

# CPC COOPERATIVE PATENT CLASSIFICATION

## 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

**16/00 Miscellaneous hardware [e.g., bushing, carpet fastener, caster, door closer, panel hanger, attachable or adjunct handle, hinge, window sash balance, etc.]**

16/05 . Bushing  
 16/063 . . Providing a restricted or insulated environment [i.e., sealable] for internal elements  
 16/075 . . Bung or tap  
 16/082 . . . Threaded  
 16/088 . . Providing strain relief  
 16/10 . Carpet fasteners  
 16/104 . . Combined fasteners and stretchers  
 16/109 . . Hook  
 16/113 . . Moldings  
 16/118 . . Rug  
 16/122 . . Stair  
 16/124 . . . Risers  
 16/125 . . . Rods  
 16/126 . . . . Catches  
 16/1263 . . . . . Sliding  
 16/1267 . . . . . Swinging  
 16/127 . . Sliding  
 16/131 . . Strips  
 16/134 . . Swinging  
 16/14 . Carpet stiffener or anti-slip device, per se  
 16/18 . Casters  
 16/182 . . Adjustable  
 16/184 . . Wheels  
 16/1847 . . . Antifrictionally mounted  
 16/1853 . . . Multiple  
 16/1857 . . . . Antifrictionally swivelled  
 16/186 . . Antifrictionally swivelled  
 16/1867 . . . Ball  
 16/1873 . . . Cylinder  
 16/1877 . . . . Pivoted  
 16/188 . . Ball  
 16/1887 . . . Antifrictionally mounted  
 16/1889 . . . . Ball  
 16/1891 . . . . Cylinder  
 16/1893 . . . . Pivoted  
 16/19 . . Bracket supports  
 16/191 . . Detachable  
 16/193 . . Leg elevators  
 16/1937 . . . Sliding  
 16/1943 . . . Swinging  
 16/195 . . Locked  
 16/196 . . . Shimmy dampening  
 16/197 . . Lubricators  
 16/199 . . Pintles  
 16/201 . . Pintle retainers

16/202 . . . Frame  
 16/203 . . Frame  
 16/204 . . . Single leg frame or fork  
 16/205 . . Rigid wheel supports  
 16/207 . . Scrapers  
 16/209 . . Sliding  
 16/21 . . . for tubular leg  
 16/211 . . Sockets  
 16/212 . . Spring supported  
 16/214 . . Inclined axle  
 16/216 . . Caster guard  
 16/218 . . Obstruction climbing aid  
 16/22 . Thermally released check or closer  
 16/27 . Checks and closers  
 16/276 . . Liquid  
 16/2766 . . . Concentric spring chamber  
 16/2769 . . . . Cam  
 16/2771 . . . Hinge  
 16/2774 . . . . Floor pivot  
 16/2777 . . . Multiple piston  
 16/2782 . . . Oscillating cylinder  
 16/2788 . . . Oscillating piston  
 16/2793 . . . Side spring chamber  
 16/2796 . . . . Cam  
 16/2799 . . . Spring and flexible link  
 16/2804 . . . Spring and gear  
 16/281 . . Pneumatic  
 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  
 16/304 . . Hinge  
 16/31 . Gate hangers  
 16/33 . . Sliding and swinging  
 16/35 . Panel hangers, travelers and/or tracks  
 16/353 . . with flexible panel attaching means  
 16/354 . . . Covered, hollow or slotted track  
 16/3543 . . . . with antifriction means  
 16/3545 . . . . . Wood track  
 16/3547 . . . . . Wood track  
 16/355 . . . with antifriction means  
 16/356 . . Ball  
 16/359 . . Cylinder  
 16/361 . . Guide brackets  
 16/364 . . Guide rollers  
 16/367 . . Link and lever  
 16/37 . . Sliding shoe  
 16/372 . . . Drapery supports  
 16/373 . . Track and bracket

- 16/375 . . . Drapery supports
- 16/376 . . Covered, hollow or slotted track
- 16/377 . . . Wood
- 16/378 . . . Drapery supports
- 16/3785 . . . . Wood
- 16/379 . . Tracks
- 16/3797 . . . Drapery supports
- 16/3803 . . . Laminated
- 16/381 . . Wheel mounts
- 16/3813 . . . Antifrictionally mounted wheels
- 16/3816 . . . Door elevating
- 16/3819 . . . Floor
- 16/3822 . . . Reciprocating track
- 16/3825 . . . Traveling wheel
- 16/3828 . . . Swinging
- 16/3831 . . . Swiveling
- 16/3834 . . . Vertically adjustable
- 16/3837 . . . Wheel and guide roller
- 16/384 . . Wheels
- 16/387 . . Overlapping doors, common track
- 16/39 . Ferrules, rings, and thimbles
- 16/42 . . Ring ferrules
- 16/44 . Handle, handle component, or handle adjunct
- 16/444 . . having receptacle within
- 16/447 . . for plow
- 16/451 . . Length adjustable pull handle for luggage or luggage cart [e.g., wheeled suitcase handle, etc.]
- 16/455 . . Luggage-type [loop style] handgrip for carrying [e.g., suitcase, handbag, briefcase, shopping bag, package, etc.]
- 16/4554 . . . Extensible handle
- 16/4559 . . . Detachable handle
- 16/4563 . . . Welded or adhesively attached handle
- 16/4567 . . . Swinging handle
- 16/4569 . . . . with means permanently connecting the handle to a carried article
- 16/4571 . . . with means permanently connecting the handle to a carried article
- 16/4576 . . . with carrier handle including a user enhanced grip attachment
- 16/458 . . Door handle
- 16/459 . . . Detachable handle
- 16/46 . . . Knob type
- 16/462 . . Drawer pull
- 16/4628 . . . Lift
- 16/4636 . . . Knob type
- 16/464 . . . . Swinging
- 16/4644 . . . Loop type
- 16/4652 . . . Ring type
- 16/466 . . Handle having mounted grip means [e.g., bicycle handlebar grips, etc.]
- 16/469 . . Detachable handle
- 16/4696 . . . for battery
- 16/4701 . . . for casket
- 16/4707 . . . for container
- 16/4713 . . . Auxiliary handle
- 16/4719 . . . Extension
- 16/4724 . . . Cord or rope related
- 16/473 . . Extensible handle
- 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
- 16/48 . Insulated handle
- 16/484 . . Handwheel
- 16/487 . . Knob type
- 16/491 . . Wire type
- 16/495 . . Unshaped or unattached pad
- 16/498 . . Bar-type handle
- 16/499 . . . for lawnmower
- 16/50 . . . Swinging
- 16/501 . . . . Casket handle
- 16/502 . . Braced handle
- 16/506 . . Knob-type handle
- 16/508 . . . with flexible suspending means
- 16/509 . . Lift
- 16/513 . . Loop-type handle
- 16/515 . . . Swinging
- 16/516 . . Ring-type handle
- 16/52 . Hinge
- 16/521 . . including frangible or fusible portion
- 16/522 . . with diverse art portion or attachment
- 16/524 . . Ball and socket
- 16/525 . . Pliant or elastic hinge
- 16/5253 . . . Metallic
- 16/5257 . . . Snap or X hinge
- 16/526 . . Eyeglass hinge
- 16/527 . . Retractable pintle
- 16/5275 . . . Latch hinge
- 16/528 . . Latch hinge
- 16/5285 . . . Resilient securing means
- 16/529 . . including lever for shifting one member of hinge relative to another
- 16/531 . . having staggered leaves
- 16/532 . . including adjustment for changing relative orientation of hinged members
- 16/5321 . . . having plural independent adjustments
- 16/5322 . . . . All rectilinear
- 16/53225 . . . . . including screw-operated means to move hinged members
- 16/5323 . . . Pivotal adjustment
- 16/53235 . . . . including screw-operated means to move hinged members
- 16/53238 . . . . . About hinge axis
- 16/5324 . . . including means to move hinged members
- 16/53247 . . . . Along or parallel to hinge axis
- 16/5325 . . . . . including threaded hinge pin
- 16/53253 . . . . Screw-operated
- 16/53257 . . . . . to shift plate toward or away from hinged member
- 16/5326 . . . having adjustable spacer between leaf and hinged member [e.g., shim]
- 16/5327 . . . Adjustable along or parallel to hinge axis
- 16/5329 . . . having interdigitated surfaces or slot for hinge-to-member fastener
- 16/533 . . having cover
- 16/5335 . . . Leaf cover
- 16/534 . . having clamp for attaching hinge to hinged member
- 16/5345 . . . Circumferential clamp

- 16/535 . . . having means to facilitate assembly and disassembly of hinge sections to join or disjoin hinged members
- 16/5353 . . . Resiliently biased hinge
- 16/5355 . . . . having helical spring along hinge axis
- 16/5357 . . . Resiliently biased retaining means
- 16/5358 . . . . having discrete latch and spring to slide or pivot latch
- 16/5359 . . . . Discrete retaining means for pivotal contacting surfaces
- 16/536 . . . Separation of pivotal contacting surfaces
- 16/53605 . . . . having movable or removable connector
- 16/53607 . . . . . Pintle removable from remainder of hinge
- 16/536075 . . . . . and additional connector for pintle or separate pintle sections
- 16/53608 . . . . . Screw-threaded connector
- 16/5361 . . . . Axially shifting hinge sections
- 16/53613 . . . . . At specific angular orientation of hinge sections
- 16/53615 . . . . Hook and pin
- 16/5362 . . . . Hook in aperture
- 16/53625 . . . . Hook to hook
- 16/5363 . . . and discrete movable or removable connector to fasten one hinge section to another
- 16/5367 . . . by relatively sliding connection [e.g., dovetail]
- 16/5369 . . . . including receiving connector attachable to hinged member
- 16/537 . . . having means to reduce friction between hinge parts
- 16/5373 . . . . by fluid lubricant
- 16/5377 . . . . Ball or roller bearing
- 16/5379 . . . . Circularly distributed balls or rollers
- 16/538 . . . Resiliently biased hinge
- 16/5381 . . . . including means to render spring ineffective through all or a portion of swing
- 16/53815 . . . . comprising manipulatable element or portion
- 16/5382 . . . Biased from either direction toward neutral position [e.g., double acting]
- 16/53822 . . . . Helical spring transverse to hinge axis
- 16/53824 . . . . Plural hinge axes [e.g., multiple pintle]
- 16/53825 . . . . . and barrels for helical springs on separate axes
- 16/53826 . . . . Resiliently biased rolling or sliding cam surface
- 16/53828 . . . . by helical spring along hinge axis
- 16/5383 . . . having transverse helical spring or elastic strip
- 16/53832 . . . . Plural hinge axes [e.g., multiple pintle ]
- 16/53833 . . . . . Four or more axes
- 16/53834 . . . . to counterbalance weight of hinged member [e.g., closure biased to open position]
- 16/53835 . . . . . including pivoted coaxial spring retaining bar
- 16/53836 . . . . Over-center spring or linkage travel [e.g., "holdback hinge"]
- 16/53838 . . . . having means to hold hinged members against pivotal movement about hinge axis [i.e., catch]
- 16/5384 . . . Over-center spring or linkage travel [e.g., "holdback hinge"]
- 16/53843 . . . . Plural hinge axes
- 16/53845 . . . . Coil spring having axis along or parallel to hinge axis
- 16/53848 . . . . including camming or sliding surface to deflect spring perpendicularly to the hinge axis
- 16/5385 . . . . having means to hold hinged members against pivotal movement about hinge axis [e.g., catch]
- 16/5386 . . . . having force adjustment
- 16/53862 . . . . . Rotatable spring-engaging collar
- 16/538627 . . . . . having detention aperture or protuberance
- 16/538633 . . . . . having tool-receiving aperture
- 16/53864 . . . . Plural hinge axes [e.g., multiple pintle]
- 16/5387 . . . . having axially biased camming surface
- 16/5388 . . . . Coil
- 16/53883 . . . . . Plural coils
- 16/53885 . . . . . to counterbalance weight of hinged member [e.g., horizontal closure biased to open position]
- 16/53888 . . . . . On pintle
- 16/5389 . . . . torsion spring
- 16/539 . . . Gravitating hinge having vertical axis
- 16/5393 . . . . having lift rod
- 16/5395 . . . . having plural spaced hinge axes
- 16/5398 . . . . including cam surface and follower
- 16/53984 . . . . . and rolling element
- 16/53985 . . . . . Between opposing surfaces
- 16/53987 . . . . . and detent in cam surface
- 16/53988 . . . . . On axially twisted or helically fluted element
- 16/53992 . . . . . including means to hold hinged members against pivotal movement
- 16/53996 . . . . . having aperture for slidably receiving pintle [e.g., camming knuckle]
- 16/54 . . . including means to hold or retard hinged members against pivotal movement [e.g., catch]
- 16/5401 . . . . Magnetic
- 16/5402 . . . . Resiliently biased catch
- 16/54021 . . . . . having spring force adjustment
- 16/54023 . . . . . including toggle linkage
- 16/54024 . . . . . having discrete manipulatable release means [e.g., lever]
- 16/540243 . . . . . including cam or eccentric
- 16/540247 . . . . . Sliding release means or lever-actuated sliding catch
- 16/54025 . . . . . Sliding
- 16/540253 . . . . . Movement along or parallel to hinge axis
- 16/540254 . . . . . Interdigitated or plural sockets
- 16/540255 . . . . . Opposed interdigitated sliding collars on hinge axis
- 16/540256 . . . . . and catch receiving socket
- 16/540257 . . . . . and catch receiving socket
- 16/54026 . . . . . Pivoted
- 16/54028 . . . . . Plural alternately useable detents
- 16/54029 . . . . . Spring arm
- 16/540295 . . . . . Plural opposed arms
- 16/5403 . . . . by friction
- 16/54033 . . . . . Screw-threaded adjustment
- 16/54034 . . . . . Along or parallel to hinge axis
- 16/540345 . . . . . Threaded pintle
- 16/54035 . . . . . Cam or wedge actuator
- 16/54038 . . . . . On hinge pin or between surfaces surrounding hinge axis
- 16/5404 . . . . Pivoted
- 16/54044 . . . . . Plural alternately useable detents
- 16/54048 . . . . . and sliding

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

**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	24/1465	. . . . . Buckle band connection
24/1326	. . . . Finger ear, belt attached pencil holder	24/1467	. . . . . Swedged sheet metal band connection
24/1329	. . . . Pencil holder with paper clip	24/1469	. . . . . End-to-end integral with band connecting means
24/1332	. . . . Combined and convertible pencil holder	24/1471	. . . . Pivoted parts
24/1335	. . . . Container type pencil holder	24/1473	. . . . Wedging parts
24/1338	. . . . Separate pencil holder and pocket engaging clip	24/1476	. . . . Wire
24/1341	. . . . Sliding jaw pencil holding clip	24/1478	. . . . Circumferentially swagged band clamp
24/1344	. . . . Wire pencil holder	24/148	. . . . End-to-end integral band end connection
24/1347	. . . . Flexible shank pencil holder	24/1482	. . . . Ratchet and tool tightened band clamp
24/135	. . . . with movable catch [e.g., pin pivoted lever, roller, etc.]	24/1484	. . . . Spring closed band clamp
24/1353	. . . . Pivoted jaw pencil holder	24/1486	. . . . Screw locked band clamp
24/1356	. . . . Pin attached	24/1488	. . . . Swedged to lock band ends
24/1359	. . . . Rule holder	24/149	. . . Wire
24/1362	. . . Sleeve holder [e.g., for inner coat]	24/1492	. . . . Separate connections
24/1365	. . . Pin attached	24/1494	. . . . Wire
24/1368	. . . Arm or leg carried holder	24/1496	. . . Wooden bands
24/1371	. . . Eyeglass holder including retaining means	24/1498	. . . Plastic band
24/1374	. . . Neck supported holder	24/15	. . . Bag fasteners
24/1376	. . . Holder contains pocket engager [e.g., antitheft device, wallet protector]	24/152	. . . Swedged bag tie
24/1379	. . . Key ring holder	24/153	. . . Plastic band bag tie
24/1382	. . . Receptacle type holder	24/155	. . . Resilient slot bag tie
24/1385	. . . Eyeglass or spectacle case	24/157	. . . Twist-to-close bag tie
24/1388	. . . Open-ended holster type holder	24/158	. . . Slides to lock bag end within housing
24/1391	. . . Article held by clip with spring [e.g., leaf, coil] member	24/16	. . . Belt fasteners
24/1394	. . . Article held by clip	24/1604	. . . Tighteners
24/1397	. . . Article held by flexible connector [e.g., chain]	24/1608	. . . Hinged
24/14	. . . Bale and package ties, hose clamps	24/1612	. . . . Ring connected belt ends
24/1402	. . . Packet holders	24/1616	. . . . Bent over flanged ends
24/1404	. . . . Cord	24/162	. . . . Pintle pin connected belt ends
24/1406	. . . . Adjustable bands	24/1624	. . . . V and round belts
24/1408	. . . . Closed loops	24/1628	. . . . Overlapped belt ends
24/141	. . . . Plastic bands	24/1632	. . . . Sheet metal knuckles, common pintle
24/1412	. . . with tighteners	24/1636	. . . . Wire knuckles, common pintle
24/1414	. . . . Wedge	24/164	. . . . Knuckle integral with belt material
24/1416	. . . . Winder	24/1644	. . . . Multiple pintles interconnected V-belt type
24/1418	. . . . Self-locking [dead center or snap action]	24/1648	. . . Lacing
24/142	. . . . Adjustable girth	24/1652	. . . One piece
24/1422	. . . . . Rack bar	24/1656	. . . . Deflecting prong
24/1424	. . . . Lever	24/166	. . . Screw clamp
24/1427	. . . . Worm and tooth	24/1664	. . . Splices
24/1429	. . . . Pivotal worm band clamp	24/1668	. . . Wire
24/1431	. . . . Radial worm band clamp	24/1672	. . . Butt connected belt ends
24/1433	. . . . Integral thread	24/1676	. . . V, round, trapezoidal belts
24/1435	. . . . External thread	24/168	. . . Flanged belt ends, connector hold ends
24/1437	. . . . . Both ends threaded	24/1684	. . . Lapped ends of endless belts
24/1439	. . . . Radial screw	24/1688	. . . Hinged ends of endless belts
24/1441	. . . . Tangential screw	24/1692	. . . Wire strands reinforce belts
24/1443	. . . . Adjustable girth	24/1696	. . . Hook and loop type fastener and zipper belt end connection
24/1445	. . . . . Step adjustment	24/17	. . . Buttoners
24/1447	. . . . . Plural separable parts	24/18	. . . Cuff holder
24/1449	. . . . . Wire	24/181	. . . Adjustable
24/1451	. . . . . Plural separable parts	24/183	. . . Sleeve clasp and button for cuff
24/1453	. . . . . Pivotal strap parts	24/184	. . . Sleeve clasp and clasp for cuff
24/1455	. . . . . Plural wrap	24/185	. . . Sleeve clasp and hook for cuff
24/1457	. . . Metal bands	24/186	. . . Sleeve clasp and pin for cuff
24/1459	. . . . Separate connections	24/188	. . . Sleeve pin and button for cuff
24/1461	. . . . . One piece	24/189	. . . Pin fastener
24/1463	. . . . . Sheet metal	24/19	. . . Necktie fastener
		24/1903	. . . Bands

24/1907	. . . End-securing pin	24/2142	. . . Ski boot and garment fasteners
24/191	. . . Gripping	24/2143	. . Strap-attached folding lever
24/1914	. . . Depressors	24/2145	. . . toggle latch
24/1917	. . . . Button engaging	24/2147	. . . Strap tightener
24/1921	. . . . Pin or spur	24/2149	. . . Tire antiskid strap tightener
24/1924	. . Button engaging	24/2151	. . . Seat belts
24/1928	. . . Adjustable	24/2153	. . . Split ring fasteners
24/1931	. . . Cord loop	24/2155	. . . Jewelry-watch straps
24/1934	. . . Pivoted or sliding jaw	24/2157	. . . Tie downs [covers, articles]
24/1938	. . . Pin attached	24/2158	. . . Cable, wire, rope tightener
24/1941	. . Collar button combined	24/216	. . . Ski boot and garment fasteners
24/1945	. . . Clasp attached	24/2162	. . . Dress hem raisers
24/1948	. . . Pin attached	24/2164	. . Midline
24/1952	. . . Separable fastener	24/2166	. . Jewelry
24/1955	. . Tie, attached hook	24/2168	. . Seat belt
24/1959	. . Magnetic, adhesive, or snap type fastener connects tie to shirt	24/217	. . Accordion straps
24/1962	. . Tie engaging loop with shirt engaging fastener	24/2172	. . Parallel poles clamp
24/1966	. . Tie knot engaging and collar attaching	24/2174	. . form panels for walls
24/1969	. . Tie clip and shirt clasp attaching	24/2175	. . Cargo tie down
24/1972	. . Tie clip and fastening pin	24/2177	. . Chain tighteners
24/1976	. . Tie pin with shirt fastener	24/2179	. . Split band with tightener
24/1979	. . Tie stiffener with shirt fastener	24/2181	. . Tire chain tighteners
24/1983	. . with pivotal jaws having spring means	24/2183	. . Ski, boot, and shoe fasteners
24/1986	. . Slider	24/2185	. . Fixed jaw with sliding or pivoted jaw
24/199	. . Ornamental	24/2187	. . Rack and pinion and circular tighteners
24/1993	. . . Key shaped	24/2189	. . Circular flange container clamp
24/1997	. . Resilient clasp	24/2191	. . Strap stretching tools, tighteners, and sealers
24/20	. Paper fastener	24/2192	. . Buckle type
24/201	. . with screw threaded or notch engaging securing means	24/2194	. . Integral piece
24/202	. . Resiliently biased	24/2196	. . toggle
24/203	. . . including means to open or close fastener	24/2198	. . Stocking top
24/204	. . . . Pivotaly mounted on pintle	24/22	. Trouser guards, clips, straps [e.g., above shoetops]
24/205	. . . One piece	24/23	. Bedclothes holders
24/206	. . . . Mounted on support means	24/24	. T-head nongripping, fabric engaging type
24/207	. . Adhesive	24/25	. Zipper or required component thereof
24/208	. . Corner fastened	24/2502	. . Plural zippers
24/209	. . Paper-penetrating	24/2504	. . . Zipper chain
24/21	. Strap tighteners	24/2505	. . . having surface sealing structure
24/2102	. . Cam lever and loop	24/2507	. . having slider or interconnected sliders with access opening for diverse-art member
24/2104	. . . Step adjusted	24/2509	. . Plural independently movable sliders
24/2106	. . . . Ski boot and garment fasteners	24/2511	. . with distinct, stationary means for anchoring slider
24/2108	. . . . Split ring tightener	24/2513	. . . and for aligning surfaces or obstructing slider movement
24/2109	. . . . Chain and rope tighteners	24/2514	. . with distinct member for sealing surfaces
24/2111	. . . . Tire chain tighteners	24/2516	. . with distinct separable-fastener
24/2113	. . . . Strap tighteners	24/2518	. . having coiled or bent continuous wire interlocking surface
24/2115	. . . . Jewelry	24/252	. . . with stringer tape interwoven or knitted therewith
24/2117	. . . Strap tighteners	24/2521	. . . with stringer tape having specific weave or knit pattern
24/2119	. . . Tie chain tighteners	24/2523	. . . with core encircled by coils or bends
24/2121	. . . Cargo tie down	24/2525	. . . with mounting portion having structural formations complementary to stitching
24/2123	. . . Cover fasteners	24/2527	. . . Attached by stitching
24/2125	. . . Chain tighteners	24/2529	. . . . String or stringer tape having distinctive property [e.g., heat sensitive]
24/2126	. . . Strap tightener machine	24/253	. . . with stringer tape having distinctive property [e.g., heat sensitive]
24/2128	. . . toggle actuated sliding jaw		
24/213	. . . Jewelry		
24/2132	. . . Split ring with tightener		
24/2134	. . . Concrete form panels		
24/2136	. . . Seat belt buckles		
24/2138	. . . Chain, cable, wire tighteners, and anchors		
24/214	. . . Envelope fasteners		

- 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
- 24/312 . . Chain connector
- 24/314 . . Elastic connector
- 24/316 . . . Strap connector
- 24/318 . . Strap connector
- 24/32 . . having magnetic fastener
- 24/33 . . having adhesive fastener
- 24/34 . . Combined diverse multipart fasteners
- 24/3401 . . Buckle
- 24/3403 . . . and buckles
- 24/3404 . . . . having separate material adjustment means

24/3405	. . . . having separate disconnect means	24/348	. . . . Hook having locking means
24/3407	. . . . . Pivotal lever type	24/3481	. . . including a button fastening element
24/3408	. . . . having disconnect structure	24/3483	. . . and penetrating prong
24/3409	. . . . . Resilient cooperating means	24/3484	. . Hook
24/3411	. . . . and pin	24/3485	. . . and hook
24/3412	. . . . Crossed belt accommodating	24/3487	. . . . having biasing spring
24/3413	. . . and clasp	24/3488	. . . . Separately connected
24/3415	. . . and pin	24/3489	. . . . having securing means
24/3416	. . . and hook	24/3491	. . . . . Sliding
24/3417	. . . . having disconnect means	24/3492	. . . . . Snap type
24/3419	. . . . having penetrating prong	24/3493	. . . . . Pivoted
24/342	. . . . Buckle having plural receiving slots	24/3495	. . . having penetrating prong
24/3421	. . . including a button fastening element	24/3496	. . . including a button fastening element
24/3423	. . . and separable fastening means for attached fastener	24/3497	. . Button fastening element including another fastener element
24/3424	. . . . Snap fastener	24/3499	. . Penetrating prong
24/3425	. . . having roller means	24/35	. Interchangeable button loop and pin
24/3427	. . Clasp	24/36	. Button with fastener
24/3428	. . . having pivoted members	24/3602	. . Loss-preventing devices
24/3429	. . . . Cam type member	24/3604	. . Adjustable
24/3431	. . . . Plural clasps	24/3606	. . Cloth shanks and covers
24/3432	. . . . . and toggle operator	24/3609	. . Multiple attachment
24/3433	. . . . . Spring biased	24/3611	. . Deflecting prong or rivet
24/3435	. . . . . . Coil	24/3613	. . . Anvil or plate
24/3436	. . . . . and cam	24/3615	. . . Integral
24/3437	. . . . Coil spring biased	24/3617	. . Hinged leaf
24/3439	. . . Plural clasps	24/3619	. . . Axially rotating
24/344	. . . . Resilient type clasp	24/3621	. . . Double
24/3441	. . . . . and cam	24/3623	. . . Sliding
24/3443	. . . . . Spring biased jaw	24/3626	. . Sliding bar
24/3444	. . . . . Circular work engageable	24/3628	. . Integral or rigid stud
24/3445	. . . . . and pin attachment	24/363	. . . Bent sheet metal [integral]
24/3447	. . . . . and disconnect means	24/3632	. . Link
24/3448	. . . including a button fastening element	24/3634	. . . Integral rubber button, extendable shank
24/3449	. . . and hook	24/3636	. . . Extendably connected
24/3451	. . . . having intermediate connector allowing movement	24/3638	. . . Pivoted leaf
24/3452	. . . . . and adjustment means	24/364	. . . Releasably locked
24/3453	. . . . having gripping configuration on clasp jaw	24/3643	. . . French cuff
24/3455	. . . . . Penetrating type	24/3645	. . . Tufting
24/3456	. . . . having cam	24/3647	. . . Integral piece
24/3457	. . . . having separable jaws	24/3649	. . Pin attached
24/3459	. . . and penetrating prong	24/3651	. . Separable
24/346	. . . and pin	24/3653	. . . Screw
24/3461	. . . . having separate pin loss prevention means	24/3655	. . . Spring
24/3463	. . . . . Pin coextensive, coplanar, and contiguous with clasp jaw	24/3657	. . . . Resilient head
24/3464	. . . . Pin coextensive, coplanar, and contiguous with clasp jaw	24/366	. . . . Resilient socket
24/3465	. . . . Pin forms part of clasp jaw	24/3662	. . . . Rotating head
24/3467	. . Pin	24/3664	. . . . with operating devices
24/3468	. . . and pin	24/3666	. . Separate thread bar
24/3469	. . . . and disconnect means	24/3668	. . Spiral fastener
24/3471	. . . . . Hook and eye type	24/367	. . Covers
24/3472	. . . . and hook	24/3672	. . . Metal or plastic caps
24/3473	. . . . . having connector allowing movement	24/3674	. . Pads
24/3475	. . . . having intermediate connector allowing movement	24/3677	. . Flexible button
24/3476	. . . and hook	24/3679	. . Swivel button
24/3477	. . . . having intermediate connector allowing movement	24/3681	. . Tufting type
24/3479	. . . . . and adjustment means	24/3683	. . Button with cavity for friction grip fastener
		24/3685	. . Button with shank for friction grip fastener
		24/3687	. . Heat or adhesive secured type
		24/3689	. . Thread or wire through apertured button
		24/3691	. . Eye shank type button



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, ductible
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
24/3789	. . having means covering tip of lacing	24/3998	. . Helical preform
24/3792	. . . Tasseled	24/40	. Buckles
24/3795	. . . with plural components	24/4002	. . Harness
24/3797	. . . with permanently deformed mounting structure	24/4005	. . . Combined buckles and snap hooks
24/38	. Strap cable or pipe button	24/4007	. . . Lock
24/39	. Cord and rope holders	24/4009	. . . . Key
24/3902	. . Chain	24/4012	. . . Clamping
24/3904	. . . Bead chain fasteners	24/4014	. . . . One-piece
24/3907	. . Sheathed strand	24/4016	. . . . Pivoted part or lever
24/3909	. . Plural-strand cord or rope	24/4019	. . . . Sliding part or wedge
24/3911	. . Friction disk	24/4021	. . . Cross bails
24/3913	. . Knot engaging	24/4023	. . . . Pivoted stud plate
		24/4026	. . . . Rigid stud
		24/4028	. . . Penetrating tongue
		24/403	. . . . Guarded
		24/4033	. . . . One-piece
		24/4035	. . . . Multiple
		24/4037	. . . . Pivoted
		24/404	. . . . . Lever actuated
		24/4042	. . . . . Stud
		24/4044	. . . . Sliding part or wedge
		24/4047	. . . Strap loops and attaching devices

24/4049	. . . Loop shields	24/44188	. . . . having wedge shaped, inserted and receiving members
24/4051	. . Garment shielded	24/44197	. . . . with specific means for attaching to flaccid strap or supporting strap
24/4053	. . Combined pressure bar and guard	24/44205	. . . . . On the inserted member
24/4056	. . . Hook attached	24/44214	. . . . having necked button sliding along length of closed, variable width loop
24/4058	. . Penetrating prong	24/44222	. . having flaccid gripping member
24/406	. . . One-piece	24/44231	. . . formed from elastic material
24/4063	. . . . Hook attached	24/44239	. . Encircling gripping member including semirigid band and operator for tightening
24/4065	. . . Pivoted	24/44248	. . Encircling gripping member including semirigid band and means for adjusting girth
24/4067	. . . . Hook attached	24/44256	. . with specifically shaped, nongripping, rigid structure for connecting independently operable clasps, clips, or support-clamps
24/407	. . . Slide	24/44265	. . Gripping member face integral with or rigidly affixed to screw-driving portion
24/4072	. . Pivoted lever	24/44274	. . having either discrete flaccid or thin, nonbiasing, integral, connecting hinge
24/4074	. . . Hook attached	24/44282	. . having equally spaced or continual gripping faces revolving about central axis
24/4077	. . . Looped strap	24/44291	. . including pivoted gripping member
24/4079	. . Sliding part of wedge	24/44299	. . . Pivoted member also slides
24/4081	. . . Hook attached	24/44308	. . . . Tapered face
24/4084	. . . Looped strap	24/44316	. . . Pivoting gripping member either supports or coacts with sliding engaging face
24/4086	. . Looped strap	24/44325	. . . having three or more pivotally connected gripping members
24/4088	. . One-piece	24/44333	. . . having toggle operator for moving
24/4091	. . . Hook attached	24/44342	. . . having rigid linking arm pivotally connected to each gripping member
24/4093	. . . Looped strap	24/4435	. . . . with extended lever portion
24/4095	. . Fabric covered	24/44359	. . . . having lever end modified for attachment to support
24/4098	. . Ornamental and/or object supported	24/44368	. . . Pivoted gripping member applies camming force
24/41	. Pierced earring fastener	24/44376	. . . Spring or resiliently biased about pivot
24/42	. Independent, headed, aperture pass-through fastener	24/44385	. . . . Distinct spring
24/43	. Fastener with revolving component wrapping structure-to-be-secured about fastener	24/44393	. . . . . Attached solely by spring
24/44	. Clasp, clip, support-clamp, or required component thereof	24/44402	. . . . . with operator for moving pivoted member
24/44009	. . Gripping member adapted for tool actuation or release	24/4441	. . . . . Camming or wedging element
24/44017	. . with specific mounting means for attaching to rigid or semirigid supporting structure or structure-to-be-secured	24/44419	. . . . . Pivoted or rotated element
24/44026	. . . for cooperating with aperture in supporting structure or structure-to-be-secured	24/44427	. . . . . with position locking-means for gripping members
24/44034	. . Dissociable gripping members	24/44436	. . . . . including pivoted arm
24/44043	. . . Channel and inserted bar	24/44444	. . . . . having specific surface material or irregularity on or along engaging face
24/44051	. . . . having operator or locking means	24/44453	. . . . . having specific handle structure
24/4406	. . . . Resilient channel or bar	24/44462	. . . . . Coil spring
24/44068	. . having gripping member actuated by fluid force	24/4447	. . . . . having coil portion coaxial or parallel with pivotal axis
24/44077	. . having inserted and receiving interlocking members connected by bendable, nonbiasing strap	24/44479	. . . . . Flat or leaf spring
24/44085	. . . Discrete flaccid strap	24/44487	. . . Closed by gravity or weight of structure-to-be-secured
24/44094	. . . . with distinct means for preventing separation of members	24/44496	. . . with operator means for moving pivoted member
24/44103	. . . . . Slidably mounted	24/44504	. . . . Threaded cylindrical rod and mating cavity
24/44111	. . . . with separate flaccid flap or pocket for protecting structure-to-be-secured	24/44513	. . . . Camming or wedging element
24/4412	. . . . with separate, cavity-blocking gate on receiving member	24/44521	. . . . Pivoted or rotated element
24/44128	. . . . Resilient inserted or receiving member	24/4453	. . . with position locking-means for gripping members
24/44137	. . . . . Inserted or receiving member substantially covered or coated for protection or to promote gripping	24/44538	. . . . Integral locking-means
24/44145	. . . . . Resilient inserted member		
24/44154	. . . . . having engaging face formed from nonmetallic material		
24/44162	. . . . . having head and neck type engaging face		
24/44171	. . . . . having internal supporting or reinforcing element		
24/44179	. . . . . Circular head or neck		

24/44547 . . .	having inserted and receiving interlocking engaging faces	24/44863 . . . . .	having specific surface irregularity on or along engaging face
24/44556 . . . .	Resilient gripping member	24/44872 . . . .	having specific handle structure
24/44564 . . .	having specific surface material or irregularity on or along engaging face	24/4488 . . . . .	Movably attached to gripping member
24/44573 . .	including track or way guided and retained gripping member	24/44889 . . . .	Interlocking faces
24/44581 . . .	Biased by distinct spring	24/44897 . . . .	with reinforcing member
24/4459 . . .	with operator for moving guided member	24/44906 . . . .	having specific surface irregularity on or along engaging face
24/44598 . . . .	Threaded cylindrical rod and mating cavity	24/44915 . . . . .	Corrugated or toothed face
24/44607 . . .	Track or way oblique to path of gripping member	24/44923 . . . .	Clasp, clip, or support-clamp cut or shaped from a single sheet of resilient, uniformly thick, planar material
24/44615 . . .	with position locking-means for gripping members	24/44932 . . .	having specific surface material or irregularity on or along engaging face
24/44624 . . . .	Integral locking-means	24/4494 . . . .	having specific handle structure
24/44632 . . .	with specific mounting means for attaching to flaccid supporting structure or structure-to-be-secured	24/44949 . . .	including resilient biasing wire
24/44641 . .	having gripping member formed from, biased by, or mounted on resilient member	24/44957 . . . .	Coiled wire
24/4465 . . .	Integrally combined, independently operable, diverse clasps, clips, or support-clamps	24/44966 . .	having gripping member shifted by operator
24/44658 . . .	with specific means for mounting to flaccid supporting structure or structure-to-be-secured	24/44974 . . .	Threaded cylindrical rod and mating cavity
24/44667 . . . .	Mounting means made entirely from integral wire portion of resilient gripping member	24/44983 . .	formed from single rigid piece of material
24/44675 . . . . .	Wire coiled about flaccid supporting structure	24/44991 . . .	having specific surface irregularity on or along engaging face
24/44684 . . .	with operator for moving biased engaging face	24/45 . .	Separable-fastener or required component thereof [e.g., projection and cavity to complete interlock]
24/44692 . . . .	Camming or wedging element	24/45005 . .	with third detached member completing interlock [e.g., hook type]
24/44701 . . . . .	Encircling sleeve type element	24/4501 . . .	Quick connect or release [e.g., spring and detent]
24/44709 . . . . .	Pivoted or rotated element	24/45016 . . .	for jewelry
24/44718 . . . . .	Element pivots or rotates in plane parallel to plane bisecting opposed engaging faces	24/45021 . . .	including eyelet [e.g., shoes]
24/44726 . . . . .	Elongated element with pivot between cam and handle portions	24/45026 . . .	for key holder
24/44735 . . . . .	for moving engaging face of U-shaped gripping member	24/45031 . . .	for tire chain, strap, etc. [e.g., rotatable or sliding spring gate]
24/44744 . . .	with position locking-means for engaging faces	24/45037 . . .	for apparel and related accessories
24/44752 . . . .	Integral locking-means	24/45042 . . . .	Button, button related
24/44761 . . . .	Pivoted lock member	24/45047 . . . . .	Snap [e.g., key hole type]
24/44769 . . .	Opposed engaging faces on gripping member formed from single piece of resilient material	24/45052 . . . .	Post and receiver [e.g., pin and slot]
24/44778 . . . .	Piece totally forms clasp, clip, or support-clamp and has shaped, wirelike, or bandlike configuration with uniform cross section throughout its length	24/45058 . . . .	Hook [e.g., within cavity]
24/44786 . . . . .	Opposed faces located in and bias towards common plane in nonuse position	24/45063 . . . .	Belt, strap, etc. [e.g., buckle or snap fastener]
24/44795 . . . . .	Resilient gripping member having tightly twisted portion	24/45068 . . . .	Glove
24/44803 . . . . .	Resilient gripping member having coiled portion	24/45073 . . . .	Purse, wallet, etc.
24/44812 . . . . .	Convolutions of coil form faces	24/45079 . . .	Belt, strap, harness, etc.
24/44821 . . . . .	Relatively movable segments of resilient gripping member contact and cross in nonuse position	24/45084 . . . .	for safety belt buckle, strap, harness, etc.
24/44829 . . . . .	Segments form opposed engaging faces	24/45089 . . .	Sliding or rotating element
24/44838 . . . . .	having specific handle structure	24/45094 . . . .	Element having key slot
24/44846 . . . . .	having specific handle structure	24/45099 . . .	Resilient element [e.g., snap type]
24/44855 . . . . .	Terminal end of resilient member having engagement or disengagement enhancing structural modifications	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]	24/45408 . . . . .	Resilient, self-biased gate
24/45168 . . . .	for container [e.g., bag]	24/45414 . . . . .	with position locking-means for gate
24/45173 . . .	Resilient element	24/45419 . . . . .	Gate and hook formed from plastic
24/45178 . . . .	Snap [e.g., identical elements]	24/45424 . . . . .	Gate and hook formed solely from wire
24/45183 . . .	Clasp [e.g., spring type]	24/45429 . . . . .	Gate and hook formed from single piece of sheet metal
24/45188 . . . .	for jewelry [e.g., buckle type]	24/45435 . . . . .	Projection pivotally attached to shank or mounting structure
24/45194 . . . .	for belt or strap	24/4544 . . . . .	Projection slidably mounted to shank or mounting structure
24/45199 . . .	Hook	24/45445 . . . . .	Projection self-biased towards shank or mounting structure
24/45204 . . . .	for belt, strap, etc. [e.g., with pivoted gate locking member]	24/4545 . . . . .	and formed solely from wire
24/45209 . . . .	for apparel	24/45455 . . . . .	Cooperating with relatively stationary wire gate
24/45215 . . .	Slot and tab or tongue	24/45461 . . .	Interlocking portion actuated or released responsive to preselected condition [e.g., heat, pressure]
24/4522 . . .	Sliding or rotating element	24/45466 . . .	having electric or fluid powered, actuation or release, of interlock
24/45225 . .	including member having distinct formations and mating member selectively interlocking therewith	24/45471 . . .	Projection having movable connection between components thereof or variable configuration
24/4523 . . .	Hook	24/45476 . . . .	with additional, similar projection for engaging different cavity
24/45236 . . . .	Multiple catch [e.g., with pivoted gate]	24/45482 . . . .	and operator therefor
24/45241 . . .	Slot and tab or tongue	24/45487 . . . . .	including camming or wedging element on projection member
24/45246 . . . .	having teeth or serrations [e.g., sliding with respect to each other]	24/45492 . . . . .	Pivotally attached element
24/45251 . . .	Resilient element [e.g., with spring]	24/45497 . . . .	including pivotal connection between projection components
24/45257 . . . .	Snap with cavity	24/45503 . . . . .	Component slides relative to connection
24/45262 . . .	Pin, post and receiver	24/45508 . . . . .	and spring or resilient extension biasing about pivot
24/45267 . . .	Notched clasp [e.g., with receiving slot]	24/45513 . . . .	including slidably guided connection between nonself-biasing projection components
24/45272 . . .	Projection passes through cavity then moves toward noninserted portion of its member to complete interlock [e.g., snap hook]	24/45518 . . . . .	and distinct spring biasing component
24/45277 . . . .	Entire projection member forms loop or ring when interlocked	24/45524 . . . .	including resiliently biased projection component or surface segment
24/45283 . . . . .	Includes slidable gate closing entrance throat	24/45529 . . . . .	Requiring manual force applied against bias to interlock or disengage
24/45288 . . . .	Hook type projection member	24/45534 . . . . .	having connected leading edge and separated trailing arms
24/45293 . . . . .	Plural hooks entering opposite sides of same cavity	24/45539 . . . . .	Cooperating with cavity having side walls and axially biased component capping end
24/45298 . . . . .	Hooks formed solely from wire	24/45545 . . . . .	forming total external surface of projection
24/45304 . . . . .	Noninserted portion of projection member includes movably connected gate for closing access throat	24/4555 . . . . .	and encircling hollow central area
24/45309 . . . . .	Threaded gate	24/45555 . . . . .	having separate mounting means inserted into area
24/45314 . . . . .	Revolvably mounted disc shaped gate	24/4556 . . . . .	Plastic deformation of means or surface required for mounting
24/45319 . . . . .	Pivotally connected gate	24/45565 . . . . .	having separate mounting means encompassing cross section of projection
24/45325 . . . . .	Gate swings transversely to plane of hook	24/45571 . . . . .	having dome-shaped head and expansion slit along side
24/4533 . . . . .	Gate also slides relative to pivot	24/45576 . . . . .	and connected surface at tip of head
24/45335 . . . . .	having means biasing gate about pivot	24/45581 . . . . .	having inserted end formed by oppositely biased surface segments
24/4534 . . . . .	and position locking-means for gate	24/45586 . . . . .	Constructed from wire
24/45346 . . . . .	Includes distinct biasing spring	24/45592 . . . . .	having both resiliently biased and rigid components forming external surface of projection
24/45351 . . . . .	Coil type spring		
24/45356 . . . . .	Coiled about pivotal axis of gate		
24/45361 . . . . .	having position locking-means for gate		
24/45366 . . . . .	Locking-means pivotally connected		
24/45372 . . . . .	Locking-means slidably mounted		
24/45377 . . . . .	Gate closes when structure-to-be-secured is tensioned		
24/45382 . . . . .	Track or way guided gate		
24/45387 . . . . .	having means biasing gate		
24/45393 . . . . .	Guide of gate encircles shank		
24/45398 . . . . .	Cavity in shank forms track or way		
24/45403 . . . . .	with position locking-means for gate		

24/45597 . . .	Projection member including noninserted spring for engaging and pushing against receiving member	24/45754 . . . . .	having closed aperture therethrough alignable with parallel access opening
24/45602 . . .	Receiving member includes either movable connection between interlocking components or variable configuration cavity	24/45759 . . . .	having flaccid component defining access opening of cavity
24/45607 . . . .	with additional cavity for engaging different projection	24/45764 . . . . .	Component formed solely by flaccid cord
24/45613 . . . . .	having common means actuating or releasing interlocking components or surfaces	24/4577 . . . . .	with nonflaccid component
24/45618 . . . . .	and interlocking with independently associated or dissociated projection members	24/45775 . . . .	having resiliently biased interlocking component or segment
24/45623 . . . .	and operator therefor	24/4578 . . . . .	Cavity or projection rotates about axis of cavity to dissociate
24/45628 . . . . .	for plural, oppositely shifting, similar interlocking components or segments	24/45785 . . . . .	Requiring manual force applied against bias to interlock or disengage
24/45634 . . . . .	Operator includes camming or wedging element	24/45791 . . . . .	and partially blocking separate, nonresilient access opening of cavity
24/45639 . . . . .	including pivotally connected element on receiving member	24/45796 . . . . .	and closed elongated access opening for guiding transverse projection travel after insertion
24/45644 . . . . .	for shifting pivotally connected interlocking component	24/45801 . . . . .	Nonresilient walls define opening
24/45649 . . . . .	Element and component pivot about same axis	24/45806 . . . . .	formed from wire
24/45654 . . . . .	for shifting slidably connected and guided, nonself-biasing interlocking component	24/45812 . . . . .	and access opening with gapped perimeter for allowing movement of noninserted projection support therepast
24/4566 . . . . .	including slidably connected and guided element on receiving member	24/45817 . . . . .	Cavity constructed solely from wire
24/45665 . . . . .	for shifting pivotally connected interlocking component	24/45822 . . . . .	Partially blocking separate, nonresilient, access opening of cavity
24/4567 . . . . .	for shifting slidably connected and guided, nonself-biasing, interlocking component	24/45827 . . . . .	and bodily shifted into or out of interlock location by manual force thereon
24/45675 . . . .	having pivotally connected interlocking component	24/45832 . . . . .	formed from wire
24/45681 . . . . .	Blocking removal of formation on projection from complementary formation on side wall of cavity	24/45838 . . . . .	having curved or bent engaging section conforming to contour of projection
24/45686 . . . . .	and position locking-means therefor	24/45843 . . . . .	Similar, distinct sections
24/45691 . . . . .	and relatively movable handle therefor	24/45848 . . . . .	having distinct sections engaging projection at spaced points
24/45696 . . . . .	Requiring manual force thereon to interlock or disengage	24/45853 . . . . .	including separate, nonprojection-engaging spring for biasing
24/45702 . . . . .	Plural, oppositely shifting, similar interlocking components	24/45859 . . . . .	Biased component or segment entirely formed from wire
24/45707 . . . . .	having aperture therein alignable with parallel access opening	24/45864 . . . . .	having portion of cavity deformed during mounting
24/45712 . . . . .	having interlocking portion thereof housed continuously within cavity	24/45869 . . . . .	and cooperating with separate mounting component
24/45717 . . . .	having cavity with side walls and axially biased component capping end	24/45874 . . . . .	having axially extending expansion slit along side of cavity
24/45723 . . . .	having slidably connected, nonself-biasing interlocking component	24/4588 . . . .	Means for mounting projection or cavity portion
24/45728 . . . . .	Blocking removal of formation on projection from complementary formation on side wall of cavity	24/45885 . . . .	Allows bodily movement facilitating interlock
24/45733 . . . . .	and position locking-means therefor	24/4589 . . . . .	About pivotal connection
24/45738 . . . . .	and relatively movable handle therefor	24/45895 . . . . .	Includes resilient component separate from portion
24/45743 . . . . .	Requiring manual force thereon to interlock or disengage	24/45901 . . . .	Allows relocation of portion
24/45749 . . . . .	Plural, oppositely shifting, similar interlocking components	24/45906 . . . .	having component of means permanently deformed during mounting operation
		24/45911 . . . . .	and formed from or fixedly attached to projection or cavity portion
		24/45916 . . . . .	Cooperates with detached component of means
		24/45921 . . . . .	having shape facilitating impaling of mounting surface
		24/45927 . . . . .	and inserted into or through cavity or projection
		24/45932 . . . . .	and encircling cavity or projection

24/45937	. . . .	Consisting of thermally fusible substance	24/4643	. . . .	with slidable connection between nonself-biasing components
24/45942	. . . .	having threaded formation	24/4645	. . . . .	Component slides parallel to axis of held penetrating portion
24/45948	. . . .	having specific structure for cooperating with stitching	24/4646	. . . .	Means engages formation formed on penetrating portion
24/45953	. . . .	having shape facilitating impaling of mounting surface	24/4648	. . . .	having nonresilient and resilient components
24/45958	. . . .	Plural distinct cavities or projections	24/465	. . . .	Means formed from single resilient wire
24/45963	. . . .	Hook type	24/4652	. . . .	Means formed from resilient sheet metal
24/45969	. . . .	Hook-shaped projection member passing through cavity	24/4654	. . . .	with independent, spaced, intermediate connections, or formations [e.g., coils], about which portion or means move
24/45974	. . . .	formed from single piece of sheet metal	24/4655	. . . .	Includes slidable connection
24/45979	. . . .	formed solely from wire	24/4657	. . . .	with pivotal connection between penetrating portion and means
24/45984	. . . .	Cavity having specific shape	24/4659	. . . .	Connection also permits sliding movement
24/4599	. . . .	including closed elongated access opening for guiding transverse projection travel after insertion	24/4661	. . . .	Resiliently biased about connection
24/45995	. . . .	having access opening with gapped perimeter for allowing movement of noninserted projection support therepast	24/4663	. . . .	with slidable connection intermediate penetrating portion and means
24/46	. . . .	Pin or separate essential cooperating device therefor	24/4664	. . . .	having resilient bridging structure between portion and means
24/4602	. . . .	with separately operable, manually releasable, nonpenetrating means for mounting [e.g., drapery hook]	24/4666	. . . .	Means includes structure for cooperating with formation [e.g., cavity] formed on portion
24/4604	. . . .	having distinct guiding, holding, or protecting means for penetrating portion	24/4668	. . . .	and penetrating portion formed from wire
24/4605	. . . .	Means detachable from or flaccidly connected to pin [e.g., hatpin type]	24/467	. . . . .	Bridging structure includes elongated nonwire element
24/4607	. . . .	for pin having plural penetrating portions	24/4671	. . . . .	Wire also forms coiled bridging structure about which portion moves
24/4609	. . . .	including relatively movable guiding, holding, or protecting components or surfaces	24/4673	. . . . .	including distinct device for cooperating with coil
24/4611	. . . . .	having operator for moving holding component or surface	24/4675	. . . . .	having means also formed from same wire
24/4613	. . . . .	Moves pivoting holding component	24/4677	. . . .	with cavity for guiding structure-to-be-secured towards penetrating portion [e.g., stocking support]
24/4614	. . . . .	Moves slidably guided, nonself-biasing, holding component	24/4679	. . . .	having penetrating portion retractable or of changeable length
24/4616	. . . . .	having pierceable [e.g., cork] or naturally resilient [e.g., rubber] surfaces	24/468	. . . .	having interconnected distinct penetrating portions
24/4618	. . . . .	with pivotal connection therebetween	24/4682	. . . .	Connection allows movement therebetween
24/462	. . . . .	with slidable connection between nonself-biasing components	24/4684	. . . .	Slidable connection
24/4621	. . . . .	having resiliently biased component or surface	24/4686	. . . .	Resilient connection
24/4623	. . . . .	Coiled about longitudinal axis of held portion	24/4688	. . . .	formed from common wire
24/4625	. . . . .	and aperture therein alignable with another spaced aperture of means	24/4689	. . . .	and pointing in same direction
24/4627	. . . . .	and nonresilient structure for guiding portion thereto	24/4691	. . . .	Penetrating portion includes relatively movable structure for resisting extraction
24/4629	. . . .	including structure for cooperating with formation [e.g., cavity] formed on penetrating portion	24/4693	. . . .	having specific wire penetrating portion
24/463	. . . .	for pin having plural penetrating portions	24/4695	. . . .	Wire curved or bent
24/4632	. . . .	Each independently movable towards and into cooperation with means	24/4696	. . . .	having distinct head structure
24/4634	. . . .	including relatively movable guiding, holding, or protecting components or surfaces	24/4698	. . . .	Movably connected to penetrating portion
24/4636	. . . .	with connection allowing component to revolve about axis of held penetrating portion	24/47	. . . .	Strap-end-attaching devices
24/4638	. . . .	with pivotal connection therebetween	24/4709	. . . .	Bendable sheet material
24/4639	. . . . .	having position locking means therefor	24/4718	. . . .	Watch pintle connected
24/4641	. . . . .	Spring or resiliently biased	24/4727	. . . .	Webbing to tube [lawn chair]
			24/4736	. . . .	Buckle connected
			24/4745	. . . .	End clasp
			24/4755	. . . .	Hook
			24/4764	. . . .	Ring-loop
			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
- 29/1163 . . with means to rotate and store stock supply
- 29/1169 . . . Axis of rotation parallel to support or mandrel
- 29/1175 . . with means for arcuate shift of mandrel
- 29/1181 . . including means to handle produced strip or web
- 29/1188 . . . with common adjustment for cutter
- 29/1194 . . Method
- 29/12 . Buckle making
- 29/13 . Button-fastener making
- 29/14 . Shredding metal or metal wool article making
- 29/142 . . Metal wool making
- 29/143 . . . Shaving or longitudinal cutting
- 29/145 . . . . Soap-pad making
- 29/147 . . Metal wool bundling
- 29/148 . . . Soap-pad making
- 29/15 . Cord heddle making
- 29/16 . Cotter-pin making
- 29/17 . Crankshaft making apparatus
- 29/18 . Expanded metal making
- 29/185 . . by use of reciprocating perforator
- 29/19 . Eyebolt or hook making
- 29/20 . Fence barb making
- 29/203 . . by use of reciprocating cutter or die
- 29/207 . . by use of rotary cutter or die
- 29/21 . Finger-ring forming or sizing
- 29/22 . Fishhook making
- 29/23 . Gem and jewel setting
- 29/24 . Hinge making or assembling
- 29/25 . Lacing-stud making
- 29/26 . Paper-fastener making
- 29/27 . Plow or cultivator iron making
- 29/28 . Puddlers balls making
- 29/29 . Railway-chair making
- 29/30 . Foil or other thin sheet-metal making or treating
- 29/301 . . Method
- 29/302 . . . Clad or other composite foil or thin metal making
- 29/303 . . . with assembling or disassembling of a pack
- 29/304 . . . . Using transitory solid cover material
- 29/305 . . . . including bond prevention treatment
- 29/306 . . . . Disassembling of a pack
- 29/307 . . . by shaving or longitudinal cutting
- 29/308 . . . Using transitory material
- 29/309 . . Means for opening or separating a pack
- 29/31 . Spectacle-frame making
- 29/32 . Spiral cutting of flat stock
- 29/33 . Stereotype-plate finishing
- 29/34 . Means for forming clench-tongue [eg, for tieband]
- 29/35 . Tire upsetting, with cutting, punching, etc.
- 29/36 . toothed-cylinder making apparatus [e.g., texture working cylinder]
- 29/37 . Impeller making apparatus
- 29/38 . Type finishing and grooving
- 29/39 . Venetian blind assembling
- 29/40 . Umbrella-frame making
- 29/41 . Barrier layer or semiconductor device making
- 29/413 . . Barrier layer device making
- 29/417 . . . Electrolytic device making [e.g., capacitor]
- 29/42 . Piezoelectric device making
- 29/43 . Electric condenser making
- 29/435 . . Solid dielectric type
- 29/44 . Filing
- 29/442 . . of key article
- 29/444 . . Continuous band type
- 29/446 . . Reciprocating type
- 29/448 . . File-blank stripper
- 29/45 . Scale remover or preventor
- 29/4506 . . for hollow workpiece
- 29/4511 . . . Interior surface
- 29/4517 . . Rolling deformation or deflection
- 29/4522 . . . for wire or rod
- 29/4528 . . with rotary head
- 29/4533 . . Fluid impingement
- 29/4539 . . . with heater
- 29/4544 . . . Liquid jet
- 29/455 . . . Airblast
- 29/4556 . . Chainer
- 29/4561 . . Scraper or scalper
- 29/4567 . . Brush type
- 29/4572 . . Mechanically powered operator
- 29/4578 . . . Tack or needle type
- 29/4583 . . . Hammer
- 29/4589 . . . Blade or chisel
- 29/4594 . . Hand tool
- 29/46 . Burning in, wearing in, or oil burnishing
- 29/47 . Burnishing
- 29/471 . . of water laid fibrous article [e.g., paper]
- 29/473 . . . Heated burnishing member
- 29/474 . . . . Burnishing tool reciprocates across work surface
- 29/476 . . Continuous feed
- 29/477 . . of gear article

29/479	. . by shot peening or blasting	29/49075	. . . . including permanent magnet or core
29/48	. Upholstered article making	29/49076	. . . . . From comminuted material
29/481	. . Method	29/49078	. . . . . Laminated
29/482	. . Tufting	29/4908	. . . . . Acoustic transducer
29/483	. . . with means to clench fastener	29/49082	. . . Resistor making
29/484	. . . with means to insert guide pin or fastener	29/49083	. . . . Heater type
29/486	. . Cover stretching	29/49085	. . . . Thermally variable
29/487	. . Edge-roll forming	29/49087	. . . . with envelope or housing
29/488	. . form or holder	29/49089	. . . . . Filling with powdered insulation
29/489	. . . with follower	29/49091	. . . . . with direct compression of powdered insulation
29/49	. Method of mechanical manufacture	29/49092	. . . . . Powdering the insulation
29/49002	. . Electrical device making	29/49094	. . . . . by oxidation
29/49004	. . . including measuring or testing of device or component part	29/49096	. . . . . with winding
29/49005	. . . Acoustic transducer	29/49098	. . . . . Applying terminal
29/49007	. . . Indicating transducer	29/49099	. . . . Coating resistive material on a base
29/49009	. . . Dynamoelectric machine	29/49101	. . . . Applying terminal
29/49011	. . . . Commutator or slip ring assembly	29/49103	. . . . Strain gauge making
29/49012	. . . . Rotor	29/49105	. . . Switch making
29/49014	. . . Superconductor	29/49107	. . . Fuse making
29/49016	. . . Antenna or wave energy "plumbing" making	29/49108	. . . Electric battery cell making
29/49018	. . . . with other electrical component	29/4911	. . . . including sealing
29/4902	. . . Electromagnet, transformer or inductor	29/49112	. . . . including laminating of indefinite length material
29/49021	. . . . Magnetic recording reproducing transducer [e.g., tape head, core, etc.]	29/49114	. . . . including adhesively bonding
29/49023	. . . . . including disassembly step	29/49115	. . . . including coating or impregnating
29/49025	. . . . . Making disc drive	29/49117	. . . Conductor or circuit manufacturing
29/49027	. . . . . Mounting preformed head/core onto other structure	29/49119	. . . . Brush
29/49028	. . . . . Mounting multitrack head	29/49121	. . . . Beam lead frame or beam lead device
29/4903	. . . . . with bonding	29/49123	. . . . Co-axial cable
29/49032	. . . . . Fabricating head structure or component thereof	29/49124	. . . . On flat or curved insulated base, e.g., printed circuit, etc.
29/49034	. . . . . Treating to affect magnetic properties	29/49126	. . . . . Assembling bases
29/49036	. . . . . including measuring or testing	29/49128	. . . . . Assembling formed circuit to base
29/49037	. . . . . Using reference point/surface to facilitate measuring	29/4913	. . . . . Assembling to base an electrical component, e.g., capacitor, etc.
29/49039	. . . . . with dual gap materials	29/49131	. . . . . by utilizing optical sighting device
29/49041	. . . . . with significant slider/housing shaping or treating	29/49133	. . . . . with component orienting
29/49043	. . . . . Depositing magnetic layer or coating	29/49135	. . . . . and shaping, e.g., cutting or bending, etc.
29/49044	. . . . . Plural magnetic deposition layers	29/49137	. . . . . Different components
29/49046	. . . . . with etching or machining of magnetic material	29/49139	. . . . . by inserting component lead or terminal into base aperture
29/49048	. . . . . Machining magnetic material [e.g., grinding, etching, polishing]	29/4914	. . . . . with deforming of lead or terminal
29/4905	. . . . . Employing workholding means	29/49142	. . . . . including metal fusion
29/49052	. . . . . by etching	29/49144	. . . . . by metal fusion
29/49053	. . . . . Multitrack heads having integral holding means	29/49146	. . . . . with encapsulating, e.g., potting, etc.
29/49055	. . . . . with bond/laminating preformed parts, at least two magnetic	29/49147	. . . . . Assembling terminal to base
29/49057	. . . . . Using glass bonding material	29/49149	. . . . . by metal fusion bonding
29/49059	. . . . . with work positioning means	29/49151	. . . . . by deforming or shaping
29/4906	. . . . . Providing winding	29/49153	. . . . . with shaping or forcing terminal into base aperture
29/49062	. . . . . Multilayered winding	29/49155	. . . . . Manufacturing circuit on or in base
29/49064	. . . . . by coating	29/49156	. . . . . with selective destruction of conductive paths
29/49066	. . . . . Preformed winding	29/49158	. . . . . with molding of insulated base
29/49067	. . . . . Specified diverse magnetic materials	29/4916	. . . . . Simultaneous circuit manufacturing
29/49069	. . . . Data storage inductor or core	29/49162	. . . . . by using wire as conductive path
29/49071	. . . . by winding or coiling	29/49163	. . . . . with sintering of base
29/49073	. . . . by assembling coil and core	29/49165	. . . . . by forming conductive walled aperture in base
		29/49167	. . . . . with deforming of conductive path



29/49169 . . . .	Assembling electrical component directly to terminal or elongated conductor	29/49266 . . . .	Gudgeon pin, wrist pin, piston pin, or boss therefor
29/49171 . . . . .	with encapsulating	29/49268 . . . .	with other attaching provision for connecting rod
29/49172 . . . . .	by molding of insulating material	29/4927 . . . .	Cylinder, cylinder head or engine valve sleeve making
29/49174 . . . .	Assembling terminal to elongated conductor	29/49272 . . . .	with liner, coating, or sleeve
29/49176 . . . . .	with molding of electrically insulating material	29/49274 . . . .	Piston ring or piston packing making
29/49178 . . . . .	by shrinking of cover	29/49275 . . . .	including forging or hammering
29/49179 . . . . .	by metal fusion bonding	29/49277 . . . .	including casting or molding
29/49181 . . . . .	by deforming	29/49279 . . . .	including rolling or die forming, e.g., drawing, punching
29/49183 . . . . .	of ferrule about conductor and terminal	29/49281 . . . .	including coating or plating
29/49185 . . . . .	of terminal	29/49282 . . . .	including grinding or honing
29/49187 . . . . .	with forming eyelet from elongated conductor	29/49284 . . . .	including machining or angular cutting
29/49188 . . . . .	with penetrating portion	29/49286 . . . .	Crankshaft making
29/4919 . . . . .	Through insulation	29/49288 . . . .	Connecting rod making
29/49192 . . . . .	with insulation removal	29/4929 . . . .	including metallurgical bonding
29/49194 . . . .	Assembling elongated conductors, e.g., splicing, etc.	29/49291 . . . .	including metal forging or die shaping
29/49195 . . . . .	with end-to-end orienting	29/49293 . . . .	Camshaft making
29/49197 . . . . .	including fluid evacuating or pressurizing	29/49295 . . . .	Push rod or rocker arm making
29/49199 . . . . .	including deforming of joining bridge	29/49297 . . . .	Seal or packing making
29/49201 . . . . .	with overlapping orienting	29/49298 . . . .	Poppet or I.C. engine valve or valve seat making
29/49202 . . . . .	including oppositely facing end orienting	29/493 . . . .	Valve guide making
29/49204 . . . .	Contact or terminal manufacturing	29/49302 . . . .	Repairing, converting, servicing or salvaging
29/49206 . . . . .	by powder metallurgy	29/49304 . . . .	Valve tappet making
29/49208 . . . . .	by assembling plural parts	29/49306 . . . .	Valve seat making
29/4921 . . . . .	with bonding	29/49307 . . . .	Composite or hollow valve stem or head making
29/49211 . . . . .	of fused material	29/49309 . . . . .	including forging
29/49213 . . . . .	Metal	29/49311 . . . . .	including extruding
29/49215 . . . . .	by impregnating a porous mass	29/49313 . . . . .	including casting
29/49217 . . . . .	by elastic joining	29/49314 . . . .	with assembly or composite article making
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		
29/49263 . . . . .	by coating or cladding		
29/49265 . . . .	Ring groove forming or finishing		

29/49359 . . . Cooling apparatus making, e.g., air conditioner, refrigerator	29/49458 . . . Disc splitting to form pulley rim groove
29/49361 . . . Tube inside tube	29/4946 . . . Groove forming in sheet metal pulley rim
29/49362 . . . Tube wound about tube	29/49462 . . . Gear making
29/49364 . . . Tube joined to flat sheet longitudinally, i.e., tube sheet	29/49464 . . . Assembling of gear into force transmitting device
29/49366 . . . Sheet joined to sheet	29/49465 . . . Gear mounting
29/49368 . . . . with inserted tubes	29/49467 . . . Gear shaping
29/49369 . . . . Utilizing bond inhibiting material	29/49469 . . . . Worm gear
29/49371 . . . . . with subsequent fluid expansion	29/49471 . . . . Roll forming
29/49373 . . . Tube joint and tube plate structure	29/49472 . . . . Punching or stamping
29/49375 . . . . including conduit expansion or inflation	29/49474 . . . . Die-press shaping
29/49377 . . . Tube with heat transfer means	29/49476 . . . . Gear tooth cutting
29/49378 . . . . Finned tube	29/49478 . . . . Gear blank making
29/4938 . . . . . Common fin traverses plurality of tubes	29/4948 . . . . with specific gear material
29/49382 . . . . . Helically finned	29/49481 . . . Wheel making
29/49384 . . . . . Internally finned	29/49483 . . . Railway or trolley wheel making
29/49385 . . . . . Made from unitary workpiece, i.e., no assembly	29/49485 . . . . Multiple part or composite
29/49387 . . . Boiler making	29/49487 . . . . . with axle or hub
29/49389 . . . Header or manifold making	29/49488 . . . Steering wheel
29/49391 . . . Tube making or reforming	29/4949 . . . Material winding, e.g., reel, spool
29/49393 . . . with metallurgical bonding	29/49492 . . . Land wheel
29/49394 . . Accumulator making	29/49494 . . . . Assembling tire to wheel body
29/49396 . . Condenser, evaporator or vaporizer making	29/49496 . . . . Disc type wheel
29/49398 . . Muffler, manifold or exhaust pipe making	29/49497 . . . . . Assembling wheel disc to rim and hub
29/494 . . Fluidic or fluid actuated device making	29/49499 . . . . . Assembling wheel disc to rim
29/49401 . . Fluid pattern dispersing device making, e.g., ink jet	29/49501 . . . . . with disc shaping
29/49403 . . Tapping device making	29/49503 . . . . . Integral rim and disc making
29/49405 . . Valve or choke making	29/49504 . . . . . Disc shaping
29/49407 . . . Repairing, converting, servicing or salvaging	29/49506 . . . . . Tensioned spoke type wheel making
29/49409 . . . Valve seat forming	29/49508 . . . . . Tensioning all spokes simultaneously
29/4941 . . . Valve stem or tire valve making	29/4951 . . . . . Tensioning spokes in series
29/49412 . . . with assembly, disassembly or composite article making	29/49512 . . . . . Tensioning spokes individually
29/49414 . . . . Joining plural semi-circular components	29/49513 . . . . . Compression, e.g., nontension, spoke type wheel making
29/49416 . . . . with material shaping or cutting	29/49515 . . . . . Joining spokes to rim and hub
29/49417 . . . . . including molding or casting	29/49517 . . . . . Joining spokes to rim
29/49419 . . . . . including machining or drilling	29/49519 . . . . . Joining spokes to hub
29/49421 . . . . . including metallurgical bonding	29/4952 . . . . . Making plural spokes from a single blank
29/49423 . . . . . including metal deforming	29/49522 . . . . . Individual spoke making
29/49425 . . . . . including metallurgical bonding	29/49524 . . . . . Rim making
29/49426 . . . including metal shaping and diverse operation	29/49526 . . . . . with assembling
29/49428 . . Gas and water specific plumbing component making	29/49528 . . . . . Demountable rim making
29/4943 . . . Plumbing fixture making	29/49529 . . . . . Die-press shaping
29/49432 . . . Nozzle making	29/49531 . . . . . Roller forming
29/49433 . . . . Sprayer	29/49533 . . . . . Hub making
29/49435 . . . Flexible conduit or fitting therefor	29/49535 . . . . . with assembling
29/49437 . . . Flue connector device making	29/49536 . . . . . Hub shaping
29/49439 . . . Trap making	29/49538 . . . . . Tire making
29/4944 . . . Return connector device making	29/4954 . . . . . Wheel trim making, e.g., wheel cover, hubcap
29/49442 . . . T-shaped fitting making	29/49542 . . . . . with means for retaining trim member on wheel
29/49444 . . . Elbow or L-shaped fitting making	29/49544 . . . Roller making
29/49446 . . . Ferrule making or reforming	29/49545 . . . Repairing or servicing
29/49448 . . Agricultural device making	29/49547 . . . Assembling preformed components
29/49449 . . . Traction apparatus, e.g., for tractor	29/49549 . . . . . Work contacting surface element assembled to core
29/49451 . . . Harvester guard	29/49551 . . . . . Work contacting surface wound about core
29/49453 . . Pulley making	29/49552 . . . . . with prestressing of component by heat differential, e.g., shrink, fit
29/49455 . . . Assembly	29/49554 . . . . . Work contacting surface having annular axial sections
29/49456 . . . . with shaping	

29/49556 . . . .	Work contacting surface element assembled to end support members	29/49654 . . . . .	having liner
29/49558 . . . .	Includes securing removable cover on roller	29/49655 . . . . .	having liner
29/4956 . . . .	Fabricating and shaping roller work contacting surface element	29/49657 . . . . .	Socket making
29/49561 . . . .	toothed roller	29/49659 . . . . .	by molding or casting
29/49563 . . . .	with coating or casting about a core	29/49661 . . . . .	Nonmetallic socket
29/49565 . . . .	One-piece roller making	29/49663 . . . . .	by assembling
29/49567 . . . .	Dental appliance making	29/49664 . . . . .	Ball making
29/49568 . . . .	Orthodontic device making	29/49666 . . . . .	with metallurgical bonding
29/4957 . . . .	Sound device making	29/49668 . . . . .	Sleeve or bushing making
29/49572 . . . .	Hearing aid component making	29/4967 . . . . .	Nonmetallic
29/49574 . . . .	Musical instrument or tuning fork making	29/49671 . . . . .	Strip or blank material shaping
29/49575 . . . .	including diaphragm or support therefor	29/49673 . . . . .	Die-press shaping
29/49577 . . . .	Phonograph component making	29/49675 . . . . .	having inner lining layer
29/49579 . . . .	Watch or clock making	29/49677 . . . . .	having liner
29/49581 . . . .	having arbor, pinion, or balance	29/49679 . . . . .	Anti-friction bearing or component thereof
29/49583 . . . .	having indicia, face, or dial	29/4968 . . . . .	Assembling of race, cage, and rolling anti-friction members
29/49584 . . . .	having case, cover, or back	29/49682 . . . . .	Assembling of race and rolling anti-friction members
29/49586 . . . .	having crown, stem, or pendent	29/49684 . . . . .	with race making
29/49588 . . . .	Jewelry or locket making	29/49686 . . . . .	Assembling of cage and rolling anti-friction members
29/4959 . . . .	Human adornment device making	29/49687 . . . . .	with cage making
29/49591 . . . .	Bracelet making	29/49689 . . . . .	Race making
29/49593 . . . .	Finger ring making	29/49691 . . . . .	Cage making
29/49595 . . . .	Latch, clasp, or fastener component making	29/49693 . . . . .	Roller making
29/49597 . . . .	Ornamental stock making	29/49694 . . . . .	Ball making
29/49599 . . . .	Knob or knob shank making	29/49696 . . . . .	Mounting
29/496 . . . .	Multiperforated metal article making	29/49698 . . . . .	Demounting
29/49602 . . . .	Coil wound wall screen	29/497 . . . . .	Pre-usage process, e.g., preloading, aligning
29/49604 . . . .	Filter	29/49702 . . . . .	Lubricating
29/49606 . . . .	Turnbuckle making	29/49703 . . . . .	Sealing
29/49607 . . . .	Spring-head clip making	29/49705 . . . . .	Coating or casting
29/49609 . . . .	Spring making	29/49707 . . . . .	Bearing surface treatment
29/49611 . . . .	for vehicle or clutch	29/49709 . . . . .	Specific metallic composition
29/49613 . . . .	for human comfort	29/4971 . . . . .	Nonmetallic bearing element
29/49615 . . . .	Resilient shock or vibration absorber utility	29/49712 . . . . .	Ball making
29/49616 . . . .	Structural member making	29/49714 . . . . .	Hollow ball
29/49618 . . . .	Restoring existing member, e.g., reinforcing, repairing	29/49716 . . . . .	Converting
29/4962 . . . .	Grille making	29/49718 . . . . .	Repairing
29/49622 . . . .	Vehicular structural member making	29/49719 . . . . .	Seal or element thereof
29/49623 . . . .	Static structure, e.g., a building component	29/49721 . . . . .	with disassembling
29/49625 . . . .	Openwork, e.g., a truss, joist, frame, lattice-type or box beam	29/49723 . . . . .	including reconditioning of part
29/49627 . . . . .	Frame component	29/49725 . . . . .	by shaping
29/49629 . . . . .	Panel	29/49726 . . . . .	Removing material
29/49631 . . . . .	Columnar member	29/49728 . . . . .	and by a metallurgical operation, e.g., welding, diffusion bonding, casting
29/49632 . . . . .	Metal reinforcement member for nonmetallic, e.g., concrete, structural element	29/4973 . . . . .	Replacing of defective part
29/49634 . . . . .	Beam or girder	29/49732 . . . . .	by attaching repair preform, e.g., remaking, restoring, or patching
29/49636 . . . .	Process for making bearing or component thereof	29/49734 . . . . .	and removing damaged material
29/49638 . . . .	Repairing	29/49735 . . . . .	Mechanically attaching preform with separate fastener
29/49639 . . . .	Fluid bearing	29/49737 . . . . .	Metallurgically attaching preform
29/49641 . . . .	Linear bearing	29/49739 . . . . .	Mechanically attaching preform by separate fastener
29/49643 . . . .	Rotary bearing	29/49741 . . . . .	Screw threaded fastener
29/49645 . . . .	Thrust bearing	29/49742 . . . . .	Metallurgically attaching preform
29/49647 . . . .	Plain bearing	29/49744 . . . . .	Screw threaded preform
29/49648 . . . . .	Self-adjusting or self-aligning, including ball and socket type, bearing and component making	29/49746 . . . . .	by applying fluent material, e.g., coating, casting
29/4965 . . . . .	Deforming socket to secure ball		
29/49652 . . . . .	Die-press shaping		

29/49748 . . . by shaping, e.g., bending, extruding, turning, etc.	29/49831 . . . . Advancing station
29/4975 . . . . including heating	29/49833 . . . Punching, piercing or reaming part by surface of second part
29/49751 . . Scrap recovering or utilizing	29/49835 . . . . with shaping
29/49753 . . . Metalworking to consolidate scrap	29/49837 . . . . . of first part
29/49755 . . . Separating one material from another	29/49838 . . . by stringing
29/49757 . . . . by burning or heating	29/4984 . . . Retaining clearance for motion between assembled parts
29/49758 . . During simulated operation or operating conditions	29/49842 . . . . Between tube-forming helical coils
29/4976 . . . Temperature	29/49844 . . . . Through resilient media
29/49762 . . Center locating and shaping	29/49845 . . . . by deforming interlock
29/49764 . . with testing or indicating	29/49847 . . . . . by folding part into plural ears
29/49766 . . . torquing threaded assemblage or determining torque herein	29/49849 . . . . . by wrapping around
29/49767 . . . . Determining relative number of threaded member rotations	29/49851 . . . . . of link closure
29/49769 . . . Using optical instrument [excludes mere human eyeballing]	29/49853 . . . . . of sphere, i.e., ball, in socket
29/49771 . . . Quantitative measuring or gauging	29/49854 . . . . . Ball point pen making
29/49773 . . . . by radioactive tracing	29/49856 . . . . . Allowing assembled sphere to move in single plane only
29/49774 . . . . by vibratory or oscillatory movement	29/49858 . . . . . of flange into tubular socket
29/49776 . . . . Pressure, force, or weight determining	29/4986 . . . . . Outwardly deforming internally fitted rod
29/49778 . . . with aligning, guiding, or instruction	29/49861 . . . Sizing mating parts during final positional association
29/4978 . . . . Assisting assembly or disassembly	29/49863 . . . with prestressing of part
29/49782 . . of a slide fastener	29/49865 . . . . by temperature differential [e.g., shrink fit]
29/49783 . . . of slider	29/49867 . . . . of skin on frame member
29/49785 . . . of interlocking element	29/49869 . . . . . by flexing
29/49787 . . Obtaining plural composite product pieces from preassembled workpieces	29/4987 . . . . Elastic joining of parts
29/49789 . . Obtaining plural product pieces from unitary workpiece	29/49872 . . . . . Confining elastic part in socket
29/4979 . . . Breaking through weakened portion	29/49874 . . . . Prestressing rod, filament or strand
29/49792 . . . Dividing through modified portion	29/49876 . . . . by snap fit
29/49794 . . . Dividing on common outline	29/49877 . . . of flexible wall, expansible chamber devices [e.g., bellows]
29/49796 . . . Coacting pieces	29/49879 . . . Spaced wall tube or receptacle
29/49798 . . . Dividing sequentially from leading end, e.g., by cutting or breaking	29/49881 . . . of separate helix [e.g., screw thread]
29/49799 . . Providing transitory integral holding or handling portion	29/49883 . . . Ribbing
29/49801 . . Shaping fiber or fibered material	29/49885 . . . with coating before or during assembling
29/49803 . . Magnetically shaping	29/49886 . . . . to roughen surface
29/49805 . . Shaping by direct application of fluent pressure	29/49888 . . . Subsequently coating
29/49806 . . . Explosively shaping	29/4989 . . . with spreading of cable strands
29/49808 . . Shaping container end to encapsulate material	29/49892 . . . Joining plate edge perpendicularly to frame
29/4981 . . Utilizing transitory attached element or associated separate material	29/49893 . . . Peripheral joining of opposed mirror image parts to form a hollow body
29/49812 . . . Temporary protective coating, impregnation, or cast layer	29/49895 . . . Associating parts by use of aligning means [e.g., use of a drift pin or a "fixture"]
29/49813 . . Shaping mating parts for reassembly in different positions	29/49897 . . . . Registering mating opposed tool parts [e.g., registering a punch and a cooperating die]
29/49815 . . Disassembling	29/49899 . . . . by multiple cooperating aligning means
29/49817 . . . with other than ancillary treating or assembling	29/49901 . . . . Sequentially associating parts on stationary aligning means
29/49819 . . . with conveying of work or disassembled work part	29/49902 . . . . by manipulating aligning means
29/49821 . . . by altering or destroying work part or connector	29/49904 . . . Assembling a subassembly, then assembling with a second subassembly
29/49822 . . . by applying force	29/49906 . . . Metal deforming with nonmetallic bonding
29/49824 . . . . to elastically deform work part or connector	29/49908 . . . Joining by deforming
29/49826 . . Assembling or joining	29/49909 . . . . Securing cup or tube between axially extending concentric annuli
29/49828 . . . Progressively advancing of work assembly station or assembled portion of work	29/49911 . . . . . by expanding inner annulus
29/49829 . . . . Advancing work to successive stations [i.e., assembly line]	29/49913 . . . . . by constricting outer annulus
	29/49915 . . . . Overedge assembling of seated part
	29/49917 . . . . . by necking in cup or tube wall
	29/49918 . . . . . At cup or tube end
	29/4992 . . . . . by flaring inserted cup or tube end

29/49922	. . . . .	by bending over projecting prongs	29/511	. . . . .	Grinding attachment
29/49924	. . . . .	of parallel side-by-side elongated members	29/5111	. . . . .	Pulley or wheel
29/49925	. . . . .	Inward deformation of aperture or hollow body wall	29/5112	. . . . .	Convertible
29/49927	. . . . .	Hollow body is axially joined cup or tube	29/5113	. . . . .	Commutator
29/49929	. . . . .	Joined to rod	29/5114	. . . . .	Lathe and tool
29/49931	. . . . .	Joined to overlapping ends of plural rods	29/5115	. . . . .	Planer
29/49933	. . . . .	After thinning	29/5116	. . . . .	forging and bending, cutting or punching
29/49934	. . . . .	by axially applying force	29/5117	. . . . .	Fastener [zipper]
29/49936	. . . . .	Surface interlocking	29/5118	. . . . .	Riveting
29/49938	. . . . .	Radially expanding part in cavity, aperture, or hollow body	29/512	. . . . .	Ball making
29/4994	. . . . .	Radially expanding internal tube	29/5121	. . . . .	Wire working
29/49941	. . . . .	Peripheral edge joining of abutting plates	29/5122	. . . . .	with means to feed work during tool contact
29/49943	. . . . .	Riveting	29/5123	. . . . .	including nonrotary flying tool
29/49945	. . . . .	by driven force fit	29/5124	. . . . .	with means to feed work intermittently from one tool station to another
29/49947	. . . . .	by applying separate fastener	29/5125	. . . . .	Stock turret
29/49948	. . . . .	Multipart cooperating fastener [e.g., bolt and nut]	29/5126	. . . . .	Swiss type
29/4995	. . . . .	Nonthreaded	29/5127	. . . . .	Blank turret
29/49952	. . . . .	At least one part is nonmetallic	29/5128	. . . . .	Rotary work - vertical axis
29/49954	. . . . .	Fastener deformed after application	29/5129	. . . . .	Rotary work - horizontal axis
29/49956	. . . . .	Riveting	29/513	. . . . .	Stationary work
29/49957	. . . . .	At least one part nonmetallic	29/5132	. . . . .	Belt drive
29/49959	. . . . .	Nonresilient fastener	29/5133	. . . . .	Crankshaft
29/49961	. . . . .	At least one part nonmetallic	29/5134	. . . . .	Collapsible tube
29/49963	. . . . .	Threaded fastener	29/5135	. . . . .	Endless belt
29/49964	. . . . .	At least one part nonmetallic	29/5136	. . . . .	Separate tool stations for selective or successive operation on work
29/49966	. . . . .	with supplemental joining	29/5137	. . . . .	including assembling or disassembling station
29/49968	. . . . .	Metal fusion joining	29/5138	. . . . .	and means to machine work part to fit cooperating work part
29/4997	. . . . .	At least one part nonmetallic	29/5139	. . . . .	and means to sever work prior to disassembling
29/49972	. . . . .	with separating, localizing, or eliminating of as-cast defects from a metal casting [e.g., anti-pipe]	29/514	. . . . .	comprising means to strip insulation from wire
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	29/531	. . Nuclear device
29/517	. . . Laterally movable stock holder	29/53104	. . Roller or ball bearing
29/5171	. . . Axial tool and transversely movable slide rest	29/53109	. . . including deforming means
29/5172	. . . . Rotary tool spindle	29/53113	. . Heat exchanger
29/5173	. . . Longitudinally and transversely movable	29/53117	. . . including means to manipulate heat exchanger tube bundle
29/5174	. . . . Rotary tool spindle	29/53122	. . . including deforming means
29/5175	. . . Oscillating tool	29/53126	. . Means to place sheath on running-length core
29/5176	. . including machining means	29/5313	. . Means to assemble electrical device
29/5177	. . . and work-holder for assembly	29/53135	. . . Storage cell or battery
29/5178	. . Attachment	29/53139	. . . . including deforming means
29/5179	. . Speed controller	29/53143	. . . Motor or generator
29/518	. . Carriage stop mechanism	29/53148	. . . . Means to assemble commutator
29/5182	. . Flash remover	29/53152	. . . . Means to position insulation
29/5183	. . Welding strip ends	29/53157	. . . . Means to stake wire to commutator or armature
29/5184	. . Casting and working	29/53161	. . . . including deforming means
29/5185	. . Tube making	29/53165	. . . Magnetic memory device
29/5186	. . Covering	29/5317	. . . Laminated device
29/5187	. . Wire working	29/53174	. . . Means to fasten electrical component to wiring board, base, or substrate
29/5188	. . Radiator making	29/53178	. . . . Chip component
29/5189	. . Printing plate	29/53183	. . . . Multilead component
29/519	. . Turret	29/53187	. . . Multiple station assembly apparatus
29/5191	. . Assembly	29/53191	. . . Means to apply vacuum directly to position or hold work part
29/5192	. . Armature	29/53196	. . . Means to apply magnetic force directly to position or hold work part
29/5193	. . Electrical connector or terminal	29/532	. . . Conductor
29/5195	. . Tire valve or spark plug	29/53204	. . . . Electrode
29/5196	. . Multiple station with conveyor	29/53209	. . . . Terminal or connector
29/5197	. . Multiple stations working strip material	29/53213	. . . . . Assembled to wire-type conductor
29/5198	. . Continuous strip	29/53217	. . . . . Means to simultaneously assemble multiple, independent conductors to terminal
29/5199	. . Work on tubes	29/53222	. . . . . Means comprising hand-manipulatable implement
29/52	. Plural diverse manufacturing apparatus	29/53226	. . . . . Fastening by deformation
29/53	. Means to assemble or disassemble	29/5323	. . . . . Fastening by elastic joining
29/53004	. . with means to regulate operation by use of templet, tape, card or other replaceable information supply	29/53235	. . . . . Means to fasten by deformation
29/53009	. . . with comparator	29/53239	. . . . . Means to fasten by elastic joining
29/53013	. . . . Computer input	29/53243	. . . . Multiple, independent conductors
29/53017	. . . Web or strand-carried information supply	29/53248	. . . . Switch or fuse
29/53022	. . with means to test work or product	29/53252	. . . Means to simultaneously fasten three or more parts
29/53026	. . with randomly actuated stopping or disabling means	29/53257	. . . Means comprising hand-manipulatable implement
29/5303	. . . Responsive to condition of work or product	29/53261	. . . Means to align and advance work part
29/53035	. . . Responsive to operative [e.g., safety device, etc.]	29/53265	. . . with work-holder for assembly
29/53039	. . with control means energized in response to activator stimulated by condition sensor	29/5327	. . . Means to fasten by deforming
29/53043	. . . including means to divert defective work part	29/53274	. . Means to disassemble electrical device
29/53048	. . . Multiple station assembly or disassembly apparatus	29/53278	. . . Storage cell or battery
29/53052	. . . . including position sensor	29/53283	. . . Means comprising hand-manipulatable implement
29/53057	. . . Responsive to timer	29/53287	. . Means to place traveler on ring or ring on bobbin of a textile machine
29/53061	. . . Responsive to work or work-related machine element	29/53291	. . Slide fastener
29/53065	. . . . with means to fasten by deformation	29/53296	. . . Means to assemble stop onto stringer
29/5307	. . . . . Self-piercing work part	29/533	. . . Means to assemble slider onto stringer
29/53074	. . . . with means to fasten by elastic joining	29/53304	. . . Means to assemble teeth onto stringer
29/53078	. . . . with means to fasten by frictional fitting	29/53309	. . . Disassembly means
29/53083	. . . . including means to apply magnetic force directly to position or hold work		
29/53087	. . with signal, scale, illuminator, or optical viewer		
29/53091	. . . for work-holder for assembly or disassembly		
29/53096	. . including means to provide a controlled environment		

29/53313 . . Means to interrelatedly feed plural work parts from plural sources without manual intervention	29/53552 . . Valve applying or removing
29/53317 . . . Box or pallet assembly means	29/53557 . . . Engine valve unit puller or applier
29/53322 . . . Means to assemble container	29/53561 . . . Engine valve spring compressor [only]
29/53326 . . . . Handle to container	29/53565 . . . . Plural spring engagement
29/5333 . . . . Label to container	29/5357 . . . . Screw operated
29/53335 . . . . Pressurized dispensing container	29/53574 . . . . . Parallel or tong type, side entrance
29/53339 . . . . Hypodermic syringe	29/53578 . . . . . Lever operated
29/53343 . . . . including fluid component	29/53583 . . . . . Single jaw or valve engagement
29/53348 . . . Running-length work	29/53587 . . . . . Plier type
29/53352 . . . . Means including orbiting running-length work supply	29/53591 . . . to or from wheel rim of resilient tire or tube
29/53357 . . . . Pipe section	29/53596 . . . Removal tool
29/53361 . . . . Assembled to article	29/536 . . . Piston ring inserter or remover
29/53365 . . . Multiple station assembly apparatus	29/53604 . . . Plier-type operation
29/5337 . . . including assembly pallet	29/53609 . . . . with ring encirclement
29/53374 . . . including turret-type conveyor	29/53613 . . . Spring applier or remover
29/53378 . . . including converging conveyors	29/53617 . . . Transmission spring
29/53383 . . . and means to fasten work parts together	29/53622 . . . Helical spring
29/53387 . . . . by deforming	29/53626 . . . Flat spiral spring [e.g., watch or clock type]
29/53391 . . . . by elastic joining	29/5363 . . . Circular spring
29/53396 . . . . by friction fit	29/53635 . . . Leaf spring
29/534 . . Multiple station assembly or disassembly apparatus	29/53639 . . Means to stake watch or clock
29/53404 . . . including turret-type conveyor	29/53643 . . . Plier type
29/53409 . . . including converging conveyors	29/53648 . . Brake lining to brake shoe
29/53413 . . . . and primary central conveyor	29/53652 . . Tube and coextensive core
29/53417 . . . Means to fasten work parts together	29/53657 . . to apply or remove a resilient article [e.g., tube, sleeve, etc.]
29/53422 . . . . by deforming	29/53661 . . . Nipple to nursing bottle
29/53426 . . . . by elastic joining	29/53665 . . . Well protector to sucker rod
29/5343 . . Means to drive self-piercing work part	29/5367 . . Coupling to conduit
29/53435 . . including assembly pallet	29/53674 . . Loose-leaf sheet binder
29/53439 . . including provision to utilize thermal expansion of work	29/53678 . . Compressing parts together face to face
29/53443 . . Means to assemble or disassemble container and fluid component	29/53683 . . Spreading parts apart or separating them from face to face engagement
29/53448 . . Vehicle wheel	29/53687 . . by rotation of work part
29/53452 . . . Railway wheel	29/53691 . . . Means to insert or remove helix
29/53457 . . Tumbler lock	29/53696 . . Means to string
29/53461 . . toy doll	29/537 . . tool handle and tool
29/53465 . . Film or tape cartridge	29/53704 . . tool chuck and tool
29/5347 . . Crystal to watch or clock	29/53709 . . Overedge assembling means
29/53474 . . Means to insert or extract pen point	29/53713 . . . Belt-hook attacher
29/53478 . . with magazine supply	29/53717 . . . Annular work
29/53483 . . . and magnetic work-holder or positioner	29/53722 . . . . with radially acting tool inside annular work
29/53487 . . . Assembling means comprising hand-manipulatable implement	29/53726 . . . . with second workpiece inside annular work one workpiece moved to shape the other
29/53491 . . . . One work part comprising living tissue	29/5373 . . . . . comprising driver for snap-off-mandrel fastener; e.g., Pop [TM] riveter
29/53496 . . . . comprising driver for snap-off-mandrel fastener; e.g., Pop [TM] riveter	29/53735 . . . . . including near side fastener shaping tool
29/535 . . . . One work part comprising nut or screw	29/53739 . . . . . Pneumatic- or fluid-actuated tool
29/53504 . . . . One work part comprising paper clip	29/53743 . . . . . Liquid
29/53509 . . . . Means to assemble tire stud into tire tread	29/53748 . . . . . . and gas
29/53513 . . . . Means to fasten by deforming	29/53752 . . . . . having rotary drive mechanism
29/53517 . . . . . Fastening sinker to fishing line	29/53757 . . . . . having allochiral actuating handles
29/53522 . . . Means to fasten by deforming	29/53761 . . . . . having repositionable annulus engaging tool
29/53526 . . Running-length work	29/53765 . . . . . including near side fastener shaping tool
29/5353 . . . Assembled on core	29/5377 . . . Riveter
29/53535 . . including means to vibrate work	29/53774 . . . . Single header
29/53539 . . including work conveyor	29/53778 . . . . . Pipe joiner
29/53543 . . . including transporting track	29/53783 . . . Clip applier
29/53548 . . . . and work carrying vehicle	29/53787 . . . Binding or covering
	29/53791 . . . . Edge binding

29/53796	. . Puller or pusher means, contained force multiplying operator	70/308	. . Combination lock
29/538	. . . Hubcap and hub	70/317	. . . Hasp-carried
29/53804	. . . Battery post and terminal	70/325	. . . Keeper-carried
29/53809	. . . Cotter pin and cooperating member	70/333	. . Key lock
29/53813	. . . . Plier type means	70/342	. . . Hasp-carried
29/53817	. . . Valve stem pin or key and another member	70/35	. . . . Keeper-encasing
29/53822	. . . Machine key and another member	70/358	. . . . . Dead bolt
29/53826	. . . Arbor-type press means	70/367	. . . . . Latching bolt
29/5383	. . . having fluid operator	70/375	. . . . . Dead bolt
29/53835	. . . having wedge operator	70/383	. . . . . Latching bolt
29/53839	. . . having percussion or explosive operator	70/392	. . . Keeper-carried
29/53843	. . . . Tube, sleeve, or ferrule inserting or removing	70/40	. Portable
29/53848	. . . having screw operator	70/402	. . Fetters
29/53852	. . . . C-frame	70/404	. . . Manacles and cuffs
29/53857	. . . . Central screw, work-engagers around screw	70/407	. . . . Nippers
29/53861	. . . . . Work-engager arms along or parallel to screw	70/409	. . . Shackles
29/53865	. . . . . with arm connecting engaging means	70/411	. . Clamps
29/5387	. . . . . Pivotal arms	70/413	. . Padlocks
29/53874	. . . . . Pivotal grippers on screw	70/415	. . . Combination and/or key-controlled
29/53878	. . . . . Tubular or tube segment forms work-engager	70/417	. . . Combination-controlled
29/53883	. . . . . Screw threaded work-engager	70/42	. . . . Non-shackle type
29/53887	. . . . . Movable grippers on screw	70/422	. . . . Rigid shackle
29/53891	. . . . . Plate or bar forms work-engager	70/424	. . . . . Sliding
29/53896	. . . having lever operator	70/426	. . . . . Removable
29/539	. . . . Plier type means	70/428	. . . . . Pivoted
29/53904	. . Means comprising piston ring group contractor or holder	70/43	. . . . . Sliding detent
29/53909	. . Means comprising hand manipulatable tool	70/433	. . . . . Swinging detent
29/53913	. . . Aligner or center	70/435	. . . . Flexible shackle
29/53917	. . . Tube with tube	70/437	. . . Key-controlled
29/53922	. . . Auto wheel with auto chassis	70/439	. . . . Non-shackle type
29/53926	. . . Clutch plates	70/441	. . . . . Housing extension and cooperating detent
29/5393	. . . Means comprising impact receiving tool	70/443	. . . . . Single stem or shank
29/53935	. . . . C-frame	70/446	. . . . Rigid shackle
29/53939	. . . . Thread protector [e.g., wheel axle type]	70/448	. . . . . Divided shackle
29/53943	. . . Hand gripper for direct push or pull	70/45	. . . . . Divided jaw type
29/53948	. . . . Centrifugal separator	70/452	. . . . . Sliding
29/53952	. . . . Tube sleeve or ferrule applying or removing	70/454	. . . . . Removable
29/53957	. . . . . Thread-tapping grip	70/457	. . . . . Arcuate locus
29/53961	. . with work-holder for assembly	70/459	. . . . . Both legs engaged
29/53965	. . . for assembling a luminescent mantle	70/461	. . . . . Short leg engaged
29/5397	. . . and assembling press [e.g., truss assembling means, etc.]	70/463	. . . . . Long leg engaged
29/53974	. . . having means to permit support movement while work is thereon	70/465	. . . . . Pivoted
29/53978	. . including means to relatively position plural work parts	70/467	. . . . . Sliding detent
29/53983	. . Work-supported apparatus	70/47	. . . . . Free end only engaged
29/53987	. . Tube, sleeve or ferrule	70/472	. . . . . Pivoted end only engaged
29/53991	. . Work gripper, anvil, or element	70/474	. . . . . Swinging detent
29/53996	. . by deforming	70/476	. . . . . Free end only engaged
29/54	. Miscellaneous apparatus	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

**Former US Class 70 series**

<b>70/00</b>	<b>Locks</b>
70/10	. Miscellaneous
70/20	. Attack-actuated defeating mechanisms
70/25	. . With reset mechanisms
70/30	. Hasp



70/5018	. . . Robes	70/5283	. . . . . Swinging
70/5022	. . . Tools	70/5288	. . . . . Combination operable only
70/5027	. . . Supporting stands	70/5292	. . . . . Key operable only
70/5031	. . . Receptacle	70/5296	. . . . . Single
70/5035	. . . . Bag	70/5301	. . . . . Sliding and swinging
70/504	. . . . Collapsible throat	70/5305	. . . . . Combination operable only
70/5044	. . . . Pivoted rigid jaw	70/531	. . . . . Key operable only
70/5049	. . . . Attache or briefcase, portfolio	70/5314	. . . . . Sliding and rotary
70/5053	. . . . . Interengageable slide fastener type	70/5319	. . . . . Sliding
70/5058	. . . . Trunk and/or suitcase	70/5323	. . . . . Multidirectional displacement
70/5062	. . . . . Projecting fixed or movable lug type	70/5327	. . . . . Keeper interlocking
70/5066	. . . . . Bolt type	70/5332	. . . . . Curved
70/5071	. . . . . Hasp controlled	70/5336	. . . . . Combination operable only
70/5075	. . . . . Link and lever of hasp type	70/5341	. . . . . Key operable only
70/508	. . . . . Hasp type	70/5345	. . . . . Swinging
70/5084	. . . . . Hasp-carried lock	70/535	. . . . . Keeper and housing interlocking
70/5089	. . . . . Loop type	70/5354	. . . . . With hooked end
70/5093	. . For closures	70/5358	. . . . . Combination operable only
70/5097	. . . Cabinet	70/5363	. . . . . Key operable only
70/5102	. . . . Projecting lug type	70/5367	. . . . . Screw
70/5106	. . . . . External catch	70/5372	. . . . . Locking latch bolts, biased
70/5111	. . . . Projectable bolt	70/5376	. . . . . Keeper interlocking
70/5115	. . . . . Multiple bolts	70/5381	. . . . . Projectable beyond normal biased position
70/5119	. . . . . Multidirectional displacement	70/5385	. . . . . Spring projected
70/5124	. . . . . Swinging and hooked end	70/5389	. . . . . Manually operable
70/5128	. . . Drawer	70/5394	. . . . . Directly acting dog for exterior, manual, bolt manipulator
70/5133	. . . . Dead bolt	70/5398	. . . . . Related dog for interior, manual, bolt manipulator
70/5137	. . . . Till	70/5403	. . . . . Dog having a dog
70/5142	. . . . . Combination	70/5407	. . . . . Related dogging means for latch-bolt
70/5146	. . . Window	70/5412	. . . . . Dog and dog actuator always interconnected
70/515	. . . . Sliding sash	70/5416	. . . . . Exterior manipulator declutched from bolt when dogged
70/5155	. . . Door	70/542	. . . . . Manual dog-controller concentric with bolt manipulator
70/5159	. . . . Emergency exit	70/5425	. . . . . Shiftable rollback serves as dog
70/5164	. . . . Links to limit opening	70/5429	. . . . . Additional dog-controller key actuated for dogging and undogging
70/5168	. . . . Braces	70/5434	. . . . . Dog-controller axially slidable and axially rotatable
70/5173	. . . . Sliding door	70/5438	. . . . . Dog-controller rotatable
70/5177	. . . . . Extending keeper	70/5442	. . . . . Key-actuated lock releases dog
70/5181	. . . . . Rigid or fixed	70/5447	. . . . . Manual bolt-manipulator operation releases dog
70/5186	. . . . . Extensible	70/5451	. . . . . Manual bolt-manipulator operation releases dog
70/519	. . . . . Projecting or extending bolt	70/5456	. . . . . Interior manual bolt-manipulator serves as dog-controller
70/5195	. . . . . Projectable bolt	70/546	. . . . . For both dogging and undogging
70/5199	. . . . Sliding door	70/5465	. . . . . Manual dog-controller
70/5204	. . . . . Interfitting lock housing and keeper	70/5469	. . . . . With additional lock actuated dog-controller
70/5208	. . . . . Multiple dead bolts	70/5473	. . . . . Additional dog-controller controls both dogging and undogging
70/5212	. . . . . Sliding dead bolt	70/5478	. . . . . Accessible at door edge
70/5217	. . . . . Swinging dead bolt		
70/5221	. . . . . Locking latch bolt, biased		
70/5226	. . . . . Combined dead bolt and latching bolt		
70/523	. . . . . Multiple dead bolts		
70/5235	. . . . . Multiple latch bolts		
70/5239	. . . . . Dead bolt, dogged latch bolt		
70/5243	. . . . . Manually dogged latch bolt		
70/5246	. . . . . Dead bolts		
70/5248	. . . . . Multiple		
70/5252	. . . . . Sliding and swinging		
70/5257	. . . . . Combination operable only		
70/5261	. . . . . Key operable only		
70/5265	. . . . . Sliding and rotary		
70/527	. . . . . Sliding		
70/5274	. . . . . Combination operable only		
70/5279	. . . . . Key operable only		

70/5482	. . . . . Slidable only	70/5739	. . . . . With padlock
70/5487	. . . . . Manual bolt-manipulator is slidable only	70/5743	. . . . . Disconnectable
70/5491	. . . . . Manual bolt-manipulator is lever	70/5748	. . . . . Foldable
70/5496	. . . . . Freely movable external manipulator	70/5752	. . . . . Universal mounting
70/55	. . . . . Dogged bolt or connections	70/5757	. . . . . Handle, handwheel or knob
70/5504	. . . . . Automatic	70/5761	. . . . . Retractable or flush handle
70/5509	. . . . . Snub bolt	70/5765	. . . . . Rotary or swinging
70/5513	. . . . . By manipulator	70/577	. . . . . Locked stationary
70/5518	. . . . . Connections only	70/5774	. . . . . Externally mounted locking device
70/5522	. . . . . Gravity projected	70/5779	. . . . . With padlock
70/5527	. . . . . Projecting mechanism is lock controlled	70/5783	. . . . . Combination lock
70/5531	. . . . . Combination and/or key operable	70/5788	. . . . . Push pin or button
70/5535	. . . . . Trip release	70/5792	. . . . . Handle-carried key lock
70/554	. . . . . Cover, lid, cap, encasing shield	70/5796	. . . . . Coaxially mounted
70/5544	. . . . . Pivoted	70/5801	. . . . . Axially movable bolt
70/5549	. . . . . Cover-carried lock	70/5805	. . . . . Freely movable when locked
70/5553	. . . . . Dead bolt	70/581	. . . . . Combination lock
70/5558	. . . . . Latching bolt	70/5814	. . . . . Push pin or button
70/5562	. . . . . Removable	70/5819	. . . . . Handle-carried key lock
70/5566	. . . . . External locking devices	70/5823	. . . . . Coaxial clutch connection
70/5571	. . . . . Freely movable when locked	70/5827	. . . . . Axially movable clutch
70/5575	. . . . . Directly seating	70/5832	. . . . . Lock and handle assembly
70/558	. . . . . Cover-carried lock	70/5836	. . . . . Wheel
70/5584	. . . . . Dead bolt	70/5841	. . . . . Rotation blocking
70/5589	. . . . . Latching bolt	70/5845	. . . . . Spoke gap traversing type
70/5593	. . . . . Movably seating	70/585	. . . . . Brake type
70/5597	. . . . . Cover-carried lock	70/5854	. . . . . Bolt, nut, stud, stud-cap
70/5602	. . . . . Dead bolt	70/5858	. . . . . Locked stationary
70/5606	. . . . . Latching bolt	70/5863	. . . . . Freely movable when locked
70/5611	. . . . . For control and machine elements	70/5867	. . . . . Encased
70/5615	. . . . . Valve	70/5872	. . . . . For cycles
70/5619	. . . . . Locked stationary	70/5876	. . . . . Anchors
70/5624	. . . . . Externally mounted locking device	70/5881	. . . . . Stands
70/5628	. . . . . Valve encasing	70/5885	. . . . . Drive
70/5633	. . . . . Housing-carried lock	70/5889	. . . . . For automotive vehicles
70/5637	. . . . . With padlock	70/5894	. . . . . Plural point
70/5642	. . . . . Rod	70/5898	. . . . . With switch
70/5646	. . . . . Rotary shaft	70/5903	. . . . . Hood
70/565	. . . . . Locked stationary	70/5907	. . . . . With switch
70/5655	. . . . . Housing-carried lock	70/5912	. . . . . Fuel valve
70/5659	. . . . . Dead bolt	70/5916	. . . . . With switch
70/5664	. . . . . Latching bolt	70/592	. . . . . Cap combined
70/5668	. . . . . Shaft-carried lock	70/5925	. . . . . Transmission
70/5673	. . . . . Freely movable when locked	70/5929	. . . . . Cover combined
70/5677	. . . . . Shaft-carried clutch	70/5934	. . . . . Selective-type shift rod, fork or block
70/5681	. . . . . Gear	70/5938	. . . . . With switch
70/5686	. . . . . Planetary	70/5942	. . . . . Planetary type
70/569	. . . . . Lever	70/5947	. . . . . With switch
70/5695	. . . . . Guide	70/5951	. . . . . With switch
70/5699	. . . . . Quadrant	70/5956	. . . . . Steering mechanism with switch
70/5704	. . . . . Lever-carried lock	70/596	. . . . . Pilot wheel control or linkage
70/5708	. . . . . Fixed lever-receiving keeper	70/5965	. . . . . Control levers with switch
70/5712	. . . . . Lever-carried lock	70/5969	. . . . . Other element with switch
70/5717	. . . . . Multiple	70/5973	. . . . . Remote control
70/5721	. . . . . Externally mounted locking device	70/5978	. . . . . With switch
70/5726	. . . . . With padlock	70/5982	. . . . . Accessories
70/573	. . . . . Single	70/5987	. . . . . Spare or mounted wheel or tire
70/5735	. . . . . Externally mounted locking device	70/5991	. . . . . Tire or rim only
		70/5996	. . . . . For seats
		70/60	. . . . . Systems
		70/625	. . . . . Operation and control

70/65	. . . Central control	70/7299	. . . . . Axially shiftable spindle
70/675	. . . Serially operable	70/7305	. . . . . Manually operable
70/70	. Operating mechanism	70/7311	. . . Step-by-step
70/7006	. . Predetermined time interval controlled	70/7316	. . . Combination upsetting
70/7011	. . . Positively initiated delay interval	70/7322	. . . Permutation
70/7017	. . . . Interval terminating	70/7328	. . . . Compound tumblers
70/7023	. . . . Repeating interval	70/7333	. . . . . With fastener or holder
70/7028	. . . Electric	70/7339	. . . . . Pin and socket
70/7034	. . . Clockwork control	70/7345	. . . . . Removable change element
70/704	. . . . Continuously operating once initiated	70/735	. . . Operating elements
70/7045	. . . . . Emergency release	70/7356	. . . . Fences
70/7051	. . Using a powered device [e.g., motor]	70/7362	. . . . . Bolt or lock housing supported
70/7057	. . . Permanent magnet	70/7367	. . . . . Tumbler structure and position
70/7062	. . . Electrical type [e.g., solenoid]	70/7373	. . . . . Nested
70/7068	. . . . Actuated after correct combination recognized [e.g., numerical, alphabetical, or magnet[s] pattern]	70/7379	. . . . . Variant diameter
70/7073	. . . . . Including use of a key	70/7384	. . . . . Mounts
70/7079	. . . . . Key rotated [e.g., Eurocylinder]	70/739	. . . . . Motion-restraining means
70/7085	. . . . . Using a dial having indicia or pointer and indicia	70/7395	. . . . . Friction holder
70/709	. . . . . Plural interdependent or plural independently operable tumbler sets	70/7401	. . . . Spindles
70/7096	. . . . . With mechanism having rocker arm or linked bars	70/7407	. . . . Operating indicators
70/7102	. . . . And details of blocking system [e.g., linkage, latch, pawl, spring]	70/7412	. . . . . Portable combination setting guide
70/7107	. . . . And alternately mechanically actuated by a key, dial, etc.	70/7418	. . . . . Dials
70/7113	. . . . Projected and retracted electrically	70/7424	. . . Tampering prevention or attach defeating
70/7119	. . . . Projected electrically only	70/7429	. . . . Resonance type
70/7124	. . . . Retracted electrically only	70/7435	. . . . Hidden or covered dial
70/713	. . . . Dogging manual operator	70/7441	. . Key
70/7136	. . . . Key initiated actuation of device	70/7446	. . . Multiple keys
70/7141	. . Combination and key	70/7452	. . . . Selective shutout type
70/7147	. . Combination or key	70/7458	. . . . Interdependent
70/7153	. . Combination	70/7463	. . . . Master- and change-key
70/7158	. . . Individual blocking elements	70/7469	. . . . . Change-key shutout
70/7164	. . . . Selectively operable	70/7475	. . . . . Submaster- and change-key
70/7169	. . . Complex movement or puzzle type	70/748	. . . . . Change-key shutout
70/7175	. . . . Labyrinthian passage	70/7486	. . . Single key
70/7181	. . . Tumbler type	70/7492	. . . . Tumblerless push or pull key
70/7186	. . . . Plural interdependent sets	70/7497	. . . . Tumblerless warded
70/7192	. . . . Plural independently operable sets	70/7503	. . . . Tumbler and ward type
70/7198	. . . . Single tumbler set	70/7508	. . . . Tumbler type
70/7203	. . . . . With ball or roller	70/7514	. . . . . Sliding and rotary or swinging tumblers
70/7209	. . . . . Intersect sliding tumblers	70/752	. . . . . Sliding tumblers
70/7215	. . . . . Individually set sliding tumblers	70/7525	. . . . . Longitudinal
70/722	. . . . . Manually operable	70/7531	. . . . . Transverse
70/7226	. . . . . Associated movable operator	70/7537	. . . . . Rotary or swinging tumblers
70/7232	. . . . . Removable	70/7542	. . . . . Single set
70/7237	. . . . . Rotary or swinging tumblers	70/7548	. . . . . Directly key engaged
70/7243	. . . . . Intersect tumblers	70/7554	. . . . . Cylinder type with auxiliary tumblers or wards
70/7249	. . . . . Tumblers released	70/7559	. . . . . Cylinder type
70/7254	. . . . . Fence held spaced from tumblers	70/7565	. . . . . Plural tumbler sets
70/726	. . . . . Individually set	70/7571	. . . . . Concentric tumblers
70/7266	. . . . . Movable selector	70/7576	. . . . . Sliding and rotary plug
70/7271	. . . . . Associated movable operator	70/7582	. . . . . Sliding plug
70/7277	. . . . . Removable	70/7588	. . . . . Rotary plug
70/7282	. . . . . Pin or rod and slot	70/7593	. . . . . Sliding tumblers
70/7288	. . . . . Spindle operator	70/7599	. . . . . Transverse of plug
70/7294	. . . . . Concentric spindles	70/7605	. . . . . Pin tumblers
		70/761	. . . . . Rotatable pins [e.g., MEDECO lock]
		70/7616	. . . . . Including sidebar
		70/7621	. . . . . Including sidebar
		70/7627	. . . . . Rotary or swinging tumblers

70/7633 . . . . . Transverse of plug  
 70/7638 . . . . . Cylinder and plug assembly  
 70/7644 . . . . . Key- and tool-controlled  
 70/765 . . . . . Key only controlled  
 70/7655 . . . . . Cylinder attaching or mounting means  
 70/7661 . . . . . Detachable or removable cylinder  
 70/7667 . . . . . Operating elements, parts and adjuncts  
 70/7672 . . . . . Cylinder  
 70/7678 . . . . . Adjustable  
 70/7684 . . . . . Plug  
 70/7689 . . . . . Tumblers  
 70/7695 . . . . . Plate  
 70/7701 . . . . . Pin  
 70/7706 . . . . . Operating connections  
 70/7712 . . . . . Rollbacks  
 70/7718 . . . . . Intermediate  
 70/7723 . . . . . Cylinder rings  
 70/7729 . . . . . Permutation  
 70/7734 . . . . . Automatically key set combinations  
 70/774 . . . . . Adjustable tumblers  
 70/7746 . . . . . Removable change element  
 70/7751 . . . . . With ball or roller  
 70/7757 . . . . . Push or pull key operation  
 70/7763 . . . . . Key ejecting  
 70/7768 . . . . . Key-removal preventing  
 70/7774 . . . . . False or picking key trapping  
 70/778 . . . . . Operating elements  
 70/7785 . . . . . Tumblers  
 70/7791 . . . . . Keys  
 70/7797 . . . . . Picking  
 70/7802 . . . . . Multi-part structures  
 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**

**74/00 Machine element or mechanism**  
 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	74/1518	. . . . Rotary cam drive
74/1225	. . . with rotor drives	74/1519	. . . . Adjustable throw
74/1229	. . Gyroscope control	74/1521	. . . . Radial cam
74/1232	. . . Erecting	74/1523	. . . . Radial cam
74/1236	. . . . by plural diverse forces	74/1524	. . . Intermittently engaged clutch
74/1239	. . . . by jet	74/1526	. . Oscillation or reciprocation to intermittent unidirectional motion
74/1243	. . . . by weight	74/1527	. . . Screw and nut devices
74/1246	. . . . by friction	74/1529	. . . Slide actuator
74/125	. . . . by magnetic field	74/1531	. . . . Multiple acting
74/1254	. . . . by motor torque	74/1532	. . . Rack actuator
74/1257	. . . Damping	74/1534	. . . . Multiple acting
74/1261	. . with pick off	74/1535	. . . . Inwardly facing racks
74/1264	. . . Optical	74/1537	. . . . Oscillating
74/1268	. . . Pneumatic	74/1539	. . . . Multiple acting
74/1271	. . . Conducting liquid	74/154	. . . . Inwardly facing racks
74/1275	. . . Electrical	74/1542	. . . Strap actuator
74/1279	. . . Electrical and magnetic	74/1544	. . . . Multiple acting
74/1282	. . with rotor drive	74/1545	. . . . Spring or weight return
74/1286	. . Vertical gyroscopes	74/1547	. . . . Single acting
74/1289	. . Horizontal gyroscopes	74/1548	. . . . Engine starter type
74/1293	. . Flexure hinges for gyros	74/155	. . . . Spring or weight return
74/1296	. . Flywheel structure	74/1552	. . . . Spring or weight return
74/13	. Machine starters	74/1553	. . . Lever actuator
74/131	. . Automatic	74/1555	. . . . Rotary driven element
74/132	. . . Separate power mesher	74/1556	. . . . Multiple acting
74/133	. . . Holders	74/1558	. . Grip units and features
74/134	. . . Clutch connection	74/156	. . . Compound movement handle
74/136	. . . Worm and wheel	74/1561	. . . . Reversible
74/137	. . . Reduction gearing	74/1563	. . . . Transverse pivots
74/138	. . Radial meshing	74/1565	. . . Gripper releasing devices
74/139	. . Cam operated	74/1566	. . . . Power pawl lifter
74/14	. Rotary member or shaft indexing, e.g., tool or work turret	74/1568	. . . . Automatic
74/1406	. . with safety device or drive disconnect	74/1569	. . . . Idle stroke
74/1412	. . with locating point adjusting	74/1571	. . . . Cooperating holding pawl
74/1418	. . Preselected indexed position	74/1573	. . . . Power stroke
74/1424	. . . Sequential	74/1574	. . . . Cooperating holding pawl
74/1429	. . . . Skip position	74/1576	. . . . Holding pawl lifter
74/1435	. . . . Held by torque	74/1577	. . . Gripper mountings, lever
74/1441	. . . . Geneva or mutilated gear drive	74/1579	. . . . Reversible
74/1447	. . . . Velocity control	74/1581	. . . . Multiple acting
74/1453	. . . . Interlocked rotator and brake	74/1582	. . . . Single ratchet or clutch
74/1459	. . . . Diverse-type brakes	74/1584	. . . Gripper mountings, slide
74/1465	. . . . with axially acting friction brake	74/1585	. . . . Multiple acting
74/1471	. . Plural operators or input drives	74/1587	. . . Grip features
74/1476	. . with means to axially shift shaft	74/1589	. . . . Driving band
74/1482	. . Single revolution input effects desired fractional output	74/159	. . . . Clamping
74/1488	. . Control means	74/1592	. . . . Driven band and gripper
74/1494	. . Locking means	74/1594	. . . . Positive grip
74/15	. Intermittent grip type mechanical movement	74/1595	. . . . Driving ratchet-bar or rack
74/1502	. . Escapement	74/1597	. . . . Multiple acting
74/1503	. . Rotary to intermittent unidirectional motion	74/1598	. . . . Driven ratchet-bar and power dog
74/1505	. . . Automatically controlled	74/16	. Alternating-motion driven device with means during operation to adjust stroke
74/1506	. . . Speed	74/1608	. . Constant length stroke with means to displace end limits
74/1508	. . . Rotary crank or eccentric drive	74/1616	. . . Cyclical displacement responsive to the alternating-motion
74/151	. . . Adjustable	74/1625	. . Stroke adjustable to zero and/or reversible in phasing
74/1511	. . . . Lever transmitter	74/1633	. . . Plural driving means to jointly drive the driven device
74/1513	. . . . Adjustable leverage		
74/1515	. . . . Rack and pinion transmitter		
74/1516	. . . . Adjustable throw		

74/1642	. . . Device driven from selected points on oscillating link	74/18384	. . . Crank, lever, and crank
74/165	. . . Driving lever with adjustable pivot point	74/18392	. . . Crank, pitman, and crank
74/1658	. . . Eccentric and strap drive, shiftable eccentric	74/184	. . . Cranks, link connected
74/1667	. . . . Changing the extent of eccentricity	74/18408	. . . Cranks, slidable connections
74/1675	. . . Crank pin drive, shiftable pin	74/18416	. . Rotary to alternating rotary
74/1683	. . . Cam and follower drive	74/18424	. . . Mangle connections
74/1692	. . . . Axial-type cam [e.g., wabblers type]	74/18432	. . . . Shiftable driven gear
74/17	. Rotary driven device adjustable during operation relative to its supporting structure	74/1844	. . . . . Central teeth
74/173	. . Screw and nut adjusting means	74/18448	. . . . Mutilated gearing connections
74/177	. . Rack and pinion adjusting means	74/18456	. . . Crank, pitman, and lever
74/18	. Mechanical movements	74/18464	. . . Reciprocating rack connections
74/18008	. . Oscillating to reciprocating and alternating rotary	74/18472	. . . . Crank and pitman actuator
74/18016	. . Oscillating to reciprocating and intermittent rotary	74/1848	. . . . Simple crank actuator
74/18024	. . Rotary to reciprocating and rotary	74/18488	. . . Oscillating rack connections
74/18032	. . . Rotary to reciprocating or rotary	74/18496	. . . . Mangle actuated
74/1804	. . Rotary to reciprocating and alternating rotary	74/18504	. . . . Crank and pitman actuator
74/18048	. . Rotary to reciprocating and intermittent rotary	74/18512	. . . Flexible connector type
74/18056	. . Rotary to or from reciprocating or oscillating	74/1852	. . . Associated inertia devices
74/18064	. . . Head motions	74/18528	. . Rotary to intermittent unidirectional motion
74/18072	. . . Reciprocating carriage motions	74/18536	. . . Space machines
74/1808	. . . . Phonograph type	74/18544	. . Rotary to gyratory
74/18088	. . . Rack and pinion type	74/18552	. . . Unbalanced weight
74/18096	. . . . Shifting rack	74/1856	. . Reciprocating or oscillating to intermittent unidirectional motion
74/18104	. . . . Shiftable pinion	74/18568	. . Reciprocating or oscillating to or from alternating rotary
74/18112	. . . . Segmental pinion	74/18576	. . . including screw and nut
74/1812	. . . . Alternately rotated pinion	74/18584	. . . . Shaft shorter than nut
74/18128	. . . . Clutchable gears	74/18592	. . . . Auxiliary drive [e.g., fluid piston, etc.] for load
74/18136	. . . . . Bevel	74/186	. . . . Alternate power path operable on failure of primary
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		
74/1832	. . . . . Multiple screw		
74/18328	. . . . . Alternately rotated screw		
74/18336	. . . . . Wabblers type		
74/18344	. . . Unbalanced weights		
74/18352	. . . Trammel-pitman		
74/1836	. . Rotary to rotary		
74/18368	. . Inertia or centrifugal transmitters		
74/18376	. . . Crank, pitman, lever, and crank		

74/18776	. . . . . Rectilinear rack	74/1914	. . . Alternate drivers and driven
74/18784	. . . including bevel gears	74/19144	. . . Miscellaneous [plural power paths]
74/18792	. . . including worm	74/19149	. . with fluid drive
74/188	. . . including spur gear	74/19153	. . . Condition responsive control
74/18808	. . . . with rack	74/19158	. . . with one or more controllers for gearing, fluid drive, or clutch
74/18816	. . . . . Curvilinear rack	74/19163	. . . . with interrelated controls
74/18824	. . . . . with biasing means	74/19167	. . In series plural interchangeably locked nonplanetary units
74/18832	. . . including flexible drive connector [e.g., belt, chain, strand, etc.]	74/19172	. . Reversal of direction of power flow changes power transmission to alternate path
74/1884	. . . . with sprocket wheel	74/19177	. . . Input and output exchange functions
74/18848	. . . . with pulley	74/19181	. . toothed gear and recirculated unconnected elements
74/18856	. . Oscillating to oscillating	74/19186	. . Alternating rotary or continuous
74/18864	. . . Snap action	74/19191	. . Alternating rotary
74/18872	. . . . Plate spring	74/19195	. . . Progressive
74/1888	. . . Geared connections	74/192	. . . Shiftable and/or slidable gears
74/18888	. . Reciprocating to or from oscillating	74/19205	. . . Clutchable gears
74/18896	. . . Snap action	74/1921	. . . . On single driven member
74/18904	. . . . Plate spring	74/19214	. . . . On single driving member
74/18912	. . . Compound lever and slide	74/19219	. . Interchangeably locked
74/1892	. . . Lever and slide	74/19223	. . . Disconnectable counter shaft
74/18928	. . . . Straight line motions	74/19228	. . . Multiple concentric clutch shafts
74/18936	. . . . Slidable connections	74/19233	. . . Plurality of counter shafts
74/18944	. . . . Link connections	74/19237	. . . Internal-external gears
74/18952	. . . . toggle transmissions	74/19242	. . . Combined gear and clutch
74/1896	. . . . Cam connections	74/19247	. . . . Preselector
74/18968	. . . . Flexible connections	74/19251	. . . Control mechanism
74/18976	. . . Rack and pinion	74/19256	. . . . Automatic
74/18984	. . . Inclined ramp	74/1926	. . . . . Speed responsive
74/18992	. . Reciprocating to reciprocating	74/19265	. . . . . Governor
74/19	. Gearing	74/1927	. . . . . with belt gearing
74/19005	. . Nonplanetary gearing differential type [e.g., gearless differentials]	74/19274	. . . . . torque responsive
74/19009	. . Single gearing unit includes fluid drive	74/19279	. . . . Cam operated
74/19014	. . Plural prime movers selectively coupled to common output	74/19284	. . . Meshing assisters
74/19019	. . Plural power paths from prime mover	74/19288	. . . . Double clutch and interposed transmission
74/19023	. . Plural power paths to and/or from gearing	74/19293	. . . Longitudinally slidable
74/19028	. . . Alternate input connections single hand crank	74/19298	. . . . Multiple spur gears
74/19033	. . . Fluid drive divides or combines alternate paths	74/19302	. . . . . with tumbler gear
74/19037	. . . One path includes fluid drive	74/19307	. . . . . Selective
74/19042	. . . Friction-type gearing	74/19312	. . . . . Direct clutch and drive
74/19047	. . . Worm-type gearing	74/19316	. . . . . Progressive
74/19051	. . . Single driven plural drives	74/19321	. . . . . Direct clutch and drive
74/19056	. . . . Parallel	74/19326	. . . . . Fluid operated
74/1906	. . . . Nonparallel	74/1933	. . . . Multiple bevel gears
74/19065	. . . . Aligned	74/19335	. . . . Single spur gear
74/1907	. . . . Parallel and aligned	74/1934	. . . . . Tumbler and cone
74/19074	. . . Single drive plural driven	74/19344	. . . . . Multiple cone
74/19079	. . . . Parallel	74/19349	. . . . Single bevel gear
74/19084	. . . . . Spur	74/19353	. . . . Pin or crown gears
74/19088	. . . . . Bevel	74/19358	. . . Laterally slidable gears
74/19093	. . . . . Spur and bevel	74/19363	. . . . Rotary carriage
74/19098	. . . . . Helical	74/19367	. . . . Swinging carriage
74/19102	. . . . . Belt or chain	74/19372	. . . Single forward and reverse speeds
74/19107	. . . . Nonparallel	74/19377	. . . Slidable keys or clutches
74/19112	. . . . Aligned	74/19381	. . . . Alternative clutch shaft
74/19116	. . . . . Vehicle	74/19386	. . . . Multiple clutch shafts
74/19121	. . . . Concentric	74/19391	. . . . . Progressive
74/19126	. . . Plural drivers plural driven	74/19395	. . . . . Keys simultaneously slidable
74/1913	. . . . Bevel	74/194	. . . . . Selective
74/19135	. . . . Spur	74/19405	. . . . . Multiple forward and reverse

74/19409 . . . . .	Single forward and reverse	74/19698 . . . . .	Spiral
74/19414 . . . . .	Single clutch shaft	74/19702 . . . . .	Screw and nut
74/19419 . . . . .	Progressive	74/19707 . . . . .	Plural longitudinally variably spaced nuts
74/19423 . . . . .	Multiple key	74/19712 . . . . .	Threadless
74/19428 . . . . .	Spur	74/19716 . . . . .	Non-linear screw
74/19433 . . . . .	Fluid operated	74/19721 . . . . .	Thread geometry
74/19437 . . . . .	Electrically operated	74/19726 . . . . .	Thread pitch varies over axial length
74/19442 . . . . .	Single key	74/1973 . . . . .	Shaft thread is spirally wound wire
74/19447 . . . . .	Clutch and ratchet	74/19735 . . . . .	Nut disengageable from screw
74/19451 . . . . .	Spur gears	74/1974 . . . . .	Nut segments hinged parallel to shaft [e.g., clam shell-type, etc.]
74/19456 . . . . .	Intermediate clutch	74/19744 . . . . .	Rolling element engaging thread
74/1946 . . . . .	Sliding clutch carrier	74/19749 . . . . .	Recirculating rolling elements
74/19465 . . . . .	Sliding clutch operator	74/19753 . . . . .	Plural independent recirculating element paths
74/1947 . . . . .	Selective	74/19758 . . . . .	Single thread common to plural paths
74/19474 . . . . .	Multiple key	74/19763 . . . . .	Roller return path in shaft
74/19479 . . . . .	Spur gears	74/19767 . . . . .	Return path geometry
74/19484 . . . . .	Single speed forward and reverse	74/19772 . . . . .	Rolling element deflector
74/19488 . . . . .	Spur gears	74/19777 . . . . .	Interconnected or cooperating rollers or roller structure
74/19493 . . . . .	Bevel gears	74/19781 . . . . .	Non-recirculating rolling elements
74/19498 . . . . .	Bevel and idler gears	74/19786 . . . . .	Captured sphere
74/19502 . . . . .	Pivotally supported	74/19791 . . . . .	Cylindrical or quasi-cylindrical roller element [e.g., inclined roller, etc.]
74/19507 . . . . .	Windmill turntable	74/19795 . . . . .	Parallel to shaft
74/19512 . . . . .	Screw	74/198 . . . . .	Perpendicular to shaft
74/19516 . . . . .	Spur	74/19805 . . . . .	Less than 360 degrees of contact between nut and screw
74/19521 . . . . .	Bevel	74/19809 . . . . .	Independent nut segments
74/19526 . . . . .	Wheel type	74/19814 . . . . .	Integral deformable tangs engaging screw
74/1953 . . . . .	Wringer type	74/19819 . . . . .	Driven rack or shaft
74/19535 . . . . .	Follow-up mechanism	74/19823 . . . . .	Screw
74/1954 . . . . .	Eccentric driving shaft and axle	74/19828 . . . . .	Worm
74/19545 . . . . .	Central driving shaft in axle	74/19833 . . . . .	Variable speed
74/1955 . . . . .	Parallel shafts, adjustable gear mesh	74/19837 . . . . .	Intermittent motion
74/19555 . . . . .	Varying speed ratio	74/19842 . . . . .	Distribution of pressure
74/1956 . . . . .	Adjustable	74/19847 . . . . .	torque actuated safety devices
74/19565 . . . . .	Relative movable axes	74/19851 . . . . .	Gear and rotary bodies
74/1957 . . . . .	Parallel shafts	74/19856 . . . . .	Laterally-spaced wheels
74/19575 . . . . .	Automatic control	74/1986 . . . . .	Radially-spaced wheels
74/1958 . . . . .	Parallel shafts	74/19865 . . . . .	with flywheel
74/19585 . . . . .	Fixed axes	74/1987 . . . . .	Rotary bodies
74/1959 . . . . .	Parallel shafts	74/19874 . . . . .	Mutilated
74/19595 . . . . .	Automatic control	74/19879 . . . . .	Geneva
74/196 . . . . .	Parallel shafts	74/19884 . . . . .	Irregular teeth and bodies
74/19605 . . . . .	Reversing means	74/19888 . . . . .	External and internal teeth
74/19609 . . . . .	Governor control	74/19893 . . . . .	Sectional
74/19614 . . . . .	Disconnecting means	74/19898 . . . . .	Backlash take-up
74/19619 . . . . .	Displaceable elements	74/19902 . . . . .	Screw and nut
74/19623 . . . . .	Backlash take-up	74/19907 . . . . .	Sound deadening
74/19628 . . . . .	Pressure distributing	74/19912 . . . . .	Differential disks
74/19633 . . . . .	Yieldability in gear trains	74/19916 . . . . .	Multiple disks
74/19637 . . . . .	with brake means for gearing	74/19921 . . . . .	Separate rim
74/19642 . . . . .	Directly cooperating gears	74/19926 . . . . .	Detachable
74/19647 . . . . .	Parallel axes or shafts	74/1993 . . . . .	Segmental rim
74/19651 . . . . .	External type	74/19935 . . . . .	Sheet metal
74/19656 . . . . .	Pin teeth	74/1994 . . . . .	Diametrically split
74/1966 . . . . .	Intersecting axes	74/19944 . . . . .	Shaft-admitting insert
74/19665 . . . . .	Bevel gear type	74/19949 . . . . .	Teeth
74/1967 . . . . .	Rack and pinion	74/19953 . . . . .	Worm and helical
74/19674 . . . . .	Spur and bevel		
74/19679 . . . . .	Spur		
74/19684 . . . . .	Motor and gearing		
74/19688 . . . . .	Bevel		
74/19693 . . . . .	Motor vehicle drive		



74/19958 . . . . .	Bevel	74/20262 . . . . .	Rotary control shaft
74/19963 . . . . .	Spur	74/20268 . . . . .	Reciprocating control elements
74/19967 . . . . .	Yieldable	74/20274 . . . . .	Flexible
74/19972 . . . . .	form	74/2028 . . . . .	Handle bar type
74/19977 . . . . .	Antifriction	74/20287 . . . . .	Flexible control element
74/19981 . . . . .	Roller	74/20293 . . . . .	with horn control
74/19986 . . . . .	Twisted	74/20299 . . . . .	Antirattling elements
74/19991 . . . . .	Lubrication	74/20305 . . . . .	Robotic arm
74/19995 . . . . .	Teeth	74/20311 . . . . .	including power cable or connector
74/20 . . . . .	Control lever and linkage systems	74/20317 . . . . .	including electric motor
74/20006 . . . . .	Resilient connections	74/20323 . . . . .	including flaccid drive element
74/20012 . . . . .	Multiple controlled elements	74/20329 . . . . .	Joint between elements
74/20018 . . . . .	Transmission control	74/20335 . . . . .	Wrist
74/20024 . . . . .	Fluid actuator	74/20341 . . . . .	Power elements as controlling elements
74/2003 . . . . .	Electrical actuator	74/20348 . . . . .	Planar surface with orthogonal movement and rotation
74/20037 . . . . .	Occupant propelled vehicle	74/20354 . . . . .	Planar surface with orthogonal movement only
74/20043 . . . . .	Transmission controlled by flexible cable	74/2036 . . . . .	Pair of power elements
74/20049 . . . . .	Transmission controlled by flexible cable	74/20366 . . . . .	Power and manual controlling elements
74/20055 . . . . .	Foot operated	74/20372 . . . . .	Manual controlling elements
74/20061 . . . . .	Multiple foot-operated controls	74/20378 . . . . .	Planar surface with orthogonal movement or rotation
74/20067 . . . . .	Control convertible between automatic and manual operation	74/20384 . . . . .	Levers
74/20073 . . . . .	Control of plural mechanisms [e.g., control of transmission and control of 4 - wheel drive]	74/2039 . . . . .	Pair of levers
74/20079 . . . . .	Separate control levers	74/20396 . . . . .	Hand operated
74/20085 . . . . .	Restriction of shift, gear selection, or gear engagement	74/20402 . . . . .	Flexible transmitter [e.g., Bowden cable]
74/20091 . . . . .	Prevention of reverse shift	74/20408 . . . . .	Constant tension sustaining
74/20098 . . . . .	Separate actuator to disengage restrictor	74/20414 . . . . .	Hydraulic control
74/20104 . . . . .	Shift element interlock	74/2042 . . . . .	and hand operator
74/2011 . . . . .	with detent, recess, notch, or groove	74/20426 . . . . .	Slidable
74/20116 . . . . .	Resiliently biased interlock	74/20432 . . . . .	for moving a mirror
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
		74/20576 . . . . .	Elements
		74/20582 . . . . .	Levers
		74/20588 . . . . .	toggle
		74/20594 . . . . .	Lazy tongs
		74/206 . . . . .	Adjustable
		74/20606 . . . . .	Swing posts

74/20612 . . . . .	Hand	74/2109 . . .	Balancing for drum, e.g., washing machine or arm-type structure, etc., centrifuge, etc.
74/20618 . . . . .	Jointed	74/211 . . .	Eccentric
74/20624 . . . . .	Adjustable	74/2111 . . .	Plural, movable relative to each other [including ball[s]]
74/2063 . . . . .	Stops	74/2112 . . . . .	Concentric
74/20636 . . . . .	Detents	74/2114 . . . . .	Adjustable
74/20642 . . . . .	Hand crank	74/2115 . . . . .	Radially
74/20648 . . . . .	Interrelated lever release	74/2116 . . . . .	having anti-friction means, e.g., roller bearing, lubrication, etc.
74/20654 . . . . .	Gear	74/2117 . . .	Power generating-type flywheel
74/2066 . . . . .	Friction	74/2119 . . . . .	Structural detail, e.g., material, configuration, superconductor, discs, laminated, etc.
74/20666 . . . . .	Lever engaging	74/212 . . . . .	Containing fiber or filament
74/20672 . . . . .	Lever engaging rack	74/2121 . . .	Flywheel, motion smoothing-type
74/20678 . . . . .	Pivoted	74/2122 . . . . .	with fluid balancing means
74/20684 . . . . .	Lever carried pawl	74/2123 . . . . .	and pressure compensation
74/2069 . . . . .	Handle release	74/2125 . . . . .	and elastic device
74/20696 . . . . .	Finger lever release	74/2126 . . . . .	and bearings
74/20702 . . . . .	Slidable	74/2127 . . . . .	with electrical or magnetic damping
74/20708 . . . . .	Pedal controlled	74/2128 . . . . .	Damping using swinging masses, e.g., pendulum type, etc.
74/20714 . . . . .	Lever carried rack	74/213 . . . . .	Damping by increasing frictional force
74/2072 . . . . .	Pivoted	74/2131 . . . . .	Damping by absorbing vibration force [via rubber, elastomeric material, etc.]
74/20726 . . . . .	Pedal controlled	74/2132 . . . . .	Structural detail, e.g., fiber, held by magnet, etc.
74/20732 . . . . .	Handles	74/2133 . . .	Pawls and ratchets
74/20738 . . . . .	Extension	74/2135 . . .	Noiseless
74/20744 . . . . .	Hand crank	74/2136 . . .	Pivoted pawls
74/2075 . . . . .	Extensible	74/2137 . . . . .	Single tooth
74/20756 . . . . .	Collapsible	74/2138 . . . . .	Flexible single tooth
74/20762 . . . . .	Shaft connections	74/214 . . . . .	Multiple tooth
74/20768 . . . . .	Engine starter type	74/2141 . . . . .	Sliding pawls
74/20774 . . . . .	Holders	74/2142 . . .	Pitmans and connecting rods
74/2078 . . . . .	Handle bars	74/2143 . . . . .	Radial
74/20786 . . . . .	Spring biased or supported	74/2144 . . . . .	Yieldable
74/20792 . . . . .	Folding or adjustable	74/2146 . . . . .	Longitudinal springs
74/20798 . . . . .	Sectional	74/2147 . . . . .	Fluid cushion
74/20804 . . . . .	Simultaneously movable	74/2148 . . . . .	Automatic release
74/2081 . . . . .	Continuous	74/2149 . . . . .	toggle link type
74/20816 . . . . .	with handle latch	74/2151 . . . . .	Longitudinally adjustable
74/20822 . . . . .	Attachments and accessories	74/2152 . . . . .	Hollow rod, lubricated
74/20828 . . . . .	Handholds and grips	74/2153 . . . . .	Sheet metal type
74/20834 . . . . .	Hand wheels	74/2154 . . . . .	Counterbalanced
74/2084 . . . . .	Knob or dial	74/2156 . . . . .	Weight type
74/20846 . . . . .	Slidable	74/2157 . . . . .	Rotating
74/20852 . . . . .	Pivoted	74/2158 . . . . .	Spring
74/20858 . . . . .	Releasable	74/2159 . . . . .	Section coupled
74/20864 . . . . .	Handles	74/216 . . . . .	Bearings, adjustable
74/2087 . . . . .	Rim grips and covers	74/2162 . . . . .	Engine type
74/20876 . . . . .	Caps and covers	74/2163 . . . . .	Idler arm
74/20882 . . . . .	Rocker arms	74/2164 . . . . .	Cranks and pedals
74/20888 . . . . .	Pedals	74/2165 . . . . .	with attached gear
74/20894 . . . . .	Treadles	74/2167 . . . . .	Variable
74/209 . . . . .	Extension	74/2168 . . . . .	Pedals
74/20906 . . . . .	Offset	74/2169 . . . . .	Counterbalanced
74/20912 . . . . .	Pads and covers	74/217 . . . . .	with toe or shoe clips
74/20918 . . . . .	Foot rests	74/2172 . . . . .	Adjustable or folding
74/20924 . . . . .	Controller checks	74/2173 . . . . .	Cranks and wrist pins
74/2093 . . . . .	Slot closers and lever guards	74/2174 . . . . .	Multiple throw
74/21 . . . . .	Elements	74/2175 . . . . .	Sectional
74/2101 . . . . .	Cams		
74/2102 . . . . .	Adjustable		
74/2104 . . . . .	Flexible strip		
74/2105 . . . . .	Memory devices		
74/2106 . . . . .	Timer devices		
74/2107 . . . . .	Follower		

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  
 82/141 . . having transverse tool and templet guide  
 82/142 . . . with workpiece gauge  
 82/143 . . . having electrical actuator  
 82/145 . . . . And hydraulic actuator  
 82/147 . . . having hydraulic actuator  
 82/148 . . Pivoted tool rest  
 82/149 . . Profiled cutter  
 82/15 . . Tapers  
 82/152 . . Offset work axis  
 82/154 . . Transversely shifted cutter  
 82/156 . . . Templet controlled  
 82/158 . . . Gear controlled  
 82/16 . . Severing or cut-off  
 82/16016 . . Processes  
 82/16032 . . Automatic and/or triggered control  
 82/16049 . . Combined with means to sharpen tool[s]  
 82/16065 . . Combined with means to apply fluid  
 82/16081 . . Combined with means to heat tool and/or work  
 82/16098 . . with dust or chip handling  
 82/16114 . . including scrap cutting means  
 82/16131 . . Flying cutter type  
 82/16147 . . Cutting couple straddling work  
 82/16163 . . . with pattern, guide or cam means [noncircular product]  
 82/16181 . . . Plural cutting means [pairs, or pair, plus single]  
 82/16196 . . . Rotary shear pair  
 82/16213 . . . . Tool axes parallel to axis of work rotation  
 82/16229 . . Interrelated means for tool infeed and circumrotation

82/16245 . . . Dependent upon reaction to work  
 82/16262 . . . Infeed cam disk rotation geared to tool holder rotation  
 82/16278 . . . . Axial infeed cam  
 82/16295 . . . . including centrifugal balancing means  
 82/16311 . . . . Scroll plate infeed cam  
 82/16327 . . . Infeed cam plate braked with respect to tool[s] carrier plate  
 82/16344 . . . Orbital cogwheel and fixed detent  
 82/16361 . . . Common gear means  
 82/16377 . . . . including adjustable means to vary gear speed  
 82/16393 . . . . with manual disconnect lever  
 82/16409 . . . with means to feed work  
 82/16426 . . Infeed means  
 82/16442 . . . with means to circumrotate tool[s] about work  
 82/16459 . . . . Fluid means for relative tool actuation  
 82/16475 . . . . Gear means for tool actuation  
 82/16491 . . . . . including axial cam  
 82/16508 . . . . . with indicator  
 82/16524 . . . . Bell crank linkage for tool[s] holder  
 82/16541 . . . . Resilient means for tool actuation  
 82/16557 . . . . . with means for manual retraction  
 82/16573 . . . Hand crank for tool holder  
 82/16591 . . . Power driven eccentric  
 82/16606 . . . . Fluid motor  
 82/16622 . . . . Plural tools  
 82/16639 . . . Tool within work  
 82/16655 . . . with means to rotate tool[s]  
 82/16672 . . . . including rotatable cutters supporting work  
 82/16688 . . . . Planetating work mandrels  
 82/16704 . . . . Pivoted tool carriage  
 82/16721 . . . . . with adjustable work stops  
 82/16737 . . . . Eccentric periphery rotary tool  
 82/16754 . . . . Means to feed work axially  
 82/16771 . . . . Translatable work support carriage  
 82/16786 . . . . with tool groove in support roll[s]  
 82/16803 . . . Rotatable tool[s] driven by contact with work  
 82/16819 . . . . Axially movable tool support  
 82/16836 . . . . . Freely floating parallel to axis  
 82/16852 . . . . . with supplemental nonrotative tool  
 82/16868 . . . . . including clutch control for work rotation  
 82/16885 . . . . . including resilient means urging work against rotary support  
 82/16901 . . . Separate means for plural tools  
 82/16918 . . . Spring urged  
 82/16934 . . . . For window shade  
 82/16951 . . . Tool adjustment and/or stop  
 82/16967 . . . with means to support and/or rotate work  
 82/16983 . . . with means to feed work  
 82/17 . . Lathe for pulley  
 82/18 . . Lathe for wheel or axle  
 82/185 . . In situ lathe for railroad wheel  
 82/19 . . Lathe for crank or crank pin  
 82/192 . . Portable lathe for crank pin  
 82/195 . . having work oscillator  
 82/198 . . . having work driver  
 82/20 . . Lathe for screw cutting  
 82/205 . . having swinging feed nut and tool bar  
 82/21 . . Portable lathe for brake drum, disc, or shoe  
 82/22 . . Portable lathe for pipe turning  
 82/23 . . Portable lathe for piston grooving

82/24	. Bench lathe
82/245	. . Watchmaker's lathe
82/25	. Lathe
82/2502	. . with program control
82/2504	. . . And transmission
82/2506	. . . And tool turret
82/2508	. . with tool turret
82/2511	. . Vertical
82/2512	. . having facing tool fed transverse to work
82/2514	. . with work feeder or remover
82/2516	. . . Magazine type
82/2518	. . . . Bar feeder
82/2521	. . . Bar feeder
82/2522	. . Portable
82/2524	. . Multiple
82/2527	. . having hollow cutter head
82/2529	. . Revolvable cutter heads
82/2531	. . Carriage feed
82/2533	. . . Control
82/2535	. . . . Electrical type
82/2537	. . . Apron mechanism
82/2539	. . . . Feednut control
82/2541	. . . Slide rest
82/2543	. . . . Multiple tool support
82/2545	. . . . Tool relief
82/2547	. . . Change gears
82/2549	. . . Feedscrews and rods
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	83/202	. With product handling means
83/0534	. . . . Cutting to join blanked holes	83/2022	. . Initiated by means responsive to product or work
83/0538	. . . Repetitive transverse severing from leading edge of work	83/2024	. . . Responsive to work
83/0543	. . . . Alternately forming products of less than total width of work	83/2027	. . Initiated by means directly responsive to tool movement
83/0548	. . . . With longitudinal severing	83/2029	. . . In return motion of tool
83/0553	. . . . . Effected by plural steps	83/2031	. . Including means to drape the product
83/0558	. . . . . Along zigzag or undulant line or cut	83/2033	. . Including means to form or hold pile of product pieces
83/0562	. . . . . Prior to transverse severing	83/2035	. . . In nested relation
83/0567	. . . . Nonrectilinear cutting	83/2037	. . . In stacked or packed relation
83/0572	. . . Plural cutting steps effect progressive cut	83/204	. . . . Stacker sweeps along product support
83/0577	. . . Repetitive blanking	83/2042	. . . . Including cut pieces overlapped on delivery means
83/0581	. . Cutting part way through from opposite sides of work	83/2044	. . . . And means to separate product portions
83/0586	. . Effecting diverse or sequential cuts in same cutting step	83/2046	. . . . Including means to move stack bodily
83/0591	. . Cutting by direct application of fluent pressure to work	83/2048	. . . . . By movement of stack holder
83/0596	. . Cutting wall of hollow work	83/205	. . . . . . By timed relocation of holder along path of stack gscheme-change-itemth
83/06	. . Blanking	83/2053	. . . . . . Interrelated adjustment of holder movement and work-feeder
83/0605	. . Cut advances across work surface	83/2055	. . . . . And means to resist stack movement
83/061	. With manually actuated means to disturb cyclic operation	83/2057	. . . . . Including means to deliver individual pieces to a stack holder
83/081	. With randomly actuated stopping means	83/2059	. . . . . With spindle to enter a hole or to make hole in product
83/083	. . With means to permit subsequent hand operation	83/2061	. . . . . By face-engaging means to push product broadside into stacked relation
83/084	. . With stop-signal-responsive means to actuate auxiliary cutter	83/2063	. . . . . Upon emergence from hollow cutter
83/086	. . With sensing of product or product handling means	83/2066	. . By fluid current
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

83/2124	. . . . .	And means to strip the outer surface of a cutter	83/313	. .	Spatially fixed tool
83/2127	. . . . .	Ejector operated with return stroke of cutter	83/323	. .	With means to stretch work temporarily
83/2129	. . . . .	By means carried by cooperating cutter	83/343	. .	With means to deform work temporarily
83/2131	. . . . .	By cam-operated ejector	83/364	. .	By fluid blast and/or suction
83/2133	. . . . .	By resiliently biased ejector	83/384	. .	By tool inside hollow work
83/2135	. . . . .	Moving stripper timed with tool stroke	83/385	. .	Work pre-packed with internal tool[s]
83/2137	. . . . .	And alternatively movable to or from operating position	83/386	. .	With expanding mandrel
83/214	. . . . .	Latched stripper released by tool return	83/387	. .	Interrelated tool feed means and means to actuate work immobilizer
83/2142	. . . . .	Plural strippers operative upon plural tools	83/388	. . .	Actuated clamp element and work holder coact to position work
83/2144	. . . . .	Single stripper operative upon plural tools	83/39	. .	Synchronized tool and work feeding means
83/2146	. . . . .	Spring arm stripper	83/391	. .	With means to position tool[s] for cutting
83/2148	. . . . .	Linkage actuated	83/392	. .	One tool [either internal or external] having compound motion
83/215	. . . . .	Carried by moving tool element or its support	83/393	. . .	Annulus and disc-type tool pair
83/2153	. . . . .	Fluid pressure actuated stripper	83/394	. .	One tool having unidirectional rotary motion
83/2155	. . . . .	Stripper biased against product	83/395	. .	One tool having only rectilinear motion[s]
83/2157	. . . . .	Elastomeric stripper contacting product	83/396	. . .	Annulus and disc-type tool pair
83/2159	. . . . .	By spring means	83/397	. . . .	A tool has a sequence of motion in plural paths
83/2161	. . . . .	By free weight of stripper	83/398	. . .	Internal tool is an active cutter
83/2163	. . . . .	Stripper biased against product	83/40	. . .	Multiple external active tools
83/2166	. . . . .	Spring biased stripper	83/401	. . . .	Tools operate in a substantially common transverse plane of cut
83/2168	. . . . .	Manually operated stripper	83/402	. . . . .	With tool actuating cams on a common support
83/217	. . . . .	Stationary stripper	83/403	. .	With manually actuated means to position or facilitate positioning of work
83/2172	. . . . .	Stripper encircles moving tool	83/404	. .	By means to misalign aligned apertured tools
83/2174	. . .	Blockable exit port	83/408	. .	Combined with another type tool of the class
83/2177	. . .	Tool conforming member interposed between tool and work	83/412	. .	Rectilinear relative movement only
83/2179	. . .	Including means to move, or resist movement of, cut pieces along delivery chute	83/416	. .	Rotary relative movement solely about a single pivot
83/2181	. . .	Active delivery means mounted on tool support	83/42	. . .	With plural apertures in one or both carriers
83/2183	. . .	Product mover including gripper means	83/424	. .	By increased tensioning of work-enclosing wire
83/2185	. . . . .	Suction gripper	83/444	. .	Tool engages work during dwell of intermittent workfeed
83/2187	. . . . .	Reciprocating product handler	83/4443	. .	Unicyclic
83/219	. . . . .	Rotating or oscillating product handler	83/4445	. . .	Convertible to and from unicyclic
83/2192	. . .	Endless conveyor	83/4448	. . .	Controlled by mechanical means
83/2194	. . . . .	And means to remove product therefrom	83/445	. .	With work-moving clamp jaw
83/2196	. . .	Roller[s]	83/4453	. .	Work moved solely by movable abutment
83/2198	. . .	Tiltable or withdrawable support	83/4455	. .	Operation initiated by work-driven detector means to measure work length
83/22	. . .	Means to move product laterally	83/4458	. .	Work-sensing means to control work-moving or work-stopping means
83/2203	. . . . .	Oscillating means	83/446	. . .	With means to initiate tool feed by same control impulse
83/2205	. . . . .	Reciprocating means	83/4463	. .	Work-sensing means to initiate tool feed
83/2207	. . .	Means to move product in a nonrectilinear path	83/4465	. . .	With work-stopping abutment in sensing means
83/2209	. . .	Guide	83/4468	. .	Plural tools at same station, one positioned for continuous engagement with work
83/2211	. . . . .	Abutment in path of product being moved by work feeder	83/447	. .	Plural tools successively actuated at same station
83/2213	. . . . .	Product-diverting conduit in or from hollow tool	83/4473	. . .	During one dwell period
83/2216	. . . . .	Inclined conduit, chute or plane	83/4475	. .	Tool has motion additional to cutting stroke during tool cycle
83/2218	. . . . .	Abutment interposed in path of free fall or flight of product	83/4478	. . .	Tool has additional motion during work dwell
83/222	. .	With receptacle or support for cut product	83/448	. . . .	Included in plural cutting cycles
83/242	. .	With means to clean work or tool	83/4483	. . .	Tool has work-feeding motion
83/263	. .	With means to apply transient nonpropellant fluent material to tool or work	83/4486	. .	With variable direction of work-feed from cycle to cycle
83/283	. .	With means to control or modify temperature of apparatus or work	83/4488	. . .	In one of certain selected directions
83/293	. .	Of tool			
83/303	. .	With tool sharpener or smoother			

- 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"	83/492	. . With means to vary timing of tool feed
83/4714	. . Oscillating work shifter adjacent cutter	83/494	. . Uniform periodic tool actuation
83/4717	. . . Work actuated senser initiates shifter	83/496	. . . With periodic lateral feed of tool or work
83/472	. . Wire tool	83/498	. . . With plural tool stations
83/4722	. . . On tool support having reciprocation parallel to direction of work-feed	83/50	. . . Reciprocating tool
83/4725	. . . . And rotation about axis parallel to direction of work-feed	83/501	. . . With plural tools on a single tool support
83/4728	. . Tool flies by engagement with the work	83/503	. . With plural tool stations
83/4731	. . . Tool merely flexes with moving work	83/505	. Operation controlled by means responsive to product
83/4734	. . Flying support or guide for work	83/515	. . Actuation of tool controlled
83/4737	. . With tool speed regulator	83/525	. Operation controlled by detector means responsive to work
83/474	. . With work feed speed regulator	83/527	. . With means to control work-responsive signal system
83/4743	. . . With means to vary cyclically speed of work	83/528	. . . To delay response to work-senser
83/4746	. . Spring return of tool in counterfly direction	83/53	. . . To change length of product
83/4749	. . Tool mounted on oscillating standard	83/531	. . With plural work-sensing means
83/4751	. . . Both tools of couple on single standard	83/533	. . With photo-electric work-sensing means
83/4754	. . . . One tool swings out of work path on return stroke	83/535	. . Release of interlock controlled
83/4757	. . Tool carrier shuttles rectilinearly parallel to direction of work feed	83/536	. . Movement of work controlled
83/476	. . . Including means to secure work to carrier	83/538	. . Positioning of tool controlled
83/4763	. . . Both members of cutting pair on same carrier	83/54	. . Actuation of tool controlled by work-driven means to measure work length
83/4766	. . Orbital motion of cutting blade	83/541	. . Actuation of tool controlled in response to work-sensing means
83/4769	. . . Work feeder mounted on tool support	83/543	. . . Sensing means responsive to work indicium or irregularity
83/4772	. . . . Gripper-type feeder	83/544	. . . With trip-switch in work-sensing mechanism
83/4775	. . . Tool speed varied within each orbital cycle	83/546	. Interrelated tool actuating and work guide moving means
83/4778	. . . Work feed gripper carried on endless belt	83/566	. Interrelated tool actuating means and means to actuate work immobilizer
83/478	. . . Endless belt or chain tool carrier	83/5669	. . Work clamp
83/4783	. . . Constantly oriented tool with arcuate cutting path	83/5678	. . . Tool deflected by guide on tightened clamp
83/4786	. . . . Cutting couple type	83/5687	. . . . With means to control clamping force
83/4789	. . . Rotatable disc-type tool on orbiting axis	83/5696	. . . Clamp driven by reaction from tool force
83/4792	. . . . Idling disc	83/5705	. . . With means providing for plural steps in clamping stroke
83/4795	. . . Rotary tool	83/5715	. . . With sequencing means
83/4798	. . . . Segmented disc slitting or slotting tool	83/5724	. . . With provision for manual control of clamp
83/4801	. . . . With undulant cutting edge [e.g., "pinking" tool]	83/5733	. . . Tool or tool support on movable clamp jaw
83/4804	. . . . Single tool action drive	83/5742	. . . Clamp moved by direct impact of tool or tool support
83/4807	. . . . . With one-revolution drive	83/5751	. . . . Clamp retracted by impact of tool or tool support
83/4809	. . . . With loop former preceding tool	83/576	. . . Clamp actuating means driven by tool or tool support
83/4812	. . . . Compound movement of tool during tool cycle	83/5769	. . . . Clamp yieldably driven by tool or tool support
83/4815	. . . . . Axial reciprocation of tool	83/5778	. . . . . With resilient drive element
83/4818	. . . . Interconnected work feeder and tool driver	83/5787	. . . Clamp driven by yieldable means
83/4821	. . . . Side cutting helical blade	83/5796	. . . . Drive means is resilient
83/4824	. . . . With means to cause progressive transverse cutting	83/5805	. . . . Fluid pressure yieldable drive means
83/4827	. . . . . With helical cutter blade	83/5815	. . Work-stop abutment
83/483	. . . . With cooperating rotary cutter or backup	83/5824	. . . Oppositely effective abutments
83/4833	. . . . . Cooperating tool axes adjustable relative to each other	83/5833	. . . With cyclic means to alter work-stopping position
83/4836	. . . . . With radial overlap of the cutting members	83/5842	. . . Stop partakes of tool motion
83/4838	. . . . . With anvil backup	83/5851	. . . . Carried by tool or tool support
83/4841	. . . . . With resilient anvil surface	83/586	. Interrelated tool actuating means and means to actuate work-mover stop
83/4844	. . . . . Resiliently urged cutter or anvil member	83/606	. Interrelated tool actuating means and guard means
83/4847	. . . . With cooperating stationary tool	83/613	. . Work guard
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		



83/619	. . Cutter guide slot closer	83/6529	. . . . . Power derived from fluid pressure means
83/626	. Operation of member controlled by means responsive to position of element remote from member [e.g., interlock]	83/6531	. . . . . Movement by screw means
83/637	. . With means to initiate operation of member	83/6532	. . . . . Movement by rack and pinion or pawl
83/647	. With means to convey work relative to tool station	83/6534	. . . . . With handle
83/6472	. . By fluid current	83/6536	. . . . . By carriage
83/6473	. . Centrifugal feed to tangential tool [e.g., "Beria" type]	83/6537	. . . . By cable or belt drive
83/6475	. . With means to regulate work-feed speed	83/6539	. . With means for transverse positioning of work on a moving conveyor
83/6476	. . Including means to move work from one tool station to another	83/654	. . With work-constraining means on work conveyor [i.e., "work-carrier"]
83/6478	. . . Tool stations angularly related	83/6542	. . . Plural means to constrain plural work pieces
83/648	. . . . Work manipulated between tool stations	83/6544	. . . . End of work protrudes through aperture in carrier
83/6481	. . . . With static tool	83/6545	. . . With means to guide work-carrier in nonrectilinear path
83/6483	. . . Tool stations staggered relative to one another	83/6547	. . . . About axis fixed relative to tool station
83/6484	. . . Punch or die station	83/6548	. . . . Infeed
83/6486	. . . Notcher or pinker station	83/655	. . . . . About vertical axis
83/6488	. . . Work reciprocated past double-edged knife	83/6552	. . . . . Cut normal to axis
83/6489	. . . Slitter station	83/6553	. . . . . Work-guide tube
83/6491	. . . . And transverse cutter station	83/6555	. . . . . Cut normal to axis
83/6492	. . Plural passes of diminishing work piece through tool station	83/6556	. . . . . Oscillating work-carrier
83/6494	. . . Work alternately, angularly re-oriented relative to tool station	83/6558	. . . . . Multiple cutters
83/6496	. . . . By additional means to engage work and orient it relative to tool station	83/656	. . . . . Coaxial rotary cutters
83/6497	. . . . By roller or roll-like element	83/6561	. . . . . Work stationary during cut
83/6499	. . . Work rectilinearly reciprocated through tool station	83/6563	. . . With means to orient or position work carrier relative to tool station
83/65	. . . . With means to cause or permit angular re-orientation of work about axis parallel to plane of cut	83/6564	. . . . By pattern or templet
83/6502	. . . . . By endless member having work-engaging teeth	83/6566	. . . . By indexing means
83/6504	. . . . . By member having work-engaging tooth	83/6568	. . . With additional work-locating means on work-carrier
83/6505	. . . . . Including plural work-engaging teeth	83/6569	. . With means to stop work conveyor
83/6507	. . . . . Fluid operated	83/6571	. . With means to store work articles
83/6508	. . . . With means to cause movement of work transversely toward plane of cut	83/6572	. . With additional means to engage work and orient it relative to tool station
83/651	. . . . . By means to cause movement toward and away from plane of cut	83/6574	. . . By work-stopping abutment
83/6512	. . . . . Actuated by movement of a member on reciprocating means	83/6576	. . . By opposed lateral guide means
83/6513	. . . . . Actuated by passive means which is external to reciprocating means	83/6577	. . . With means to adjust additional means
83/6515	. . . . . By means to define increment of movement toward plane of cut	83/6579	. . With means to press work to work-carrier
83/6516	. . . . . Interrelated with movement of reciprocating means	83/658	. . With projections on work-carrier [e.g., pin wheel]
83/6518	. . . . . By pusher mechanism	83/6582	. . Tool between tandem arranged work carrying means
83/652	. . . . . With additional work holding or positioning means	83/6584	. . Cut made parallel to direction of and during work movement
83/6521	. . . . . Work holding means includes actuator	83/6585	. . . Including nonconcurrently acting tool
83/6523	. . . . . Including plural, simultaneously acting pusher elements	83/6587	. . . Including plural, laterally spaced tools
83/6524	. . . . . Independently adjustable	83/6588	. . . . Tools mounted on common tool support
83/6526	. . . . . With additional means to retract elements	83/659	. . . . Tools axially shiftable on support
83/6528	. . . . . Power derived from movement of reciprocating means	83/6592	. . . Interrelated work-conveying and tool-moving means
		83/6593	. . . . With reciprocating tool [e.g., "jigsaw" type]
		83/6595	. . . . With means to move tool laterally of feed direction during cutting
		83/6596	. . . . With means to effect difference between work speed and tool speed
		83/6598	. . . . Tool co-axial with work-conveying means
		83/66	. . . With means to press work to tool
		83/6601	. . . Bevel cutting tool
		83/6603	. . . Tool shiftable relative to work-conveying means

- 83/6604 . . . Tool in contact with surface of work-conveying means
- 83/6606 . . . Tool between laterally spaced work-conveying means
- 83/6608 . . . By rectilinearly moving work carriage
- 83/6609 . . . . Angularly adjustable
- 83/6611 . . . . Having positive adjustment stop; e.g., link
- 83/6612 . . . . Having position indicating means
- 83/6614 . . . . Pusher engaging rear surface of work
- 83/6616 . . . . Having means to actuate pusher
- 83/6617 . . . . . Hydraulic or pneumatic means
- 83/6619 . . . . . Gear or pulley actuated pusher
- 83/662 . . . . . Lever, cam, or link actuated pusher
- 83/6622 . . . . Having means to actuate carriage
- 83/6624 . . . . . Hydraulic or pneumatic means
- 83/6625 . . . . . Gear or pulley
- 83/6627 . . . . . Adapted to place tension on flacid member
- 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
- 83/6644 . . . With work-supplying reel
- 83/6646 . . . . And provision for selecting feed length
- 83/6648 . . . Continuous conveying during, cutting; e.g., straw cutting
- 83/6649 . . . Supporting work at cutting station
- 83/6651 . . . . Comprising part of cutting station
- 83/6652 . . . Tool and feed roller actuated by common handle
- 83/6654 . . . Tool and roller on common movable support
- 83/6656 . . Rectilinear movement only
- 83/6657 . . . Tool opposing pusher
- 83/6659 . . . . Hydraulically or pneumatically actuated
- 83/666 . . . . Screw actuated
- 83/6662 . . . . Gear or pulley actuated
- 83/6664 . . . . Lever, cam, or link actuated
- 83/6665 . . . . Spring or gravity urged
- 83/6667 . . Work carrier rotates about axis fixed relative to tool station
- 83/6668 . . Interrelated work-feeding means and tool-moving means
- 83/667 . . Tool carrier or guide affixed to work during cutting
- 83/674 . . By flexible work-engaging member
- 83/68 . . Entirely work supported
- 83/687 . . By tool reciprocable along elongated edge
- 83/6875 . . With means permitting tool to be rotatably adjusted about its cutting edge during cutting
- 83/688 . . With dynamic balancing or shock absorbing means
- 83/6885 . . With tool of another type
- 83/689 . . With means to change to other type tool
- 83/6895 . . Plural reciprocable tools
- 83/69 . . Stored energy furnishes drive in one direction
- 83/6905 . . With tool in-feed
- 83/691 . . . And auxiliary means for promoting or retarding tool in-feed
- 83/6915 . . . . By yieldable means
- 83/692 . . . . And means to vary tool in-feed speed
- 83/6925 . . . . With interrelated tool actuating and in-feed means
- 83/693 . . . Of rectilinearly reciprocating tool
- 83/6935 . . . . With in-feed by pivoting carrier
- 83/694 . . . And means to prevent tool in-feed
- 83/6945 . . . With passive means to guide tool directly
- 83/695 . . . . By plural opposed guide surfaces
- 83/6955 . . . . Having relative adjustment between guide surfaces
- 83/696 . . . . With relative adjustment between guide and work or work-support
- 83/6965 . . . . . By or with additional movable work-support portion
- 83/697 . . . . . By rotation about an axis parallel to the work-support surface
- 83/6975 . . . . . By rotation about an axis perpendicular to the work-support surface
- 83/698 . . . Including means to cause nonrectilinear tool infeed
- 83/6985 . . . Of arcuately oscillating tool
- 83/699 . . . Of tool carrier on single moving pivot
- 83/6995 . . . . Pivot moves in closed loop
- 83/70 . . . . Pivot moves to and fro in arcuate path
- 83/7005 . . . . . Axis of arcuate path moves during cutting
- 83/701 . . . . Pivot moves to and fro in rectilinear path
- 83/7015 . . Having uniplanar compound motion
- 83/702 . . . By plural arcuately oscillating carrier
- 83/7025 . . . Constantly oriented tool travelling in orbit
- 83/703 . . . Tool rocks cutting reciprocations
- 83/7035 . . . . One tool reciprocates along fixed guide element
- 83/704 . . With work-support and means to vary relationship between tool and work support
- 83/7045 . . Arcuately oscillating tool carried on single pivot
- 83/705 . . With means to support tool at opposite ends
- 83/7055 . . . And apply drive force to both ends of tool
- 83/706 . . . . By flexible drive means
- 83/7065 . . . . By reciprocating rigid support
- 83/707 . . By endless band or chain knife
- 83/7076 . . With programming means
- 83/7083 . . With cutter other than endlessly orbiting type
- 83/7089 . . Including contiguous oppositely moving knife portions
- 83/7095 . . With means to change to non-endlessly orbiting cutter
- 83/7101 . . With tool in-feed
- 83/7108 . . . Including ground-traversing vehicle
- 83/7114 . . . Including means to permit arcuate in-feed motion
- 83/712 . . . . Including means to relocate path of in-feed motion
- 83/7126 . . . . . Angular relative previous path
- 83/7133 . . . . By gravity
- 83/7139 . . . . With fluid in-feed regulating means
- 83/7145 . . . By motor-driven mechanism
- 83/7151 . . With scale or indicator
- 83/7158 . . Including plural cutting zones

83/7164	. . . With adjustment of separation between zones	83/758	. . . With means to adjust clamp position or stroke
83/717	. . . . By lever means	83/7587	. . Gapped work-constrainer
83/7176	. . . . By screw-threaded means	83/7593	. . Work-stop abutment
83/7183	. . . Including "figure-8" band	83/76	. . . With scale or indicator
83/7189	. . . Comprising plural bands	83/7607	. . . Normal to plane of cut
83/7195	. . Including means to adjust relationship between band and work-support surface	83/7613	. . . . Adjustable
83/7201	. . . By varying angle between band and work-support surface	83/762	. . . . . Angularly relative to plane of cut; e.g., miter
83/7208	. . . . By tilting band carrier	83/7627	. . . . With traversing cutter guide; e.g., cut-off saw
83/7214	. . . . . About point of intersection of cutting span and work-support surface	83/7633	. . . Collapsible
83/722	. . . By varying distance between band and work-support surface	83/764	. . . Retractable
83/7226	. . With means to guard the tension	83/7647	. . . Adjustable
83/7233	. . . Including means to retard undriven pulley or sprocket	83/7653	. . . . Having curved cutting edge to make arcuate cut, plural nonaligned intersecting cutting edges, or spaced punches
83/7239	. . . With means to vary distance between pulley or sprocket axes	83/766	. . . . . Spaced edges
83/7245	. . . . And angular relationship of axes	83/7667	. . . Having curved cutting edge to make arcuate cut, plural nonaligned intersecting cutting edges, or spaced punches
83/7251	. . . . Including means to yieldably bias pulley	83/7673	. . . . . Spaced edges
83/7258	. . . . . By fluid means	83/768	. Rotatable disc tool pair or tool and carrier
83/7264	. . With special blade guide means	83/7684	. . With means to support work relative to tool[s]
83/727	. With means to guide moving work	83/7688	. . . Plural tool elements successively actuated at same station
83/728	. . In pivotal or arcuate movement	83/7693	. . . Tool moved relative to work-support during cutting
83/73	. . Guide fixed to or integral with stationary tool element	83/7697	. . . . Tool angularly adjustable relative to work-support
83/731	. . . Tool element cooperates with a second tool	83/7701	. . . Supporting surface and tool axis angularly related
83/732	. . With guard	83/7705	. . . . Adjustable angular relationship
83/734	. . With attachment or operative connection to tool carrier	83/7709	. . . Unidirectionally movable work support
83/735	. . With attachment or operative connection to passive tool guide	83/7713	. . . . With opposed work-presser
83/736	. . Guide cooperates with template or straight edge secured to work	83/7718	. . . . . Presser co-axial with tool
83/738	. . Curved or deflecting guide	83/7722	. . . Support and tool relatively adjustable
83/739	. . Positively confines or otherwise determines path of work	83/7726	. . . . By movement of the tool
83/74	. . Adapted to permit maneuvering of work at tool zone	83/773	. . . Work-support includes passageway for tool [e.g., slotted table]
83/741	. . With movable or yieldable guide element	83/7734	. . With guard for tool
83/743	. . . Opposed to work-supporting surface	83/7738	. . Optional tool pairs alternatively operative
83/744	. . Plural guide elements	83/7743	. . . One element of tool pairs common to all pairs
83/745	. . . Opposed	83/7747	. . With means to permit replacement of tool
83/747	. . Opposed to work-supporting surface	83/7751	. . Means to separate elements of tool pair
83/748	. With work immobilizer	83/7755	. . Carrier for rotatable tool movable during cutting
83/7487	. . Means to clamp work	83/7759	. . . Unicyclic movement
83/7493	. . . Combined with, peculiarly related to, other element	83/7763	. . . Tool carrier reciprocable rectilinearly
83/75	. . . . With or to tool guide	83/7768	. . . . With means to adjust path of reciprocation
83/7507	. . . . Guide for traveling cutter	83/7772	. . . . . Angular relative to previous path
83/7513	. . . . Tool or tool support on movable clamp jaw	83/7776	. . . . . With means to reciprocate carrier
83/752	. . . With means providing for plural steps in clamping stroke	83/778	. . . . . And means to rotate tool
83/7527	. . . With equalizer or self-aligning jaw	83/7784	. . . . . With means to rotate tool
83/7533	. . . With biasing or counterbalancing means	83/7788	. . . Tool carrier oscillated or rotated
83/754	. . . Clamp driven by yieldable means	83/7793	. . Means to rotate or oscillate tool
83/7547	. . . Liquid pressure actuating means	83/7797	. . . Including means to rotate both elements of tool pair
83/7553	. . . Including means to retain clamp jaw in position	83/7801	. . . . Including means to rotate both elements at different speeds
83/756	. . . Self-locking drive means	83/7805	. . . . And means to change speed of rotation
83/7567	. . . Manually actuated drive means	83/7809	. . Tool pair comprises rotatable tools
83/7573	. . . Including clamping face of specific structure	83/7813	. . . Tool pair elements angularly related
		83/7818	. . . . Elements of tool pair angularly adjustable relative to each other

83/7822	. . . Tool pair axially shiftable	83/8702	. . Clicker die press
83/7826	. . . . With shifting mechanism for at least one element of tool pair	83/8703	. . . With die handling attachment
83/783	. . . Tool pair comprises contacting overlapped discs	83/8704	. . . With reciprocating presser
83/7834	. . . . With means to effect axial pressure on pair	83/8706	. . . . Laterally movable to selective operative positions
83/7838	. . . . . With means to change axial pressure	83/8707	. . . . . Pivotal or revolving only
83/7843	. . . . With means to change overlap of discs	83/8709	. . . . . With means to impart, limit, or control pivotal motion of presser
83/7847	. . . Tool element axially shiftable	83/871	. . . . . Interrelated with presser reciprocating means
83/7851	. . . Tool pair comprises disc and cylindrical anvil	83/8712	. . . . . With means to mount presser for oscillation about column
83/7855	. . . . With adjustable means to urge tool elements together	83/8713	. . . . With adjustable bed block
83/7859	. . . Elements of tool pair adjustably spaced	83/8714	. . . . Including presser member reinforcing, or flexure compensating, means
83/7863	. . Tool pair comprises rotatable tool and nonrotatable tool	83/8716	. . . . With manually actuated control apparatus for reciprocation of presser member
83/7868	. . Tool element selectively operative	83/8717	. . By deforming resilient tool or tool support
83/7872	. . Tool element mounted for adjustment	83/8719	. . With transmission yieldable on overload
83/7876	. . . Plural, axially spaced tool elements	83/872	. . With guard means
83/788	. Tool pair comprises rotatable anvil and fixed-type tool	83/8722	. . . Static
83/793	. . Anvil has motion in addition to rotation [i.e., traveling anvil]	83/8723	. . . . Adjustable
83/798	. . . Additional motion is along fixed arcuate path	83/8725	. . Including movable, tool protecting, cushioning sheet
83/803	. . . With plural anvils	83/8726	. . Single tool with plural selective driving means
83/808	. Two tool pairs, driver for one pair moves relative to driver for other pair	83/8727	. . Plural tools selectively engageable with single drive
83/811	. . One tool support acts as driver for other	83/8729	. . . Predetermined sequence of selection
83/814	. . . Punch and shear	83/873	. . . . Of paired tools
83/817	. . With variable spacing between tool pairs	83/8732	. . . Turret of tools
83/819	. . . With intermediate work support	83/8733	. . Tool movable to cooperate selectively with one of a plurality of mating tools
83/822	. . Punch and shear	83/8735	. . With means providing for plural steps in tool stroke
83/825	. . Successively acting	83/8736	. . Sequential cutting motions
83/828	. With illuminating or viewing means for work	83/8737	. . With tool positioning means synchronized with cutting stroke
83/839	. . Mirror or lens	83/8739	. . . Anvil moves into and out of operative position
83/849	. With signal, scale, or indicator	83/874	. . . Straight line positioning
83/85	. . Signal; e.g., alarm	83/8742	. . Tool pair positionable as a unit
83/851	. . Indicator comprising work or product	83/8743	. . . Straight line positioning
83/852	. . Responsive to force	83/8745	. . Tool and anvil relatively positionable
83/853	. . Indicates tool position	83/8746	. . . Straight line
83/855	. . . Relative to another element	83/8748	. . Tool displaceable to inactive position [e.g., for work loading]
83/856	. . . . To work-engaging member	83/8749	. . . By pivotal motion
83/857	. . . . . Calibrated scale or indicator	83/875	. . With templet surface following tool
83/858	. . . . . Indicates dimension of work being cut	83/8752	. . Tool moves work to and against cooperating tool
83/859	. . . . . Dynamic indicator	83/8753	. . . With means to clamp or bind work to moving tool
83/86	. . . . To another tool assembly	83/8755	. . . One tool resiliently mounted or biased
83/861	. . . . To cooperating tool	83/8756	. . . Work forced through tool aperture or between spaced cooperating tools
83/862	. . . . To another component of tool assembly	83/8758	. . . Manually actuated work-moving tool
83/863	. . . . Adjustable guide for traversing tool; e.g., radial saw guide or miter saw guide	83/8759	. . With means to connect or disconnect tool and its drive
83/865	. . Indicates work characteristic	83/8761	. . . Continuously moving drive means [e.g., "gag"]
83/866	. . Indicates wear	83/8762	. . . . Hand actuated connecting means
83/867	. . Bubble level	83/8763	. . Convertible from tool path to another or from implement to machine
83/868	. . Counter	83/8765	. . Magnet- or solenoid-actuated tool
83/869	. Means to drive or to guide tool	83/8766	. . . Tool movement modifies actuating circuit
83/8691	. . Unicyclic	83/8768	. . . Solenoid core is tool or tool support
83/8693	. . . With adjustable stopping point or tool		
83/8694	. . . With brake or blocking means		
83/8696	. . Means to change datum plane of tool or tool presser stroke		
83/8697	. . . For disabling of continuously actuated cutter		
83/8699	. . . With adjustable stop		
83/87	. . . By varying length of tool stroke		

83/8769	. . Cutting tool operative in opposite directions of travel	83/884	. . . . By connecting rod articulated with tool support
83/8771	. . Motion direction of tool influenced by resistance of work	83/8841	. . . Tool driver movable relative to tool support
83/8772	. . One tool edge of tool pair encompasses work [e.g., wire cutter]	83/8843	. . . . Cam or eccentric revolving about fixed axis
83/8773	. . Bevel or miter cut	83/8844	. . . . Gear actuated tool support
83/8775	. . With tool tensioning means	83/8845	. . . . Toggle links, one link pivoted to tool support
83/8776	. . Constantly urged tool or tool support [e.g., spring biased]	83/8847	. . . . Screw actuated tool support
83/8778	. . . Ledger blade	83/8848	. . . . Connecting rod articulated with tool support
83/8779	. . . Oscillating tool urged axially	83/885	. . . . Fixed axis lever
83/8781	. . . . And urged about pivotal axis	83/8851	. . . . . Adjustable mechanical advantage
83/8782	. . . Stored energy furnishes cutting force	83/8853	. . . . Including details of guide for tool or tool support
83/8784	. . . . With reset	83/8854	. . . Progressively cutting
83/8785	. . . Through return [noncutting] stroke	83/8855	. . . With spaced guide pins [e.g., die set leader pins]
83/8786	. . . . Oscillating tool	83/8857	. . . With inclined guides
83/8788	. . Tool return mechanism separate from tool advance mechanism	83/8858	. . . Fluid pressure actuated
83/8789	. . With simple revolving motion only	83/886	. . . . Utilizing fluid amplifier
83/8791	. . . Tool mounted on radial face of rotor	83/8861	. . . . Diaphragm
83/8792	. . . Variable speed during one revolution [e.g., intermittent]	83/8863	. . . . Explosive fluid
83/8794	. . . Revolving tool moves through recess in work holder or cooperating tool	83/8864	. . . . Plural cylinders
83/8795	. . . . Progressively cutting	83/8866	. . . . Offset cutter
83/8796	. . . Progressively cutting	83/8867	. . . With means to adjust tool position on tool holder
83/8798	. . With simple oscillating motion only	83/8868	. . . . Adjustably mounted cooperating tool
83/8799	. . . Plural tool pairs	83/887	. . Parallel draw-cut [e.g., translatory]
83/8801	. . . . Plural tools on single oscillating arm [i.e., tool holder]	83/8871	. . . Link suspension
83/8802	. . . And means to move cooperating cutter member	83/8873	. . Straight line motion combined with tilting in plane of stroke
83/8804	. . . Tool driver movable relative to tool support	83/8874	. . Uniplanar compound motion
83/8805	. . . . Cam or eccentric revolving about fixed axis	83/8876	. . . Reciprocating plus work approach [e.g., saw type]
83/8807	. . . . Gear or ratchet pawl drives toothed tool support	83/8877	. . . With gyratory drive
83/8808	. . . . Toggle links, one link pivoted to tool support	83/8878	. . Guide
83/8809	. . . . Fixed axis lever	83/888	. . . With nonrigidly positioned member
83/8811	. . . . . Adjustable mechanical advantage	83/8881	. . . With anti-friction means
83/8812	. . . Cutting edge in radial plane	83/8883	. . . . Roller with peripheral flange or groove
83/8814	. . . . Adjustable	83/8884	. . . . Disc
83/8815	. . . . With guide means for the cutting member	83/8886	. . . With means to vary space between opposed members
83/8817	. . . Axially extending cutting edge	83/8887	. . . . By rectilinear movement of member
83/8818	. . . . Axially progressing cut	83/8889	. . . With means to adjust position
83/882	. . . . Adjustable	83/889	. Tool with either work holder or means to hold work supply
83/8821	. . With simple rectilinear reciprocating motion only	83/896	. . Rotatable wound package supply
83/8822	. . . Edge-to-edge of sheet or web [e.g., traveling cutter]	83/902	. . . Plural supply sources
83/8824	. . . With provision for dynamic balance	83/909	. Cutter assemblage or cutter element therefor [e.g., chain saw chain]
83/8825	. . . With lost motion in tool drive	83/913	. . With means permitting removal of cutter element
83/8827	. . . Means to vary force on, or speed of, tool during stroke	83/917	. . Having diverse cutting elements
83/8828	. . . Plural tools with same drive means	83/921	. . . And noncutting depth gauge
83/883	. . . . Tools positioned by template	83/925	. . Having noncutting depth gauge
83/8831	. . . . Plural distinct cutting edges on same support	83/929	. Tool or tool with support
83/8832	. . . . . Concentrically mounted	83/9292	. . Wire tool
83/8834	. . . . . Successively acting	83/9295	. . Work supported tool [e.g., clicker die]
83/8835	. . . And means to move cooperating cutting member	83/9297	. . . With product ejection facilitator
83/8837	. . . With application of force to opposite ends of tool supporting crosshead	83/93	. . . With tool manipulating portion
83/8838	. . . . By relatively movable fixed axis levers	83/9302	. . . With tool positioning abutment
		83/9304	. . . To sever article from work and cut within article
		83/9307	. . . With tool contour adjusting means
		83/9309	. . Anvil

83/9312	. . . Rotatable type	83/9444	. . . . Shear type
83/9314	. . Pointed perforators	83/9447	. . . Shear type
83/9317	. . Endless band or belt type	83/9449	. . . Spaced cut forming tool
83/9319	. . Toothed blade or tooth therefor	83/9452	. . . With tool contour adjusting means
83/9321	. . . With means to vary tooth position	83/9454	. . Reciprocable type
83/9324	. . . With additional cutting means	83/9457	. . Joint or connection
83/9326	. . . Plural separable sections	83/9459	. . . Magnetic connection
83/9329	. . . . Tooth separable from blade	83/9461	. . . Resiliently biased connection
83/9331	. . . . . By independent connecting element	83/9464	. . . For rotary tool
83/9333	. . . . . Transversely movable	83/9466	. . . . Flexible sleevelike tool
83/9336	. . . . . Arcuately movable	83/9469	. . . . Adjustable
83/9338	. . . . . With additional element to prevent movement of connecting element	83/9471	. . . . Rectilinearly
83/9341	. . . . . Rectilinearly movable	83/9473	. . . For rectilinearly reciprocating tool
83/9343	. . . . . By deformation	83/9476	. . . . Tool is single element with continuous cutting edge [e.g., punch, etc.]
83/9346	. . . Uniformly varying teeth or tooth spacing	83/9478	. . . . Tool is single element reciprocable generally perpendicularly to elongate cutting edge [e.g., shear, etc.]
83/9348	. . . Undulating tooth arrangement	83/9481	. . . . Tool is single element reciprocable along elongate cutting edge [e.g., saw blade, etc.]
83/935	. . . Plural tooth groups	83/9483	. . . . Adjustable
83/9353	. . . . Including raker tooth group	83/9486	. . . . . Rectilinearly
83/9355	. . . . Including intermediate raker tooth	83/9488	. . . . Adjustable
83/9358	. . . Series of dissimilar teeth	83/949	. . . . Rectilinearly
83/936	. . . Series of allochiral teeth	83/9493	. . Stationary cutter
83/9362	. . . Teeth having transversely curved cutting edge	83/9495	. . . Nonparallel cutting edges
83/9365	. . . Teeth having cutting edge parallel to blade surface	83/9498	. . . Parallel cutting edges
83/9367	. . . Teeth having cutting edge perpendicular to blade surface	83/95	. Machine frame
83/937	. . Tool mounted by and between spaced arms	83/96	. . Guard
83/9372	. . Rotatable type	83/97	. Miscellaneous
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		

**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****137/00 Fluid handling**

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



137/2592	. . . . .	Carried choke	137/271	. . .	For single valve
137/2594	. . . . .	Choke	137/2713	.	Siphons
137/2597	. . . . .	Variable choke resistance	137/272	. .	Plural
137/2599	. . . . .	Venturi	137/2727	. . .	Tank truck mounted
137/2602	. . . . .	Flapper	137/2733	. . .	Sequentially discharging in parallel
137/2605	. . . . .	Pressure responsive	137/274	. . . .	From plural tanks
137/2607	. . . . .	With pressure reducing inlet valve	137/2747	. . .	Main siphon with auxiliary starting, stopping or resetting siphon
137/261	. . . . .	Relief port through common sensing means	137/2754	. . . .	Sinking or bucket-type float operated main siphon, float emptying auxiliary siphon
137/2612	. . . . .	Common sensor for both bypass or relief valve and other branch valve	137/2761	. .	With discharge-controlling receiver
137/2615	. . . . .	Bypass or relief valve opens as other branch valve closes	137/2768	. . .	With float
137/2617	. . . . .	Bypass or relief valve biased open	137/2774	. .	Periodic or accumulation responsive discharge
137/262	. . . . .	Increasing pressure progressively closes then reopens by-pass or relief valve	137/2781	. . .	With manual control
137/2622	. . . . .	Bypass or relief valve responsive to pressure downstream of outlet valve	137/2788	. . .	Control by filling auxiliary tank
137/2625	. . . . .	Pilot valve	137/2795	. . .	Float-operated inlet to siphon
137/2627	. . . . .	Outlet valve carried by bypass or relief valve	137/2802	. . .	Release of trapped air
137/263	. . . . .	Plural sensors for single bypass or relief valve	137/2808	. . . .	Through float-operated vent
137/2632	. . . . .	Sensors interconnected by timing or restrictive orifice	137/2815	. . . .	Through liquid trap seal
137/2635	. . . . .	Pilot valve operated	137/2822	. . . . .	Auxiliary liquid trap seal
137/2637	. . . . .	Mechanical movement between sensor and valve	137/2829	. .	With strainer, filter, separator or sediment trap
137/264	. . . . .	Electrical control	137/2836	. .	With recorder, register, signal, indicator or inspection window
137/2642	. . . . .	Sensor rigid with valve	137/2842	. .	With flow starting, stopping or maintaining means
137/2645	. . . . .	Flexible sensor	137/2849	. . .	Siphon venting or breaking
137/2647	. . . . .	Pressure responsive outlet valve	137/2856	. . .	With leakage or entrained air removal
137/265	. . .	Plural outflows	137/2863	. . .	Pressure applied to liquid in supply chamber
137/2652	. . . .	Single actuator operates plural outlets simultaneously	137/287	. . .	Plunge or immersion starting
137/2655	. . . .	Biased open isolation valve	137/2877	. . .	Pump or liquid displacement device for flow passage
137/2657	. . . .	Flow rate responsive	137/2883	. . . .	Piston
137/266	. . . . .	Primer valve	137/289	. . . . .	Co-axial within flow passage
137/2663	. . . . .	Pressure responsive	137/2897	. . . .	Collapsible bulb
137/2665	. . . . .	With external control for correlating valve [e.g., manual]	137/2904	. . .	Siphon inlet movable to and from seat
137/2668	. . . .	Alternately or successively substituted outflow	137/2911	. . .	With valve or closure in-flow passage
137/267	. . . . .	Control by filling auxiliary gravitating or float operating tank	137/2917	. .	With means for mounting and/or positioning relative to siphon chamber
137/2673	. . . . .	Control by filling outlet tank or receiver	137/2924	. .	Elements
137/2675	. . . . .	Float controlled	137/2931	. .	Diverse fluid containing pressure systems
137/2678	. . . . .	Four port reversing valve	137/2934	. .	Gas lift valves for wells
137/268	. . . . .	Responsive to pressure or flow interruption	137/2937	. .	Gas pressure discharge of liquids feed traps [e.g., to boiler]
137/2683	. . . . .	Plural outlets control with automatic reset	137/294	. . .	Gas pressure controlled by amount of liquids in boiler or discharge receiver
137/2685	. . . . .	Manually set to a single outflow position	137/2943	. . . .	Pressure connection at liquid level in boiler or discharge receiver
137/2688	. . . . .	Flow rate responsive	137/2947	. . .	Gas pressure controlled by amount of liquid in trap
137/269	. . . . .	Flow sensing turbine	137/295	. . . .	Plural trap chambers
137/2693	. . . . .	Pressure responsive	137/2953	. . . . .	Gravitating
137/2695	. . . . .	Responsive to outlet pressure	137/2956	. . . .	Gravitating vessel
137/2698	. . . . .	Electrical control	137/2959	. . . . .	Sinking or bucket type float
137/27	. .	Liquid level responsive	137/2962	. . . . .	Pivoted vessel with fluid passage through pivot
137/2703	. .	Flow rate responsive	137/2965	. . . .	Float responsive
137/2705	. . .	Pressure differential	137/2968	. . . . .	Liquid control valve positively actuated
137/2708	. .	Plural sensors	137/2971	. . . . .	Gas condensing type
			137/2975	. . . . .	Gas inlet and outlet valves unitary
			137/2978	. . .	Gas pressure controlled by manual or cyclic means
			137/2981	. . . .	Movable trap chamber

- 137/2984 . . . Foam control in gas charged liquids
- 137/2987 . . . . Level or pressure responsive
- 137/299 . . . . Separate handling of foam
- 137/2993 . . . . With conditioning trap or chamber
- 137/2996 . . . . . Recarbonation
- 137/30 . . . . . With trap or chamber by-pass
- 137/3003 . . . Fluid separating traps or vents
- 137/3006 . . . . Liquids separated from liquid
- 137/3009 . . . . Plural discriminating outlets for diverse fluids
- 137/3012 . . . . . Common actuator for control valves
- 137/3015 . . . . . Choke or restricted passage gas bleed
- 137/3018 . . . . . . From above liquid level
- 137/3021 . . . . Discriminating outlet for liquid
- 137/3024 . . . . . With alternately operated inlet and outlet valves
- 137/3028 . . . . . With non-discriminating gas vent or liquid discharge
- 137/3031 . . . . . . Abnormal pressure responsive liquid blow-off or drain
- 137/3034 . . . . . . Manual control
- 137/3037 . . . . . With auxiliary inlet or by-pass valve
- 137/304 . . . . . With fluid responsive valve
- 137/3043 . . . . . . Successively opened valves
- 137/3046 . . . . . . Gas collecting float [e.g., inverted bucket]
- 137/3049 . . . . . . . Downstream from valve
- 137/3052 . . . . . . . Level responsive
- 137/3056 . . . . . . . Weight or pressure
- 137/3059 . . . . . . . . Gravitating vessel
- 137/3062 . . . . . . . . Sinking or bucket type float
- 137/3065 . . . . . . . . . Servo-control
- 137/3068 . . . . . . . . . Float
- 137/3071 . . . . . . . . . With main line gas outlet from trap chamber
- 137/3074 . . . . . . . . . With outlet extending above liquid in trap
- 137/3077 . . . . . . . . . Servo-control
- 137/308 . . . . . . . . . With pressure balanced outlet valve
- 137/3084 . . . . Discriminating outlet for gas
- 137/3087 . . . . . With reverse flow stop or pressure regulating valve
- 137/309 . . . . . Fluid sensing valve
- 137/3093 . . . . . . With vaporized liquid stop
- 137/3096 . . . . . . . With separate return for condensate
- 137/3099 . . . . . . . . Float responsive
- 137/3102 . . . . . With liquid emptying means
- 137/3105 . . . . . Self-emptying
- 137/3109 . . . Liquid filling by evacuating container
- 137/3112 . . . Main line flow displaces additive from shunt reservoir
- 137/3115 . . . Gas pressure storage over or displacement of liquid
- 137/3118 . . . . Surge suppression
- 137/3121 . . . . With return of liquid to supply
- 137/3124 . . . . Plural units
- 137/3127 . . . . With gas maintenance or application
- 137/313 . . . . . Gas carried by or evolved from liquid
- 137/3133 . . . . . . Gas injectors
- 137/3137 . . . . . Gas injected by liquid pressure or flow
- 137/314 . . . . . Unitary mounting for gas pressure inlet and liquid outlet
- 137/3143 . . . . With liquid level responsive gas vent or whistle
- 137/3146 . . . . . Combined high and low level responsive
- 137/3149 . . . Back flow prevention by vacuum breaking [e.g., anti-siphon devices]
- 137/3185 . . . Air vent in liquid flow line
- 137/3222 . . . . With liquid seal in liquid flow line
- 137/3258 . . . . . Automatic valve in vent line
- 137/3294 . . . . . Valved
- 137/3331 . . . . . . With co-acting valve in liquid flow path
- 137/3367 . . . . . Larner-Johnson type valves; i.e., telescoping internal valve in expanded flow line section
- 137/3421 . . . Line condition change responsive
- 137/3476 . . . Internal servo-motor with internal pilot valve
- 137/353 . . . . Pilot controlled passage in nose or needle
- 137/3584 . . . Inflatable article [e.g., tire filling chuck and/or stem]
- 137/36 . . . With pressure-responsive pressure-control means
- 137/3615 . . . . Pulsating
- 137/3631 . . . . Diaphragm, bellows or expansible tube
- 137/3646 . . . . Co-axial inflation and relief valves
- 137/3662 . . . . With gauge or indicator
- 137/3677 . . . . . With deflating means
- 137/3693 . . . . . Selectively connected
- 137/3709 . . . Stem attached relief valve
- 137/3724 . . . With coupling means
- 137/374 . . . With cap
- 137/3755 . . . . Valve actuating, assembling or locking means on cap
- 137/3771 . . . . . Valve manually seated
- 137/3786 . . . Removable valve head and seat unit [valve insides]
- 137/3802 . . . With vehicle guide or support, e.g., service station
- 137/402 . . . Distribution systems involving geographic features
- 137/4238 . . . With cleaner, lubrication added to fluid or liquid sealing at valve interface
- 137/4245 . . . Cleaning or steam sterilizing
- 137/4252 . . . . Reverse fluid flow
- 137/4259 . . . . With separate material addition
- 137/4266 . . . . Steam sterilizing
- 137/4273 . . . . Mechanical cleaning
- 137/428 . . . . . Valve grinding motion of valve on seat
- 137/4287 . . . . . . Concentric stem
- 137/4294 . . . . . . . Spring pressed
- 137/4301 . . . . . . . Lost motion permits grinding
- 137/4308 . . . . . . . With swivel-preventing means
- 137/4315 . . . . . . . Nut releasable from body and/or stem
- 137/4322 . . . . . . . With independent grinding actuator
- 137/4329 . . . . . . . . Separable
- 137/4336 . . . . . . . . Cleaning member reciprocates in passage
- 137/4343 . . . . . . . . By-pass cleaning
- 137/4351 . . . . . . . . Independent actuation
- 137/4358 . . . . Liquid supplied at valve interface
- 137/4365 . . . . Plural feed
- 137/4372 . . . . Line pressure feed
- 137/4379 . . . . Feed by or with actuation
- 137/4386 . . . . Loss control
- 137/4393 . . . . Screw feed
- 137/44 . . . . . With check valve
- 137/4407 . . . . . . Excess relief
- 137/4414 . . . . . . . Jacking
- 137/4421 . . . . . . . Jacking
- 137/4428 . . . . . . . Seating
- 137/4435 . . . . Spring biased piston feed
- 137/4442 . . . . External pressure
- 137/4449 . . . . Gravity or capillary feed

137/4456	. With liquid valves or liquid trap seals	137/5362	. . . Extensible spout
137/4463	. . Liquid seal in liquid flow line; flow liquid forms seal	137/5368	. . . Spout articulated to riser
137/4471	. . . Valves	137/5374	. . Plural riser
137/4478	. . . . Line condition change responsive	137/538	. . Expandable chamber operated by valve actuator for draining riser
137/4486	. . . . . Plural valves or valve seats	137/5386	. . With pump or ejector
137/4493	. . . . . Pivoted valve	137/5392	. . Removable valve and valve seat
137/4501	. . . . . Ball valve	137/5397	. . . With extension to facilitate removal
137/4508	. . . . . Seats vertically up	137/5403	. . Removable valve with supplemental check valve
137/4516	. . . Seal replenishers	137/5409	. . Movable riser actuated valve
137/4523	. . . Plural inlet	137/5415	. . . Reciprocating riser
137/4531	. . . Divided and recombined passages	137/5421	. . . . Piston type valve
137/4538	. . . Tangential inlet flow	137/5427	. . Balanced valve
137/4546	. . . Downward partition encircles projecting outlet	137/5433	. . Valve actuator extends laterally from bottom of riser
137/4553	. . . Submerged inlet pipe end	137/5438	. . Valve actuator outside riser
137/4561	. . . . Hinged seal bowl	137/5444	. . . Lever actuator
137/4568	. . . . Distinct seal bowl in flow line connected casing	137/545	. . . With casing, flush with ground or pavement surface
137/4576	. . . U-seals	137/5456	. . With casing
137/4583	. . . . Topside access beneath cover plate closed floor opening	137/5462	. . . Flush with ground or pavement surface
137/4591	. . . . Enlarged upflow leg	137/5468	. . . Cap, cover or hood
137/4598	. . . . . Topside access opening	137/5474	. . . With heater
137/4606	. . . . Even diameter legs	137/5479	. . With actuator lubricating means
137/4613	. . . . . Access opening	137/5485	. . With valve at outlet
137/4621	. . Seal for relatively movable valving parts	137/5491	. . With supplemental valve
137/4628	. . . Horizontally moving valve	137/5497	. . Protection against freezing
137/4636	. . . . Rotary	137/5503	. . . Stop and waste
137/4643	. . Liquid valves	137/5509	. . . . With disabling means
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		
137/5333	. . Water crane type		
137/5339	. . . Spout operated valve		
137/5345	. . . Rotating riser		
137/535	. . . . Spout articulated to riser		
137/5356	. . . . Vertically movable riser		

137/6017	. . . . Including removable valve head and seat unit	137/6195	. . . . Spring bias
137/6021	. . . . Including mechanical movement actuator	137/6198	. Non-valving motion of the valve or valve seat
137/6024	. . . . Particular handle or handle fastening means	137/6253	. . Rotary motion of a reciprocating valve
137/6028	. . Assembling or disassembling pivoted valve	137/6307	. . . Turbine on valve
137/6031	. . Assembling or disassembling rotary valve	137/6362	. . . Manual rotating means
137/6035	. . . Rotary ball valve	137/6416	. With heating or cooling of the system
137/6038	. . . . Particular valve seat or interface seal	137/6443	. . With burner
137/6041	. . . . . Replaceable	137/647	. . . Flue extending through fluid
137/6045	. . . . . With top entry valve	137/6497	. . Hot and cold water system having a connection from the hot to the cold channel
137/6048	. . . Butterfly valve	137/6525	. . Air heated or cooled [fan, fins, or channels]
137/6052	. . . . Having valve head or seat packing	137/6552	. . With diversion of part of fluid to heat or cool the device or its contents
137/6055	. . . . With head and stem collections	137/6579	. . Circulating fluid in heat exchange relationship
137/6058	. . . Plug valve	137/6606	. . With electric heating element
137/6062	. . . . Having retainer at actuator end	137/6633	. With fluid system support for workman or non-system material
137/6065	. . Assembling or disassembling reciprocating valve	137/6851	. With casing, support, protector or static constructional installations
137/6069	. . . Having particularly packed or sealed mechanical movement actuator	137/6855	. . Vehicle
137/6072	. . . Gate valve	137/6858	. . . Locomotive
137/6075	. . . . Bifaced	137/6862	. . . . Boiler or steam dome
137/6079	. . . . Having particular valve seat	137/6866	. . . Railway car
137/6082	. . . . . Including seal	137/6869	. . . . Car frame
137/6086	. . Assembling or disassembling check valve	137/6873	. . . . End of car
137/6089	. . With mechanical movement between actuator and valve	137/6877	. . . . Roof, wall or floor
137/6092	. . . Plural motions of valve	137/6881	. . . Automotive
137/6096	. . . Lever type	137/6884	. . . . Steering post or wheel
137/6099	. . . Gear type	137/6888	. . . . Dash
137/6103	. . . Cam type	137/6892	. . . . Floor or frame
137/6106	. . . Screw type	137/6895	. . . . Fender or running board
137/6109	. . Tool for applying or removing valve or valve member	137/6899	. . . With hose reel storage means
137/6113	. . . Including sealing feature	137/6903	. . . Guided by means of track or guideway
137/6116	. . With holding means functioning only during transportation assembly or disassembly	137/6906	. . . Aerial or water-supported [e.g., airplane or ship, etc.]
137/612	. . Tapping a pipe, keg, or apertured tank under pressure	137/691	. . . With retractable or nonuse-positionable support wheel
137/6123	. . . With aperture forming means	137/6914	. . . Vehicle supports fluid compressor and compressed fluid storage tank
137/6126	. . . Imperforate closure removing and holding tap	137/6918	. . With hose storage or retrieval means
137/613	. . . With valved closure or bung	137/6921	. . . With means for plural hoses
137/6133	. . . . Combined rotary and longitudinal movement of valve	137/6925	. . . With flow regulation responsive to hose movement
137/6137	. . . . Longitudinal movement of valve	137/6929	. . . . Reel type
137/614	. . . . Rotary movement of valve	137/6932	. . . With retrieval means
137/6144	. . . With core ejectors	137/6936	. . . . Power stop or brake
137/6147	. . . . Impact operated	137/694	. . . . . Responsive to position of hose in casing
137/615	. . Foot valve extraction from top of enclosure	137/6943	. . . . . Biased to retracted position
137/6154	. . With disassembly tool engaging feature	137/6947	. . . . . Boom type
137/6157	. . . Wrench engaging lugs	137/6951	. . . . . Weighted
137/6161	. . With provision of alternate wear parts	137/6954	. . . Reel with support therefor
137/6164	. . . Valve heads and/or seats	137/6958	. . . . Ground supported
137/6167	. . . . Opposite duplicate surfaces of unitary structure	137/6962	. . . Basket or holder for folded coiled hose
137/6171	. . . . . Homogeneous material	137/6966	. . Static constructional installations
137/6174	. . . . . Valve heads	137/6969	. . . Buildings
137/6178	. . . . Different portions of continuous surfaces	137/6973	. . . . Outside access to portions of the system
137/6181	. . . . Successively used adjacent independent elements	137/6977	. . . . Escutcheon type support
137/6184	. . Removable valve with normally disabled supplemental check valve	137/698	. . . . Wall
137/6188	. . . Check valve disabled by normally movable main valve part	137/6984	. . . . . Recessed gas outlet box
137/6191	. . . . Ball check	137/6988	. . . . Floor installation
		137/6991	. . . Ground supporting enclosure
		137/6995	. . . . Valve and meter wells

137/6999	. . . . . With means to center well on valve	137/7384	. . . . . Pilot float released
137/7002	. . . . . Detachable base plate	137/7387	. . . . . Over center mechanism
137/7006	. . . . . Vertical casing aligned by valve casing	137/7391	. . . . . Shifting weight
137/701	. . . . . Combined with actuator	137/7394	. . . . . Trip mechanism
137/7014	. . . . . Telescopic well casing	137/7397	. . . . . Weight or spring bias
137/7017	. . . . . Telescopic well casing	137/74	. . . . . Lost motion mechanism
137/7021	. . . . . Covers	137/7404	. . . . . Plural floats
137/7025	. . . . . Pipe line transport	137/7407	. . . . . With counter-balance
137/7028	. . . . . Tapering or tower type	137/741	. . . . . Within tank
137/7032	. . . . . Furniture and housing furnishings	137/7413	. . . . . Level adjustment or selection means
137/7036	. . . . . Jacketed	137/7417	. . . . . With float leakage disposal
137/7039	. . . . . Tank supports	137/742	. . . . . In separate communicating float chamber
137/7043	. . . . . Guards and shields	137/7423	. . . . . Rectilinearly traveling float
137/7047	. . . . . Resilient abutment for preventing breakage	137/7426	. . . . . Float co-axial with valve or port
137/7051	. . . . . Nozzle abutment for scratch or damage prevention	137/743	. . . . . Float is spreader or anti-splash means
137/7054	. . . . . Cover for beer cooler aperture for faucet	137/7433	. . . . . Float surrounds inlet pipe
137/7058	. . . . . Sanitary covers or shields	137/7436	. . . . . Float rigid with valve
137/7062	. . . . . Valve guards	137/7439	. . . . . Float arm operated valve
137/7065	. . . . . With means for accommodating a detachable actuator	137/7442	. . . . . With valve retarder or cushion means
137/7069	. . . . . With lock or seal	137/7446	. . . . . With flow guide or restrictor
137/71	. . . . . With seal	137/7449	. . . . . External hood or deflector or annular outlet surrounding the inlet pipe
137/7131	. . . . . Common lock and valve actuator	137/7452	. . . . . Movable nozzle or inlet terminal
137/7162	. . . . . Combination lock	137/7455	. . . . . Valve removable from outside container
137/7194	. . . . . Biased valve	137/7459	. . . . . With U-shaped inlet pipe having terminal valve
137/7225	. . . . . Mechanical movement between lock and valve	137/7462	. . . . . With refill pipe
137/7256	. . . . . Locks against rotary motion	137/7465	. . . . . Assembly mounted on and having reciprocating valve element coaxial with inlet pipe
137/7287	. . . . . Liquid level responsive or maintaining systems	137/7468	. . . . . Horizontal or side entering pipe
137/729	. . . . . Washing machine cycle control	137/7472	. . . . . Vertical inlet riser
137/7293	. . . . . Liquid excluding devices for gas inlet or outlets	137/7475	. . . . . With toggle or second lever connected to valve
137/7297	. . . . . With second diverse control	137/7478	. . . . . With interposed cam, gear or threaded connection
137/73	. . . . . Manual control	137/7481	. . . . . Rotary valve element
137/7303	. . . . . Control of both inflow and outflow of tank	137/7485	. . . . . Pivoted valve
137/7306	. . . . . Electrical characteristic sensing	137/7488	. . . . . Ball valves
137/731	. . . . . With control fluid connection at desired liquid level	137/7491	. . . . . Balanced valves
137/7313	. . . . . Control of outflow from tank	137/7494	. . . . . Flexible valve
137/7316	. . . . . Self-emptying tanks	137/7498	. . . . . Barometric
137/7319	. . . . . By float	137/7501	. . . . . With shut-off between supply tank and receiver
137/7323	. . . . . By float	137/7504	. . . . . Removable valve head and seat unit
137/7326	. . . . . Low level safety cut-off	137/7559	. . . . . Pump type
137/7329	. . . . . With supplemental or safety closing means or bias	137/7613	. . . . . Threaded into valve casing
137/7332	. . . . . Sinking or bucket type float	137/7668	. . . . . Retained by bonnet or closure
137/7336	. . . . . Gravitating tank	137/7722	. . . . . Line condition change responsive valves
137/7339	. . . . . By weight of accumulated fluid	137/7723	. . . . . Safety cut-off requiring reset
137/7342	. . . . . In sinking or bucket type float	137/7724	. . . . . Thermal
137/7345	. . . . . Oil burner fuel overflow preventing safety cut-offs	137/7725	. . . . . Responsive to both high and low pressure or velocity
137/7349	. . . . . In communicating measuring vessel	137/7726	. . . . . Responsive to change in rate of flow
137/7352	. . . . . Top and bottom connections	137/7727	. . . . . Excessive flow cut-off
137/7355	. . . . . In gravitating tank	137/7728	. . . . . High pressure cut-off
137/7358	. . . . . By float controlled valve	137/7729	. . . . . Reset by pressure equalization valve or by-pass
137/7361	. . . . . Valve opened by external means, closing or closing control by float	137/773	. . . . . Fluid released trip
137/7365	. . . . . Single float controls plural valves	137/7731	. . . . . Fluid counter-biased or unseated valve
137/7368	. . . . . Servo relay operation of control	137/7732	. . . . . With mechanical stop against reopening
137/7371	. . . . . Fluid pressure	137/7733	. . . . . With fluid pressure seating of valve
137/7374	. . . . . Flexible diaphragm valve	137/7734	. . . . . Fluid opened valve requiring reset
137/7378	. . . . . From tank	137/7736	. . . . . Consistency responsive
137/7381	. . . . . Quick acting		

137/7737	. . Thermal responsive	137/7793	. . . With opening bias [e.g., pressure regulator]
137/7738	. . Pop valves	137/7794	. . . . With relief valve
137/7739	. . . Pop closing valves	137/7795	. . . . Multi-stage
137/774	. . . Pop pressure reactor in inflow to valve	137/7796	. . . . Senses inlet pressure
137/7741	. . . Pop pressure reactor in branched released path	137/7797	. . . . Bias variable during operation
137/7742	. . . . Separate relief valves or valves for each branch	137/7798	. . . . . Ancillary reactor surface responds to inlet pressure
137/7743	. . . Lost motion between pop pressure reactor and valve	137/7799	. . . . . Liquid transfer
137/7744	. . . Adjustable choke	137/78	. . . . . Weight
137/7745	. . . . Annular lip or baffle	137/7801	. . . . Balanced valve
137/7746	. . . . . On movable valve part	137/7802	. . . . Liquid level responsive gas flow control
137/7747	. . . . . Screw threaded	137/7803	. . . . With protective separator
137/7748	. . Combustion engine induction type	137/7804	. . . . Main flow through isolated reactor chamber
137/7749	. . . Valve in auxiliary inlet to induction line	137/7805	. . . . Through external pipe
137/775	. . . With manual modifier	137/7806	. . . . . Modified valve casing
137/7751	. . . With suction compensator	137/7807	. . . . . Adjustable external lever
137/7752	. . . With separate reactor surface	137/7808	. . . . Apertured reactor surface surrounds flow line
137/7753	. . . Unbalanced pivoted valve [e.g., unbalanced butterfly type]	137/7809	. . . . Reactor surface separated by apertured partition
137/7754	. . Line flow effect assisted	137/781	. . . . . In valve stem
137/7755	. . . Reactor surface normal to flow	137/7811	. . . . . Also through reactor surface
137/7756	. . . Reactor surface separated from flow by apertured partition	137/7812	. . . . . Valve stem passes through the aperture
137/7757	. . . . Through separate aperture	137/7813	. . . . . Plural reactor surfaces
137/7758	. . Pilot or servo controlled	137/7814	. . . . . Reactor is an inverted cup having liquid seal
137/7759	. . . Responsive to change in rate of fluid flow	137/7815	. . . . . . With movement dampener
137/776	. . . . Control by pressures across flow line valve	137/7816	. . . . . . Valve head in inlet chamber
137/7761	. . . Electrically actuated valve	137/7818	. . . . . . Valve head in inlet chamber
137/7762	. . . Fluid pressure type	137/7819	. . . . . . Rectilinear valve stem rigid with reactor surface
137/7764	. . . . Choked or throttled pressure type	137/782	. . . . . Reactor surface is diaphragm
137/7765	. . . . . Pilot valve within main valve head	137/7821	. . . . . . With valve closing bias
137/7766	. . . . . Choked passage through main valve head	137/7822	. . . . Reactor surface closes chamber
137/7767	. . . . . Loose fitting piston	137/7823	. . . . . Valve head in inlet chamber
137/7768	. . . . . Pilot controls supply to pressure chamber	137/7824	. . . . . Reactor surface is inverted cup [float]
137/7769	. . . . Single acting fluid servo	137/7825	. . . . . Rectilinear valve stem rigid with reactor surface
137/777	. . . . . Spring biased	137/7826	. . . . . . With valve closing bias
137/7771	. . Bi-directional flow valves	137/7827	. . . . . . In reactor chamber
137/7772	. . . One head and seat carried by head of another	137/7828	. . . . . Valve head on yoke
137/7773	. . . . Supporting valve only spring biased	137/7829	. . . . . Yoke has valve closing bias
137/7774	. . . . Supporting valve spring carried by supporting valve	137/783	. . . . . Reactor operatively connected to valve by mechanical movement
137/7775	. . . . . Spring stop on supported valve stem	137/7831	. . . . With mechanical movement between actuator and valve
137/7776	. . . . . Spring abuts guide for supported valve stem	137/7832	. . . Plural valves biased closed
137/7777	. . . . Both valves spring biased	137/7833	. . . With means for mounting or connecting to system
137/7778	. . . Axes of ports perpendicular	137/7834	. . . Valve seat or external sleeve moves to open valve
137/7779	. . . Axes of ports parallel	137/7835	. . . Valve seating in direction of flow
137/778	. . . Axes of ports co-axial	137/7836	. . . . Flexible diaphragm or bellows reactor
137/7781	. . With separate connected fluid reactor surface	137/7837	. . Direct response valves [i.e., check valve type]
137/7782	. . . With manual or external control for line valve	137/7838	. . . Plural
137/7783	. . . Valve closes in responses to reverse flow	137/7839	. . . . Dividing and recombining in a single flow path
137/7784	. . . Responsive to change in rate of fluid flow	137/784	. . . . . Integral resilient member forms plural valves
137/7785	. . . . Valve closes in response to excessive flow	137/7841	. . . . One valve carries head and seat for second valve
137/7786	. . . . Turbine or swinging vane type reactor	137/7842	. . . . Diverse types
137/7787	. . . . Expansible chamber subject to differential pressures	137/7843	. . . . Integral resilient member forms plural valves
137/7788	. . . . . Pressures across fixed choke		
137/7789	. . . . . With Venturi tube having a connection to throat		
137/7791	. . . . . Pressures across flow line valve		
137/7792	. . . . Movable deflector or choke		

137/7845	. . . . With common biasing means	137/7903	. . . . Weight biased
137/7846	. . . . Mechanically interconnected	137/7904	. . . Reciprocating valves
137/7847	. . . With leak passage	137/7905	. . . . Plural biasing means
137/7848	. . . . Permits flow at valve interface	137/7906	. . . . Cam means for adjusting and fixing bias
137/7849	. . . . Bypass in valve casing	137/7907	. . . . Varying effective lever arm
137/785	. . . With retarder or dashpot	137/7908	. . . . Weight biased
137/7851	. . . . End of valve forms dashpot chamber	137/7909	. . . . Valve body is the weight
137/7852	. . . . End of valve moves inside dashpot chamber	137/791	. . . . . Ball valves
137/7853	. . . . . Enlarged piston on end of valve stem	137/7911	. . . . . Removable cage
137/7854	. . . In couplings for coaxial conduits, e.g., drill pipe check valves	137/7912	. . . . . Separable seat
137/7855	. . . . Valve seat threaded into a coupling element	137/7913	. . . . . Guided head
137/7856	. . . . Valve seat formed on or carried by a coupling element	137/7914	. . . . . Cage
137/7857	. . . . Valve seat clamped between coupling elements	137/7915	. . . . . Guide stem
137/7858	. . . With means for selecting area of valve or seat	137/7916	. . . . . With closing stop
137/7859	. . . Single head, plural ports in parallel	137/7917	. . . . . Oppositely disposed
137/786	. . . . Concentric ports	137/7918	. . . . . Head slidable on guide rod
137/7861	. . . . Annular head	137/7919	. . . . . Guide and seat integral unit
137/7862	. . . . . Central post on seat	137/792	. . . . . Guide and closure integral unit
137/7863	. . . . . Stop	137/7921	. . . . . Weight coaxial with valve
137/7864	. . . . . With guide	137/7922	. . . . Spring biased
137/7865	. . . . . Guide	137/7923	. . . . . With means to protect spring from fluid
137/7866	. . . Plural seating	137/7924	. . . . . Spring under tension
137/7867	. . . . Sequential	137/7925	. . . . . Piston-type valves
137/7868	. . . . . Resilient gasket	137/7927	. . . . . Ball valves
137/7869	. . . Biased open	137/7928	. . . . . With follower
137/787	. . . . Oppositely swinging vanes	137/7929	. . . . . Spring coaxial with valve
137/7871	. . . . Weight biased	137/793	. . . . . Broken valve parts retainer
137/7873	. . . . . Ball valves	137/7931	. . . . . Spring in inlet
137/7874	. . . . . Edge pivoted valve	137/7932	. . . . . Valve stem extends through fixed spring abutment
137/7875	. . . . Pivoted valves	137/7933	. . . . . Yoke or cage-type support for valve stem
137/7876	. . . With external means for opposing bias	137/7934	. . . . . Spring abuts removable valve stem guide
137/7877	. . . . With means for retaining external means in bias opposing position	137/7935	. . . . . Head slides on guide-rod concentric with spring
137/7878	. . . With bias adjustment indicator	137/7936	. . . . . Spring guides valve head
137/7879	. . . Resilient material valve	137/7937	. . . . . Cage-type guide for stemless valves
137/788	. . . . Having expansible port	137/7938	. . . . . Guide means integral and coplanar with valve disk
137/7881	. . . . . Apertured plate	137/7939	. . . . . Head between spring and guide
137/7882	. . . . . Having exit lip	137/794	. . . . . With means for separating solid material from the fluid
137/7883	. . . . . With biasing means	137/7976	. . Plural separating elements
137/7884	. . . . . Side vent	137/8013	. . Sediment chamber
137/7885	. . . . . Multiple slit	137/8049	. . Movable strainer
137/7886	. . . . . Internally extending mount	137/8085	. . Hollow strainer, fluid inlet and outlet perpendicular to each other
137/7887	. . . . Center flexing strip	137/8122	. . Planar strainer normal to flow path
137/7888	. . . . With valve member flexing about securement	137/8158	. . With indicator, register, recorder, alarm or inspection means
137/7889	. . . . . Sleeve	137/8175	. . Plural
137/789	. . . . . Central mount	137/8192	. . . Unobvious - "combination lock" type
137/7891	. . . . . Flap or reed	137/8208	. . Time
137/7892	. . . . . With stop	137/8225	. . Position or extent of motion indicator
137/7893	. . . . . With spring	137/8242	. . . Electrical
137/7894	. . . . . With weight	137/8259	. . . Selection from plural branches
137/7895	. . . . . Peripherally secured diaphragm	137/8275	. . . Indicator element rigidly carried by the movable element whose position is indicated
137/7896	. . . . Annulus	137/8292	. . . . Movable indicator element is a pointer
137/7897	. . . Vacuum relief type	137/8309	. . . . . Pointer integral with handle
137/7898	. . . Pivoted valves		
137/79	. . . . Head retained by removable closure		
137/7901	. . . . Valve head movably connected for accommodation to seat		
137/7902	. . . . Valve mounted on end of pipe		

137/8326	. . Fluid pressure responsive indicator, recorder or alarm	137/86316	. . . . . Access opening interlock or telltale on outlet valve actuator
137/8342	. . Liquid level responsive indicator, recorder or alarm	137/86324	. . . Tank with gas vent and inlet or outlet
137/8359	. . Inspection means	137/86332	. . . . . Vent and inlet or outlet in unitary mounting
137/8376	. Combined	137/8634	. . . With vented outlet
137/8593	. Systems	137/86348	. . Tank with internally extending flow guide, pipe or conduit
137/85938	. . Non-valved flow dividers	137/86356	. . . Nondraining overflow type
137/85946	. . Faucet connected, sink drained	137/86364	. . . Inverted "U" passage
137/85954	. . Closed circulating system	137/86372	. . . Inlet internally extending
137/85962	. . . With thermal circulating means [thermo-siphons]	137/86381	. . Head-establishing standpipe or expansion chamber [e.g., surge tanks]
137/8597	. . Main line as motive fluid for follower-type feeder	137/86389	. . Programmer or timer
137/85978	. . With pump	137/86397	. . . With independent valve controller
137/85986	. . . Pumped fluid control	137/86405	. . . Repeating cycle
137/85994	. . . . Manual	137/86413	. . . . Self-cycling
137/86002	. . . . Fluid pressure responsive	137/86421	. . . . Variable
137/8601	. . . . . And pilot valve	137/86429	. . . . . Attachable and removable element
137/86019	. . . . . Direct response valve	137/86437	. . . . . Adjustable cam
137/86027	. . . . . Electric	137/86445	. . . Plural, sequential, valve actuations
137/86035	. . . Combined with fluid receiver	137/86453	. . . . Plural trips or trip actuations
137/86043	. . . . Reserve or surge receiver	137/86461	. . . . Variable cycle
137/86051	. . . . Compressed air supply unit	137/86469	. . . Clock alarm mechanism controlled
137/86059	. . . . Hydraulic power unit	137/86477	. . . Biased latch, cam operated
137/86067	. . . . Fluid sump	137/86485	. . Line condition change responsive release of valve
137/86075	. . . And jet-aspiration type pump	137/86493	. . Multi-way valve unit
137/86083	. . . Vacuum pump	137/86501	. . . Sequential distributor or collector type
137/86091	. . . Resiliently mounted pump	137/86509	. . . Sequentially progressive opening or closing of plural ports
137/86099	. . . Hand pump	137/86517	. . . . With subsequent closing of first port
137/86107	. . . Multiple inlet with multiple outlet	137/86525	. . . . Flow combining with flow dividing
137/86115	. . . Downstream cyclic distributor	137/86533	. . . . Rotary
137/86123	. . . . Distributor part unitary with movable pump part	137/86541	. . . . . Plug
137/86131	. . . Plural	137/86549	. . . Selective reciprocation or rotation
137/86139	. . . . Serial	137/86558	. . . Plural noncommunicating flow paths
137/86147	. . . . . With single motive input	137/86566	. . . . Rotary plug
137/86155	. . . . . One pump driven by motive fluid from the other	137/86574	. . . Supply and exhaust
137/86163	. . . . Parallel	137/86582	. . . . Pilot-actuated
137/86171	. . . With pump bypass	137/8659	. . . . . Variable orifice-type modulator
137/86179	. . . Drain valve actuator mounted on pump	137/86598	. . . . . Opposed orifices; interposed modulator
137/86187	. . Plural tanks or compartments connected for serial flow	137/86606	. . . . . Common to plural valve motor chambers
137/86196	. . . Separable with valved-connecting passage	137/86614	. . . . . Electric
137/86204	. . . Fluid progresses by zigzag flow	137/86622	. . . . . Motor-operated
137/86212	. . . Plural compartments formed by baffles	137/8663	. . . . . Fluid motor
137/8622	. . . Plural top-to-bottom connected tanks	137/86638	. . . . . Rotary valve
137/86228	. . . With communicating opening in common walls of tanks or compartments	137/86646	. . . . . Plug type
137/86236	. . Tank with movable or adjustable outlet or overflow pipe	137/86654	. . . . . For plural lines
137/86244	. . . Horizontally traversing outlet	137/86662	. . . . . Axial and radial flow
137/86252	. . . Float-supported outlet	137/8667	. . . . . Reciprocating valve
137/8626	. . . Swinging outlet pipe or spout	137/86678	. . . . . Combined disk or plug and gate or piston
137/86268	. . With running joint between movable parts of system	137/86686	. . . . . Plural disk or plug
137/86276	. . Movable tank	137/86694	. . . . . Piston valve
137/86284	. . With antisplash means not in flow passage	137/86702	. . . . . With internal flow passage
137/86292	. . System with plural openings, one a gas vent or access opening	137/8671	. . . . . With annular passage [e.g., spool]
137/863	. . . Access and outlet	137/86718	. . . Dividing into parallel flow paths with recombining
137/86308	. . . . Tank access opening and bottom outlet	137/86726	. . . . Valve with bypass connections
		137/86734	. . . . With metering feature
		137/86743	. . . . Rotary
		137/86751	. . . . . Plug
		137/86759	. . . . Reciprocating
		137/86767	. . . . . Spool



137/86775 . . . . .	With internal passage	137/87225 . . . .	Fluid motor
137/86783 . . . . .	Unequal heads	137/87233 . . .	Biased exhaust valve
137/86791 . . . . .	Piston	137/87241 . . . .	Biased closed
137/86799 . . . . .	With internal flow passage	137/87249 . .	Multiple inlet with multiple outlet
137/86807 . . . . .	Sequential opening or closing of serial ports in single flow line	137/87257 . .	Hydraulic brake line [e.g., hill holders]
137/86815 . . .	Multiple inlet with single outlet	137/87265 . .	Dividing into parallel flow paths with recombining
137/86823 . . . .	Rotary valve	137/87273 . . .	With fluid coupling [e.g., railway car hose coupling, truck-trailer oil system coupling, etc.]
137/86831 . . .	Selective opening of plural ports	137/87281 . . .	System having plural inlets
137/86839 . . .	Four port reversing valves	137/8729 . . . .	Having digital flow controller
137/86847 . . .	Pivoted valve unit	137/87298 . . .	Having digital flow controller
137/86855 . . . .	Gate	137/87306 . . . .	Having plural branches under common control for separate valve actuators
137/86863 . . .	Rotary valve unit	137/87314 . . . . .	Electromagnetic or electric control [e.g., digital control, bistable electro control, etc.]
137/86871 . . . .	Plug	137/87322 . . .	With multi way valve having serial valve in at least one branch
137/86879 . . .	Reciprocating valve unit	137/8733 . . . .	Fluid pressure regulator in at least one branch
137/86887 . . . .	Combined disk or plug and gate or piston	137/87338 . . .	Flow passage with bypass
137/86895 . . . .	Plural disk or plug	137/87346 . . . .	Including mixing feature
137/86903 . .	Plural petcocks	137/87354 . . . .	Including flowmeter
137/86911 . .	Sequential distributor or collector type	137/87362 . . . .	Including cleaning, treating, or heat transfer feature
137/86919 . .	Sequentially closing and opening alternately seating flow controllers	137/8737 . . . . .	Water treatment feature
137/86928 . .	Sequentially progressive opening or closing of plural valves	137/87378 . . .	Second valve assembly carried by first valve head
137/86936 . . .	Pressure equalizing or auxiliary shunt flow	137/87386 . . . .	With rotary plug having variable restrictor
137/86944 . . . .	One valve seats against other valve [e.g., concentric valves]	137/87394 . . . .	Carried valve is direct response valve [e.g., check valve, etc.]
137/86952 . . . . .	Locomotive throttle	137/87402 . . .	With foam controlling means [e.g., beer, soda faucets]
137/8696 . . . . .	Gate	137/8741 . . . .	With common operator
137/86968 . . . . .	With balancing chamber	137/87418 . . . .	Balanced valve
137/86976 . . . . .	First valve moves second valve	137/87426 . . . .	Single resilient member actuates or forms plural passages
137/86984 . . . . .	Actuator moves both valves	137/87434 . . . .	Valves deform to close passage
137/86992 . . .	With subsequent closing of first opened port	137/87442 . . . .	Rotary valve
137/87 . . . . .	Simultaneously moved port controllers	137/8745 . . . . .	Including rigid plate with flexible or resilient seal
137/87008 . . .	Screw-actuated differential valves	137/87458 . . . . .	Axes of rotation of valves intersect at point
137/87016 . . .	Lost motion	137/87467 . . . . .	Axes of rotation parallel
137/87024 . . . .	Cam determines sequence	137/87475 . . . . .	Adjacent plate valves always parallel
137/87032 . . . .	Rotary concentric valves	137/87483 . . . . .	Adjacent plate valves counter rotate
137/8704 . . . . .	First valve actuates second valve	137/87491 . . . .	Mechanical movement between actuator and non-rotary valve
137/87048 . .	With preselecting means for plural valve actuator	137/87499 . . .	Fluid actuated or retarded
137/87056 . .	With selective motion for plural valve actuator	137/87507 . . .	Electrical actuator
137/87064 . . .	Oppositely movable cam surfaces	137/87515 . . .	Mechanical movement between actuator and valve
137/87072 . . .	Rotation about either of two pivotal axes	137/87523 . . .	Rotary valve
137/8708 . . . .	Rotation of actuator arm about its pivot and its axis	137/87531 . . . .	Butterfly valve
137/87088 . . .	Reciprocation along and rotation about same axis	137/87539 . . .	Having guide or restrictor
137/87096 . .	Valves with separate, correlated, actuators	137/87547 . . . .	Manually variable
137/87105 . . .	Correlated across separable flow path joint	137/87555 . . .	Having direct response valve [e.g., check valve, etc.]
137/87113 . . .	Interlocked	137/87563 . . . .	With reverse flow direction
137/87121 . . .	Coaxial stems	137/87571 . .	Multiple inlet with single outlet
137/87129 . . . .	Rotary	137/87579 . . .	Faucet attachment
137/87137 . . . . .	And reciprocating	137/87587 . . .	Combining by aspiration
137/87145 . . . . .	Concentric, central valve removable	137/87595 . . . .	Combining of three or more diverse fluids
137/87153 . .	Plural noncommunicating flow paths	137/87603 . . . .	Plural motivating fluid jets
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		

137/87611	. . . .	Flow control by varying position of a fluid inlet relative to entrainment chamber	137/87989	. . . .	Delivery cock with terminal valve
137/87619	. . . .	With selectively operated flow control means in inlet	137/87997	. . . .	Alternately seating
137/87627	. . . .	Flow control means is located in aspirated fluid inlet	137/88005	. . . .	Biased valve
137/87635	. . . . .	Single actuator operates flow control means located in both motivating fluid and aspirated fluid inlets	137/88014	. . . .	Opposed screw
137/87643	. . . .	With condition responsive valve	137/88022	. . .	One valve head provides seat for other head
137/87652	. . .	With means to promote mixing or combining of plural fluids	137/8803	. . . .	Also carries head of other valve
137/8766	. . . .	With selectively operated flow control means	137/88038	. . .	One valve head carries other valve head
137/87668	. . . . .	Single actuator operates plural flow control means	137/88046	. . .	Biased valve with external operator
137/87676	. . .	With flow control	137/88054	. . .	Direct response normally closed valve limits direction of flow
137/87684	. . . .	Valve in each inlet	137/88062	. . .	Coaxial oppositely directed seats
137/87692	. . . . .	With common valve operator	137/8807	. .	Articulated or swinging flow conduit
137/877	. .	With flow control means for branched passages	137/88078	. . .	Actuates valve
137/87708	. . .	With common valve operator	137/88086	. . . .	Plural motions of valve
137/87716	. . . .	For valve having a flexible diaphragm valving member	137/88094	. . . .	Reciprocating valve
137/87724	. . . .	For valve having a ball head	137/88102	. . . .	Rotary valve
137/87732	. . . .	With gearing	137/8811	.	Frangible
137/8774	. . . .	Threaded actuator	137/9029	.	With coupling
137/87748	. . . .	Pivoted or rotary motion converted to reciprocating valve head motion	137/9138	. .	Flexible
137/87756	. . . . .	Spring biased	137/9247	.	With closure
137/87764	. . . .	Having fluid actuator	137/9464	.	Faucets and spouts
137/87772	. . . .	With electrical actuation	137/9682	.	Miscellaneous
137/8778	. . . .	Spring biased			
137/87788	. . .	With valve or movable deflector at junction			
137/87796	. . . .	Movable deflector spout in lateral port			
137/87804	. . . .	Valve or deflector is tubular passageway			
137/87812	. . . .	Pivoted valve or deflector			
137/8782	. . . .	Rotary valve or deflector			
137/87829	. . .	Biased valve			
137/87837	. . . .	Spring bias			
137/87845	. . . . .	For valve having a ball head			
137/87853	. . . . .	With threaded actuator			
137/87861	. . . . .	Spring coaxial with valve			
137/87869	. . . . .	Biased open			
137/87877	. . .	Single inlet with multiple distinctly valved outlets			
137/87885	. . .	Sectional block structure			
137/87893	. . .	With fluid actuator			
137/87901	. . .	With threaded actuator			
137/87909	. . .	Containing rotary valve			
137/87917	. .	Flow path with serial valves and/or closures			
137/87925	. . .	Separable flow path section, valve or closure in each			
137/87933	. . . .	Common joint and valve seat faces, or sections joined by closing members			
137/87941	. . . .	Each valve and/or closure operated by coupling motion			
137/87949	. . . . .	Linear motion of flow path sections operates both			
137/87957	. . . . .	Valves actuate each other			
137/87965	. . . .	Valve- or closure-operated by coupling motion			
137/87973	. . . .	Coupling interlocked with valve, or closure or actuator			
137/87981	. . .	Common actuator			

**Former US Class 152 Series****152/00 Resilient tires and wheels**

152/10	.	Tires, resilient
152/10009	. .	Emergency
152/10018	. .	with splash guards
152/10027	. .	with wear indicating feature
152/10036	. .	Cushion and pneumatic combined
152/10045	. . .	Metallic spring cushion
152/10054	. . .	Enclosed cushion
152/10063	. . .	Superimposed
152/10072	. . . .	Plungers
152/10081	. . . .	Edge-secured cushion
152/1009	. . . .	Guide flanges
152/10099	. . . . .	Radial stops
152/10108	. . . . .	Bolts or studs
152/10117	. . .	Integral
152/10126	. . . .	with removable inner tube
152/10135	. .	Armored
152/10144	. . .	Single tube tires internal
152/10153	. . . .	Metal
152/10162	. . . . .	Plates
152/10171	. . .	Casing construction
152/1018	. . . .	Embedded
152/10189	. . . . .	Metal
152/10198	. . . . .	Plates
152/10207	. . . . .	Annular
152/10216	. . . . .	Linked mat
152/10225	. . . . .	Woven
152/10234	. . .	Interliners
152/10243	. . . .	Cotton, fabric, or rubber
152/10252	. . . .	Metal
152/10261	. . . . .	Scale armor
152/1027	. . . . .	Annular
152/10279	. .	Cushion
152/10288	. . .	Sectional
152/10297	. . . .	Annular
152/10306	. . . . .	Superimposed
152/10315	. . . .	Superimposed

152/10324	. . . .	with apertured external binders	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
152/10333	. . . .	Radial bolt secured			
152/10342	. . . .	Abutting sections			
152/10351	. . . . .	with annular internal binders			
152/1036	. . . . .	Interfitting	152/1081	. . . .	Breaker or belt characterized by the chemical composition or physical properties of elastomer or the like
152/10369	. . . . .	Indented at joints			
152/10378	. . . .	Casing enclosed core	152/10819	. . . .	Characterized by the structure of the bead portion of the tire
152/10387	. . . . .	Separate core			
152/10396	. . . . .	Removable	152/10828	. . . .	Chafer or sealing strips
152/10405	. . . . .	Sponge rubber	152/10837	. . . .	Bead characterized by the radial extent of apex, flipper or chafer into tire sidewall
152/10414	. . . . .	with core compression			
152/10423	. . . . .	Superimposed rings	152/10846	. . . .	Bead characterized by the chemical composition and or physical properties of elastomers or the like
152/10432	. . . . .	Sectional transversely			
152/10441	. . . . .	Balls	152/10855	. . . .	Characterized by the carcass, carcass material, or physical arrangement of the carcass materials
152/1045	. . . . .	Integral structure			
152/10459	. . . . .	Recessed	152/10864	. . . .	Sidewall stiffening or reinforcing means other than main carcass plies or foldups thereof about beads
152/10468	. . . . .	Chambered			
152/10477	. . . . .	Perforated	152/10873	. . . .	with two or more differing cord materials
152/10486	. . . . .	Chambered	152/10882	. . . .	Patches
152/10495	. . . .	Pneumatic tire or inner tube	152/10891	. . . .	Mechanically secured
152/10504	. . . .	Asymmetric tire	152/109	. . . .	Inside and outside, bolt connected
152/10513	. . . .	Tire reinforcement material characterized by short length fibers or the like	152/10909	. . . .	with plugs
152/10522	. . . .	Multiple chamber	152/10918	. . . .	Bandages
152/10531	. . . .	Cylinder and piston	152/10927	. . . .	Mechanically secured
152/1054	. . . . .	Mutually free walls	152/10936	. . . . .	to felly or rim
152/10549	. . . . .	Interfitting			
152/10558	. . . . .	Balls			
152/10567	. . . . .	with simultaneous inflating means			
152/10576	. . . . .	Annular chambers			
152/10585	. . . . .	with simultaneous inflating means			
152/10594	. . . . .	Mutually free walls			
152/10603	. . . . .	with simultaneous inflating means			
152/10612	. . . . .	with simultaneous inflating means			
152/10621	. . . .	Sectional casings			
152/1063	. . . . .	Circumferential			
152/10639	. . . . .	Rigid inner sections			
152/10648	. . . .	with means restricting relative movement between tire and inner tube [e.g., anti-creep feature, etc.]			
152/10657	. . . .	with means to protect inner tube from rim			
152/10666	. . . .	Automatic sealing of punctures [e.g., self-healing, etc.]			
152/10675	. . . . .	Using flowable coating or composition			
152/10684	. . . . .	On inner surface of tubeless tire			
152/10693	. . . . .	Sealant in plural layers or plural pockets			
152/10702	. . . . .	within or part of construction of inflating inner tube			
152/10711	. . . . .	Sealant in plural layers or plural pockets			
152/1072	. . . . .	by compression			
152/10729	. . . . .	with reinflating means			
152/10738	. . . .	with means to protect tire from rim			
152/10747	. . . .	Means other than rim closing the tire opening			
152/10756	. . . . .	Positive casing closure			
152/10765	. . . .	Characterized by belt or breaker structure			
152/10774	. . . . .	Consisting of only one ply			
152/10783	. . . . .	Reinforcing plies made up from wound narrow ribbons			
152/10792	. . . .	Structure where each bias angle reinforcing cord ply has no opposingly angled ply			

- 156/103 . . . . Encasing or enveloping the configured lamina
- 156/1031 . . . . with preshaping of lamina
- 156/1033 . . . . Flexible sheet to cylinder lamina
- 156/1034 . . . Overedge bending of lamina about edges of sheetlike base
- 156/1036 . . . Bending of one piece blank and joining edges to form article
- 156/1038 . . . . Hollow cylinder article
- 156/1039 . . . Surface deformation only of sandwich or lamina [e.g., embossed panels]
- 156/1041 . . . . Subsequent to lamination
- 156/1043 . . . Subsequent to assembly
- 156/1044 . . . . of parallel stacked sheets only
- 156/1046 . . . . . Bending of one lamina only
- 156/1048 . . . . . to form dished or receptacle-like product
- 156/1049 . . . . Folding only
- 156/1051 . . . by folding
- 156/1052 . . with cutting, punching, tearing or severing
- 156/1054 . . . and simultaneously bonding [e.g., cut-seaming]
- 156/1056 . . . Perforating lamina
- 156/1057 . . . . Subsequent to assembly of laminae
- 156/1059 . . . Splitting sheet lamina in plane intermediate of faces
- 156/1061 . . . Spiral peeling
- 156/1062 . . . Prior to assembly
- 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
- 156/1072 . . . . . Closure cap liner applying type
- 156/1074 . . . . Separate cutting of separate sheets or webs
- 156/1075 . . . . of plural laminae from single stock and assembling to each other or to additional lamina
- 156/1077 . . . . . Applying plural cut laminae to single face of additional lamina
- 156/1079 . . . . . Joining of cut laminae end-to-end
- 156/108 . . . Flash, trim or excess removal
- 156/1082 . . . Partial cutting bonded sandwich [e.g., grooving or incising]
- 156/1084 . . . of continuous or running length bonded web
- 156/1085 . . . . One web only
- 156/1087 . . . . Continuous longitudinal slitting
- 156/1089 . . of discrete laminae to single face of additional lamina
- 156/109 . . . Embedding of laminae within face of additional laminae
- 156/1092 . . . All laminae planar and face to face
- 156/1093 . . . . with covering of discrete laminae with additional lamina
- 156/1095 . . . . . Opposed laminae are running length webs
- 156/1097 . . . . Lamina is running length web
- 156/1098 . . . . . Feeding of discrete laminae from separate sources
- 156/11 . . Methods of delaminating, per se; i.e., separating at bonding face
- 156/1105 . . Delaminating process responsive to feed or shape at delamination
- 156/1111 . . Using solvent during delaminating [e.g., water dissolving adhesive at bonding face during delamination, etc.]
- 156/1116 . . . Using specified organic delamination solvent
- 156/1121 . . Using vibration during delaminating
- 156/1126 . . Using direct fluid current against work during delaminating
- 156/1132 . . . Using vacuum directly against work during delaminating
- 156/1137 . . . Using air blast directly against work during delaminating
- 156/1142 . . Changing dimension during delaminating [e.g., crushing, expanding, warping, etc.]
- 156/1147 . . . Using shrinking or swelling agent during delaminating
- 156/1153 . . Temperature change for delamination [e.g., heating during delaminating, etc.]
- 156/1158 . . . Electromagnetic radiation applied to work for delamination [e.g., microwave, uv, ir, etc.]
- 156/1163 . . . Sintering for delamination
- 156/1168 . . Gripping and pulling work apart during delaminating
- 156/1174 . . . Using roller for delamination [e.g., roller pairs operating at differing speeds or directions, etc.]
- 156/1179 . . . with poking during delaminating [e.g., jabbing, etc.]
- 156/1184 . . . . Piercing layer during delaminating [e.g., cutting, etc.]
- 156/1189 . . . with shearing during delaminating
- 156/1195 . . . Delaminating from release surface
- 156/12 . Surface bonding means and/or assembly means with cutting, punching, piercing, severing or tearing
- 156/125 . . Plural severing means each acting on a different work piece
- 156/13 . . Severing followed by associating with part from same source
- 156/1304 . . Means making hole or aperture in part to be laminated
- 156/1309 . . . and securing separate part over hole or aperture
- 156/1313 . . Cutting element simultaneously bonds [e.g., cut seaming]
- 156/1317 . . Means feeding plural workpieces to be joined
- 156/1322 . . . Severing before bonding or assembling of parts
- 156/1326 . . . . Severing means or member secured thereto also bonds
- 156/133 . . . . Delivering cut part to indefinite or running length web
- 156/1335 . . . . . Cutter also delivers cut piece
- 156/1339 . . . . Delivering cut part in sequence to serially conveyed articles
- 156/1343 . . . Cutting indefinite length web after assembly with discrete article
- 156/1348 . . Work traversing type
- 156/1352 . . . with liquid applying means
- 156/1357 . . . . Slitting and severing
- 156/1361 . . . . Cutting after bonding
- 156/1365 . . . Fixed cutter
- 156/137 . . Stamp from multiple row sheet type
- 156/1374 . . with means projecting fluid against work
- 156/1378 . . Cutter actuated by or secured to bonding element
- 156/1383 . . . with liquid applicator
- 156/1387 . . . . Common actuator for bonding and liquid applying means

156/1391	. . . . . Liquid applied to web before cutting	156/1785	. . Magazine stack directly contacting work
156/1396	. . . . . Roller applicator	156/1788	. . Work traversing type and/or means applying work to wall or static structure
156/14	. Surface bonding means and/or assembly means with shaping, scarifying, or cleaning joining surface only	156/179	. . . with liquid applying means
156/15	. Combined or convertible surface bonding means and/or assembly means	156/1793	. . . Grip or clamp for web end
156/16	. Surface bonding means and/or assembly means with bond interfering means [slip sheet, etc. ]	156/1795	. . . Implement carried web supply
156/17	. Surface bonding means and/or assembly means with work feeding or handling means	156/1798	. . with liquid adhesive or adhesive activator applying means
156/1702	. . For plural parts or plural areas of single part	156/18	. Surface bonding means and/or assembly means with handle or handgrip
156/1705	. . . Lamina transferred to base from adhered flexible web or sheet type carrier	156/19	. Delaminating means
156/1707	. . . . Discrete spaced laminae on adhered carrier	156/1906	. . Delaminating means responsive to feed or shape at delamination
156/171	. . . . . Means serially presenting discrete base articles or separate portions of a single article	156/1911	. . Heating or cooling delaminating means [e.g., melting means, freezing means, etc.]
156/1712	. . . Indefinite or running length work	156/1917	. . . Electromagnetic radiation delaminating means [e.g., microwave, uv, ir, etc.]
156/1715	. . . . Means joining indefinite length work edge to edge	156/1922	. . Vibrating delaminating means
156/1717	. . . . . Means applying adhesively secured tape to seam	156/1928	. . Differential fluid pressure delaminating means
156/172	. . . . . Means applying fluid adhesive to work edge	156/1933	. . . Spraying delaminating means [e.g., atomizer, etc.
156/1722	. . . . Means applying fluent adhesive or adhesive activator material between layers	156/1939	. . . . Air blasting delaminating means]
156/1724	. . . . . At spaced areas	156/1944	. . . Vacuum delaminating means [e.g., vacuum chamber, etc.]
156/1727	. . . . . Plural indefinite length or running length workpieces	156/195	. . Delaminating roller means
156/1729	. . . . . Fluid applied to nip between indefinite length webs	156/1956	. . . Roller pair delaminating means
156/1732	. . . . . Fluid applied to plural workpieces	156/1961	. . Severing delaminating means [e.g., chisel, etc.]
156/1734	. . . . Means bringing articles into association with web	156/1967	. . . Cutting delaminating means
156/1737	. . . . Discontinuous, spaced area, and/or patterned pressing	156/1972	. . . . Shearing delaminating means
156/1739	. . . . Webs of different width, longitudinally aligned	156/1978	. . Delaminating bending means
156/1741	. . . . Progressive continuous bonding press [e.g., roll couples]	156/1983	. . . Poking delaminating means
156/1744	. . . Means bringing discrete articles into assembled relationship	156/1989	. . . Corner edge bending delaminating means
156/1746	. . . . Plural lines and/or separate means assembling separate sandwiches	156/1994	. . Means for delaminating from release surface
156/1749	. . . . All articles from single source only	<b>Former US Class 225 series</b>	
156/1751	. . . . At least three articles	<b>225/00</b>	<b>Severing by tearing or breaking</b>
156/1754	. . . . . At least two applied side by side to common base	225/10	. Methods
156/1756	. . . . . Plural ranks	225/12	. . With preliminary weakening
156/1759	. . . . . Sheet form common base	225/14	. . Longitudinally of direction of feed
156/1761	. . . . . Stacked serially	225/16	. . Transversely of continuously fed work
156/1763	. . . . Magazine stack directly contacting separate work	225/18	. . . Progressively to or from one side edge
156/1766	. . . . . Magazine movable to work	225/20	. Severing by manually forcing against fixed edge
156/1768	. . . . Means simultaneously conveying plural articles from a single source and serially presenting them to an assembly station	225/201	. . With other type severing means
156/1771	. . . . . Turret or rotary drum-type conveyor	225/202	. . With timer-released means for preventing work feed-out
156/1773	. . . . . For flexible sheets	225/203	. . Including means to effect bias cut
156/1776	. . . . Means separating articles from bulk source	225/205	. . With feed-out of predetermined length from work supply
156/1778	. . . . . Stacked sheet source	225/206	. . . Including means to select or adjust feed-out length
156/178	. . . . . Rotary or pivoted picker	225/207	. . . Including feed-out stop for manually pulled work
156/1783	. . . . . Translating picker	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	225/27	. . Movable blade continually biased toward wound web supply package
225/217	. . Work stripped from blade by relatively movable means	225/271	. . . Including temporary bias-disabling means
225/218	. . . Including movable blade	225/272	. . . Including stripper to separate lead-end from package
225/22	. . With means to move work toward or into severing position	225/274	. . . Weight of bodily movable package contributes to blade-biasing force
225/221	. . . With means to strip adhering work therefrom	225/275	. . . Blade slidably guided
225/222	. . With work-immobilizing paster surface	225/276	. . Blade movable to severing position by moving work
225/223	. . . With finger-access opening	225/277	. . . With simultaneous application of brake or clamp
225/224	. . With means to hold pad or stack of individual sheets	225/278	. . . . Applied to running length work
225/225	. . . With means to separate severed end of stub from supply package	225/279	. . . . . Opposed movable jaws
225/226	. . . With changeable blade-edge contour	225/28	. . Wound package bodily biased toward fixed blade
225/228	. . . . Slidable notcher	225/282	. . With fixed blade and support for wound package
225/229	. . . Blade slidably along plane of work surface	225/283	. . . Body- or belt-attached
225/23	. . Zigzag-folded supply package	225/284	. . . With brake applied to supply package
225/231	. . Separate blades usable alternatively or sequentially on same work supply	225/285	. . . With guide spaced from blade edge to provide lead-end therebetween
225/232	. . Plural supply sources	225/286	. . With work-abutment stop
225/233	. . . On turret-type support with single blade	225/287	. . With brake or clamp
225/234	. . . With movable blade registrable selectively with each source	225/289	. . . Thread cutter and clamp attachment for sewing machine presser foot
225/236	. . . With plural blades	225/29	. . . Applied to running length work
225/237	. . . . With individual blade for each source	225/291	. . . . Spaced from blade edge to provide lead-end therebetween
225/238	. . With housing for work supply	225/292	. . . . . Blade manually movable to expose lead-end
225/239	. . . Liquid-, gas-, or light-tight work passage	225/293	. . . . Manually applied, spring returned
225/24	. . . With inspection window or transparent panel	225/294	. . With guide for running length work
225/241	. . . With mounting means for housing	225/295	. . Blade manually movable to or from severing position
225/243	. . . Blade on pivoted closure for housing	225/297	. . With means to facilitate lead-end grasping
225/244	. . . Sectional telescoping housing	225/298	. . Blades or severing devices
225/245	. . . . Including removable cap or sleeve enclosure for spooled work supply	225/299	. . . Adjustable blade-edge contour
225/246	. . . Including special support for wound supply package	225/30	. Breaking or tearing apparatus
225/247	. . . . Bearing or trunnions to engage package core	225/304	. . Including means to apply thermal shock to work
225/248	. . . Single blank container	225/307	. . Combined with preliminary weakener or with nonbreaking cutter
225/249	. . . . Blade unitary with container	225/314	. . . Successively actuated sharp and dull tools
225/251	. . . . With closure fastener	225/321	. . . Preliminary weakener
225/252	. . . With brake or tensioner	225/325	. . . . With means to apply moment of force to weakened work
225/253	. . . . Restricted or restrictable work outlet	225/329	. . Plural breakers
225/254	. . . With finger-access opening to facilitate work feed-out	225/336	. . Conveyor diverter for moving work
225/255	. . . With internal guide	225/343	. . . Plural divergent work paths
225/256	. . Blade carrier bodily and slidably supported on running length work	225/35	. . Work-parting pullers [bursters]
225/257	. . Blade mounted on hand-held wound package	225/357	. . . Relatively movable clamps
225/259	. . . With lead-end stripper for tacky adhesive work	225/364	. . Axial twisters
225/26	. . . By resiliently embracing outer circumference of package	225/371	. . Movable breaking tool
225/261	. . . Work supply nonrotatably wound on flanged spool	225/379	. . . Breaking tool intermediate spaced work supports
225/262	. . . . Circumferentially movable blade radially retained by beaded or grooved flanges	225/386	. . . . Clamping supports
225/263	. . . . Blade carrier supports hollow spool for rotation	225/393	. . Web restrainer
225/264	. . . . Flange edge notched to provide or coact with cutter	<b>Former US Class 279 Series</b>	
225/266	. . . . With clamp for lead-end of strand-type work	279/00	<b>Chucks or sockets</b>
225/267	. . . . . Strand clamped against flange	279/10	. Expanding
225/268	. . . By resiliently engaging package ends or interior of core	279/1004	. . Collet type
225/269	. . . Blade carrier supports package for rotation	279/1008	. . . Fixed jaws and moving cam
		279/1012	. . . Fixed cam and moving jaws

279/1016	. . Jaws mounted on flexible member; i.e., diaphragm	279/17171	. . . One-way-clutch type
279/1021	. . Fluid-pressure actuator	279/17179	. . . . Wedge
279/1024	. . . Directly expanding jaws	279/17188	. . . . Side detent
279/1029	. . . . Jaw is expansible chamber; i.e., bladder type	279/17196	. . . . . Ball or roller
279/1033	. . . Expanding jaws via mechanical connection	279/17205	. . Conical clamp threaded in socket
279/1037	. . Axially moving actuator	279/17213	. . Transversely oscillating jaws
279/1041	. . . Wedge	279/17222	. . . Screw actuated
279/1045	. . . . Internal cone	279/17231	. . Pivoted jaws
279/1049	. . . . with jaw positively interlocked with wedge; e.g., dovetail or T-slot	279/17239	. . . Moving-cam actuator
279/1054	. . . . with resilient means contacting nonresilient jaw	279/17247	. . . . Threaded cam sleeve
279/1058	. . . . . Constricting band, annulus, or clip	279/17256	. . . . Reciprocating cam sleeve
279/1062	. . . Toggle	279/17264	. . . Fixed cam and moving jaws
279/1066	. . . Axially compressible element expands radially	279/17273	. . . . Axial screw actuator
279/1071	. . . Lever	279/17282	. . . . Threaded-sleeve actuator
279/1074	. . Rotary actuator	279/17291	. . Resilient split socket
279/1079	. . . Clutch or self-actuating type	279/17299	. . . Threaded cam sleeve
279/1083	. . Jaw structure	279/17307	. . . Reciprocating cam sleeve
279/1087	. . . Resilient	279/17316	. . . Unitary
279/1091	. . . Ball or roller	279/17324	. . . . Split at one end only
279/1095	. . . Pivoted	279/17333	. . . . . Transverse screw actuator
279/11	. Vacuum	279/17341	. . . . . Cam actuator
279/12	. with fluid-pressure actuator	279/17351	. . . . . Split end to end
279/1208	. . with measuring, indicating or control means	279/17358	. . . . with jaw pads or insert
279/1216	. . Jaw is expansible chamber; i.e., bladder type	279/17367	. . . Nonresilient member biased by a resilient member
279/1224	. . Pneumatic type	279/17376	. . . Resilient member reinforced by another resilient member
279/1233	. . Jaws mounted on flexible member; i.e., diaphragm	279/17384	. . with means to exclude contaminants; e.g., seal, shield
279/1241	. . Socket type	279/17393	. . One movable side
279/1249	. . . Collet	279/17401	. . . Sleeved
279/1258	. . . . Fixed cam and moving jaws	279/17411	. . Spring biased jaws
279/1266	. . . . Moving cam and fixed jaws	279/17418	. . . Unitary
279/1274	. . Radially reciprocating jaws	279/17427	. . . . Split at one end only
279/1283	. . . Fluid pressure directly moves jaws	279/17435	. . . . Split at both ends
279/1291	. . . Fluid pressure moves jaws via mechanical connection	279/17444	. . . . Split end to end
279/13	. Angularly adjustable or indexing	279/17452	. . . . with jaw pads or insert
279/14	. Eccentric	279/17461	. . . Nonresilient member biased by a resilient member
279/15	. Threaded grip	279/17471	. . . Resilient member reinforced by another resilient member
279/16	. Longitudinal screw clamp	279/17478	. . . with means to exclude contaminants; e.g., seal, shield
279/17	. Socket type	279/17487	. . . Moving-cam actuator
279/17008	. . Multiple alternative	279/17495	. . . . Threaded sleeve and wedge
279/17017	. . Self-centering of floating	279/17504	. . . . Threaded cam sleeve
279/17025	. . . Radially reciprocating jaws	279/17512	. . . . . Loose jaws
279/17034	. . . Transverse holder and setscrew	279/17521	. . . . . Reciprocating cam sleeve
279/17042	. . Lost motion	279/17529	. . . Fixed cam and moving jaws
279/17051	. . . Swinging external yoke or detent	279/17538	. . . . Threaded-sleeve actuator
279/17059	. . . . Rotary socket	279/17547	. . . . Axial screw actuator
279/17068	. . . Rotary socket	279/17555	. . . Loose jaws
279/17076	. . . Spreading elements	279/17564	. . Loose jaws
279/17085	. . . Key retainer	279/17572	. . . Moving-cam actuator
279/17094	. . . Sleeve type retainer	279/17581	. . . . Threaded cam sleeve
279/17102	. . . . Sleeve in socket	279/17589	. . . . Reciprocating cam sleeve
279/17111	. . Fluid-conduit drill holding	279/17598	. . . Fixed cam and moving jaws
279/17119	. . Feed type	279/17606	. . . . Threaded sleeve and body
279/17128	. . Self-grasping	279/17615	. . Obliquely guided reciprocating jaws
279/17136	. . . Yielding grasping jaws	279/17623	. . . Threaded sleeve and jaw
279/17145	. . . . Ball or roller	279/17632	. . . . Conical sleeve
279/17153	. . . . Spring jaws	279/17641	. . . Threaded central cone and jaw
279/17162	. . . Yielding detent		

279/17649	. . . Threaded sleeve and body	279/21	. with measuring, indicating or control means
279/17658	. . . Reciprocating jaw advancing sleeve	279/22	. Double acting
279/17666	. . Radially reciprocating jaws	279/23	. with magnetic or electrostatic means
279/17675	. . . Transverse-screw actuated	279/24	. by centrifugal force
279/17683	. . . . Interlaced jaws	279/243	. . to counterbalance jaws
279/17692	. . . Moving-cam actuator	279/247	. . to grip tool or workpiece
279/17701	. . . . Threaded cam sleeve	279/25	. Compensation for eccentricity
279/17709	. . . . Threaded sleeve and wedge	279/26	. with centering means
279/17717	. . . . Rotary eccentric-cam sleeve	279/27	. Separate chuck-actuating power source
279/17726	. . . . . Roller and rocking jaw	279/275	. . Self-contained
279/17735	. . . . . Worm actuated	279/28	. for gear or spline molding
279/17743	. . . . Reciprocating cam sleeve	279/29	. More than one set of gripping means
279/17752	. . . . . Ball or roller jaws	279/30	. Torsion mandrel
279/17761	. . Side detent	279/31	. Jaws mounted on flexible member; i.e. , diaphragm
279/17769	. . . Pivoted or rotary	279/32	. Means to prevent jaw loosening
279/17777	. . . . Sleeved	279/33	. Member applies axial force component
279/17786	. . . Spring	279/34	. Accessory or component
279/17794	. . . . Sleeved	279/3406	. . Adapter
279/17803	. . . Rotary cam sleeve	279/3412	. . . Drive conversion
279/17811	. . . Reciprocating sleeve	279/3418	. . . for particular tool or workpiece
279/17821	. . . Set screw	279/3425	. . Sliding cam chuck actuator
279/17829	. . . U-clamp	279/3431	. . Chuck key
279/17837	. . . Plural bolt	279/3437	. . . Safety feature; e.g., ejector, interlock
279/17846	. . . Single transverse bolt	279/3443	. . . Key holding or attaching means
279/17854	. . . Longitudinal clamping wedge	279/3451	. . . Nonseparable or built-in
279/17863	. . Shouldered-tang holding	279/3456	. . Padded or cushioned jaw
279/17871	. . . Cap	279/3462	. . Jaw insert
279/17881	. . . . Screw	279/3468	. . . Machinable jaw
279/17888	. . Tang offset within socket	279/3475	. . . . Locking or positioning means
279/17897	. . Tang offset without socket	279/3481	. . Tool or workpiece ejector
279/17905	. . Bottomless	279/3487	. . Tool or work stop or locator
279/17914	. . . Friction grip	279/3493	. . Protection means; e.g., cover, seal, overstress prevention, air blast
279/17923	. . Transverse pin	279/35	. Miscellaneous
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		

**Former US Class 292 series**

<b>292/00</b>	<b>Closure fasteners</b>
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	292/0895	. . .	Operating means
292/0826	. . . .	Operating means	292/0897	. . . .	Link and lever
292/0828	. . . . .	Link and lever	292/0898	. . . .	Cam
292/0829	. . . . .	Cam	292/0899	. . . .	Flexible
292/083	. . . . .	Flexible	292/09	. . . .	Lever
292/0831	. . . . .	Lever	292/0901	. . . .	Push or pull rod
292/0832	. . . . .	Push or pull rod	292/0902	. . . .	Rigid
292/0833	. . . . .	Rigid	292/0903	. . . . .	Seal catch
292/0834	. . .	Sliding	292/0905	. . . . .	Swinging catch
292/0836	. . . .	Operating means	292/0906	. . . .	Screw
292/0837	. . . . .	Cam and lever	292/0907	. . .	Multiple head
292/0838	. . . . .	Lever and push or pull rod	292/0908	. .	Emergency operating means
292/0839	. . . . .	Link and lever	292/0909	. . .	Panel
292/084	. . . . .	Cam	292/091	. . .	Platform
292/0841	. . . . .	Flexible	292/0911	. .	Hooked end
292/0843	. . . . .	Gear	292/0913	. . .	Sliding and swinging
292/0844	. . . . .	Lever	292/0914	. . . .	Operating means
292/0845	. . . . .	Push or pull rod	292/0915	. . . . .	Cam
292/0846	. . . . .	Rigid	292/0916	. . . . .	Gear
292/0847	. . . . .	Screw	292/0917	. . . . .	Lever
292/0848	. . .	Swinging	292/0918	. . . . .	Rigid
292/0849	. . . .	Operating means	292/092	. . . . .	Screw
292/0851	. . . . .	Cam and lever	292/0921	. . .	Multiple head
292/0852	. . . . .	Link and cam	292/0922	. . . .	Operating means
292/0853	. . . . .	Link and lever	292/0923	. . . . .	Lever
292/0854	. . . . .	Cam	292/0924	. . . . .	Push or pull rod
292/0855	. . . . .	Flexible	292/0925	. . . . .	Rigid
292/0856	. . . . .	Gear	292/0926	. . .	Spring projected
292/0857	. . . . .	Lever	292/0928	. . . .	Operating means
292/0859	. . . . .	Push or pull rod	292/0929	. . . . .	Link and lever
292/086	. . . . .	Rigid	292/093	. . . . .	Cam
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

292/0966	. . . . . Gear	292/1032	. . . . . Seal
292/0967	. . . . . Lever	292/1033	. . . . . Screw
292/0968	. . . . . Rigid	292/1034	. . . . . Curved
292/0969	. . . . . Spring projected	292/1036	. . . . . End lever
292/097	. . . . . Operating means	292/1037	. . . . . Pivoted end
292/0971	. . . . . Cam and lever	292/1038	. . . . . Roller
292/0972	. . . . . Lever and push or pull rod	292/1039	. . . . . Swinging and camming
292/0974	. . . . . Link and lever	292/10395	. . . . . Spring projected
292/0975	. . . . . Link and push or pull rod	292/104	. . . . . Rigid operating means
292/0976	. . . . . Sliding cam	292/1041	. . . . . Rigid operating means
292/0977	. . . . . Cam	292/1043	. . . . . Swinging
292/0978	. . . . . Specifically related to vehicle closure	292/1044	. . . . . Multiple head
292/0979	. . . . . Bolt disabled by contraretractive movement of inside handle	292/1045	. . . . . Operating means
292/098	. . . . . Auxiliary bolt	292/1046	. . . . . Cam
292/0982	. . . . . Bolt blocking or disabling means	292/1047	. . . . . Closure
292/0983	. . . . . Involves rollback	292/1048	. . . . . Lever
292/0984	. . . . . Rollback members located on separate spindles	292/1049	. . . . . Rigid
292/0985	. . . . . Discrete pivotable or rotatable actuator	292/1051	. . . . . Spring projected
292/0986	. . . . . Discrete push or pull actuator	292/1052	. . . . . Operating means
292/0987	. . . . . Bolt has ancillary projection spring	292/1053	. . . . . Lever and push or pull rod
292/0989	. . . . . Plural rollback elements directionally selectively effective	292/1054	. . . . . Link and cam
292/099	. . . . . On separate spindles	292/1055	. . . . . Link and lever
292/0991	. . . . . On a tubular member	292/1056	. . . . . Cam
292/0992	. . . . . Flexible	292/1057	. . . . . Flexible
292/0993	. . . . . Gear	292/1059	. . . . . Lever
292/0994	. . . . . Lever	292/106	. . . . . Push or pull rod
292/0995	. . . . . Push or pull rod	292/1061	. . . . . Rigid
292/0997	. . . . . Rigid	292/1062	. . . . . Spring retracted
292/0998	. . . . . Screw	292/1063	. . . . . Gravity actuated
292/0999	. . . . . Spring retracted	292/1064	. . . . . Operating means
292/10	. . . . . Friction catch	292/1066	. . . . . Cam and lever
292/1001	. . . . . Sliding catch	292/1067	. . . . . Link and lever
292/1002	. . . . . Spring-arm catch	292/1068	. . . . . Cam
292/1003	. . . . . Swinging catch	292/1069	. . . . . Flexible
292/1005	. . . . . Cam-operating means	292/107	. . . . . Lever
292/1006	. . . . . Gravity actuated	292/1071	. . . . . Push or pull rod
292/1007	. . . . . Operating means	292/1072	. . . . . Rigid
292/1008	. . . . . Cam and lever	292/1074	. . . . . Roller
292/1009	. . . . . Link and lever	292/1075	. . . . . Operating means
292/101	. . . . . Cam	292/1076	. . . . . Link and lever
292/1011	. . . . . Lever	292/1077	. . . . . Cam
292/1013	. . . . . Rigid	292/1078	. . . . . Closure
292/1014	. . . . . Operating means	292/1079	. . . . . Gear
292/1015	. . . . . Link and lever	292/108	. . . . . Lever
292/1016	. . . . . Cam	292/1082	. . . . . Motor
292/1017	. . . . . Flexible	292/1083	. . . . . Rigid
292/1018	. . . . . Gear	292/1084	. . . . . Closure catch
292/102	. . . . . Lever	292/1085	. . . . . Friction catch
292/1021	. . . . . Motor	292/1086	. . . . . Padlock or seal catch
292/1022	. . . . . Rigid	292/1087	. . . . . Screw catch
292/1023	. . . . . Closure catch	292/1089	. . . . . Sliding catch
292/1024	. . . . . Friction catch	292/109	. . . . . Seal
292/1025	. . . . . Padlock or seal catch	292/1091	. . . . . Spring-arm catch
292/1026	. . . . . Screw catch	292/1092	. . . . . Swinging catch
292/1028	. . . . . Sliding catch	292/1093	. . . . . Seal
292/1029	. . . . . Seal	292/1094	. . . . . Screw
292/103	. . . . . Spring-arm catch	292/1095	. . . . . Seal-rupturing devices
292/1031	. . . . . Swinging catch	292/1097	. . . . . Reversible
		292/1098	. . . . . Cam and lever operating means
		292/1099	. . . . . Screw
		292/11	. . . . . Magnetic

292/14	. Ball	292/40	. Rings
292/17	. Bendable securers	292/42	. Rigid engaging means
292/175	. Bolt releasers	292/426	. . Screw catch
292/18	. . Free-end-engaging means	292/432	. . Sliding catch
292/19	. . Foot operated	292/438	. . Spring-arm catch
292/20	. Clamps	292/444	. . Swinging catch
292/202	. . Hatch fastener	292/45	. Rod clamps
292/205	. . Ring	292/47	. . Friction-plate catch
292/207	. . . Permanently deformed	292/48	. Seals
292/209	. . . Resilient wedge	292/481	. . Compressible disk
292/212	. . . With expanding or contracting means	292/483	. . . Reinforced
292/214	. . . . Screw	292/484	. . . Multiple
292/216	. . . . Toggle lever	292/485	. . . . Sheet metal
292/218	. . Screw against closure	292/487	. . . . Hard and soft metal
292/221	. . Screw and nut	292/488	. . . Sheet metal
292/223	. . . Swingable	292/49	. . Compressible rivets and eyelets
292/225	. . Cam-operating means	292/491	. . Distorted shackle
292/228	. . Portable	292/492	. . Driving
292/23	. Cross bars	292/494	. . Interengaging shackle ends, inclosing housing
292/237	. . Screw-operating means	292/4945	. . Rigid shackle ends
292/243	. . Vehicle door latches	292/495	. . . Resilient and rigid engaging means
292/25	. Cylinder	292/496	. . . Resilient engaging means
292/28	. Extension link	292/497	. . Resilient shackle ends
292/282	. . Multiple	292/498	. . . Rigid engaging means
292/283	. . Chain	292/499	. . . Resilient engaging means
292/285	. . Notched bar	292/50	. . Single piece, spring catch
292/286	. . . Sliding catch	292/502	. . Shiftable catch shackle operated
292/288	. . . Swinging catch	292/503	. . Split-ring catch, shackle operated
292/289	. . Slotted bar	292/505	. . Strap-end fasteners
292/291	. . . Sliding catch	292/506	. . Rigid disk, distorted shackle
292/293	. . . Swinging catch	292/507	. . Tag type
292/2935	. . Slotted or notched keeper	292/509	. . Encasing
292/294	. . . Sliding catch	292/51	. Seal bolts
292/296	. . . Swinging catch	292/513	. Shackles
292/297	. . Notched keeper	292/516	. . Sliding catch, seal
292/299	. . Slotted keeper	292/522	. . Swinging catch, seal
292/301	. . Friction catch	292/528	. . Seal catch
292/302	. . Screw catch	292/534	. . Seal-rupturing devices
292/304	. . Sliding catch	292/54	. Trippers
292/305	. . Swinging catch	292/546	. . Sliding detent
292/306	. Gear	292/552	. . Spring-arm detent
292/307	. . Sliding catch	292/558	. . Sliding bolt, swinging detent
292/308	. . Swinging catch	292/564	. . Swinging bolt, swinging detent
292/31	. Hasps	292/57	. Operators with knobs or handles
292/314	. . Sliding catch	292/59	. Rollback and spindle connection
292/319	. . . Seal	292/62	. Bolt casings
292/323	. . Swinging catch	292/65	. Braces
292/327	. . . Seal	292/67	. . Portable
292/331	. . Seal catch	292/68	. Keepers
292/336	. . Seal-rupturing devices	292/683	. . Segment
292/34	. Portable	292/685	. . With anti-friction means
292/37	. Portable securer plate or bar	292/688	. . With silencing or anti-rattle means
292/373	. . Sliding and swinging holding member	292/691	. . . Take-up
292/376	. . Screw-holding member	292/694	. . Covers
292/379	. . Sliding holding member	292/696	. . With movable dog, catch or striker
292/382	. . . Screw-operating means	292/699	. . . Motor controlled
292/385	. . . Screw catch	292/702	. . . Pivoted or swinging
292/388	. . . Sliding catch	292/705	. . Adjustable
292/391	. . . Swinging catch	292/707	. . . Vertically
292/394	. . Swinging holding member	292/71	. Wedges
292/397	. . . Catch devices	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 307 series**

**307/00 Electrical transmission or interconnection systems**  
 307/25 . Plural load circuit systems  
 307/258 . . Common conductor or return type  
 307/266 . . . Polyphase  
 307/273 . . . . Phase balancing  
 307/281 . . . Voltage divider type  
 307/289 . . . Plural output generators  
 307/297 . . Transformer connections  
 307/305 . . Plural sources of supply  
 307/313 . . . Interconnected for energy transfer  
 307/32 . . . . With control of magnitude of energy transfer  
 307/328 . . . . Diverse sources  
 307/336 . . . . . AC and DC  
 307/344 . . . Substitute or alternate source  
 307/352 . . . With control of magnitude of current or power  
 307/359 . . . Diverse sources  
 307/367 . . . . AC and DC  
 307/375 . . . . Different frequencies  
 307/383 . . . . Different voltages  
 307/391 . . . Selectively connected loads and/or sources  
 307/398 . . Anticoupling of load circuits through same source  
 307/406 . . Control of current or power  
 307/414 . . . Load current proportioning or dividing  
 307/422 . . . Constant magnitude control  
 307/43 . . . . By control of one or more load circuits  
 307/438 . . . Limit control  
 307/445 . . Serially connected load circuits  
 307/453 . . . Selective series-parallel connections  
 307/461 . . Selectively connected or controlled load circuits  
 307/469 . . . Condition responsive  
 307/477 . . . Code-controlled  
 307/484 . . . Sequential or alternating  
 307/492 . . Circuit arrangements or layouts  
 307/50 . Plural supply circuits or sources  
 307/505 . . One source floats across or compensates for other source  
 307/511 . . . With intervening converter  
 307/516 . . . . Storage battery or accumulator-type source  
 307/522 . . . Dynamoelectric-type source  
 307/527 . . . Storage battery or accumulator-type source  
 307/533 . . . . With series-connected auxiliary source  
 307/538 . . . . Tap-changing or variable number of cells  
 307/544 . . Circulating- or inter-current control or prevention

307/549 . . Load current control  
 307/555 . . . Load current division  
 307/56 . . . . Serially connected sources  
 307/565 . . . . Fixed or predetermined ratio  
 307/571 . . . . . Diverse-or unlike-type sources  
 307/576 . . . . . Plural generators  
 307/582 . . . . . Plural converters  
 307/587 . . . . Peak or excess load  
 307/593 . . . Constant load or current  
 307/598 . . . . Serially connected sources  
 307/604 . . . Load-limiting  
 307/609 . . . Serially connected sources  
 307/615 . . Substitute or emergency source  
 307/62 . . . Plural substitute sources  
 307/625 . . . Storage battery or accumulator  
 307/631 . . . . With intervening dynamoelectric machine  
 307/636 . . . Dynamoelectric  
 307/642 . . Sources distributed along load circuit  
 307/647 . . Load transfer without paralleling sources  
 307/653 . . Series-parallel connection of sources  
 307/658 . . Diverse or unlike electrical characteristics  
 307/664 . . . Differing frequencies  
 307/669 . . . Differing capacities  
 307/675 . . . Differing voltages  
 307/68 . . . . Generator sources  
 307/685 . . Series-connected sources  
 307/691 . . . Generator sources  
 307/696 . . Selective or optional sources  
 307/702 . . . Predetermined sequence  
 307/707 . . Plural converters  
 307/713 . . Plural transformers  
 307/718 . . Plural generators  
 307/724 . . Connecting or disconnecting  
 307/729 . . . Condition responsive  
 307/735 . . . . Attainment of voltage, frequency or phase relationship  
 307/74 . Switching systems  
 307/747 . . Plural switches  
 307/753 . . . Lazy-man switch type  
 307/76 . . . Selectively actuated  
 307/766 . . Condition responsive  
 307/773 . . . Light, heat, vibratory or radiant energy  
 307/779 . . . Fluid pressure, density, level, velocity or humidity  
 307/786 . . . Mechanical force  
 307/793 . . . . Speed, centrifugal or kinetic force  
 307/799 . . . . . Inertia or acceleration  
 307/806 . . . . . Direction of rotation  
 307/812 . . . . . Differential speed between two bodies  
 307/819 . . . . . Torque  
 307/826 . . . Electrical  
 307/832 . . . . Power or energy  
 307/839 . . . . Polarity, phase sequence or reverse flow  
 307/845 . . . . AC or DC discriminating  
 307/852 . . . . Frequency  
 307/858 . . . . Voltage  
 307/865 . . . . Current  
 307/872 . . Repetitive make and break  
 307/878 . . . Electronically controlled relay  
 307/885 . . . . Responsive to physical condition  
 307/891 . . . Thermal relay

307/898 . . . Vibrating relay  
 307/904 . . . Miscellaneous  
 307/911 . . With operation facilitating feature  
 307/918 . . . Preliminary reduction in current or voltage of system  
 307/924 . . . Switch contact conditioning  
 307/931 . . . . Polarity reversing  
 307/937 . . Switch actuation  
 307/944 . . . Power circuit controlled  
 307/951 . . . With time delay or retardation means  
 307/957 . . . . Electrically initiated  
 307/964 . . . . Series connected switches  
 307/97 . . . With locking, holding or braking means  
 307/977 . . . Electrical actuator  
 307/983 . . . Fluid-pressure actuator

**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  
 403/1616 . . Position or guide means  
 403/1624 . . . Related to joint component  
 403/1633 . . Utilizing fluid pressure  
 403/1641 . . Back-off means, e.g., separator, etc.  
 403/1649 . . Handle or handwheel  
 403/1658 . . . Actuates retainer or blocker  
 403/1666 . . tool-engaging or accommodating means or with tool  
 403/1674 . . . for latch or retainer  
 403/1683 . . Releasably captive nut or bolt  
 403/1691 . . Means to lock bolt or nut when other is turned  
 403/17 . with adjunctive shield  
 403/18 . Structurally installed in diverse art device  
 403/185 . . Head or base  
 403/19 . Coupling supported by independent bearing  
 403/20 . with indicator or inspection means  
 403/21 . Utilizing thermal characteristic, e.g. , expansion or contraction, etc.  
 403/213 . . Interposed material of intermediate coefficient of expansion  
 403/217 . . Members having different coefficients of expansion  
 403/22 . with fluid pressure responsive component  
 403/23 . with ambient condition responsive control means  
 403/24 . with independent handle or operator  
 403/25 . with distinct fluid or article handling or directing feature  
 403/251 . . External reservoir  
 403/253 . . Pressure fitting

403/255 . . including port or reservoir communicating with joint  
 403/257 . . . Articulated member  
 403/259 . . . . At joint interface  
 403/26 . Non-adhering fluent material at joint  
 403/27 . with strain-limiting means  
 403/28 . Combined  
 403/29 . Rotarily connected, differentially translatable members, e.g. , turn-buckle, etc.  
 403/291 . . having tool-engaging means or operating handle  
 403/293 . . having operating mechanism  
 403/295 . . having locking means  
 403/297 . . Differential pitch, similar hand  
 403/299 . . Externally threaded actuator  
 403/30 . Laterally related members connected by latch means, e.g. , scaffold connectors  
 403/31 . Flexible diaphragm or bellows  
 403/315 . . with additional connection or packing  
 403/32 . Articulated members  
 403/32008 . . Plural distinct articulation axes  
 403/32016 . . . Three or more parallel axes  
 403/32024 . . . Single adjustment for plural axes  
 403/32032 . . . Plural ball and socket  
 403/32041 . . . Universal  
 403/32049 . . . . Non-coplanar axes  
 403/32057 . . . Angular and linear  
 403/32065 . . . . Screw and swivel  
 403/32073 . . . . Pivot stud slidable in elongated opening  
 403/32081 . . . Parallel rotary  
 403/32091 . . . Plural translating connections  
 403/32098 . . Branched  
 403/32106 . . Member pivoted at rigid corner  
 403/32114 . . including static joint  
 403/32122 . . . Trunnion assembly to side of rod  
 403/32131 . . . One member is plate or side  
 403/32139 . . . . Secant, i.e., rod extending through plate  
 403/32147 . . . . Plate or side forms bearing surface  
 403/32155 . . . . Bearing component clamped to plate or side, e.g., bolted, etc.  
 403/32163 . . . Articulate joint intermediate end joints  
 403/32172 . . . . Variable angle  
 403/32181 . . . . . Universal  
 403/32188 . . . Angled or offset members  
 403/32196 . . . Articulate joint is ball and socket  
 403/32204 . . . . with threaded joint  
 403/32213 . . . Articulate joint is a swivel  
 403/32221 . . . Articulate joint comprises pivoted clevis or channel bar  
 403/32229 . . . Articulate joint is a slide  
 403/32237 . . including operator  
 403/32245 . . Arcuate shank moves in complementary guide  
 403/32254 . . Lockable at fixed position  
 403/32262 . . . At selected angle  
 403/32271 . . . . Movable brace between members  
 403/32278 . . . . Members rotatable about oblique axes  
 403/32286 . . . . Clamping screw traverses sliding complementary arcuate bearing surfaces  
 403/32295 . . . . Securing yoke or ring spaced radially from locking means  
 403/32303 . . . . . Eyebolt  
 403/32311 . . . . Ball and socket  
 403/32319 . . . . including pivot stud

403/32327	. . . . .	including radially spaced detent or latch component	403/32754	. . . . .	Variably preloaded
403/32336	. . . . .	Engaging notch or recess in outer periphery of component	403/32762	. . . . .	Spring-biased seat opposite ball stud
403/32344	. . . . .	Side of rod engages recess in radial face	403/32771	. . . . .	Porous
403/32352	. . . . .	Pivoted detent	403/32778	. . . . .	Completely spacing the members
403/32361	. . . . .	Engaging recess in radial face	403/32786	. . . . .	Divided socket-type coupling
403/32368	. . . . .	including radial interengaging tongue and slot or serrations	403/32795	. . . . .	Bifurcated socket
403/32377	. . . . .	Radially spaced arcuate slot engages fastener	403/32803	. . . . .	Separable socket sections
403/32385	. . . . .	Locked by plural motions of one member	403/32811	. . . . .	Spring-biased
403/32393	. . . . .	including bridging keeper	403/32819	. . . . .	including tension or take-up means
403/32401	. . . . .	Locked by nesting parts	403/32827	. . . . .	Interposed spring means coaxial with pivot
403/32409	. . . . .	Members locked in axial alignment	403/32836	. . . . .	Acting through tapered surface on bearing component
403/32418	. . . . .	Plural distinct positions	403/32844	. . . . .	Manually variable
403/32426	. . . . .	Plural distinct positions	403/32852	. . . . .	External of bearing assembly, e.g., antirattler, etc.
403/32434	. . . . .	Unidirectional movement, e.g., ratchet, etc.	403/32861	. . . . .	T-pivot, e.g., wrist pin, etc.
403/32442	. . . . .	At least one discrete position	403/32868	. . . . .	Floating pin
403/32451	. . . . .	Step-by-step adjustment	403/32877	. . . . .	Pin is integral with or secured to inner member
403/32459	. . . . .	Retainer extends through aligned recesses	403/32885	. . . . .	Expanded pin or end
403/32467	. . . . .	Telescoping members	403/32893	. . . . .	including distinct pin retainer
403/32475	. . . . .	having detent	403/32901	. . . . .	Unitary clip or plug
403/32483	. . . . .	Spring biased	403/32909	. . . . .	Threaded pin end
403/32491	. . . . .	Threaded	403/32918	. . . . .	fork and tongue
403/32501	. . . . .	Cam or wedge	403/32926	. . . . .	with interposed antifriction means
403/32508	. . . . .	having transverse pin	403/32934	. . . . .	Oppositely laterally movable tines
403/32516	. . . . .	Remotely actuated	403/32942	. . . . .	On oblique interface
403/32524	. . . . .	Self-locking	403/32951	. . . . .	Transverse pin or stud
403/32532	. . . . .	Clamped members	403/32959	. . . . .	Traverses interposed facing component
403/32541	. . . . .	Rotatable members resiliently biased to one position	403/32967	. . . . .	Attached to or integral with one member
403/32549	. . . . .	including limit means	403/32975	. . . . .	Rotatable
403/32557	. . . . .	for pivotal motion	403/32983	. . . . .	Rod in socket
403/32565	. . . . .	Ball and socket with restricted movement about one axis	403/32991	. . . . .	Axially spring-biased coaxial members
403/32573	. . . . .	Ball stud passes through confining opening	403/33	. . . . .	Transverse rod to spaced plate surfaces
403/32581	. . . . .	Pin and slot	403/335	. . . . .	Retainer utilizes or abuts plural plates
403/32591	. . . . .	Opposed stops on one member	403/34	. . . . .	Branched
403/32598	. . . . .	Threaded interface	403/341	. . . . .	Three or more radiating members
403/32606	. . . . .	Pivoted	403/342	. . . . .	Polyhedral
403/32614	. . . . .	including circumferential biasing or damping means	403/343	. . . . .	Unilateral of plane
403/32622	. . . . .	Rocking or rolling contact	403/344	. . . . .	Plural pairs of axially aligned members
403/32631	. . . . .	Universal ball and socket	403/345	. . . . .	Coplanar
403/32639	. . . . .	including internal tie means	403/346	. . . . .	Additional rod held by encompassing means
403/32647	. . . . .	Plural concave surfaces with diverse curvature	403/347	. . . . .	Polyhedral
403/32655	. . . . .	Interposed concavo-convex component	403/348	. . . . .	Parallel rods
403/32663	. . . . .	Outer surfaces	403/349	. . . . .	Coplanar
403/32672	. . . . .	Swiveled ball parts or seat	403/35	. . . . .	Diverse material coupling member
403/32681	. . . . .	Composite ball	403/36	. . . . .	Three or more serial joints, at least one diverse
403/32688	. . . . .	Spring biased segments	403/362	. . . . .	Nonaligned axes
403/32696	. . . . .	Nonmetallic part	403/364	. . . . .	Separable intermediate joint
403/32704	. . . . .	Stud extends into ball	403/366	. . . . .	Axially acting connector
403/32713	. . . . .	Elastomerically biased or backed components	403/368	. . . . .	Screw or cam
403/32721	. . . . .	Elastomeric seat	403/37	. . . . .	Joint involving plural layers of single rod
403/32729	. . . . .	Externally packed	403/38	. . . . .	Laterally related rods independently joined to transverse surface
403/32737	. . . . .	including liner, shim, or discrete seat	403/39	. . . . .	Rod to member to side, e.g., plate, rod side, etc.
403/32745	. . . . .	Spring acts through wedging surfaces	403/3906	. . . . .	Rod side to member to side
			403/3913	. . . . .	Unilateral of side
			403/3921	. . . . .	Arcuate or multiplanar side
			403/3926	. . . . .	Encompassed side
			403/3933	. . . . .	Intermediate member includes tubular part
			403/3941	. . . . .	Side or tubular part deformed <u>in situ</u>
			403/3946	. . . . .	Intermediate member extends through side

- 403/3953 . . . . Split or divided tubular part and coacting compressor
- 403/3961 . . . . Transverse clamp secures rod and tubular part
- 403/3966 . . . . Rod also extends through side
- 403/3973 . . . . Oblique rod
- 403/3981 . . . . Intermediate member secured to side by radial flange
- 403/3986 . . . . Internally threaded tubular part
- 403/3993 . . . . Intermediate member extends completely through side
- 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
- 403/4608 . . . . Structure attached to rod end encompasses side
- 403/4611 . . . . Clamped saddle
- 403/4614 . . . . Yoke or ring
- 403/4617 . . . . having radial screw at bight
- 403/4621 . . . . including saddle
- 403/4622 . . . . Gland type
- 403/4625 . . . . Rod and side gripped simultaneously by single actuation
- 403/4628 . . . . Rod clamped to hole edge
- 403/4631 . . . . Rod to open edge of side, e.g., wrap-around connection
- 403/4634 . . . . Rod and side deformingly interlocked
- 403/4637 . . . . Radially interposed, side-engaging shim or bushing
- 403/4641 . . . . Socket formed by shaping or deforming side
- 403/4642 . . . . Integral transverse projection on side, e.g., necked, etc.
- 403/4645 . . . . From rod side
- 403/4648 . . . . Utilizing opposite sides of member
- 403/4651 . . . . Rod is expanded by component inserted from distal side
- 403/4654 . . . . . Separate and deformable component
- 403/4657 . . . . . Plural contacting components
- 403/4661 . . . . . Barbed component
- 403/4662 . . . . . Inserted, blind-side-engaging, retaining portion on rod
- 403/4665 . . . . . Stepped or tapered recess in side
- 403/4668 . . . . . Terminal, rod-attached retainer engages distal side
- 403/4671 . . . . . . . . . . Inserted into rod
- 403/4674 . . . . . . . . . . Clamped member
- 403/4677 . . . . . . . . . . Clamping component engages recessed side
- 403/4681 . . . . . . . . . . Bolted to rod
- 403/4682 . . . . . . . . . . Between rod shoulder and terminal nut
- 403/4685 . . . . . . . . . . Bolted through member
- 403/4688 . . . . . . . . . . Coaxial collar or shoulder or rod is clamp element
- 403/4691 . . . . . . . . . . Flange on rod bolted to side
- 403/4694 . . . . . . . . . . Rod received in recessed side, e.g., socket or tapered opening, etc.
- 403/4697 . . . . . . . . . . Utilizing internal rod structure
- 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 . . . . . . . . . . Shrunken 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	403/7007	. . . Bayonet joint
403/551	. . Externally bridged	403/7009	. . Rotary binding cam or wedge
403/553	. . Laterally inserted section	403/7011	. . . Radially interposed shim or bushing
403/555	. . Angle section	403/7013	. . . . Arcuate slip
403/556	. . Section threaded to member	403/7015	. . Assembled by plural manipulations of member
403/557	. . Expansible section	403/7016	. . Diametric end slot is joint component
403/559	. . Fluted or splined section	403/7018	. . including separably interposed key
403/56	. Thread adaptor	403/7021	. . . Axially extending
403/57	. Distinct end coupler	403/7022	. . . . Resilient
403/5706	. . Diverse serial connections	403/7024	. . . . Longitudinally stepped or tapered
403/5713	. . . Axially cleft coupler	403/7026	. . Longitudinally splined or fluted rod
403/5721	. . Single actuator for plural connections	403/7028	. . . Splayed or having a cam surface for anti-backlash
403/5726	. . . Axially biased end portions	403/7031	. . . Rod designed to be manipulable, e.g., twistable, within coupling for quick disconnect
403/5733	. . Plural opposed sockets	403/7032	. . . including a means, e.g., spring biased portion, for misalignment correction
403/5741	. . Separate screw or pin-type connections	403/7033	. . . including a lock or retainer
403/5746	. . Continuous thread	403/7035	. . . Specific angle or shape of rib, key, groove, or shoulder
403/5753	. . having separable end caps or plugs	403/7037	. . Externally shouldered or headed rod
403/5761	. . Interrupted periphery, e.g., split or segmental, etc.	403/7039	. . Socket
403/5766	. . . Axially divided segments	403/7041	. . including set screw
403/5773	. . . . Interfitting	403/7043	. . Interfitted angle or channel bars
403/5781	. . . . Bolted	403/7045	. . Interdigitated ends
403/5786	. . . Split	403/7047	. . Radially interposed shim or bushing
403/5793	. . including member wedging or camming means	403/7049	. . . Biased by distinct radially acting means
403/58	. including ancillary means blocking disconnection of joint	403/7051	. . . Wedging or camming
403/581	. . Blocker for assembled joint retainer	403/7052	. . . . Engaged by axial movement
403/583	. . . Blocker keeper	403/7054	. . . . . Plural, circumferentially related shims between members
403/585	. . . Blocked key	403/7056	. . . . . Threaded actuator
403/587	. . Blocker is catch or key	403/7058	. . . . . Split or slotted bushing
403/589	. . Cam or thread lock	403/7061	. . . Resilient
403/59	. Manually releaseable latch type	403/7062	. . Clamped members
403/591	. . having operating mechanism	403/7064	. . . by wedge or cam
403/592	. . . Ball detent	403/7066	. . . . having actuator
403/593	. . . Remotely actuated	403/7067	. . . . . Threaded actuator
403/595	. . . Lever	403/7069	. . . . . Axially oriented
403/597	. . Swiveled bolt	403/7071	. . . . . Lever actuator
403/598	. . Transversely sliding pin	403/7073	. . Peripheral enlargement, depression, or slot on one member is joint component
403/599	. . Spring biased manipulator	403/7075	. . including discrete retainer
403/60	. Biased catch or latch	403/7077	. . . for telescoping members
403/602	. . by separate spring	403/7079	. . . . Transverse pin
403/604	. . . Radially sliding catch	403/7081	. . . . . Multiple retainers
403/606	. . Leaf spring	403/7083	. . . . . having means to prevent removal of retainer
403/608	. . Pivoted	403/7084	. . . . . Bolt, rivet, or screw
403/61	. Side slide: elongated co-linear members	403/7086	. . . . . Wedge pin
403/62	. Annular recess is joint component	403/7088	. . . . . Sliding pin
403/63	. Convergent interface	403/7091	. . . . . Expansible retainer
403/635	. . Tapered	403/7092	. . . for interfitted side faces
403/64	. Interconnected flanges or shoulders	403/7094	. . Enlarged head in complementary recess, e.g., dovetail, etc.
403/642	. . Separate flange or shoulder	403/7096	. . Rigid angle
403/645	. . Axially bolted or riveted	403/7098	. . Non-circular rod section is joint component
403/648	. . Clamped	403/71	. Rod side to plate or side
403/65	. Scarf	403/7105	. . Connected by double clamp
403/655	. . Mirror images	403/7111	. . Shackle is integral with or independently attached to proximate side of plate or other side
403/66	. Interfitted members with external bridging piece	403/7117	. . Flanged or grooved rod
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		



403/7123 . . 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**

**407/00 Cutters, for shaping**  
 407/10 . . including noncutting work modifying means  
 407/11 . . including chip breaker, guide or deflector  
 detachable from tool and tool holder  
 407/112 . . Adjustable relative to cutting edge  
 407/114 . . . including adjusting means  
 407/116 . . Attached to or integral with tool clamping jaw  
 407/118 . . Chip breaker  
 407/12 . . Freely movable cutting edge  
 407/13 . . Yieldable tool  
 407/134 . . Resiliently mounted tool  
 407/137 . . . including yield stress or flexure limit adjusting  
 means  
 407/14 . . with means to apply fluid to cutting tool  
 407/15 . . Rotary broach  
 407/16 . . Rectilinear broach  
 407/1614 . . Hollow tool for surrounding workpiece  
 407/1628 . . including holder having seat for inserted tool  
 407/1642 . . . Annular tool  
 407/1657 . . . including single tooth  
 407/1671 . . Plural tooth groups  
 407/1685 . . including sequentially acting teeth of stepped  
 cutting width  
 407/17 . . Gear cutting tool  
 407/1705 . . Face mill gear cutting tool  
 407/171 . . . Adjustable teeth  
 407/1715 . . Hob  
 407/172 . . . Thread cutting  
 407/1725 . . . including holder having seat for inserted tool  
 407/173 . . . for cutting involute gear tooth  
 407/1735 . . Rotary, gear shaving cutting tool  
 407/174 . . Gear generating, revolving shaper cutting tool  
 407/1745 . . Rotary, tooth form cutting tool  
 407/18 . . File or rasp  
 407/1805 . . Flexible blade or carrier therefor  
 407/181 . . Tire rasp  
 407/1815 . . Rotary file or round disc

407/182 . . Composite, diverse sector, or assembled  
 407/1825 . . Handle or holder, per se  
 407/19 . . Rotary cutting tool  
 407/1902 . . Gang  
 407/1904 . . Composite body of diverse material  
 407/1906 . . including holder [i.e., head] having seat for  
 inserted tool  
 407/1908 . . . Face or end mill  
 407/191 . . . . Plural simultaneously usable separable tools  
 in common seat or common clamp actuator  
 for plural simultaneously usable tools  
 407/1912 . . . . Tool adjustable relative to holder  
 407/1914 . . . . Radially  
 407/1916 . . . . . And axially  
 407/1918 . . . . . Selectively  
 407/192 . . . . with separate means to fasten tool to holder  
 407/1922 . . . . Wedge clamp element  
 407/1924 . . . . Specified tool shape  
 407/1926 . . . Plural simultaneously usable separable tools  
 in common seat or common clamp actuator for  
 plural simultaneously usable tools  
 407/1928 . . . Tool adjustable relative to holder  
 407/193 . . . . Radially  
 407/1932 . . . with means to fasten tool seat to holder  
 407/1934 . . . with separate means to fasten tool to holder  
 407/1936 . . . . Apertured tool  
 407/1938 . . . . Wedge clamp element  
 407/194 . . . . Resilient clamp jaw  
 407/1942 . . . Peripherally spaced tools  
 407/1944 . . . . Sectional support  
 407/1946 . . Face or end mill  
 407/1948 . . . with cutting edge entirely across end of tool  
 [e.g., router bit, end mill, etc.]  
 407/195 . . Compound tooth arrangement  
 407/1952 . . Having peripherally spaced teeth  
 407/1954 . . . Axially tapering tool  
 407/1956 . . . Circumferentially staggered  
 407/1958 . . . . Plural teeth spaced about a helix  
 407/196 . . . Varying in cutting edge profile  
 407/1962 . . . Specified tooth shape or spacing  
 407/1964 . . . . Arcuate cutting edge  
 407/1966 . . . . Helical tooth  
 407/20 . . Profiled circular tool  
 407/21 . . Arc segment tool  
 407/22 . . including holder having seat for inserted tool  
 407/2202 . . Plural spaced seats and common holder  
 407/2204 . . . Relatively adjustable seats  
 407/2206 . . . Simultaneously usable  
 407/2208 . . Plural simultaneously usable separable tools  
 in common seat or common clamp actuator for  
 plural simultaneously usable tools  
 407/221 . . . Adjustable tool  
 407/2212 . . with tool ejector  
 407/2214 . . with separate means to adjust tool to and fro  
 relative to holder  
 407/2216 . . . with indicator  
 407/2218 . . . Plural provisions for adjustment  
 407/222 . . . by moving tool seat  
 407/2222 . . Tool adjustable relative to holder  
 407/2224 . . . with indicator  
 407/2226 . . . Plural provisions for adjustment  
 407/2228 . . . . Plural interfering seats

407/223	. . . . including pivotable seat or tool	408/173	. . . Responsive to work
407/2232	. . . . . with detent	408/175	. . to control relative positioning of Tool and work
407/2234	. . . . . Pivoted seat	408/18	. with stopping upon completion of prescribed operation
407/2236	. . . . . And pivotable tool	408/20	. . Responsive to condition of work or product
407/2238	. . . by adjustable or replaceable stop	408/21	. with signal, indicator, illuminator or optical means
407/224	. . . . Adjustable	408/23	. including means to cause Tool to progressively vibrate toward work
407/2242	. . . . . Screw	408/26	. with means to condition tool
407/2244	. . . by movement of seat relative to holder	408/29	. with means to deForm work temporarily
407/2246	. . . . Pivoted seat	408/31	. Convertible cutting means
407/2248	. . . Pivoted tool	408/33	. . Utilizing common cutting Tool
407/225	. . . Resiliently biased tool clamping jaw	408/34	. Combined cutting means
407/2252	. . . Rectilinearly	408/344	. . including Tool operating on rotating work
407/2254	. . . . including rotatable cam clamp element	408/348	. . Plural other type cutting means
407/2256	. . . . including wedge clamp element	408/35	. . . including plural rotating tools
407/2258	. . . . . And guide or detent	408/352	. . including rotating cutter other than rotating, axially moving Tool
407/226	. . . . including detent	408/353	. . . Crystalline cutter
407/2262	. . . . Tool gripped directly by set screw	408/355	. . . Utilized in cutting work or product to length
407/2264	. . . . Slidable jaw	408/3555	. . . . Adapted to cut entire thickness of work at one pass
407/2266	. . Holder adapted for tools of different shape	408/356	. . including plunging [single stroke] cutter
407/2268	. . with chip breaker, guide or deflector	408/36	. Machine including plural tools
407/227	. . with separate means to fasten tool seat to holder	408/365	. . Axes of tools moving with work during operation
407/2272	. . with separate means to fasten tool to holder	408/367	. . . including means to infeed Tool and means to infeed work or including coaxial tools
407/2274	. . . Apertured tool	408/368	. . . Plural work stations
407/2276	. . . . with means projecting through aperture to force tool laterally against reaction surface	408/37	. . Turret of tools
407/2278	. . . . . Tilting clamp element and separate means to tilt same	408/375	. . Coaxial tools
407/228	. . . Rotatable cam clamp element	408/378	. . . Coaxial, opposed tools
407/2282	. . . including tool holding clamp and clamp actuator	408/3784	. . . . with additional, converging Tool
407/2284	. . . . Wedge clamp element	408/3788	. . . . Plural pairs of coaxial, opposed tools
407/2286	. . . . Resiliently biased clamp jaw	408/3792	. . . . with means to sequentially feed tools toward work
407/2288	. . . . . Integral with holder	408/3796	. . . . with interconnected means to simultaneously feed tools
407/229	. . . . Pivoted jaw	408/38	. . Plural, simultaneously operational tools
407/2292	. . . . Slidable jaw	408/3806	. . . with plural simultaneously operational work stations
407/23	. including tool having plural alternatively usable cutting edges	408/3809	. . . . Successively acting on workpiece
407/235	. . with integral chip breaker, guide or deflector	408/381	. . . . . Pivotally mounted, work-advancing, work-supporting means, pivot-axis parallel to tool-axis
407/24	. with chip breaker, guide or deflector	408/3811	. . . with provision for adjustment of relationship of axes
407/245	. . comprising concave surface in cutting face of tool	408/3817	. . . at least one Tool driven by orbiting wrist plate
407/25	. including cut off tool	408/3822	. . . at least one Tool including flexible drive connection
407/26	. comprising cutting edge bonded to tool shank	408/3828	. . . with work-infeed
407/27	. comprising tool of specific chemical composition	408/3833	. . . with means to advance work relative to Tool
407/28	. Miscellaneous	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

**Former US Class 408 Series**

<b>408/00</b>	<b>Cutting by use of rotating axially moving tool</b>
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

408/455	. . . Conducting channel extending to end of Tool	408/5635	. . . Oppositely moving lateral clamps
408/458	. . . including nozzle	408/5638	. . . Adjustable relative to tool-axis
408/46	. . including nozzle	408/564	. . Movable relative to Tool along tool-axis
408/47	. with work-infeed means	408/5647	. . . including means to move Tool
408/476	. . Driven by fluid motor	408/5653	. . . with means to bias Tool away from work
408/482	. . Driven by means having sliding engagement therewith	408/566	. . Axially fixed to Tool
408/488	. . Driven by lever or connecting link	408/5665	. . . Work-engaging surface parallel to tool-axis
408/494	. . and gear to drive infeed means	408/567	. . Adjustable, tool-guiding jig
408/50	. with product handling or receiving means	408/568	. . . Guide bushing
408/51	. . Ejector	408/569	. . Bushing
408/52	. with work advancing or guiding means	408/57	. Tool-support with means to receive tool-position indicator
408/54	. . Means to intermittently advance work	408/60	. Plural tool-assemblages
408/545	. . . Rotary, work-supporting means	408/62	. . Coaxial
408/55	. with work-engaging structure other than Tool or tool-support	408/625	. . . Spring biased
408/551	. . with means actuated by work to release Tool from fixed position in Tool support	408/63	. Tool or tool-support with torque-applying ratchet
408/552	. . . Adapted to engage work at tool-axis	408/637	. . with thrust applying means
408/553	. . Centering means adapted to be replaced by Tool	408/639	. . . Reversible ratchet
408/554	. . Magnetic or suction means	408/641	. . . Double-acting ratchet
408/556	. . Tool supporting wheel	408/643	. . Reversible ratchet
408/5565	. . . Wheel-axis parallel to tool-axis	408/65	. Means to drive tool
408/557	. . Frictionally engaging sides of opening in work	408/655	. . with specific Tool structure
408/558	. . . Opening coaxial with Tool	408/66	. . Friction gearing
408/5583	. . . . Engaging sides of opening being enlarged by Tool	408/665	. . Universal or flexible drive connection to rotate Tool
408/5584	. . . . . Engaging surface axially advanced of tool-action	408/67	. . Belt and pulley
408/5586	. . . . . Engaging surface subsequent to tool-action on that surface	408/675	. . including means to move Tool along tool-axis
408/5587	. . . . Valve fitting	408/6757	. . . Fluid means
408/559	. . Funnel like work-engaging surface cooperating with protuberance on work	408/6764	. . . Laterally adjustable Tool
408/56	. . Adapted to "form" recession in work	408/6771	. . . with clutch means
408/5605	. . . Recession at tool-axis	408/6774	. . . . including plural speed drive
408/561	. . Having tool-opposing, work-engaging surface	408/6776	. . . . Actuated by Tool movement
408/5612	. . . Tool having shiftable tool-axis	408/6779	. . . Rack and pinion
408/5614	. . . Angularly adjustable surface	408/6786	. . . Manually moved lever
408/5616	. . . . Adjustable about axis that is parallel to tool-axis	408/6793	. . . Screw coaxial with Tool
408/5617	. . . Laterally adjustable surface	408/68	. Tool or tool-support with thrust-applying machine-engaging screw
408/5619	. . . Flexible or concatenated member	408/70	. Tool or tool-support with torque-applying clutch
408/5621	. . . Connected to Tool through opening being enlarged by Tool	408/72	. . Friction clutch
408/5622	. . . . Plural, coaxially opposing, work-engaging means	408/73	. Tool or tool-support with torque-applying spline
408/5623	. . . with presser foot	408/75	. . Relative motion of splined shaft and tool-support causing release of Tool from operating position
408/56238	. . . . Encompassed by Tool during cut	408/76	. Tool-carrier with vibration-damping means
408/56245	. . . . including tool-guide [or bushing]	408/78	. Tool of specific diverse material
408/56253	. . . . Base supported machine	408/81	. Tool having crystalline cutting edge
408/5626	. . . with means to move Tool relative to other work-engaging structure along tool-axis	408/83	. Tool-support with means to move Tool relative to tool-support
408/5627	. . . . Having sliding engagement therewith	408/85	. . to move radially
408/56275	. . . . . Screw coaxial with Tool	408/852	. . . with Tool releasing trigger
408/5628	. . . Tool having screw-thread engaging frame to cause infeed	408/853	. . . . and separate Tool setting means
408/563	. . Work-gripping clamp	408/854	. . . to move eccentrically mounted Tool
408/5633	. . . Adapted to coaxially grip round work	408/855	. . . . Tool-support including plural, adjustable sections
408/56337	. . . . Oppositely moving lateral clamps	408/856	. . . Moving means including pinion engaging rack-like surface of Tool
408/5634	. . . . . Three or more moving clamps	408/858	. . . Moving means including wedge, screw or cam
408/56343	. . . . Base supported clamp	408/8583	. . . . with resiliently urged Tool
		408/85837	. . . . . with spring retainer
		408/85843	. . . . . Resilient Tool or tool-support
		408/8585	. . . . including oppositely moving, diverging tools
		408/8588	. . . . Axially slidable moving-means
		408/85884	. . . . . Tool pivotally mounted on support

- 408/85888 . . . . . Having axially spaced shoulders
- 408/85892 . . . . . Screw driven wedge or cam
- 408/85893 . . . . . Screw with axis radially spaced from tool-axis
- 408/85894 . . . . . Annular wedge-collar
- 408/858945 . . . . . Axially spaced tool-retaining collars
- 408/858946 . . . . . with travelling wedge
- 408/858948 . . . . . Tool having axially facing, collar-receiving groove
- 408/858949 . . . . . including two-piece collar
- 408/85895 . . . . . Traveling wedge
- 408/858953 . . . . . Interfitting, tool-retaining wedge
- 408/858955 . . . . . including separable interfitting element
- 408/858957 . . . . . Having externally threaded shank connected to tool-support
- 408/85896 . . . . . Annular wedge-collar
- 408/859 . . . . . Rotary cam
- 408/8591 . . . . . Scroll plate
- 408/85913 . . . . . Volute scroll
- 408/85915 . . . . . with means to rotate scroll
- 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 . . . . with 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  
 409/105565 . . . Cutting rotating work, the axis of which lies in a plane intersecting the cutter axis  
 409/105724 . . . Gear shaving  
 409/105883 . . . Using rotary cutter  
 409/106042 . . . having axially directed cutting edge  
 409/106201 . . . Plural rotary cutters  
 409/10636 . . . On reciprocating carriage  
 409/106519 . . . Using reciprocating or oscillating cutter  
 409/106678 . . . Bevel gear cutting  
 409/106837 . . . Dual cutters  
 409/106996 . . . Double acting cutter  
 409/107155 . . . Rectilinearly reciprocating cutter  
 409/107314 . . . Cutter comprising a rack  
 409/107473 . . . Making a noncircular gear, worm, rotor, or a planar-faced gear  
 409/107632 . . Gear shaving  
 409/107791 . . Using rotary cutter  
 409/10795 . . . Process  
 409/108109 . . . End mill  
 409/108268 . . . Radially faced  
 409/108427 . . . Using plural, selectively usable tools  
 409/108586 . . . Plural rotary cutters  
 409/108745 . . . Cutting action along work axis  
 409/108904 . . . Cutting action intersecting work axis  
 409/109063 . . Using reciprocating or oscillating cutter  
 409/109222 . . . Broach  
 409/109381 . . . including circumferentially disposed cutting edges  
 409/10954 . . Work dividing or checking of work position or division  
 409/109699 . . with work clamping  
 409/20 . . with refurbishing of cutter  
 409/30 . . Milling  
 409/300056 . . Thread or helix generating  
 409/300112 . . . Process  
 409/300168 . . . with means to regulate operation by use of templet, card, or other replaceable information supply  
 409/300224 . . . Complete cycle  
 409/30028 . . . to regulate cutting depth [e.g., relief, taper, etc.]  
 409/300336 . . . to regulate rate of motion [e.g., stopping, etc.]  
 409/300392 . . . with nonthread or nonhelix generating, milling cutter  
 409/300448 . . . with means to advance work or product  
 409/300504 . . . Plural cutters or work holders  
 409/30056 . . . with planetary cutter  
 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  
 409/300896 . . . with sensing of numerical information and regulation without mechanical connection between sensing means and regulated means [i.e., numerical control]  
 409/300952 . . . to cut lock key  
 409/301008 . . . Using templet other than a key  
 409/301064 . . . Complete cycle  
 409/30112 . . . Process  
 409/301176 . . . Reproducing means  
 409/301232 . . . including pantograph cutter-carrier  
 409/301288 . . . and means to move work at work station  
 409/301344 . . . About work axis  
 409/3014 . . . Pivotaly supported for vertical movement  
 409/301456 . . . and means to counterbalance carrier  
 409/301512 . . . including plural cutters  
 409/301568 . . . by use of pivotaly supported tracer  
 409/301624 . . . Duplicating means  
 409/30168 . . . with means for operation without manual intervention  
 409/301736 . . . to make a double curvature foil  
 409/301792 . . . including means to sense optical or magnetic image  
 409/301848 . . . with means to support templet above or under work  
 409/301904 . . . including tracer adapted to trigger electrical energy  
 409/30196 . . . to actuate electrically driven work or tool moving means  
 409/302016 . . . to actuate fluid driven work or tool moving means  
 409/302072 . . . including tracer adapted to trigger fluid energy  
 409/302128 . . . to actuate fluid driven work or tool moving means  
 409/302184 . . . including cutter and tracer fixed to move laterally together  
 409/30224 . . . and provision for circumferential relative movement of cutter and work  
 409/302296 . . . including plural cutters

409/302352 . . . . .	including plural cutters	409/304872 . . . . .	to control limit of infeed
409/302408 . . . . .	including cross-slide tool carrier	409/304928 . . . . .	Adapted to hydraulically or pneumatically stimulate control
409/302464 . . . . .	including plural cutters	409/304984 . . . . .	Adapted to electrically stimulate control
409/30252 . . . . .	including cross-slide tool carrier	409/30504 . . . . .	to control rate of infeed or return
409/302576 . . . . .	with means to support templet above or under work	409/305096 . . . . .	to effect stopping of infeed
409/302632 . . . . .	with provision for circumferential relative movement of cutter and work	409/305152 . . . . .	with means to change rate of infeed
409/302688 . . . . .	with provision for circumferential relative movement of cutter and work	409/305208 . . . . .	Means to mill indeterminate length work
409/302744 . . . . .	and means for operation without manual intervention	409/305264 . . . . .	Multiple work stations
409/3028 . . . . .	including tracer adapted to trigger electrical or fluid energy	409/30532 . . . . .	with means to advance work or product
409/302856 . . . . .	For using planar templet in cutting profile [e.g., contour map from planar map, etc.]	409/305376 . . . . .	Vertically
409/302912 . . . . .	including means for operation without manual intervention	409/305432 . . . . .	Endless or orbital work or product advancing means
409/302968 . . . . .	including means for operation without manual intervention	409/305488 . . . . .	to reciprocate or oscillate work
409/303024 . . . . .	including simultaneously usable plural tracers or including tracer adapted to simultaneously use plural templets	409/305544 . . . . .	with work holder
409/30308 . . . . .	to make a double curvature foil	409/3056 . . . . .	and means to selectively position work
409/303136 . . . . .	to make a double curvature foil	409/305656 . . . . .	including means to support work for rotation during operation
409/303192 . . . . .	including cutter and tracer fixed to move together	409/305712 . . . . .	and including means to infeed cutter toward work axis
409/303248 . . . . .	with provision for circumferential relative movement of cutter and work	409/305768 . . . . .	with linear movement of work
409/303304 . . . . .	and provision for circumferential relative movement of cutter and work	409/305824 . . . . .	with angular movement of work
409/30336 . . . . .	including cutter and tracer fixed to move together	409/30588 . . . . .	including friction gearing drive
409/303416 . . . . .	Templet, tracer, or cutter	409/305936 . . . . .	including fluid drive
409/303472 . . . . .	Tracer	409/305992 . . . . .	with means to effect stopping upon completion of operation
409/303528 . . . . .	Adapted to trigger electrical energy	409/306048 . . . . .	with means to advance work or product
409/303584 . . . . .	Photocell	409/306104 . . . . .	Endless or orbital work or product advancing means
409/30364 . . . . .	Adapted to trigger fluid energy	409/30616 . . . . .	with means to precisely reposition work
409/303696 . . . . .	Templet	409/306216 . . . . .	Randomly manipulated, work supported, or work following device
409/303752 . . . . .	Process	409/306272 . . . . .	For machining commutator
409/303808 . . . . .	including infeeding	409/306328 . . . . .	For cutting longitudinal groove in shaft [e.g., keyway, etc.]
409/303864 . . . . .	with means to weigh or test work or product	409/306384 . . . . .	with work supported guide means
409/30392 . . . . .	with means to protect operative or machine [e.g., guard, safety device, etc.]	409/30644 . . . . .	to guide tool to move in arcuate path
409/303976 . . . . .	with means to control temperature or lubricate	409/306496 . . . . .	with work follower
409/304032 . . . . .	Cutter or work	409/306552 . . . . .	Randomly manipulated
409/304088 . . . . .	with means to remove chip	409/306608 . . . . .	End mill [e.g., router, etc.]
409/304144 . . . . .	Means to trim edge	409/306664 . . . . .	including means to infeed rotary cutter toward work
409/3042 . . . . .	Means to remove scale or raised surface imperfection	409/30672 . . . . .	with means to limit penetration into work
409/304256 . . . . .	Means to remove flash or burr	409/306776 . . . . .	Axially
409/304312 . . . . .	with means to dampen vibration	409/306832 . . . . .	with infeed control means energized in response to activator stimulated by condition sensor
409/304368 . . . . .	Means to mill epitrochoidal shape	409/306888 . . . . .	In response to cutter condition
409/304424 . . . . .	Means for internal milling	409/306944 . . . . .	In response to work condition
409/30448 . . . . .	with detachable or auxiliary cutter support to convert cutting action	409/307 . . . . .	with work holder
409/304536 . . . . .	including means to infeed work to cutter	409/307056 . . . . .	and laterally
409/304592 . . . . .	with compensation for backlash in drive means	409/307112 . . . . .	Simultaneously
409/304648 . . . . .	with control means energized in response to activator stimulated by condition sensor	409/307168 . . . . .	Plural cutters
409/304704 . . . . .	In response to cutter or cutter carriage	409/307224 . . . . .	with infeed control means energized in response to activator stimulated by condition sensor
409/30476 . . . . .	In response to work or work carriage	409/30728 . . . . .	In response to cutter condition
409/304816 . . . . .	to control rate of infeed or return	409/307336 . . . . .	In response to work condition
		409/307392 . . . . .	with means to change rate of infeed
		409/307448 . . . . .	with work holder
		409/307504 . . . . .	Indexable
		409/30756 . . . . .	Machining arcuate surface

- 409/307616 . . . . with means to move cutter eccentrically
- 409/307672 . . . Angularly adjustable cutter head
- 409/307728 . . . including gantry-type cutter-carrier
- 409/307784 . . . Plural cutters
- 409/30784 . . including means to adjustably position cutter
- 409/307896 . . . with work holder or guide
- 409/307952 . . . Linear adjustment
- 409/308008 . . . . with control for adjustment means responsive to activator stimulated by condition sensor
- 409/308064 . . . . . Responsive to position of cutter
- 409/30812 . . . . . and means to clamp cutter support in adjusted position
- 409/308176 . . . . with position indicator or limit means
- 409/308232 . . . . and angular adjustment
- 409/308288 . . . . including gantry-type cutter-carrier
- 409/308344 . . . . Plural cutters
- 409/3084 . . . with position indicator or limit means
- 409/308456 . . . with right angle cutter drive
- 409/308512 . . . Compound angular adjustment
- 409/308568 . . . Plural cutters
- 409/308624 . . with limit means to aid in positioning of cutter bit or work [e.g., gauge, stop, etc.]
- 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**

428/10 . Liquid crystal optical display having layer of specified composition

428/1005 . . Alignment layer of specified composition

428/1009 . . . Alignment layer is inorganic

428/1014 . . . Silicon compound [i.e., organosilicon]

428/1018 . . . Polyamide

428/1023 . . . Polyimide

428/1027 . . . . Polyimidefluoride

428/1032 . . . . Polyimide-metallo

428/1036 . . with viewing layer of specified composition

428/1041 . . . Polarizer or dye containing viewing layer

428/1045 . . . Silicon compound [e.g., glass, organosilicon, etc.]

428/105 . . . Ester [e.g., polycarbonate, polyacrylate, etc.]

428/1055 . . with charge transferring layer of specified composition

428/1059 . . with bonding or intermediate layer of specified composition [e.g., sealant, space, etc.]

428/1064 . . . Inorganic layer

428/1068 . . . Silicon compound [i.e., organosilicon]

428/1073 . . . Epoxy

428/1077 . . . Ester

428/1082 . . . Unsaturated aliphatic polymer [e.g., vinyl, etc.]

428/1086 . . with substrate layer of specified composition

428/1091 . . . Releasable substrate layer to expose adhesive

428/1095 . . . Inorganic substrate layer [e.g., ceramic, metallic, glass, etc.]

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.]
- 428/12299 . . Workpiece mimicking finished stock having nonrectangular or noncircular cross section
- 428/12306 . . Workpiece of parallel, nonfastened components [e.g., fagot, pile, etc.]
- 428/12313 . . . Arranged to avoid lateral displacement
- 428/12319 . . . Composite
- 428/12326 . . with provision for limited relative movement between components
- 428/12333 . . Helical or with helical component
- 428/1234 . . Honeycomb, or with grain orientation or elongated elements in defined angular relationship in respective components [e.g., parallel, inter- secting, etc.]
- 428/12347 . . Plural layers discontinuously bonded [e.g., spot-weld, mechanical fastener, etc.]
- 428/12354 . . Nonplanar, uniform-thickness material having symmetrical channel shape or reverse fold [e.g., making acute angle, etc.]
- 428/12361 . . . having aperture or cut
- 428/12368 . . . Struck-out portion type
- 428/12375 . . . having member which crosses the plane of another member [e.g., T or X cross section, etc.]
- 428/12382 . . Defined configuration of both thickness and nonthickness surface or angle therebetween [e.g., rounded corners, etc.]
- 428/12389 . . . having variation in thickness
- 428/12396 . . . Discontinuous surface component
- 428/12403 . . . Longitudinally smooth and symmetrical
- 428/1241 . . . Nonplanar uniform thickness or nonlinear uniform diameter [e.g., L-shape]
- 428/12417 . . . Intersecting corrugating or dimples not in a single line [e.g., waffle form, etc.]
- 428/12424 . . Mass of only fibers
- 428/12431 . . Foil or filament smaller than 6 mils
- 428/12438 . . . Composite
- 428/12444 . . Embodying fibers interengaged or between layers [e.g., paper, etc.]
- 428/12451 . . Macroscopically anomalous interface between layers
- 428/12458 . . . having composition, density, or hardness gradient
- 428/12465 . . . having magnetic properties, or preformed fiber orientation coordinate with shape
- 428/12472 . . Microscopic interfacial wave or roughness
- 428/12479 . . Porous [e.g., foamed, spongy, cracked, etc.]
- 428/12486 . . Laterally noncoextensive components [e.g., embedded, etc.]
- 428/12493 . . Composite; i.e., plural, adjacent, spatially distinct metal components [e.g., layers, joint, etc.]
- 428/125 . . . Deflectable by temperature change [e.g., thermostat element]
- 428/12507 . . . . More than two components
- 428/12514 . . . . One component Cu-based
- 428/12521 . . . . Both components Fe-based with more than 10% Ni
- 428/12528 . . . Semiconductor component
- 428/12535 . . . with additional, spatially distinct nonmetal component
- 428/12542 . . . . More than one such component
- 428/12549 . . . . . Adjacent to each other
- 428/12556 . . . . Organic component
- 428/12562 . . . . . Elastomer
- 428/12569 . . . . . Synthetic resin
- 428/12576 . . . . Boride, carbide or nitride component
- 428/12583 . . . . Component contains compound of adjacent metal
- 428/1259 . . . . . Oxide
- 428/12597 . . . . . Noncrystalline silica or noncrystalline plural-oxide component [e.g., glass, etc.]
- 428/12604 . . . . . Film [e.g., glaze, etc.]
- 428/12611 . . . . Oxide-containing component
- 428/12618 . . . . . Plural oxides
- 428/12625 . . . . Free carbon containing component

428/12632	. . . Four or more distinct components with alternate recurrence of each type component	428/12944	. . . . . Ni-base component
428/12639	. . . Adjacent, identical composition, components	428/12951	. . . . . Fe-base component
428/12646	. . . . Group VIII or IB metal-base	428/12958	. . . . . Next to Fe-base component
428/12653	. . . . . Fe, containing 0.01-1.7% carbon [i.e., steel]	428/12965	. . . . . Both containing 0.01-1.7% carbon [i.e., steel]
428/1266	. . . O, S, or organic compound in metal component	428/12972	. . . . . Containing 0.01-1.7% carbon [i.e., steel]
428/12667	. . . . Oxide of transition metal or Al	428/12979	. . . . . Containing more than 10% nonferrous elements [e.g., high alloy, stainless]
428/12674	. . . Ge- or Si-base component	428/12986	. . . Adjacent functionally defined components
428/12681	. . . Ga-, In-, Tl- or Group VA metal-base component	428/12993	. . Surface feature [e.g., rough, mirror]
428/12687	. . . Pb- and Sn-base components: alternative to or next to each other	428/13	. Hollow or container type article [e.g., tube, vase, etc.]
428/12694	. . . . and next to Cu- or Fe-base component	428/1303	. . Paper containing [e.g., paperboard, cardboard, fiberboard, etc.]
428/12701	. . . Pb-base component	428/1307	. . . Bag or tubular film [e.g., pouch, flexible food casing, envelope, etc.]
428/12708	. . . Sn-base component	428/131	. . Glass, ceramic, or sintered, fused, fired, or calcined metal oxide or metal carbide containing [e.g., porcelain, brick, cement, etc.]
428/12715	. . . . Next to Group IB metal-base component	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.]
428/12722	. . . . Next to Group VIII metal-base component	428/1317	. . . Multilayer [continuous layer]
428/12729	. . . Group IIA metal-base component	428/1321	. . . . Polymer or resin containing [i.e., natural or synthetic]
428/12736	. . . Al-base component	428/1324	. . Flexible food casing [e.g., sausage type, etc.]
428/12743	. . . . Next to refractory [Group IVB, VB, or VIB] metal-base component	428/1328	. . Shrinkable or shrunk [e.g., due to heat, solvent, volatile agent, restraint removal, etc.]
428/1275	. . . . Next to Group VIII or IB metal-base component	428/1331	. . . Single layer [continuous layer]
428/12757	. . . . . Fe	428/1334	. . Nonself-supporting tubular film or bag [e.g., pouch, envelope, packet, etc.]
428/12764	. . . . Next to Al-base component	428/1338	. . . Elemental metal containing
428/12771	. . . Transition metal-base component	428/1341	. . . Contains vapor or gas barrier, polymer derived from vinyl chloride or vinylidene chloride, or polymer containing a vinyl alcohol unit
428/12778	. . . . Alternative base metals from diverse categories	428/1345	. . . Single layer [continuous layer]
428/12785	. . . . Group IIB metal-base component	428/1348	. . Cellular material derived from plant or animal source [e.g., wood, cotton, wool, leather, etc.]
428/12792	. . . . . Zn-base component	428/1352	. . Polymer or resin containing [i.e., natural or synthetic]
428/12799	. . . . . Next to Fe-base component [e.g., galvanized]	428/1355	. . . Elemental metal containing [e.g., substrate, foil, film, coating, etc.]
428/12806	. . . . Refractory [Group IVB, VB, or VIB] metal-base component	428/1359	. . . . Three or more layers [continuous layer]
428/12812	. . . . . Diverse refractory group metal-base components: alternative to or next to each other	428/1362	. . . Textile, fabric, cloth, or pile containing [e.g., web, net, woven, knitted, mesh, nonwoven, matted, etc.]
428/12819	. . . . . Group VB metal-base component	428/1366	. . . . Textile, fabric, cloth, or pile is sandwiched between two distinct layers of material unlike the textile, fabric, cloth, or pile layer
428/12826	. . . . . Group VIB metal-base component	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.]
428/12833	. . . . . Alternative to or next to each other	428/1372	. . . Randomly noninterengaged or randomly contacting fibers, filaments, particles, or flakes
428/1284	. . . . . W-base component	428/1376	. . . Foam or porous material containing
428/12847	. . . . . Cr-base component	428/1379	. . . Contains vapor or gas barrier, polymer derived from vinyl chloride or vinylidene chloride, or polymer containing a vinyl alcohol unit
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		

- 428/1383 . . . . 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 . . . Crackled, 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	428/2861 . . .	having readily strippable combined with readily readhearable properties [e.g., stick-ons, etc.]
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.]	428/2865 . . .	including monomer or polymer of carbohydrate [e.g., starch, dextrin, etc.] Or protein [e.g., casein, animal protein, etc.] Or derivative thereof
428/249995 . . .	Constituent is in liquid form	428/287 . . .	including epoxy group or epoxy polymer
428/249996 . . . . .	Ink in pores	428/2874 . . .	including aldehyde or ketone condensation polymer [e.g., urea formaldehyde polymer, melamine formaldehyde polymer, etc.]
428/249997 . . . . .	Encapsulated liquid	428/2878 . . .	including addition polymer from unsaturated monomer
428/249998 . . .	Indefinite plurality of similar impregnated thin sheets [e.g., "decorative laminate" type, etc.]	428/2883 . . . . .	including addition polymer of diene monomer [e.g., SBR, SIS, etc.]
428/249999 . . .	Differentially filled foam, filled plural layers, or filled layer with coat of filling material	428/2887 . . . . .	including nitrogen containing polymer [e.g., polyacrylonitrile, polymethacrylonitrile, etc.]
428/25 . . .	Web or sheet containing structurally defined element or component and including a second component containing structurally defined particles	428/2891 . . . . .	including addition polymer from alpha-beta unsaturated carboxylic acid [e.g., acrylic acid, methacrylic acid, etc.] Or derivative thereof
428/251 . . .	Mica	428/2896 . . .	including nitrogen containing condensation polymer [e.g., polyurethane, polyisocyanate, etc.]
428/252 . . .	Glass or ceramic [i.e., fired or glazed clay, cement, etc.] [porcelain, quartz, etc.]	428/29 . . .	Coated or structually defined flake, particle, cell, strand, strand portion, rod, filament, macroscopic fiber or mass thereof
428/253 . . .	Cellulosic [e.g., wood, paper, cork, rayon, etc.]	428/2902 . . .	Channel shape
428/254 . . .	Polymeric or resinous material	428/2904 . . .	Staple length fiber
428/256 . . .	Heavy metal or aluminum or compound thereof	428/2905 . . .	Plural and with bonded intersections only
428/257 . . .	Iron oxide or aluminum oxide	428/2907 . . .	with coating or impregnation
428/258 . . .	Alkali metal or alkaline earth metal or compound thereof	428/2909 . . .	Nonlinear [e.g., crimped, coiled, etc.]
428/259 . . .	Silicic material	428/2911 . . .	Mica flake
428/26 . . .	Web or sheet containing structurally defined element or component, the element or component having a specified physical dimension	428/2913 . . .	Rod, strand, filament or fiber
428/261 . . .	In terms of molecular thickness or light wave length	428/2915 . . .	including textile, cloth or fabric
428/263 . . .	Coating layer not in excess of 5 mils thick or equivalent	428/2916 . . .	including boron or compound thereof [not as steel]
428/264 . . .	Up to 3 mils	428/2918 . . .	including free carbon or carbide or therewith [not as steel]
428/265 . . . . .	1 mil or less	428/292 . . . . .	In coating or impregnation
428/266 . . .	of base or substrate	428/2922 . . .	Nonlinear [e.g., crimped, coiled, etc.]
428/268 . . .	Monolayer with structurally defined element	428/2924 . . . . .	Composite
428/269 . . .	including synthetic resin or polymer layer or component	428/2925 . . . . .	Helical or coiled
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.]	428/2927 . . .	including structurally defined particulate matter
428/273 . . .	of coating	428/2929 . . .	Bicomponent, conjugate, composite or collateral fibers or filaments [i.e., coextruded sheath-core or side-by-side type]
428/277 . . .	Cellulosic substrate	428/2931 . . . . .	Fibers or filaments nonconcentric [e.g., side-by-side or eccentric, etc.]
428/28 . . .	Web or sheet containing structurally defined element or component and having an adhesive outermost layer	428/2933 . . .	Coated or with bond, impregnation or core
428/2804 . . .	Next to metal	428/2935 . . . . .	Discontinuous or tubular or cellular core
428/2809 . . .	including irradiated or wave energy treated component	428/2936 . . . . .	Wound or wrapped core or coating [i.e., spiral or helical]
428/2813 . . .	Heat or solvent activated or sealable	428/2938 . . . . .	Coating on discrete and individual rods, strands or filaments
428/2817 . . . . .	Heat sealable	428/294 . . . . .	including metal or compound thereof [excluding glass, ceramic and asbestos]
428/2822 . . . . .	Wax containing	428/2942 . . . . .	Plural coatings
428/2826 . . . . .	Synthetic resin or polymer	428/2944 . . . . .	Free metal in coating
428/283 . . . . .	Water activated	428/2945 . . . . .	Natural rubber in coating
428/2835 . . .	including moisture or waterproof component	428/2947 . . . . .	Synthetic resin or polymer in plural coatings, each of different type
428/2839 . . .	with release or antistick coating	428/2949 . . . . .	Glass, ceramic or metal oxide in 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		

428/2951	. . . . . Metal with weld modifying or stabilizing coating [e.g., flux, slag, producer, etc.]	428/31569	. . . Next to natural rubber
428/2953	. . . . . Titanium compound in coating	428/31573	. . . Next to addition polymer of ethylenically unsaturated monomer
428/2955	. . . . . Silicic material in coating	428/31576	. . . . Ester monomer type [polyvinylacetate, etc.]
428/2956	. . . . . Glass or silicic fiber or filament with metal coating	428/3158	. . . . Halide monomer type [polyvinyl chloride, etc.]
428/2958	. . . . . Metal or metal compound in coating	428/31583	. . . . Nitrile monomer type [polyacrylonitrile, etc.]
428/296	. . . . . Rubber, cellulosic or silicic material in coating	428/31587	. . . . Hydrocarbon polymer [polyethylene, polybutadiene, etc.]
428/2962	. . . . . Silane, silicone or siloxane in coating	428/31591	. . . Next to cellulosic
428/2964	. . . . . Artificial fiber or filament	428/31594	. . . Next to aldehyde or ketone condensation product [phenol-aldehyde, etc.]
428/2965	. . . . . Cellulosic	428/31598	. . . Next to silicon-containing [silicone, cement, etc.] layer
428/2967	. . . . . Synthetic resin or polymer	428/31601	. . . . Quartz or glass
428/2969	. . . . . Polyamide, polyimide or polyester	428/31605	. . . Next to free metal
428/2971	. . . . . Impregnation	428/31609	. . . Particulate metal or metal compound-containing
428/2973	. . . Particular cross section	428/31612	. . . . As silicone, silane or siloxane
428/2975	. . . . . Tubular or cellular	428/31616	. . . Next to polyester [e.g., alkyd]
428/2976	. . . . . Longitudinally varying	428/3162	. . . . Cross-linked polyester [e.g., glycerol maleate-styrene, etc.]
428/2978	. . . . . Surface characteristic	428/31623	. . . Next to polyamide or polyimide
428/298	. . . Physical dimension	428/31627	. . . Next to aldehyde or ketone condensation product
428/2982	. . Particulate matter [e.g., sphere, flake, etc.]	428/3163	. . . . Next to acetal of polymerized unsaturated alcohol [e.g., formal butyral, etc.]
428/2984	. . . Microcapsule with fluid core [includes liposome]	428/31634	. . . Next to cellulosic
428/2985	. . . . . Solid-walled microcapsule from synthetic polymer	428/31638	. . . . Cellulosic ester
428/2987	. . . . . Addition polymer from unsaturated monomers only	428/31641	. . . Next to natural rubber, gum, oil, rosin, wax, bituminous or tarry residue
428/2989	. . . Microcapsule with solid core [includes liposome]	428/31645	. . . Next to addition polymer from unsaturated monomers
428/2991	. . . Coated	428/31649	. . . . Ester, halide or nitrile of addition polymer
428/2993	. . . . . Silicic or refractory material containing [e.g., tungsten oxide, glass, cement, etc.]	428/31652	. . Of asbestos
428/2995	. . . . . Silane, siloxane or silicone coating	428/31656	. . . With metal layer
428/2996	. . . . . Glass particles or spheres	428/31659	. . . With cellulosic layer
428/2998	. . . . . including synthetic resin or polymer	428/31663	. . . As siloxane, silicone or silane
428/30	. Self-sustaining carbon mass or layer with impregnant or other layer	428/31667	. . . Next to addition polymer from unsaturated monomers, or aldehyde or ketone condensation product
428/31	. Surface property or characteristic of web, sheet or block	428/3167	. . Of cork
428/315	. . Surface modified glass [e.g., tempered, strengthened, etc.]	428/31674	. . . Including natural oil or gum or rosin [e.g., linoleum, etc.]
428/31504	. Composite [nonstructural laminate]	428/31678	. . Of metal
428/31507	. . Of polycarbonate	428/31681	. . . Next to polyester, polyamide or polyimide [e.g., alkyd, glue, or nylon, etc.]
428/31511	. . Of epoxy ether	428/31685	. . . . Natural source polyamide [e.g., casein, gelatin, etc.]
428/31515	. . . As intermediate layer	428/31688	. . . Next to aldehyde or ketone condensation product
428/31518	. . . . Next to glass or quartz	428/31692	. . . Next to addition polymer from unsaturated monomers
428/31522	. . . . Next to metal	428/31696	. . . . Including polyene monomers [e.g., butadiene, etc.]
428/31525	. . . Next to glass or quartz	428/31699	. . . . Ester, halide or nitrile of addition polymer
428/31529	. . . Next to metal	428/31703	. . . Next to cellulosic
428/31533	. . Of polythioether	428/31707	. . . Next to natural rubber
428/31536	. . Including interfacial reaction product of adjacent layers	428/3171	. . . . With natural rubber next to second layer of natural rubber
428/3154	. . Of fluorinated addition polymer from unsaturated monomers	428/31714	. . . Next to natural gum, natural oil, rosin, lac or wax
428/31544	. . . Addition polymer is perhalogenated	428/31717	. . . Next to bituminous or tarry residue
428/31547	. . Of polyisocyanurate		
428/31551	. . Of polyamidoester [polyurethane, polyisocyanate, polycarbamate, etc.]		
428/31554	. . . Next to second layer of polyamidoester		
428/31558	. . . Next to animal skin or membrane		
428/31562	. . . Next to polyamide [nylon, etc.]		
428/31565	. . . Next to polyester [polyethylene terephthalate, etc.]		

428/31721	. . . . .	Of polyimide	428/31902	. . . . .	Monoethylenically unsaturated
428/31725	. . . . .	Of polyamide	428/31906	. . . . .	Ester, halide or nitrile of addition polymer
428/31728	. . . . .	Next to second layer of polyamide	428/31909	. . . . .	Next to second addition polymer from unsaturated monomers
428/31732	. . . . .	At least one layer is nylon type	428/31913	. . . . .	Monoolefin polymer
428/31736	. . . . .	Next to polyester	428/31917	. . . . .	Next to polyene polymer
428/31739	. . . . .	Nylon type	428/3192	. . . . .	Next to vinyl or vinylidene chloride polymer
428/31743	. . . . .	Next to addition polymer from unsaturated monomer[s]	428/31924	. . . . .	Including polyene monomers
428/31746	. . . . .	Polymer of monoethylenically unsaturated hydrocarbon	428/31928	. . . . .	Ester, halide or nitrile of addition polymer
428/3175	. . . . .	Next to addition polymer from unsaturated monomer[s]	428/31931	. . . . .	Polyene monomer-containing
428/31754	. . . . .	Natural source-type polyamide	428/31935	. . . . .	Ester, halide or nitrile of addition polymer
428/31757	. . . . .	Polymer of monoethylenically unsaturated hydrocarbon	428/31938	. . . . .	Polymer of monoethylenically unsaturated hydrocarbon
428/31761	. . . . .	Next to aldehyde or ketone condensation product	428/31942	. . . . .	Of aldehyde or ketone condensation product
428/31765	. . . . .	Inorganic-containing or next to inorganic-containing	428/31946	. . . . .	Next to second aldehyde or ketone condensation product
428/31768	. . . . .	Natural source-type polyamide [e.g., casein, gelatin, etc.]	428/31949	. . . . .	Next to cellulosic
428/31772	. . . . .	Next to cellulosic	428/31953	. . . . .	Modified or regenerated cellulose
428/31775	. . . . .	Paper	428/31957	. . . . .	Wood
428/31779	. . . . .	Next to cellulosic	428/3196	. . . . .	Phenoplast
428/31783	. . . . .	Paper or wood	428/31964	. . . . .	Paper
428/31786	. . . . .	Of polyester [e.g., alkyd, etc.]	428/31967	. . . . .	Phenoplast
428/3179	. . . . .	Next to cellulosic	428/31971	. . . . .	Of carbohydrate
428/31794	. . . . .	Of cross-linked polyester	428/31975	. . . . .	Of cellulosic next to another carbohydrate
428/31797	. . . . .	Next to addition polymer from unsaturated monomers	428/31978	. . . . .	Cellulosic next to another cellulosic
428/31801	. . . . .	Of wax or waxy material	428/31982	. . . . .	Wood or paper
428/31804	. . . . .	Next to cellulosic	428/31986	. . . . .	Regenerated or modified
428/31808	. . . . .	Cellulosic is paper	428/31989	. . . . .	Of wood
428/31812	. . . . .	Glassine paper	428/31993	. . . . .	Of paper
428/31815	. . . . .	Of bituminous or tarry residue	428/31996	. . . . .	Next to layer of metal salt [e.g., plasterboard, etc.]
428/31819	. . . . .	Next to cellulosic	428/32	. . . . .	Composite [nonstructural laminate] of inorganic material having metal-compound-containing layer and having defined magnetic layer
428/31823	. . . . .	Paper	428/325	. . . . .	Magnetic layer next to second metal compound-containing layer
428/31826	. . . . .	Of natural rubber	428/4935	. . . . .	Impregnated naturally solid product [e.g., leather, stone, etc.]
428/3183	. . . . .	Next to second layer of natural rubber	428/662	. . . . .	Wood timber product [e.g., piling, post, veneer, etc.]
428/31833	. . . . .	Next to aldehyde or ketone condensation product or addition polymer from unsaturated monomers	428/8305	. . . . .	Miscellaneous [e.g., treated surfaces, etc.]
428/31837	. . . . .	Including polyene monomers			
428/31841	. . . . .	Next to cellulosic			
428/31844	. . . . .	Of natural gum, rosin, natural oil or lac			
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			

**Former US Class 436 Series**

<b>436/00</b>	<b>Chemistry: analytical and immunological testing</b>
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 sulphydryl containing [e.g., mercaptan, hydrogen, sulfide, etc.]  
 436/184 . . . Only hydrogen sulfide  
 436/186 . . Sulfur dioxide  
 436/188 . . Total or elemental sulfur  
 436/19 . . Halogen containing  
 436/193333 . . In aqueous solution  
 436/196666 . . Carbon containing compound [e.g., vinylchloride, etc.]  
 436/20 . . Oxygen containing  
 436/200833 . . Carbonyl, ether, aldehyde or ketone containing  
 436/201666 . . . Carboxylic acid  
 436/202499 . . . Formaldehyde or acetone  
 436/203332 . . Hydroxyl containing  
 436/204165 . . . Ethanol  
 436/204998 . . Inorganic carbon compounds  
 436/205831 . . . Carbon monoxide only  
 436/206664 . . Ozone or peroxide  
 436/207497 . . Molecular oxygen  
 436/208339 . . . Fuel/air mixture or exhaust gas analysis  
 436/209163 . . . Dissolved or trace oxygen or oxygen content of a sealed environment  
 436/21 . . Hydrocarbon  
 436/212 . . Aromatic  
 436/214 . . Acyclic [e.g., methane, octane, isoparaffin, etc.]  
 436/216 . . . Unsaturated [e.g., ethylene, diene, etc.]  
 436/218 . . Total hydrocarbon, flammability, combustibility [e.g., air-fuel mixture, etc.]  
 436/22 . . Hydrogen, per se  
 436/23 . . Carbon containing  
 436/235 . . In an aqueous solution [e.g., TOC, etc.]  
 436/24 . . Nuclear magnetic resonance, electron spin resonance or other spin effects or mass spectrometry including sample preparation  
 436/25125 . . Digestion or removing interfering materials  
 436/2525 . . Stabilizing or preserving  
 436/25375 . . Liberation or purification of sample or separation of material from a sample [e.g., filtering, centrifuging, etc.]  
 436/255 . . . including use of a solid sorbent, semipermeable membrane, or liquid extraction  
 436/25625 . . Dilution  
 436/2575 . . Volumetric liquid transfer  
 436/25875 . . Gaseous sample or with change of physical state

**Former US Class 442 series**

- 442/00 Fabric [woven, knitted, or nonwoven textile or cloth, etc.]**  
 442/10 . . Scrim [e.g., open net or mesh, gauze, loose or open weave or knit, etc.]  
 442/102 . . Woven scrim  
 442/103 . . . Including a multifilament fiber precoated with other than free metal or alloy prior to weaving  
 442/105 . . . . Comprising a composite fiber  
 442/107 . . . . Comprising at least two chemically different fibers  
 442/109 . . . Metal or metal-coated fiber-containing scrim  
 442/11 . . . . Including an additional free metal or alloy constituent  
 442/112 . . . . . Particulate free metal or alloy constituent  
 442/114 . . . . Including a foam layer  
 442/116 . . . . Including a woven fabric which is not a scrim  
 442/117 . . . . . Including a nonwoven fabric which is not a scrim  
 442/119 . . . . Including a paper layer  
 442/121 . . . . Including a nonwoven fabric which is not a scrim  
 442/122 . . . . . Two or more nonwoven fabric layers  
 442/124 . . . . Including a natural or synthetic rubber layer  
 442/126 . . . . Including a preformed film, foil, or sheet

- 442/128 . . . . Including a layer derived from a water-settable material [e.g., cement, gypsum, etc.]
- 442/129 . . . . Including a ceramic or glass layer
- 442/131 . . . . Including a coating or impregnation of synthetic polymeric material
- 442/133 . . . . Inorganic fiber-containing scrim
- 442/134 . . . . Including a carbon or carbonized fiber
- 442/136 . . . . Including a foam layer
- 442/138 . . . . Including a metal layer
- 442/14 . . . . Including an additional scrim layer
- 442/141 . . . . Including a woven fabric which is not a scrim
- 442/143 . . . . Including a nonwoven fabric which is not a scrim
- 442/145 . . . . Including a preformed film, foil, or sheet
- 442/147 . . . . Including a mica layer
- 442/148 . . . . Including a coating or impregnation containing particulate material other than fiber
- 442/15 . . . . Including a foam layer
- 442/152 . . . . Including a free metal or alloy constituent
- 442/153 . . . . Including an additional scrim layer
- 442/155 . . . . Including a paper layer
- 442/157 . . . . Two or more paper layers
- 442/159 . . . . Including a nonwoven fabric which is not a scrim
- 442/16 . . . . Two or more nonwoven layers
- 442/162 . . . . Including a natural or synthetic rubber layer
- 442/164 . . . . Including a preformed film, foil, or sheet
- 442/166 . . . . Cellulose acetate film or sheet
- 442/167 . . . . Fluorinated polyolefin film or sheet
- 442/169 . . . . Polyolefin film or sheet
- 442/171 . . . . Including a layer derived from a water-settable material [e.g., cement, gypsum, etc.]
- 442/172 . . . . Coated or impregnated
- 442/174 . . . . Including particulate material other than fiber in coating or impregnation
- 442/176 . . . . Three or more layers
- 442/178 . . . . Synthetic polymeric fiber
- 442/179 . . . . . Nylon fiber
- 442/181 . . . . Bitumen coating or impregnation
- 442/183 . . . . Synthetic polymeric fiber
- 442/184 . . . . Nonwoven scrim
- 442/186 . . . . Comprising a composite fiber
- 442/188 . . . . Metal or metal-coated fiber-containing scrim
- 442/19 . . . . Including a paper layer
- 442/191 . . . . Inorganic fiber-containing scrim
- 442/193 . . . . Including a foam layer
- 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
- 442/2008 . . . . Fabric composed of a fiber or strand which is of specific structural definition
- 442/2016 . . . . Impregnation is confined to a plane disposed between both major fabric surfaces which are essentially free of impregnating material
- 442/2025 . . . . Coating produced by extrusion
- 442/2033 . . . . Coating or impregnation formed in situ [e.g., by interfacial condensation, coagulation, precipitation, etc.]
- 442/2041 . . . . Two or more non-extruded coatings or impregnations
- 442/2049 . . . . Each major face of the fabric has at least one coating or impregnation
- 442/2057 . . . . . At least two coatings or impregnations of different chemical composition
- 442/2066 . . . . . Different coatings or impregnations on opposite faces of the fabric
- 442/2074 . . . . . At least one coating or impregnation contains particulate material
- 442/2082 . . . . . . At least one coating or impregnation functions to fix pigments or particles on the surface of a coating or impregnation
- 442/209 . . . . . At least one coating or impregnation contains particulate material
- 442/2098 . . . . . At least two coatings or impregnations of different chemical composition
- 442/2107 . . . . . At least one coating or impregnation contains particulate material
- 442/2115 . . . . . . At least one coating or impregnation functions to fix pigments or particles on the surface of a coating or impregnation
- 442/2123 . . . . . At least one coating or impregnation contains particulate material
- 442/2131 . . . . . At least one coating or impregnation functions to fix pigments or particles on the surface of a coating or impregnation
- 442/2139 . . . . . Coating or impregnation specified as porous or permeable to a specific substance [e.g., water vapor, air, etc.]
- 442/2148 . . . . . Coating or impregnation is specified as microporous but is not a foam
- 442/2156 . . . . . Coating or impregnation collects radionuclide or heavy metal
- 442/2164 . . . . . Coating or impregnation specified as water repellent
- 442/2172 . . . . . Also specified as oil repellent
- 442/218 . . . . . Organosilicon containing
- 442/2189 . . . . . Fluorocarbon containing
- 442/2197 . . . . . Nitrogen containing
- 442/2205 . . . . . Natural oil or wax containing
- 442/2213 . . . . . Coating or impregnation is specified as weather proof, water vapor resistant, or moisture resistant
- 442/2221 . . . . . Coating or impregnation is specified as water proof
- 442/223 . . . . . Organosilicon containing
- 442/2238 . . . . . Fluorocarbon containing
- 442/2246 . . . . . Nitrogen containing
- 442/2254 . . . . . Natural oil or wax containing
- 442/2262 . . . . . Coating or impregnation is oil repellent but not oil or stain release
- 442/227 . . . . . Fluorocarbon containing
- 442/2279 . . . . . Coating or impregnation improves soil repellency, soil release, or anti- soil redeposition qualities of fabric
- 442/2287 . . . . . Fluorocarbon containing
- 442/2295 . . . . . Linear polyether group chain containing

- 442/2303 . . Coating or impregnation provides a fragrance or releases an odor intended to be perceptible to humans
- 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
- 442/232 . . . Fluorocarbon containing
- 442/2328 . . . Organosilicon containing
- 442/2336 . . . Natural oil or wax containing
- 442/2344 . . Coating or impregnation is anti-slip or friction-increasing other than specified as an abrasive
- 442/2352 . . Coating or impregnation functions to soften the feel of or improve the "hand" of the fabric
- 442/2361 . . Coating or impregnation improves stiffness of the fabric other than specified as a size
- 442/2369 . . Coating or impregnation improves elasticity, bendability, resiliency, flexibility, or shape retention of the fabric
- 442/2377 . . . Improves elasticity
- 442/2385 . . . Improves shrink resistance
- 442/2393 . . . Coating or impregnation provides crease-resistance or wash and wear characteristics
- 442/2402 . . Coating or impregnation specified as a size
- 442/241 . . Coating or impregnation improves snag or pull resistance of the fabric
- 442/2418 . . Coating or impregnation increases electrical conductivity or anti-static quality
- 442/2426 . . . Elemental carbon containing
- 442/2434 . . . Linear polyether group chain containing
- 442/2443 . . . Nitrogen and phosphorus containing
- 442/2451 . . . Phosphorus containing
- 442/2459 . . . Nitrogen containing
- 442/2467 . . . Sulphur containing
- 442/2475 . . Coating or impregnation is electrical insulation-providing, -improving, or -increasing, or conductivity-reducing
- 442/2484 . . Coating or impregnation is water absorbency-increasing or hydrophilicity-increasing or hydrophilicity-imparting
- 442/2492 . . . Polyether group 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	442/3211	. . . . Multi-planar weft layers
442/2902	. . . . Aromatic polyamide fiber fabric	442/322	. . . Warp differs from weft
442/291	. . . Coated or impregnated polyolefin fiber fabric	442/3228	. . . . Materials differ
442/2918	. . . . Polypropylene fiber fabric	442/3236	. . . . . Including inorganic strand material
442/2926	. . Coated or impregnated inorganic fiber fabric	442/3244	. . . . . Including natural strand material [e.g., cotton, wool, etc.]
442/2934	. . . Coating or impregnation contains vinyl polymer or copolymer	442/3252	. . . . . Including synthetic polymeric strand material
442/2943	. . . . Vinyl acetate polymer or copolymer	442/326	. . . . . Including synthetic polymeric strand material
442/2951	. . . Coating or impregnation contains epoxy polymer or copolymer or polyether	442/3268	. . . . . Including natural strand material
442/2959	. . . Coating or impregnation contains aldehyde or ketone condensation product	442/3276	. . . . . Including polyamide strand material
442/2967	. . . . Amide-aldehyde condensate	442/3285	. . . . . Including polyester strand material
442/2975	. . . Coated or impregnated ceramic fiber fabric	442/3293	. . . Warp and weft are identical and contain at least two chemically different strand materials
442/2984	. . . Coated or impregnated carbon or carbonaceous fiber fabric	442/3301	. . . Coated, impregnated, or autogenous bonded
442/2992	. . . Coated or impregnated glass fiber fabric	442/3309	. . . . Woven fabric contains inorganic strand material
442/30	. Woven fabric [i.e., woven strand or strip material]	442/3317	. . . . Woven fabric contains synthetic polymeric strand material
442/3008	. . Woven fabric has an elastic quality	442/3325	. . Including a foamed layer or component
442/3016	. . . Including a preformed layer other than the elastic woven fabric [e.g., fabric or film or foil or sheet layer, etc.]	442/3333	. . . Including a free metal or alloy constituent
442/3024	. . . Including elastic strand or strip	442/3341	. . . Plural foam layers
442/3033	. . Including a strip or ribbon	442/335	. . . Plural fabric layers
442/3041	. . . Woven fabric comprises strips or ribbons only	442/3358	. . . . Including a nonwoven fabric layer
442/3049	. . Including strand precoated with other than free metal or alloy	442/3366	. . . Woven fabric is coated, impregnated, or autogenously bonded
442/3057	. . . Multiple coatings	442/3374	. . . . Coating or impregnation includes particulate material other than fiber
442/3065	. . Including strand which is of specific structural definition	442/3382	. . Including a free metal or alloy constituent
442/3073	. . . Strand material is core-spun [not sheath-core bicomponent strand]	442/339	. . . Metal or metal-coated strand
442/3081	. . . . Core is synthetic polymeric material	442/3398	. . . Vapor or sputter deposited metal layer
442/3089	. . . Cross-sectional configuration of strand material is specified	442/3407	. . . Chemically deposited metal layer [e.g., chemical precipitation or electrochemical deposition or plating, etc.]
442/3098	. . . . Cross-sectional configuration varies longitudinally along the strand	442/3415	. . . Preformed metallic film or foil or sheet [film or foil or sheet had structural integrity prior to association with the woven fabric]
442/3106	. . . . Hollow strand material	442/3423	. . . . Plural metallic films or foils or sheets
442/3114	. . . . Cross-sectional configuration of the strand material is other than circular	442/3431	. . . . Plural fabric layers
442/3122	. . . . . Cross-sectional configuration is multi-lobal	442/3439	. . . . . Including a nonwoven fabric layer
442/313	. . . Strand material formed of individual filaments having different chemical compositions	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]
442/3138	. . . . Including inorganic filament	442/3455	. . . . Including particulate material other than fiber
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	442/3463	. . . Plural fabric layers
442/3154	. . . Sheath-core multicomponent strand material	442/3472	. . Woven fabric including an additional woven fabric layer
442/3163	. . . Islands-in-sea multicomponent strand material	442/348	. . . Mechanically needled or hydroentangled
442/3171	. . . Strand material is a blend of polymeric material and a filler material	442/3488	. . . . Four or more layers
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	442/3496	. . . . Coated, impregnated, or autogenously bonded
442/3187	. . . Triaxially woven fabric	442/3504	. . . Woven fabric layers comprise chemically different strand material
442/3195	. . . Three-dimensional weave [e.g., x-y-z planes, multi-planar warps and/or wefts, etc.]	442/3512	. . . . Three or more fabric layers
442/3203	. . . . Multi-planar warp layers	442/352	. . . . . One of which is a nonwoven fabric layer
		442/3528	. . . Three or more fabric layers
		442/3537	. . . . One of which is a nonwoven fabric layer
		442/3545	. . . . Woven fabric layers impregnated with a blend of thermosetting and thermoplastic resins

- 442/3553 . . . . Woven fabric layers impregnated with an organosilicon resin
- 442/3561 . . . . Woven fabric layers impregnated with a natural or synthetic rubber
- 442/3569 . . . . Woven fabric layers impregnated with a thermosetting resin
- 442/3577 . . . . . Phenolic resin
- 442/3585 . . . . . Epoxy resin
- 442/3594 . . . . Woven fabric layers impregnated with a thermoplastic resin [e.g., vinyl polymer, etc.]
- 442/3602 . . . Three or more distinct layers
- 442/361 . . . . At least one layer is derived from water-settable material [e.g., cement, gypsum, etc.]
- 442/3618 . . . . At least one layer contains wood or cork
- 442/3626 . . . . At least one layer contains bituminous material [e.g., tar, pitch, asphalt, etc.]
- 442/3634 . . . . At least one layer comprises paper
- 442/3642 . . . . At least one layer contains natural or synthetic rubber
- 442/365 . . . . At least one layer is a preformed synthetic polymeric film or sheet
- 442/3659 . . . . At least one layer comprises ceramic or glass material in other than particulate form
- 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]
- 442/3675 . . . . . Fabric layer contains natural strand material
- 442/3683 . . . . . Fabric layer contains carbon or carbonaceous strand material
- 442/3691 . . . . . Fabric layer contains glass strand material
- 442/3699 . . . . Including particulate material other than fiber
- 442/3707 . . Woven fabric including a nonwoven fabric layer other than paper
- 442/3715 . . . Nonwoven fabric layer comprises parallel arrays of strand material
- 442/3724 . . . Needled
- 442/3732 . . . . Including an additional nonwoven fabric
- 442/374 . . . . . Additional nonwoven fabric comprises chemically different strand material than the first nonwoven fabric
- 442/3748 . . . . . Including inorganic strand material
- 442/3756 . . . . Nonwoven fabric layer comprises at least two chemically different fibers
- 442/3764 . . . . Coated, impregnated, or autogenously bonded
- 442/3772 . . . Hydroentangled
- 442/378 . . . Coated, impregnated, or autogenously bonded
- 442/3789 . . . . Plural nonwoven fabric layers
- 442/3797 . . . . Coating or impregnation is derived from a water-settable material [e.g., cement, gypsum, etc.]
- 442/3805 . . . . Coating or impregnation contains natural or synthetic rubber
- 442/3813 . . . . Coating or impregnation contains synthetic polymeric material
- 442/3821 . . . . Coating or impregnation contains bituminous material
- 442/3829 . . . . Four or more layers
- 442/3837 . . . . . Including particulate material other than fiber
- 442/3846 . . . . Including particulate material other than fiber
- 442/3854 . . Woven fabric with a preformed polymeric film or sheet
- 442/3862 . . . Ester condensation polymer sheet or film [e.g., polyethylene terephthalate, etc.]
- 442/387 . . . Vinyl polymer or copolymer sheet or film [e.g., polyvinyl chloride, polyvinylidene chloride, polyvinyl acetate, etc.]
- 442/3878 . . . Fluorinated olefin polymer or copolymer sheet or film [e.g., Teflon®, etc.]
- 442/3886 . . . Olefin polymer or copolymer sheet or film [e.g., polypropylene, polyethylene, ethylene-butylene copolymer, etc.]
- 442/3894 . . . Amide condensation polymer sheet or film [e.g., nylon 6, etc.]
- 442/3902 . . . Polyimide sheet or film
- 442/3911 . . . Natural or synthetic rubber sheet or film
- 442/3919 . . . Including particulate material other than fiber
- 442/3927 . . Including a paper or wood pulp layer
- 442/3935 . . . Mica paper layer
- 442/3943 . . . Plural paper or wood pulp layers
- 442/3951 . . . Including a bituminous layer
- 442/3959 . . . Including an outermost adhesive layer
- 442/3967 . . . Including a natural or synthetic rubber layer
- 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.]
- 442/3984 . . . Strand is other than glass and is heat or fire resistant
- 442/3992 . . . Strand is heat shrinkable
- 442/40 . . Knit fabric [i.e., knit strand or strip material]
- 442/406 . . Including parallel strips
- 442/413 . . Including an elastic strand
- 442/419 . . Including strand precoated with other than free metal or alloy
- 442/425 . . Including strand which is of specific structural definition
- 442/431 . . . Cross-sectional configuration of strand material is specified
- 442/438 . . . Strand material formed of individual filaments having different chemical compositions
- 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
- 442/45 . . 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
- 442/456 . . . Including additional strand inserted within knit fabric
- 442/463 . . . . Warp knit insert strand
- 442/469 . . Including a foamed layer or component
- 442/475 . . Including a free metal or alloy constituent
- 442/481 . . . Chemically deposited metal layer [e.g., chemical precipitation or electrochemical deposition or plating, etc.]
- 442/488 . . Including an additional knit fabric layer
- 442/494 . . Including a nonwoven fabric layer other than paper

442/50	. FELT FABRIC	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
442/51	. . From natural organic fiber [e.g., wool, etc.]	442/635	. . . . Synthetic polymeric strand or fiber material
442/53	. . . Including particulate material other than fiber	442/636	. . . . Synthetic polymeric strand or fiber material is of staple length
442/54	. . . At least three layers	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
442/56	. . From synthetic organic fiber	442/638	. . . Side-by-side multicomponent strand or fiber material
442/57	. . Including particulate material other than fiber	442/64	. . . Islands-in-sea multicomponent strand or fiber material
442/59	. . At least three layers	442/641	. . . Sheath-core multicomponent strand or fiber material
442/60	. Nonwoven fabric [i.e., nonwoven strand or fiber material]	442/642	. . . Strand or fiber material is a blend of polymeric material and a filler material
442/601	. . Nonwoven fabric has an elastic quality	442/643	. . Including parallel strand or fiber material within the nonwoven fabric
442/602	. . . Nonwoven fabric comprises an elastic strand or fiber material	442/644	. . . Parallel strand or fiber material is glass
442/603	. . Including strand or fiber material precoated with other than free metal or alloy	442/645	. . . Parallel strand or fiber material is inorganic [e.g., rock wool, mineral wool, etc.]
442/604	. . . Strand or fiber material is glass	442/646	. . . Parallel strand or fiber material is naturally occurring [e.g., cotton, wool, etc.]
442/605	. . . Strand or fiber material is inorganic	442/647	. . Including a foamed layer or component
442/607	. . . Strand or fiber material is synthetic polymer	442/648	. . . Including a free metal or alloy constituent
442/608	. . Including strand or fiber material which is of specific structural definition	442/649	. . . Plural foamed layers
442/609	. . . Cross-sectional configuration of strand or fiber material is specified	442/651	. . . Plural fabric layers
442/61	. . . . Cross-sectional configuration varies longitudinally along strand or fiber material	442/652	. . . Nonwoven fabric is coated, impregnated, or autogenously bonded
442/611	. . . . Cross-sectional configuration of strand or fiber material is other than circular	442/653	. . . . Including particulate material other than fiber
442/612	. . . . Hollow strand or fiber material	442/654	. . Including a free metal or alloy constituent
442/613	. . . . Microcellular strand or fiber material	442/655	. . . Metal or metal-coated strand or fiber material
442/614	. . . Strand or fiber material specified as having micro dimensions [i.e., microfiber]	442/656	. . . Preformed metallic film or foil or sheet [film or foil or sheet had structural integrity prior to association with the nonwoven fabric]
442/615	. . . . Strand or fiber material is blended with another chemically different microfiber in the same layer	442/657	. . . Vapor, chemical, or spray deposited metal layer
442/616	. . . . . Blend of synthetic polymeric and inorganic microfibers	442/658	. . . Particulate free metal or alloy constituent
442/618	. . . . . Blend of chemically different inorganic microfibers	442/659	. . Including an additional nonwoven fabric
442/619	. . . . Including other strand or fiber material in the same layer not specified as having micro dimensions	442/66	. . . Additional nonwoven fabric is a spun-bonded fabric
442/62	. . . . Including another chemically different microfiber in a separate layer	442/662	. . . . Needled
442/621	. . . . Including other strand or fiber material in a different layer not specified as having micro dimensions	442/663	. . . . Hydroentangled
442/622	. . . . Microfiber is a composite fiber	442/664	. . . Including a wood fiber containing layer
442/623	. . . . Microfiber is glass	442/665	. . . Including a layer derived from a water-settable material [e.g., cement, gypsum, etc.]
442/624	. . . . Microfiber is carbon or carbonaceous	442/666	. . . Mechanically interengaged by needling or impingement of fluid [e.g., gas or liquid stream, etc.]
442/625	. . . . Autogenously bonded	442/667	. . . . Needled
442/626	. . . . Microfiber is synthetic polymer	442/668	. . . Separate nonwoven fabric layers comprise chemically different strand or fiber material
442/627	. . . Strand or fiber material is specified as non-linear [e.g., crimped, coiled, etc.]	442/669	. . . . At least one layer of inorganic strand or fiber material and at least one layer of synthetic polymeric strand or fiber material
442/629	. . . . Composite strand or fiber material	442/67	. . . Multiple nonwoven fabric layers composed of the same inorganic 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		

- 442/671 . . . 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
- 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
- 477/6237 . . . Belt-type
- 477/624 . . . . Fluid pressure control
- 477/6242 . . . . . Ratio change controlled
- 477/62423 . . . . . Engine coast braking
- 477/62427 . . . . . with electric valve control
- 477/62429 . . . . . Duty ratio control
- 477/6243 . . . Fluid pressure control
- 477/625 . . Fluid resistance inhibits rotation of planetary transmission element
- 477/631 . . including fluid drive
- 477/633 . . . Impeller-turbine-type
- 477/6333 . . . . Engine controlled
- 477/6337 . . . . with countershaft gearing
- 477/63378 . . . . . and turbine shaft brake
- 477/63385 . . . . . and clutch control
- 477/63393 . . . . . Control of or by fluid drive
- 477/634 . . . . with hydrodynamic braking

**Former US Class 464 Series**

- 464/00 Rotary shafts, gudgeons, housings, and flexible couplings for rotary shafts**
- 464/10 . having heating or cooling means
- 464/20 . with auxilliary indicator or alarm
- 464/30 . Electrical or magnetic coupling
- 464/40 . Coupling accommodates drive between members having misaligned or angularly related axes, transmits torque via radially directed pin, and has particular balancing means
- 464/50 . Shafting having particular vibration dampening or balancing structure

**Former US Class 477 Series**

- 477/00 Interrelated power delivery controls, including engine control**
- 477/10 . Steering by driving

477/6343	. . . . with nonratio brake	477/69	. . . Engine [coast] braking
477/6347	. . . . Control responsive to fluid drive	477/691	. . . . Electric valve control
477/635	. . . . with clutch control	477/692	. . . by acceleration
477/6351	. . . . . Disengaged during shift	477/693	. . . by input manifold pressure or engine fuel control
477/6352	. . . . . Speed responsive		
477/63525	. . . . . Electrical	477/6931	. . . . Selector-type
477/6353	. . . . with fluid unit vane control	477/6933	. . . . with positive shift means
477/6357	. . . . Fill and empty-type fluid units	477/69335	. . . . . with synchronization
477/636	. . . Ratio control	477/6934	. . . . Prevents unsafe or unintentional shift
477/637	. . . . with planetary transmission control	477/6935	. . . . . Reverse inhibitor
477/638	. . with clutch control	477/6936	. . . . Shift valve control
477/6388	. . . and brake control	477/69362	. . . . . Hysteresis
477/6389	. . . . Temperature responsive control	477/693625	. . . . . Electric control
477/639	. . . . Engine controlled	477/69363	. . . . . Plural shift valves
477/6392	. . . . Clutch controlled	477/693635	. . . . . Electric control
477/6394	. . . . Gearing controlled	477/693636	. . . . . Downshift control
477/6395	. . . Temperature responsive control	477/693637	. . . . . Kickdown
477/6403	. . . Clutch, engine, and transmission controlled	477/693638	. . . . . Selector valve overrule
477/6407	. . . . Electronic digital control	477/69364	. . . . . Downshift control
477/641	. . . Clutch and transmission controlled	477/693643	. . . . . Kickdown
477/6414	. . . . Speed responsive control	477/693645	. . . . . Selector valve overrule
477/6415	. . . . . with manual override	477/69365	. . . . . Electric control
477/6417	. . . . . Vacuum actuated clutch	477/69366	. . . . . Downshift control
477/6418	. . . Clutch and engine controlled	477/69367	. . . . . Downshift control
477/6422	. . . . Speed responsive control	477/693675	. . . . . Kickdown
477/6424	. . . . . Plural speed signals	477/69368	. . . . . Selector valve overrule
477/6425	. . . Clutch controlled	477/6937	. . . . Servo motor timing
477/6428	. . . . Electric clutch	477/69373	. . . . . Downshift
477/643	. . . . Vacuum actuated clutch	477/693738	. . . . . with fluid accumulator
477/6432	. . . . . Electric control	477/693742	. . . . . Electric valve control
477/6433	. . . Engine controlled	477/693746	. . . . . Double acting servo
477/6437	. . . . Speed responsive	477/693754	. . . . . Speed responsive control
477/644	. . with brake control	477/693762	. . . . . Electric valve control
477/646	. . . Anti-creep	477/69377	. . . . . with fluid accumulator
477/647	. . . Brake controls transmission	477/69378	. . . . . Engine parameter controls back pressure
477/648	. . . . Pressure controlled	477/69379	. . . . . Electric valve control
477/649	. . . One control blocks another	477/6938	. . . . . Double acting servo
477/65	. . Control by sensed ambient condition, pattern indicia, external signal, or temperature	477/69383	. . . . . Speed responsive control
477/653	. . . Temperature control	477/69387	. . . . . Electric valve control
477/656	. . Engine starting interlock	477/6939	. . . . Transmission pressure controlled
477/663	. . Exhaust emission control	477/69393	. . . . . Variable capacity pump
477/669	. . Engine ignition control for transmission change	477/69395	. . . . . Line pressure controlled
477/67	. . . Ignition advanced or retarded	477/693958	. . . . . Responsive to speed
477/671	. . . Ignition intermitting and safety means limiting duration of intermission	477/693962	. . . . . Electric valve control
477/673	. . . Ignition intermitting controlled by manifold pressure	477/693964	. . . . . Duty ratio control
477/674	. . . Ignition intermitting initiated by positioning accelerator	477/693965	. . . . . Transmission setting contingent
477/6745	. . . . Initiation inhibited by sensed condition	477/693973	. . . . . Electric valve control
477/675	. . Engine controlled by transmission	477/69398	. . . . . Electric valve control
477/676	. . . Constant output shaft speed	477/694	. . Engine control linkage mounted on manual gearshift lever
477/677	. . . Diminution during transmission change	477/70	. Clutch control
477/679	. . . Responsive to transmission output condition	477/71	. . with starter
477/68	. . . Transmission setting contingent	477/73	. . with fluid drive
477/6805	. . . . Change to neutral idles engine	477/735	. . . Speed responsive control
477/6808	. . . . . Engine input variable in neutral	477/74	. . with brake control
477/681	. . Anticreep	477/743	. . . Clutch controlled
477/688	. . Transmission controlled by engine	477/745	. . . . and brake controlled
477/689	. . . Shift from neutral shock control	477/747	. . . Engine controlled
477/6895	. . . . Pressure 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