. . . . Segmental pinion
74/1555	. . . . Rotary driven element	74/1812	. . . . Alternately rotated pinion
74/1556	. . . . . Multiple acting	74/18128	. . . . Clutchable gears
74/1558	. . . Grip units and features	74/18136	. . . . . Bevel
74/156	. . . Compound movement handle		
74/1561	. . . . Reversible		
74/1563	. . . . Transverse pivots		
74/1565	. . . Gripper releasing devices		

74/18144 . . .	Overcoming dead center	74/18608 . . . .	Single input split into two intermediate outputs that are subsequently superposed into a single output
74/18152 . . .	Belt or chain carried member	74/18616 . . . .	Single input, plural outputs
74/1816 . . .	Crank, lever, toggle, and slide	74/18624 . . . .	Plural inputs, single output
74/18168 . . .	Crank, lazy-tong, and slide	74/18632 . . . .	Plural nuts driving shaft
74/18176 . . .	Crank, pitman, lever, and slide	74/1864 . . . .	Shaft and nut driven
74/18182 . . . .	Pump jack type	74/18648 . . . .	Carriage surrounding, guided by, and primarily supported by member other than screw [e.g., linear guide, etc.]
74/18184 . . .	Crank, pitman, and lever	74/18656 . . . .	Carriage surrounded, guided, and primarily supported by member other than screw [e.g., linear guide, etc.]
74/182 . . . .	Multiple levers	74/18664 . . . .	Shaft moves through rotary drive means
74/18208 . . .	Crank, pitman, and slide	74/18672 . . . .	Plural screws in series [e.g., telescoping, etc.]
74/18216 . . .	Crank, lever, and slide	74/1868 . . . .	Deflection related
74/18224 . . . .	Rack connections	74/18688 . . . .	Limit stop
74/18232 . . .	Crank and lever	74/18696 . . . .	including means to selectively transmit power [e.g., clutch, etc.]
74/1824 . . . .	Slidable connections	74/18704 . . . .	Means to selectively lock or retard screw or nut
74/18248 . . .	Crank and slide	74/18712 . . . .	Contamination related
74/18256 . . . .	Slidable connections [e.g., scotch yoke]	74/1872 . . . .	Imperforate enclosure
74/18264 . . .	Crank and multiple pitmans	74/18728 . . . .	Backlash
74/18272 . . .	Planetary gearing and slide	74/18736 . . . .	Pressurized fluid introduced between nut and screw
74/1828 . . .	Cam, lever, and slide	74/18744 . . . .	Lubrication
74/18288 . . .	Cam and lever	74/18752 . . . .	Manually driven
74/18296 . . .	Cam and slide	74/1876 . . . .	including inertia device
74/18304 . . . .	Axial cam	74/18768 . . . .	with rack and pinion
74/18312 . . . . .	Grooved	74/18776 . . . . .	Rectilinear rack
74/1832 . . . . .	Multiple screw	74/18784 . . . .	including bevel gears
74/18328 . . . . .	Alternately rotated screw	74/18792 . . . .	including worm
74/18336 . . . .	Wabblar type	74/188 . . . .	including spur gear
74/18344 . . .	Unbalanced weights	74/18808 . . . .	with rack
74/18352 . . .	Trammel-pitman	74/18816 . . . . .	Curvilinear rack
74/1836 . . .	Rotary to rotary	74/18824 . . . . .	with biasing means
74/18368 . . .	Inertia or centrifugal transmitters	74/18832 . . . .	including flexible drive connector [e.g., belt, chain, strand, etc.]
74/18376 . . .	Crank, pitman, lever, and crank	74/1884 . . . .	with sprocket wheel
74/18384 . . .	Crank, lever, and crank	74/18848 . . . .	with pulley
74/18392 . . .	Crank, pitman, and crank	74/18856 . . . .	Oscillating to oscillating
74/184 . . . .	Cranks, link connected	74/18864 . . . .	Snap action
74/18408 . . .	Cranks, slidable connections	74/18872 . . . .	Plate spring
74/18416 . . .	Rotary to alternating rotary	74/1888 . . . .	Geared connections
74/18424 . . .	Mangle connections	74/18888 . . . .	Reciprocating to or from oscillating
74/18432 . . . .	Shiftable driven gear	74/18896 . . . .	Snap action
74/1844 . . . . .	Central teeth	74/18904 . . . .	Plate spring
74/18448 . . . .	Mutilated gearing connections	74/18912 . . . .	Compound lever and slide
74/18456 . . .	Crank, pitman, and lever	74/1892 . . . .	Lever and slide
74/18464 . . .	Reciprocating rack connections	74/18928 . . . .	Straight line motions
74/18472 . . . .	Crank and pitman actuator	74/18936 . . . .	Slidable connections
74/1848 . . . .	Simple crank actuator	74/18944 . . . .	Link connections
74/18488 . . .	Oscillating rack connections	74/18952 . . . .	toggle transmissions
74/18496 . . . .	Mangle actuated	74/1896 . . . .	Cam connections
74/18504 . . . .	Crank and pitman actuator	74/18968 . . . .	Flexible connections
74/18512 . . .	Flexible connector type	74/18976 . . . .	Rack and pinion
74/1852 . . . .	Associated inertia devices	74/18984 . . . .	Inclined ramp
74/18528 . . .	Rotary to intermittent unidirectional motion	74/18992 . . . .	Reciprocating to reciprocating
74/18536 . . .	Space machines	74/19 . . . .	Gearing
74/18544 . . .	Rotary to gyratory	74/19005 . . . .	Nonplanetary gearing differential type [e.g., gearless differentials]
74/18552 . . .	Unbalanced weight		
74/1856 . . . .	Reciprocating or oscillating to intermittent unidirectional motion		
74/18568 . . .	Reciprocating or oscillating to or from alternating rotary		
74/18576 . . . .	including screw and nut		
74/18584 . . . .	Shaft shorter than nut		
74/18592 . . . .	Auxiliary drive [e.g., fluid piston, etc.] for load		
74/186 . . . .	Alternate power path operable on failure of primary		

74/19009 . . . Single gearing unit includes fluid drive	74/19274 . . . . . torque responsive
74/19014 . . . Plural prime movers selectively coupled to common output	74/19279 . . . . . Cam operated
74/19019 . . . Plural power paths from prime mover	74/19284 . . . . . Meshing assisters
74/19023 . . . Plural power paths to and/or from gearing	74/19288 . . . . . Double clutch and interposed transmission
74/19028 . . . . Alternate input connections single hand crank	74/19293 . . . . . Longitudinally slidable
74/19033 . . . . Fluid drive divides or combines alternate paths	74/19298 . . . . . Multiple spur gears
74/19037 . . . . One path includes fluid drive	74/19302 . . . . . with tumbler gear
74/19042 . . . . Friction-type gearing	74/19307 . . . . . Selective
74/19047 . . . . Worm-type gearing	74/19312 . . . . . Direct clutch and drive
74/19051 . . . . Single driven plural drives	74/19316 . . . . . Progressive
74/19056 . . . . . Parallel	74/19321 . . . . . Direct clutch and drive
74/1906 . . . . . Nonparallel	74/19326 . . . . . Fluid operated
74/19065 . . . . . Aligned	74/1933 . . . . . Multiple bevel gears
74/1907 . . . . . Parallel and aligned	74/19335 . . . . . Single spur gear
74/19074 . . . . Single drive plural driven	74/1934 . . . . . Tumbler and cone
74/19079 . . . . . Parallel	74/19344 . . . . . Multiple cone
74/19084 . . . . . Spur	74/19349 . . . . . Single bevel gear
74/19088 . . . . . Bevel	74/19353 . . . . . Pin or crown gears
74/19093 . . . . . Spur and bevel	74/19358 . . . . Laterally slidable gears
74/19098 . . . . . Helical	74/19363 . . . . . Rotary carriage
74/19102 . . . . . Belt or chain	74/19367 . . . . . Swinging carriage
74/19107 . . . . . Nonparallel	74/19372 . . . . Single forward and reverse speeds
74/19112 . . . . . Aligned	74/19377 . . . . Slidable keys or clutches
74/19116 . . . . . Vehicle	74/19381 . . . . . Alternative clutch shaft
74/19121 . . . . . Concentric	74/19386 . . . . . Multiple clutch shafts
74/19126 . . . . Plural drivers plural driven	74/19391 . . . . . Progressive
74/1913 . . . . . Bevel	74/19395 . . . . . Keys simultaneously slidable
74/19135 . . . . . Spur	74/194 . . . . . Selective
74/1914 . . . . Alternate drivers and driven	74/19405 . . . . . Multiple forward and reverse
74/19144 . . . . Miscellaneous [plural power paths]	74/19409 . . . . . Single forward and reverse
74/19149 . . . with fluid drive	74/19414 . . . . . Single clutch shaft
74/19153 . . . . Condition responsive control	74/19419 . . . . . Progressive
74/19158 . . . . with one or more controllers for gearing, fluid drive, or clutch	74/19423 . . . . . Multiple key
74/19163 . . . . . with interrelated controls	74/19428 . . . . . Spur
74/19167 . . . In series plural interchangeably locked nonplanetary units	74/19433 . . . . . Fluid operated
74/19172 . . . Reversal of direction of power flow changes power transmission to alternate path	74/19437 . . . . . Electrically operated
74/19177 . . . . Input and output exchange functions	74/19442 . . . . . Single key
74/19181 . . . toothed gear and recirculated unconnected elements	74/19447 . . . . . Clutch and ratchet
74/19186 . . . Alternating rotary or continuous	74/19451 . . . . . Spur gears
74/19191 . . . Alternating rotary	74/19456 . . . . . Intermediate clutch
74/19195 . . . . Progressive	74/1946 . . . . . Sliding clutch carrier
74/192 . . . . Shiftable and/or slidable gears	74/19465 . . . . . Sliding clutch operator
74/19205 . . . . Clutchable gears	74/1947 . . . . . Selective
74/1921 . . . . . On single driven member	74/19474 . . . . . Multiple key
74/19214 . . . . . On single driving member	74/19479 . . . . . Spur gears
74/19219 . . . Interchangeably locked	74/19484 . . . . . Single speed forward and reverse
74/19223 . . . . Disconnectable counter shaft	74/19488 . . . . . Spur gears
74/19228 . . . . Multiple concentric clutch shafts	74/19493 . . . . . Bevel gears
74/19233 . . . . Plurality of counter shafts	74/19498 . . . . . Bevel and idler gears
74/19237 . . . . Internal-external gears	74/19502 . . . Pivotally supported
74/19242 . . . . Combined gear and clutch	74/19507 . . . Windmill turntable
74/19247 . . . . Preselector	74/19512 . . . . Screw
74/19251 . . . . Control mechanism	74/19516 . . . . Spur
74/19256 . . . . . Automatic	74/19521 . . . . Bevel
74/1926 . . . . . Speed responsive	74/19526 . . . . . Wheel type
74/19265 . . . . . Governor	74/1953 . . . . . Wringer type
74/1927 . . . . . with belt gearing	74/19535 . . . Follow-up mechanism
	74/1954 . . . Eccentric driving shaft and axle
	74/19545 . . . Central driving shaft in axle
	74/1955 . . . Parallel shafts, adjustable gear mesh
	74/19555 . . . Varying speed ratio



74/1956	. . . Adjustable	74/19823	. . . . . Screw
74/19565	. . . Relative movable axes	74/19828	. . . . . Worm
74/1957	. . . . . Parallel shafts	74/19833	. . . . . Variable speed
74/19575	. . . . . Automatic control	74/19837	. . . . . Intermittent motion
74/1958	. . . . . Parallel shafts	74/19842	. . . . . Distribution of pressure
74/19585	. . . Fixed axes	74/19847	. . . torque actuated safety devices
74/1959	. . . . . Parallel shafts	74/19851	. . . Gear and rotary bodies
74/19595	. . . . . Automatic control	74/19856	. . . Laterally-spaced wheels
74/196	. . . . . Parallel shafts	74/1986	. . . Radially-spaced wheels
74/19605	. . . Reversing means	74/19865	. . . with flywheel
74/19609	. . . Governor control	74/1987	. . . Rotary bodies
74/19614	. . . Disconnecting means	74/19874	. . . Mutilated
74/19619	. . . Displaceable elements	74/19879	. . . Geneva
74/19623	. . . Backlash take-up	74/19884	. . . Irregular teeth and bodies
74/19628	. . . Pressure distributing	74/19888	. . . External and internal teeth
74/19633	. . . Yieldability in gear trains	74/19893	. . . Sectional
74/19637	. . . with brake means for gearing	74/19898	. . . . . Backlash take-up
74/19642	. . . Directly cooperating gears	74/19902	. . . . . Screw and nut
74/19647	. . . Parallel axes or shafts	74/19907	. . . . . Sound deadening
74/19651	. . . . . External type	74/19912	. . . . . Differential disks
74/19656	. . . . . Pin teeth	74/19916	. . . . . Multiple disks
74/1966	. . . Intersecting axes	74/19921	. . . . . Separate rim
74/19665	. . . . . Bevel gear type	74/19926	. . . . . Detachable
74/1967	. . . Rack and pinion	74/1993	. . . . . Segmental rim
74/19674	. . . Spur and bevel	74/19935	. . . . . Sheet metal
74/19679	. . . Spur	74/1994	. . . . . Diametrically split
74/19684	. . . . . Motor and gearing	74/19944	. . . . . Shaft-admitting insert
74/19688	. . . Bevel	74/19949	. . . Teeth
74/19693	. . . . . Motor vehicle drive	74/19953	. . . Worm and helical
74/19698	. . . Spiral	74/19958	. . . Bevel
74/19702	. . . . . Screw and nut	74/19963	. . . Spur
74/19707	. . . . . Plural longitudinally variably spaced nuts	74/19967	. . . . . Yieldable
74/19712	. . . . . Threadless	74/19972	. . . . . form
74/19716	. . . . . Non-linear screw	74/19977	. . . . . Antifriction
74/19721	. . . . . Thread geometry	74/19981	. . . . . Roller
74/19726	. . . . . Thread pitch varies over axial length	74/19986	. . . . . Twisted
74/1973	. . . . . Shaft thread is spirally wound wire	74/19991	. . . Lubrication
74/19735	. . . . . Nut disengageable from screw	74/19995	. . . Teeth
74/1974	. . . . . Nut segments hinged parallel to shaft [e.g., clam shell-type, etc.]	74/20	. . . Control lever and linkage systems
74/19744	. . . . . Rolling element engaging thread	74/20006	. . . Resilient connections
74/19749	. . . . . Recirculating rolling elements	74/20012	. . . Multiple controlled elements
74/19753	. . . . . Plural independent recirculating element paths	74/20018	. . . Transmission control
74/19758	. . . . . Single thread common to plural paths	74/20024	. . . . . Fluid actuator
74/19763	. . . . . Roller return path in shaft	74/2003	. . . . . Electrical actuator
74/19767	. . . . . Return path geometry	74/20037	. . . . . Occupant propelled vehicle
74/19772	. . . . . Rolling element deflector	74/20043	. . . . . Transmission controlled by flexible cable
74/19777	. . . . . Interconnected or cooperating rollers or roller structure	74/20049	. . . . . Transmission controlled by flexible cable
74/19781	. . . . . Non-recirculating rolling elements	74/20055	. . . . . Foot operated
74/19786	. . . . . Captured sphere	74/20061	. . . . . Multiple foot-operated controls
74/19791	. . . . . Cylindrical or quasi-cylindrical roller element [e.g., inclined roller, etc.]	74/20067	. . . . . Control convertible between automatic and manual operation
74/19795	. . . . . Parallel to shaft	74/20073	. . . . . Control of plural mechanisms [e.g., control of transmission and control of 4 - wheel drive]
74/198	. . . . . Perpendicular to shaft	74/20079	. . . . . Separate control levers
74/19805	. . . . . Less than 360 degrees of contact between nut and screw	74/20085	. . . . . Restriction of shift, gear selection, or gear engagement
74/19809	. . . . . Independent nut segments	74/20091	. . . . . Prevention of reverse shift
74/19814	. . . . . Integral deformable tangs engaging screw	74/20098	. . . . . Separate actuator to disengage restrictor
74/19819	. . . . . Driven rack or shaft	74/20104	. . . . . Shift element interlock
		74/2011	. . . . . with detent, recess, notch, or groove
		74/20116	. . . . . Resiliently biased interlock

74/20122 . . . . .	Spherical restrictor	74/20438 . . . . .	Single rotatable lever [e.g., for bicycle brake or derailleur]
74/20128 . . . . .	Resiliently biased restrictor	74/20444 . . . . .	including rolling antifriction elements
74/20134 . . . . .	having vibration damper	74/2045 . . . . .	and sheath support, connector, or anchor
74/2014 . . . . .	Manually operated selector [e.g., remotely controlled device, lever, push button, rotary dial, etc.]	74/20456 . . . . .	Specific cable or sheath structure
74/20146 . . . . .	Control lever on steering column	74/20462 . . . . .	Specific cable connector or guide
74/20152 . . . . .	Control lever movable through plural planes	74/20468 . . . . .	Sliding rod
74/20159 . . . . .	Control lever movable through plural planes	74/20474 . . . . .	Rotatable rod, shaft, or post
74/20165 . . . . .	Spherical mount [e.g., ball and socket]	74/2048 . . . . .	Gear, drum, and cable
74/20171 . . . . .	Resiliently biased control lever	74/20486 . . . . .	Drum and cable
74/20177 . . . . .	Particular element [e.g., shift fork, template, etc.]	74/20492 . . . . .	Gear
74/20183 . . . . .	Shift fork structure	74/20498 . . . . .	Variable ratio
74/20189 . . . . .	Foot operated	74/20504 . . . . .	Screw and nut
74/20195 . . . . .	Offset extension	74/2051 . . . . .	Adjustable
74/20201 . . . . .	Control moves in two planes	74/20516 . . . . .	Mountings
74/20207 . . . . .	Multiple controlling elements for single controlled element	74/20522 . . . . .	Antenna
74/20213 . . . . .	Interconnected	74/20528 . . . . .	Foot operated
74/2022 . . . . .	Hand and foot	74/20534 . . . . .	Accelerator
74/20226 . . . . .	Accelerator	74/2054 . . . . .	Signal
74/20232 . . . . .	Marine	74/20546 . . . . .	Knee operated
74/20238 . . . . .	Interlocked	74/20552 . . . . .	Elbow
74/20244 . . . . .	Push button	74/20558 . . . . .	Variable output force
74/2025 . . . . .	Rod blocks actuation of rotary member	74/20564 . . . . .	Flexible
74/20256 . . . . .	Steering and controls assemblies	74/2057 . . . . .	Variable input leverage
74/20262 . . . . .	Rotary control shaft	74/20576 . . . . .	Elements
74/20268 . . . . .	Reciprocating control elements	74/20582 . . . . .	Levers
74/20274 . . . . .	Flexible	74/20588 . . . . .	toggle
74/2028 . . . . .	Handle bar type	74/20594 . . . . .	Lazy tongs
74/20287 . . . . .	Flexible control element	74/206 . . . . .	Adjustable
74/20293 . . . . .	with horn control	74/20606 . . . . .	Swing posts
74/20299 . . . . .	Antirattling elements	74/20612 . . . . .	Hand
74/20305 . . . . .	Robotic arm	74/20618 . . . . .	Jointed
74/20311 . . . . .	including power cable or connector	74/20624 . . . . .	Adjustable
74/20317 . . . . .	including electric motor	74/2063 . . . . .	Stops
74/20323 . . . . .	including flaccid drive element	74/20636 . . . . .	Detents
74/20329 . . . . .	Joint between elements	74/20642 . . . . .	Hand crank
74/20335 . . . . .	Wrist	74/20648 . . . . .	Interrelated lever release
74/20341 . . . . .	Power elements as controlling elements	74/20654 . . . . .	Gear
74/20348 . . . . .	Planar surface with orthogonal movement and rotation	74/2066 . . . . .	Friction
74/20354 . . . . .	Planar surface with orthogonal movement only	74/20666 . . . . .	Lever engaging
74/2036 . . . . .	Pair of power elements	74/20672 . . . . .	Lever engaging rack
74/20366 . . . . .	Power and manual controlling elements	74/20678 . . . . .	Pivoted
74/20372 . . . . .	Manual controlling elements	74/20684 . . . . .	Lever carried pawl
74/20378 . . . . .	Planar surface with orthogonal movement or rotation	74/2069 . . . . .	Handle release
74/20384 . . . . .	Levers	74/20696 . . . . .	Finger lever release
74/2039 . . . . .	Pair of levers	74/20702 . . . . .	Slidable
74/20396 . . . . .	Hand operated	74/20708 . . . . .	Pedal controlled
74/20402 . . . . .	Flexible transmitter [e.g., Bowden cable]	74/20714 . . . . .	Lever carried rack
74/20408 . . . . .	Constant tension sustaining	74/2072 . . . . .	Pivoted
74/20414 . . . . .	Hydraulic control	74/20726 . . . . .	Pedal controlled
74/2042 . . . . .	and hand operator	74/20732 . . . . .	Handles
74/20426 . . . . .	Slidable	74/20738 . . . . .	Extension
74/20432 . . . . .	for moving a mirror	74/20744 . . . . .	Hand crank
		74/2075 . . . . .	Extensible
		74/20756 . . . . .	Collapsible
		74/20762 . . . . .	Shaft connections
		74/20768 . . . . .	Engine starter type
		74/20774 . . . . .	Holders
		74/2078 . . . . .	Handle bars
		74/20786 . . . . .	Spring biased or supported
		74/20792 . . . . .	Folding or adjustable

74/20798 . . . . . Sectional  
 74/20804 . . . . . Simultaneously movable  
 74/2081 . . . . . Continuous  
 74/20816 . . . . . with handle latch  
 74/20822 . . . . . Attachments and accessories  
 74/20828 . . . . . Handholds and grips  
 74/20834 . . . . . Hand wheels  
 74/2084 . . . . . Knob or dial  
 74/20846 . . . . . Slidable  
 74/20852 . . . . . Pivoted  
 74/20858 . . . . . Releasable  
 74/20864 . . . . . Handles  
 74/2087 . . . . . Rim grips and covers  
 74/20876 . . . . . Caps and covers  
 74/20882 . . . . . Rocker arms  
 74/20888 . . . . . Pedals  
 74/20894 . . . . . Treadles  
 74/209 . . . . . Extension  
 74/20906 . . . . . Offset  
 74/20912 . . . . . Pads and covers  
 74/20918 . . . . . Foot rests  
 74/20924 . . . . . Controller checks  
 74/2093 . . . . . Slot closers and lever guards  
 74/21 . . . . . Elements  
 74/2101 . . . . . Cams  
 74/2102 . . . . . Adjustable  
 74/2104 . . . . . Flexible strip  
 74/2105 . . . . . Memory devices  
 74/2106 . . . . . Timer devices  
 74/2107 . . . . . Follower  
 74/2109 . . . . . Balancing for drum, e.g., washing machine or  
 arm-type structure, etc., centrifuge, etc.  
 74/211 . . . . . Eccentric  
 74/2111 . . . . . Plural, movable relative to each other  
 [including ball[s]]  
 74/2112 . . . . . Concentric  
 74/2114 . . . . . Adjustable  
 74/2115 . . . . . Radially  
 74/2116 . . . . . having anti-friction means, e.g., roller bearing,  
 lubrication, etc.  
 74/2117 . . . . . Power generating-type flywheel  
 74/2119 . . . . . Structural detail, e.g., material, configuration,  
 superconductor, discs, laminated, etc.  
 74/212 . . . . . Containing fiber or filament  
 74/2121 . . . . . Flywheel, motion smoothing-type  
 74/2122 . . . . . with fluid balancing means  
 74/2123 . . . . . and pressure compensation  
 74/2125 . . . . . and elastic device  
 74/2126 . . . . . and bearings  
 74/2127 . . . . . with electrical or magnetic damping  
 74/2128 . . . . . Damping using swinging masses, e.g.,  
 pendulum type, etc.  
 74/213 . . . . . Damping by increasing frictional force  
 74/2131 . . . . . Damping by absorbing vibration force [via  
 rubber, elastomeric material, etc.]  
 74/2132 . . . . . Structural detail, e.g., fiber, held by magnet,  
 etc.  
 74/2133 . . . . . Pawls and ratchets  
 74/2135 . . . . . Noiseless  
 74/2136 . . . . . Pivoted pawls  
 74/2137 . . . . . Single tooth  
 74/2138 . . . . . Flexible single tooth

74/214 . . . . . Multiple tooth  
 74/2141 . . . . . Sliding pawls  
 74/2142 . . . . . Pitmans and connecting rods  
 74/2143 . . . . . Radial  
 74/2144 . . . . . Yieldable  
 74/2146 . . . . . Longitudinal springs  
 74/2147 . . . . . Fluid cushion  
 74/2148 . . . . . Automatic release  
 74/2149 . . . . . toggle link type  
 74/2151 . . . . . Longitudinally adjustable  
 74/2152 . . . . . Hollow rod, lubricated  
 74/2153 . . . . . Sheet metal type  
 74/2154 . . . . . Counterbalanced  
 74/2156 . . . . . Weight type  
 74/2157 . . . . . Rotating  
 74/2158 . . . . . Spring  
 74/2159 . . . . . Section coupled  
 74/216 . . . . . Bearings, adjustable  
 74/2162 . . . . . Engine type  
 74/2163 . . . . . Idler arm  
 74/2164 . . . . . Cranks and pedals  
 74/2165 . . . . . with attached gear  
 74/2167 . . . . . Variable  
 74/2168 . . . . . Pedals  
 74/2169 . . . . . Counterbalanced  
 74/217 . . . . . with toe or shoe clips  
 74/2172 . . . . . Adjustable or folding  
 74/2173 . . . . . Cranks and wrist pins  
 74/2174 . . . . . Multiple throw  
 74/2175 . . . . . Sectional  
 74/2177 . . . . . Sectional  
 74/2178 . . . . . Yieldable  
 74/2179 . . . . . Adjustable  
 74/218 . . . . . Automatically  
 74/2181 . . . . . Variable  
 74/2183 . . . . . Counterbalanced  
 74/2184 . . . . . Vibration dampers  
 74/2185 . . . . . Lubricated  
 74/2186 . . . . . Gear casings  
 74/2188 . . . . . Axle and torque tubes  
 74/2189 . . . . . Cooling  
 74/219 . . . . . Guards  
 74/2191 . . . . . for rotary member  
 74/2193 . . . . . Guard mechanisms  
 74/2194 . . . . . Automatic  
 74/2195 . . . . . Oscillating member actuator  
 74/2196 . . . . . Reciprocating member actuator  
 74/2198 . . . . . Operator controlled  
 74/2199 . . . . . Set screw  
 74/22 . . . . . Miscellaneous

#### **Former US Class 82 Series**

**82/00 Turning**  
 82/10 . . . . . Process of turning  
 82/11 . . . . . Talking machine tablet  
 82/12 . . . . . Radially moving rotating tool inside bore  
 82/122 . . . . . Forming non-circular bore  
 82/125 . . . . . Tool simultaneously moving axially  
 82/128 . . . . . Pivoted to tool-carrier  
 82/13 . . . . . Pattern section  
 82/135 . . . . . Cam-controlled cutter

82/14	. Axial pattern	82/16721	. . . . . with adjustable work stops
82/141	. . having transverse tool and templet guide	82/16737	. . . . Eccentric periphery rotary tool
82/142	. . . with workpiece gauge	82/16754	. . . . Means to feed work axially
82/143	. . . having electrical actuator	82/16771	. . . . Translatable work support carriage
82/145	. . . . And hydraulic actuator	82/16786	. . . . with tool groove in support roll[s]
82/147	. . . having hydraulic actuator	82/16803	. . . Rotatable tool[s] driven by contact with work
82/148	. . Pivoted tool rest	82/16819	. . . . Axially movable tool support
82/149	. . Profiled cutter	82/16836	. . . . . Freely floating parallel to axis
82/15	. Tapers	82/16852	. . . . . with supplemental nonrotative tool
82/152	. . Offset work axis	82/16868	. . . . . including clutch control for work rotation
82/154	. . Transversely shifted cutter	82/16885	. . . . including resilient means urging work against rotary support
82/156	. . . Templet controlled	82/16901	. . . Separate means for plural tools
82/158	. . . Gear controlled	82/16918	. . . Spring urged
82/16	. Severing or cut-off	82/16934	. . . . For window shade
82/16016	. . Processes	82/16951	. . . Tool adjustment and/or stop
82/16032	. . Automatic and/or triggered control	82/16967	. . . with means to support and/or rotate work
82/16049	. . Combined with means to sharpen tool[s]	82/16983	. . . with means to feed work
82/16065	. . Combined with means to apply fluid	82/17	. Lathe for pulley
82/16081	. . Combined with means to heat tool and/or work	82/18	. Lathe for wheel or axle
82/16098	. . with dust or chip handling	82/185	. . <u>In situ</u> lathe for railroad wheel
82/16114	. . including scrap cutting means	82/19	. Lathe for crank or crank pin
82/16131	. . Flying cutter type	82/192	. . Portable lathe for crank pin
82/16147	. . Cutting couple straddling work	82/195	. . having work oscillator
82/16163	. . . with pattern, guide or cam means [noncircular product]	82/198	. . . having work driver
82/16181	. . . Plural cutting means [pairs, or pair, plus single]	82/20	. Lathe for screw cutting
82/16196	. . . Rotary shear pair	82/205	. . having swinging feed nut and tool bar
82/16213	. . . . Tool axes parallel to axis of work rotation	82/21	. Portable lathe for brake drum, disc, or shoe
82/16229	. . Interrelated means for tool infeed and circumrotation	82/22	. Portable lathe for pipe turning
82/16245	. . . Dependent upon reaction to work	82/23	. Portable lathe for piston grooving
82/16262	. . . Infeed cam disk rotation geared to tool holder rotation	82/24	. Bench lathe
82/16278	. . . . Axial infeed cam	82/245	. . Watchmaker's lathe
82/16295	. . . . including centrifugal balancing means	82/25	. Lathe
82/16311	. . . . Scroll plate infeed cam	82/2502	. . with program control
82/16327	. . . Infeed cam plate braked with respect to tool[s] carrier plate	82/2504	. . . And transmission
82/16344	. . . Orbital cogwheel and fixed detent	82/2506	. . . And tool turret
82/16361	. . . Common gear means	82/2508	. . with tool turret
82/16377	. . . . including adjustable means to vary gear speed	82/2511	. . Vertical
82/16393	. . . . with manual disconnect lever	82/2512	. . having facing tool fed transverse to work
82/16409	. . . with means to feed work	82/2514	. . with work feeder or remover
82/16426	. . Infeed means	82/2516	. . . Magazine type
82/16442	. . . with means to circumrotate tool[s] about work	82/2518	. . . . Bar feeder
82/16459	. . . . Fluid means for relative tool actuation	82/2521	. . . Bar feeder
82/16475	. . . . Gear means for tool actuation	82/2522	. . Portable
82/16491	. . . . . including axial cam	82/2524	. . Multiple
82/16508	. . . . . with indicator	82/2527	. . having hollow cutter head
82/16524	. . . . Bell crank linkage for tool[s] holder	82/2529	. . Revolvable cutter heads
82/16541	. . . . Resilient means for tool actuation	82/2531	. . Carriage feed
82/16557	. . . . with means for manual retraction	82/2533	. . . Control
82/16573	. . . Hand crank for tool holder	82/2535	. . . . Electrical type
82/16591	. . . Power driven eccentric	82/2537	. . . Apron mechanism
82/16606	. . . . Fluid motor	82/2539	. . . . Feednut control
82/16622	. . . . Plural tools	82/2541	. . . Slide rest
82/16639	. . . Tool within work	82/2543	. . . . Multiple tool support
82/16655	. . . with means to rotate tool[s]	82/2545	. . . . Tool relief
82/16672	. . . . including rotatable cutters supporting work	82/2547	. . . Change gears
82/16688	. . . . Planetating work mandrels	82/2549	. . . Feedscrews and rods
82/16704	. . . . Pivoted tool carriage	82/2552	. . Headstock
		82/2554	. . . Speed changing gear
		82/2556	. . . . Speed change gears for maintaining constant cutting speed

82/2558 . . . Spindle reverser  
 82/2561 . . . Spindle or work angler  
 82/2562 . . . Spindle and bearings  
 82/2564 . . Tailstock  
 82/2566 . . Bed  
 82/2568 . . Center  
 82/2571 . . . Alignment adjuster  
 82/2572 . . Attachment  
 82/2574 . . . Stop [e.g., carriage, tool, work, etc.]  
 82/2577 . . . . Tool slide  
 82/2579 . . . . Collet or spindle  
 82/2581 . . . . Indexible [e.g., roll type, etc.]  
 82/2583 . . Tool and work rest  
 82/2585 . . Tool rest  
 82/2587 . . . Turret type holder [e.g., multiple tools, etc.]  
 82/2589 . . . Quick release tool or holder clamp  
 82/2591 . . . Tool post  
 82/2593 . . Work rest  
 82/2595 . . . with noise or vibration dampener  
 82/2597 . . . Center rest  
 82/26 . Work driver  
 82/262 . . Lathe dog  
 82/264 . . . Cam grip  
 82/266 . . Mandrel  
 82/268 . . . Expansible  
 82/27 . Centerer  
 82/28 . Drill press attachment for turning  
 82/29 . Attachment for cutting a valve  
 82/30 . Miscellaneous

**Former US Class 83 series****83/00 Cutting**

83/02 . Other than completely through work thickness  
 83/0207 . . or through work presented  
 83/0215 . . . Including use of rotary scoring blade  
 83/0222 . . . . Plural independent rotary scoring blades  
 83/023 . . . With infeeding of work  
 83/0237 . . Pricking  
 83/0244 . . . Including use of orbiting tool carrier  
 83/0252 . . . With infeeding of tool  
 83/0259 . . Edge trimming [e.g., chamfering, etc.]  
 83/0267 . . Splitting  
 83/0274 . . . By use of endless band or chain knife  
 83/0281 . . . By use of rotary blade  
 83/0289 . . . . Plural independent rotary blades  
 83/0296 . . . With infeeding of work  
 83/0304 . . Grooving  
 83/0311 . . . By use of plural independent rotary blades  
 83/0319 . . . . Forming common groove  
 83/0326 . . . . Blades turning about perpendicular axes  
 83/0333 . . Scoring  
 83/0341 . . . Processes  
 83/0348 . . . Active means to control depth of score  
 83/0356 . . . Serially  
 83/0363 . . . Plural independent scoring blades  
 83/037 . . . . Rotary scoring blades  
 83/0378 . . . . . On opposite sides of work  
 83/0385 . . . Rotary scoring blade  
 83/0393 . . . . With means to rotate blade  
 83/04 . Processes

83/0405 . . With preparatory or simultaneous ancillary treatment of work  
 83/041 . . . By heating or cooling  
 83/0414 . . . . At localized area [e.g., line of separation]  
 83/0419 . . . By distorting within elastic limit  
 83/0424 . . . . By stretching  
 83/0429 . . . . By compressing  
 83/0433 . . . . By flexing around or by tool  
 83/0438 . . . . . To conform to shape of tool  
 83/0443 . . . By fluid application  
 83/0448 . . With subsequent handling [i.e., of product]  
 83/0453 . . . By fluid application  
 83/0457 . . . By retaining or reinserting product in workpiece  
 83/0462 . . . By accelerating travel  
 83/0467 . . . By separating products from each other  
 83/0472 . . . By moving work support to which a tacky product is adhered  
 83/0476 . . Including stacking of plural workpieces  
 83/0481 . . Puncturing  
 83/0486 . . With manipulation of tool protective strip [e.g., backing strip]  
 83/0491 . . Cutting of interdigitating products  
 83/0495 . . Making and using a registration cut  
 83/05 . . With reorientation of tool between cuts  
 83/0505 . . With reorientation of work between cuts  
 83/051 . . . Relative to same tool  
 83/0515 . . During movement of work past flying cutter  
 83/0519 . . . Cyclically varying rate of tool or work movement  
 83/0524 . . Plural cutting steps  
 83/0529 . . . Blanking and cutting  
 83/0534 . . . . Cutting to join blanked holes  
 83/0538 . . . Repetitive transverse severing from leading edge of work  
 83/0543 . . . . Alternately forming products of less than total width of work  
 83/0548 . . . . With longitudinal severing  
 83/0553 . . . . . Effected by plural steps  
 83/0558 . . . . . Along zigzag or undulant line or cut  
 83/0562 . . . . . Prior to transverse severing  
 83/0567 . . . . . Nonrectilinear cutting  
 83/0572 . . . Plural cutting steps effect progressive cut  
 83/0577 . . . Repetitive blanking  
 83/0581 . . Cutting part way through from opposite sides of work  
 83/0586 . . Effecting diverse or sequential cuts in same cutting step  
 83/0591 . . Cutting by direct application of fluent pressure to work  
 83/0596 . . Cutting wall of hollow work  
 83/06 . Blanking  
 83/0605 . . Cut advances across work surface  
 83/061 . With manually actuated means to disturb cyclic operation  
 83/081 . With randomly actuated stopping means  
 83/083 . . With means to permit subsequent hand operation  
 83/084 . . With stop-signal-responsive means to actuate auxiliary cutter  
 83/086 . . With sensing of product or product handling means

83/088	. . Responsive to tool detector or work-feed-means detector	83/2068	. . . Plural blasts directed against plural product pieces
83/089	. . . Responsive to tool characteristic	83/207	. . . By suction means
83/091	. . Responsive to work sensing means	83/2072	. . By brush means
83/093	. . . Of buckled work	83/2074	. . Including means to divert one portion of product from another
83/094	. . . . Running loop	83/2077	. . . By kerf entering guide
83/096	. . . Detector supported on or urged against work	83/2079	. . . Remaining or re-inserted product portion from base material
83/098	. . . . Resiliently biased	83/2081	. . . Gravity type
83/099	. . Manually operated	83/2083	. . . Deflecting guide
83/101	. With stopping means effective on completion of predetermined number of tool cycles	83/2085	. . . . Positionable gate in product flow path
83/121	. With means to accomplish delayed stopping after cessation of cyclic operation	83/2087	. . . Diverging product movers
83/141	. With means to monitor and control operation [e.g., self-regulating means]	83/209	. . Including means to replace product in base material after cutting
83/145	. . Including means to monitor product	83/2092	. . Means to move, guide, or permit free fall or flight of product
83/148	. . Including means to correct the sensed operation	83/2094	. . . Means to move product at speed different from work speed
83/152	. . . And modify another operation	83/2096	. . . Means to move product out of contact with tool
83/155	. . . Optimizing product from unique workpiece	83/2098	. . . . With means to effect subsequent conveying or guiding
83/159	. . Including means to compensate tool speed for work-feed variations	83/21	. . . . Out of contact with a rotary tool
83/162	. With control means responsive to replaceable or selectable information program	83/2103	. . . . . Mover surrounds axis of tool rotation
83/164	. . For cutting component of animal; e.g., hair clipper	83/2105	. . . . . Mover mounted on rotary tool
83/166	. . Removable element carries program	83/2107	. . . . . For radial movement of product
83/169	. . . Indeterminate length, web or strand	83/2109	. . . . . Resiliently mounted
83/171	. . . . Magnetic	83/2111	. . . . . Mover is resiliently mounted
83/173	. . Arithmetically determined program	83/2113	. . . . . Pivoted mover
83/175	. . . With condition sensor	83/2116	. . . . . And plural rotating tools
83/178	. . . . Responsive to work	83/2118	. . . . . Stationary mover
83/18	. . . With operator input means	83/212	. . . . . And plural rotating tools
83/182	. With means to weigh product	83/2122	. . . . By ejector within a hollow cutter
83/202	. With product handling means	83/2124	. . . . . And means to strip the outer surface of a cutter
83/2022	. . Initiated by means responsive to product or work	83/2127	. . . . . Ejector operated with return stroke of cutter
83/2024	. . . Responsive to work	83/2129	. . . . . By means carried by cooperating cutter
83/2027	. . Initiated by means directly responsive to tool movement	83/2131	. . . . . By cam-operated ejector
83/2029	. . . In return motion of tool	83/2133	. . . . . By resiliently biased ejector
83/2031	. . Including means to drape the product	83/2135	. . . . Moving stripper timed with tool stroke
83/2033	. . Including means to form or hold pile of product pieces	83/2137	. . . . . And alternatively movable to or from operating position
83/2035	. . . In nested relation	83/214	. . . . . Latched stripper released by tool return
83/2037	. . . In stacked or packed relation	83/2142	. . . . . Plural strippers operative upon plural tools
83/204	. . . . Stacker sweeps along product support	83/2144	. . . . . Single stripper operative upon plural tools
83/2042	. . . . Including cut pieces overlapped on delivery means	83/2146	. . . . . Spring arm stripper
83/2044	. . . . And means to separate product portions	83/2148	. . . . . Linkage actuated
83/2046	. . . . Including means to move stack bodily	83/215	. . . . . Carried by moving tool element or its support
83/2048	. . . . . By movement of stack holder	83/2153	. . . . . Fluid pressure actuated stripper
83/205	. . . . . By timed relocation of holder along path of stack gscheme-change-itemth	83/2155	. . . . . Stripper biased against product
83/2053	. . . . . Interrelated adjustment of holder movement and work-feeder	83/2157	. . . . . Elastomeric stripper contacting product
83/2055	. . . . And means to resist stack movement	83/2159	. . . . . By spring means
83/2057	. . . . Including means to deliver individual pieces to a stack holder	83/2161	. . . . . By free weight of stripper
83/2059	. . . . . With spindle to enter a hole or to make hole in product	83/2163	. . . . . Stripper biased against product
83/2061	. . . . . By face-engaging means to push product broadside into stacked relation	83/2166	. . . . . Spring biased stripper
83/2063	. . . . Upon emergence from hollow cutter	83/2168	. . . . Manually operated stripper
83/2066	. . By fluid current	83/217	. . . . Stationary stripper
		83/2172	. . . . . Stripper encircles moving tool
		83/2174	. . . Blockable exit port

- 83/2177 . . . Tool conforming member interposed between tool and work
- 83/2179 . . . Including means to move, or resist movement of, cut pieces along delivery chute
- 83/2181 . . . Active delivery means mounted on tool support
- 83/2183 . . . Product mover including gripper means
- 83/2185 . . . . Suction gripper
- 83/2187 . . . . Reciprocating product handler
- 83/219 . . . . Rotating or oscillating product handler
- 83/2192 . . . Endless conveyor
- 83/2194 . . . . And means to remove product therefrom
- 83/2196 . . . Roller[s]
- 83/2198 . . . Tilttable or withdrawable support
- 83/22 . . . Means to move product laterally
- 83/2203 . . . . Oscillating means
- 83/2205 . . . . Reciprocating means
- 83/2207 . . . Means to move product in a nonrectilinear path
- 83/2209 . . . Guide
- 83/2211 . . . . Abutment in path of product being moved by work feeder
- 83/2213 . . . . Product-diverting conduit in or from hollow tool
- 83/2216 . . . . Inclined conduit, chute or plane
- 83/2218 . . . . Abutment interposed in path of free fall or flight of product
- 83/222 . . With receptacle or support for cut product
- 83/242 . . With means to clean work or tool
- 83/263 . . With means to apply transient nonpropellant fluent material to tool or work
- 83/283 . . With means to control or modify temperature of apparatus or work
- 83/293 . . Of tool
- 83/303 . . With tool sharpener or smoother
- 83/313 . . Spatially fixed tool
- 83/323 . . With means to stretch work temporarily
- 83/343 . . With means to deform work temporarily
- 83/364 . . By fluid blast and/or suction
- 83/384 . . By tool inside hollow work
- 83/385 . . Work pre-packed with internal tool[s]
- 83/386 . . With expanding mandrel
- 83/387 . . Interrelated tool feed means and means to actuate work immobilizer
- 83/388 . . . Actuated clamp element and work holder coact to position work
- 83/39 . . Synchronized tool and work feeding means
- 83/391 . . With means to position tool[s] for cutting
- 83/392 . . One tool [either internal or external] having compound motion
- 83/393 . . . Annulus and disc-type tool pair
- 83/394 . . One tool having unidirectional rotary motion
- 83/395 . . One tool having only rectilinear motion[s]
- 83/396 . . . Annulus and disc-type tool pair
- 83/397 . . . . A tool has a sequence of motion in plural paths
- 83/398 . . . Internal tool is an active cutter
- 83/40 . . . Multiple external active tools
- 83/401 . . . . Tools operate in a substantially common transverse plane of cut
- 83/402 . . . . . With tool actuating cams on a common support
- 83/403 . . With manually actuated means to position or facilitate positioning of work
- 83/404 . . By means to misalign aligned apertured tools
- 83/408 . . Combined with another type tool of the class
- 83/412 . . Rectilinear relative movement only
- 83/416 . . Rotary relative movement solely about a single pivot
- 83/42 . . . With plural apertures in one or both carriers
- 83/424 . . By increased tensioning of work-enclosing wire
- 83/444 . . Tool engages work during dwell of intermittent workfeed
- 83/4443 . . Unicyclic
- 83/4445 . . . Convertible to and from unicyclic
- 83/4448 . . . Controlled by mechanical means
- 83/445 . . With work-moving clamp jaw
- 83/4453 . . Work moved solely by movable abutment
- 83/4455 . . Operation initiated by work-driven detector means to measure work length
- 83/4458 . . Work-sensing means to control work-moving or work-stopping means
- 83/446 . . . With means to initiate tool feed by same control impulse
- 83/4463 . . Work-sensing means to initiate tool feed
- 83/4465 . . . With work-stopping abutment in sensing means
- 83/4468 . . Plural tools at same station, one positioned for continuous engagement with work
- 83/447 . . Plural tools successively actuated at same station
- 83/4473 . . . During one dwell period
- 83/4475 . . Tool has motion additional to cutting stroke during tool cycle
- 83/4478 . . . Tool has additional motion during work dwell
- 83/448 . . . . Included in plural cutting cycles
- 83/4483 . . . Tool has work-feeding motion
- 83/4486 . . With variable direction of work-feed from cycle to cycle
- 83/4488 . . . In one of certain selected directions
- 83/4491 . . Interlock between tool actuating and work feed means
- 83/4493 . . Tool motion initiates work feed and vice versa
- 83/4496 . . Stored energy means for moving work or tool, loaded by tool or work
- 83/4498 . . . Work feed means actuates energy storage device for tool
- 83/4501 . . Work feed means controlled by means mounted on tool or tool support
- 83/4503 . . . Such means drives the work feed means
- 83/4506 . . . . Work feed means carried by tool or tool support
- 83/4508 . . . . With supplemental work feed means
- 83/4511 . . . . On return stroke of tool
- 83/4513 . . . Work feed means halted by means on tool or tool support
- 83/4516 . . Work-feed mechanism in nonfeed motion effects or initiates tool actuation
- 83/4518 . . . By striking tool actuator
- 83/4521 . . . . Nonfeed motion is reverse to feed motion
- 83/4523 . . With means to vary number of work-feed increments between tool strokes
- 83/4526 . . Dwell caused by imposing reverse motion on portion of flexible moving work
- 83/4529 . . With uninterrupted flow of work from supply source
- 83/4531 . . Work feed increment shorter than longitudinal tool field
- 83/4534 . . Unequal work feed increments in recurring series

- 83/4536 . . . Work carriage carries ratchet means to determine increments
- 83/4539 . . Means to change tool position, or length or datum position of work- or tool-feed increment
- 83/4541 . . . With means to vary magnitude of work-feed increment
- 83/4544 . . . . Multi-increment type [e.g., ticket issuing]
- 83/4546 . . . . Length selector initiates machine operation
- 83/4549 . . . . By change in length of one member of feed-driving linkage
- 83/4551 . . . . Rotating member
- 83/4554 . . . . By change of effective shape of driving or driven surface of element of work-feed mechanism
- 83/4556 . . . . By adjustment of fixed stop
- 83/4559 . . . With means to vary magnitude or base position of tool stroke
- 83/4561 . . With means to facilitate manual repositioning [shift] of work
- 83/4564 . . With means to produce plurality of work-feed increments per tool cycle
- 83/4567 . . . Including supplemental work-feed means
- 83/4569 . . . Manual
- 83/4572 . . . With stop adapted to engage abutment surface on work
- 83/4574 . . . . Plurality of work stops successively effective
- 83/4577 . . Work fed successively to plural tools
- 83/4579 . . . With change of direction between tools
- 83/4582 . . Work advance occurs during return stroke of tool
- 83/4584 . . Dwell defined only by "dead-center" of rotating crank
- 83/4587 . . Dwell initiated by disengagement of surface of moving frictional feed means from work
- 83/4589 . . . Feed means has interrupted frictional surface
- 83/4592 . . . Feed means has rotary motion
- 83/4594 . . Dwell caused by clamping or blocking work during continuous operation of feed means
- 83/4597 . . With means to control magnitude of work-feed increment or work acceleration
- 83/4599 . . . Means to prevent random or excessive work feeds
- 83/4602 . . . Full stroke required of feed means
- 83/4604 . . Work feed functions as tool support
- 83/4607 . . With rotary work-carrier
- 83/461 . . With abutment to position work being fed with respect to cutter
- 83/4612 . . . With slip between positioned work and feed means
- 83/4615 . . Work guide and feed means have open side
- 83/4617 . . Work feed means modified to maintain clearance from tool
- 83/462 . . Plurality of work feed means in separate paths
- 83/4622 . . Intermittent drive type of gearing for work-feed means
- 83/4625 . . . Gearing modified to lock the work-feed means
- 83/4627 . . . Mutilated gear in mesh with gear driving work-feed means
- 83/463 . . Work-feed element contacts and moves with work
- 83/4632 . . . Comprises a work-moving gripper
- 83/4635 . . . Comprises element entering aperture in, or engaging abutment surface on, work
- 83/4637 . . With means to guide, position, or present work to work-feed means
- 83/464 . . . Means to transport work to work-feed means
- 83/4642 . . . . Including means to pick articles from pack or stack
- 83/4645 . . With means to clamp work during dwell
- 83/4647 . . One-revolution clutch in tool drive
- 83/465 . Cutting motion of tool has component in direction of moving work
- 83/4653 . . With means to initiate intermittent tool action
- 83/4656 . . . Tool moved in response to work-sensing means
- 83/4659 . . . . With means to vary "length" of product
- 83/4662 . . . . . To vary an end-product "length" [e.g., "crop cut"]
- 83/4664 . . . . With photo-electric work-sensing means
- 83/4667 . . . . With trip-switch work-sensing means
- 83/467 . . . . . To initiate feed movement of tool
- 83/4673 . . . . . And to initiate flying movement of tool
- 83/4676 . . . . With work-responsive means to initiate flying movement of tool
- 83/4679 . . . . . With flying work-gripper means related to tool carrier
- 83/4682 . . . . . With means controlling flying speed dependent on work speed
- 83/4685 . . . With means to vary frequency of initiation
- 83/4688 . . . . By orbitally traveling trigger pin[s]
- 83/4691 . . Interrelated control of tool and work-feed drives
- 83/4693 . . With means to concurrently adjust flying frequency and retain flying speed of tool
- 83/4696 . . Plural diverse flying cutters
- 83/4699 . . Combined with other type cutter
- 83/4702 . . . With slitter
- 83/4705 . . Plural separately mounted flying cutters
- 83/4708 . . With means to render cutter pass[es] ineffective
- 83/4711 . . . With means to produce "mis-cut"
- 83/4714 . . Oscillating work shifter adjacent cutter
- 83/4717 . . . Work actuated senser initiates shifter
- 83/472 . . Wire tool
- 83/4722 . . . On tool support having reciprocation parallel to direction of work-feed
- 83/4725 . . . . And rotation about axis parallel to direction of work-feed
- 83/4728 . . Tool flies by engagement with the work
- 83/4731 . . . Tool merely flexes with moving work
- 83/4734 . . Flying support or guide for work
- 83/4737 . . With tool speed regulator
- 83/474 . . With work feed speed regulator
- 83/4743 . . . With means to vary cyclically speed of work
- 83/4746 . . Spring return of tool in counterfly direction
- 83/4749 . . Tool mounted on oscillating standard
- 83/4751 . . . Both tools of couple on single standard
- 83/4754 . . . . One tool swings out of work path on return stroke
- 83/4757 . . Tool carrier shuttles rectilinearly parallel to direction of work feed
- 83/476 . . . Including means to secure work to carrier
- 83/4763 . . . Both members of cutting pair on same carrier
- 83/4766 . . Orbital motion of cutting blade
- 83/4769 . . . Work feeder mounted on tool support
- 83/4772 . . . . Gripper-type feeder
- 83/4775 . . . Tool speed varied within each orbital cycle
- 83/4778 . . . Work feed gripper carried on endless belt



- 83/478 . . . Endless belt or chain tool carrier
- 83/4783 . . . Constantly oriented tool with arcuate cutting path
- 83/4786 . . . . Cutting couple type
- 83/4789 . . . Rotatable disc-type tool on orbiting axis
- 83/4792 . . . . Idling disc
- 83/4795 . . . Rotary tool
- 83/4798 . . . . Segmented disc slitting or slotting tool
- 83/4801 . . . . With undulant cutting edge [e.g., "pinking" tool]
- 83/4804 . . . . Single tool action drive
- 83/4807 . . . . . With one-revolution drive
- 83/4809 . . . . With loop former preceding tool
- 83/4812 . . . . Compound movement of tool during tool cycle
- 83/4815 . . . . . Axial reciprocation of tool
- 83/4818 . . . . Interconnected work feeder and tool driver
- 83/4821 . . . . Side cutting helical blade
- 83/4824 . . . . With means to cause progressive transverse cutting
- 83/4827 . . . . . With helical cutter blade
- 83/483 . . . . With cooperating rotary cutter or backup
- 83/4833 . . . . . Cooperating tool axes adjustable relative to each other
- 83/4836 . . . . . With radial overlap of the cutting members
- 83/4838 . . . . . With anvil backup
- 83/4841 . . . . . With resilient anvil surface
- 83/4844 . . . . . Resiliently urged cutter or anvil member
- 83/4847 . . . . With cooperating stationary tool
- 83/485 . Cutter with timed stroke relative to moving work
- 83/487 . . Work swings about progressively cutting tool during tool stroke
- 83/489 . . Tool actuated by movable work support
- 83/49 . . Traveling cutter
- 83/492 . . With means to vary timing of tool feed
- 83/494 . . Uniform periodic tool actuation
- 83/496 . . . With periodic lateral feed of tool or work
- 83/498 . . . With plural tool stations
- 83/50 . . . Reciprocating tool
- 83/501 . . . With plural tools on a single tool support
- 83/503 . . With plural tool stations
- 83/505 . Operation controlled by means responsive to product
- 83/515 . . Actuation of tool controlled
- 83/525 . Operation controlled by detector means responsive to work
- 83/527 . . With means to control work-responsive signal system
- 83/528 . . . To delay response to work-senser
- 83/53 . . . To change length of product
- 83/531 . . With plural work-sensing means
- 83/533 . . With photo-electric work-sensing means
- 83/535 . . Release of interlock controlled
- 83/536 . . Movement of work controlled
- 83/538 . . Positioning of tool controlled
- 83/54 . . Actuation of tool controlled by work-driven means to measure work length
- 83/541 . . Actuation of tool controlled in response to work-sensing means
- 83/543 . . . Sensing means responsive to work indicium or irregularity
- 83/544 . . . With trip-switch in work-sensing mechanism
- 83/546 . Interrelated tool actuating and work guide moving means
- 83/566 . Interrelated tool actuating means and means to actuate work immobilizer
- 83/5669 . . Work clamp
- 83/5678 . . . Tool deflected by guide on tightened clamp
- 83/5687 . . . . With means to control clamping force
- 83/5696 . . . Clamp driven by reaction from tool force
- 83/5705 . . . With means providing for plural steps in clamping stroke
- 83/5715 . . . . With sequencing means
- 83/5724 . . . With provision for manual control of clamp
- 83/5733 . . . Tool or tool support on movable clamp jaw
- 83/5742 . . . Clamp moved by direct impact of tool or tool support
- 83/5751 . . . . Clamp retracted by impact of tool or tool support
- 83/576 . . . Clamp actuating means driven by tool or tool support
- 83/5769 . . . . Clamp yieldably driven by tool or tool support
- 83/5778 . . . . . With resilient drive element
- 83/5787 . . . Clamp driven by yieldable means
- 83/5796 . . . . Drive means is resilient
- 83/5805 . . . . Fluid pressure yieldable drive means
- 83/5815 . . Work-stop abutment
- 83/5824 . . . Oppositely effective abutments
- 83/5833 . . . With cyclic means to alter work-stopping position
- 83/5842 . . . Stop partakes of tool motion
- 83/5851 . . . . Carried by tool or tool support
- 83/586 . Interrelated tool actuating means and means to actuate work-mover stop
- 83/606 . Interrelated tool actuating means and guard means
- 83/613 . . Work guard
- 83/619 . . Cutter guide slot closer
- 83/626 . Operation of member controlled by means responsive to position of element remote from member [e.g., interlock]
- 83/637 . . With means to initiate operation of member
- 83/647 . With means to convey work relative to tool station
- 83/6472 . . By fluid current
- 83/6473 . . Centrifugal feed to tangential tool [e.g., "Beria" type]
- 83/6475 . . With means to regulate work-feed speed
- 83/6476 . . Including means to move work from one tool station to another
- 83/6478 . . . Tool stations angularly related
- 83/648 . . . . Work manipulated between tool stations
- 83/6481 . . . . . With static tool
- 83/6483 . . . Tool stations staggered relative to one another
- 83/6484 . . . Punch or die station
- 83/6486 . . . Notcher or pinker station
- 83/6488 . . . Work reciprocated past double-edged knife
- 83/6489 . . . Slitter station
- 83/6491 . . . . And transverse cutter station
- 83/6492 . . Plural passes of diminishing work piece through tool station
- 83/6494 . . . Work alternately, angularly re-oriented relative to tool station
- 83/6496 . . . . By additional means to engage work and orient it relative to tool station
- 83/6497 . . . . . By roller or roll-like element

83/6499	. . . Work rectilinearly reciprocated through tool station	83/6564	. . . . By pattern or templet
83/65	. . . . With means to cause or permit angular re-orientation of work about axis parallel to plane of cut	83/6566	. . . . By indexing means
83/6502	. . . . . By endless member having work-engaging teeth	83/6568	. . . With additional work-locating means on work-carrier
83/6504	. . . . . By member having work-engaging tooth	83/6569	. . With means to stop work conveyor
83/6505	. . . . . Including plural work-engaging teeth	83/6571	. . With means to store work articles
83/6507	. . . . . Fluid operated	83/6572	. . With additional means to engage work and orient it relative to tool station
83/6508	. . . . With means to cause movement of work transversely toward plane of cut	83/6574	. . . By work-stopping abutment
83/651	. . . . . By means to cause movement toward and away from plane of cut	83/6576	. . . By opposed lateral guide means
83/6512	. . . . . Actuated by movement of a member on reciprocating means	83/6577	. . . With means to adjust additional means
83/6513	. . . . . Actuated by passive means which is external to reciprocating means	83/6579	. . With means to press work to work-carrier
83/6515	. . . . . By means to define increment of movement toward plane of cut	83/658	. . With projections on work-carrier [e.g., pin wheel]
83/6516	. . . . . Interrelated with movement of reciprocating means	83/6582	. . Tool between tandem arranged work carrying means
83/6518	. . . . . By pusher mechanism	83/6584	. . Cut made parallel to direction of and during work movement
83/652	. . . . . With additional work holding or positioning means	83/6585	. . . Including nonconcurrently acting tool
83/6521	. . . . . Work holding means includes actuator	83/6587	. . . Including plural, laterally spaced tools
83/6523	. . . . . Including plural, simultaneously acting pusher elements	83/6588	. . . . Tools mounted on common tool support
83/6524	. . . . . Independently adjustable	83/659	. . . . . Tools axially shiftable on support
83/6526	. . . . . With additional means to retract elements	83/6592	. . . Interrelated work-conveying and tool-moving means
83/6528	. . . . . Power derived from movement of reciprocating means	83/6593	. . . . With reciprocating tool [e.g., "jigsaw" type]
83/6529	. . . . . Power derived from fluid pressure means	83/6595	. . . . With means to move tool laterally of feed direction during cutting
83/6531	. . . . . Movement by screw means	83/6596	. . . . With means to effect difference between work speed and tool speed
83/6532	. . . . . Movement by rack and pinion or pawl	83/6598	. . . . Tool co-axial with work-conveying means
83/6534	. . . . . With handle	83/66	. . . With means to press work to tool
83/6536	. . . . . By carriage	83/6601	. . . Bevel cutting tool
83/6537	. . . . By cable or belt drive	83/6603	. . . Tool shiftable relative to work-conveying means
83/6539	. . With means for transverse positioning of work on a moving conveyor	83/6604	. . . Tool in contact with surface of work-conveying means
83/654	. . With work-constraining means on work conveyor [i.e., "work-carrier"]	83/6606	. . . Tool between laterally spaced work-conveying means
83/6542	. . . Plural means to constrain plural work pieces	83/6608	. . . By rectilinearly moving work carriage
83/6544	. . . . End of work protrudes through aperture in carrier	83/6609	. . . . Angularly adjustable
83/6545	. . . With means to guide work-carrier in nonrectilinear path	83/6611	. . . . . Having positive adjustment stop; e.g., link
83/6547	. . . . About axis fixed relative to tool station	83/6612	. . . . . Having position indicating means
83/6548	. . . . Infeed	83/6614	. . . . . Pusher engaging rear surface of work
83/655	. . . . . About vertical axis	83/6616	. . . . . Having means to actuate pusher
83/6552	. . . . . Cut normal to axis	83/6617	. . . . . Hydraulic or pneumatic means
83/6553	. . . . . Work-guide tube	83/6619	. . . . . Gear or pulley actuated pusher
83/6555	. . . . . Cut normal to axis	83/662	. . . . . Lever, cam, or link actuated pusher
83/6556	. . . . . Oscillating work-carrier	83/6622	. . . . Having means to actuate carriage
83/6558	. . . . . Multiple cutters	83/6624	. . . . . Hydraulic or pneumatic means
83/656	. . . . . Coaxial rotary cutters	83/6625	. . . . . Gear or pulley
83/6561	. . . . . Work stationary during cut	83/6627	. . . . . Adapted to place tension on flacid member
83/6563	. . . With means to orient or position work carrier relative to tool station	83/6628	. . . . . Lever, cam, or link means
		83/663	. . . . On or attached to vehicle
		83/6632	. . . . Supported for movement at one side of tool only
		83/6633	. . . By work moving flexible chain or conveyor
		83/6635	. . . By feed roller
		83/6636	. . . . Pinch rollers
		83/6638	. . . Unattached manual work pusher
		83/664	. . Roller
		83/6641	. . . Plural independent rollers for feed of plural distinct work

83/6643	. . . Shaped to conform to work	83/701	. . . . Pivot moves to and fro in rectilinear path
83/6644	. . . With work-supplying reel	83/7015	. . Having uniplanar compound motion
83/6646	. . . . And provision for selecting feed length	83/702	. . . By plural arcuately oscillating carrier
83/6648	. . . Continuous conveying during, cutting; e.g., straw cutting	83/7025	. . . Constantly oriented tool travelling in orbit
83/6649	. . . Supporting work at cutting station	83/703	. . . Tool rocks cutting reciprocations
83/6651	. . . . Comprising part of cutting station	83/7035	. . . . One tool reciprocates along fixed guide element
83/6652	. . . Tool and feed roller actuated by common handle	83/704	. . With work-support and means to vary relationship between tool and work support
83/6654	. . . Tool and roller on common movable support	83/7045	. . Arcuately oscillating tool carried on single pivot
83/6656	. . Rectilinear movement only	83/705	. . With means to support tool at opposite ends
83/6657	. . . Tool opposing pusher	83/7055	. . . And apply drive force to both ends of tool
83/6659	. . . . Hydraulically or pneumatically actuated	83/706	. . . . By flexible drive means
83/666	. . . . Screw actuated	83/7065	. . . . By reciprocating rigid support
83/6662	. . . . Gear or pulley actuated	83/707	. By endless band or chain knife
83/6664	. . . . Lever, cam, or link actuated	83/7076	. . With programming means
83/6665	. . . . Spring or gravity urged	83/7083	. . With cutter other than endlessly orbiting type
83/6667	. . Work carrier rotates about axis fixed relative to tool station	83/7089	. . Including contiguous oppositely moving knife portions
83/6668	. . Interrelated work-feeding means and tool-moving means	83/7095	. . With means to change to non-endlessly orbiting cutter
83/667	. Tool carrier or guide affixed to work during cutting	83/7101	. . With tool in-feed
83/674	. . By flexible work-engaging member	83/7108	. . . Including ground-traversing vehicle
83/68	. . Entirely work supported	83/7114	. . . Including means to permit arcuate in-feed motion
83/687	. By tool reciprocable along elongated edge	83/712	. . . . Including means to relocate path of in-feed motion
83/6875	. . With means permitting tool to be rotatably adjusted about its cutting edge during cutting	83/7126	. . . . . Angular relative previous path
83/688	. . With dynamic balancing or shock absorbing means	83/7133	. . . By gravity
83/6885	. . With tool of another type	83/7139	. . . . With fluid in-feed regulating means
83/689	. . With means to change to other type tool	83/7145	. . . By motor-driven mechanism
83/6895	. . Plural reciprocable tools	83/7151	. . With scale or indicator
83/69	. . Stored energy furnishes drive in one direction	83/7158	. . Including plural cutting zones
83/6905	. . With tool in-feed	83/7164	. . . With adjustment of separation between zones
83/691	. . . And auxiliary means for promoting or retarding tool in-feed	83/717	. . . . By lever means
83/6915	. . . . By yieldable means	83/7176	. . . . By screw-threaded means
83/692	. . . . And means to vary tool in-feed speed	83/7183	. . . Including "figure-8" band
83/6925	. . . . With interrelated tool actuating and in-feed means	83/7189	. . . Comprising plural bands
83/693	. . . Of rectilinearly reciprocating tool	83/7195	. . Including means to adjust relationship between band and work-support surface
83/6935	. . . . With in-feed by pivoting carrier	83/7201	. . . By varying angle between band and work-support surface
83/694	. . . And means to prevent tool in-feed	83/7208	. . . . By tilting band carrier
83/6945	. . . With passive means to guide tool directly	83/7214	. . . . . About point of intersection of cutting span and work-support surface
83/695	. . . . By plural opposed guide surfaces	83/722	. . . By varying distance between band and work-support surface
83/6955	. . . . . Having relative adjustment between guide surfaces	83/7226	. . With means to guard the tension
83/696	. . . . . With relative adjustment between guide and work or work-support	83/7233	. . . Including means to retard undriven pulley or sprocket
83/6965	. . . . . By or with additional movable work-support portion	83/7239	. . . With means to vary distance between pulley or sprocket axes
83/697	. . . . . By rotation about an axis parallel to the work-support surface	83/7245	. . . . And angular relationship of axes
83/6975	. . . . . By rotation about an axis perpendicular to the work-support surface	83/7251	. . . . Including means to yieldably bias pulley
83/698	. . . Including means to cause nonrectilinear tool infeed	83/7258	. . . . . By fluid means
83/6985	. . . Of arcuately oscillating tool	83/7264	. . With special blade guide means
83/699	. . . Of tool carrier on single moving pivot	83/727	. With means to guide moving work
83/6995	. . . . Pivot moves in closed loop	83/728	. . In pivotal or arcuate movement
83/70	. . . . Pivot moves to and fro in arcuate path	83/73	. . Guide fixed to or integral with stationary tool element
83/7005	. . . . . Axis of arcuate path moves during cutting	83/731	. . . Tool element cooperates with a second tool
		83/732	. . With guard

83/734	. . With attachment or operative connection to tool carrier	83/7705	. . . . Adjustable angular relationship
83/735	. . With attachment or operative connection to passive tool guide	83/7709	. . . Unidirectionally movable work support
83/736	. . Guide cooperates with template or straight edge secured to work	83/7713	. . . . With opposed work-presser
83/738	. . Curved or deflecting guide	83/7718	. . . . . Presser co-axial with tool
83/739	. . Positively confines or otherwise determines path of work	83/7722	. . . Support and tool relatively adjustable
83/74	. . Adapted to permit maneuvering of work at tool zone	83/7726	. . . . By movement of the tool
83/741	. . With movable or yieldable guide element	83/773	. . . Work-support includes passageway for tool [e.g., slotted table]
83/743	. . . Opposed to work-supporting surface	83/7734	. . With guard for tool
83/744	. . Plural guide elements	83/7738	. . Optional tool pairs alternatively operative
83/745	. . . Opposed	83/7743	. . . One element of tool pairs common to all pairs
83/747	. . Opposed to work-supporting surface	83/7747	. . With means to permit replacement of tool
83/748	. With work immobilizer	83/7751	. . Means to separate elements of tool pair
83/7487	. . Means to clamp work	83/7755	. . Carrier for rotatable tool movable during cutting
83/7493	. . . Combined with, peculiarly related to, other element	83/7759	. . . Unicyclic movement
83/75	. . . . With or to tool guide	83/7763	. . . Tool carrier reciprocable rectilinearly
83/7507	. . . . Guide for traveling cutter	83/7768	. . . . With means to adjust path of reciprocation
83/7513	. . . . Tool or tool support on movable clamp jaw	83/7772	. . . . . Angular relative to previous path
83/752	. . . With means providing for plural steps in clamping stroke	83/7776	. . . . With means to reciprocate carrier
83/7527	. . . With equalizer or self-aligning jaw	83/778	. . . . . And means to rotate tool
83/7533	. . . With biasing or counterbalancing means	83/7784	. . . . With means to rotate tool
83/754	. . . Clamp driven by yieldable means	83/7788	. . . Tool carrier oscillated or rotated
83/7547	. . . Liquid pressure actuating means	83/7793	. . Means to rotate or oscillate tool
83/7553	. . . Including means to retain clamp jaw in position	83/7797	. . . Including means to rotate both elements of tool pair
83/756	. . . Self-locking drive means	83/7801	. . . . Including means to rotate both elements at different speeds
83/7567	. . . Manually actuated drive means	83/7805	. . . . . And means to change speed of rotation
83/7573	. . . Including clamping face of specific structure	83/7809	. . Tool pair comprises rotatable tools
83/758	. . . With means to adjust clamp position or stroke	83/7813	. . . Tool pair elements angularly related
83/7587	. . Gapped work-constrainer	83/7818	. . . . Elements of tool pair angularly adjustable relative to each other
83/7593	. . Work-stop abutment	83/7822	. . . Tool pair axially shiftable
83/76	. . . With scale or indicator	83/7826	. . . . With shifting mechanism for at least one element of tool pair
83/7607	. . . Normal to plane of cut	83/783	. . . Tool pair comprises contacting overlapped discs
83/7613	. . . . Adjustable	83/7834	. . . . With means to effect axial pressure on pair
83/762	. . . . . Angularly relative to plane of cut; e.g., miter	83/7838	. . . . . With means to change axial pressure
83/7627	. . . . With traversing cutter guide; e.g., cut-off saw	83/7843	. . . . With means to change overlap of discs
83/7633	. . . Collapsible	83/7847	. . . Tool element axially shiftable
83/764	. . . Retractable	83/7851	. . . Tool pair comprises disc and cylindrical anvil
83/7647	. . . Adjustable	83/7855	. . . . With adjustable means to urge tool elements together
83/7653	. . . . Having curved cutting edge to make arcuate cut, plural nonaligned intersecting cutting edges, or spaced punches	83/7859	. . . Elements of tool pair adjustably spaced
83/766	. . . . . Spaced edges	83/7863	. . Tool pair comprises rotatable tool and nonrotatable tool
83/7667	. . . Having curved cutting edge to make arcuate cut, plural nonaligned intersecting cutting edges, or spaced punches	83/7868	. . Tool element selectively operative
83/7673	. . . . Spaced edges	83/7872	. . Tool element mounted for adjustment
83/768	. Rotatable disc tool pair or tool and carrier	83/7876	. . . Plural, axially spaced tool elements
83/7684	. . With means to support work relative to tool[s]	83/788	. Tool pair comprises rotatable anvil and fixed-type tool
83/7688	. . . Plural tool elements successively actuated at same station	83/793	. . Anvil has motion in addition to rotation [i.e., traveling anvil]
83/7693	. . . Tool moved relative to work-support during cutting	83/798	. . . Additional motion is along fixed arcuate path
83/7697	. . . . Tool angularly adjustable relative to work-support	83/803	. . . With plural anvils
83/7701	. . . Supporting surface and tool axis angularly related	83/808	. Two tool pairs, driver for one pair moves relative to driver for other pair
		83/811	. . One tool support acts as driver for other
		83/814	. . . Punch and shear
		83/817	. . With variable spacing between tool pairs
		83/819	. . . With intermediate work support

83/822	. . Punch and shear	83/8733	. . Tool movable to cooperate selectively with one of a plurality of mating tools
83/825	. . Successively acting	83/8735	. . With means providing for plural steps in tool stroke
83/828	. With illuminating or viewing means for work	83/8736	. . Sequential cutting motions
83/839	. . Mirror or lens	83/8737	. . With tool positioning means synchronized with cutting stroke
83/849	. With signal, scale, or indicator	83/8739	. . . Anvil moves into and out of operative position
83/85	. . Signal; e.g., alarm	83/874	. . . Straight line positioning
83/851	. . Indicator comprising work or product	83/8742	. . Tool pair positionable as a unit
83/852	. . Responsive to force	83/8743	. . . Straight line positioning
83/853	. . Indicates tool position	83/8745	. . Tool and anvil relatively positionable
83/855	. . . Relative to another element	83/8746	. . . Straight line
83/856	. . . . To work-engaging member	83/8748	. . Tool displaceable to inactive position [e.g., for work loading]
83/857	. . . . . Calibrated scale or indicator	83/8749	. . . By pivotal motion
83/858	. . . . . Indicates dimension of work being cut	83/875	. . With templet surface following tool
83/859	. . . . . Dynamic indicator	83/8752	. . Tool moves work to and against cooperating tool
83/86	. . . . . To another tool assembly	83/8753	. . . With means to clamp or bind work to moving tool
83/861	. . . . . To cooperating tool	83/8755	. . . One tool resiliently mounted or biased
83/862	. . . . . To another component of tool assembly	83/8756	. . . Work forced through tool aperture or between spaced cooperating tools
83/863	. . . . . Adjustable guide for traversing tool; e.g., radial saw guide or miter saw guide	83/8758	. . . Manually actuated work-moving tool
83/865	. . Indicates work characteristic	83/8759	. . With means to connect or disconnect tool and its drive
83/866	. . Indicates wear	83/8761	. . . Continuously moving drive means [e.g., "gag"]
83/867	. . Bubble level	83/8762	. . . . Hand actuated connecting means
83/868	. . Counter	83/8763	. . Convertible from tool path to another or from implement to machine
83/869	. Means to drive or to guide tool	83/8765	. . Magnet- or solenoid-actuated tool
83/8691	. . Unicyclic	83/8766	. . . Tool movement modifies actuating circuit
83/8693	. . . With adjustable stopping point or tool	83/8768	. . . Solenoid core is tool or tool support
83/8694	. . . With brake or blocking means	83/8769	. . Cutting tool operative in opposite directions of travel
83/8696	. . Means to change datum plane of tool or tool presser stroke	83/8771	. . Motion direction of tool influenced by resistance of work
83/8697	. . . For disabling of continuously actuated cutter	83/8772	. . One tool edge of tool pair encompasses work [e.g., wire cutter]
83/8699	. . . With adjustable stop	83/8773	. . Bevel or miter cut
83/87	. . . By varying length of tool stroke	83/8775	. . With tool tensioning means
83/8702	. . Clicker die press	83/8776	. . Constantly urged tool or tool support [e.g., spring biased]
83/8703	. . . With die handling attachment	83/8778	. . . Ledger blade
83/8704	. . . With reciprocating presser	83/8779	. . . Oscillating tool urged axially
83/8706	. . . . Laterally movable to selective operative positions	83/8781	. . . . And urged about pivotal axis
83/8707	. . . . . Pivotal or revolving only	83/8782	. . . Stored energy furnishes cutting force
83/8709	. . . . . With means to impart, limit, or control pivotal motion of presser	83/8784	. . . . With reset
83/871	. . . . . Interrelated with presser reciprocating means	83/8785	. . . Through return [noncutting] stroke
83/8712	. . . . . With means to mount presser for oscillation about column	83/8786	. . . . Oscillating tool
83/8713	. . . . With adjustable bed block	83/8788	. . Tool return mechanism separate from tool advance mechanism
83/8714	. . . . Including presser member reinforcing, or flexure compensating, means	83/8789	. . With simple revolving motion only
83/8716	. . . . With manually actuated control apparatus for reciprocation of presser member	83/8791	. . . Tool mounted on radial face of rotor
83/8717	. . By deforming resilient tool or tool support	83/8792	. . . Variable speed during one revolution [e.g., intermittent]
83/8719	. . With transmission yieldable on overload	83/8794	. . . Revolving tool moves through recess in work holder or cooperating tool
83/872	. . With guard means	83/8795	. . . . Progressively cutting
83/8722	. . . Static	83/8796	. . . Progressively cutting
83/8723	. . . Adjustable	83/8798	. . With simple oscillating motion only
83/8725	. . Including movable, tool protecting, cushioning sheet	83/8799	. . . Plural tool pairs
83/8726	. . Single tool with plural selective driving means		
83/8727	. . Plural tools selectively engageable with single drive		
83/8729	. . . Predetermined sequence of selection		
83/873	. . . Of paired tools		
83/8732	. . . Turret of tools		

83/8801	. . . . Plural tools on single oscillating arm [i.e., tool holder]	83/8874	. . Uniplanar compound motion
83/8802	. . . And means to move cooperating cutter member	83/8876	. . . Reciprocating plus work approach [e.g., saw type]
83/8804	. . . Tool driver movable relative to tool support	83/8877	. . . With gyratory drive
83/8805	. . . . Cam or eccentric revolving about fixed axis	83/8878	. . Guide
83/8807	. . . . Gear or ratchet pawl drives toothed tool support	83/888	. . . With nonrigidly positioned member
83/8808	. . . . Toggle links, one link pivoted to tool support	83/8881	. . . With anti-friction means
83/8809	. . . . Fixed axis lever	83/8883	. . . . Roller with peripheral flange or groove
83/8811	. . . . . Adjustable mechanical advantage	83/8884	. . . . Disc
83/8812	. . . Cutting edge in radial plane	83/8886	. . . With means to vary space between opposed members
83/8814	. . . . Adjustable	83/8887	. . . . . By rectilinear movement of member
83/8815	. . . . With guide means for the cutting member	83/8889	. . . With means to adjust position
83/8817	. . . Axially extending cutting edge	83/889	. Tool with either work holder or means to hold work supply
83/8818	. . . . Axially progressing cut	83/896	. . Rotatable wound package supply
83/882	. . . . Adjustable	83/902	. . . Plural supply sources
83/8821	. . With simple rectilinear reciprocating motion only	83/909	. Cutter assemblage or cutter element therefor [e.g., chain saw chain]
83/8822	. . . Edge-to-edge of sheet or web [e.g., traveling cutter]	83/913	. . With means permitting removal of cutter element
83/8824	. . . With provision for dynamic balance	83/917	. . Having diverse cutting elements
83/8825	. . . With lost motion in tool drive	83/921	. . . And noncutting depth gauge
83/8827	. . . Means to vary force on, or speed of, tool during stroke	83/925	. . Having noncutting depth gauge
83/8828	. . . Plural tools with same drive means	83/929	. Tool or tool with support
83/883	. . . . Tools positioned by template	83/9292	. . Wire tool
83/8831	. . . . Plural distinct cutting edges on same support	83/9295	. . Work supported tool [e.g., clicker die]
83/8832	. . . . . Concentrically mounted	83/9297	. . . With product ejection facilitator
83/8834	. . . . . Successively acting	83/93	. . . With tool manipulating portion
83/8835	. . . And means to move cooperating cutting member	83/9302	. . . With tool positioning abutment
83/8837	. . . With application of force to opposite ends of tool supporting crosshead	83/9304	. . . To sever article from work and cut within article
83/8838	. . . . By relatively movable fixed axis levers	83/9307	. . . With tool contour adjusting means
83/884	. . . . By connecting rod articulated with tool support	83/9309	. . Anvil
83/8841	. . . Tool driver movable relative to tool support	83/9312	. . . Rotatable type
83/8843	. . . . Cam or eccentric revolving about fixed axis	83/9314	. . Pointed perforators
83/8844	. . . . Gear actuated tool support	83/9317	. . Endless band or belt type
83/8845	. . . . Toggle links, one link pivoted to tool support	83/9319	. . Toothed blade or tooth therefor
83/8847	. . . . Screw actuated tool support	83/9321	. . . With means to vary tooth position
83/8848	. . . . Connecting rod articulated with tool support	83/9324	. . . With additional cutting means
83/885	. . . . Fixed axis lever	83/9326	. . . Plural separable sections
83/8851	. . . . . Adjustable mechanical advantage	83/9329	. . . . Tooth separable from blade
83/8853	. . . . Including details of guide for tool or tool support	83/9331	. . . . . By independent connecting element
83/8854	. . . Progressively cutting	83/9333	. . . . . Transversely movable
83/8855	. . . With spaced guide pins [e.g., die set leader pins]	83/9336	. . . . . Arcuately movable
83/8857	. . . With inclined guides	83/9338	. . . . . . With additional element to prevent movement of connecting element
83/8858	. . . Fluid pressure actuated	83/9341	. . . . . Rectilinearly movable
83/886	. . . . Utilizing fluid amplifier	83/9343	. . . . . By deformation
83/8861	. . . . Diaphragm	83/9346	. . . Uniformly varying teeth or tooth spacing
83/8863	. . . . Explosive fluid	83/9348	. . . Undulating tooth arrangement
83/8864	. . . . Plural cylinders	83/935	. . . Plural tooth groups
83/8866	. . . . Offset cutter	83/9353	. . . . Including raker tooth group
83/8867	. . . With means to adjust tool position on tool holder	83/9355	. . . . Including intermediate raker tooth
83/8868	. . . . Adjustably mounted cooperating tool	83/9358	. . . Series of dissimilar teeth
83/887	. . Parallel draw-cut [e.g., translatory]	83/936	. . . Series of allochiral teeth
83/8871	. . . Link suspension	83/9362	. . . Teeth having transversely curved cutting edge
83/8873	. . Straight line motion combined with tilting in plane of stroke	83/9365	. . . Teeth having cutting edge parallel to blade surface
		83/9367	. . . Teeth having cutting edge perpendicular to blade surface
		83/937	. . Tool mounted by and between spaced arms
		83/9372	. . Rotatable type

83/9374	. . .	With spacer interposed between shaft-mounted tools
83/9377	. . .	Mounting of tool about rod-type shaft
83/9379	. . . .	At end of shaft
83/9382	. . .	Punching plus nonpunching tool
83/9384	. . .	Notching plus nonnotching tool
83/9387	. . .	Punching tool
83/9389	. . . .	Shear type
83/9391	. . .	Notching tool
83/9394	. . .	Helical tool
83/9396	. . .	Shear type
83/9399	. . . .	Cutting edge wholly parallel to axis of rotation
83/9401	. . . .	Cutting edge wholly normal to axis of rotation
83/9403	. . .	Disc type
83/9406	. . .	Radially adjustable tool
83/9408	. . .	Spaced cut forming tool
83/9411	. .	Cutting couple type
83/9413	. . .	Spiral type cutter
83/9416	. . .	To punch and cut punched article
83/9418	. . .	Punching plus nonpunching tool
83/942	. . .	Notching plus nonnotching tool
83/9423	. . .	Punching tool
83/9425	. . . .	Tool pair
83/9428	. . . .	Shear-type male tool
83/943	. . . . .	Multiple punchings
83/9432	. . . . .	Plural spaced successively operative shearing portions
83/9435	. . . . .	Progressive cutting
83/9437	. . . .	Shear-type female tool
83/944	. . . .	Multiple punchings
83/9442	. . .	Notching tool
83/9444	. . . .	Shear type
83/9447	. . .	Shear type
83/9449	. . .	Spaced cut forming tool
83/9452	. . .	With tool contour adjusting means
83/9454	. .	Reciprocable type
83/9457	. .	Joint or connection
83/9459	. . .	Magnetic connection
83/9461	. . .	Resiliently biased connection
83/9464	. . .	For rotary tool
83/9466	. . . .	Flexible sleeve-like tool
83/9469	. . . .	Adjustable
83/9471	. . . . .	Rectilinearly
83/9473	. . .	For rectilinearly reciprocating tool
83/9476	. . . .	Tool is single element with continuous cutting edge [e.g., punch, etc.]
83/9478	. . . .	Tool is single element reciprocable generally perpendicularly to elongate cutting edge [e.g., shear, etc.]
83/9481	. . . .	Tool is single element reciprocable along elongate cutting edge [e.g., saw blade, etc.]
83/9483	. . . .	Adjustable
83/9486	. . . . .	Rectilinearly
83/9488	. . .	Adjustable
83/949	. . . .	Rectilinearly
83/9493	. .	Stationary cutter
83/9495	. . .	Nonparallel cutting edges
83/9498	. . .	Parallel cutting edges
83/95	. .	Machine frame
83/96	. .	Guard

83/97 . Miscellaneous

#### **Former US Class 117 Series**

<b>117/00</b>	<b>Single-crystal, oriented-crystal, and epitaxy growth processes; non-coating apparatus therefor</b>
117/10	. Apparatus
117/1004	. . with means for measuring, testing, or sensing
117/1008	. . . with responsive control means
117/1012	. . . with a window or port for visual observation or examination
117/1016	. . with means for treating single-crystal [e.g., heat treating]
117/102	. . for forming a platelet shape or a small diameter, elongate, generally cylindrical shape [e.g., whisker, fiber, needle, filament]
117/1024	. . for crystallization from liquid or supercritical state
117/1028	. . . Crucibleless apparatus having means providing movement of discrete droplets or solid particles to thin-film precursor [e.g., Verneuil method]
117/1032	. . . Seed pulling
117/1036	. . . . including solid member shaping means other than seed or product [e.g., EDFG die]
117/104	. . . . . Means for forming a hollow structure [e.g., tube, polygon]
117/1044	. . . . . including means forming a flat shape [e.g., ribbon]
117/1048	. . . . . Pulling includes a horizontal component
117/1052	. . . . including a sectioned crucible [e.g., double crucible, baffle]
117/1056	. . . . including details of precursor replenishment
117/106	. . . . including sealing means details
117/1064	. . . . including a fully-sealed or vacuum-maintained crystallization chamber [e.g., ampoule]
117/1068	. . . . including heating or cooling details [e.g., shield configuration]
117/1072	. . . . including details of means providing product movement [e.g., shaft guides, servo means]
117/1076	. . . having means for producing a moving solid-liquid-solid zone
117/108	. . . . Including a solid member other than seed or product contacting the liquid [e.g., crucible, immersed heating element]
117/1084	. . . . having details of a stabilizing feature
117/1088	. . . . including heating or cooling details
117/1092	. . . Shape defined by a solid member other than seed or product [e.g., Bridgman-Stockbarger]
117/1096	. . . including pressurized crystallization means [e.g., hydrothermal]

#### **Former US Class 137 series**

<b>137/00</b>	<b>Fluid handling</b>
137/0318	. Processes
137/0324	. . With control of flow by a condition or characteristic of a fluid
137/0329	. . . Mixing of plural fluids of diverse characteristics or conditions
137/0335	. . . . Controlled by consistency of mixture
137/034	. . . . Controlled by conductivity of mixture
137/0346	. . . . Controlled by heat of combustion of mixture
137/0352	. . . . Controlled by pressure
137/0357	. . . For producing uniform flow

- 137/0363 . . . For producing proportionate flow
- 137/0368 . . . By speed of fluid
- 137/0374 . . . For regulating boiler feed water level
- 137/0379 . . . By fluid pressure
- 137/0385 . . Carbonated beverage handling processes
- 137/0391 . . Affecting flow by the addition of material or energy
- 137/0396 . . Involving pressure control
- 137/0402 . . Cleaning, repairing, or assembling
- 137/0407 . . . Repairing or assembling hydrant [e.g., fireplug, etc.]
- 137/0413 . . . Gas or water meter repairing or assembling
- 137/0419 . . . Fluid cleaning or flushing
- 137/0424 . . . . Liquid cleaning or flushing
- 137/043 . . . . . Valve or valve seat cleaning
- 137/0435 . . . Mechanical cleaning [e.g., pig, etc.]
- 137/0441 . . . Repairing, securing, replacing, or servicing pipe joint, valve, or tank
- 137/0447 . . . . Including joint or coupling
- 137/0452 . . . . Detecting or repairing leak
- 137/0458 . . . . Tapping pipe, keg, or tank
- 137/0463 . . . . . Particular aperture forming means
- 137/0469 . . . . . Cutter or cutting tool
- 137/0475 . . . . . Having deformable or inflatable means
- 137/048 . . . . With content loading or unloading [e.g., dispensing, discharge assistant, etc.]
- 137/0486 . . . . Specific valve or valve element mounting or repairing
- 137/0491 . . . Valve or valve element assembling, disassembling, or replacing
- 137/0497 . . . . Fluid actuated or retarded
- 137/0502 . . . . Multi way valve
- 137/0508 . . . . Ball valve or rotary ball valve
- 137/0514 . . . . Gate valve
- 137/0519 . . . . Plug valve
- 137/0525 . . . . Butterfly valve
- 137/053 . . . . Float valve
- 137/0536 . . Highspeed fluid intake means [e.g., jet engine intake]
- 137/0645 . . With condition responsive control means
- 137/0753 . Control by change of position or inertia of system
- 137/0777 . . With second control
- 137/0801 . . Position relative body of water [e.g., marine governors]
- 137/0826 . . . Float controlled
- 137/085 . . . Pressure or head controlled
- 137/0874 . . Vent opening or closing on tipping container
- 137/0898 . . By shifting of liquid level
- 137/0923 . . By pendulum or swinging member
- 137/0947 . . . With servo connection to valve
- 137/0971 . Speed responsive valve control
- 137/0989 . . Acceleration responsive valve control
- 137/1007 . . With manual valve control
- 137/1026 . . Speed change and excess speed valve control
- 137/1044 . . With other condition responsive valve control
- 137/1062 . . . Governor drive failure responsive
- 137/108 . . Centrifugal mass type [exclusive of liquid]
- 137/1098 . . . With multiple valves
- 137/1116 . . . Periodically actuated valve
- 137/1135 . . . Rotating valve and rotating governor
- 137/1153 . . . Excess speed responsive
- 137/1171 . . . With fluid servo-motor
- 137/1189 . . Freeze condition responsive safety systems
- 137/1244 . . With freeze waste
- 137/1298 . . Stop and waste
- 137/1353 . . Low temperature responsive drains
- 137/1407 . . Combustion failure responsive fuel safety cut-off for burners
- 137/1516 . . . Thermo-electric
- 137/1624 . . Destructible or deformable element controlled
- 137/1632 . . . Destructible element
- 137/1639 . . . . Combined destructible and fusible element
- 137/1647 . . . . Explosive actuation
- 137/1654 . . . . Separable valve coupling or conduit
- 137/1662 . . . . . Tensile or sheer pin or bolt
- 137/1669 . . . . Tensile or sheer pin or bolt
- 137/1677 . . . . . Pressure causes pin or bolt to destruct
- 137/1684 . . . With alarm or indicator
- 137/1692 . . . Rupture disc
- 137/1699 . . . . Means for holding entire disc after rupture
- 137/1707 . . . . Disc burst after destruction of additional element
- 137/1714 . . . . . Direct pressure causes disc to burst
- 137/1722 . . . . . Two-way rupture disc
- 137/1729 . . . . . Dome shape
- 137/1737 . . . . . Reverse buckling
- 137/1744 . . . . . Specific weakening point
- 137/1752 . . . . Integral disc assembly
- 137/1759 . . . . Knife or cutter causes disc to break
- 137/1767 . . . . . Movable knife or cutter
- 137/1774 . . . With counterbalancing element
- 137/1782 . . . Frangible element returns pressure responsive valve
- 137/1789 . . . Having pressure responsive valve
- 137/1797 . . Heat destructible or fusible
- 137/1804 . . . With second sensing means
- 137/1812 . . . In fluid flow path
- 137/1819 . . . Safety cut-off
- 137/1827 . . . . With heater for destructible or fusible element
- 137/1834 . . . . . With external closing means
- 137/1842 . . Ambient condition change responsive
- 137/1866 . . For controlling soil irrigation
- 137/189 . . . Soil moisture sensing
- 137/1915 . . Burner gas cutoff
- 137/1939 . . Atmospheric
- 137/1963 . . . Temperature
- 137/1987 . . . . With additional diverse control
- 137/2012 . . . Pressure
- 137/2036 . . Underwater
- 137/206 . . Flow affected by fluid contact, energy field or coanda effect [e.g., pure fluid device or system]
- 137/2065 . . Responsive to condition external of system
- 137/2071 . . . And causing change or correction of sensed condition
- 137/2076 . . Utilizing diverse fluids
- 137/2082 . . Utilizing particular fluid
- 137/2087 . . Means to cause rotational flow of fluid [e.g., vortex generator]
- 137/2093 . . . Plural vortex generators
- 137/2098 . . . Vortex generator as control for system
- 137/2104 . . . Vortex generator in interaction chamber of device



137/2109	. . . By tangential input to axial output [e.g., vortex amplifier]	137/2524	. . . . Flow dividers [e.g., reversely acting controls]
137/2115	. . . . With means to vary input or output of device	137/2526	. . . . Main line flow displaces or entrains material from reservoir
137/212	. . System comprising plural fluidic devices or stages	137/2529	. . . . With electrical controller
137/2125	. . . Plural power inputs [e.g., parallel inputs]	137/2531	. . . Flow displacement element actuates electrical controller
137/2131	. . . . Variable or different-value power inputs	137/2534	. . . Liquid level response
137/2136	. . . . Pulsating power input and continuous-flow power input	137/2536	. . . . Float controlled weir or valve
137/2142	. . . . With variable or selectable source of control-input signal	137/2539	. . . . Swinging outlet pipe controller
137/2147	. . . . To cascaded plural devices	137/2541	. . . With measuring type discharge assistant
137/2153	. . . . With feedback passage[s] between devices of cascade	137/2544	. . Supply and exhaust type
137/2158	. . . . With pulsed control-input signal	137/2546	. . . Vacuum or suction pulsator type [e.g., milking machine]
137/2164	. . Plural power inputs to single device	137/2549	. . . . With trip linkage or snap action
137/2169	. . . Intersecting at interaction region [e.g., comparator]	137/2552	. . . . With pulsation responsive pilot valve
137/2174	. . . . Co-linear, oppositely-directed power inputs [e.g., impact modulator]	137/2554	. . . Reversing or 4-way valve systems
137/218	. . Means to regulate or vary operation of device	137/2557	. . . Waste responsive to flow stoppage
137/2185	. . . To vary frequency of pulses or oscillations	137/2559	. . Self-controlled branched flow systems
137/2191	. . . By non-fluid energy field affecting input [e.g., transducer]	137/2562	. . . Dividing and recombining
137/2196	. . . . Acoustical or thermal energy	137/2564	. . . Plural inflows
137/2202	. . . By movable element	137/2567	. . . . Alternate or successive inflows
137/2207	. . . . Operating at timed intervals [e.g., to produce pulses]	137/2569	. . . . Control by depletion of source
137/2213	. . . . Electrically-actuated element [e.g., electro-mechanical transducer]	137/2572	. . . . One inflow supplements another
137/2218	. . . . Means [e.g., valve] in control input	137/2574	. . . Bypass or relief controlled by main line fluid condition
137/2224	. . Structure of body of device	137/2577	. . . . Liquid level responsive
137/2229	. . Device including passages having V over T configuration	137/2579	. . . . Flow rate responsive
137/2234	. . . And feedback passage[s] or path[s]	137/2582	. . . . Including controlling main line flow
137/224	. . . With particular characteristics of control input	137/2584	. . . . Relief or bypass closes as main opens
137/2245	. . . . Multiple control-input passages	137/2587	. . . . Bypass or relief valve biased open
137/2251	. . . And multiple or joined power-outlet passages	137/2589	. . . . Pilot valve operated
137/2256	. . . And enlarged interaction chamber	137/2592	. . . . Carried choke
137/2262	. . . And vent passage[s]	137/2594	. . . . Choke
137/2267	. . Device including passages having V over gamma configuration	137/2597	. . . . Variable choke resistance
137/2273	. . Device including linearly-aligned power stream emitter and power stream collector	137/2599	. . . . Venturi
137/2278	. Pressure modulating relays or followers	137/2602	. . . . Flapper
137/2322	. . Jet control type	137/2605	. . . . Pressure responsive
137/2365	. . Plural series units	137/2607	. . . . With pressure reducing inlet valve
137/2409	. . With counter-balancing pressure feedback to the modulating device	137/261	. . . . Relief port through common sensing means
137/2452	. . . With counter-counter balancing pressure feedback	137/2612	. . . . Common sensor for both bypass or relief valve and other branch valve
137/2496	. Self-proportioning or correlating systems	137/2615	. . . . Bypass or relief valve opens as other branch valve closes
137/2499	. . Mixture condition maintaining or sensing	137/2617	. . . . Bypass or relief valve biased open
137/2501	. . . Dividing and recombining flow	137/262	. . . . Increasing pressure progressively closes then reopens by-pass or relief valve
137/2504	. . . By specific gravity	137/2622	. . . . Bypass or relief valve responsive to pressure downstream of outlet valve
137/2506	. . . By viscosity or consistency	137/2625	. . . . Pilot valve
137/2509	. . . By optical or chemical property	137/2627	. . . . Outlet valve carried by bypass or relief valve
137/2511	. . Fuel controlled by boiler or water system condition	137/263	. . . . Plural sensors for single bypass or relief valve
137/2514	. . Self-proportioning flow systems	137/2632	. . . . Sensors interconnected by timing or restrictive orifice
137/2516	. . . Interconnected flow displacement elements	137/2635	. . . . Pilot valve operated
137/2519	. . . . Movable trap chamber	137/2637	. . . . Mechanical movement between sensor and valve
137/2521	. . . Flow comparison or differential response	137/264	. . . . Electrical control
		137/2642	. . . . Sensor rigid with valve
		137/2645	. . . . Flexible sensor

137/2647	. . . . . Pressure responsive outlet valve	137/2877	. . . Pump or liquid displacement device for flow passage
137/265	. . . Plural outflows	137/2883	. . . . . Piston
137/2652	. . . . Single actuator operates plural outlets simultaneously	137/289	. . . . . Co-axial within flow passage
137/2655	. . . . Biased open isolation valve	137/2897	. . . . Collapsible bulb
137/2657	. . . . Flow rate responsive	137/2904	. . . Siphon inlet movable to and from seat
137/266	. . . . . Primer valve	137/2911	. . . With valve or closure in-flow passage
137/2663	. . . . Pressure responsive	137/2917	. . With means for mounting and/or positioning relative to siphon chamber
137/2665	. . . . . With external control for correlating valve [e.g., manual]	137/2924	. . Elements
137/2668	. . . . Alternately or successively substituted outflow	137/2931	. Diverse fluid containing pressure systems
137/267	. . . . . Control by filling auxiliary gravitating or float operating tank	137/2934	. . Gas lift valves for wells
137/2673	. . . . . Control by filling outlet tank or receiver	137/2937	. . Gas pressure discharge of liquids feed traps [e.g., to boiler]
137/2675	. . . . . Float controlled	137/294	. . . Gas pressure controlled by amount of liquids in boiler or discharge receiver
137/2678	. . . . . Four port reversing valve	137/2943	. . . . Pressure connection at liquid level in boiler or discharge receiver
137/268	. . . . . Responsive to pressure or flow interruption	137/2947	. . . Gas pressure controlled by amount of liquid in trap
137/2683	. . . . . Plural outlets control with automatic reset	137/295	. . . . Plural trap chambers
137/2685	. . . . . Manually set to a single outflow position	137/2953	. . . . . Gravitating
137/2688	. . . . . Flow rate responsive	137/2956	. . . . Gravitating vessel
137/269	. . . . . Flow sensing turbine	137/2959	. . . . . Sinking or bucket type float
137/2693	. . . . . Pressure responsive	137/2962	. . . . . Pivoted vessel with fluid passage through pivot
137/2695	. . . . . Responsive to outlet pressure	137/2965	. . . . Float responsive
137/2698	. . . . . Electrical control	137/2968	. . . . . Liquid control valve positively actuated
137/27	. . Liquid level responsive	137/2971	. . . . . Gas condensing type
137/2703	. . Flow rate responsive	137/2975	. . . . . Gas inlet and outlet valves unitary
137/2705	. . . Pressure differential	137/2978	. . . Gas pressure controlled by manual or cyclic means
137/2708	. . Plural sensors	137/2981	. . . . Movable trap chamber
137/271	. . . For single valve	137/2984	. . Foam control in gas charged liquids
137/2713	. Siphons	137/2987	. . . Level or pressure responsive
137/272	. . Plural	137/299	. . . Separate handling of foam
137/2727	. . . Tank truck mounted	137/2993	. . . With conditioning trap or chamber
137/2733	. . . Sequentially discharging in parallel	137/2996	. . . . Recarbonation
137/274	. . . . From plural tanks	137/30	. . . . With trap or chamber by-pass
137/2747	. . . Main siphon with auxiliary starting, stopping or resetting siphon	137/3003	. . Fluid separating traps or vents
137/2754	. . . . Sinking or bucket-type float operated main siphon, float emptying auxiliary siphon	137/3006	. . . Liquids separated from liquid
137/2761	. . With discharge-controlling receiver	137/3009	. . . Plural discriminating outlets for diverse fluids
137/2768	. . . With float	137/3012	. . . . Common actuator for control valves
137/2774	. . Periodic or accumulation responsive discharge	137/3015	. . . . Choke or restricted passage gas bleed
137/2781	. . . With manual control	137/3018	. . . . . From above liquid level
137/2788	. . . Control by filling auxiliary tank	137/3021	. . . Discriminating outlet for liquid
137/2795	. . . Float-operated inlet to siphon	137/3024	. . . . With alternately operated inlet and outlet valves
137/2802	. . . Release of trapped air	137/3028	. . . . With non-discriminating gas vent or liquid discharge
137/2808	. . . . Through float-operated vent	137/3031	. . . . . Abnormal pressure responsive liquid blow-off or drain
137/2815	. . . . Through liquid trap seal	137/3034	. . . . . Manual control
137/2822	. . . . . Auxiliary liquid trap seal	137/3037	. . . . With auxiliary inlet or by-pass valve
137/2829	. . With strainer, filter, separator or sediment trap	137/304	. . . . With fluid responsive valve
137/2836	. . With recorder, register, signal, indicator or inspection window	137/3043	. . . . . Successively opened valves
137/2842	. . With flow starting, stopping or maintaining means	137/3046	. . . . . Gas collecting float [e.g., inverted bucket]
137/2849	. . . Siphon venting or breaking	137/3049	. . . . . Downstream from valve
137/2856	. . . With leakage or entrained air removal	137/3052	. . . . . Level responsive
137/2863	. . . Pressure applied to liquid in supply chamber	137/3056	. . . . . Weight or pressure
137/287	. . . Plunge or immersion starting	137/3059	. . . . . Gravitating vessel
		137/3062	. . . . . Sinking or bucket type float

137/3065	. . . . . Servo-control	137/402	. Distribution systems involving geographic features
137/3068	. . . . . Float	137/4238	. With cleaner, lubrication added to fluid or liquid sealing at valve interface
137/3071	. . . . . With main line gas outlet from trap chamber	137/4245	. . Cleaning or steam sterilizing
137/3074	. . . . . With outlet extending above liquid in trap	137/4252	. . . Reverse fluid flow
137/3077	. . . . . Servo-control	137/4259	. . . With separate material addition
137/308	. . . . . With pressure balanced outlet valve	137/4266	. . . Steam sterilizing
137/3084	. . . Discriminating outlet for gas	137/4273	. . . Mechanical cleaning
137/3087	. . . With reverse flow stop or pressure regulating valve	137/428	. . . . Valve grinding motion of valve on seat
137/309	. . . . Fluid sensing valve	137/4287	. . . . . Concentric stem
137/3093	. . . . With vaporized liquid stop	137/4294	. . . . . Spring pressed
137/3096	. . . . . With separate return for condensate	137/4301	. . . . . Lost motion permits grinding
137/3099	. . . . . Float responsive	137/4308	. . . . . With swivel-preventing means
137/3102	. . . With liquid emptying means	137/4315	. . . . . Nut releasable from body and/or stem
137/3105	. . . . Self-emptying	137/4322	. . . . . With independent grinding actuator
137/3109	. . Liquid filling by evacuating container	137/4329	. . . . . Separable
137/3112	. . Main line flow displaces additive from shunt reservoir	137/4336	. . . . . Cleaning member reciprocates in passage
137/3115	. . Gas pressure storage over or displacement of liquid	137/4343	. . . . . By-pass cleaning
137/3118	. . . Surge suppression	137/4351	. . . . . Independent actuation
137/3121	. . . With return of liquid to supply	137/4358	. . Liquid supplied at valve interface
137/3124	. . . Plural units	137/4365	. . . Plural feed
137/3127	. . . With gas maintenance or application	137/4372	. . . Line pressure feed
137/313	. . . . Gas carried by or evolved from liquid	137/4379	. . . Feed by or with actuation
137/3133	. . . . . Gas injectors	137/4386	. . . Loss control
137/3137	. . . . Gas injected by liquid pressure or flow	137/4393	. . . Screw feed
137/314	. . . . Unitary mounting for gas pressure inlet and liquid outlet	137/44	. . . . With check valve
137/3143	. . . With liquid level responsive gas vent or whistle	137/4407	. . . . . Excess relief
137/3146	. . . . Combined high and low level responsive	137/4414	. . . . . Jacking
137/3149	. Back flow prevention by vacuum breaking [e.g., anti-siphon devices]	137/4421	. . . . . Jacking
137/3185	. . Air vent in liquid flow line	137/4428	. . . . . Seating
137/3222	. . . With liquid seal in liquid flow line	137/4435	. . . Spring biased piston feed
137/3258	. . . . Automatic valve in vent line	137/4442	. . . External pressure
137/3294	. . . Valved	137/4449	. . . Gravity or capillary feed
137/3331	. . . . With co-acting valve in liquid flow path	137/4456	. With liquid valves or liquid trap seals
137/3367	. Larmer-Johnson type valves; i.e., telescoping internal valve in expanded flow line section	137/4463	. . Liquid seal in liquid flow line; flow liquid forms seal
137/3421	. . Line condition change responsive	137/4471	. . . Valves
137/3476	. . Internal servo-motor with internal pilot valve	137/4478	. . . . Line condition change responsive
137/353	. . . Pilot controlled passage in nose or needle	137/4486	. . . . . Plural valves or valve seats
137/3584	. Inflatable article [e.g., tire filling chuck and/or stem]	137/4493	. . . . . Pivoted valve
137/36	. . With pressure-responsive pressure-control means	137/4501	. . . . . Ball valve
137/3615	. . . Pulsating	137/4508	. . . . . Seats vertically up
137/3631	. . . Diaphragm, bellows or expansible tube	137/4516	. . . Seal replenishers
137/3646	. . . Co-axial inflation and relief valves	137/4523	. . . Plural inlet
137/3662	. . With gauge or indicator	137/4531	. . . Divided and recombined passages
137/3677	. . . With deflating means	137/4538	. . . Tangential inlet flow
137/3693	. . . Selectively connected	137/4546	. . . Downward partition encircles projecting outlet
137/3709	. . Stem attached relief valve	137/4553	. . . Submerged inlet pipe end
137/3724	. . With coupling means	137/4561	. . . . Hinged seal bowl
137/374	. . With cap	137/4568	. . . . . Distinct seal bowl in flow line connected casing
137/3755	. . . Valve actuating, assembling or locking means on cap	137/4576	. . . U-seals
137/3771	. . . . Valve manually seated	137/4583	. . . . Topside access beneath cover plate closed floor opening
137/3786	. . Removable valve head and seat unit [valve insides]	137/4591	. . . . . Enlarged upflow leg
137/3802	. With vehicle guide or support, e.g., service station	137/4598	. . . . . Topside access opening
		137/4606	. . . . . Even diameter legs
		137/4613	. . . . . Access opening
		137/4621	. . Seal for relatively movable valving parts
		137/4628	. . . Horizontally moving valve
		137/4636	. . . . Rotary
		137/4643	. . Liquid valves

137/4651	. . . Branched passage for sealing liquid	137/5515	. . . . Separate relatively movable valves with single actuator
137/4658	. . . With auxiliary means for varying liquid level	137/5521	. . . . . Unidirectional abutting connection between main valve or actuator and waste valve
137/4666	. . . With baffle	137/5526	. . . . . With screw or gear in actuating mechanism
137/4673	. Plural tanks or compartments with parallel flow	137/5532	. . . . . Reciprocating relatively fixed valves
137/469	. . Sequentially filled and emptied [e.g., holding type]	137/5538	. . . . . Waste through lower valve guide
137/4707	. . . With relative rotation of tank group and filling head	137/5544	. Reversing valves - regenerative furnace type
137/4723	. . . . With rotary filling and emptying head	137/5617	. . With cooling
137/474	. . With housings, supports or stacking arrangements	137/5689	. . Rotary reversing valve
137/4757	. . Battery or electrolytic cell replenishment	137/5762	. With leakage or drip collecting
137/4774	. . . Barometric supply	137/5835	. . Relatively movable receptacle or drain pipe and outlet
137/479	. . Flow dividing compartments	137/5907	. . Collector for waste liquid derived from solid, gas or vapor
137/4807	. . Tank type manifold [i.e., one tank supplies or receives from at least two others]	137/598	. With repair, tapping, assembly, or disassembly means
137/4824	. . Tank within tank	137/5983	. . Blow out preventer or choke valve device [e.g., oil well flow controlling device, etc.]
137/4841	. . With cross connecting passage	137/5987	. . Solenoid or electromagnetically operated valve
137/4857	. . With manifold or grouped outlets	137/599	. . Pressure regulating type valve
137/4874	. . . Tank truck type	137/5994	. . . Diaphragm type
137/4891	. With holder for solid, flaky or pulverized material to be dissolved or entrained	137/5997	. . Gas or water meter replacing
137/5109	. Convertible	137/60	. . Assembling or disassembling flexible tube or sleeve type valve
137/5153	. . Reversible check	137/6004	. . Assembling or disassembling float or float valve
137/5196	. . Unit orientable in a single location between plural positions	137/6007	. . Assembling or disassembling multi way valve
137/524	. . . Reversible stop and vent or waste	137/6011	. . Assembling, disassembling, or removing cartridge type valve [e.g., insertable and removable as a unit, etc.]
137/5283	. . Units interchangeable between alternate locations	137/6014	. . . Faucet type [e.g., domestic water use, etc.]
137/5327	. Hydrant type	137/6017	. . . . Including removable valve head and seat unit
137/5333	. . Water crane type	137/6021	. . . . Including mechanical movement actuator
137/5339	. . . Spout operated valve	137/6024	. . . . Particular handle or handle fastening means
137/5345	. . . Rotating riser	137/6028	. . Assembling or disassembling pivoted valve
137/535	. . . . Spout articulated to riser	137/6031	. . Assembling or disassembling rotary valve
137/5356	. . . . Vertically movable riser	137/6035	. . . Rotary ball valve
137/5362	. . . Extensible spout	137/6038	. . . . Particular valve seat or interface seal
137/5368	. . . Spout articulated to riser	137/6041	. . . . . Replaceable
137/5374	. . Plural riser	137/6045	. . . . . With top entry valve
137/538	. . Expansible chamber operated by valve actuator for draining riser	137/6048	. . . Butterfly valve
137/5386	. . With pump or ejector	137/6052	. . . . Having valve head or seat packing
137/5392	. . Removable valve and valve seat	137/6055	. . . . With head and stem collections
137/5397	. . . With extension to facilitate removal	137/6058	. . . Plug valve
137/5403	. . Removable valve with supplemental check valve	137/6062	. . . . Having retainer at actuator end
137/5409	. . Movable riser actuated valve	137/6065	. . Assembling or disassembling reciprocating valve
137/5415	. . . Reciprocating riser	137/6069	. . . Having particularly packed or sealed mechanical movement actuator
137/5421	. . . . Piston type valve	137/6072	. . . Gate valve
137/5427	. . Balanced valve	137/6075	. . . . Bifaced
137/5433	. . Valve actuator extends laterally from bottom of riser	137/6079	. . . . Having particular valve seat
137/5438	. . Valve actuator outside riser	137/6082	. . . . . Including seal
137/5444	. . . Lever actuator	137/6086	. . Assembling or disassembling check valve
137/545	. . . With casing, flush with ground or pavement surface	137/6089	. . With mechanical movement between actuator and valve
137/5456	. . With casing	137/6092	. . . Plural motions of valve
137/5462	. . . Flush with ground or pavement surface	137/6096	. . . Lever type
137/5468	. . . Cap, cover or hood	137/6099	. . . Gear type
137/5474	. . . With heater	137/6103	. . . Cam type
137/5479	. . With actuator lubricating means	137/6106	. . . Screw type
137/5485	. . With valve at outlet		
137/5491	. . With supplemental valve		
137/5497	. . Protection against freezing		
137/5503	. . . Stop and waste		
137/5509	. . . . With disabling means		

137/6109	. . Tool for applying or removing valve or valve member	137/6892	. . . . Floor or frame
137/6113	. . . Including sealing feature	137/6895	. . . . Fender or running board
137/6116	. . With holding means functioning only during transportation assembly or disassembly	137/6899	. . . With hose reel storage means
137/612	. . Tapping a pipe, keg, or apertured tank under pressure	137/6903	. . . Guided by means of track or guideway
137/6123	. . . With aperture forming means	137/6906	. . . Aerial or water-supported [e.g., airplane or ship, etc.]
137/6126	. . . Imperforate closure removing and holding tap	137/691	. . . With retractable or nonuse-positionable support wheel
137/613	. . . With valved closure or bung	137/6914	. . . Vehicle supports fluid compressor and compressed fluid storage tank
137/6133	. . . . Combined rotary and longitudinal movement of valve	137/6918	. . With hose storage or retrieval means
137/6137	. . . . Longitudinal movement of valve	137/6921	. . . With means for plural hoses
137/614	. . . . Rotary movement of valve	137/6925	. . . With flow regulation responsive to hose movement
137/6144	. . . With core ejectors	137/6929	. . . . Reel type
137/6147	. . . . Impact operated	137/6932	. . . With retrieval means
137/615	. . Foot valve extraction from top of enclosure	137/6936	. . . . Power stop or brake
137/6154	. . With disassembly tool engaging feature	137/694	. . . . . Responsive to position of hose in casing
137/6157	. . . Wrench engaging lugs	137/6943	. . . . . Biased to retracted position
137/6161	. . With provision of alternate wear parts	137/6947	. . . . . Boom type
137/6164	. . . Valve heads and/or seats	137/6951	. . . . . Weighted
137/6167	. . . . Opposite duplicate surfaces of unitary structure	137/6954	. . . Reel with support therefor
137/6171	. . . . . Homogeneous material	137/6958	. . . . Ground supported
137/6174	. . . . . Valve heads	137/6962	. . . Basket or holder for folded coiled hose
137/6178	. . . . Different portions of continuous surfaces	137/6966	. . Static constructional installations
137/6181	. . . . Successively used adjacent independent elements	137/6969	. . . Buildings
137/6184	. . Removable valve with normally disabled supplemental check valve	137/6973	. . . . Outside access to portions of the system
137/6188	. . . Check valve disabled by normally movable main valve part	137/6977	. . . . Escutcheon type support
137/6191	. . . . Ball check	137/698	. . . . Wall
137/6195	. . . . Spring bias	137/6984	. . . . . Recessed gas outlet box
137/6198	. Non-valving motion of the valve or valve seat	137/6988	. . . . Floor installation
137/6253	. . Rotary motion of a reciprocating valve	137/6991	. . . Ground supporting enclosure
137/6307	. . . Turbine on valve	137/6995	. . . . Valve and meter wells
137/6362	. . . Manual rotating means	137/6999	. . . . . With means to center well on valve
137/6416	. With heating or cooling of the system	137/7002	. . . . . Detachable base plate
137/6443	. . With burner	137/7006	. . . . . Vertical casing aligned by valve casing
137/647	. . . Flue extending through fluid	137/701	. . . . . Combined with actuator
137/6497	. . Hot and cold water system having a connection from the hot to the cold channel	137/7014	. . . . . Telescopic well casing
137/6525	. . Air heated or cooled [fan, fins, or channels]	137/7017	. . . . . Telescopic well casing
137/6552	. . With diversion of part of fluid to heat or cool the device or its contents	137/7021	. . . . . Covers
137/6579	. . Circulating fluid in heat exchange relationship	137/7025	. . . . Pipe line transport
137/6606	. . With electric heating element	137/7028	. . . Tapering or tower type
137/6633	. With fluid system support for workman or non-system material	137/7032	. . Furniture and housing furnishings
137/6851	. With casing, support, protector or static constructional installations	137/7036	. . Jacketed
137/6855	. . Vehicle	137/7039	. . Tank supports
137/6858	. . . Locomotive	137/7043	. . Guards and shields
137/6862	. . . . Boiler or steam dome	137/7047	. . . Resilient abutment for preventing breakage
137/6866	. . . Railway car	137/7051	. . . Nozzle abutment for scratch or damage prevention
137/6869	. . . . Car frame	137/7054	. . . Cover for beer cooler aperture for faucet
137/6873	. . . . End of car	137/7058	. . . Sanitary covers or shields
137/6877	. . . . Roof, wall or floor	137/7062	. . . Valve guards
137/6881	. . . Automotive	137/7065	. . . . With means for accommodating a detachable actuator
137/6884	. . . . Steering post or wheel	137/7069	. With lock or seal
137/6888	. . . . Dash	137/71	. . With seal
		137/7131	. . Common lock and valve actuator
		137/7162	. . . Combination lock
		137/7194	. . . Biased valve
		137/7225	. . . Mechanical movement between lock and valve
		137/7256	. . Locks against rotary motion
		137/7287	. Liquid level responsive or maintaining systems

137/729	. . Washing machine cycle control	137/7465	. . . . Assembly mounted on and having reciprocating valve element coaxial with inlet pipe
137/7293	. . Liquid excluding devices for gas inlet or outlets	137/7468	. . . . . Horizontal or side entering pipe
137/7297	. . With second diverse control	137/7472	. . . . . Vertical inlet riser
137/73	. . . Manual control	137/7475	. . . . . With toggle or second lever connected to valve
137/7303	. . Control of both inflow and outflow of tank	137/7478	. . . . . With interposed cam, gear or threaded connection
137/7306	. . Electrical characteristic sensing	137/7481	. . . . . Rotary valve element
137/731	. . With control fluid connection at desired liquid level	137/7485	. . . . . Pivoted valve
137/7313	. . Control of outflow from tank	137/7488	. . . . . Ball valves
137/7316	. . . Self-emptying tanks	137/7491	. . . . . Balanced valves
137/7319	. . . . By float	137/7494	. . . . . Flexible valve
137/7323	. . . . By float	137/7498	. . Barometric
137/7326	. . . . Low level safety cut-off	137/7501	. . . . With shut-off between supply tank and receiver
137/7329	. . With supplemental or safety closing means or bias	137/7504	. Removable valve head and seat unit
137/7332	. . . Sinking or bucket type float	137/7559	. . Pump type
137/7336	. . . Gravitating tank	137/7613	. . Threaded into valve casing
137/7339	. . By weight of accumulated fluid	137/7668	. . Retained by bonnet or closure
137/7342	. . . In sinking or bucket type float	137/7722	. Line condition change responsive valves
137/7345	. . . Oil burner fuel overflow preventing safety cut-offs	137/7723	. . Safety cut-off requiring reset
137/7349	. . . In communicating measuring vessel	137/7724	. . . Thermal
137/7352	. . . . Top and bottom connections	137/7725	. . . Responsive to both high and low pressure or velocity
137/7355	. . . In gravitating tank	137/7726	. . . Responsive to change in rate of flow
137/7358	. . By float controlled valve	137/7727	. . . . Excessive flow cut-off
137/7361	. . . Valve opened by external means, closing or closing control by float	137/7728	. . . High pressure cut-off
137/7365	. . . Single float controls plural valves	137/7729	. . . Reset by pressure equalization valve or by-pass
137/7368	. . . Servo relay operation of control	137/773	. . . Fluid released trip
137/7371	. . . . Fluid pressure	137/7731	. . . Fluid counter-biased or unseated valve
137/7374	. . . . . Flexible diaphragm valve	137/7732	. . . . With mechanical stop against reopening
137/7378	. . . . . From tank	137/7733	. . . . With fluid pressure seating of valve
137/7381	. . . Quick acting	137/7734	. . Fluid opened valve requiring reset
137/7384	. . . . Pilot float released	137/7736	. . Consistency responsive
137/7387	. . . . Over center mechanism	137/7737	. . Thermal responsive
137/7391	. . . . . Shifting weight	137/7738	. . Pop valves
137/7394	. . . . . Trip mechanism	137/7739	. . . Pop closing valves
137/7397	. . . . . Weight or spring bias	137/774	. . . Pop pressure reactor in inflow to valve
137/74	. . . . Lost motion mechanism	137/7741	. . . Pop pressure reactor in branched released path
137/7404	. . . Plural floats	137/7742	. . . . Separate relief valves or valves for each branch
137/7407	. . . With counter-balance	137/7743	. . . Lost motion between pop pressure reactor and valve
137/741	. . . . Within tank	137/7744	. . . Adjustable choke
137/7413	. . . Level adjustment or selection means	137/7745	. . . . Annular lip or baffle
137/7417	. . . With float leakage disposal	137/7746	. . . . . On movable valve part
137/742	. . . In separate communicating float chamber	137/7747	. . . . . Screw threaded
137/7423	. . . Rectilinearly traveling float	137/7748	. . Combustion engine induction type
137/7426	. . . . Float co-axial with valve or port	137/7749	. . . Valve in auxiliary inlet to induction line
137/743	. . . . . Float is spreader or anti-splash means	137/775	. . . With manual modifier
137/7433	. . . . . Float surrounds inlet pipe	137/7751	. . . With suction compensator
137/7436	. . . . . Float rigid with valve	137/7752	. . . With separate reactor surface
137/7439	. . . Float arm operated valve	137/7753	. . . Unbalanced pivoted valve [e.g., unbalanced butterfly type]
137/7442	. . . . With valve retarder or cushion means	137/7754	. . Line flow effect assisted
137/7446	. . . . With flow guide or restrictor	137/7755	. . . Reactor surface normal to flow
137/7449	. . . . . External hood or deflector or annular outlet surrounding the inlet pipe	137/7756	. . . Reactor surface separated from flow by apertured partition
137/7452	. . . . Movable nozzle or inlet terminal	137/7757	. . . . Through separate aperture
137/7455	. . . . Valve removable from outside container	137/7758	. . Pilot or servo controlled
137/7459	. . . . With U-shaped inlet pipe having terminal valve	137/7759	. . . Responsive to change in rate of fluid flow
137/7462	. . . . With refill pipe		

137/776	. . . . Control by pressures across flow line valve	137/7818	. . . . . Valve head in inlet chamber
137/7761	. . . Electrically actuated valve	137/7819	. . . . . Rectilinear valve stem rigid with reactor surface
137/7762	. . . Fluid pressure type	137/782	. . . . . Reactor surface is diaphragm
137/7764	. . . . Choked or throttled pressure type	137/7821	. . . . . With valve closing bias
137/7765	. . . . . Pilot valve within main valve head	137/7822	. . . . Reactor surface closes chamber
137/7766	. . . . . Choked passage through main valve head	137/7823	. . . . . Valve head in inlet chamber
137/7767	. . . . . Loose fitting piston	137/7824	. . . . . Reactor surface is inverted cup [float]
137/7768	. . . . . Pilot controls supply to pressure chamber	137/7825	. . . . . Rectilinear valve stem rigid with reactor surface
137/7769	. . . . Single acting fluid servo	137/7826	. . . . . With valve closing bias
137/777	. . . . . Spring biased	137/7827	. . . . . In reactor chamber
137/7771	. . Bi-directional flow valves	137/7828	. . . . . Valve head on yoke
137/7772	. . . One head and seat carried by head of another	137/7829	. . . . . Yoke has valve closing bias
137/7773	. . . . Supporting valve only spring biased	137/783	. . . . . Reactor operatively connected to valve by mechanical movement
137/7774	. . . . Supporting valve spring carried by supporting valve	137/7831	. . . . With mechanical movement between actuator and valve
137/7775	. . . . . Spring stop on supported valve stem	137/7832	. . . Plural valves biased closed
137/7776	. . . . . Spring abuts guide for supported valve stem	137/7833	. . . With means for mounting or connecting to system
137/7777	. . . . Both valves spring biased	137/7834	. . . Valve seat or external sleeve moves to open valve
137/7778	. . . Axes of ports perpendicular	137/7835	. . . Valve seating in direction of flow
137/7779	. . . Axes of ports parallel	137/7836	. . . . Flexible diaphragm or bellows reactor
137/778	. . . Axes of ports co-axial	137/7837	. . Direct response valves [i.e., check valve type]
137/7781	. . With separate connected fluid reactor surface	137/7838	. . . Plural
137/7782	. . . With manual or external control for line valve	137/7839	. . . . Dividing and recombining in a single flow path
137/7783	. . . Valve closes in responses to reverse flow	137/784	. . . . . Integral resilient member forms plural valves
137/7784	. . . Responsive to change in rate of fluid flow	137/7841	. . . . One valve carries head and seat for second valve
137/7785	. . . . Valve closes in response to excessive flow	137/7842	. . . . Diverse types
137/7786	. . . . Turbine or swinging vane type reactor	137/7843	. . . . Integral resilient member forms plural valves
137/7787	. . . . Expansible chamber subject to differential pressures	137/7845	. . . . With common biasing means
137/7788	. . . . . Pressures across fixed choke	137/7846	. . . . Mechanically interconnected
137/7789	. . . . . With Venturi tube having a connection to throat	137/7847	. . . With leak passage
137/7791	. . . . . Pressures across flow line valve	137/7848	. . . . Permits flow at valve interface
137/7792	. . . . Movable deflector or choke	137/7849	. . . . Bypass in valve casing
137/7793	. . . With opening bias [e.g., pressure regulator]	137/785	. . . With retarder or dashpot
137/7794	. . . . With relief valve	137/7851	. . . . End of valve forms dashpot chamber
137/7795	. . . . Multi-stage	137/7852	. . . . End of valve moves inside dashpot chamber
137/7796	. . . . Senses inlet pressure	137/7853	. . . . . Enlarged piston on end of valve stem
137/7797	. . . . Bias variable during operation	137/7854	. . . In couplings for coaxial conduits, e.g., drill pipe check valves
137/7798	. . . . . Ancillary reactor surface responds to inlet pressure	137/7855	. . . . Valve seat threaded into a coupling element
137/7799	. . . . . Liquid transfer	137/7856	. . . . Valve seat formed on or carried by a coupling element
137/78	. . . . . Weight	137/7857	. . . . Valve seat clamped between coupling elements
137/7801	. . . . Balanced valve	137/7858	. . . With means for selecting area of valve or seat
137/7802	. . . . Liquid level responsive gas flow control	137/7859	. . . Single head, plural ports in parallel
137/7803	. . . . With protective separator	137/786	. . . . Concentric ports
137/7804	. . . . Main flow through isolated reactor chamber	137/7861	. . . . Annular head
137/7805	. . . . Through external pipe	137/7862	. . . . . Central post on seat
137/7806	. . . . . Modified valve casing	137/7863	. . . . . Stop
137/7807	. . . . . Adjustable external lever	137/7864	. . . . . With guide
137/7808	. . . . Apertured reactor surface surrounds flow line	137/7865	. . . . . Guide
137/7809	. . . . Reactor surface separated by apertured partition	137/7866	. . . Plural seating
137/781	. . . . . In valve stem	137/7867	. . . . Sequential
137/7811	. . . . . Also through reactor surface	137/7868	. . . . . Resilient gasket
137/7812	. . . . . Valve stem passes through the aperture		
137/7813	. . . . . Plural reactor surfaces		
137/7814	. . . . . Reactor is an inverted cup having liquid seal		
137/7815	. . . . . With movement dampener		
137/7816	. . . . . Valve head in inlet chamber		

137/7869	. . . Biased open	137/7933	. . . . . Yoke or cage-type support for valve stem
137/787	. . . . Oppositely swinging vanes	137/7934	. . . . . Spring abuts removable valve stem guide
137/7871	. . . . Weight biased	137/7935	. . . . . Head slides on guide-rod concentric with spring
137/7873	. . . . . Ball valves	137/7936	. . . . . Spring guides valve head
137/7874	. . . . . Edge pivoted valve	137/7937	. . . . . Cage-type guide for stemless valves
137/7875	. . . . . Pivoted valves	137/7938	. . . . . Guide means integral and coplanar with valve disk
137/7876	. . . With external means for opposing bias	137/7939	. . . . . Head between spring and guide
137/7877	. . . . With means for retaining external means in bias opposing position	137/794	. With means for separating solid material from the fluid
137/7878	. . . With bias adjustment indicator	137/7976	. . Plural separating elements
137/7879	. . . Resilient material valve	137/8013	. . Sediment chamber
137/788	. . . . Having expansible port	137/8049	. . Movable strainer
137/7881	. . . . . Apertured plate	137/8085	. . Hollow strainer, fluid inlet and outlet perpendicular to each other
137/7882	. . . . . Having exit lip	137/8122	. . Planar strainer normal to flow path
137/7883	. . . . . With biasing means	137/8158	. With indicator, register, recorder, alarm or inspection means
137/7884	. . . . . Side vent	137/8175	. . Plural
137/7885	. . . . . Multiple slit	137/8192	. . . Unobvious - "combination lock" type
137/7886	. . . . . Internally extending mount	137/8208	. . Time
137/7887	. . . . Center flexing strip	137/8225	. . Position or extent of motion indicator
137/7888	. . . . With valve member flexing about securement	137/8242	. . . Electrical
137/7889	. . . . . Sleeve	137/8259	. . . Selection from plural branches
137/789	. . . . . Central mount	137/8275	. . . Indicator element rigidly carried by the movable element whose position is indicated
137/7891	. . . . . Flap or reed	137/8292	. . . . Movable indicator element is a pointer
137/7892	. . . . . With stop	137/8309	. . . . . Pointer integral with handle
137/7897	. . . Vacuum relief type	137/8326	. . Fluid pressure responsive indicator, recorder or alarm
137/7898	. . . Pivoted valves	137/8342	. . Liquid level responsive indicator, recorder or alarm
137/79	. . . . Head retained by removable closure	137/8359	. . Inspection means
137/7901	. . . . Valve head movably connected for accommodation to seat	137/8376	. Combined
137/7902	. . . . Valve mounted on end of pipe	137/8593	. Systems
137/7903	. . . . Weight biased	137/85938	. . Non-valved flow dividers
137/7904	. . . Reciprocating valves	137/85946	. . Faucet connected, sink drained
137/7905	. . . . Plural biasing means	137/85954	. . Closed circulating system
137/7906	. . . . Cam means for adjusting and fixing bias	137/85962	. . . With thermal circulating means [thermo-siphons]
137/7907	. . . . Varying effective lever arm	137/8597	. . Main line as motive fluid for follower-type feeder
137/7908	. . . . Weight biased	137/85978	. . With pump
137/7909	. . . . . Valve body is the weight	137/85986	. . . Pumped fluid control
137/791	. . . . . Ball valves	137/85994	. . . . Manual
137/7911	. . . . . Removable cage	137/86002	. . . . Fluid pressure responsive
137/7912	. . . . . Separable seat	137/8601	. . . . . And pilot valve
137/7913	. . . . . Guided head	137/86019	. . . . . Direct response valve
137/7914	. . . . . Cage	137/86027	. . . . . Electric
137/7915	. . . . . Guide stem	137/86035	. . . Combined with fluid receiver
137/7916	. . . . . . With closing stop	137/86043	. . . . Reserve or surge receiver
137/7917	. . . . . . Oppositely disposed	137/86051	. . . . Compressed air supply unit
137/7918	. . . . . . Head slidable on guide rod	137/86059	. . . . Hydraulic power unit
137/7919	. . . . . . Guide and seat integral unit	137/86067	. . . . Fluid sump
137/792	. . . . . . Guide and closure integral unit	137/86075	. . . And jet-aspiration type pump
137/7921	. . . . . Weight coaxial with valve	137/86083	. . . Vacuum pump
137/7922	. . . . . Spring biased	137/86091	. . . Resiliently mounted pump
137/7923	. . . . . With means to protect spring from fluid	137/86099	. . . Hand pump
137/7924	. . . . . Spring under tension	137/86107	. . . Multiple inlet with multiple outlet
137/7925	. . . . . Piston-type valves	137/86115	. . . Downstream cyclic distributor
137/7927	. . . . . Ball valves		
137/7928	. . . . . With follower		
137/7929	. . . . . Spring coaxial with valve		
137/793	. . . . . Broken valve parts retainer		
137/7931	. . . . . Spring in inlet		
137/7932	. . . . . Valve stem extends through fixed spring abutment		



137/86123 . . . . Distributor part unitary with movable pump part	137/86533 . . . . . Rotary
137/86131 . . . Plural	137/86541 . . . . . Plug
137/86139 . . . . Serial	137/86549 . . . Selective reciprocation or rotation
137/86147 . . . . . With single motive input	137/86558 . . . Plural noncommunicating flow paths
137/86155 . . . . . One pump driven by motive fluid from the other	137/86566 . . . . Rotary plug
137/86163 . . . . Parallel	137/86574 . . . Supply and exhaust
137/86171 . . . With pump bypass	137/86582 . . . . Pilot-actuated
137/86179 . . . Drain valve actuator mounted on pump	137/8659 . . . . . Variable orifice-type modulator
137/86187 . . Plural tanks or compartments connected for serial flow	137/86598 . . . . . Opposed orifices; interposed modulator
137/86196 . . . Separable with valved-connecting passage	137/86606 . . . . . Common to plural valve motor chambers
137/86204 . . . Fluid progresses by zigzag flow	137/86614 . . . . . Electric
137/86212 . . . Plural compartments formed by baffles	137/86622 . . . . Motor-operated
137/8622 . . . Plural top-to-bottom connected tanks	137/8663 . . . . . Fluid motor
137/86228 . . . With communicating opening in common walls of tanks or compartments	137/86638 . . . . Rotary valve
137/86236 . . Tank with movable or adjustable outlet or overflow pipe	137/86646 . . . . . Plug type
137/86244 . . . Horizontally traversing outlet	137/86654 . . . . . For plural lines
137/86252 . . . Float-supported outlet	137/86662 . . . . . Axial and radial flow
137/8626 . . . Swinging outlet pipe or spout	137/8667 . . . . Reciprocating valve
137/86268 . . With running joint between movable parts of system	137/86678 . . . . . Combined disk or plug and gate or piston
137/86276 . . Movable tank	137/86686 . . . . . Plural disk or plug
137/86284 . . With antisplash means not in flow passage	137/86694 . . . . . Piston valve
137/86292 . . System with plural openings, one a gas vent or access opening	137/86702 . . . . . With internal flow passage
137/863 . . . Access and outlet	137/8671 . . . . . With annular passage [e.g., spool]
137/86308 . . . . Tank access opening and bottom outlet	137/86718 . . . Dividing into parallel flow paths with recombining
137/86316 . . . . . Access opening interlock or telltale on outlet valve actuator	137/86726 . . . . Valve with bypass connections
137/86324 . . . Tank with gas vent and inlet or outlet	137/86734 . . . . With metering feature
137/86332 . . . . Vent and inlet or outlet in unitary mounting	137/86743 . . . . Rotary
137/8634 . . . With vented outlet	137/86751 . . . . . Plug
137/86348 . . Tank with internally extending flow guide, pipe or conduit	137/86759 . . . . Reciprocating
137/86356 . . . Nondraining overflow type	137/86767 . . . . . Spool
137/86364 . . . Inverted "U" passage	137/86775 . . . . . With internal passage
137/86372 . . . Inlet internally extending	137/86783 . . . . . Unequal heads
137/86381 . . Head-establishing standpipe or expansion chamber [e.g., surge tanks]	137/86791 . . . . . Piston
137/86389 . . Programmer or timer	137/86799 . . . . . With internal flow passage
137/86397 . . . With independent valve controller	137/86807 . . . . . Sequential opening or closing of serial ports in single flow line
137/86405 . . . Repeating cycle	137/86815 . . . Multiple inlet with single outlet
137/86413 . . . . Self-cycling	137/86823 . . . . Rotary valve
137/86421 . . . . Variable	137/86831 . . . Selective opening of plural ports
137/86429 . . . . . Attachable and removable element	137/86839 . . . Four port reversing valves
137/86437 . . . . . Adjustable cam	137/86847 . . . Pivoted valve unit
137/86445 . . . Plural, sequential, valve actuations	137/86855 . . . . Gate
137/86453 . . . . Plural trips or trip actuations	137/86863 . . . Rotary valve unit
137/86461 . . . . Variable cycle	137/86871 . . . . Plug
137/86469 . . . Clock alarm mechanism controlled	137/86879 . . . Reciprocating valve unit
137/86477 . . . Biased latch, cam operated	137/86887 . . . . Combined disk or plug and gate or piston
137/86485 . . Line condition change responsive release of valve	137/86895 . . . . Plural disk or plug
137/86493 . . Multi-way valve unit	137/86903 . . Plural petcocks
137/86501 . . . Sequential distributor or collector type	137/86911 . . Sequential distributor or collector type
137/86509 . . . Sequentially progressive opening or closing of plural ports	137/86919 . . Sequentially closing and opening alternately seating flow controllers
137/86517 . . . . With subsequent closing of first port	137/86928 . . Sequentially progressive opening or closing of plural valves
137/86525 . . . . . Flow combining with flow dividing	137/86936 . . . Pressure equalizing or auxiliary shunt flow
	137/86944 . . . . One valve seats against other valve [e.g., concentric valves]
	137/86952 . . . . . Locomotive throttle
	137/8696 . . . . . Gate
	137/86968 . . . . . With balancing chamber
	137/86976 . . . . . First valve moves second valve
	137/86984 . . . . . Actuator moves both valves

- 137/86992 . . . With subsequent closing of first opened port
- 137/87 . . . . Simultaneously moved port controllers
- 137/87008 . . . Screw-actuated differential valves
- 137/87016 . . . Lost motion
- 137/87024 . . . . Cam determines sequence
- 137/87032 . . . . Rotary concentric valves
- 137/8704 . . . . First valve actuates second valve
- 137/87048 . . With preselecting means for plural valve actuator
- 137/87056 . . With selective motion for plural valve actuator
- 137/87064 . . . Oppositely movable cam surfaces
- 137/87072 . . . Rotation about either of two pivotal axes
- 137/8708 . . . Rotation of actuator arm about its pivot and its axis
- 137/87088 . . . Reciprocation along and rotation about same axis
- 137/87096 . . Valves with separate, correlated, actuators
- 137/87105 . . . Correlated across separable flow path joint
- 137/87113 . . . Interlocked
- 137/87121 . . . Coaxial stems
- 137/87129 . . . . Rotary
- 137/87137 . . . . . And reciprocating
- 137/87145 . . . . . Concentric, central valve removable
- 137/87153 . . Plural noncommunicating flow paths
- 137/87161 . . . With common valve operator
- 137/87169 . . Supply and exhaust
- 137/87177 . . . With bypass
- 137/87185 . . . . Controlled by supply or exhaust valve
- 137/87193 . . . Pilot-actuated
- 137/87201 . . . . Common to plural valve motor chambers
- 137/87209 . . . . Electric
- 137/87217 . . . Motor
- 137/87225 . . . . Fluid motor
- 137/87233 . . . Biased exhaust valve
- 137/87241 . . . . Biased closed
- 137/87249 . . Multiple inlet with multiple outlet
- 137/87257 . . Hydraulic brake line [e.g., hill holders]
- 137/87265 . . Dividing into parallel flow paths with recombining
- 137/87273 . . . With fluid coupling [e.g., railway car hose coupling, truck-trailer oil system coupling, etc.]
- 137/87281 . . . System having plural inlets
- 137/8729 . . . . Having digital flow controller
- 137/87298 . . . Having digital flow controller
- 137/87306 . . . . Having plural branches under common control for separate valve actuators
- 137/87314 . . . . . Electromagnetic or electric control [e.g., digital control, bistable electro control, etc.]
- 137/87322 . . . With multi way valve having serial valve in at least one branch
- 137/8733 . . . Fluid pressure regulator in at least one branch
- 137/87338 . . . Flow passage with bypass
- 137/87346 . . . . Including mixing feature
- 137/87354 . . . . Including flowmeter
- 137/87362 . . . . Including cleaning, treating, or heat transfer feature
- 137/8737 . . . . . Water treatment feature
- 137/87378 . . . Second valve assembly carried by first valve head
- 137/87386 . . . . With rotary plug having variable restrictor
- 137/87394 . . . . Carried valve is direct response valve [e.g., check valve, etc.]
- 137/87402 . . . With foam controlling means [e.g., beer, soda faucets]
- 137/8741 . . . . With common operator
- 137/87418 . . . . . Balanced valve
- 137/87426 . . . . . Single resilient member actuates or forms plural passages
- 137/87434 . . . . . Valves deform to close passage
- 137/87442 . . . . . Rotary valve
- 137/8745 . . . . . Including rigid plate with flexible or resilient seal
- 137/87458 . . . . . Axes of rotation of valves intersect at point
- 137/87467 . . . . . Axes of rotation parallel
- 137/87475 . . . . . . Adjacent plate valves always parallel
- 137/87483 . . . . . . Adjacent plate valves counter rotate
- 137/87491 . . . . . Mechanical movement between actuator and non-rotary valve
- 137/87499 . . . Fluid actuated or retarded
- 137/87507 . . . Electrical actuator
- 137/87515 . . . Mechanical movement between actuator and valve
- 137/87523 . . . Rotary valve
- 137/87531 . . . . Butterfly valve
- 137/87539 . . . Having guide or restrictor
- 137/87547 . . . . Manually variable
- 137/87555 . . . Having direct response valve [e.g., check valve, etc.]
- 137/87563 . . . . With reverse flow direction
- 137/87571 . . Multiple inlet with single outlet
- 137/87579 . . . Faucet attachment
- 137/87587 . . . Combining by aspiration
- 137/87595 . . . . Combining of three or more diverse fluids
- 137/87603 . . . . Plural motivating fluid jets
- 137/87611 . . . . Flow control by varying position of a fluid inlet relative to entrainment chamber
- 137/87619 . . . . With selectively operated flow control means in inlet
- 137/87627 . . . . . Flow control means is located in aspirated fluid inlet
- 137/87635 . . . . . Single actuator operates flow control means located in both motivating fluid and aspirated fluid inlets
- 137/87643 . . . . With condition responsive valve
- 137/87652 . . . With means to promote mixing or combining of plural fluids
- 137/8766 . . . . With selectively operated flow control means
- 137/87668 . . . . . Single actuator operates plural flow control means
- 137/87676 . . . With flow control
- 137/87684 . . . . Valve in each inlet
- 137/87692 . . . . . With common valve operator
- 137/877 . . With flow control means for branched passages
- 137/87708 . . . With common valve operator
- 137/87716 . . . . For valve having a flexible diaphragm valving member
- 137/87724 . . . . For valve having a ball head
- 137/87732 . . . . With gearing
- 137/8774 . . . . Threaded actuator
- 137/87748 . . . . Pivoted or rotary motion converted to reciprocating valve head motion
- 137/87756 . . . . . Spring biased
- 137/87764 . . . . Having fluid actuator
- 137/87772 . . . . With electrical actuation
- 137/8778 . . . . Spring biased

137/87788 . . .	With valve or movable deflector at junction	152/10045 . . .	Metallic spring cushion
137/87796 . . . .	Movable deflector spout in lateral port	152/10054 . . .	Enclosed cushion
137/87804 . . . .	Valve or deflector is tubular passageway	152/10063 . . .	Superimposed
137/87812 . . . .	Pivoted valve or deflector	152/10072 . . . .	Plungers
137/8782 . . . .	Rotary valve or deflector	152/10081 . . . .	Edge-secured cushion
137/87829 . . .	Biased valve	152/1009 . . . .	Guide flanges
137/87837 . . . .	Spring bias	152/10099 . . . .	Radial stops
137/87845 . . . . .	For valve having a ball head	152/10108 . . . . .	Bolts or studs
137/87853 . . . . .	With threaded actuator	152/10117 . . .	Integral
137/87861 . . . . .	Spring coaxial with valve	152/10126 . . . .	with removable inner tube
137/87869 . . . . .	Biased open	152/10135 . .	Armored
137/87877 . . .	Single inlet with multiple distinctly valved outlets	152/10144 . . .	Single tube tires internal
137/87885 . . .	Sectional block structure	152/10153 . . . .	Metal
137/87893 . . .	With fluid actuator	152/10162 . . . . .	Plates
137/87901 . . .	With threaded actuator	152/10171 . . .	Casing construction
137/87909 . . .	Containing rotary valve	152/1018 . . . .	Embedded
137/87917 . .	Flow path with serial valves and/or closures	152/10189 . . . . .	Metal
137/87925 . . .	Separable flow path section, valve or closure in each	152/10198 . . . . .	Plates
137/87933 . . . .	Common joint and valve seat faces, or sections joined by closing members	152/10207 . . . . .	Annular
137/87941 . . . .	Each valve and/or closure operated by coupling motion	152/10216 . . . . .	Linked mat
137/87949 . . . . .	Linear motion of flow path sections operates both	152/10225 . . . . .	Woven
137/87957 . . . . .	Valves actuate each other	152/10234 . . .	Interliners
137/87965 . . . .	Valve- or closure-operated by coupling motion	152/10243 . . . .	Cotton, fabric, or rubber
137/87973 . . . .	Coupling interlocked with valve, or closure or actuator	152/10252 . . . .	Metal
137/87981 . . .	Common actuator	152/10261 . . . . .	Scale armor
137/87989 . . . .	Delivery cock with terminal valve	152/1027 . . . . .	Annular
137/87997 . . . .	Alternately seating	152/10279 . .	Cushion
137/88005 . . . . .	Biased valve	152/10288 . . .	Sectional
137/88014 . . . .	Opposed screw	152/10297 . . . .	Annular
137/88022 . . .	One valve head provides seat for other head	152/10306 . . . . .	Superimposed
137/8803 . . . .	Also carries head of other valve	152/10315 . . . .	Superimposed
137/88038 . . .	One valve head carries other valve head	152/10324 . . . .	with apertured external binders
137/88046 . . .	Biased valve with external operator	152/10333 . . . .	Radial bolt secured
137/88054 . . .	Direct response normally closed valve limits direction of flow	152/10342 . . . .	Abutting sections
137/88062 . . .	Coaxial oppositely directed seats	152/10351 . . . . .	with annular internal binders
137/8807 . . .	Articulated or swinging flow conduit	152/1036 . . . . .	Interfitting
137/88078 . . .	Actuates valve	152/10369 . . . . .	Indented at joints
137/88086 . . . .	Plural motions of valve	152/10378 . . .	Casing enclosed core
137/88094 . . . .	Reciprocating valve	152/10387 . . . .	Separate core
137/88102 . . . .	Rotary valve	152/10396 . . . . .	Removable
137/8811 . .	Frangible	152/10405 . . . . .	Sponge rubber
137/9029 . .	With coupling	152/10414 . . . . .	with core compression
137/9138 . .	Flexible	152/10423 . . . . .	Superimposed rings
137/9247 . .	With closure	152/10432 . . . . .	Sectional transversely
137/9464 . .	Faucets and spouts	152/10441 . . . . .	Balls
137/9682 . .	Miscellaneous	152/1045 . . . . .	Integral structure
		152/10459 . . . . .	Recessed
		152/10468 . . . . .	Chambered
		152/10477 . . . . .	Perforated
		152/10486 . . . . .	Chambered
		152/10495 . .	Pneumatic tire or inner tube
		152/10504 . . .	Asymmetric tire
		152/10513 . . .	Tire reinforcement material characterized by short length fibers or the like
		152/10522 . . .	Multiple chamber
		152/10531 . . . .	Cylinder and piston
		152/1054 . . . . .	Mutually free walls
		152/10549 . . . . .	Interfitting
		152/10558 . . . . .	Balls
		152/10567 . . . . .	with simultaneous inflating means
		152/10576 . . . .	Annular chambers

**Former US Class 152 Series**

<b>152/00</b>	<b>Resilient tires and wheels</b>
152/10	. Tires, resilient
152/10009	. . Emergency
152/10018	. . with splash guards
152/10027	. . with wear indicating feature
152/10036	. . Cushion and pneumatic combined

152/10585	. . . . .	with simultaneous inflating means	156/10	. . . . .	Methods of surface bonding and/or assembly therefor
152/10594	. . . . .	Mutually free walls	156/1002	. . . . .	with permanent bending or reshaping or surface deformation of self sustaining lamina
152/10603	. . . . .	with simultaneous inflating means	156/1003	. . . . .	by separating laminae between spaced secured areas [e.g., honeycomb expanding]
152/10612	. . . . .	with simultaneous inflating means	156/1005	. . . . .	by inward collapsing of portion of hollow body
152/10621	. . . . .	Sectional casings	156/1007	. . . . .	Running or continuous length work
152/1063	. . . . .	Circumferential	156/1008	. . . . .	Longitudinal bending
152/10639	. . . . .	Rigid inner sections	156/101	. . . . .	Prior to or during assembly with additional lamina
152/10648	. . . . .	with means restricting relative movement between tire and inner tube [e.g., anti-creep feature, etc.]	156/1011	. . . . .	Overedge bending or overedge folding
152/10657	. . . . .	with means to protect inner tube from rim	156/1013	. . . . .	and edge-joining of one piece blank to form tube
152/10666	. . . . .	Automatic sealing of punctures [e.g., self-healing, etc.]	156/1015	. . . . .	Folding
152/10675	. . . . .	Using flowable coating or composition	156/1016	. . . . .	Transverse corrugating
152/10684	. . . . .	On inner surface of tubeless tire	156/1018	. . . . .	Subsequent to assembly of laminae
152/10693	. . . . .	Sealant in plural layers or plural pockets	156/102	. . . . .	with deformation or cutting of corrugated lamina
152/10702	. . . . .	within or part of construction of inflating inner tube	156/1021	. . . . .	Treating material of corrugated lamina or dry adhesive thereon to render tacky
152/10711	. . . . .	Sealant in plural layers or plural pockets	156/1023	. . . . .	Surface deformation only [e.g., embossing]
152/1072	. . . . .	by compression	156/1025	. . . . .	to form undulated to corrugated sheet and securing to base with parts of shaped areas out of contact
152/10729	. . . . .	with reinflating means	156/1026	. . . . .	with slitting or removal of material at reshaping area prior to reshaping
152/10738	. . . . .	with means to protect tire from rim	156/1028	. . . . .	by bending, drawing or stretch forming sheet to assume shape of configured lamina while in contact therewith
152/10747	. . . . .	Means other than rim closing the tire opening	156/103	. . . . .	Encasing or enveloping the configured lamina
152/10756	. . . . .	Positive casing closure	156/1031	. . . . .	with preshaping of lamina
152/10765	. . . . .	Characterized by belt or breaker structure	156/1033	. . . . .	Flexible sheet to cylinder lamina
152/10774	. . . . .	Consisting of only one ply	156/1034	. . . . .	Overedge bending of lamina about edges of sheetlike base
152/10783	. . . . .	Reinforcing plies made up from wound narrow ribbons	156/1036	. . . . .	Bending of one piece blank and joining edges to form article
152/10792	. . . . .	Structure where each bias angle reinforcing cord ply has no opposingly angled ply	156/1038	. . . . .	Hollow cylinder article
152/10801	. . . . .	Structure made up of two or more sets of plies wherein the reinforcing cords in one set lie in a different angular position relative to those in other sets	156/1039	. . . . .	Surface deformation only of sandwich or lamina [e.g., embossed panels]
152/1081	. . . . .	Breaker or belt characterized by the chemical composition or physical properties of elastomer or the like	156/1041	. . . . .	Subsequent to lamination
152/10819	. . . . .	Characterized by the structure of the bead portion of the tire	156/1043	. . . . .	Subsequent to assembly
152/10828	. . . . .	Chafer or sealing strips	156/1044	. . . . .	of parallel stacked sheets only
152/10837	. . . . .	Bead characterized by the radial extent of apex, flipper or chafer into tire sidewall	156/1046	. . . . .	Bending of one lamina only
152/10846	. . . . .	Bead characterized by the chemical composition and or physical properties of elastomers or the like	156/1048	. . . . .	to form dished or receptacle-like product
152/10855	. . . . .	Characterized by the carcass, carcass material, or physical arrangement of the carcass materials	156/1049	. . . . .	Folding only
152/10864	. . . . .	Sidewall stiffening or reinforcing means other than main carcass plies or foldups thereof about beads	156/1051	. . . . .	by folding
152/10873	. . . . .	with two or more differing cord materials	156/1052	. . . . .	with cutting, punching, tearing or severing
152/10882	. . . . .	Patches	156/1054	. . . . .	and simultaneously bonding [e.g., cut-seaming]
152/10891	. . . . .	Mechanically secured	156/1056	. . . . .	Perforating lamina
152/109	. . . . .	Inside and outside, bolt connected	156/1057	. . . . .	Subsequent to assembly of laminae
152/10909	. . . . .	with plugs	156/1059	. . . . .	Splitting sheet lamina in plane intermediate of faces
152/10918	. . . . .	Bandages	156/1061	. . . . .	Spiral peeling
152/10927	. . . . .	Mechanically secured	156/1062	. . . . .	Prior to assembly
152/10936	. . . . .	to felly or rim	156/1064	. . . . .	Partial cutting [e.g., grooving or incising]
			156/1066	. . . . .	Cutting to shape joining edge surfaces only
			156/1067	. . . . .	Continuous longitudinal slitting
			156/1069	. . . . .	Bonding face to face of laminae cut from single sheet
			156/107	. . . . .	Punching and bonding pressure application by punch

**Former US Class 156 Series**

**156/00**      **Adhesive bonding and miscellaneous chemical manufacture**

156/1072	. . . . . Closure cap liner applying type	156/13	. . Severing followed by associating with part from same source
156/1074	. . . . . Separate cutting of separate sheets or webs	156/1304	. . Means making hole or aperture in part to be laminated
156/1075	. . . . . of plural laminae from single stock and assembling to each other or to additional lamina	156/1309	. . . and securing separate part over hole or aperture
156/1077	. . . . . Applying plural cut laminae to single face of additional lamina	156/1313	. . Cutting element simultaneously bonds [e.g., cut seaming]
156/1079	. . . . . Joining of cut laminae end-to-end	156/1317	. . Means feeding plural workpieces to be joined
156/108	. . . Flash, trim or excess removal	156/1322	. . . Severing before bonding or assembling of parts
156/1082	. . . Partial cutting bonded sandwich [e.g., grooving or incising]	156/1326	. . . . . Severing means or member secured thereto also bonds
156/1084	. . . of continuous or running length bonded web	156/133	. . . . . Delivering cut part to indefinite or running length web
156/1085	. . . . . One web only	156/1335	. . . . . Cutter also delivers cut piece
156/1087	. . . . . Continuous longitudinal slitting	156/1339	. . . . . Delivering cut part in sequence to serially conveyed articles
156/1089	. . of discrete laminae to single face of additional lamina	156/1343	. . . Cutting indefinite length web after assembly with discrete article
156/109	. . . Embedding of laminae within face of additional laminae	156/1348	. . Work traversing type
156/1092	. . . All laminae planar and face to face	156/1352	. . . with liquid applying means
156/1093	. . . . . with covering of discrete laminae with additional lamina	156/1357	. . . . . Slitting and severing
156/1095	. . . . . Opposed laminae are running length webs	156/1361	. . . . . Cutting after bonding
156/1097	. . . . . Lamina is running length web	156/1365	. . . Fixed cutter
156/1098	. . . . . Feeding of discrete laminae from separate sources	156/137	. . Stamp from multiple row sheet type
156/11	. Methods of delaminating, <u>per se</u> ; i.e. , separating at bonding face	156/1374	. . with means projecting fluid against work
156/1105	. . Delaminating process responsive to feed or shape at delamination	156/1378	. . Cutter actuated by or secured to bonding element
156/1111	. . Using solvent during delaminating [e.g., water dissolving adhesive at bonding face during delamination, etc.]	156/1383	. . . with liquid applicator
156/1116	. . . Using specified organic delamination solvent	156/1387	. . . . . Common actuator for bonding and liquid applying means
156/1121	. . Using vibration during delaminating	156/1391	. . . . . Liquid applied to web before cutting
156/1126	. . Using direct fluid current against work during delaminating	156/1396	. . . . . Roller applicator
156/1132	. . . Using vacuum directly against work during delaminating	156/14	. Surface bonding means and/or assembly means with shaping, scarifying, or cleaning joining surface only
156/1137	. . . Using air blast directly against work during delaminating	156/15	. Combined or convertible surface bonding means and/or assembly means
156/1142	. . Changing dimension during delaminating [e.g., crushing, expanding, warping, etc.]	156/16	. Surface bonding means and/or assembly means with bond interfering means [slip sheet, etc. ]
156/1147	. . . Using shrinking or swelling agent during delaminating	156/17	. Surface bonding means and/or assembly means with work feeding or handling means
156/1153	. . Temperature change for delamination [e.g., heating during delaminating, etc.]	156/1702	. . For plural parts or plural areas of single part
156/1158	. . . Electromagnetic radiation applied to work for delamination [e.g., microwave, uv, ir, etc.]	156/1705	. . . Lamina transferred to base from adhered flexible web or sheet type carrier
156/1163	. . . Sintering for delamination	156/1707	. . . . . Discrete spaced laminae on adhered carrier
156/1168	. . Gripping and pulling work apart during delaminating	156/171	. . . . . Means serially presenting discrete base articles or separate portions of a single article
156/1174	. . . Using roller for delamination [e.g., roller pairs operating at differing speeds or directions, etc.]	156/1712	. . . Indefinite or running length work
156/1179	. . . with poking during delaminating [e.g., jabbing, etc.]	156/1715	. . . . . Means joining indefinite length work edge to edge
156/1184	. . . . . Piercing layer during delaminating [e.g., cutting, etc.]	156/1717	. . . . . Means applying adhesively secured tape to seam
156/1189	. . . with shearing during delaminating	156/172	. . . . . Means applying fluid adhesive to work edge
156/1195	. . . Delaminating from release surface	156/1722	. . . . . Means applying fluent adhesive or adhesive activator material between layers
156/12	. Surface bonding means and/or assembly means with cutting, punching, piercing, severing or tearing	156/1724	. . . . . At spaced areas
156/125	. . Plural severing means each acting on a different work piece	156/1727	. . . . . Plural indefinite length or running length workpieces
		156/1729	. . . . . Fluid applied to nip between indefinite length webs
		156/1732	. . . . . Fluid applied to plural workpieces
		156/1734	. . . . . Means bringing articles into association with web

156/1737 . . . . Discontinuous, spaced area, and/or patterned pressing

156/1739 . . . . Webs of different width, longitudinally aligned

156/1741 . . . . Progressive continuous bonding press [e.g., roll couples]

156/1744 . . . Means bringing discrete articles into assembled relationship

156/1746 . . . . Plural lines and/or separate means assembling separate sandwiches

156/1749 . . . . All articles from single source only

156/1751 . . . . At least three articles

156/1754 . . . . . At least two applied side by side to common base

156/1756 . . . . . Plural ranks

156/1759 . . . . . Sheet form common base

156/1761 . . . . . Stacked serially

156/1763 . . . . Magazine stack directly contacting separate work

156/1766 . . . . . Magazine movable to work

156/1768 . . . . Means simultaneously conveying plural articles from a single source and serially presenting them to an assembly station

156/1771 . . . . . Turret or rotary drum-type conveyor

156/1773 . . . . . For flexible sheets

156/1776 . . . . Means separating articles from bulk source

156/1778 . . . . . Stacked sheet source

156/178 . . . . . Rotary or pivoted picker

156/1783 . . . . . Translating picker

156/1785 . . Magazine stack directly contacting work

156/1788 . . Work traversing type and/or means applying work to wall or static structure

156/179 . . . with liquid applying means

156/1793 . . . Grip or clamp for web end

156/1795 . . . Implement carried web supply

156/1798 . . with liquid adhesive or adhesive activator applying means

156/18 . . Surface bonding means and/or assembly means with handle or handgrip

156/19 . . Delaminating means

156/1906 . . Delaminating means responsive to feed or shape at delamination

156/1911 . . Heating or cooling delaminating means [e.g., melting means, freezing means, etc.]

156/1917 . . . Electromagnetic radiation delaminating means [e.g., microwave, uv, ir, etc.]

156/1922 . . Vibrating delaminating means

156/1928 . . Differential fluid pressure delaminating means

156/1933 . . . Spraying delaminating means [e.g., atomizer, etc.]

156/1939 . . . . Air blasting delaminating means]

156/1944 . . . Vacuum delaminating means [e.g., vacuum chamber, etc.]

156/195 . . Delaminating roller means

156/1956 . . . Roller pair delaminating means

156/1961 . . Severing delaminating means [e.g., chisel, etc.]

156/1967 . . . Cutting delaminating means

156/1972 . . . . Shearing delaminating means

156/1978 . . Delaminating bending means

156/1983 . . . Poking delaminating means

156/1989 . . . Corner edge bending delaminating means

156/1994 . . Means for delaminating from release surface

**Former US Class 225 series****225/00****Severing by tearing or breaking**

225/10

. Methods

225/12

. . With preliminary weakening

225/14

. . Longitudinally of direction of feed

225/16

. . Transversely of continuously fed work

225/18

. . . Progressively to or from one side edge

225/20

. Severing by manually forcing against fixed edge

225/201

. . With other type severing means

225/202

. . With timer-released means for preventing work feed-out

225/203

. . Including means to effect bias cut

225/205

. . With feed-out of predetermined length from work supply

225/206

. . . Including means to select or adjust feed-out length

225/207

. . . Including feed-out stop for manually pulled work

225/208

. . . . Stop abuts work edge or work-mounted article

225/209

. . . . With feed-out of lead-end to aid initial grasping

225/21

. . . Merely to provide lead-end for manual grasping

225/211

. . . Manually operated feed-out mechanism

225/213

. . With indicator

225/214

. . . Indicates length to be severed from supply

225/215

. . With blade-edge guard

225/216

. . . Movable

225/217

. . Work stripped from blade by relatively movable means

225/218

. . . Including movable blade

225/22

. . With means to move work toward or into severing position

225/221

. . . With means to strip adhering work therefrom

225/222

. . With work-immobilizing paster surface

225/223

. . . With finger-access opening

225/224

. . With means to hold pad or stack of individual sheets

225/225

. . . With means to separate severed end of stub from supply package

225/226

. . . With changeable blade-edge contour

225/228

. . . . Slidable notcher

225/229

. . . Blade slidable along plane of work surface

225/23

. . Zigzag-folded supply package

225/231

. . Separate blades usable alternatively or sequentially on same work supply

225/232

. . Plural supply sources

225/233

. . . On turret-type support with single blade

225/234

. . . With movable blade registrable selectively with each source

225/236

. . . With plural blades

225/237

. . . . With individual blade for each source

225/238

. . With housing for work supply

225/239

. . . Liquid-, gas-, or light-tight work passage

225/24

. . . With inspection window or transparent panel

225/241

. . . With mounting means for housing

225/243

. . . Blade on pivoted closure for housing

225/244

. . . Sectional telescoping housing

225/245

. . . . Including removable cap or sleeve enclosure for spooled work supply

225/246 . . . Including special support for wound supply package

225/247 . . . . Bearing or trunnions to engage package core

225/248 . . . Single blank container

225/249 . . . . Blade unitary with container

225/251 . . . . With closure fastener

225/252 . . . With brake or tensioner

225/253 . . . . Restricted or restrictable work outlet

225/254 . . . With finger-access opening to facilitate work feed-out

225/255 . . . With internal guide

225/256 . . Blade carrier bodily and slidably supported on running length work

225/257 . . Blade mounted on hand-held wound package

225/259 . . . With lead-end stripper for tacky adhesive work

225/26 . . . By resiliently embracing outer circumference of package

225/261 . . . Work supply nonrotatably wound on flanged spool

225/262 . . . . Circumferentially movable blade radially retained by beaded or grooved flanges

225/263 . . . . Blade carrier supports hollow spool for rotation

225/264 . . . . Flange edge notched to provide or coact with cutter

225/266 . . . . With clamp for lead-end of strand-type work

225/267 . . . . Strand clamped against flange

225/268 . . . By resiliently engaging package ends or interior of core

225/269 . . . Blade carrier supports package for rotation

225/27 . . Movable blade continually biased toward wound web supply package

225/271 . . . Including temporary bias-disabling means

225/272 . . . Including stripper to separate lead-end from package

225/274 . . . Weight of bodily movable package contributes to blade-biasing force

225/275 . . . Blade slidably guided

225/276 . . Blade movable to severing position by moving work

225/277 . . . With simultaneous application of brake or clamp

225/278 . . . . Applied to running length work

225/279 . . . . . Opposed movable jaws

225/28 . . Wound package bodily biased toward fixed blade

225/282 . . With fixed blade and support for wound package

225/283 . . . Body- or belt-attached

225/284 . . . With brake applied to supply package

225/285 . . . With guide spaced from blade edge to provide lead-end therebetween

225/286 . . With work-abutment stop

225/287 . . With brake or clamp

225/289 . . . Thread cutter and clamp attachment for sewing machine presser foot

225/29 . . . Applied to running length work

225/291 . . . . Spaced from blade edge to provide lead-end therebetween

225/292 . . . . . Blade manually movable to expose lead-end

225/293 . . . Manually applied, spring returned

225/294 . . With guide for running length work

225/295 . . Blade manually movable to or from severing position

225/297 . . With means to facilitate lead-end grasping

225/298 . . Blades or severing devices

225/299 . . . Adjustable blade-edge contour

225/30 . . Breaking or tearing apparatus

225/304 . . Including means to apply thermal shock to work

225/307 . . Combined with preliminary weakener or with nonbreaking cutter

225/314 . . . Successively actuated sharp and dull tools

225/321 . . . Preliminary weakener

225/325 . . . . With means to apply moment of force to weakened work

225/329 . . Plural breakers

225/336 . . Conveyor diverter for moving work

225/343 . . . Plural divergent work paths

225/35 . . Work-parting pullers [bursters]

225/357 . . . Relatively movable clamps

225/364 . . Axial twisters

225/371 . . Movable breaking tool

225/379 . . . Breaking tool intermediate spaced work supports

225/386 . . . . Clamping supports

225/393 . . Web restrainer

**Former US Class 279 Series****279/00 Chucks or sockets**

279/10 . . Expanding

279/1004 . . Collet type

279/1008 . . . Fixed jaws and moving cam

279/1012 . . . Fixed cam and moving jaws

279/1016 . . Jaws mounted on flexible member; i.e., diaphragm

279/1021 . . Fluid-pressure actuator

279/1024 . . . Directly expanding jaws

279/1029 . . . . Jaw is expansible chamber; i.e., bladder type

279/1033 . . . Expanding jaws via mechanical connection

279/1037 . . Axially moving actuator

279/1041 . . . Wedge

279/1045 . . . . Internal cone

279/1049 . . . . with jaw positively interlocked with wedge; e.g., dovetail or T-slot

279/1054 . . . . with resilient means contacting nonresilient jaw

279/1058 . . . . . Constricting band, annulus, or clip

279/1062 . . . Toggle

279/1066 . . . Axially compressible element expands radially

279/1071 . . . Lever

279/1074 . . Rotary actuator

279/1079 . . . Clutch or self-actuating type

279/1083 . . Jaw structure

279/1087 . . . Resilient

279/1091 . . . Ball or roller

279/1095 . . . Pivoted

279/11 . . Vacuum

279/12 . . with fluid-pressure actuator

279/1208 . . with measuring, indicating or control means

279/1216 . . Jaw is expansible chamber; i.e., bladder type

279/1224 . . Pneumatic type

279/1233 . . Jaws mounted on flexible member; i.e., diaphragm

279/1241 . . Socket type

279/1249 . . . Collet

279/1258 . . . . Fixed cam and moving jaws

279/1266	. . . . Moving cam and fixed jaws	279/17427	. . . . Split at one end only
279/1274	. . Radially reciprocating jaws	279/17435	. . . . Split at both ends
279/1283	. . . Fluid pressure directly moves jaws	279/17444	. . . . Split end to end
279/1291	. . . Fluid pressure moves jaws via mechanical connection	279/17452	. . . . with jaw pads or insert
279/13	. Angularly adjustable or indexing	279/17461	. . . Nonresilient member biased by a resilient member
279/14	. Eccentric	279/17471	. . . Resilient member reinforced by another resilient member
279/15	. Threaded grip	279/17478	. . . with means to exclude contaminants; e.g., seal, shield
279/16	. Longitudinal screw clamp	279/17487	. . . Moving-cam actuator
279/17	. Socket type	279/17495	. . . . Threaded sleeve and wedge
279/17008	. . Multiple alternative	279/17504	. . . . Threaded cam sleeve
279/17017	. . Self-centering of floating	279/17512	. . . . . Loose jaws
279/17025	. . . Radially reciprocating jaws	279/17521	. . . . Reciprocating cam sleeve
279/17034	. . . Transverse holder and setscrew	279/17529	. . . Fixed cam and moving jaws
279/17042	. . Lost motion	279/17538	. . . . Threaded-sleeve actuator
279/17051	. . . Swinging external yoke or detent	279/17547	. . . . Axial screw actuator
279/17059	. . . . Rotary socket	279/17555	. . . Loose jaws
279/17068	. . . Rotary socket	279/17564	. . Loose jaws
279/17076	. . . Spreading elements	279/17572	. . . Moving-cam actuator
279/17085	. . . Key retainer	279/17581	. . . . Threaded cam sleeve
279/17094	. . . Sleeve type retainer	279/17589	. . . . Reciprocating cam sleeve
279/17102	. . . . Sleeve in socket	279/17598	. . . Fixed cam and moving jaws
279/17111	. . Fluid-conduit drill holding	279/17606	. . . . Threaded sleeve and body
279/17119	. . Feed type	279/17615	. . Obliquely guided reciprocating jaws
279/17128	. . Self-grasping	279/17623	. . . Threaded sleeve and jaw
279/17136	. . . Yielding grasping jaws	279/17632	. . . . Conical sleeve
279/17145	. . . . Ball or roller	279/17641	. . . Threaded central cone and jaw
279/17153	. . . . Spring jaws	279/17649	. . . Threaded sleeve and body
279/17162	. . . Yielding detent	279/17658	. . . Reciprocating jaw advancing sleeve
279/17171	. . . One-way-clutch type	279/17666	. . Radially reciprocating jaws
279/17179	. . . . Wedge	279/17675	. . . Transverse-screw actuated
279/17188	. . . . Side detent	279/17683	. . . . Interlaced jaws
279/17196	. . . . . Ball or roller	279/17692	. . . Moving-cam actuator
279/17205	. . Conical clamp threaded in socket	279/17701	. . . . Threaded cam sleeve
279/17213	. . Transversely oscillating jaws	279/17709	. . . . Threaded sleeve and wedge
279/17222	. . . Screw actuated	279/17717	. . . . Rotary eccentric-cam sleeve
279/17231	. . Pivoted jaws	279/17726	. . . . . Roller and rocking jaw
279/17239	. . . Moving-cam actuator	279/17735	. . . . . Worm actuated
279/17247	. . . . Threaded cam sleeve	279/17743	. . . . Reciprocating cam sleeve
279/17256	. . . . Reciprocating cam sleeve	279/17752	. . . . . Ball or roller jaws
279/17264	. . . Fixed cam and moving jaws	279/17761	. . Side detent
279/17273	. . . . Axial screw actuator	279/17769	. . . Pivoted or rotary
279/17282	. . . . Threaded-sleeve actuator	279/17777	. . . . Sleeved
279/17291	. . Resilient split socket	279/17786	. . . Spring
279/17299	. . . Threaded cam sleeve	279/17794	. . . . Sleeved
279/17307	. . . Reciprocating cam sleeve	279/17803	. . . Rotary cam sleeve
279/17316	. . . Unitary	279/17811	. . . Reciprocating sleeve
279/17324	. . . . Split at one end only	279/17821	. . . Set screw
279/17333	. . . . . Transverse screw actuator	279/17829	. . . U-clamp
279/17341	. . . . . Cam actuator	279/17837	. . . Plural bolt
279/17351	. . . . Split end to end	279/17846	. . . Single transverse bolt
279/17358	. . . . with jaw pads or insert	279/17854	. . . Longitudinal clamping wedge
279/17367	. . . Nonresilient member biased by a resilient member	279/17863	. . Shouldered-tang holding
279/17376	. . . Resilient member reinforced by another resilient member	279/17871	. . . Cap
279/17384	. . with means to exclude contaminants; e.g., seal, shield	279/17881	. . . . Screw
279/17393	. . One movable side	279/17888	. . Tang offset within socket
279/17401	. . . Sleeved	279/17897	. . Tang offset without socket
279/17411	. . Spring biased jaws	279/17905	. . Bottomless
279/17418	. . . Unitary	279/17914	. . . Friction grip



279/17923 . . Transverse pin  
 279/17931 . . Screw threaded  
 279/17941 . . . Nut lock  
 279/17948 . . . . Threaded sleeve  
 279/17957 . . Friction grip  
 279/17965 . . . Drill type  
 279/17974 . . Barbed or pronged tang  
 279/17982 . . Molded or cast-in tang  
 279/17991 . . Adjustable length or size  
 279/18 . . Pivoted jaw  
 279/182 . . Cam-sleeve actuated  
 279/185 . . Internal-cone actuated  
 279/188 . . Toggle actuated  
 279/19 . . Radially reciprocating jaws  
 279/1906 . . with indicator  
 279/1913 . . Transverse-screw actuated  
 279/1921 . . . Annular rack  
 279/1926 . . Spiral cam or scroll actuated  
 279/1933 . . . Worm  
 279/1941 . . . Bevel pinion  
 279/1946 . . Rack-and-pinion actuated  
 279/1953 . . Toggle actuated  
 279/1961 . . Lever actuated  
 279/1966 . . . Internal cone  
 279/1973 . . Wedge actuated  
 279/1981 . . External-cone actuated  
 279/1986 . . Jaws  
 279/1993 . . . with means to facilitate jaw removal  
 279/20 . . with safety feature  
 279/21 . . with measuring, indicating or control means  
 279/22 . . Double acting  
 279/23 . . with magnetic or electrostatic means  
 279/24 . . by centrifugal force  
 279/243 . . to counterbalance jaws  
 279/247 . . to grip tool or workpiece  
 279/25 . . Compensation for eccentricity  
 279/26 . . with centering means  
 279/27 . . Separate chuck-actuating power source  
 279/275 . . Self-contained  
 279/28 . . for gear or spline molding  
 279/29 . . More than one set of gripping means  
 279/30 . . Torsion mandrel  
 279/31 . . Jaws mounted on flexible member; i.e. , diaphragm  
 279/32 . . Means to prevent jaw loosening  
 279/33 . . Member applies axial force component  
 279/34 . . Accessory or component  
 279/3406 . . Adapter  
 279/3412 . . . Drive conversion  
 279/3418 . . . for particular tool or workpiece  
 279/3425 . . Sliding cam chuck actuator  
 279/3431 . . Chuck key  
 279/3437 . . . Safety feature; e.g., ejector, interlock  
 279/3443 . . . Key holding or attaching means  
 279/3451 . . . Nonseparable or built-in  
 279/3456 . . Padded or cushioned jaw  
 279/3462 . . Jaw insert  
 279/3468 . . . Machinable jaw  
 279/3475 . . . . Locking or positioning means  
 279/3481 . . Tool or workpiece ejector  
 279/3487 . . Tool or work stop or locator

279/3493 . . Protection means; e.g., cover, seal, overstress prevention, air blast  
 279/35 . . Miscellaneous

**Former US Class 292 series**

**292/00 Closure fasteners**  
 292/03 . Miscellaneous  
 292/06 . Adjustable backset  
 292/08 . Bolts  
 292/0801 . . Multiple  
 292/0802 . . . Sliding and rotary  
 292/0803 . . . Sliding and swinging  
 292/0805 . . . . Combined motion  
 292/0806 . . . . . Lever-operating means  
 292/0807 . . . Sliding and hooked end  
 292/0808 . . . Sliding and roller  
 292/0809 . . . Sliding and spring arm  
 292/081 . . . Swinging and hooked end  
 292/0811 . . . Swinging and roller  
 292/0813 . . . Swinging and spring arm  
 292/0814 . . . Double acting  
 292/0815 . . . . Roller  
 292/0816 . . . . Sliding  
 292/0817 . . . . Spring arm  
 292/0818 . . . . Swinging  
 292/082 . . . Spring arm  
 292/0821 . . . . Combined motion  
 292/0822 . . . Emergency operating means  
 292/0823 . . . Gear  
 292/0824 . . . Roller  
 292/0825 . . . Hooked end  
 292/0826 . . . . Operating means  
 292/0828 . . . . . Link and lever  
 292/0829 . . . . . Cam  
 292/083 . . . . . Flexible  
 292/0831 . . . . . Lever  
 292/0832 . . . . . Push or pull rod  
 292/0833 . . . . . Rigid  
 292/0834 . . . Sliding  
 292/0836 . . . . Operating means  
 292/0837 . . . . . Cam and lever  
 292/0838 . . . . . Lever and push or pull rod  
 292/0839 . . . . . Link and lever  
 292/084 . . . . . Cam  
 292/0841 . . . . . Flexible  
 292/0843 . . . . . Gear  
 292/0844 . . . . . Lever  
 292/0845 . . . . . Push or pull rod  
 292/0846 . . . . . Rigid  
 292/0847 . . . . . Screw  
 292/0848 . . . Swinging  
 292/0849 . . . . Operating means  
 292/0851 . . . . . Cam and lever  
 292/0852 . . . . . Link and cam  
 292/0853 . . . . . Link and lever  
 292/0854 . . . . . Cam  
 292/0855 . . . . . Flexible  
 292/0856 . . . . . Gear  
 292/0857 . . . . . Lever  
 292/0859 . . . . . Push or pull rod  
 292/086 . . . . . Rigid

292/0861	. . . . . Screw	292/0931	. . . . . Flexible
292/0862	. . Swinging and hooked end, multiple head	292/0932	. . . . . Lever
292/0863	. . Sliding and rotary	292/0933	. . . . . Push or pull rod
292/0864	. . . Combined motion	292/0934	. . . . . Rigid
292/0866	. . . Multiple head	292/0936	. . . Spring retracted
292/0867	. . . Spring projected	292/0937	. . . Gravity actuated
292/0868	. . . . Combined motion	292/0938	. . . . Operating means
292/0869	. . . Spring retracted	292/0939	. . . . . Cam
292/087	. . Loops	292/094	. . . . . Flexible
292/0871	. . . Sliding and swinging, lever-operating means	292/0941	. . . . . Lever
292/0872	. . . Sliding catch	292/0943	. . . . . Push or pull rod
292/0874	. . . Spring-arm catch	292/0944	. . . . . Rigid
292/0875	. . . Swinging catch	292/0945	. . . Operating means
292/0876	. . Double acting	292/0946	. . . . Link and lever
292/0877	. . . Sliding and swinging	292/0947	. . . . . Cam
292/0878	. . . Sliding	292/0948	. . . . . Closure
292/0879	. . . . Roller	292/0949	. . . . . Lever
292/088	. . . Spring arm	292/0951	. . . . . Rigid
292/0882	. . . . Roller	292/0952	. . . . . Closure catch
292/0883	. . . Swinging	292/0953	. . . . . Friction catch
292/0884	. . . . Roller	292/0954	. . . . . Padlock or seal catch
292/0885	. . . Roller	292/0955	. . . . . Screw catch
292/0886	. . Sliding and swinging	292/0956	. . . . . Sliding catch
292/0887	. . . Operating means	292/0957	. . . . . Spring-arm catch
292/0889	. . . . Cam	292/0959	. . . . . Swinging catch
292/089	. . . . Lever	292/096	. . Sliding
292/0891	. . . . Rigid	292/0961	. . . Multiple head
292/0892	. . . Multiple head	292/0962	. . . . Operating means
292/0893	. . . Spring retracted	292/0963	. . . . . Link and lever
292/0894	. . Spring arm	292/0964	. . . . . Cam
292/0895	. . . Operating means	292/0966	. . . . . Gear
292/0897	. . . . Link and lever	292/0967	. . . . . Lever
292/0898	. . . . Cam	292/0968	. . . . . Rigid
292/0899	. . . . Flexible	292/0969	. . . Spring projected
292/09	. . . . Lever	292/097	. . . . Operating means
292/0901	. . . . Push or pull rod	292/0971	. . . . . Cam and lever
292/0902	. . . . Rigid	292/0972	. . . . . Lever and push or pull rod
292/0903	. . . . . Seal catch	292/0974	. . . . . Link and lever
292/0905	. . . . . Swinging catch	292/0975	. . . . . Link and push or pull rod
292/0906	. . . . . Screw	292/0976	. . . . . Sliding cam
292/0907	. . . Multiple head	292/0977	. . . . . Cam
292/0908	. . Emergency operating means	292/0978	. . . . . Specifically related to vehicle closure
292/0909	. . . Panel	292/0979	. . . . . Bolt disabled by contraretractive movement of inside handle
292/091	. . . Platform		
292/0911	. . Hooked end	292/098	. . . . . Auxiliary bolt
292/0913	. . . Sliding and swinging	292/0982	. . . . . Bolt blocking or disabling means
292/0914	. . . . Operating means	292/0983	. . . . . Involves rollback
292/0915	. . . . . Cam	292/0984	. . . . . Rollback members located on separate spindles
292/0916	. . . . . Gear		
292/0917	. . . . . Lever	292/0985	. . . . . Discrete pivotable or rotatable actuator
292/0918	. . . . . Rigid		
292/092	. . . . . Screw	292/0986	. . . . . Discrete push or pull actuator
292/0921	. . . Multiple head	292/0987	. . . . . Bolt has ancillary projection spring
292/0922	. . . . Operating means	292/0989	. . . . . Plural rollback elements directionally selectively effective
292/0923	. . . . . Lever		
292/0924	. . . . . Push or pull rod	292/099	. . . . . On separate spindles
292/0925	. . . . . Rigid	292/0991	. . . . . On a tubular member
292/0926	. . . Spring projected	292/0992	. . . . . Flexible
292/0928	. . . . Operating means	292/0993	. . . . . Gear
292/0929	. . . . . Link and lever	292/0994	. . . . . Lever
292/093	. . . . . Cam	292/0995	. . . . . Push or pull rod
		292/0997	. . . . . Rigid

292/0998	. . . . .	Screw	292/1067	. . . . .	Link and lever
292/0999	. . .	Spring retracted	292/1068	. . . . .	Cam
292/10	. . . .	Friction catch	292/1069	. . . . .	Flexible
292/1001	. . . .	Sliding catch	292/107	. . . . .	Lever
292/1002	. . . .	Spring-arm catch	292/1071	. . . . .	Push or pull rod
292/1003	. . . .	Swinging catch	292/1072	. . . . .	Rigid
292/1005	. . . .	Cam-operating means	292/1074	. . . .	Roller
292/1006	. . .	Gravity actuated	292/1075	. . .	Operating means
292/1007	. . . .	Operating means	292/1076	. . . .	Link and lever
292/1008	. . . . .	Cam and lever	292/1077	. . . .	Cam
292/1009	. . . . .	Link and lever	292/1078	. . . .	Closure
292/101	. . . . .	Cam	292/1079	. . . .	Gear
292/1011	. . . . .	Lever	292/108	. . . .	Lever
292/1013	. . . . .	Rigid	292/1082	. . . .	Motor
292/1014	. . .	Operating means	292/1083	. . . .	Rigid
292/1015	. . . .	Link and lever	292/1084	. . . . .	Closure catch
292/1016	. . . .	Cam	292/1085	. . . . .	Friction catch
292/1017	. . . .	Flexible	292/1086	. . . . .	Padlock or seal catch
292/1018	. . . .	Gear	292/1087	. . . . .	Screw catch
292/102	. . . .	Lever	292/1089	. . . . .	Sliding catch
292/1021	. . . .	Motor	292/109	. . . . .	Seal
292/1022	. . . .	Rigid	292/1091	. . . . .	Spring-arm catch
292/1023	. . . . .	Closure catch	292/1092	. . . . .	Swinging catch
292/1024	. . . . .	Friction catch	292/1093	. . . . .	Seal
292/1025	. . . . .	Padlock or seal catch	292/1094	. . . .	Screw
292/1026	. . . . .	Screw catch	292/1095	. .	Seal-rupturing devices
292/1028	. . . . .	Sliding catch	292/1097	. .	Reversible
292/1029	. . . . .	Seal	292/1098	. . .	Cam and lever operating means
292/103	. . . . .	Spring-arm catch	292/1099	. .	Screw
292/1031	. . . . .	Swinging catch	292/11	. .	Magnetic
292/1032	. . . . .	Seal	292/14	. .	Ball
292/1033	. . . .	Screw	292/17	. .	Bendable securers
292/1034	. . .	Curved	292/175	. .	Bolt releasers
292/1036	. . .	End lever	292/18	. .	Free-end-engaging means
292/1037	. . .	Pivoted end	292/19	. .	Foot operated
292/1038	. . .	Roller	292/20	. .	Clamps
292/1039	. .	Swinging and camming	292/202	. .	Hatch fastener
292/10395	. . .	Spring projected	292/205	. .	Ring
292/104	. . . .	Rigid operating means	292/207	. . .	Permanently deformed
292/1041	. . .	Rigid operating means	292/209	. . .	Resilient wedge
292/1043	. .	Swinging	292/212	. . .	With expanding or contracting means
292/1044	. . .	Multiple head	292/214	. . . .	Screw
292/1045	. . . .	Operating means	292/216	. . . .	Toggle lever
292/1046	. . . . .	Cam	292/218	. .	Screw against closure
292/1047	. . . . .	Closure	292/221	. .	Screw and nut
292/1048	. . . . .	Lever	292/223	. . .	Swingable
292/1049	. . . . .	Rigid	292/225	. .	Cam-operating means
292/1051	. . .	Spring projected	292/228	. .	Portable
292/1052	. . . .	Operating means	292/23	. .	Cross bars
292/1053	. . . . .	Lever and push or pull rod	292/237	. .	Screw-operating means
292/1054	. . . . .	Link and cam	292/243	. .	Vehicle door latches
292/1055	. . . . .	Link and lever	292/25	. .	Cylinder
292/1056	. . . . .	Cam	292/28	. .	Extension link
292/1057	. . . . .	Flexible	292/282	. .	Multiple
292/1059	. . . . .	Lever	292/283	. .	Chain
292/106	. . . . .	Push or pull rod	292/285	. .	Notched bar
292/1061	. . . . .	Rigid	292/286	. . .	Sliding catch
292/1062	. . .	Spring retracted	292/288	. . .	Swinging catch
292/1063	. . .	Gravity actuated	292/289	. .	Slotted bar
292/1064	. . . .	Operating means	292/291	. . .	Sliding catch
292/1066	. . . . .	Cam and lever	292/293	. . .	Swinging catch

292/2935 . . Slotted or notched keeper  
 292/294 . . . Sliding catch  
 292/296 . . . Swinging catch  
 292/297 . . Notched keeper  
 292/299 . . Slotted keeper  
 292/301 . . Friction catch  
 292/302 . . Screw catch  
 292/304 . . Sliding catch  
 292/305 . . Swinging catch  
 292/306 . Gear  
 292/307 . . Sliding catch  
 292/308 . . Swinging catch  
 292/31 . Hasps  
 292/314 . . Sliding catch  
 292/319 . . . Seal  
 292/323 . . Swinging catch  
 292/327 . . . Seal  
 292/331 . . Seal catch  
 292/336 . . Seal-rupturing devices  
 292/34 . Portable  
 292/37 . Portable securer plate or bar  
 292/373 . . Sliding and swinging holding member  
 292/376 . . Screw-holding member  
 292/379 . . Sliding holding member  
 292/382 . . . Screw-operating means  
 292/385 . . . Screw catch  
 292/388 . . . Sliding catch  
 292/391 . . . Swinging catch  
 292/394 . . Swinging holding member  
 292/397 . . . Catch devices  
 292/40 . Rings  
 292/42 . Rigid engaging means  
 292/426 . . Screw catch  
 292/432 . . Sliding catch  
 292/438 . . Spring-arm catch  
 292/444 . . Swinging catch  
 292/45 . Rod clamps  
 292/47 . . Friction-plate catch  
 292/48 . Seals  
 292/481 . . Compressible disk  
 292/483 . . . Reinforced  
 292/484 . . . Multiple  
 292/485 . . . . Sheet metal  
 292/487 . . . . Hard and soft metal  
 292/488 . . . Sheet metal  
 292/49 . . Compressible rivets and eyelets  
 292/491 . . Distorted shackle  
 292/492 . . Driving  
 292/494 . . Interengaging shackle ends, inclosing housing  
 292/4945 . . Rigid shackle ends  
 292/495 . . . Resilient and rigid engaging means  
 292/496 . . . Resilient engaging means  
 292/497 . . Resilient shackle ends  
 292/498 . . . Rigid engaging means  
 292/499 . . . Resilient engaging means  
 292/50 . . Single piece, spring catch  
 292/502 . . Shiftable catch shackle operated  
 292/503 . . Split-ring catch, shackle operated  
 292/505 . . Strap-end fasteners  
 292/506 . . Rigid disk, distorted shackle  
 292/507 . . Tag type

292/509 . . Encasing  
 292/51 . Seal bolts  
 292/513 . Shackles  
 292/516 . . Sliding catch, seal  
 292/522 . . Swinging catch, seal  
 292/528 . . Seal catch  
 292/534 . . Seal-rupturing devices  
 292/54 . Trippers  
 292/546 . . Sliding detent  
 292/552 . . Spring-arm detent  
 292/558 . . Sliding bolt, swinging detent  
 292/564 . . Swinging bolt, swinging detent  
 292/57 . Operators with knobs or handles  
 292/59 . Rollback and spindle connection  
 292/62 . Bolt casings  
 292/65 . Braces  
 292/67 . . Portable  
 292/68 . Keepers  
 292/683 . . Segment  
 292/685 . . With anti-friction means  
 292/688 . . With silencing or anti-rattle means  
 292/691 . . . Take-up  
 292/694 . . Covers  
 292/696 . . With movable dog, catch or striker  
 292/699 . . . Motor controlled  
 292/702 . . . Pivoted or swinging  
 292/705 . . Adjustable  
 292/707 . . . Vertically  
 292/71 . Wedges  
 292/73 . . Portable  
 292/74 . Weights  
 292/76 . Blind-slat holders  
 292/79 . Bolt guards  
 292/82 . Knobs  
 292/85 . Knob-attaching devices  
 292/854 . . Friction  
 292/858 . . Screw  
 292/861 . . . Guards  
 292/865 . . Sliding  
 292/869 . . Spring arm  
 292/873 . . Swinging  
 292/876 . . Wedge  
 292/88 . Knob bearings  
 292/91 . Knob rose plates  
 292/93 . Latch spindles  
 292/96 . Latch-spindle catches

#### **Former US Class 403 Series**

**403/00 Joints and connections**  
 403/10 . Selectively engageable hub to shaft connection  
 403/11 . including frangible component  
 403/12 . Selectively assembled, e.g. , convertible, etc.  
 403/125 . . Selective orientation  
 403/13 . Inflatable connector  
 403/14 . with opening for access to connector or operator  
 403/142 . . to threaded component  
 403/145 . . . Transverse to thread axis  
 403/148 . . to biased component  
 403/15 . Closure or plug spaced from joint  
 403/16 . with adjunctive protector, broken parts retainer, repair, assembly or disassembly feature

403/1608	. . Holding means or protector functioning only during transportation, assembly or disassembly	403/32106	. . Member pivoted at rigid corner
403/1616	. . Position or guide means	403/32114	. . including static joint
403/1624	. . . Related to joint component	403/32122	. . . Trunnion assembly to side of rod
403/1633	. . Utilizing fluid pressure	403/32131	. . . One member is plate or side
403/1641	. . Back-off means, e.g., separator, etc.	403/32139	. . . . Secant, i.e., rod extending through plate
403/1649	. . Handle or handwheel	403/32147	. . . . Plate or side forms bearing surface
403/1658	. . . Actuates retainer or blocker	403/32155	. . . . Bearing component clamped to plate or side, e.g., bolted, etc.
403/1666	. . tool-engaging or accommodating means or with tool	403/32163	. . . Articulate joint intermediate end joints
403/1674	. . . for latch or retainer	403/32172	. . . . Variable angle
403/1683	. . Releasably captive nut or bolt	403/32181	. . . . . Universal
403/1691	. . Means to lock bolt or nut when other is turned	403/32188	. . . Angled or offset members
403/17	. with adjunctive shield	403/32196	. . . Articulate joint is ball and socket
403/18	. Structurally installed in diverse art device	403/32204	. . . . with threaded joint
403/185	. . Head or base	403/32213	. . . Articulate joint is a swivel
403/19	. Coupling supported by independent bearing	403/32221	. . . Articulate joint comprises pivoted clevis or channel bar
403/20	. with indicator or inspection means	403/32229	. . . Articulate joint is a slide
403/21	. Utilizing thermal characteristic, e.g. , expansion or contraction, etc.	403/32237	. . including operator
403/213	. . Interposed material of intermediate coefficient of expansion	403/32245	. . Arcuate shank moves in complementary guide
403/217	. . Members having different coefficients of expansion	403/32254	. . Lockable at fixed position
403/22	. with fluid pressure responsive component	403/32262	. . . At selected angle
403/23	. with ambient condition responsive control means	403/32271	. . . . Movable brace between members
403/24	. with independent handle or operator	403/32278	. . . . Members rotatable about oblique axes
403/25	. with distinct fluid or article handling or directing feature	403/32286	. . . . Clamping screw traverses sliding complementary arcuate bearing surfaces
403/251	. . External reservoir	403/32295	. . . . Securing yoke or ring spaced radially from locking means
403/253	. . Pressure fitting	403/32303	. . . . . Eyebolt
403/255	. . including port or reservoir communicating with joint	403/32311	. . . . . Ball and socket
403/257	. . . Articulated member	403/32319	. . . . . including pivot stud
403/259	. . . . At joint interface	403/32327	. . . . . including radially spaced detent or latch component
403/26	. Non-adhering fluent material at joint	403/32336	. . . . . Engaging notch or recess in outer periphery of component
403/27	. with strain-limiting means	403/32344	. . . . . Side of rod engages recess in radial face
403/28	. Combined	403/32352	. . . . . Pivoted detent
403/29	. Rotarily connected, differentially translatable members, e.g. , turn-buckle, etc.	403/32361	. . . . . Engaging recess in radial face
403/291	. . having tool-engaging means or operating handle	403/32368	. . . . . including radial interengaging tongue and slot or serrations
403/293	. . having operating mechanism	403/32377	. . . . . Radially spaced arcuate slot engages fastener
403/295	. . having locking means	403/32385	. . . . . Locked by plural motions of one member
403/297	. . Differential pitch, similar hand	403/32393	. . . . . including bridging keeper
403/299	. . Externally threaded actuator	403/32401	. . . . . Locked by nesting parts
403/30	. Laterally related members connected by latch means, e.g. , scaffold connectors	403/32409	. . . . . Members locked in axial alignment
403/31	. Flexible diaphragm or bellows	403/32418	. . . . . Plural distinct positions
403/315	. . with additional connection or packing	403/32426	. . . Plural distinct positions
403/32	. Articulated members	403/32434	. . . . Unidirectional movement, e.g., ratchet, etc.
403/32008	. . Plural distinct articulation axes	403/32442	. . . . At least one discrete position
403/32016	. . . Three or more parallel axes	403/32451	. . . . . Step-by-step adjustment
403/32024	. . . Single adjustment for plural axes	403/32459	. . . . . Retainer extends through aligned recesses
403/32032	. . . Plural ball and socket	403/32467	. . . Telescoping members
403/32041	. . . Universal	403/32475	. . . . having detent
403/32049	. . . . Non-coplanar axes	403/32483	. . . . . Spring biased
403/32057	. . . Angular and linear	403/32491	. . . . . Threaded
403/32065	. . . . Screw and swivel	403/32501	. . . . . Cam or wedge
403/32073	. . . . Pivot stud slidable in elongated opening	403/32508	. . . . . having transverse pin
403/32081	. . . Parallel rotary	403/32516	. . . . . Remotely actuated
403/32091	. . . Plural translating connections	403/32524	. . . . . Self-locking
403/32098	. . Branched	403/32532	. . . Clamped members

- 403/32541 . . . Rotatable members resiliently biased to one position
  - 403/32549 . . . including limit means
  - 403/32557 . . . . for pivotal motion
  - 403/32565 . . . . Ball and socket with restricted movement about one axis
  - 403/32573 . . . . . Ball stud passes through confining opening
  - 403/32581 . . . . . Pin and slot
  - 403/32591 . . . . . Opposed stops on one member
  - 403/32598 . . . Threaded interface
  - 403/32606 . . . Pivoted
  - 403/32614 . . . . including circumferential biasing or damping means
  - 403/32622 . . . . Rocking or rolling contact
  - 403/32631 . . . . Universal ball and socket
  - 403/32639 . . . . . including internal tie means
  - 403/32647 . . . . . Plural concave surfaces with diverse curvature
  - 403/32655 . . . . . Interposed concavo-convex component
  - 403/32663 . . . . . Outer surfaces
  - 403/32672 . . . . . Swiveled ball parts or seat
  - 403/32681 . . . . . Composite ball
  - 403/32688 . . . . . Spring biased segments
  - 403/32696 . . . . . Nonmetallic part
  - 403/32704 . . . . . Stud extends into ball
  - 403/32713 . . . . . Elastomerically biased or backed components
  - 403/32721 . . . . . Elastomeric seat
  - 403/32729 . . . . . Externally packed
  - 403/32737 . . . . . including liner, shim, or discrete seat
  - 403/32745 . . . . . Spring acts through wedging surfaces
  - 403/32754 . . . . . Variably preloaded
  - 403/32762 . . . . . Spring-biased seat opposite ball stud
  - 403/32771 . . . . . Porous
  - 403/32778 . . . . . Completely spacing the members
  - 403/32786 . . . . . Divided socket-type coupling
  - 403/32795 . . . . . Bifurcated socket
  - 403/32803 . . . . . Separable socket sections
  - 403/32811 . . . . . Spring-biased
  - 403/32819 . . . . including tension or take-up means
  - 403/32827 . . . . . Interposed spring means coaxial with pivot
  - 403/32836 . . . . . Acting through tapered surface on bearing component
  - 403/32844 . . . . . Manually variable
  - 403/32852 . . . . . External of bearing assembly, e.g., antirattler, etc.
  - 403/32861 . . . . T-pivot, e.g., wrist pin, etc.
  - 403/32868 . . . . . Floating pin
  - 403/32877 . . . . . Pin is integral with or secured to inner member
  - 403/32885 . . . . . Expanded pin or end
  - 403/32893 . . . . . including distinct pin retainer
  - 403/32901 . . . . . Unitary clip or plug
  - 403/32909 . . . . . Threaded pin end
  - 403/32918 . . . . . fork and tongue
  - 403/32926 . . . . . with interposed antifriction means
  - 403/32934 . . . . . Oppositely laterally movable tines
  - 403/32942 . . . . On oblique interface
  - 403/32951 . . . . Transverse pin or stud
  - 403/32959 . . . . . Traverses interposed facing component
  - 403/32967 . . . . . Attached to or integral with one member
  - 403/32975 . . . Rotatable
  - 403/32983 . . . . Rod in socket
  - 403/32991 . . . Axially spring-biased coaxial members
  - 403/33 . . Transverse rod to spaced plate surfaces
  - 403/335 . . Retainer utilizes or abuts plural plates
  - 403/34 . . Branched
  - 403/341 . . Three or more radiating members
  - 403/342 . . . Polyhedral
  - 403/343 . . . . Unilateral of plane
  - 403/344 . . . Plural pairs of axially aligned members
  - 403/345 . . . Coplanar
  - 403/346 . . . . Additional rod held by encompassing means
  - 403/347 . . Polyhedral
  - 403/348 . . Parallel rods
  - 403/349 . . Coplanar
  - 403/35 . . Diverse material coupling member
  - 403/36 . . Three or more serial joints, at least one diverse
  - 403/362 . . Nonaligned axes
  - 403/364 . . Separable intermediate joint
  - 403/366 . . . Axially acting connector
  - 403/368 . . . Screw or cam
  - 403/37 . . Joint involving plural layers of single rod
  - 403/38 . . Laterally related rods independently joined to transverse surface
  - 403/39 . . Rod to member to side, e.g. , plate, rod side, etc.  
(Frozen)
- WARNING**
- Groups [Y10T 403/39](#) - [Y10T 403/3993](#) are no longer used for the classification of documents as of August 1, 2018.
- The content of these groups is being reclassified into groups [F16B 7/00](#), [F16B 9/00](#), [F16B 17/00](#), [F16B 2200/00](#), other [F16B](#) groups as appropriate and [Y10T 403/46](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- 403/3906 . . . Rod side to member to side  
(Frozen)
  - 403/3913 . . . Unilateral of side  
(Frozen)
  - 403/3921 . . . Arcuate or multiplanar side  
(Frozen)
  - 403/3926 . . . Encompassed side  
(Frozen)
  - 403/3933 . . . Intermediate member includes tubular part  
(Frozen)
  - 403/3941 . . . Side or tubular part deformed in situ  
(Frozen)
  - 403/3946 . . . Intermediate member extends through side  
(Frozen)
  - 403/3953 . . . . Split or divided tubular part and coacting compressor  
(Frozen)
  - 403/3961 . . . . Transverse clamp secures rod and tubular part  
(Frozen)
  - 403/3966 . . . . Rod also extends through side  
(Frozen)
  - 403/3981 . . . Intermediate member secured to side by radial flange  
(Frozen)
  - 403/3986 . . . Internally threaded tubular part  
(Frozen)
  - 403/3993 . . . Intermediate member extends completely through side  
(Frozen)

- 403/40 . . Radially spaced members joined by independent coupling
- 403/405 . . . Flexible intermediate member
- 403/41 . . Coacting connection between inner member and plural parts of outer member
- 403/42 . . Rigid angle coupling, e.g., elbow or u, etc.
- 403/43 . . Axially curved or bent portion of rod is joint component
- 403/4309 . . . Interfitted crossing rods
- 403/4318 . . . Joined to laterally related transverse surface at axially spaced points
- 403/4327 . . . Reversely bent portion
- 403/4336 . . . . Around eye-forming thimble
- 403/4345 . . . . with wedge clamp
- 403/4354 . . . . Held by crimped collar
- 403/4363 . . . . Open U
- 403/4372 . . . Intertwisted ends
- 403/4381 . . . End of rod is deflected laterally within connector
- 403/4391 . . . Plural rods distorted by single component
- 403/44 . . Three or more members connected at single locus
- 403/443 . . . All encompassed
- 403/447 . . . Mutually contacting
- 403/45 . . Flexibly connected rigid members
- 403/451 . . . Rigid sleeve encompasses flexible bushing
- 403/452 . . . . Longitudinally divided sleeve
- 403/453 . . . Flexible sleeve-type coupling
- 403/454 . . . Connecting pin traverses radially interposed elastomer
- 403/455 . . . Elastomer interposed between radially spaced members
- 403/456 . . . . Elastomer encompasses shoulder on inner member
- 403/457 . . . . including axially acting compressing means
- 403/458 . . . . Composite bushing with elastomeric component
- 403/459 . . . Helical spring type coupling
- 403/46 . . Rod end to transverse side of member
- 403/4602 . . . Corner joint
- 403/4605 . . . Stirrup  
(Frozen)
- WARNING**  
Groups [Y10T 403/4605](#) - [Y10T 403/4648](#) are no longer used for the classification of documents as of August 1, 2018.  
The content of these groups is being reclassified into groups [F16B 7/00](#), [F16B 9/00](#), [F16B 17/00](#), [F16B 2200/00](#), other [F16B](#) groups as appropriate and [Y10T 403/46](#).  
All groups listed in this Warning should be considered in order to perform a complete search.
- 403/4608 . . . Structure attached to rod end encompasses side  
(Frozen)
- 403/4611 . . . . Clamped saddle  
(Frozen)
- 403/4614 . . . . Yoke or ring  
(Frozen)
- 403/4617 . . . . . having radial screw at bight  
(Frozen)
- 403/4621 . . . including saddle  
(Frozen)
- 403/4634 . . . Rod and side deformingly interlocked  
(Frozen)
- 403/4637 . . . Radially interposed, side-engaging shim or bushing  
(Frozen)
- 403/4641 . . . Socket formed by shaping or deforming side  
(Frozen)
- 403/4642 . . . Integral transverse projection on side, e.g., necked, etc.  
(Frozen)
- 403/4645 . . . . From rod side  
(Frozen)
- 403/4648 . . . Utilizing opposite sides of member  
(Frozen)
- 403/47 . . Molded joint
- 403/471 . . . And independent connection
- 403/472 . . . including mechanical interlock
- 403/473 . . . Socket or open cup for bonding material
- 403/475 . . . Member cast in situ
- 403/477 . . . Fusion bond, e.g., weld, etc.
- 403/478 . . . . Metallic fusion material
- 403/479 . . . . . Added bonding material, e.g., solder, braze, etc.
- 403/48 . . Shrunk fit
- 403/49 . . Member deformed in situ
- 403/4908 . . . Separating element between strands of member
- 403/4916 . . . Interposed deforming element contacts socket bottom
- 403/4924 . . . Inner member is expanded by longitudinally inserted element
- 403/4933 . . . by separate, deformable element
- 403/4941 . . . Deformation occurs simultaneously with action of separate, diverse function, joint component
- 403/4949 . . . Deforming component is inserted section
- 403/4958 . . . Separate deforming means remains with joint assembly
- 403/4966 . . . Deformation occurs simultaneously with assembly
- 403/4974 . . . by piercing
- 403/4983 . . . Diverse resistance to lateral deforming force
- 403/4991 . . . Both members deformed
- 403/50 . . Bridged by diverse connector
- 403/51 . . including spaced, diverse connections
- 403/52 . . including distinct packing
- 403/53 . . Split end with laterally movable opposed portions
- 403/535 . . . with separate force-applying means
- 403/54 . . Flexible member is joint component
- 403/55 . . Member ends joined by inserted section
- 403/551 . . . Externally bridged
- 403/553 . . . Laterally inserted section
- 403/555 . . . Angle section
- 403/556 . . . Section threaded to member
- 403/557 . . . Expansible section
- 403/559 . . . Fluted or splined section
- 403/56 . . Thread adaptor
- 403/57 . . Distinct end coupler
- 403/5706 . . . Diverse serial connections
- 403/5713 . . . . Axially cleft coupler
- 403/5721 . . . Single actuator for plural connections
- 403/5726 . . . . Axially biased end portions
- 403/5733 . . . Plural opposed sockets
- 403/5741 . . . Separate screw or pin-type connections
- 403/5746 . . . Continuous thread
- 403/5753 . . . having separable end caps or plugs

- 403/5761 . . Interrupted periphery, e.g., split or segmental, etc.
- 403/5766 . . . Axially divided segments
- 403/5773 . . . . Interfitting
- 403/5781 . . . . Bolted
- 403/5786 . . . Split
- 403/5793 . . including member wedging or camming means
- 403/58 . . including ancillary means blocking disconnection of joint
- 403/581 . . Blocker for assembled joint retainer
- 403/583 . . . Blocker keeper
- 403/585 . . . Blocked key
- 403/587 . . Blocker is catch or key
- 403/589 . . Cam or thread lock
- 403/59 . . Manually releaseable latch type
- 403/591 . . having operating mechanism
- 403/592 . . . Ball detent
- 403/593 . . . Remotely actuated
- 403/595 . . . Lever
- 403/597 . . Swiveled bolt
- 403/598 . . Transversely sliding pin
- 403/599 . . Spring biased manipulator
- 403/60 . . Biased catch or latch
- 403/602 . . by separate spring
- 403/604 . . . Radially sliding catch
- 403/606 . . Leaf spring
- 403/608 . . Pivoted
- 403/61 . . Side slide: elongated co-linear members
- 403/62 . . Annular recess is joint component
- 403/63 . . Convergent interface
- 403/635 . . Tapered
- 403/65 . . Scarf
- 403/655 . . Mirror images
- 403/66 . . Interfitted members with external bridging piece
- 403/67 . . Thimble: screw or cam
- 403/68 . . Screw or cam
- 403/69 . . Axially split or separable member
- 403/70 . . Interfitted members
- 403/7001 . . Crossed rods
- 403/7003 . . . One rod is encompassed by the other
- 403/7005 . . Lugged member, rotary engagement
- 403/7007 . . . Bayonet joint
- 403/7009 . . Rotary binding cam or wedge
- 403/7011 . . . Radially interposed shim or bushing
- 403/7013 . . . . Arcuate slip
- 403/7015 . . Assembled by plural manipulations of member
- 403/7016 . . Diametric end slot is joint component
- 403/7018 . . including separably interposed key
- 403/7021 . . . Axially extending
- 403/7022 . . . . Resilient
- 403/7024 . . . . Longitudinally stepped or tapered
- 403/7026 . . Longitudinally splined or fluted rod
- 403/7028 . . . Splayed or having a cam surface for anti-backlash
- 403/7031 . . . Rod designed to be manipulable, e.g., twistable, within coupling for quick disconnect
- 403/7032 . . . including a means, e.g., spring biased portion, for misalignment correction
- 403/7033 . . . including a lock or retainer
- 403/7035 . . . Specific angle or shape of rib, key, groove, or shoulder
- 403/7037 . . Externally shouldered or headed rod
- 403/7041 . . including set screw
- 403/7043 . . Interfitted angle or channel bars
- 403/7045 . . Interdigitated ends
- 403/7047 . . Radially interposed shim or bushing
- 403/7049 . . . Biased by distinct radially acting means
- 403/7051 . . . Wedging or camming
- 403/7052 . . . . Engaged by axial movement
- 403/7054 . . . . . Plural, circumferentially related shims between members
- 403/7056 . . . . . Threaded actuator
- 403/7058 . . . . . Split or slotted bushing
- 403/7061 . . . Resilient
- 403/7062 . . Clamped members
- 403/7064 . . . by wedge or cam
- 403/7066 . . . . having actuator
- 403/7067 . . . . . Threaded actuator
- 403/7069 . . . . . Axially oriented
- 403/7071 . . . . . Lever actuator
- 403/7073 . . Peripheral enlargement, depression, or slot on one member is joint component
- 403/7075 . . including discrete retainer
- 403/7077 . . . for telescoping members
- 403/7079 . . . . Transverse pin
- 403/7081 . . . . . Multiple retainers
- 403/7083 . . . . . having means to prevent removal of retainer
- 403/7084 . . . . . Bolt, rivet, or screw
- 403/7086 . . . . . Wedge pin
- 403/7088 . . . . . Sliding pin
- 403/7091 . . . . . Expansible retainer
- 403/7092 . . . for interfitted side faces
- 403/7096 . . Rigid angle
- 403/7098 . . Non-circular rod section is joint component
- 403/71 . . Rod side to plate or side
- 403/7105 . . Connected by double clamp
- 403/7111 . . Shackle is integral with or independently attached to proximate side of plate or other side
- 403/7117 . . Flanged or grooved rod
- 403/7123 . . Traversed by connector
- 403/7129 . . Laterally spaced rods
- 403/7135 . . . by separable shim or bushing in connector
- 403/7141 . . . Plural channels in connector
- 403/7147 . . Connected by flexible tie
- 403/7152 . . Lapped rod ends
- 403/7158 . . Diagonal connector
- 403/7164 . . One rod held between bight and other rod extending through aperture in leg of connector
- 403/7171 . . Two rods encompassed by single connector
- 403/7176 . . Resilient clip
- 403/7182 . . Yoke or ring-type connector
- 403/7188 . . . Rod received in open channel
- 403/7194 . . Crossed rods
- 403/72 . . Miter joint
- 403/725 . . Connector bridges inner or outer periphery
- 403/73 . . Rigid angle
- 403/74 . . Particular configuration or material of member
- 403/75 . . having a joining piece extending through aligned openings in plural members
- 403/76 . . having a cam, wedge, or tapered portion
- 403/77 . . Miscellaneous



**Former US Class 407 Series**

<b>407/00</b>	<b>Cutters, for shaping</b>	
407/10	. including noncutting work modifying means	407/1932 . . . with means to fasten tool seat to holder
407/11	. including chip breaker, guide or deflector detachable from tool and tool holder	407/1934 . . . with separate means to fasten tool to holder
407/112	. . Adjustable relative to cutting edge	407/1936 . . . . Apertured tool
407/114	. . . including adjusting means	407/1938 . . . . Wedge clamp element
407/116	. . Attached to or integral with tool clamping jaw	407/194 . . . . . Resilient clamp jaw
407/118	. . Chip breaker	407/1942 . . . Peripherally spaced tools
407/12	. Freely movable cutting edge	407/1944 . . . . Sectional support
407/13	. Yieldable tool	407/1946 . . Face or end mill
407/134	. . Resiliently mounted tool	407/1948 . . . with cutting edge entirely across end of tool [e.g., router bit, end mill, etc.]
407/137	. . . including yield stress or flexure limit adjusting means	407/195 . . Compound tooth arrangement
407/14	. with means to apply fluid to cutting tool	407/1952 . . Having peripherally spaced teeth
407/15	. Rotary broach	407/1954 . . . Axially tapering tool
407/16	. Rectilinear broach	407/1956 . . . Circumferentially staggered
407/1614	. . Hollow tool for surrounding workpiece	407/1958 . . . . Plural teeth spaced about a helix
407/1628	. . including holder having seat for inserted tool	407/196 . . . Varying in cutting edge profile
407/1642	. . . Annular tool	407/1962 . . . Specified tooth shape or spacing
407/1657	. . . including single tooth	407/1964 . . . . Arcuate cutting edge
407/1671	. . Plural tooth groups	407/1966 . . . . . Helical tooth
407/1685	. . including sequentially acting teeth of stepped cutting width	407/20 . . Profiled circular tool
407/17	. Gear cutting tool	407/21 . . Arc segment tool
407/1705	. . Face mill gear cutting tool	407/22 . . including holder having seat for inserted tool
407/171	. . . Adjustable teeth	407/2202 . . Plural spaced seats and common holder
407/1715	. . Hob	407/2204 . . . Relatively adjustable seats
407/172	. . . Thread cutting	407/2206 . . . Simultaneously usable
407/1725	. . . including holder having seat for inserted tool	407/2208 . . Plural simultaneously usable separable tools in common seat or common clamp actuator for plural simultaneously usable tools
407/173	. . . for cutting involute gear tooth	407/221 . . . Adjustable tool
407/1735	. . Rotary, gear shaving cutting tool	407/2212 . . with tool ejector
407/174	. . Gear generating, revolving shaper cutting tool	407/2214 . . with separate means to adjust tool to and fro relative to holder
407/1745	. . Rotary, tooth form cutting tool	407/2216 . . . with indicator
407/18	. File or rasp	407/2218 . . . Plural provisions for adjustment
407/1805	. . Flexible blade or carrier therefor	407/222 . . . by moving tool seat
407/181	. . Tire rasp	407/2222 . . Tool adjustable relative to holder
407/1815	. . Rotary file or round disc	407/2224 . . . with indicator
407/182	. . Composite, diverse sector, or assembled	407/2226 . . . Plural provisions for adjustment
407/1825	. . Handle or holder, <u>per se</u>	407/2228 . . . . Plural interfering seats
407/19	. Rotary cutting tool	407/223 . . . . including pivotable seat or tool
407/1902	. . Gang	407/2232 . . . . . with detent
407/1904	. . Composite body of diverse material	407/2234 . . . . . Pivoted seat
407/1906	. . including holder [i.e., head] having seat for inserted tool	407/2236 . . . . . And pivotable tool
407/1908	. . . Face or end mill	407/2238 . . . by adjustable or replaceable stop
407/191	. . . . Plural simultaneously usable separable tools in common seat or common clamp actuator for plural simultaneously usable tools	407/224 . . . . Adjustable
407/1912	. . . . Tool adjustable relative to holder	407/2242 . . . . . Screw
407/1914	. . . . . Radially	407/2244 . . . by movement of seat relative to holder
407/1916	. . . . . And axially	407/2246 . . . . Pivoted seat
407/1918	. . . . . Selectively	407/2248 . . . Pivoted tool
407/192	. . . . with separate means to fasten tool to holder	407/225 . . . Resiliently biased tool clamping jaw
407/1922	. . . . . Wedge clamp element	407/2252 . . . Rectilinearly
407/1924	. . . . . Specified tool shape	407/2254 . . . . including rotatable cam clamp element
407/1926	. . . Plural simultaneously usable separable tools in common seat or common clamp actuator for plural simultaneously usable tools	407/2256 . . . . including wedge clamp element
407/1928	. . . Tool adjustable relative to holder	407/2258 . . . . . And guide or detent
407/193	. . . . Radially	407/226 . . . . including detent
		407/2262 . . . . Tool gripped directly by set screw
		407/2264 . . . . Slidable jaw
		407/2266 . . Holder adapted for tools of different shape
		407/2268 . . with chip breaker, guide or deflector
		407/227 . . with separate means to fasten tool seat to holder
		407/2272 . . with separate means to fasten tool to holder
		407/2274 . . . Apertured tool

- 407/2276 . . . . with means projecting through aperture to force tool laterally against reaction surface
- 407/2278 . . . . . Tilting clamp element and separate means to tilt same
- 407/228 . . . Rotatable cam clamp element
- 407/2282 . . . including tool holding clamp and clamp actuator
- 407/2284 . . . . Wedge clamp element
- 407/2286 . . . . Resiliently biased clamp jaw
- 407/2288 . . . . . Integral with holder
- 407/229 . . . . Pivoted jaw
- 407/2292 . . . . Slidable jaw
- 407/23 . . including tool having plural alternatively usable cutting edges
- 407/235 . . with integral chip breaker, guide or deflector
- 407/24 . . with chip breaker, guide or deflector
- 407/245 . . comprising concave surface in cutting face of tool
- 407/25 . . including cut off tool
- 407/26 . . comprising cutting edge bonded to tool shank
- 407/27 . . comprising tool of specific chemical composition
- 407/28 . . Miscellaneous
- 408/365 . . Axes of tools moving with work during operation
- 408/367 . . . including means to infeed Tool and means to infeed work or including coaxial tools
- 408/368 . . . Plural work stations
- 408/37 . . Turret of tools
- 408/375 . . Coaxial tools
- 408/378 . . . Coaxial, opposed tools
- 408/3784 . . . . with additional, converging Tool
- 408/3788 . . . . Plural pairs of coaxial, opposed tools
- 408/3792 . . . . with means to sequentially feed tools toward work
- 408/3796 . . . . with interconnected means to simultaneously feed tools
- 408/38 . . Plural, simultaneously operational tools
- 408/3806 . . . with plural simultaneously operational work stations
- 408/3809 . . . . Successively acting on workpiece
- 408/381 . . . . . Pivotaly mounted, work-advancing, work-supporting means, pivot-axis parallel to tool-axis
- 408/3811 . . . with provision for adjustment of relationship of axes
- 408/3817 . . . at least one Tool driven by orbiting wrist plate
- 408/3822 . . . at least one Tool including flexible drive connection
- 408/3828 . . . with work-infeed
- 408/3833 . . . with means to advance work relative to Tool
- 408/3839 . . . with presser-foot
- 408/3844 . . . with tool-opposing, work-engaging surface
- 408/385 . . Rotatable about parallel axes
- 408/39 . . with radially outer limit of cutting edge moving to define cylinder partially, but not entirely encircled by work
- 408/42 . . Axis of Tool moving with work during operation
- 408/44 . . with means to apply transient, fluent medium to work or product
- 408/45 . . including Tool with duct
- 408/453 . . . and means to move gaseous fluid by application of vacuum
- 408/455 . . . Conducting channel extending to end of Tool
- 408/458 . . . including nozzle
- 408/46 . . including nozzle
- 408/47 . . with work-infeed means
- 408/476 . . Driven by fluid motor
- 408/482 . . Driven by means having sliding engagement therewith
- 408/488 . . Driven by lever or connecting link
- 408/494 . . and gear to drive infeed means
- 408/50 . . with product handling or receiving means
- 408/51 . . Ejector
- 408/52 . . with work advancing or guiding means
- 408/54 . . Means to intermittently advance work
- 408/545 . . . Rotary, work-supporting means
- 408/55 . . with work-engaging structure other than Tool or tool-support
- 408/551 . . with means actuated by work to release Tool from fixed position in Tool support
- 408/552 . . . Adapted to engage work at tool-axis
- 408/553 . . Centering means adapted to be replaced by Tool
- 408/554 . . Magnetic or suction means
- 408/556 . . Tool supporting wheel
- 408/5565 . . . Wheel-axis parallel to tool-axis
- 408/557 . . Frictionally engaging sides of opening in work

**Former US Class 408 Series****408/00 Cutting by use of rotating axially moving tool**

- 408/03 . . Processes
- 408/04 . . Bit detachable
- 408/05 . . with means to weigh or test work or product
- 408/08 . . with means to regulate operation by use of templet, tape, card, or other replaceable information supply
- 408/10 . . with interlock between machine elements
- 408/13 . . with randomly-actuated stopping means
- 408/14 . . Responsive to condition of Tool or tool-drive
- 408/15 . . Responsive to condition of work or product
- 408/16 . . with control means energized in response to activator stimulated by condition sensor
- 408/165 . . to control Tool rotation
- 408/17 . . to control infeed
- 408/172 . . . Responsive to Tool
- 408/173 . . . Responsive to work
- 408/175 . . to control relative positioning of Tool and work
- 408/18 . . with stopping upon completion of prescribed operation
- 408/20 . . Responsive to condition of work or product
- 408/21 . . with signal, indicator, illuminator or optical means
- 408/23 . . including means to cause Tool to progressively vibrate toward work
- 408/26 . . with means to condition tool
- 408/29 . . with means to deForm work temporarily
- 408/31 . . Convertible cutting means
- 408/33 . . Utilizing common cutting Tool
- 408/34 . . Combined cutting means
- 408/344 . . including Tool operating on rotating work
- 408/348 . . Plural other type cutting means
- 408/35 . . . including plural rotating tools
- 408/352 . . including rotating cutter other than rotating, axially moving Tool
- 408/353 . . . Crystalline cutter
- 408/355 . . . Utilized in cutting work or product to length
- 408/3555 . . . . Adapted to cut entire thickness of work at one pass
- 408/356 . . including plunging [single stroke] cutter
- 408/36 . . Machine including plural tools
- 408/365 . . Axes of tools moving with work during operation
- 408/367 . . . including means to infeed Tool and means to infeed work or including coaxial tools
- 408/368 . . . Plural work stations
- 408/37 . . Turret of tools
- 408/375 . . Coaxial tools
- 408/378 . . . Coaxial, opposed tools
- 408/3784 . . . . with additional, converging Tool
- 408/3788 . . . . Plural pairs of coaxial, opposed tools
- 408/3792 . . . . with means to sequentially feed tools toward work
- 408/3796 . . . . with interconnected means to simultaneously feed tools
- 408/38 . . Plural, simultaneously operational tools
- 408/3806 . . . with plural simultaneously operational work stations
- 408/3809 . . . . Successively acting on workpiece
- 408/381 . . . . . Pivotaly mounted, work-advancing, work-supporting means, pivot-axis parallel to tool-axis
- 408/3811 . . . with provision for adjustment of relationship of axes
- 408/3817 . . . at least one Tool driven by orbiting wrist plate
- 408/3822 . . . at least one Tool including flexible drive connection
- 408/3828 . . . with work-infeed
- 408/3833 . . . with means to advance work relative to Tool
- 408/3839 . . . with presser-foot
- 408/3844 . . . with tool-opposing, work-engaging surface
- 408/385 . . Rotatable about parallel axes
- 408/39 . . with radially outer limit of cutting edge moving to define cylinder partially, but not entirely encircled by work
- 408/42 . . Axis of Tool moving with work during operation
- 408/44 . . with means to apply transient, fluent medium to work or product
- 408/45 . . including Tool with duct
- 408/453 . . . and means to move gaseous fluid by application of vacuum
- 408/455 . . . Conducting channel extending to end of Tool
- 408/458 . . . including nozzle
- 408/46 . . including nozzle
- 408/47 . . with work-infeed means
- 408/476 . . Driven by fluid motor
- 408/482 . . Driven by means having sliding engagement therewith
- 408/488 . . Driven by lever or connecting link
- 408/494 . . and gear to drive infeed means
- 408/50 . . with product handling or receiving means
- 408/51 . . Ejector
- 408/52 . . with work advancing or guiding means
- 408/54 . . Means to intermittently advance work
- 408/545 . . . Rotary, work-supporting means
- 408/55 . . with work-engaging structure other than Tool or tool-support
- 408/551 . . with means actuated by work to release Tool from fixed position in Tool support
- 408/552 . . . Adapted to engage work at tool-axis
- 408/553 . . Centering means adapted to be replaced by Tool
- 408/554 . . Magnetic or suction means
- 408/556 . . Tool supporting wheel
- 408/5565 . . . Wheel-axis parallel to tool-axis
- 408/557 . . Frictionally engaging sides of opening in work

408/558	. . . Opening coaxial with Tool	408/665	. . Universal or flexible drive connection to rotate Tool
408/5583	. . . . Engaging sides of opening being enlarged by Tool	408/67	. . Belt and pulley
408/5584	. . . . . Engaging surface axially advanced of tool-action	408/675	. . including means to move Tool along tool-axis
408/5586	. . . . . Engaging surface subsequent to tool-action on that surface	408/6757	. . . Fluid means
408/5587	. . . . Valve fitting	408/6764	. . . Laterally adjustable Tool
408/559	. . Funnel like work-engaging surface cooperating with protuberance on work	408/6771	. . . with clutch means
408/56	. . Adapted to "form" recession in work	408/6774	. . . . including plural speed drive
408/5605	. . . Recession at tool-axis	408/6776	. . . . Actuated by Tool movement
408/561	. . Having tool-opposing, work-engaging surface	408/6779	. . . Rack and pinion
408/5612	. . . Tool having shiftable tool-axis	408/6786	. . . Manually moved lever
408/5614	. . . Angularly adjustable surface	408/6793	. . . Screw coaxial with Tool
408/5616	. . . . Adjustable about axis that is parallel to tool-axis	408/68	. Tool or tool-support with thrust-applying machine-engaging screw
408/5617	. . . Laterally adjustable surface	408/70	. Tool or tool-support with torque-applying clutch
408/5619	. . . Flexible or concatenated member	408/72	. . Friction clutch
408/5621	. . . Connected to Tool through opening being enlarged by Tool	408/73	. Tool or tool-support with torque-applying spline
408/5622	. . . . Plural, coaxially opposing, work-engaging means	408/75	. . Relative motion of splined shaft and tool-support causing release of Tool from operating position
408/5623	. . . with presser foot	408/76	. Tool-carrier with vibration-damping means
408/56238	. . . . Encompassed by Tool during cut	408/78	. Tool of specific diverse material
408/56245	. . . . including tool-guide [or bushing]	408/81	. Tool having crystalline cutting edge
408/56253	. . . . Base supported machine	408/83	. Tool-support with means to move Tool relative to tool-support
408/5626	. . . with means to move Tool relative to other work-engaging structure along tool-axis	408/85	. . to move radially
408/5627	. . . . Having sliding engagement therewith	408/852	. . . with Tool releasing trigger
408/56275	. . . . . Screw coaxial with Tool	408/853	. . . . and separate Tool setting means
408/5628	. . . Tool having screw-thread engaging frame to cause infeed	408/854	. . . to move eccentrically mounted Tool
408/563	. . Work-gripping clamp	408/855	. . . . Tool-support including plural, adjustable sections
408/5633	. . . Adapted to coaxially grip round work	408/856	. . . Moving means including pinion engaging rack-like surface of Tool
408/56337	. . . . Oppositely moving lateral clamps	408/858	. . . Moving means including wedge, screw or cam
408/5634	. . . . . Three or more moving clamps	408/8583	. . . . with resiliently urged Tool
408/56343	. . . . Base supported clamp	408/85837	. . . . . with spring retainer
408/5635	. . . Oppositely moving lateral clamps	408/85843	. . . . . Resilient Tool or tool-support
408/5638	. . . Adjustable relative to tool-axis	408/8585	. . . . including oppositely moving, diverging tools
408/564	. . Movable relative to Tool along tool-axis	408/8588	. . . . Axially slidable moving-means
408/5647	. . . including means to move Tool	408/85884	. . . . . Tool pivotally mounted on support
408/5653	. . . with means to bias Tool away from work	408/85888	. . . . . Having axially spaced shoulders
408/566	. . Axially fixed to Tool	408/85892	. . . . . Screw driven wedge or cam
408/5665	. . . Work-engaging surface parallel to tool-axis	408/85893	. . . . . Screw with axis radially spaced from tool-axis
408/567	. . Adjustable, tool-guiding jig	408/85894	. . . . . Annular wedge-collar
408/568	. . . Guide bushing	408/858945	. . . . . Axially spaced tool-retaining collars
408/569	. . Bushing	408/858946	. . . . . with travelling wedge
408/57	. Tool-support with means to receive tool-position indicator	408/858948	. . . . . Tool having axially facing, collar-receiving groove
408/60	. Plural tool-assemblages	408/858949	. . . . . including two-piece collar
408/62	. . Coaxial	408/85895	. . . . . Traveling wedge
408/625	. . . Spring biased	408/858953	. . . . . Interfitting, tool-retaining wedge
408/63	. Tool or tool-support with torque-applying ratchet	408/858955	. . . . . including separable interfitting element
408/637	. . with thrust applying means	408/858957	. . . . . Having externally threaded shank connected to tool-support
408/639	. . . Reversible ratchet	408/85896	. . . . . Annular wedge-collar
408/641	. . . Double-acting ratchet	408/859	. . . . . Rotary cam
408/643	. . Reversible ratchet	408/8591	. . . . . Scroll plate
408/65	. Means to drive tool	408/85913	. . . . . Volute scroll
408/655	. . with specific Tool structure	408/85915	. . . . . with means to rotate scroll
408/66	. . Friction gearing	408/85918	. . . . . with adjustable means to limit scroll movement

408/8592 . . . . . Coaxial with tool-axis  
 408/8593 . . . . . Wedge moving perpendicular to tool-axis  
 408/8595 . . . . . Pivotal tool-support  
 408/8598 . . . . . Screw extending perpendicular to tool-axis  
 408/85985 . . . . . Plural tools moved by diametrically opposed screws  
 408/85988 . . . . . Screws mounted on common shaft  
 408/8599 . . . . . Tool having pitch-stabilizing ridge  
 408/85995 . . . . . with tool-holding clamp and clamp actuator  
 408/86 . . . Tool-support with means to permit positioning of the Tool relative to support  
 408/865 . . . Pivotal Tool  
 408/868 . . . with multiple cutting positions  
 408/87 . . . Tool having stepped cutting edges  
 408/8713 . . . including means to permit both radial and axial positioning of edge  
 408/8725 . . . including means to permit relative axial positioning of edges  
 408/8729 . . . . . with work-engaging structure other than cutting edge  
 408/8734 . . . . . including central Tool axially movable relative to support  
 408/8738 . . . including inverse cutting edge  
 408/875 . . . including means to "form" depression in work  
 408/88 . . . including central-lead  
 408/885 . . . including tool-holding clamp and clamp actuator  
 408/888 . . . Movable along tool-axis  
 408/89 . . . Tool or Tool with support  
 408/892 . . . with work-engaging structure detachable from cutting edge  
 408/8923 . . . Removable central lead  
 408/8925 . . . Depth-limiting member  
 408/8928 . . . Adjustable  
 408/893 . . . Hollow milling Tool  
 408/895 . . . Having axial, core-receiving central portion  
 408/8953 . . . with lateral outlet  
 408/8957 . . . and having stepped cutting edges  
 408/896 . . . Having product-receiving chamber  
 408/8967 . . . and central lead-screw  
 408/8973 . . . and central lead  
 408/898 . . . Helical ribbon Tool  
 408/899 . . . Having inversely angled cutting edge  
 408/90 . . . and axially extending peripheral cutting spur  
 408/901 . . . Having axially extending peripheral cutting spur  
 408/902 . . . Having central lead-screw  
 408/904 . . . with pitch-stabilizing ridge  
 408/9042 . . . and radially spaced cutting edge  
 408/9044 . . . including cutting teeth of different width  
 408/9045 . . . and different root circles  
 408/9046 . . . including tapered section  
 408/90467 . . . and relieved cutting edge  
 408/90473 . . . including work-embracing cutting edges  
 408/9048 . . . Extending outwardly from tool-axis  
 408/905 . . . Having stepped cutting edges  
 408/906 . . . Axially spaced  
 408/9065 . . . with central lead  
 408/907 . . . including detailed shank  
 408/909 . . . Having peripherally spaced cutting edges  
 408/9093 . . . Each formed by a pair of axially facing facets  
 408/9095 . . . with axially extending relief channel  
 408/9097 . . . . . Spiral channel

408/9098 . . . with means to retain Tool to support  
 408/90987 . . . . . Wedge means  
 408/90993 . . . . . Screw driven means  
 408/91 . . . Machine frame  
 408/92 . . . with counterweight mechanism  
 408/93 . . . including pivotally mounted tool-carrier  
 408/935 . . . including laterally movable tool-carrier  
 408/94 . . . Tool-support  
 408/95 . . . with tool-retaining means  
 408/953 . . . Clamping jaws  
 408/957 . . . Tool adapter  
 408/96 . . . Miscellaneous  
 408/97 . . . Drill bushings  
 408/98 . . . Drill guide  
 408/99 . . . Adjustable stop

#### Former US Class 409 Series

##### 409/00 Gear cutting, milling, or planing

409/10 . . . Gear cutting  
 409/100159 . . . with regulation of operation by use of templet, card, or other replaceable information supply  
 409/100318 . . . including follower for templet  
 409/100477 . . . and burnishing simultaneously  
 409/100636 . . . with compensation for backlash in drive means  
 409/100795 . . . with work or product advancing  
 409/100954 . . . Utilizing transfer arm  
 409/101113 . . . Gear chamfering or deburring  
 409/101272 . . . Using relatively reciprocating or oscillating cutter  
 409/101431 . . . Gear tooth shape generating  
 409/10159 . . . Hobbing  
 409/101749 . . . . . Process  
 409/101908 . . . . . Generating tooth for bevel gear  
 409/102067 . . . . . including means to shift hob between cutting passes  
 409/102226 . . . . . with control means energized in response to activator stimulated by condition sensor  
 409/102385 . . . . . Plural hobs  
 409/102544 . . . . . including infeed means  
 409/102703 . . . . . to infeed along axis of work rotation  
 409/102862 . . . . . Infeed of cutter  
 409/103021 . . . . . and infeed radially of axis of work rotation  
 409/10318 . . . . . Vertically  
 409/103339 . . . . . to infeed radially of axis of work rotation  
 409/103498 . . . . . Infeed of cutter  
 409/103657 . . . . . and infeed tangentially of work axis  
 409/103816 . . . Milling with radial faced tool  
 409/103975 . . . . . Process  
 409/104134 . . . . . Adapted to cut bevel gear  
 409/104293 . . . . . with means to continuously rotate work and means to co-form all teeth of gear  
 409/104452 . . . . . Bevel gear having nonparallel opposing tooth flanks  
 409/104611 . . . . . including rotary cutter cradle  
 409/10477 . . . by relative axial movement between synchronously indexing or rotating work and cutter  
 409/104929 . . . . . Crowning  
 409/105088 . . . . . Displacing cutter axially relative to work [e.g., gear shaving, etc.]  
 409/105247 . . . . . Using gear shaper-cutter

409/105406 . . . . .	Plural distinct cutting edges	409/300896 . . . . .	with sensing of numerical information and regulation without mechanical connection between sensing means and regulated means [i.e., numerical control]
409/105565 . . . . .	Cutting rotating work, the axis of which lies in a plane intersecting the cutter axis	409/300952 . . . . .	to cut lock key
409/105724 . . . . .	Gear shaving	409/301008 . . . . .	Using templet other than a key
409/105883 . . . . .	Using rotary cutter	409/301064 . . . . .	Complete cycle
409/106042 . . . . .	having axially directed cutting edge	409/301112 . . . . .	Process
409/106201 . . . . .	Plural rotary cutters	409/301176 . . . . .	Reproducing means
409/10636 . . . . .	On reciprocating carriage	409/301232 . . . . .	including pantograph cutter-carrier
409/106519 . . . . .	Using reciprocating or oscillating cutter	409/301288 . . . . .	and means to move work at work station
409/106678 . . . . .	Bevel gear cutting	409/301344 . . . . .	About work axis
409/106837 . . . . .	Dual cutters	409/3014 . . . . .	Pivotally supported for vertical movement
409/106996 . . . . .	Double acting cutter	409/301456 . . . . .	and means to counterbalance carrier
409/107155 . . . . .	Rectilinearly reciprocating cutter	409/301512 . . . . .	including plural cutters
409/107314 . . . . .	Cutter comprising a rack	409/301568 . . . . .	by use of pivotally supported tracer
409/107473 . . . . .	Making a noncircular gear, worm, rotor, or a planar-faced gear	409/301624 . . . . .	Duplicating means
409/107632 . . . . .	Gear shaving	409/30168 . . . . .	with means for operation without manual intervention
409/107791 . . . . .	Using rotary cutter	409/301736 . . . . .	to make a double curvature foil
409/10795 . . . . .	Process	409/301792 . . . . .	including means to sense optical or magnetic image
409/108109 . . . . .	End mill	409/301848 . . . . .	with means to support templet above or under work
409/108268 . . . . .	Radially faced	409/301904 . . . . .	including tracer adapted to trigger electrical energy
409/108427 . . . . .	Using plural, selectively usable tools	409/30196 . . . . .	to actuate electrically driven work or tool moving means
409/108586 . . . . .	Plural rotary cutters	409/302016 . . . . .	to actuate fluid driven work or tool moving means
409/108745 . . . . .	Cutting action along work axis	409/302072 . . . . .	including tracer adapted to trigger fluid energy
409/108904 . . . . .	Cutting action intersecting work axis	409/302128 . . . . .	to actuate fluid driven work or tool moving means
409/109063 . . . . .	Using reciprocating or oscillating cutter	409/302184 . . . . .	including cutter and tracer fixed to move laterally together
409/109222 . . . . .	Broach	409/30224 . . . . .	and provision for circumferential relative movement of cutter and work
409/109381 . . . . .	including circumferentially disposed cutting edges	409/302296 . . . . .	including plural cutters
409/10954 . . . . .	Work dividing or checking of work position or division	409/302352 . . . . .	including plural cutters
409/109699 . . . . .	with work clamping	409/302408 . . . . .	including cross-slide tool carrier
409/20 . . . . .	with refurbishing of cutter	409/302464 . . . . .	including plural cutters
409/30 . . . . .	Milling	409/30252 . . . . .	including cross-slide tool carrier
409/300056 . . . . .	Thread or helix generating	409/302576 . . . . .	with means to support templet above or under work
409/300112 . . . . .	Process	409/302632 . . . . .	with provision for circumferential relative movement of cutter and work
409/300168 . . . . .	with means to regulate operation by use of templet, card, or other replaceable information supply	409/302688 . . . . .	with provision for circumferential relative movement of cutter and work
409/300224 . . . . .	Complete cycle	409/302744 . . . . .	and means for operation without manual intervention
409/30028 . . . . .	to regulate cutting depth [e.g., relief, taper, etc.]	409/3028 . . . . .	including tracer adapted to trigger electrical or fluid energy
409/300336 . . . . .	to regulate rate of motion [e.g., stopping, etc.]	409/302856 . . . . .	For using planar templet in cutting profile [e.g., contour map from planar map, etc.]
409/300392 . . . . .	with nonthread or nonhelix generating, milling cutter	409/302912 . . . . .	including means for operation without manual intervention
409/300448 . . . . .	with means to advance work or product	409/302968 . . . . .	including means for operation without manual intervention
409/300504 . . . . .	Plural cutters or work holders	409/303024 . . . . .	including simultaneously usable plural tracers or including tracer adapted to simultaneously use plural templets
409/30056 . . . . .	with planetary cutter	409/30308 . . . . .	to make a double curvature foil
409/300616 . . . . .	Work means to move work axially and means to interrelate work movement with cutter rotation		
409/300672 . . . . .	with means to rotate work and means to interrelatedly infeed the work relative to the cutter		
409/300728 . . . . .	Means to infeed the cutter		
409/300784 . . . . .	with means to circumferentially adjust the position of the cutter with respect to the work		
409/30084 . . . . .	with regulation of operation by templet, card, or other replaceable information supply		

409/303136 . . . .	to make a double curvature foil	409/305936 . . . .	including fluid drive
409/303192 . . . .	including cutter and tracer fixed to move together	409/305992 . . . .	with means to effect stopping upon completion of operation
409/303248 . . . .	with provision for circumferential relative movement of cutter and work	409/306048 . . . .	with means to advance work or product
409/303304 . . . .	and provision for circumferential relative movement of cutter and work	409/306104 . . . .	Endless or orbital work or product advancing means
409/303336 . . . .	including cutter and tracer fixed to move together	409/30616 . . . .	with means to precisely reposition work
409/303416 . . . .	Templet, tracer, or cutter	409/306216 . . . .	Randomly manipulated, work supported, or work following device
409/303472 . . . .	Tracer	409/306272 . . . .	For machining commutator
409/303528 . . . .	Adapted to trigger electrical energy	409/306328 . . . .	For cutting longitudinal groove in shaft [e.g., keyway, etc.]
409/303584 . . . . .	Photocell	409/306384 . . . .	with work supported guide means
409/30364 . . . . .	Adapted to trigger fluid energy	409/30644 . . . . .	to guide tool to move in arcuate path
409/303696 . . . .	Templet	409/306496 . . . .	with work follower
409/303752 . . . .	Process	409/306552 . . . .	Randomly manipulated
409/303808 . . . .	including infeeding	409/306608 . . . . .	End mill [e.g., router, etc.]
409/303864 . . . .	with means to weigh or test work or product	409/306664 . . . .	including means to infeed rotary cutter toward work
409/30392 . . . .	with means to protect operative or machine [e.g., guard, safety device, etc.]	409/30672 . . . .	with means to limit penetration into work
409/303976 . . . .	with means to control temperature or lubricate	409/306776 . . . .	Axially
409/304032 . . . .	Cutter or work	409/306832 . . . . .	with infeed control means energized in response to activator stimulated by condition sensor
409/304088 . . . .	with means to remove chip	409/306888 . . . . .	In response to cutter condition
409/304144 . . . .	Means to trim edge	409/306944 . . . . .	In response to work condition
409/3042 . . . .	Means to remove scale or raised surface imperfection	409/307 . . . . .	with work holder
409/304256 . . . .	Means to remove flash or burr	409/307056 . . . . .	and laterally
409/304312 . . . .	with means to dampen vibration	409/307112 . . . . .	Simultaneously
409/304368 . . . .	Means to mill epitrochoidal shape	409/307168 . . . . .	Plural cutters
409/304424 . . . .	Means for internal milling	409/307224 . . . . .	with infeed control means energized in response to activator stimulated by condition sensor
409/30448 . . . .	with detachable or auxiliary cutter support to convert cutting action	409/30728 . . . . .	In response to cutter condition
409/304536 . . . .	including means to infeed work to cutter	409/307336 . . . . .	In response to work condition
409/304592 . . . .	with compensation for backlash in drive means	409/307392 . . . .	with means to change rate of infeed
409/304648 . . . .	with control means energized in response to activator stimulated by condition sensor	409/307448 . . . .	with work holder
409/304704 . . . . .	In response to cutter or cutter carriage	409/307504 . . . . .	Indexable
409/30476 . . . . .	In response to work or work carriage	409/30756 . . . .	Machining arcuate surface
409/304816 . . . . .	to control rate of infeed or return	409/307616 . . . . .	with means to move cutter eccentrically
409/304872 . . . . .	to control limit of infeed	409/307672 . . . .	Angularly adjustable cutter head
409/304928 . . . . .	Adapted to hydraulically or pneumatically stimulate control	409/307728 . . . .	including gantry-type cutter-carrier
409/304984 . . . . .	Adapted to electrically stimulate control	409/307784 . . . .	Plural cutters
409/30504 . . . . .	to control rate of infeed or return	409/30784 . . . .	including means to adjustably position cutter
409/305096 . . . . .	to effect stopping of infeed	409/307896 . . . .	with work holder or guide
409/305152 . . . .	with means to change rate of infeed	409/307952 . . . .	Linear adjustment
409/305208 . . . .	Means to mill indeterminate length work	409/308008 . . . . .	with control for adjustment means responsive to activator stimulated by condition sensor
409/305264 . . . .	Multiple work stations	409/308064 . . . . .	Responsive to position of cutter
409/30532 . . . . .	with means to advance work or product	409/30812 . . . . .	and means to clamp cutter support in adjusted position
409/305376 . . . . .	Vertically	409/308176 . . . . .	with position indicator or limit means
409/305432 . . . . .	Endless or orbital work or product advancing means	409/308232 . . . . .	and angular adjustment
409/305488 . . . .	to reciprocate or oscillate work	409/308288 . . . . .	including gantry-type cutter-carrier
409/305544 . . . .	with work holder	409/308344 . . . . .	Plural cutters
409/3056 . . . . .	and means to selectively position work	409/3084 . . . . .	with position indicator or limit means
409/305656 . . . . .	including means to support work for rotation during operation	409/308456 . . . .	with right angle cutter drive
409/305712 . . . . .	and including means to infeed cutter toward work axis	409/308512 . . . .	Compound angular adjustment
409/305768 . . . . .	with linear movement of work	409/308568 . . . .	Plural cutters
409/305824 . . . . .	with angular movement of work	409/308624 . . . .	with limit means to aid in positioning of cutter bit or work [e.g., gauge, stop, etc.]
409/30588 . . . .	including friction gearing drive	409/30868 . . . .	Work support

- 409/308736 . . . with position indicator or stop
- 409/308792 . . . Indexable
- 409/308848 . . . including dividing head
- 409/308904 . . . . Multiple row dividing head
- 409/30896 . . . with angular adjustment
- 409/309016 . . . with work holder or guide
- 409/309072 . . . including cutter limited to rotary motion
- 409/309128 . . . with means to adjust work support vertically
- 409/309184 . . including cutter limited to rotary motion
- 409/30924 . . . Cutter turning about vertical axis
- 409/309296 . . Detachable or repositionable tool head
- 409/309352 . . Cutter spindle or spindle support
- 409/309408 . . . with cutter holder
- 409/309464 . . . . and draw bar
- 409/30952 . . with cutter holder
- 409/309576 . . Machine frame
- 409/309632 . . . Overarm harness structure
- 409/309688 . . . including counterbalancing means
- 409/309744 . . . including means to compensate for deformation
- 409/3098 . . . . Deflection of cutter spindle
- 409/309856 . . . Convertible from lathe
- 409/309912 . . . including relatively movable components and means to relatively immobilize these components
- 409/309968 . . Tailstock
- 409/40 . Broaching
- 409/400175 . . Process
- 409/40035 . . with control means energized in response to activator stimulated by condition sensor
- 409/400525 . . . Responsive to condition of work or product
- 409/4007 . . with means to distribute cutter infeed force
- 409/400875 . . with means to select cutter or to select or modify cutter drive
- 409/40105 . . with means to clean, lubricate, or modify temperature of work or cutter
- 409/401225 . . with product handling means
- 409/4014 . . . Between plural broaching stations
- 409/401575 . . . Means to eject broached product
- 409/40175 . . . Chip removal means
- 409/401925 . . with means to protect operative or machine [e.g., guard, safety device, etc.]
- 409/4021 . . . with safety means for overload or safety interlock
- 409/402275 . . with work immobilizer and means to activate work immobilizer interrelated with cutter infeed, work infeed, or work advance
- 409/40245 . . with work infeed or advancing means and means to clamp the work thereto, which clamping means is interrelated with work or cutter infeed
- 409/402625 . . Means to remove flash or burr
- 409/4028 . . Means for cutting groove
- 409/402975 . . . Arcuate groove in cylindrical surface
- 409/40315 . . . . Rifling
- 409/403325 . . Orbital carrier for cutter
- 409/4035 . . Orbital carrier for work
- 409/403675 . . with means to cyclically manipulate cutter or cutter support
- 409/40385 . . . to reorient, introduce, or remove cutter
- 409/404025 . . . Cutter released to interim support at termination of cutting stroke
- 409/4042 . . . to remove and return cutter to cutter support
- 409/404375 . . with plural cutters
- 409/40455 . . with means to advance, infeed, or manipulate work
- 409/404725 . . . Interrelated with cutter infeed
- 409/4049 . . . . including means supporting work and additional means opposing infeed force
- 409/405075 . . . . including work indexing means for sequential cutting of different surfaces of a single workpiece
- 409/40525 . . . . including work indexing means for sequential cutting of surfaces of different workpieces
- 409/405425 . . . . with means to retract work from path of tool's idle return stroke
- 409/4056 . . . to infeed work past cutter
- 409/405775 . . with means to hold work during cutting
- 409/40595 . . . including work clamping means
- 409/406125 . . . with means to adjust or facilitate adjustment of work or work holder
- 409/4063 . . . with means on work or work holder to guide cutter during infeed
- 409/406475 . . Cutter infeed means
- 409/40665 . . . Imparting rectilinear motion to cutter
- 409/406825 . . . . and rotary motion to cutter
- 409/407 . . . . Fluid powered means
- 409/407175 . . . . Rack means
- 409/40735 . . . . Screw means
- 409/407525 . . Machine frame
- 409/4077 . . Cutter support or guide
- 409/50 . Planing
- 409/500164 . . with regulation of operation by templet, card, or other replaceable information supply
- 409/500328 . . . including use of tracer adapted to trigger electrical or fluid energy
- 409/500492 . . . . including provision for circumferential relative movement of cutter and work
- 409/500656 . . . including provision for circumferential relative movement of cutter and work
- 409/50082 . . Process
- 409/500984 . . with means to lubricate
- 409/501148 . . with product handling means
- 409/501312 . . Randomly manipulated, work supported, or work following device
- 409/501476 . . Means to remove flash or burr
- 409/50164 . . . Elongated work
- 409/501804 . . . . Flash or burr inside hollow work
- 409/501968 . . . . Transverse burr
- 409/502132 . . . Flat work
- 409/502296 . . of commutator
- 409/50246 . . Means for trimming edge [e.g., chamfering, scarfing, etc.]
- 409/502624 . . Means for cutting groove
- 409/502788 . . . Arcuate groove
- 409/502952 . . . . For rifling
- 409/503116 . . . Inside hollow work
- 409/50328 . . Means for shaving by blade spanning work surface
- 409/503444 . . . Concave work surface [e.g., bearing, stereotype printing plate, etc.]
- 409/503608 . . . Circumferential surface
- 409/503772 . . . including rack driven infeed means
- 409/503936 . . . including roller infeed means
- 409/5041 . . Means for cutting arcuate surface
- 409/504264 . . . Cycloidal surface

409/504428 . . . with work infeed and means to arcuately reposition the cutter  
 409/504592 . . . with work infeed and means to arcuately reposition the work  
 409/504756 . . . with means to relatively infeed cutter and work  
 409/50492 . . . and means to rotate work and cutter at same rate about converging axes  
 409/505084 . . . with plural sequentially acting cutters or with double acting cutter  
 409/505248 . . . and means to vary rate of infeed  
 409/505412 . . . Reciprocating work infeed means  
 409/505576 . . . . with fluid-driven bed  
 409/50574 . . . . with rack-driven bed  
 409/505904 . . . . with screw-driven bed  
 409/506068 . . . . and means to permit repositioning of cutter laterally  
 409/506232 . . . Reciprocating cutter infeed means  
 409/506396 . . . . Reciprocating cutter horizontally  
 409/50656 . . . . . with work support and lead screw to reposition work support  
 409/506724 . . . . . with fluid-powered means to drive cutter  
 409/506888 . . . . . with pivoting link to drive cutter  
 409/507052 . . . . . Link driven by crank  
 409/507216 . . . . . with rack to drive cutter  
 409/50738 . . . . . with screw to drive cutter  
 409/507544 . . . . . with link or cam to drive cutter  
 409/507708 . . . . . with rack to drive cutter  
 409/507872 . . . including means causing return stroke  
 409/508036 . . Machine frame  
 409/5082 . . . Means to permit repositioning of cutter  
 409/508364 . . . . Laterally  
 409/508528 . . . . . Plural independently positioned cutters  
 409/508692 . . . . . including clutch  
 409/508856 . . . . . including repositioning means and means to effect stopping thereof  
 409/50902 . . . including relatively movable components and means to relatively immobilize these components  
 409/509184 . . . Work table  
 409/509348 . . Tool head  
 409/509512 . . . with selectively usable cutting edges  
 409/509676 . . . with means to permit repositioning of cutting for idle return stroke  
 409/50984 . . . . comprising pivotable cutter or cutter support

**Former US Class 428 Series****428/00 Stock material or miscellaneous articles**

428/11 . Magnetic recording head  
 428/1107 . . Magnetoresistive  
 428/1114 . . . having tunnel junction effect  
 428/1121 . . . Multilayer  
 428/1129 . . . . Super lattice [e.g., giant magneto resistance [GMR] or colossal magneto resistance [CMR], etc.]  
 428/1136 . . . Single film  
 428/1143 . . . with defined structural feature  
 428/115 . . Magnetic layer composition  
 428/1157 . . Substrate composition  
 428/1164 . . with protective film  
 428/1171 . . with defined laminate structural detail  
 428/1179 . . . Head with slider structure  
 428/1186 . . . with head pole component

428/1193 . . with interlaminar component [e.g., adhesion layer, etc.]  
 428/12 . All metal or with adjacent metals  
 428/12007 . . Component of composite having metal continuous phase interengaged with nonmetal continuous phase  
 428/12014 . . having metal particles  
 428/12021 . . . having composition or density gradient or differential porosity  
 428/12028 . . . Composite; i.e., plural, adjacent, spatially distinct metal components [e.g., layers, etc.]  
 428/12035 . . . . Fiber, asbestos, or cellulose in or next to particulate component  
 428/12042 . . . . Porous component  
 428/12049 . . . . Nonmetal component  
 428/12056 . . . . . Entirely inorganic  
 428/12063 . . . . . Nonparticulate metal component  
 428/12069 . . . . . Plural nonparticulate metal components  
 428/12076 . . . . . Next to each other  
 428/12083 . . . . . Nonmetal in particulate component  
 428/1209 . . . . . Plural particulate metal components  
 428/12097 . . . . . Nonparticulate component encloses particles  
 428/12104 . . . . . Particles discontinuous  
 428/12111 . . . . . Separated by nonmetal matrix or binder [e.g., welding electrode, etc.]  
 428/12118 . . . . . Nonparticulate component has Ni-, Cu-, or Zn-base  
 428/12125 . . . . . Nonparticulate component has Fe-base  
 428/12132 . . . . . Next to Fe-containing particles  
 428/12139 . . . . . Nonmetal particles in particulate component  
 428/12146 . . . . Nonmetal particles in a component  
 428/12153 . . . Interconnected void structure [e.g., permeable, etc.]  
 428/1216 . . . Continuous interengaged phases of plural metals, or oriented fiber containing  
 428/12167 . . . . Nonmetal containing  
 428/12174 . . . . Mo or W containing  
 428/12181 . . Composite powder [e.g., coated, etc.]  
 428/12188 . . having marginal feature for indexing or weakened portion for severing  
 428/12194 . . . For severing perpendicular to longitudinal dimension  
 428/12201 . . Width or thickness variation or marginal cuts repeating longitudinally  
 428/12208 . . . Variation in both width and thickness  
 428/12215 . . . Marginal slots [i.e., deeper than wide]  
 428/12222 . . Shaped configuration for melting [e.g., package, etc.]  
 428/12229 . . Intermediate article [e.g., blank, etc.]  
 428/12236 . . . Panel having nonrectangular perimeter  
 428/12243 . . . . Disk  
 428/1225 . . . . Symmetrical  
 428/12257 . . . . . Only one plane of symmetry  
 428/12264 . . . having outward flange, gripping means or interlocking feature  
 428/12271 . . . having discrete fastener, marginal fastening, taper, or end structure  
 428/12278 . . . . Same structure at both ends of plural taper  
 428/12285 . . . . Single taper [e.g., ingot, etc.]



428/12292	. . Workpiece with longitudinal passageway or stopweld material [e.g., for tubular stock, etc.]	428/12569	. . . . . Synthetic resin
428/12299	. . Workpiece mimicking finished stock having nonrectangular or noncircular cross section	428/12576	. . . . . Boride, carbide or nitride component
428/12306	. . Workpiece of parallel, nonfastened components [e.g., fagot, pile, etc.]	428/12583	. . . . . Component contains compound of adjacent metal
428/12313	. . . Arranged to avoid lateral displacement	428/1259	. . . . . Oxide
428/12319	. . . Composite	428/12597	. . . . . Noncrystalline silica or noncrystalline plural-oxide component [e.g., glass, etc.]
428/12326	. . with provision for limited relative movement between components	428/12604	. . . . . Film [e.g., glaze, etc.]
428/12333	. . Helical or with helical component	428/12611	. . . . . Oxide-containing component
428/1234	. . Honeycomb, or with grain orientation or elongated elements in defined angular relationship in respective components [e.g., parallel, inter- secting, etc.]	428/12618	. . . . . Plural oxides
428/12347	. . Plural layers discontinuously bonded [e.g., spot-weld, mechanical fastener, etc.]	428/12625	. . . . . Free carbon containing component
428/12354	. . Nonplanar, uniform-thickness material having symmetrical channel shape or reverse fold [e.g., making acute angle, etc.]	428/12632	. . . Four or more distinct components with alternate recurrence of each type component
428/12361	. . having aperture or cut	428/12639	. . . Adjacent, identical composition, components
428/12368	. . . Struck-out portion type	428/12646	. . . . . Group VIII or IB metal-base
428/12375	. . having member which crosses the plane of another member [e.g., T or X cross section, etc.]	428/12653	. . . . . Fe, containing 0.01-1.7% carbon [i.e., steel]
428/12382	. . Defined configuration of both thickness and nonthickness surface or angle therebetween [e.g., rounded corners, etc.]	428/1266	. . . O, S, or organic compound in metal component
428/12389	. . having variation in thickness	428/12667	. . . . . Oxide of transition metal or Al
428/12396	. . . Discontinuous surface component	428/12674	. . . Ge- or Si-base component
428/12403	. . . Longitudinally smooth and symmetrical	428/12681	. . . Ga-, In-, Tl- or Group VA metal-base component
428/1241	. . Nonplanar uniform thickness or nonlinear uniform diameter [e.g., L-shape]	428/12687	. . . Pb- and Sn-base components: alternative to or next to each other
428/12417	. . . Intersecting corrugating or dimples not in a single line [e.g., waffle form, etc.]	428/12694	. . . . . and next to Cu- or Fe-base component
428/12424	. . Mass of only fibers	428/12701	. . . Pb-base component
428/12431	. . Foil or filament smaller than 6 mils	428/12708	. . . Sn-base component
428/12438	. . . Composite	428/12715	. . . . . Next to Group IB metal-base component
428/12444	. . Embodying fibers interengaged or between layers [e.g., paper, etc.]	428/12722	. . . . . Next to Group VIII metal-base component
428/12451	. . Macroscopically anomalous interface between layers	428/12729	. . . Group IIA metal-base component
428/12458	. . having composition, density, or hardness gradient	428/12736	. . . Al-base component
428/12465	. . having magnetic properties, or preformed fiber orientation coordinate with shape	428/12743	. . . . . Next to refractory [Group IVB, VB, or VIB] metal-base component
428/12472	. . Microscopic interfacial wave or roughness	428/1275	. . . . . Next to Group VIII or IB metal-base component
428/12479	. . Porous [e.g., foamed, spongy, cracked, etc.]	428/12757	. . . . . Fe
428/12486	. . Laterally noncoextensive components [e.g., embedded, etc.]	428/12764	. . . . . Next to Al-base component
428/12493	. . Composite; i.e., plural, adjacent, spatially distinct metal components [e.g., layers, joint, etc.]	428/12771	. . . Transition metal-base component
428/125	. . . Deflectable by temperature change [e.g., thermostat element]	428/12778	. . . . . Alternative base metals from diverse categories
428/12507	. . . . . More than two components	428/12785	. . . . . Group IIB metal-base component
428/12514	. . . . . One component Cu-based	428/12792	. . . . . Zn-base component
428/12521	. . . . . Both components Fe-based with more than 10% Ni	428/12799	. . . . . Next to Fe-base component [e.g., galvanized]
428/12528	. . . Semiconductor component	428/12806	. . . . . Refractory [Group IVB, VB, or VIB] metal-base component
428/12535	. . . with additional, spatially distinct nonmetal component	428/12812	. . . . . Diverse refractory group metal-base components: alternative to or next to each other
428/12542	. . . . . More than one such component	428/12819	. . . . . Group VB metal-base component
428/12549	. . . . . Adjacent to each other	428/12826	. . . . . Group VIB metal-base component
428/12556	. . . . . Organic component	428/12833	. . . . . Alternative to or next to each other
428/12562	. . . . . Elastomer	428/1284	. . . . . W-base component
		428/12847	. . . . . Cr-base component
		428/12854	. . . . . Next to Co-, Fe-, or Ni-base component
		428/12861	. . . . . Group VIII or IB metal-base component
		428/12868	. . . . . Group IB metal-base component alternative to platinum group metal-base component [e.g., precious metal, etc.]
		428/12875	. . . . . Platinum group metal-base component
		428/12882	. . . . . Cu-base component alternative to Ag-, Au-, or Ni-base component

- 428/12889 . . . . . Au-base component
- 428/12896 . . . . . Ag-base component
- 428/12903 . . . . . Cu-base component
- 428/1291 . . . . . Next to Co-, Cu-, or Ni-base component
- 428/12917 . . . . . Next to Fe-base component
- 428/12924 . . . . . Fe-base has 0.01-1.7% carbon [i.e., steel]
- 428/12931 . . . . . Co-, Fe-, or Ni-base components, alternative to each other
- 428/12937 . . . . . Co- or Ni-base component next to Fe-base component
- 428/12944 . . . . . Ni-base component
- 428/12951 . . . . . Fe-base component
- 428/12958 . . . . . Next to Fe-base component
- 428/12965 . . . . . Both containing 0.01-1.7% carbon [i.e., steel]
- 428/12972 . . . . . Containing 0.01-1.7% carbon [i.e., steel]
- 428/12979 . . . . . Containing more than 10% nonferrous elements [e.g., high alloy, stainless]
- 428/12986 . . . . . Adjacent functionally defined components
- 428/12993 . . . . . Surface feature [e.g., rough, mirror]
- 428/13 . . . . . Hollow or container type article [e.g., tube, vase, etc.]
- 428/1303 . . . . . Paper containing [e.g., paperboard, cardboard, fiberboard, etc.]
- 428/1307 . . . . . Bag or tubular film [e.g., pouch, flexible food casing, envelope, etc.]
- 428/131 . . . . . Glass, ceramic, or sintered, fused, fired, or calcined metal oxide or metal carbide containing [e.g., porcelain, brick, cement, etc.]
- 428/1314 . . . . . Contains fabric, fiber particle, or filament made of glass, ceramic, or sintered, fused, fired, or calcined metal oxide, or metal carbide or other inorganic compound [e.g., fiber glass, mineral fiber, sand, etc.]
- 428/1317 . . . . . Multilayer [continuous layer]
- 428/1321 . . . . . Polymer or resin containing [i.e., natural or synthetic]
- 428/1324 . . . . . Flexible food casing [e.g., sausage type, etc.]
- 428/1328 . . . . . Shrinkable or shrunk [e.g., due to heat, solvent, volatile agent, restraint removal, etc.]
- 428/1331 . . . . . Single layer [continuous layer]
- 428/1334 . . . . . Nonself-supporting tubular film or bag [e.g., pouch, envelope, packet, etc.]
- 428/1338 . . . . . Elemental metal containing
- 428/1341 . . . . . Contains vapor or gas barrier, polymer derived from vinyl chloride or vinylidene chloride, or polymer containing a vinyl alcohol unit
- 428/1345 . . . . . Single layer [continuous layer]
- 428/1348 . . . . . Cellular material derived from plant or animal source [e.g., wood, cotton, wool, leather, etc.]
- 428/1352 . . . . . Polymer or resin containing [i.e., natural or synthetic]
- 428/1355 . . . . . Elemental metal containing [e.g., substrate, foil, film, coating, etc.]
- 428/1359 . . . . . Three or more layers [continuous layer]
- 428/1362 . . . . . Textile, fabric, cloth, or pile containing [e.g., web, net, woven, knitted, mesh, nonwoven, matted, etc.]
- 428/1366 . . . . . Textile, fabric, cloth, or pile is sandwiched between two distinct layers of material unlike the textile, fabric, cloth, or pile layer
- 428/1369 . . . . . Fiber or fibers wound around each other or into a self-sustaining shape [e.g., yarn, braid, fibers shaped around a core, etc.]
- 428/1372 . . . . . Randomly noninterengaged or randomly contacting fibers, filaments, particles, or flakes
- 428/1376 . . . . . Foam or porous material containing
- 428/1379 . . . . . Contains vapor or gas barrier, polymer derived from vinyl chloride or vinylidene chloride, or polymer containing a vinyl alcohol unit
- 428/1383 . . . . . Vapor or gas barrier, polymer derived from vinyl chloride or vinylidene chloride, or polymer containing a vinyl alcohol unit is sandwiched between layers [continuous layer]
- 428/1386 . . . . . Natural or synthetic rubber or rubber-like compound containing
- 428/139 . . . . . Open-ended, self-supporting conduit, cylinder, or tube-type article
- 428/1393 . . . . . Multilayer [continuous layer]
- 428/1397 . . . . . Single layer [continuous layer]
- 428/14 . . . . . Layer or component removable to expose adhesive
- 428/1405 . . . . . Capsule or particulate matter containing [e.g., sphere, flake, microballoon, etc.]
- 428/141 . . . . . Bituminous
- 428/1414 . . . . . Ceramic, glass, glasslike, vitreous
- 428/1419 . . . . . Wax containing
- 428/1424 . . . . . Halogen containing compound
- 428/1429 . . . . . Fluorine
- 428/1433 . . . . . Coloring agent containing
- 428/1438 . . . . . Metal containing
- 428/1443 . . . . . Aluminum
- 428/1448 . . . . . Coloring agent containing
- 428/1452 . . . . . Polymer derived only from ethylenically unsaturated monomer
- 428/1457 . . . . . Silicon
- 428/1462 . . . . . Polymer derived from material having at least one acrylic or alkacrylic group or the nitrile or amide derivative thereof [e.g., acrylamide, acrylate ester, etc.]
- 428/1467 . . . . . Coloring agent
- 428/1471 . . . . . Protective layer
- 428/1476 . . . . . Release layer
- 428/1481 . . . . . Dissimilar adhesives
- 428/1486 . . . . . Ornamental, decorative, pattern, or indicia
- 428/149 . . . . . Sectional layer removable
- 428/1495 . . . . . Adhesive is on removable layer
- 428/15 . . . . . Sheet, web, or layer weakened to permit separation through thickness
- 428/16 . . . . . Two dimensionally sectional layer
- 428/161 . . . . . with frame, casing, or perimeter structure
- 428/162 . . . . . Transparent or translucent layer or section
- 428/163 . . . . . Next to unitary web or sheet of equal or greater extent
- 428/164 . . . . . Continuous two dimensionally sectional layer
- 428/166 . . . . . Glass, ceramic, or metal sections [e.g., floor or wall tile, etc.]
- 428/167 . . . . . Cellulosic sections [e.g., parquet floor, etc.]
- 428/168 . . . . . Nonrectangular
- 428/169 . . . . . Sections connected flexibly with external fastener
- 428/17 . . . . . Three or more coplanar interfitted sections with securing means
- 428/18 . . . . . Longitudinally sectional layer of three or more sections

- 428/183 . . Next to unitary sheet of equal or greater extent
- 428/187 . . . Continuous sectional layer
- 428/19 . Sheets or webs edge spliced or joined
- 428/192 . . Sheets or webs coplanar
- 428/193 . . . Double faced corrugated sheets or webs connected
- 428/195 . . . Beveled, stepped, or skived in thickness
- 428/197 . . . with noncoplanar reinforcement
- 428/198 . . . . Pile or nap surface sheets connected
- 428/20 . Patched hole or depression
- 428/21 . Circular sheet or circular blank
- 428/211 . . Gear
- 428/213 . . Frictional
- 428/214 . . End closure
- 428/215 . . Seal, gasket, or packing
- 428/216 . . Ornamental, decorative, pattern, or indicia
- 428/218 . . Aperture containing
- 428/219 . . Edge structure
- 428/22 . Nonparticulate element embedded or inlaid in substrate and visible
- 428/23 . Sheet including cover or casing
- 428/231 . . Filled with gas other than air; or under vacuum
- 428/232 . . Encased layer derived from inorganic settable ingredient
- 428/233 . . Foamed or expanded material encased
- 428/234 . . including elements cooperating to form cells
- 428/236 . . . Honeycomb type cells extend perpendicularly to nonthickness layer
- 428/237 . . Noninterengaged fibered material encased [e.g., mat, batt, etc.]
- 428/238 . . . Metal cover or casing
- 428/239 . . Complete cover or casing
- 428/23907 . Pile or nap type surface or component
- 428/23914 . . Interlaminar
- 428/23921 . . With particles
- 428/23929 . . Edge feature or configured or discontinuous surface
- 428/23936 . . . Differential pile length or surface
- 428/23943 . . Flock surface
- 428/2395 . . Nap type surface
- 428/23957 . . Particular shape or structure of pile
- 428/23964 . . . U-, V-, or W-shaped or continuous strand, filamentary material
- 428/23971 . . . . Continuous strand with adhesive bond to backing
- 428/23979 . . Particular backing structure or composition
- 428/23986 . . With coating, impregnation, or bond
- 428/23993 . . Composition of pile or adhesive
- 428/24 . Structurally defined web or sheet [e.g., overall dimension, etc.]
- 428/24008 . . including fastener for attaching to external surface
- 428/24017 . . . Hook or barb
- 428/24025 . . Superposed movable attached layers or components
- 428/24033 . . including stitching and discrete fastener[s], coating or bond
- 428/24041 . . . Discontinuous or differential coating, impregnation, or bond
- 428/2405 . . . . Coating, impregnation, or bond in stitching zone only
- 428/24058 . . including grain, strips, or filamentary elements in respective layers or components in angular relation
- 428/24066 . . . Wood grain
- 428/24074 . . . Strand or strand-portions
- 428/24083 . . . . Nonlinear strands or strand-portions
- 428/24091 . . . . with additional layer[s]
- 428/24099 . . . . . On each side of strands or strand-portions
- 428/24107 . . . . . including mechanically interengaged strands, strand-portions or strand-like strips
- 428/24116 . . . . Oblique to direction of web
- 428/24124 . . . Fibers
- 428/24132 . . including grain, strips, or filamentary elements in different layers or components parallel
- 428/2414 . . including fringe
- 428/24149 . . Honeycomb-like
- 428/24157 . . . Filled honeycomb cells [e.g., solid substance in cavities, etc.]
- 428/24165 . . . Hexagonally shaped cavities
- 428/24174 . . including sheet or component perpendicular to plane of web or sheet
- 428/24182 . . . Inward from edge of web or sheet
- 428/2419 . . Fold at edge
- 428/24198 . . . Channel-shaped edge component [e.g., binding, etc.]
- 428/24207 . . . with strand[s] or strand-portion[s] between layers [e.g., upholstery trim, etc.]
- 428/24215 . . . Acute or reverse fold of exterior component
- 428/24223 . . . . Embedded in body of web
- 428/24231 . . . . At opposed marginal edges
- 428/2424 . . . . . Annular cover
- 428/24248 . . . . . One piece
- 428/24256 . . . . . Abutted or lapped seam
- 428/24264 . . . Particular fold structure [e.g., beveled, etc.]
- 428/24273 . . including aperture
- 428/24281 . . . Struck out portion type
- 428/24289 . . . . Embedded or interlocked
- 428/24298 . . . Noncircular aperture [e.g., slit, diamond, rectangular, etc.]
- 428/24306 . . . . Diamond or hexagonal
- 428/24314 . . . . Slit or elongated
- 428/24322 . . . Composite web or sheet
- 428/24331 . . . . including nonapertured component
- 428/24339 . . . . . Keyed
- 428/24347 . . . . . From both sides
- 428/24355 . . Continuous and nonuniform or irregular surface on layer or component [e.g., roofing, etc.]
- 428/24364 . . . with transparent or protective coating
- 428/24372 . . . Particulate matter
- 428/2438 . . . . Coated
- 428/24388 . . . . . Silicon containing coating
- 428/24397 . . . . Carbohydrate
- 428/24405 . . . . Polymer or resin [e.g., natural or synthetic rubber, etc.]
- 428/24413 . . . . Metal or metal compound
- 428/24421 . . . . Silicon containing
- 428/2443 . . . . . Sand, clay, or crushed rock or slate
- 428/24438 . . . Artificial wood or leather grain surface
- 428/24446 . . . Wrinkled, creased, crinkled or creped
- 428/24455 . . . . Paper
- 428/24463 . . . . . Plural paper components

- 428/24471 . . . Cracked, crazed or slit
- 428/24479 . . including variation in thickness
- 428/24488 . . . Differential nonuniformity at margin
- 428/24496 . . . Foamed or cellular component
- 428/24504 . . . . Component comprises a polymer [e.g., rubber, etc.]
- 428/24512 . . . . Polyurethane
- 428/24521 . . . with component conforming to contour of nonplanar surface
- 428/24529 . . . . and conforming component on an opposite nonplanar surface
- 428/24537 . . . . Parallel ribs and/or grooves
- 428/24545 . . . . Containing metal or metal compound
- 428/24554 . . . . including cellulosic or natural rubber component
- 428/24562 . . . Interlaminar spaces
- 428/2457 . . . Parallel ribs and/or grooves
- 428/24579 . . . . with particulate matter
- 428/24587 . . . . Oblique to longitudinal axis of web or sheet
- 428/24595 . . . and varying density
- 428/24603 . . . . Fiber containing component
- 428/24612 . . . Composite web or sheet
- 428/2462 . . . . with partial filling of valleys on outer surface
- 428/24628 . . Nonplanar uniform thickness material
- 428/24636 . . . Embodying mechanically interengaged strand[s], strand-portion[s] or strand-like strip[s] [e.g., weave, knit, etc.]
- 428/24645 . . . . with folds in parallel planes
- 428/24653 . . . Differential nonplanarity at margin
- 428/24661 . . . Forming, or cooperating to form cells
- 428/24669 . . . Aligned or parallel nonplanarities
- 428/24678 . . . . Waffle-form
- 428/24686 . . . . Pleats or otherwise parallel adjacent folds
- 428/24694 . . . . Parallel corrugations
- 428/24702 . . . . . with locally deformed crests or intersecting series of corrugations
- 428/24711 . . . . . Plural corrugated components
- 428/24719 . . . . . with corrugations of respective components intersecting in plane projection
- 428/24727 . . . . . with planar component
- 428/24736 . . . Ornamental design or indicia
- 428/24744 . . Longitudinal or transverse tubular cavity or cell
- 428/24752 . . Laterally noncoextensive components
- 428/2476 . . . Fabric, cloth or textile component
- 428/24769 . . . Cellulosic
- 428/24777 . . Edge feature
- 428/24785 . . . including layer embodying mechanically interengaged strands, strand portions or strand-like strips [e.g., weave, knit, etc.]
- 428/24793 . . . Comprising discontinuous or differential impregnation or bond
- 428/24802 . . Discontinuous or differential coating, impregnation or bond [e.g., artwork, printing, retouched photograph, etc.]
- 428/2481 . . . including layer of mechanically interengaged strands, strand-portions or strand-like strips
- 428/24818 . . . . Knitted, with particular or differential bond sites or intersections
- 428/24826 . . . Spot bonds connect components
- 428/24835 . . . including developable image or soluble portion in coating or impregnation [e.g., safety paper, etc.]
- 428/24843 . . . with heat sealable or heat releasable adhesive layer
- 428/24851 . . . Intermediate layer is discontinuous or differential
- 428/2486 . . . . with outer strippable or release layer
- 428/24868 . . . . Translucent outer layer
- 428/24876 . . . . . Intermediate layer contains particulate material [e.g., pigment, etc.]
- 428/24884 . . . . . Translucent layer comprises natural oil, wax, resin, gum, glue, gelatin
- 428/24893 . . . including particulate material
- 428/24901 . . . . including coloring matter
- 428/24909 . . . . Free metal or mineral containing
- 428/24917 . . . including metal layer
- 428/24926 . . . including ceramic, glass, porcelain or quartz layer
- 428/24934 . . . including paper layer
- 428/24942 . . including components having same physical characteristic in differing degree
- 428/2495 . . . Thickness [relative or absolute]
- 428/24959 . . . . of adhesive layers
- 428/24967 . . . . Absolute thicknesses specified
- 428/24975 . . . . . No layer or component greater than 5 mils thick
- 428/24983 . . . Hardness
- 428/24992 . . . Density or compression of components
- 428/249921 . Web or sheet containing structurally defined element or component
- 428/249922 . . Embodying intertwined or helical component[s]
- 428/249923 . . Including interlaminar mechanical fastener
- 428/249924 . . Noninterengaged fiber-containing paper-free web or sheet which is not of specified porosity
- 428/249925 . . . Fiber-containing wood product [e.g., hardboard, lumber, or wood board, etc.]
- 428/249926 . . . Including paper layer
- 428/249927 . . . Fiber embedded in a metal matrix
- 428/249928 . . . Fiber embedded in a ceramic, glass, or carbon matrix
- 428/249929 . . . . Fibers are aligned substantially parallel
- 428/24993 . . . . . Fiber is precoated
- 428/249931 . . . . . Free metal or alloy fiber
- 428/249932 . . . Fiber embedded in a layer derived from a water-settable material [e.g., cement, gypsum, etc.]
- 428/249933 . . . Fiber embedded in or on the surface of a natural or synthetic rubber matrix
- 428/249934 . . . . Fibers are aligned substantially parallel
- 428/249935 . . . . . Fiber is nonlinear [e.g., crimped, sinusoidal, etc.]
- 428/249936 . . . . . Fiber is precoated
- 428/249937 . . . . . Fiber is precoated
- 428/249938 . . . . Composite or conjugate fiber [e.g., fiber contains more than one chemically different material in monofilament or multifilament form, etc.]
- 428/249939 . . . . Two or more layers
- 428/24994 . . . Fiber embedded in or on the surface of a polymeric matrix
- 428/249941 . . . . Fiber is on the surface of a polymeric matrix having no embedded portion
- 428/249942 . . . . Fibers are aligned substantially parallel
- 428/249943 . . . . . Fiber is nonlinear [e.g., crimped, sinusoidal, etc.]

- 428/249944 . . . . . Fiber is precoated
- 428/249945 . . . . . Carbon or carbonaceous fiber
- 428/249946 . . . . . Glass fiber
- 428/249947 . . . . . Polymeric fiber
- 428/249948 . . . . . Fiber is precoated
- 428/249949 . . . . . Two or more chemically different fibers
- 428/24995 . . . . . Two or more layers
- 428/249951 . . . . . Including a free metal or alloy constituent
- 428/249952 . . . . . At least one thermosetting synthetic polymeric material layer
- 428/249953 . . . Composite having voids in a component [e.g., porous, cellular, etc.]
- 428/249954 . . . With chemically effective material or specified gas other than air, N, or carbon dioxide in void-containing component
- 428/249955 . . . Void-containing component partially impregnated with adjacent component
- 428/249956 . . . . . Void-containing component is inorganic
- 428/249957 . . . . . Inorganic impregnant
- 428/249958 . . . . . Void-containing component is synthetic resin or natural rubbers
- 428/249959 . . . . . Void-containing component is wood or paper
- 428/24996 . . . With internal element bridging layers, nonplanar interface between layers, or intermediate layer of commingled adjacent foam layers
- 428/249961 . . . With gradual property change within a component
- 428/249962 . . . Void-containing component has a continuous matrix of fibers only [e.g., porous paper, etc.]
- 428/249963 . . . . . And a force disintegratable component [e.g., stencil sheet, etc.]
- 428/249964 . . . . . Fibers of defined composition
- 428/249965 . . . . . Cellulosic
- 428/249966 . . . . . Plural cellulosic components
- 428/249967 . . . Inorganic matrix in void-containing component
- 428/249968 . . . . . Of hydraulic-setting material
- 428/249969 . . . . . Of silicon-containing material [e.g., glass, etc.]
- 428/24997 . . . . . Of metal-containing material
- 428/249971 . . . Preformed hollow element-containing
- 428/249972 . . . . . Resin or rubber element
- 428/249973 . . . . . Mineral element
- 428/249974 . . . . . Metal- or silicon-containing element
- 428/249975 . . . Void shape specified [e.g., crushed, flat, round, etc.]
- 428/249976 . . . Voids specified as closed
- 428/249977 . . . . . Specified thickness of void-containing component [absolute or relative], numerical cell dimension or density
- 428/249978 . . . Voids specified as micro
- 428/249979 . . . . . Specified thickness of void-containing component [absolute or relative] or numerical cell dimension
- 428/24998 . . . . . Composite has more than two layers
- 428/249981 . . . Plural void-containing components
- 428/249982 . . . With component specified as adhesive or bonding agent
- 428/249983 . . . . . As outermost component
- 428/249984 . . . . . Adhesive or bonding component contains voids
- 428/249985 . . . . . Composition of adhesive or bonding component specified
- 428/249986 . . . . . Void-containing component contains also a solid fiber or solid particle
- 428/249987 . . . . . With nonvoid component of specified composition
- 428/249988 . . . . . Of about the same composition as, and adjacent to, the void-containing component
- 428/249989 . . . . . Integrally formed skin
- 428/24999 . . . . . Inorganic
- 428/249991 . . . . . Synthetic resin or natural rubbers
- 428/249992 . . . . . Linear or thermoplastic
- 428/249993 . . . . . Hydrocarbon polymer
- 428/249994 . . . Composite having a component wherein a constituent is liquid or is contained within preformed walls [e.g., impregnant-filled, previously void containing component, etc.]
- 428/249995 . . . . . Constituent is in liquid form
- 428/249996 . . . . . Ink in pores
- 428/249997 . . . . . Encapsulated liquid
- 428/249998 . . . . . Indefinite plurality of similar impregnated thin sheets [e.g., "decorative laminate" type, etc.]
- 428/249999 . . . . . Differentially filled foam, filled plural layers, or filled layer with coat of filling material
- 428/25 . . . Web or sheet containing structurally defined element or component and including a second component containing structurally defined particles
- 428/251 . . . Mica
- 428/252 . . . Glass or ceramic [i.e., fired or glazed clay, cement, etc.] [porcelain, quartz, etc.]
- 428/253 . . . Cellulosic [e.g., wood, paper, cork, rayon, etc.]
- 428/254 . . . Polymeric or resinous material
- 428/256 . . . Heavy metal or aluminum or compound thereof
- 428/257 . . . Iron oxide or aluminum oxide
- 428/258 . . . Alkali metal or alkaline earth metal or compound thereof
- 428/259 . . . Silicic material
- 428/26 . . . Web or sheet containing structurally defined element or component, the element or component having a specified physical dimension
- 428/261 . . . In terms of molecular thickness or light wave length
- 428/263 . . . Coating layer not in excess of 5 mils thick or equivalent
- 428/264 . . . Up to 3 mils
- 428/265 . . . . . 1 mil or less
- 428/266 . . . of base or substrate
- 428/268 . . . Monolayer with structurally defined element
- 428/269 . . . including synthetic resin or polymer layer or component
- 428/27 . . . Web or sheet containing structurally defined element or component, the element or component having a specified weight per unit area [e.g., gms/sq cm, lbs/sq ft, etc.]
- 428/273 . . . of coating
- 428/277 . . . Cellulosic substrate
- 428/28 . . . Web or sheet containing structurally defined element or component and having an adhesive outermost layer
- 428/2804 . . . Next to metal
- 428/2809 . . . including irradiated or wave energy treated component
- 428/2813 . . . Heat or solvent activated or sealable
- 428/2817 . . . Heat sealable
- 428/2822 . . . . . Wax containing

- 428/2826 . . . . Synthetic resin or polymer
- 428/283 . . . Water activated
- 428/2835 . . including moisture or waterproof component
- 428/2839 . . with release or antistick coating
- 428/2843 . . including a primer layer
- 428/2848 . . Three or more layers
- 428/2852 . . Adhesive compositions
- 428/2857 . . . including metal or compound thereof or natural rubber
- 428/2861 . . . having readily strippable combined with readily readhearable properties [e.g., stick-ons, etc.]
- 428/2865 . . . including monomer or polymer of carbohydrate [e.g., starch, dextrin, etc.] Or protein [e.g., casein, animal protein, etc.] Or derivative thereof
- 428/287 . . . including epoxy group or epoxy polymer
- 428/2874 . . . including aldehyde or ketone condensation polymer [e.g., urea formaldehyde polymer, melamine formaldehyde polymer, etc.]
- 428/2878 . . . including addition polymer from unsaturated monomer
- 428/2883 . . . . including addition polymer of diene monomer [e.g., SBR, SIS, etc.]
- 428/2887 . . . . including nitrogen containing polymer [e.g., polyacrylonitrile, polymethacrylonitrile, etc.]
- 428/2891 . . . . including addition polymer from alpha-beta unsaturated carboxylic acid [e.g., acrylic acid, methacrylic acid, etc.] Or derivative thereof
- 428/2896 . . . including nitrogen containing condensation polymer [e.g., polyurethane, polyisocyanate, etc.]
- 428/29 . . Coated or structually defined flake, particle, cell, strand, strand portion, rod, filament, macroscopic fiber or mass thereof
- 428/2902 . . Channel shape
- 428/2904 . . Staple length fiber
- 428/2905 . . . Plural and with bonded intersections only
- 428/2907 . . . with coating or impregnation
- 428/2909 . . . Nonlinear [e.g., crimped, coiled, etc.]
- 428/2911 . . Mica flake
- 428/2913 . . Rod, strand, filament or fiber
- 428/2915 . . . including textile, cloth or fabric
- 428/2916 . . . including boron or compound thereof [not as steel]
- 428/2918 . . . including free carbon or carbide or therewith [not as steel]
- 428/292 . . . . In coating or impregnation
- 428/2922 . . . Nonlinear [e.g., crimped, coiled, etc.]
- 428/2924 . . . . Composite
- 428/2925 . . . . Helical or coiled
- 428/2927 . . . including structurally defined particulate matter
- 428/2929 . . . Bicomponent, conjugate, composite or collateral fibers or filaments [i.e., coextruded sheath-core or side-by-side type]
- 428/2931 . . . . Fibers or filaments nonconcentric [e.g., side-by-side or eccentric, etc.]
- 428/2933 . . . Coated or with bond, impregnation or core
- 428/2935 . . . . Discontinuous or tubular or cellular core
- 428/2936 . . . . Wound or wrapped core or coating [i.e., spiral or helical]
- 428/2938 . . . . Coating on discrete and individual rods, strands or filaments
- 428/294 . . . . including metal or compound thereof [excluding glass, ceramic and asbestos]
- 428/2942 . . . . . Plural coatings
- 428/2944 . . . . . Free metal in coating
- 428/2945 . . . . . Natural rubber in coating
- 428/2947 . . . . . Synthetic resin or polymer in plural coatings, each of different type
- 428/2949 . . . . . Glass, ceramic or metal oxide in coating
- 428/2951 . . . . . Metal with weld modifying or stabilizing coating [e.g., flux, slag, producer, etc.]
- 428/2953 . . . . . Titanium compound in coating
- 428/2955 . . . . . Silicic material in coating
- 428/2956 . . . . . Glass or silicic fiber or filament with metal coating
- 428/2958 . . . . . Metal or metal compound in coating
- 428/296 . . . . . Rubber, cellulosic or silicic material in coating
- 428/2962 . . . . . Silane, silicone or siloxane in coating
- 428/2964 . . . . . Artificial fiber or filament
- 428/2965 . . . . . Cellulosic
- 428/2967 . . . . . Synthetic resin or polymer
- 428/2969 . . . . . Polyamide, polyimide or polyester
- 428/2971 . . . . . Impregnation
- 428/2973 . . . . Particular cross section
- 428/2975 . . . . . Tubular or cellular
- 428/2976 . . . . . Longitudinally varying
- 428/2978 . . . . . Surface characteristic
- 428/298 . . . Physical dimension
- 428/2982 . . . Particulate matter [e.g., sphere, flake, etc.]
- 428/2984 . . . Microcapsule with fluid core [includes liposome]
- 428/2985 . . . . Solid-walled microcapsule from synthetic polymer
- 428/2987 . . . . . Addition polymer from unsaturated monomers only
- 428/2989 . . . . Microcapsule with solid core [includes liposome]
- 428/2991 . . . Coated
- 428/2993 . . . . Silicic or refractory material containing [e.g., tungsten oxide, glass, cement, etc.]
- 428/2995 . . . . . Silane, siloxane or silicone coating
- 428/2996 . . . . . Glass particles or spheres
- 428/2998 . . . . . including synthetic resin or polymer
- 428/30 . . Self-sustaining carbon mass or layer with impregnant or other layer
- 428/31 . . Surface property or characteristic of web, sheet or block
- 428/315 . . . Surface modified glass [e.g., tempered, strengthened, etc.]
- 428/31504 . . Composite [nonstructural laminate]
- 428/31507 . . . Of polycarbonate
- 428/31511 . . . Of epoxy ether
- 428/31515 . . . . As intermediate layer
- 428/31518 . . . . . Next to glass or quartz
- 428/31522 . . . . . Next to metal
- 428/31525 . . . . . Next to glass or quartz
- 428/31529 . . . . . Next to metal
- 428/31533 . . . Of polythioether
- 428/31536 . . . Including interfacial reaction product of adjacent layers
- 428/3154 . . . Of fluorinated addition polymer from unsaturated monomers
- 428/31544 . . . . Addition polymer is perhalogenated

428/31547 . . . Of polyisocyanurate	428/31699 . . . . Ester, halide or nitrile of addition polymer
428/31551 . . . Of polyamidoester [polyurethane, polyisocyanate, polycarbamate, etc.]	428/31703 . . . Next to cellulosic
428/31554 . . . Next to second layer of polyamidoester	428/31707 . . . Next to natural rubber
428/31558 . . . Next to animal skin or membrane	428/3171 . . . . With natural rubber next to second layer of natural rubber
428/31562 . . . Next to polyamide [nylon, etc.]	428/31714 . . . Next to natural gum, natural oil, rosin, lac or wax
428/31565 . . . Next to polyester [polyethylene terephthalate, etc.]	428/31717 . . . Next to bituminous or tarry residue
428/31569 . . . Next to natural rubber	428/31721 . . . Of polyimide
428/31573 . . . Next to addition polymer of ethylenically unsaturated monomer	428/31725 . . . Of polyamide
428/31576 . . . . Ester monomer type [polyvinylacetate, etc.]	428/31728 . . . Next to second layer of polyamide
428/3158 . . . . Halide monomer type [polyvinyl chloride, etc.]	428/31732 . . . . At least one layer is nylon type
428/31583 . . . . Nitrile monomer type [polyacrylonitrile, etc.]	428/31736 . . . Next to polyester
428/31587 . . . . Hydrocarbon polymer [polyethylene, polybutadiene, etc.]	428/31739 . . . Nylon type
428/31591 . . . Next to cellulosic	428/31743 . . . . Next to addition polymer from unsaturated monomer[s]
428/31594 . . . Next to aldehyde or ketone condensation product [phenol-aldehyde, etc.]	428/31746 . . . . . Polymer of monoethylenically unsaturated hydrocarbon
428/31598 . . . Next to silicon-containing [silicone, cement, etc.] layer	428/3175 . . . Next to addition polymer from unsaturated monomer[s]
428/31601 . . . . Quartz or glass	428/31754 . . . . Natural source-type polyamide
428/31605 . . . Next to free metal	428/31757 . . . . Polymer of monoethylenically unsaturated hydrocarbon
428/31609 . . . Particulate metal or metal compound-containing	428/31761 . . . Next to aldehyde or ketone condensation product
428/31612 . . . . As silicone, silane or siloxane	428/31765 . . . Inorganic-containing or next to inorganic-containing
428/31616 . . . Next to polyester [e.g., alkyd]	428/31768 . . . Natural source-type polyamide [e.g., casein, gelatin, etc.]
428/3162 . . . . Cross-linked polyester [e.g., glycerol maleate-styrene, etc.]	428/31772 . . . . Next to cellulosic
428/31623 . . . Next to polyamide or polyimide	428/31775 . . . . . Paper
428/31627 . . . Next to aldehyde or ketone condensation product	428/31779 . . . Next to cellulosic
428/3163 . . . . Next to acetal of polymerized unsaturated alcohol [e.g., formal butyral, etc.]	428/31783 . . . . Paper or wood
428/31634 . . . Next to cellulosic	428/31786 . . . Of polyester [e.g., alkyd, etc.]
428/31638 . . . . Cellulosic ester	428/3179 . . . Next to cellulosic
428/31641 . . . Next to natural rubber, gum, oil, rosin, wax, bituminous or tarry residue	428/31794 . . . Of cross-linked polyester
428/31645 . . . Next to addition polymer from unsaturated monomers	428/31797 . . . Next to addition polymer from unsaturated monomers
428/31649 . . . . Ester, halide or nitrile of addition polymer	428/31801 . . . Of wax or waxy material
428/31652 . . . Of asbestos	428/31804 . . . Next to cellulosic
428/31656 . . . With metal layer	428/31808 . . . . Cellulosic is paper
428/31659 . . . With cellulosic layer	428/31812 . . . . . Glassine paper
428/31663 . . . As siloxane, silicone or silane	428/31815 . . . Of bituminous or tarry residue
428/31667 . . . Next to addition polymer from unsaturated monomers, or aldehyde or ketone condensation product	428/31819 . . . Next to cellulosic
428/3167 . . . Of cork	428/31823 . . . . Paper
428/31674 . . . Including natural oil or gum or rosin [e.g., linoleum, etc.]	428/31826 . . . Of natural rubber
428/31678 . . . Of metal	428/3183 . . . Next to second layer of natural rubber
428/31681 . . . Next to polyester, polyamide or polyimide [e.g., alkyd, glue, or nylon, etc.]	428/31833 . . . Next to aldehyde or ketone condensation product or addition polymer from unsaturated monomers
428/31685 . . . . Natural source polyamide [e.g., casein, gelatin, etc.]	428/31837 . . . . Including polyene monomers
428/31688 . . . Next to aldehyde or ketone condensation product	428/31841 . . . Next to cellulosic
428/31692 . . . Next to addition polymer from unsaturated monomers	428/31844 . . . Of natural gum, rosin, natural oil or lac
428/31696 . . . . Including polyene monomers [e.g., butadiene, etc.]	428/31848 . . . Next to cellulosic
	428/31851 . . . . Natural oil
	428/31855 . . . Of addition polymer from unsaturated monomers
	428/31859 . . . Next to an aldehyde or ketone condensation product
	428/31862 . . . . Melamine-aldehyde
	428/31866 . . . . . Impregnated or coated cellulosic material
	428/3187 . . . . Amide-aldehyde
	428/31873 . . . . . Urea or modified urea-aldehyde

428/31877 . . . . Phenol-aldehyde  
 428/3188 . . . . Next to cellulosic  
 428/31884 . . . . Regenerated or modified cellulose  
 428/31888 . . . . . Addition polymer of hydrocarbon[s] only  
 428/31891 . . . . . Where addition polymer is an ester or halide  
 428/31895 . . . . Paper or wood  
 428/31899 . . . . . Addition polymer of hydrocarbon[s] only  
 428/31902 . . . . . Monoethylenically unsaturated  
 428/31906 . . . . . Ester, halide or nitrile of addition polymer  
 428/31909 . . . . Next to second addition polymer from unsaturated monomers  
 428/31913 . . . . Monoolefin polymer  
 428/31917 . . . . . Next to polyene polymer  
 428/3192 . . . . . Next to vinyl or vinylidene chloride polymer  
 428/31924 . . . . Including polyene monomers  
 428/31928 . . . . Ester, halide or nitrile of addition polymer  
 428/31931 . . . Polyene monomer-containing  
 428/31935 . . . Ester, halide or nitrile of addition polymer  
 428/31938 . . . Polymer of monoethylenically unsaturated hydrocarbon  
 428/31942 . . Of aldehyde or ketone condensation product  
 428/31946 . . . Next to second aldehyde or ketone condensation product  
 428/31949 . . . Next to cellulosic  
 428/31953 . . . . Modified or regenerated cellulose  
 428/31957 . . . . Wood  
 428/3196 . . . . . Phenoplast  
 428/31964 . . . . Paper  
 428/31967 . . . . . Phenoplast  
 428/31971 . . Of carbohydrate  
 428/31975 . . . Of cellulosic next to another carbohydrate  
 428/31978 . . . . Cellulosic next to another cellulosic  
 428/31982 . . . . . Wood or paper  
 428/31986 . . . . . Regenerated or modified  
 428/31989 . . . Of wood  
 428/31993 . . . Of paper  
 428/31996 . . . . Next to layer of metal salt [e.g., plasterboard, etc.]  
 428/32 . . Composite [nonstructural laminate] of inorganic material having metal-compound-containing layer and having defined magnetic layer  
 428/325 . . Magnetic layer next to second metal compound-containing layer  
 428/4935 . . Impregnated naturally solid product [e.g., leather, stone, etc.]  
 428/662 . . Wood timber product [e.g., piling, post, veneer, etc.]  
 428/8305 . . Miscellaneous [e.g., treated surfaces, etc.]

**Former US Class 436 Series****436/00 Chemistry: analytical and immunological testing**

436/10 . . Composition for standardization, calibration, simulation, stabilization, preparation or preservation; processes of use in preparation for chemical testing  
 436/100833 . . Simulative of a gaseous composition  
 436/101666 . . Particle count or volume standard or control [e.g., platelet count standards, etc.]  
 436/102499 . . Blood gas standard or control  
 436/103332 . . Bilirubin or uric acid standard or control

436/104165 . . Lipid, cholesterol, or triglyceride standard or control  
 436/104998 . . Glucose, ketone, nitrate standard or control  
 436/105831 . . Protein or peptide standard or control [e.g., hemoglobin, etc.]  
 436/106664 . . Blood serum or blood plasma standard or control  
 436/107497 . . Preparation composition [e.g., lysing or precipitation, etc.]  
 436/108331 . . Preservative, buffer, anticoagulant or diluent  
 436/109163 . . Inorganic standards or controls  
 436/11 . . Automated chemical analysis  
 436/110833 . . Utilizing a moving indicator strip or tape  
 436/111666 . . Utilizing a centrifuge or compartmented rotor  
 436/112499 . . with sample on test slide  
 436/113332 . . with conveyance of sample along a test line in a container or rack  
 436/114165 . . . with step of insertion or removal from test line  
 436/114998 . . . with treatment or replacement of aspirator element [e.g., cleaning, etc.]  
 436/115831 . . Condition or time responsive  
 436/116664 . . . with automated titrator  
 436/117497 . . with a continuously flowing sample or carrier stream  
 436/118339 . . . with formation of a segmented stream  
 436/119163 . . with aspirator of claimed structure  
 436/12 . . Condition responsive control  
 436/13 . . Tracers or tags  
 436/14 . . Heterocyclic carbon compound [i.e., O, S, N, Se, Te, as only ring hetero atom]  
 436/141111 . . Diverse hetero atoms in same or different rings [e.g., alkaloids, opiates, etc.]  
 436/142222 . . Hetero-O [e.g., ascorbic acid, etc.]  
 436/143333 . . . Saccharide [e.g., DNA, etc.]  
 436/144444 . . . . Glucose  
 436/145555 . . Hetero-N  
 436/146666 . . . Bile pigment  
 436/147777 . . . Plural nitrogen in the same ring [e.g., barbituates, creatinine, etc.]  
 436/148888 . . . . Uric acid  
 436/15 . . Inorganic acid or base [e.g., hcl, sulfuric acid, etc.]  
 436/153333 . . Halogen containing  
 436/156666 . . Sulfur containing  
 436/16 . . Phosphorus containing  
 436/163333 . . Organic [e.g., chemical warfare agents, insecticides, etc.]  
 436/166666 . . of inorganic phosphorus compound in body fluid  
 436/17 . . Nitrogen containing  
 436/170769 . . N-Nitroso containing [e.g., nitrosamine, etc.]  
 436/171538 . . Urea or blood urea nitrogen  
 436/172307 . . Cyanide or isocyanide  
 436/173076 . . Nitrite or nitrate  
 436/173845 . . Amine and quaternary ammonium  
 436/174614 . . . Tertiary amine  
 436/175383 . . . Ammonia  
 436/176152 . . Total nitrogen determined  
 436/176921 . . . As part of an elemental analysis  
 436/177692 . . Oxides of nitrogen  
 436/178459 . . . Only nitrogen dioxide  
 436/179228 . . . Both nitrogen oxide and dioxide  
 436/18 . . Sulfur containing  
 436/182 . . Organic or sulfhydryl containing [e.g., mercaptan, hydrogen, sulfide, etc.]



436/184	. . . Only hydrogen sulfide	442/117	. . . . Including a nonwoven fabric which is not a scrim
436/186	. . Sulfur dioxide	442/119	. . . . Including a paper layer
436/188	. . Total or elemental sulfur	442/121	. . . . Including a nonwoven fabric which is not a scrim
436/19	. Halogen containing	442/122	. . . . Two or more nonwoven fabric layers
436/193333	. . In aqueous solution	442/124	. . . . Including a natural or synthetic rubber layer
436/196666	. . Carbon containing compound [e.g., vinylchloride, etc.]	442/126	. . . . Including a preformed film, foil, or sheet
436/20	. Oxygen containing	442/128	. . . . Including a layer derived from a water-settable material [e.g., cement, gypsum, etc.]
436/200833	. . Carbonyl, ether, aldehyde or ketone containing	442/129	. . . . Including a ceramic or glass layer
436/201666	. . . Carboxylic acid	442/131	. . . . Including a coating or impregnation of synthetic polymeric material
436/202499	. . . Formaldehyde or acetone	442/133	. . . Inorganic fiber-containing scrim
436/203332	. . Hydroxyl containing	442/134	. . . . Including a carbon or carbonized fiber
436/204165	. . . Ethanol	442/136	. . . . Including a foam layer
436/204998	. . Inorganic carbon compounds	442/138	. . . . Including a metal layer
436/205831	. . . Carbon monoxide only	442/14	. . . . Including an additional scrim layer
436/206664	. . Ozone or peroxide	442/141	. . . . Including a woven fabric which is not a scrim
436/207497	. . Molecular oxygen	442/143	. . . . Including a nonwoven fabric which is not a scrim
436/208339	. . . Fuel/air mixture or exhaust gas analysis	442/145	. . . . Including a preformed film, foil, or sheet
436/209163	. . . Dissolved or trace oxygen or oxygen content of a sealed environment	442/147	. . . . Including a mica layer
436/21	. Hydrocarbon	442/148	. . . . Including a coating or impregnation containing particulate material other than fiber
436/212	. . Aromatic	442/15	. . . Including a foam layer
436/214	. . Acyclic [e.g., methane, octane, isoparaffin, etc.]	442/152	. . . Including a free metal or alloy constituent
436/216	. . . Unsaturated [e.g., ethylene, diene, etc.]	442/153	. . . Including an additional scrim layer
436/218	. . Total hydrocarbon, flammability, combustibility [e.g., air-fuel mixture, etc.]	442/155	. . . Including a paper layer
436/22	. Hydrogen, <u>per se</u>	442/157	. . . . Two or more paper layers
436/23	. Carbon containing	442/159	. . . Including a nonwoven fabric which is not a scrim
436/235	. . In an aqueous solution [e.g., TOC, etc.]	442/16	. . . . Two or more nonwoven layers
436/24	. Nuclear magnetic resonance, electron spin resonance or other spin effects or mass spectrometry	442/162	. . . Including a natural or synthetic rubber layer
436/25	. including sample preparation	442/164	. . . Including a preformed film, foil, or sheet
436/25125	. . Digestion or removing interfering materials	442/166	. . . . Cellulose acetate film or sheet
436/2525	. . Stabilizing or preserving	442/167	. . . . Fluorinated polyolefin film or sheet
436/25375	. . Liberation or purification of sample or separation of material from a sample [e.g., filtering, centrifuging, etc.]	442/169	. . . . Polyolefin film or sheet
436/255	. . . including use of a solid sorbent, semipermeable membrane, or liquid extraction	442/171	. . . Including a layer derived from a water-settable material [e.g., cement, gypsum, etc.]
436/25625	. . Dilution	442/172	. . . Coated or impregnated
436/2575	. . Volumetric liquid transfer	442/174	. . . . Including particulate material other than fiber in coating or impregnation
436/25875	. . Gaseous sample or with change of physical state	442/176	. . . . Three or more layers

**Former US Class 442 series**

<b>442/00</b>	<b>Fabric [woven, knitted, or nonwoven textile or cloth, etc.]</b>	442/178	. . . . Synthetic polymeric fiber
442/10	. Scrim [e.g., open net or mesh, gauze, loose or open weave or knit, etc.]	442/179	. . . . Nylon fiber
442/102	. . Woven scrim	442/181	. . . . Bitumen coating or impregnation
442/103	. . . Including a multifilament fiber precoated with other than free metal or alloy prior to weaving	442/183	. . . Synthetic polymeric fiber
442/105	. . . Comprising a composite fiber	442/184	. . Nonwoven scrim
442/107	. . . Comprising at least two chemically different fibers	442/186	. . . Comprising a composite fiber
442/109	. . . Metal or metal-coated fiber-containing scrim	442/188	. . . Metal or metal-coated fiber-containing scrim
442/11	. . . . Including an additional free metal or alloy constituent	442/19	. . . . Including a paper layer
442/112	. . . . . Particulate free metal or alloy constituent	442/191	. . . Inorganic fiber-containing scrim
442/114	. . . . Including a foam layer	442/193	. . . . Including a foam layer
442/116	. . . . Including a woven fabric which is not a scrim	442/195	. . . Including a foam layer
		442/197	. . . Including a nonwoven fabric which is not a scrim
		442/198	. . . Coated or impregnated

442/20	• Coated or impregnated woven, knit, or nonwoven fabric which is not [a] associated with another preformed layer or fiber layer or, [b] with respect to woven and knit, characterized, respectively, by a particular or differential weave or knit, wherein the coating or impregnation is neither a foamed material nor a free metal or alloy layer	442/2254	• • • Natural oil or wax containing
442/2008	• • Fabric composed of a fiber or strand which is of specific structural definition	442/2262	• • Coating or impregnation is oil repellent but not oil or stain release
442/2016	• • Impregnation is confined to a plane disposed between both major fabric surfaces which are essentially free of impregnating material	442/227	• • • Fluorocarbon containing
442/2025	• • Coating produced by extrusion	442/2279	• • Coating or impregnation improves soil repellency, soil release, or anti- soil redeposition qualities of fabric
442/2033	• • Coating or impregnation formed <u>in situ</u> [e.g., by interfacial condensation, coagulation, precipitation, etc.]	442/2287	• • • Fluorocarbon containing
442/2041	• • Two or more non-extruded coatings or impregnations	442/2295	• • • Linear polyether group chain containing
442/2049	• • • Each major face of the fabric has at least one coating or impregnation	442/2303	• • Coating or impregnation provides a fragrance or releases an odor intended to be perceptible to humans
442/2057	• • • • At least two coatings or impregnations of different chemical composition	442/2311	• • Coating or impregnation is a lubricant or a surface friction reducing agent other than specified as improving the "hand" of the fabric or increasing the softness thereof
442/2066	• • • • • Different coatings or impregnations on opposite faces of the fabric	442/232	• • • Fluorocarbon containing
442/2074	• • • • • At least one coating or impregnation contains particulate material	442/2328	• • • Organosilicon containing
442/2082	• • • • • At least one coating or impregnation functions to fix pigments or particles on the surface of a coating or impregnation	442/2336	• • • Natural oil or wax containing
442/209	• • • • At least one coating or impregnation contains particulate material	442/2344	• • Coating or impregnation is anti-slip or friction-increasing other than specified as an abrasive
442/2098	• • • At least two coatings or impregnations of different chemical composition	442/2352	• • Coating or impregnation functions to soften the feel of or improve the "hand" of the fabric
442/2107	• • • • At least one coating or impregnation contains particulate material	442/2361	• • Coating or impregnation improves stiffness of the fabric other than specified as a size
442/2115	• • • • • At least one coating or impregnation functions to fix pigments or particles on the surface of a coating or impregnation	442/2369	• • Coating or impregnation improves elasticity, bendability, resiliency, flexibility, or shape retention of the fabric
442/2123	• • • At least one coating or impregnation contains particulate material	442/2377	• • • Improves elasticity
442/2131	• • • • At least one coating or impregnation functions to fix pigments or particles on the surface of a coating or impregnation	442/2385	• • • Improves shrink resistance
442/2139	• • Coating or impregnation specified as porous or permeable to a specific substance [e.g., water vapor, air, etc.]	442/2393	• • • Coating or impregnation provides crease-resistance or wash and wear characteristics
442/2148	• • • Coating or impregnation is specified as microporous but is not a foam	442/2402	• • Coating or impregnation specified as a size
442/2156	• • Coating or impregnation collects radionuclide or heavy metal	442/241	• • Coating or impregnation improves snag or pull resistance of the fabric
442/2164	• • Coating or impregnation specified as water repellent	442/2418	• • Coating or impregnation increases electrical conductivity or anti-static quality
442/2172	• • • Also specified as oil repellent	442/2426	• • • Elemental carbon containing
442/218	• • • Organosilicon containing	442/2434	• • • Linear polyether group chain containing
442/2189	• • • Fluorocarbon containing	442/2443	• • • Nitrogen and phosphorus containing
442/2197	• • • Nitrogen containing	442/2451	• • • Phosphorus containing
442/2205	• • • Natural oil or wax containing	442/2459	• • • Nitrogen containing
442/2213	• • Coating or impregnation is specified as weather proof, water vapor resistant, or moisture resistant	442/2467	• • • Sulphur containing
442/2221	• • Coating or impregnation is specified as water proof	442/2475	• • Coating or impregnation is electrical insulation-providing, -improving, or -increasing, or conductivity-reducing
442/223	• • • Organosilicon containing	442/2484	• • Coating or impregnation is water absorbency-increasing or hydrophilicity-increasing or hydrophilicity-imparting
442/2238	• • • Fluorocarbon containing	442/2492	• • • Polyether group containing
442/2246	• • • Nitrogen containing	442/25	• • Coating or impregnation absorbs sound
		442/2508	• • Coating or impregnation absorbs chemical material other than water
		442/2516	• • • Chemical material is one used in biological or chemical warfare
		442/2525	• • Coating or impregnation functions biologically [e.g., insect repellent, antiseptic, insecticide, bactericide, etc.]
		442/2533	• • • Inhibits mildew
		442/2541	• • • Insect repellent
		442/2549	• • Coating or impregnation is chemically inert or of stated nonreactance
		442/2557	• • • Oxygen or ozone resistant

- 442/2566 . . . Organic solvent resistant [e.g., dry cleaning fluid, etc.]
- 442/2574 . . . Acid or alkali resistant
- 442/2582 . . Coating or impregnation contains an optical bleach or brightener or functions as an optical bleach or brightener [e.g., it masks fabric yellowing, etc.]
- 442/259 . . Coating or impregnation provides protection from radiation [e.g., U.V., visible light, I.R., micscheme-change-itemave, high energy particle, etc.] or heat retention thru radiation absorption
- 442/2598 . . . Radiation reflective
- 442/2607 . . . Radiation absorptive
- 442/2615 . . Coating or impregnation is resistant to penetration by solid implements
- 442/2623 . . . Ballistic resistant
- 442/2631 . . Coating or impregnation provides heat or fire protection
- 442/2639 . . . Coated or impregnated asbestos fabric
- 442/2648 . . . Coating or impregnation is specified as an intumescent material
- 442/2656 . . . Antimony containing
- 442/2664 . . . Boron containing
- 442/2672 . . . Phosphorus containing
- 442/268 . . . . Phosphorus and nitrogen containing compound
- 442/2689 . . . . A phosphorus containing compound and a nitrogen containing compound
- 442/2697 . . . . Phosphorus and halogen containing compound
- 442/2705 . . . . A phosphorus containing compound and a halogen containing compound
- 442/2713 . . . Halogen containing
- 442/2721 . . . Nitrogen containing
- 442/273 . . Coating or impregnation provides wear or abrasion resistance
- 442/2738 . . Coating or impregnation intended to function as an adhesive to solid surfaces subsequently associated therewith
- 442/2746 . . . Heat-activatable adhesive
- 442/2754 . . . Pressure-sensitive adhesive
- 442/2762 . . Coated or impregnated natural fiber fabric [e.g., cotton, wool, silk, linen, etc.]
- 442/277 . . . Coated or impregnated cellulosic fiber fabric
- 442/2779 . . . . Coating or impregnation contains an acrylic polymer or copolymer [e.g., polyacrylonitrile, polyacrylic acid, etc.]
- 442/2787 . . . . Coating or impregnation contains a vinyl polymer or copolymer
- 442/2795 . . . . Coating or impregnation contains an epoxy polymer or copolymer or polyether
- 442/2803 . . . . Polymeric coating or impregnation from a silane or siloxane not specified as lubricant or water repellent
- 442/2811 . . . . Coating or impregnation contains polyimide or polyamide
- 442/282 . . . . Coating or impregnation contains natural gum, rosin, natural oil, or wax
- 442/2828 . . . . Coating or impregnation contains aldehyde or ketone condensation product
- 442/2836 . . . . . Phenol-aldehyde condensate
- 442/2844 . . . . . Melamine-aldehyde condensate
- 442/2852 . . . . . Amide-aldehyde condensate [e.g., modified urea-aldehyde condensate, etc.]
- 442/2861 . . Coated or impregnated synthetic organic fiber fabric
- 442/2869 . . . Coated or impregnated regenerated cellulose fiber fabric
- 442/2877 . . . Coated or impregnated polyvinyl alcohol fiber fabric
- 442/2885 . . . Coated or impregnated acrylic fiber fabric
- 442/2893 . . . Coated or impregnated polyamide fiber fabric
- 442/2902 . . . . Aromatic polyamide fiber fabric
- 442/291 . . . Coated or impregnated polyolefin fiber fabric
- 442/2918 . . . . Polypropylene fiber fabric
- 442/2926 . . Coated or impregnated inorganic fiber fabric
- 442/2934 . . . Coating or impregnation contains vinyl polymer or copolymer
- 442/2943 . . . . Vinyl acetate polymer or copolymer
- 442/2951 . . . Coating or impregnation contains epoxy polymer or copolymer or polyether
- 442/2959 . . . Coating or impregnation contains aldehyde or ketone condensation product
- 442/2967 . . . . Amide-aldehyde condensate
- 442/2975 . . . Coated or impregnated ceramic fiber fabric
- 442/2984 . . . Coated or impregnated carbon or carbonaceous fiber fabric
- 442/2992 . . . Coated or impregnated glass fiber fabric
- 442/30 . . Woven fabric [i.e., woven strand or strip material]
- 442/3008 . . Woven fabric has an elastic quality
- 442/3016 . . . Including a preformed layer other than the elastic woven fabric [e.g., fabric or film or foil or sheet layer, etc.]
- 442/3024 . . . Including elastic strand or strip
- 442/3033 . . Including a strip or ribbon
- 442/3041 . . . Woven fabric comprises strips or ribbons only
- 442/3049 . . Including strand precoated with other than free metal or alloy
- 442/3057 . . . Multiple coatings
- 442/3065 . . Including strand which is of specific structural definition
- 442/3073 . . . Strand material is core-spun [not sheath-core bicomponent strand]
- 442/3081 . . . . Core is synthetic polymeric material
- 442/3089 . . . Cross-sectional configuration of strand material is specified
- 442/3098 . . . . Cross-sectional configuration varies longitudinally along the strand
- 442/3106 . . . . Hollow strand material
- 442/3114 . . . . Cross-sectional configuration of the strand material is other than circular
- 442/3122 . . . . . Cross-sectional configuration is multi-lobal
- 442/313 . . . Strand material formed of individual filaments having different chemical compositions
- 442/3138 . . . . Including inorganic filament
- 442/3146 . . Strand material is composed of two or more polymeric materials in physically distinct relationship [e.g., sheath-core, side-by-side, islands-in-sea, fibrils-in-matrix, etc.] or composed of physical blend of chemically different polymeric materials or a physical blend of a polymeric material and a filler material
- 442/3154 . . . Sheath-core multicomponent strand material
- 442/3163 . . . Islands-in-sea multicomponent strand material
- 442/3171 . . . Strand material is a blend of polymeric material and a filler material

442/3179	. . Woven fabric is characterized by a particular or differential weave other than fabric in which the strand denier or warp/weft pick count is specified	442/352	. . . . . One of which is a nonwoven fabric layer
442/3187	. . . Triaxially woven fabric	442/3528	. . . Three or more fabric layers
442/3195	. . . Three-dimensional weave [e.g., x-y-z planes, multi-planar warps and/or wefts, etc.]	442/3537	. . . . . One of which is a nonwoven fabric layer
442/3203	. . . . Multi-planar warp layers	442/3545	. . . . . Woven fabric layers impregnated with a blend of thermosetting and thermoplastic resins
442/3211	. . . . Multi-planar weft layers	442/3553	. . . . . Woven fabric layers impregnated with an organosilicon resin
442/322	. . . Warp differs from weft	442/3561	. . . . . Woven fabric layers impregnated with a natural or synthetic rubber
442/3228	. . . . Materials differ	442/3569	. . . . . Woven fabric layers impregnated with a thermosetting resin
442/3236	. . . . . Including inorganic strand material	442/3577	. . . . . Phenolic resin
442/3244	. . . . . Including natural strand material [e.g., cotton, wool, etc.]	442/3585	. . . . . Epoxy resin
442/3252	. . . . . Including synthetic polymeric strand material	442/3594	. . . . . Woven fabric layers impregnated with a thermoplastic resin [e.g., vinyl polymer, etc.]
442/326	. . . . . Including synthetic polymeric strand material	442/3602	. . . Three or more distinct layers
442/3268	. . . . . Including natural strand material	442/361	. . . . . At least one layer is derived from water-settable material [e.g., cement, gypsum, etc.]
442/3276	. . . . . Including polyamide strand material	442/3618	. . . . . At least one layer contains wood or cork
442/3285	. . . . . Including polyester strand material	442/3626	. . . . . At least one layer contains bituminous material [e.g., tar, pitch, asphalt, etc.]
442/3293	. . . Warp and weft are identical and contain at least two chemically different strand materials	442/3634	. . . . . At least one layer comprises paper
442/3301	. . . Coated, impregnated, or autogenous bonded	442/3642	. . . . . At least one layer contains natural or synthetic rubber
442/3309	. . . . Woven fabric contains inorganic strand material	442/365	. . . . . At least one layer is a preformed synthetic polymeric film or sheet
442/3317	. . . . Woven fabric contains synthetic polymeric strand material	442/3659	. . . . . At least one layer comprises ceramic or glass material in other than particulate form
442/3325	. . Including a foamed layer or component	442/3667	. . . . . Composite consisting of at least two woven fabrics bonded by an interposed adhesive layer [but not two woven fabrics bonded together by an impregnation which penetrates through the thickness of at least one of the woven fabric layers]
442/3333	. . . Including a free metal or alloy constituent	442/3675	. . . . . Fabric layer contains natural strand material
442/3341	. . . Plural foam layers	442/3683	. . . . . Fabric layer contains carbon or carbonaceous strand material
442/335	. . . Plural fabric layers	442/3691	. . . . . Fabric layer contains glass strand material
442/3358	. . . . Including a nonwoven fabric layer	442/3699	. . . . . Including particulate material other than fiber
442/3366	. . . Woven fabric is coated, impregnated, or autogenously bonded	442/3707	. . Woven fabric including a nonwoven fabric layer other than paper
442/3374	. . . . Coating or impregnation includes particulate material other than fiber	442/3715	. . . Nonwoven fabric layer comprises parallel arrays of strand material
442/3382	. . Including a free metal or alloy constituent	442/3724	. . . Needled
442/339	. . . Metal or metal-coated strand	442/3732	. . . . . Including an additional nonwoven fabric
442/3398	. . . Vapor or sputter deposited metal layer	442/374	. . . . . Additional nonwoven fabric comprises chemically different strand material than the first nonwoven fabric
442/3407	. . . Chemically deposited metal layer [e.g., chemical precipitation or electrochemical deposition or plating, etc.]	442/3748	. . . . . Including inorganic strand material
442/3415	. . . Preformed metallic film or foil or sheet [film or foil or sheet had structural integrity prior to association with the woven fabric]	442/3756	. . . . . Nonwoven fabric layer comprises at least two chemically different fibers
442/3423	. . . . Plural metallic films or foils or sheets	442/3764	. . . . . Coated, impregnated, or autogenously bonded
442/3431	. . . . Plural fabric layers	442/3772	. . . Hydroentangled
442/3439	. . . . . Including a nonwoven fabric layer	442/378	. . . Coated, impregnated, or autogenously bonded
442/3447	. . . . . Including a preformed synthetic polymeric film or sheet [i.e., film or sheet having structural integrity prior to association with the woven fabric]	442/3789	. . . . Plural nonwoven fabric layers
442/3455	. . . . Including particulate material other than fiber	442/3797	. . . . Coating or impregnation is derived from a water-settable material [e.g., cement, gypsum, etc.]
442/3463	. . . Plural fabric layers	442/3805	. . . . Coating or impregnation contains natural or synthetic rubber
442/3472	. . Woven fabric including an additional woven fabric layer		
442/348	. . . Mechanically needled or hydroentangled		
442/3488	. . . . Four or more layers		
442/3496	. . . . Coated, impregnated, or autogenously bonded		
442/3504	. . . Woven fabric layers comprise chemically different strand material		
442/3512	. . . . Three or more fabric layers		

442/3813	. . . . Coating or impregnation contains synthetic polymeric material	442/475	. . Including a free metal or alloy constituent
442/3821	. . . . Coating or impregnation contains bituminous material	442/481	. . . Chemically deposited metal layer [e.g., chemical precipitation or electrochemical deposition or plating, etc.]
442/3829	. . . . Four or more layers	442/488	. . Including an additional knit fabric layer
442/3837	. . . . Including particulate material other than fiber	442/494	. . Including a nonwoven fabric layer other than paper
442/3846	. . . . Including particulate material other than fiber	442/50	. FELT FABRIC
442/3854	. . Woven fabric with a preformed polymeric film or sheet	442/51	. . From natural organic fiber [e.g., wool, etc.]
442/3862	. . . Ester condensation polymer sheet or film [e.g., polyethylene terephthalate, etc.]	442/53	. . . Including particulate material other than fiber
442/387	. . . Vinyl polymer or copolymer sheet or film [e.g., polyvinyl chloride, polyvinylidene chloride, polyvinyl acetate, etc.]	442/54	. . . At least three layers
442/3878	. . . Fluorinated olefin polymer or copolymer sheet or film [e.g., Teflon®, etc.]	442/56	. . From synthetic organic fiber
442/3886	. . . Olefin polymer or copolymer sheet or film [e.g., polypropylene, polyethylene, ethylene-butylene copolymer, etc.]	442/57	. . Including particulate material other than fiber
442/3894	. . . Amide condensation polymer sheet or film [e.g., nylon 6, etc.]	442/59	. . At least three layers
442/3902	. . . Polyimide sheet or film	442/60	. Nonwoven fabric [i.e., nonwoven strand or fiber material]
442/3911	. . . Natural or synthetic rubber sheet or film	442/601	. . Nonwoven fabric has an elastic quality
442/3919	. . . Including particulate material other than fiber	442/602	. . . Nonwoven fabric comprises an elastic strand or fiber material
442/3927	. . Including a paper or wood pulp layer	442/603	. . Including strand or fiber material precoated with other than free metal or alloy
442/3935	. . . Mica paper layer	442/604	. . . Strand or fiber material is glass
442/3943	. . . Plural paper or wood pulp layers	442/605	. . . Strand or fiber material is inorganic
442/3951	. . . Including a bituminous layer	442/607	. . . Strand or fiber material is synthetic polymer
442/3959	. . . Including an outermost adhesive layer	442/608	. . Including strand or fiber material which is of specific structural definition
442/3967	. . . Including a natural or synthetic rubber layer	442/609	. . . Cross-sectional configuration of strand or fiber material is specified
442/3976	. . Including strand which is stated to have specific attributes [e.g., heat or fire resistance, chemical or solvent resistance, high absorption for aqueous composition, water solubility, heat shrinkability, etc.]	442/61	. . . . Cross-sectional configuration varies longitudinally along strand or fiber material
442/3984	. . . Strand is other than glass and is heat or fire resistant	442/611	. . . . Cross-sectional configuration of strand or fiber material is other than circular
442/3992	. . . Strand is heat shrinkable	442/612	. . . . Hollow strand or fiber material
442/40	. Knit fabric [i.e., knit strand or strip material]	442/613	. . . . Microcellular strand or fiber material
442/406	. . Including parallel strips	442/614	. . . Strand or fiber material specified as having microdimensions [i.e., microfiber]
442/413	. . Including an elastic strand	442/615	. . . . Strand or fiber material is blended with another chemically different microfiber in the same layer
442/419	. . Including strand precoated with other than free metal or alloy	442/616	. . . . . Blend of synthetic polymeric and inorganic microfibers
442/425	. . Including strand which is of specific structural definition	442/618	. . . . . Blend of chemically different inorganic microfibers
442/431	. . . Cross-sectional configuration of strand material is specified	442/619	. . . . Including other strand or fiber material in the same layer not specified as having microdimensions
442/438	. . . Strand material formed of individual filaments having different chemical compositions	442/62	. . . . Including another chemically different microfiber in a separate layer
442/444	. . Strand is a monofilament composed of two or more polymeric materials in physically distinct relationship [e.g., sheath-core, side-by-side, islands-in-sea, fibrils-in-matrix, etc.] or composed of physical blend of chemically different polymeric materials or a physical blend of a polymeric material and a filler material	442/621	. . . . Including other strand or fiber material in a different layer not specified as having microdimensions
442/45	. . Knit fabric is characterized by a particular or differential knit pattern other than open knit fabric or a fabric in which the strand denier is specified	442/622	. . . . Microfiber is a composite fiber
442/456	. . . Including additional strand inserted within knit fabric	442/623	. . . . Microfiber is glass
442/463	. . . . Warp knit insert strand	442/624	. . . . Microfiber is carbon or carbonaceous
442/469	. . Including a foamed layer or component	442/625	. . . . Autogenously bonded
		442/626	. . . . Microfiber is synthetic polymer
		442/627	. . . Strand or fiber material is specified as non-linear [e.g., crimped, coiled, etc.]
		442/629	. . . . Composite strand or fiber material
		442/63	. . . . Carbon or carbonaceous strand or fiber material
		442/631	. . . . Glass strand or fiber material

- 442/632 . . . . A single nonwoven layer comprising non-linear synthetic polymeric strand or fiber material and strand or fiber material not specified as non-linear
- 442/633 . . . . Synthetic polymeric strand or fiber material is of staple length
- 442/634 . . . . A nonwoven fabric having a layer comprising non-linear synthetic polymeric strand or fiber material and a separate and distinct layer comprising strand or fiber material which is not specified as non-linear
- 442/635 . . . . Synthetic polymeric strand or fiber material
- 442/636 . . . . Synthetic polymeric strand or fiber material is of staple length
- 442/637 . . Including strand or fiber material which is a monofilament composed of two or more polymeric materials in physically distinct relationship [e.g., sheath-core, side-by-side, islands-in-sea, fibrils-in-matrix, etc.] or composed of physical blend of chemically different polymeric materials or a physical blend of a polymeric material and a filler material
- 442/638 . . . Side-by-side multicomponent strand or fiber material
- 442/64 . . . Islands-in-sea multicomponent strand or fiber material
- 442/641 . . . Sheath-core multicomponent strand or fiber material
- 442/642 . . . Strand or fiber material is a blend of polymeric material and a filler material
- 442/643 . . Including parallel strand or fiber material within the nonwoven fabric
- 442/644 . . . Parallel strand or fiber material is glass
- 442/645 . . . Parallel strand or fiber material is inorganic [e.g., rock wool, mineral wool, etc.]
- 442/646 . . . Parallel strand or fiber material is naturally occurring [e.g., cotton, wool, etc.]
- 442/647 . . Including a foamed layer or component
- 442/648 . . . Including a free metal or alloy constituent
- 442/649 . . . Plural foamed layers
- 442/651 . . . Plural fabric layers
- 442/652 . . . Nonwoven fabric is coated, impregnated, or autogenously bonded
- 442/653 . . . . Including particulate material other than fiber
- 442/654 . . Including a free metal or alloy constituent
- 442/655 . . . Metal or metal-coated strand or fiber material
- 442/656 . . . Preformed metallic film or foil or sheet [film or foil or sheet had structural integrity prior to association with the nonwoven fabric]
- 442/657 . . . Vapor, chemical, or spray deposited metal layer
- 442/658 . . . Particulate free metal or alloy constituent
- 442/659 . . Including an additional nonwoven fabric
- 442/66 . . . Additional nonwoven fabric is a spun-bonded fabric
- 442/662 . . . . Needled
- 442/663 . . . . Hydroentangled
- 442/664 . . . Including a wood fiber containing layer
- 442/665 . . . Including a layer derived from a water-settable material [e.g., cement, gypsum, etc.]
- 442/666 . . . Mechanically interengaged by needling or impingement of fluid [e.g., gas or liquid stream, etc.]
- 442/667 . . . . Needled
- 442/668 . . . Separate nonwoven fabric layers comprise chemically different strand or fiber material
- 442/669 . . . . At least one layer of inorganic strand or fiber material and at least one layer of synthetic polymeric strand or fiber material
- 442/67 . . . Multiple nonwoven fabric layers composed of the same inorganic strand or fiber material
- 442/671 . . . Multiple nonwoven fabric layers composed of the same polymeric strand or fiber material
- 442/673 . . . Including particulate material other than fiber
- 442/674 . . Nonwoven fabric with a preformed polymeric film or sheet
- 442/675 . . . Ester condensation polymer sheet or film [e.g., polyethylene terephthalate, etc.]
- 442/676 . . . Vinyl polymer or copolymer sheet or film [e.g., polyvinyl chloride, polyvinylidene chloride, polyvinyl acetate, etc.]
- 442/677 . . . Fluorinated olefin polymer or copolymer sheet or film [e.g., TeflonR, etc.]
- 442/678 . . . Olefin polymer or copolymer sheet or film [e.g., polypropylene, polyethylene, ethylene-butylene copolymer, etc.]
- 442/679 . . . Natural or synthetic rubber sheet or film
- 442/68 . . Melt-blown nonwoven fabric
- 442/681 . . Spun-bonded nonwoven fabric
- 442/682 . . Needled nonwoven fabric
- 442/684 . . . Containing at least two chemically different strand or fiber materials
- 442/685 . . . . Containing inorganic and polymeric strand or fiber materials
- 442/686 . . . . Containing polymeric and natural strand or fiber materials
- 442/687 . . . . Containing inorganic strand or fiber material
- 442/688 . . . . Containing polymeric strand or fiber material
- 442/689 . . Hydroentangled nonwoven fabric
- 442/69 . . Autogenously bonded nonwoven fabric
- 442/691 . . . Inorganic strand or fiber material only
- 442/692 . . . Containing at least two chemically different strand or fiber materials
- 442/693 . . Including a paper layer
- 442/695 . . Including a wood containing layer
- 442/696 . . Including strand or fiber material which is stated to have specific attributes [e.g., heat or fire resistance, chemical or solvent resistance, high absorption for aqueous compositions, water solubility, heat shrinkability, etc.]
- 442/697 . . Containing at least two chemically different strand or fiber materials
- 442/698 . . . Containing polymeric and natural strand or fiber materials
- 442/699 . . Including particulate material other than strand or fiber material

**Former US Class 464 Series**

**464/00 Rotary shafts, gudgeons, housings, and flexible couplings for rotary shafts**

- 464/10 . having heating or cooling means  
(Frozen)

**WARNING**

Group [Y10T 464/10](#) is no longer used for the classification of documents as of January 1, 2021.

The content of this group is being reclassified into groups [F16D 2300/02](#), [F16D 2300/021](#), [F16D 2300/0212](#), [F16D 2300/0214](#) and [F16D 2300/04](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 464/20 . with auxilliary indicator or alarm  
(Frozen)

**WARNING**

Group [Y10T 464/20](#) is no longer used for the classification of documents as of January 1, 2021.

The content of this group is being reclassified into groups [F16D 2300/18](#) and [F16D 2300/20](#).

Groups [Y10T 464/20](#), [F16D 2300/18](#) and [F16D 2300/20](#) should be considered in order to perform a complete search.

- 464/30 . Electrical or magnetic coupling  
(Frozen)

**WARNING**

Group [Y10T 464/30](#) is no longer used for the classification of documents as of January 1, 2021.

The content of this group is being reclassified into groups [H02K 49/10](#), [H02K 49/104](#), [H02K 49/106](#) and [H02K 49/108](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 464/40 . Coupling accommodates drive between members  
(Frozen) having misaligned or angularly related axes, transmits torque via radially directed pin, and has particular balancing means

**WARNING**

Group [Y10T 464/40](#) is no longer used for the classification of documents as of January 1, 2021.

The content of this group is being reclassified into groups [F16D 2300/22](#) and [F16D 3/38](#).

Groups [Y10T 464/40](#), [F16D 2300/22](#) and [F16D 3/38](#) should be considered in order to perform a complete search.

- 464/50 . Shafting having particular vibration dampening or  
(Frozen) balancing structure

**WARNING**

Group [Y10T 464/50](#) is no longer used for the classification of documents as of January 1, 2021.

The content of this group is being reclassified into groups [F16F 15/10](#), [F16F 15/32](#), [F16F 15/322](#), [F16F 15/264](#), [F16C 1/00](#), [F16C 1/06](#), [F16C 1/08](#) and [F16C 1/108](#).

All groups listed in this Warning should be considered in order to perform a complete search.

**Former US Class 477 Series****477/00 Interrelated power delivery controls, including engine control**

- 477/10 . Steering by driving
- 477/20 . Plural engines
- 477/23 . . Electric engine
- 477/24 . . . with brake control
- 477/26 . . . with clutch control
- 477/27 . . with clutch control
- 477/30 . Electric engine
- 477/32 . . with clutch control
- 477/322 . . . with brake control
- 477/3225 . . . . Stopped at end of cycle
- 477/323 . . . Engine stopped at end of cycle
- 477/325 . . . Common controller
- 477/327 . . . Electric clutch
- 477/328 . . . Speed responsive
- 477/33 . . with transmission control
- 477/333 . . . Load motion limit control
- 477/337 . . . Transmission change by moving engine
- 477/34 . . . Reversible engine
- 477/343 . . . Engine starting interlock
- 477/347 . . . Condition responsive engine control
- 477/35 . . Brake engaged when engine energy deactivated, brake disengaged when engine energy activated
- 477/357 . . . Cam actuated brake
- 477/363 . . . Electrically actuated brake
- 477/37 . . Brake actuation opens switch to engine
- 477/373 . . . Electrically actuated brake
- 477/377 . . . Fluid actuated brake
- 477/38 . . Control means selectively operates engine energy input and brake
- 477/387 . . . Fluid actuated brake
- 477/393 . . . Electrically actuated brake
- 477/40 . Gas turbine engine
- 477/45 . . Continuously variable transmission
- 477/50 . with supercharger
- 477/55 . . Manifold pressure control
- 477/60 . Transmission control
- 477/606 . . Differential transmission
- 477/613 . . Plural outputs
- 477/619 . . Continuously variable friction transmission
- 477/6197 . . . with fluid drive
- 477/6203 . . . with clutch control
- 477/621 . . . with brake control
- 477/6217 . . . Interrelated control of diverse transmissions
- 477/6223 . . . Constant speed output

477/623	. . .	Controlled by engine map	477/67	. . .	Ignition advanced or retarded
477/6237	. . .	Belt-type	477/671	. . .	Ignition intermitting and safety means limiting duration of intermission
477/624	. . . .	Fluid pressure control	477/673	. . .	Ignition intermitting controlled by manifold pressure
477/6242	. . . . .	Ratio change controlled	477/674	. . .	Ignition intermitting initiated by positioning accelerator
477/62423	. . . . .	Engine coast braking	477/6745	. . . .	Initiation inhibited by sensed condition
477/62427	. . . . .	with electric valve control	477/675	. .	Engine controlled by transmission
477/62429	. . . . .	Duty ratio control	477/676	. . .	Constant output shaft speed
477/6243	. . .	Fluid pressure control	477/677	. . .	Diminution during transmission change
477/625	. .	Fluid resistance inhibits rotation of planetary transmission element	477/679	. . .	Responsive to transmission output condition
477/631	. .	including fluid drive	477/68	. . .	Transmission setting contingent
477/633	. . .	Impeller-turbine-type	477/6805	. . . .	Change to neutral idles engine
477/6333	. . . .	Engine controlled	477/6808	. . . . .	Engine input variable in neutral
477/6337	. . . .	with countershaft gearing	477/681	. .	Anticreep
477/63378	. . . . .	and turbine shaft brake	477/688	. .	Transmission controlled by engine
477/63385	. . . . .	and clutch control	477/689	. . .	Shift from neutral shock control
477/63393	. . . . .	Control of or by fluid drive	477/6895	. . . .	Pressure controlled
477/634	. . . .	with hydrodynamic braking	477/69	. . .	Engine [coast] braking
477/6343	. . . .	with nonratio brake	477/691	. . . .	Electric valve control
477/6347	. . . .	Control responsive to fluid drive	477/692	. . .	by acceleration
477/635	. . . .	with clutch control	477/693	. . .	by input manifold pressure or engine fuel control
477/6351	. . . . .	Disengaged during shift	477/6931	. . . .	Selector-type
477/6352	. . . . .	Speed responsive	477/6933	. . . .	with positive shift means
477/63525	. . . . .	Electrical	477/69335	. . . . .	with synchronization
477/6353	. . . .	with fluid unit vane control	477/6934	. . . .	Prevents unsafe or unintentional shift
477/6357	. . . .	Fill and empty-type fluid units	477/6935	. . . . .	Reverse inhibitor
477/636	. . .	Ratio control	477/6936	. . . .	Shift valve control
477/637	. . . .	with planetary transmission control	477/69362	. . . . .	Hysteresis
477/638	. .	with clutch control	477/693625	. . . . .	Electric control
477/6388	. . .	and brake control	477/69363	. . . . .	Plural shift valves
477/6389	. . . .	Temperature responsive control	477/693635	. . . . .	Electric control
477/639	. . . .	Engine controlled	477/693636	. . . . .	Downshift control
477/6392	. . . .	Clutch controlled	477/693637	. . . . .	Kickdown
477/6394	. . . .	Gearing controlled	477/693638	. . . . .	Selector valve overrule
477/6395	. . .	Temperature responsive control	477/69364	. . . . .	Downshift control
477/6403	. . .	Clutch, engine, and transmission controlled	477/693643	. . . . .	Kickdown
477/6407	. . . .	Electronic digital control	477/693645	. . . . .	Selector valve overrule
477/641	. . .	Clutch and transmission controlled	477/69365	. . . . .	Electric control
477/6414	. . . .	Speed responsive control	477/69366	. . . . .	Downshift control
477/6415	. . . . .	with manual override	477/69367	. . . . .	Downshift control
477/6417	. . . . .	Vacuum actuated clutch	477/693675	. . . . .	Kickdown
477/6418	. . .	Clutch and engine controlled	477/69368	. . . . .	Selector valve overrule
477/6422	. . . .	Speed responsive control	477/6937	. . . .	Servo motor timing
477/6424	. . . . .	Plural speed signals	477/69373	. . . . .	Downshift
477/6425	. . .	Clutch controlled	477/693738	. . . . .	with fluid accumulator
477/6428	. . . .	Electric clutch	477/693742	. . . . .	Electric valve control
477/643	. . . .	Vacuum actuated clutch	477/693746	. . . . .	Double acting servo
477/6432	. . . . .	Electric control	477/693754	. . . . .	Speed responsive control
477/6433	. . .	Engine controlled	477/693762	. . . . .	Electric valve control
477/6437	. . . .	Speed responsive	477/69377	. . . . .	with fluid accumulator
477/644	. .	with brake control	477/69378	. . . . .	Engine parameter controls back pressure
477/646	. . .	Anti-creep	477/69379	. . . . .	Electric valve control
477/647	. . .	Brake controls transmission	477/6938	. . . . .	Double acting servo
477/648	. . . .	Pressure controlled	477/69383	. . . . .	Speed responsive control
477/649	. . .	One control blocks another	477/69387	. . . . .	Electric valve control
477/65	. .	Control by sensed ambient condition, pattern indicia, external signal, or temperature	477/6939	. . . .	Transmission pressure controlled
477/653	. . .	Temperature control	477/69393	. . . . .	Variable capacity pump
477/656	. .	Engine starting interlock	477/69395	. . . . .	Line pressure controlled
477/663	. .	Exhaust emission control	477/693958	. . . . .	Responsive to speed
477/669	. .	Engine ignition control for transmission change			



477/693962 . . . . . Electric valve control  
 477/693964 . . . . . Duty ratio control  
 477/693965 . . . . . Transmission setting contingent  
 477/693973 . . . . . Electric valve control  
 477/69398 . . . . . Electric valve control  
 477/694 . . Engine control linkage mounted on manual  
                   gearshift lever  
 477/70 . Clutch control  
 477/71 . . with starter  
 477/73 . . with fluid drive  
 477/735 . . . Speed responsive control  
 477/74 . . with brake control  
 477/743 . . . Clutch controlled  
 477/745 . . . . and brake controlled  
 477/747 . . . Engine controlled  
 477/75 . . Condition responsive control  
 477/753 . . . Speed responsive  
 477/755 . . . . Slip rate control  
 477/757 . . . Overload release  
 477/759 . . . . Engine shut off  
 477/76 . . Electric clutch  
 477/78 . . Regulated clutch engagement  
 477/79 . . Engine controlled by clutch control  
 477/80 . Brake control  
 477/81 . . Sensed condition responsive control of engine of  
                   brake  
 477/813 . . . Brake  
 477/814 . . . . and engine  
 477/816 . . . . Speed or acceleration responsive  
 477/817 . . . . Speed or acceleration responsive  
 477/82 . . Plural diverse brake means  
 477/83 . . Engine energy control having adjusting and  
                   holding device, with means on brake control to  
                   override holding device  
 477/833 . . . Holding device engaged by electric means  
 477/835 . . . . Magnetic holding device  
 477/837 . . . . Mechanical holding device engaged by  
                   mechanical means  
 477/839 . . . . Device or means including a threaded shaft,  
                   rack or ratchet  
 477/84 . . Brake control having holding device, with means  
                   on engine control to override holding device  
 477/847 . . . Holding device responsive to motion, speed or  
                   acceleration  
 477/85 . . . . Holding device comprising brake valve  
                   operated by solenoid  
 477/853 . . . Holding device engaged by electric means  
 477/857 . . . . Holding device comprising brake valve  
                   operated by solenoid  
 477/86 . . Brake engaged when engine energy deactivated,  
                   brake disengaged when engine energy is activated  
 477/865 . . . Internal combustion engine  
 477/868 . . . . Controls brake valve  
 477/869 . . . . . Vacuum actuated brake  
 477/87 . . Brake condition change modifies engine  
                   condition  
 477/873 . . . Brake actuation interrupts ignition circuit of  
                   fluid engine  
 477/877 . . . Brake actuation decreases or eliminates fluid  
                   energy input to engine  
 477/878 . . . . by closing throttle valve  
 477/879 . . . . by preventing increasing operation of engine  
                   energy control

477/88 . . Decreasing fluid energy input to engine actuates  
           brake  
 477/89 . . Control means selectively operates engine energy  
           input and brake  
 477/893 . . . Foot operated control means  
 477/8936 . . . . Engine and brake control including  
                   interconnected elements  
 477/8941 . . . . Pivots and translates  
 477/8944 . . . . . Pivots about intermediate fulcrum  
 477/8947 . . . . Pivots about two fulcrums  
 477/8953 . . . . Pivots about intermediate fulcrum  
 477/8959 . . . . Lever reciprocates on moveable supports at  
                   both ends  
 477/8964 . . . . Pivots for sequential operation  
 477/897 . . . Control means including fluid passage

#### **Former US Class 483 Series**

**483/00      Tool changing**  
 483/10 . Process  
 483/11 . with safety means  
 483/115 . . Guard  
 483/12 . with means to regulate operation by means of  
           replaceable information supply [e.g. , templet, tape,  
           card, etc. ]  
 483/123 . . Replaceable information comprising tool location  
 483/127 . . . including determining optimum tool access  
                   path  
 483/13 . with control means energized in response to  
           activator stimulated by condition sensor  
 483/132 . . Responsive to tool identifying information  
 483/134 . . . Identifying information on tool or tool holder  
 483/136 . . Responsive to tool  
 483/138 . . . including means to monitor and control, i.e.,  
                   adaptive machining  
 483/14 . with signal or indicator  
 483/15 . with means to condition or adjust tool or tool  
           support  
 483/16 . with means to transfer work  
 483/165 . . Plural machine tools, e.g., flexible manufacturing  
 483/17 . including machine tool or component  
 483/1702 . . Rotating work machine tool [e.g., screw machine,  
                   lathe, etc.]  
 483/1705 . . . Tool support comprises rotary spindle  
 483/1707 . . . Tool having specific mounting or work treating  
                   feature  
 483/171 . . . . Workpiece holder [e.g., chuck or chuck jaw,  
                   collet, etc.]  
 483/1712 . . . . Turning tool insert changer  
 483/1714 . . . Tool changer between tool support and matrix  
 483/1717 . . . . Plural matrices  
 483/1719 . . . . Tool support comprises turret  
 483/1721 . . . . . Linearly moveable tool changer  
 483/1724 . . . . . Linearly moveable tool changer  
 483/1726 . . . Direct tool exchange between tool support and  
                   matrix  
 483/1729 . . Reciprocating tool machine tool [e.g., broaching  
                   machine, shaping machine, etc.]  
 483/1731 . . . including matrix  
 483/1733 . . Rotary spindle machine tool [e.g., milling  
                   machine, boring, machine, grinding machine,  
                   etc.]

- 483/1736 . . . Tool having specific mounting or work treating feature
- 483/1738 . . . . Tool head
- 483/174 . . . . Abrading wheel
- 483/1743 . . . . including means for angularly orienting tool and spindle
- 483/1745 . . . . . Spindle angularly oriented to align with tool
- 483/1748 . . . Tool changer between spindle and matrix
- 483/175 . . . . Plural matrices
- 483/1752 . . . . including tool holder pivotable about axis
- 483/1755 . . . . . Plural tool holders pivotable about common axis
- 483/1757 . . . . . including intermediate tool changer
- 483/176 . . . . . Intermediate tool changer includes tool holder pivotable about axis
- 483/1762 . . . . . Tool holders pivotable with respect to each other
- 483/1764 . . . . . Tool holders pivotable about plural nonparallel axes
- 483/1767 . . . . . Linearly movable tool holders
- 483/1769 . . . . . Extensible tool holders
- 483/1771 . . . . . Translatable axis
- 483/1774 . . . . . Distinct tool changer for each tool
- 483/1776 . . . . . including intermediate tool changer
- 483/1779 . . . . . Linearly movable tool holder
- 483/1781 . . . . . Tool holder pivotable about plural nonparallel axes
- 483/1783 . . . . including linearly translatable tool changer [e.g., shuttle, ram, etc.]
- 483/1786 . . . . . Plural tool holders
- 483/1788 . . . . . Orthogonally translatable
- 483/179 . . . Direct tool exchange between spindle and matrix
- 483/1793 . . . . Spindle comprises tool changer
- 483/1795 . . . . . Matrix indexes selected tool to transfer position
- 483/1798 . . . . including means to project tool from matrix
- 483/18 . . Tool transfer to or from matrix
- 483/1809 . . Matrix including means to latch tool
- 483/1818 . . Matrix including means to project tool for transfer
- 483/1827 . . . Rectilinear
- 483/1836 . . . Pivoting
- 483/1845 . . Plural matrices
- 483/1855 . . . including tool replenishing
- 483/1864 . . including tool pot or adapter
- 483/1873 . . Indexing matrix
- 483/1882 . . . Rotary disc
- 483/1891 . . . Chain or belt
- 483/19 . . Miscellaneous