

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.]	16/202	. . . Frame
16/05	. Bushing	16/203	. . Frame
16/063	. . Providing a restricted or insulated environment [i.e., sealable] for internal elements	16/204	. . . Single leg frame or fork
16/075	. . Bung or tap	16/205	. . Rigid wheel supports
16/082	. . . Threaded	16/207	. . Scrapers
16/088	. . Providing strain relief	16/209	. . Sliding
16/10	. Carpet fasteners	16/21	. . . for tubular leg
16/104	. . Combined fasteners and stretchers	16/211	. . Sockets
16/109	. . Hook	16/212	. . Spring supported
16/113	. . Moldings	16/214	. . Inclined axle
16/118	. . Rug	16/216	. . Caster guard
16/122	. . Stair	16/218	. . Obstruction climbing aid
16/124	. . . Risers	16/22	. Thermally released check or closer
16/125	. . . Rods	16/27	. Checks and closers
16/126	. . . . Catches	16/276	. . Liquid
16/1263	. . . . . Sliding	16/2766	. . . Concentric spring chamber
16/1267	. . . . . Swinging	16/2769	. . . . Cam
16/127	. . Sliding	16/2771	. . . Hinge
16/131	. . Strips	16/2774	. . . . Floor pivot
16/134	. . Swinging	16/2777	. . . Multiple piston
16/14	. Carpet stiffener or anti-slip device, <u>per se</u>	16/2782	. . . Oscillating cylinder
16/18	. Casters	16/2788	. . . Oscillating piston
16/182	. . Adjustable	16/2793	. . . Side spring chamber
16/184	. . Wheels	16/2796	. . . . Cam
16/1847	. . . Antifrictionally mounted	16/2799	. . . Spring and flexible link
16/1853	. . . Multiple	16/2804	. . . Spring and gear
16/1857	. . . . Antifrictionally swivelled	16/281	. . Pneumatic
16/186	. . Antifrictionally swivelled	16/282	. . . Flexible link
16/1867	. . . Ball	16/283	. . . Hinge
16/1873	. . . Cylinder	16/285	. . . Spring and gear
16/1877	. . . . Pivoted	16/286	. . . Spring and lever
16/188	. . Ball	16/287	. . Spring and flexible link
16/1887	. . . Antifrictionally mounted	16/293	. . Spring and gear
16/1889	. . . . Ball	16/299	. . Spring and lever
16/1891	. . . . Cylinder	16/304	. . Hinge
16/1893	. . . Pivoted	16/31	. Gate hangers
16/19	. . Bracket supports	16/33	. . Sliding and swinging
16/191	. . Detachable	16/35	. Panel hangers, travelers and/or tracks
16/193	. . Leg elevators	16/353	. . with flexible panel attaching means
16/1937	. . . Sliding	16/354	. . . Covered, hollow or slotted track
16/1943	. . . Swinging	16/3543	. . . . with antifriction means
16/195	. . Locked	16/3545	. . . . . Wood track
16/196	. . . Shimmy dampening	16/3547	. . . . . Wood track
16/197	. . Lubricators	16/355	. . . with antifriction means
16/199	. . Pintles	16/356	. . Ball
16/201	. . Pintle retainers	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	16/476	. . 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
16/375	. . . Drapery supports	16/48	. Insulated handle
16/376	. . Covered, hollow or slotted track	16/484	. . Handwheel
16/377	. . . Wood	16/487	. . Knob type
16/378	. . . Drapery supports	16/491	. . Wire type
16/3785	. . . . Wood	16/495	. . Unshaped or unattached pad
16/379	. . Tracks	16/498	. . Bar-type handle
16/3797	. . . Drapery supports	16/499	. . . for lawnmower
16/3803	. . . Laminated	16/50	. . . Swinging
16/381	. . Wheel mounts	16/501	. . . . Casket handle
16/3813	. . . Antifrictionally mounted wheels	16/502	. . Braced handle
16/3816	. . . Door elevating	16/506	. . Knob-type handle
16/3819	. . . Floor	16/508	. . . with flexible suspending means
16/3822	. . . Reciprocating track	16/509	. . Lift
16/3825	. . . Traveling wheel	16/513	. . Loop-type handle
16/3828	. . . Swinging	16/515	. . . Swinging
16/3831	. . . Swiveling	16/516	. . Ring-type handle
16/3834	. . . Vertically adjustable	16/52	. Hinge
16/3837	. . . Wheel and guide roller	16/521	. . including frangible or fusible portion
16/384	. . Wheels	16/522	. . with diverse art portion or attachment
16/387	. . Overlapping doors, common track	16/524	. . Ball and socket
16/39	. Ferrules, rings, and thimbles	16/525	. . Pliant or elastic hinge
16/42	. . Ring ferrules	16/5253	. . . Metallic
16/44	. Handle, handle component, or handle adjunct	16/5257	. . . Snap or X hinge
16/444	. . having receptacle within	16/526	. . Eyeglass hinge
16/447	. . for plow	16/527	. . Retractable pintle
16/451	. . Length adjustable pull handle for luggage or luggage cart [e.g., wheeled suitcase handle, etc.]	16/5275	. . . Latch hinge
16/455	. . Luggage-type [loop style] handgrip for carrying [e.g., suitcase, handbag, briefcase, shopping bag, package, etc.]	16/528	. . Latch hinge
16/4554	. . . Extensible handle	16/5285	. . . Resilient securing means
16/4559	. . . Detachable handle	16/529	. . including lever for shifting one member of hinge relative to another
16/4563	. . . Welded or adhesively attached handle	16/531	. . having staggered leaves
16/4567	. . . Swinging handle	16/532	. . including adjustment for changing relative orientation of hinged members
16/4569	. . . . with means permanently connecting the handle to a carried article	16/5321	. . . having plural independent adjustments
16/4571	. . . with means permanently connecting the handle to a carried article	16/5322	. . . . All rectilinear
16/4576	. . . with carrier handle including a user enhanced grip attachment	16/53225	. . . . including screw-operated means to move hinged members
16/458	. . Door handle	16/5323	. . . Pivotal adjustment
16/459	. . . Detachable handle	16/53235	. . . . including screw-operated means to move hinged members
16/46	. . . Knob type	16/53238	. . . . About hinge axis
16/462	. . Drawer pull	16/5324	. . . including means to move hinged members
16/4628	. . . Lift	16/53247	. . . . Along or parallel to hinge axis
16/4636	. . . Knob type	16/5325	. . . . including threaded hinge pin
16/464	. . . . Swinging	16/53253	. . . . Screw-operated
16/4644	. . . Loop type	16/53257	. . . . to shift plate toward or away from hinged member
16/4652	. . . Ring type	16/5326	. . . having adjustable spacer between leaf and hinged member [e.g., shim]
16/466	. . Handle having mounted grip means [e.g., bicycle handlebar grips, etc.]	16/5327	. . . Adjustable along or parallel to hinge axis
16/469	. . Detachable handle	16/5329	. . . having interdigitated surfaces or slot for hinge-to-member fastener
16/4696	. . . for battery	16/533	. . having cover
16/4701	. . . for casket	16/5335	. . . Leaf cover
16/4707	. . . for container	16/534	. . having clamp for attaching hinge to hinged member
16/4713	. . . Auxiliary handle	16/5345	. . . Circumferential clamp
16/4719	. . . Extension		
16/4724	. . . Cord or rope related		
16/473	. . Extensible handle		

- 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	. . . . Pivotally 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

70/00	Locks
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	. . . .	Swinging 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

117/00	Single-crystal, oriented-crystal, and epitaxy growth processes; non-coating apparatus therefor
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]
- 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

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

- 137/1789 . . . 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
			152/10918	. . . .	Bandages
152/10522	. . . .	Multiple chamber	152/10927	. . . .	Mechanically secured
152/10531	. . . .	Cylinder and piston	152/10936	. . . . .	to felly or rim
152/1054	. . . . .	Mutually free walls			
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	156/00		Adhesive bonding and miscellaneous chemical manufacture
152/10684	. . . . .	On inner surface of tubeless tire	156/10	. . . .	Methods of surface bonding and/or assembly therefor
152/10693	. . . . .	Sealant in plural layers or plural pockets	156/1002	. . . .	with permanent bending or reshaping or surface deformation of self sustaining lamina
152/10702	. . . . .	within or part of construction of inflating inner tube	156/1003	. . . .	by separating laminae between spaced secured areas [e.g., honeycomb expanding]
			156/1005	. . . .	by inward collapsing of portion of hollow body
152/10711	. . . . .	Sealant in plural layers or plural pockets	156/1007	. . . .	Running or continuous length work
152/1072	. . . . .	by compression	156/1008	. . . .	Longitudinal bending
152/10729	. . . . .	with reinflating means	156/101	. . . . .	Prior to or during assembly with additional lamina
152/10738	. . . .	with means to protect tire from rim	156/1011	. . . . .	Overedge bending or overedge folding
152/10747	. . . .	Means other than rim closing the tire opening	156/1013	. . . . .	and edge-joining of one piece blank to form tube
152/10756	. . . . .	Positive casing closure	156/1015	. . . .	Folding
152/10765	. . . .	Characterized by belt or breaker structure	156/1016	. . . .	Transverse corrugating
152/10774	. . . . .	Consisting of only one ply	156/1018	. . . . .	Subsequent to assembly of laminae
152/10783	. . . . .	Reinforcing plies made up from wound narrow ribbons	156/102	. . . . .	with deformation or cutting of corrugated lamina
			156/1021	. . . . .	Treating material of corrugated lamina or dry adhesive thereon to render tacky
152/10792	. . . .	Structure where each bias angle reinforcing cord ply has no opposingly angled ply	156/1023	. . . .	Surface deformation only [e.g., embossing]
			156/1025	. . . .	to form undulated to corrugated sheet and securing to base with parts of shaped areas out of contact
			156/1026	. . . .	with slitting or removal of material at reshaping area prior to reshaping
			156/1028	. . . .	by bending, drawing or stretch forming sheet to assume shape of configured lamina while in contact therewith

- 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	Former US Class 225 series	
156/1751	. . . . At least three articles	225/00	Severing by tearing or breaking
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 pasteur 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	Former US Class 279 Series	
225/266	. . . . With clamp for lead-end of strand-type work	279/00	Chucks or sockets
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**292/00 Closure fasteners**

292/03	. Miscellaneous
292/06	. Adjustable backset
292/08	. Bolts
292/0801	. . Multiple
292/0802	. . . Sliding and rotary
292/0803	. . . Sliding and swinging
292/0805	. . . . Combined motion
292/0806	. . . . . Lever-operating means
292/0807	. . . Sliding and hooked end
292/0808	. . . Sliding and roller
292/0809	. . . Sliding and spring arm
292/081	. . . Swinging and hooked end
292/0811	. . . Swinging and roller
292/0813	. . . Swinging and spring arm
292/0814	. . . Double acting
292/0815	. . . . Roller
292/0816	. . . . Sliding
292/0817	. . . . Spring arm
292/0818	. . . . Swinging
292/082	. . . Spring arm
292/0821	. . . . Combined motion
292/0822	. . . Emergency operating means
292/0823	. . . Gear
292/0824	. . . Roller

292/0825	. . .	Hooked end	292/0895	. . .	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
- 407/2232 with detent
- 407/2234 Pivoted seat
- 407/2236 And pivotable tool
- 407/2238 . . . by adjustable or replaceable stop
- 407/224 Adjustable
- 407/2242 Screw
- 407/2244 . . . by movement of seat relative to holder
- 407/2246 Pivoted seat
- 407/2248 . . . Pivoted tool
- 407/225 . . . Resiliently biased tool clamping jaw
- 407/2252 . . . Rectilinearly
- 407/2254 including rotatable cam clamp element
- 407/2256 including wedge clamp element
- 407/2258 And guide or detent
- 407/226 including detent
- 407/2262 Tool gripped directly by set screw
- 407/2264 Slidable jaw
- 407/2266 . . Holder adapted for tools of different shape
- 407/2268 . . with chip breaker, guide or deflector
- 407/227 . . with separate means to fasten tool seat to holder
- 407/2272 . . with separate means to fasten tool to holder
- 407/2274 . . . Apertured tool
- 407/2276 with means projecting through aperture to force tool laterally against reaction surface
- 407/2278 Tilting clamp element and separate means to tilt same
- 407/228 . . . Rotatable cam clamp element
- 407/2282 . . . including tool holding clamp and clamp actuator
- 407/2284 Wedge clamp element
- 407/2286 Resiliently biased clamp jaw
- 407/2288 Integral with holder
- 407/229 Pivoted jaw
- 407/2292 Slidable jaw
- 407/23 . . including tool having plural alternatively usable cutting edges
- 407/235 . . with integral chip breaker, guide or deflector
- 407/24 . . with chip breaker, guide or deflector
- 407/245 . . comprising concave surface in cutting face of tool
- 407/25 . . including cut off tool
- 407/26 . . comprising cutting edge bonded to tool shank
- 407/27 . . comprising tool of specific chemical composition
- 407/28 . . Miscellaneous
- 408/173 . . . Responsive to work
- 408/175 . . to control relative positioning of Tool and work
- 408/18 . . with stopping upon completion of prescribed operation
- 408/20 . . Responsive to condition of work or product
- 408/21 . . with signal, indicator, illuminator or optical means
- 408/23 . . including means to cause Tool to progressively vibrate toward work
- 408/26 . . with means to condition tool
- 408/29 . . with means to deForm work temporarily
- 408/31 . . Convertible cutting means
- 408/33 . . Utilizing common cutting Tool
- 408/34 . . Combined cutting means
- 408/344 . . including Tool operating on rotating work
- 408/348 . . Plural other type cutting means
- 408/35 . . . including plural rotating tools
- 408/352 . . including rotating cutter other than rotating, axially moving Tool
- 408/353 . . . Crystalline cutter
- 408/355 . . . Utilized in cutting work or product to length
- 408/3555 Adapted to cut entire thickness of work at one pass
- 408/356 . . including plunging [single stroke] cutter
- 408/36 . . Machine including plural tools
- 408/365 . . Axes of tools moving with work during operation
- 408/367 . . . including means to infeed Tool and means to infeed work or including coaxial tools
- 408/368 . . . Plural work stations
- 408/37 . . Turret of tools
- 408/375 . . Coaxial tools
- 408/378 . . . Coaxial, opposed tools
- 408/3784 with additional, converging Tool
- 408/3788 Plural pairs of coaxial, opposed tools
- 408/3792 with means to sequentially feed tools toward work
- 408/3796 with interconnected means to simultaneously feed tools
- 408/38 . . Plural, simultaneously operational tools
- 408/3806 . . . with plural simultaneously operational work stations
- 408/3809 Successively acting on workpiece
- 408/381 Pivotally mounted, work-advancing, work-supporting means, pivot-axis parallel to tool-axis
- 408/3811 . . . with provision for adjustment of relationship of axes
- 408/3817 . . . at least one Tool driven by orbiting wrist plate
- 408/3822 . . . at least one Tool including flexible drive connection
- 408/3828 . . . with work-infeed
- 408/3833 . . . with means to advance work relative to Tool
- 408/3839 . . . with presser-foot
- 408/3844 . . . with tool-opposing, work-engaging surface
- 408/385 . . Rotatable about parallel axes
- 408/39 . . with radially outer limit of cutting edge moving to define cylinder partially, but not entirely encircled by work
- 408/42 . . Axis of Tool moving with work during operation
- 408/44 . . with means to apply transient, fluent medium to work or product
- 408/45 . . including Tool with duct
- 408/453 . . . and means to move gaseous fluid by application of vacuum

Former US Class 408 Series

- 408/00 Cutting by use of rotating axially moving tool**
- 408/03 . . Processes
- 408/04 . . Bit detachable
- 408/05 . . with means to weigh or test work or product
- 408/08 . . with means to regulate operation by use of templet, tape, card, or other replaceable information supply
- 408/10 . . with interlock between machine elements
- 408/13 . . with randomly-actuated stopping means
- 408/14 . . Responsive to condition of Tool or tool-drive
- 408/15 . . Responsive to condition of work or product
- 408/16 . . with control means energized in response to activator stimulated by condition sensor
- 408/165 . . to control Tool rotation
- 408/17 . . to control infeed
- 408/172 . . . Responsive to Tool

408/455	. . . 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
 409/302408 including cross-slide tool carrier
 409/302464 including plural cutters
 409/30252 including cross-slide tool carrier
 409/302576 with means to support templet above or under work
 409/302632 with provision for circumferential relative movement of cutter and work
 409/302688 with provision for circumferential relative movement of cutter and work
 409/302744 and means for operation without manual intervention
 409/3028 including tracer adapted to trigger electrical or fluid energy
 409/302856 For using planar templet in cutting profile [e.g., contour map from planar map, etc.]
 409/302912 including means for operation without manual intervention
 409/302968 including means for operation without manual intervention
 409/303024 including simultaneously usable plural tracers or including tracer adapted to simultaneously use plural templets
 409/30308 to make a double curvature foil
 409/303136 to make a double curvature foil
 409/303192 including cutter and tracer fixed to move together
 409/303248 with provision for circumferential relative movement of cutter and work
 409/303304 and provision for circumferential relative movement of cutter and work
 409/30336 including cutter and tracer fixed to move together
 409/303416 Templet, tracer, or cutter
 409/303472 Tracer
 409/303528 Adapted to trigger electrical energy
 409/303584 Photocell
 409/30364 Adapted to trigger fluid energy
 409/303696 Templet
 409/303752 Process
 409/303808 including infeeding
 409/303864 with means to weigh or test work or product
 409/30392 with means to protect operative or machine [e.g., guard, safety device, etc.]
 409/303976 with means to control temperature or lubricate
 409/304032 Cutter or work
 409/304088 with means to remove chip
 409/304144 Means to trim edge
 409/3042 Means to remove scale or raised surface imperfection
 409/304256 Means to remove flash or burr
 409/304312 with means to dampen vibration
 409/304368 Means to mill epitrochoidal shape
 409/304424 Means for internal milling
 409/30448 with detachable or auxiliary cutter support to convert cutting action
 409/304536 including means to infeed work to cutter
 409/304592 with compensation for backlash in drive means
 409/304648 with control means energized in response to activator stimulated by condition sensor
 409/304704 In response to cutter or cutter carriage
 409/30476 In response to work or work carriage
 409/304816 to control rate of infeed or return
 409/304872 to control limit of infeed
 409/304928 Adapted to hydraulically or pneumatically stimulate control
 409/304984 Adapted to electrically stimulate control
 409/30504 to control rate of infeed or return
 409/305096 to effect stopping of infeed
 409/305152 with means to change rate of infeed
 409/305208 Means to mill indeterminate length work
 409/305264 Multiple work stations
 409/30532 with means to advance work or product
 409/305376 Vertically
 409/305432 Endless or orbital work or product advancing means
 409/305488 to reciprocate or oscillate work
 409/305544 with work holder
 409/3056 and means to selectively position work
 409/305656 including means to support work for rotation during operation
 409/305712 and including means to infeed cutter toward work axis
 409/305768 with linear movement of work
 409/305824 with angular movement of work
 409/30588 including friction gearing drive
 409/305936 including fluid drive
 409/305992 with means to effect stopping upon completion of operation
 409/306048 with means to advance work or product
 409/306104 Endless or orbital work or product advancing means
 409/30616 with means to precisely reposition work
 409/306216 Randomly manipulated, work supported, or work following device
 409/306272 For machining commutator
 409/306328 For cutting longitudinal groove in shaft [e.g., keyway, etc.]
 409/306384 with work supported guide means
 409/30644 to guide tool to move in arcuate path
 409/306496 with work follower
 409/306552 Randomly manipulated
 409/306608 End mill [e.g., router, etc.]
 409/306664 including means to infeed rotary cutter toward work
 409/30672 with means to limit penetration into work
 409/306776 Axially
 409/306832 with infeed control means energized in response to activator stimulated by condition sensor
 409/306888 In response to cutter condition
 409/306944 In response to work condition
 409/307 with work holder
 409/307056 and laterally
 409/307112 Simultaneously
 409/307168 Plural cutters
 409/307224 with infeed control means energized in response to activator stimulated by condition sensor
 409/30728 In response to cutter condition
 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
 428/31725 . . . Of polyamide
 428/31728 . . . Next to second layer of polyamide
 428/31732 At least one layer is nylon type
 428/31736 . . . Next to polyester
 428/31739 . . . Nylon type
 428/31743 Next to addition polymer from unsaturated monomer[s]
 428/31746 Polymer of monoethylenically unsaturated hydrocarbon
 428/3175 . . . Next to addition polymer from unsaturated monomer[s]
 428/31754 Natural source-type polyamide
 428/31757 Polymer of monoethylenically unsaturated hydrocarbon
 428/31761 . . . Next to aldehyde or ketone condensation product
 428/31765 . . . Inorganic-containing or next to inorganic-containing
 428/31768 . . . Natural source-type polyamide [e.g., casein, gelatin, etc.]
 428/31772 Next to cellulosic
 428/31775 Paper
 428/31779 . . . Next to cellulosic
 428/31783 Paper or wood
 428/31786 . . . Of polyester [e.g., alkyd, etc.]
 428/3179 . . . Next to cellulosic
 428/31794 . . . Of cross-linked polyester
 428/31797 . . . Next to addition polymer from unsaturated monomers
 428/31801 . . . Of wax or waxy material
 428/31804 . . . Next to cellulosic
 428/31808 Cellulosic is paper
 428/31812 Glassine paper
 428/31815 . . . Of bituminous or tarry residue
 428/31819 . . . Next to cellulosic
 428/31823 Paper
 428/31826 . . . Of natural rubber
 428/3183 . . . Next to second layer of natural rubber
 428/31833 . . . Next to aldehyde or ketone condensation product or addition polymer from unsaturated monomers
 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
 428/31902 Monoethylenically unsaturated
 428/31906 Ester, halide or nitrile of addition polymer
 428/31909 . . . Next to second addition polymer from unsaturated monomers
 428/31913 Monoolefin polymer
 428/31917 Next to polyene polymer
 428/3192 Next to vinyl or vinylidene chloride polymer
 428/31924 Including polyene monomers
 428/31928 Ester, halide or nitrile of addition polymer
 428/31931 . . . Polyene monomer-containing
 428/31935 . . . Ester, halide or nitrile of addition polymer
 428/31938 . . . Polymer of monoethylenically unsaturated hydrocarbon
 428/31942 . . . Of aldehyde or ketone condensation product
 428/31946 . . . Next to second aldehyde or ketone condensation product
 428/31949 . . . Next to cellulosic
 428/31953 Modified or regenerated cellulose
 428/31957 Wood
 428/3196 Phenoplast
 428/31964 Paper
 428/31967 Phenoplast
 428/31971 . . . Of carbohydrate
 428/31975 Of cellulosic next to another carbohydrate
 428/31978 Cellulosic next to another cellulosic
 428/31982 Wood or paper
 428/31986 Regenerated or modified
 428/31989 Of wood
 428/31993 Of paper
 428/31996 Next to layer of metal salt [e.g., plasterboard, etc.]
 428/32 . . . Composite [nonstructural laminate] of inorganic material having metal-compound-containing layer and having defined magnetic layer
 428/325 . . . Magnetic layer next to second metal compound-containing layer
 428/4935 . . . Impregnated naturally solid product [e.g., leather, stone, etc.]
 428/662 . . . Wood timber product [e.g., piling, post, veneer, etc.]
 428/8305 . . . Miscellaneous [e.g., treated surfaces, etc.]

Former US Class 436 Series

- 436/00 Chemistry: analytical and immunological testing**
 436/10 . . . Composition for standardization, calibration, simulation, stabilization, preparation or preservation; processes of use in preparation for chemical testing
 436/100833 . . . Simulative of a gaseous composition
 436/101666 . . . Particle count or volume standard or control [e.g., platelet count standards, etc.]
 436/102499 . . . Blood gas standard or control
 436/103332 . . . Bilirubin or uric acid standard or control
 436/104165 . . . Lipid, cholesterol, or triglyceride standard or control
 436/104998 . . . Glucose, ketone, nitrate standard or control
 436/105831 . . . Protein or peptide standard or control [e.g., hemoglobin, etc.]
 436/106664 . . . Blood serum or blood plasma standard or control
 436/107497 . . . Preparation composition [e.g., lysing or precipitation, etc.]

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