### CPC - COOPERATIVE PATENT CLASSIFICATION

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

(NOTES omitted)

#### Y10 TECHNICAL SUBJECTS COVERED BY FORMER USPC

#### Y10T TECHNICAL SUBJECTS COVERED BY FORMER US CLASSIFICATION

**NOTE**

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

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

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

16/5324 . . . including means to move hinged members
16/53247 . . . Along or parallel to hinge axis
16/5325 . . . including threaded hinge pin
16/53253 . . . Screw-operated
16/53257 . . . to shift plate toward or away from hinged member
16/5326 . . . having adjustable spacer between leaf and hinged member [e.g., shim]
16/5327 . . . Adjustable along or parallel to hinge axis
16/5329 . . . having interdigitated surfaces or slot for hinge-to-member fastener
16/533 . . . having cover
16/5335 . . . Leaf cover
16/534 . . . having clamp for attaching hinge to hinged member
16/5345 . . . Circumferential clamp
16/535 . . . having means to facilitate assembly and disassembly of hinge sections to join or disjoin hinged members
16/5353 . . . Resiliently biased hinge
16/5355 . . . having helical spring along hinge axis
16/5357 . . . Resiliently biased retaining means
16/5358 . . . having discrete latch and spring to slide or pivot latch
16/5359 . . . Discrete retaining means for pivotal contacting surfaces
16/536 . . . Separation of pivotal contacting surfaces
16/53605 . . . having movable or removable connector
16/53607 . . . Pintle removable from remainder of hinge
16/536075 . . . and additional connector for pintle or separate pintle sections
16/53608 . . . Screw-threaded connector
16/5361 . . . Axially shifting hinge sections
16/53613 . . . At specific angular orientation of hinge sections
16/53615 . . . Hook and pin
16/5362 . . . Hook in aperture
16/53625 . . . Hook to hook
16/5363 . . . and discrete movable or removable connector to fasten one hinge section to another
16/5367 . . . by relatively sliding connection [e.g., dovetail]
16/5369 . . . including receiving connector attachable to hinged member
16/537 . . . having means to reduce friction between hinge parts
16/5373 . . . by fluid lubricant
16/5377 . . . Ball or roller bearing
16/5379 . . . Circularly distributed balls or rollers
16/538 . . . Resiliently biased hinge
16/5381 . . . including means to render spring ineffective through all or a portion of swing
16/53815 . . . comprising manipulatable element or portion
16/5382 . . . Biased from either direction toward neutral position [e.g., double acting]
16/53822 . . . Helical spring transverse to hinge axis
16/53824 . . . Plural hinge axes [e.g., multiple pintle]
16/53825 . . . and barrels for helical springs on separate axes
16/53826 . . . Resiliently biased rolling or sliding cam surface
16/53828 . . . by helical spring along hinge axis
16/5383 . . . having transverse helical spring or elastic strip
16/53832 . . . Plural hinge axes [e.g., multiple pintle]
16/53833 . . . Four or more axes
16/53834 . . . to counterbalance weight of hinged member [e.g., closure biased to open position]
16/53835 . . . including pivoted coaxial spring retaining bar
16/53836 . . . Over-center spring or linkage travel [e.g., "holdback hinge"]
16/53838 . . . having means to hold hinged members against pivotal movement about hinge axis [i.e., catch]
16/5384 . . . Over-center spring or linkage travel [e.g., "holdback hinge"]
16/53843 . . . Plural hinge axes
16/53845 . . . Coil spring having axis along or parallel to hinge axis
16/53848 . . . including camming or sliding surface to deflect spring perpendicularly to the hinge axis
16/5385 . . . having means to hold hinged members against pivotal movement about hinge axis [e.g., catch]
16/5386 . . . having force adjustment
16/53862 . . . Rotatable spring-engaging collar
16/538627 . . . having detention aperture or protuberance
16/538633 . . . having tool-receiving aperture
16/53864 . . . Plural hinge axes [e.g., multiple pintle]
16/5387 . . . having axially biased camming surface
16/5388 . . . Coil
16/53883 . . . Plural coils
16/53885 . . . to counterbalance weight of hinged member [e.g., horizontal closure biased to open position]
16/53888 . . . On pintle
16/5389 . . . torsion spring
16/539 . . . Gravitating hinge having vertical axis
16/5393 . . . having lift rod
16/5395 . . . having plural spaced hinge axes
16/5398 . . . including cam surface and follower
16/53984 . . . and rolling element
16/53985 . . . Between opposing surfaces
16/53987 . . . and detent in cam surface
16/53988 . . . On axially twisted or helically fluted element
16/53992 . . . including means to hold hinged members against pivotal movement
16/53996 . . . having aperture for slidably receiving pintle [e.g., camming knuckle]
16/54 . . . including means to hold or retard hinged members against pivotal movement [e.g., catch]
16/5401 . . . Magnetic
16/5402 . . . Resiliently biased catch
16/54021 . . . having spring force adjustment
16/54023 . . . including toggle linkage
16/54024 . . . having discrete manipulatable release means [e.g., lever]
16/540243 . . . including cam or eccentric
16/540247 . . . Sliding release means or lever-actuated sliding catch
16/54025 . . . Sliding
16/540253 . . . Movement along or parallel to hinge axis
16/540254 . . . Interdigitated or plural sockets
16/540255 . . . Opposed interdigitated sliding collars on hinge axis
16/540256 . . . and catch receiving socket
16/540257 . . . and catch receiving socket
16/54026 . . . Pivoted
16/54028 . . . Plural alternately useable detents
16/54029 . . . Spring arm
16/540295 . . . Plural opposed arms
16/5403 . . . by friction
16/54033 . . . Screw-threaded adjustment
16/54034 . . . Along or parallel to hinge axis
16/540345 . . . Threaded pintle
16/54035 . . . Cam or wedge actuator
16/54038 . . . On hinge pin or between surfaces surrounding hinge axis
16/5404 . . . Pivoted
16/54044 . . . Plural alternately useable detents
16/54048 . . . and sliding
16/54052 . . . Serially connected pivoted arms between leaves [e.g., brace]
16/54056 . . . About axis along or parallel to hinge axis
16/5406 . . . by transversely moving pin in slot
16/5407 . . . having discrete manipulatable release means [e.g., lever operated]
16/5408 . . . by shifting hinged members
16/54085 . . . Along hinge axis
16/5409 . . . Sliding
16/54095 . . . Along or parallel to hinge axis
16/541 . . . including toothed gear
16/542 . . . comprising nested open curved portions attached to hinged members
16/543 . . . including hinge pin
16/544 . . . including transversely moving pin in slot
16/5443 . . . Plural noncollinear pins and slots
16/5444 . . . Parallel slots
16/5445 . . . having pin fixed to pivoted arm or plate
16/5448 . . . Hinge pin moveable along slot
16/545 . . . including sliding surfaces to permit relative translation of hinged members
16/5453 . . . and stop or abutment for pivotal movement
16/5457 . . . Movement transverse to hinge axis
16/546 . . . Three-hinged members
16/547 . . . having plural hinge axes [e.g., multiple pintle]
16/5472 . . . having transverse or skewed axes
16/5474 . . . Connected by serially arranged pivoted links between hinged members
16/5475 . . . Plural sets of serially arranged pivoted links
16/5476 . . . Four or more axes
16/5478 . . . including stop or latch
16/548 . . . including laminated leaf
16/549 . . . Wire hinge
16/551 . . . having stop or abutment
16/5513 . . . Adjustable or resilient
16/5515 . . . comprising relieved axially opposed relatively rotating surfaces
16/5518 . . . comprising platelike bearing portion curved about hinge axis
16/552 . . . Hinge axis passes through hinged member [e.g., floor hinge]
16/5525 . . . Pintle or pivot concealed in hinged member
16/553 . . . including means to retain pintle in hinge [e.g., tamper proof, nonrising pintle, etc.]
16/5535 . . . Threaded or slotted pintle or knuckle
16/554 . . . including means to fasten leaf to member
16/5543 . . . by expandable connector
16/5547 . . . Self-penetrating fastener
16/555 . . . Specified material
16/557 . . . Specific pintle structure
16/558 . . . Specific leaf structure
16/559 . . . having prongs or cooperating structure on leaf
16/5595 . . . Angular leaf sections
16/55963 . . . Parallel sections
16/55975 . . . Coplanar sections
16/55988 . . . including planar section perpendicular to hinge axis
16/56 . . . Closers
16/568 . . . Spring and flexible link
16/577 . . . Spring and gear
16/585 . . . Spring and lever
16/593 . . . Spring
16/595 . . . Bow
16/597 . . . Rubber
16/599 . . . torsional
16/5995 . . . Coil
16/60 . . . Volute
16/602 . . . Weight
16/61 . . . Closure checks
16/615 . . . Inertia
16/62 . . . Pneumatic
16/625 . . . Spring
16/628 . . . Rubber
16/6285 . . . Rubber cushioned
16/629 . . . Multiple or opposed buffer surfaces
16/6295 . . . Link type
16/6298 . . . Sash balances
16/63 . . . Cord and counterweight
16/635 . . . Sash and cord
16/64 . . . Spring
16/641 . . . Drum and cord
16/642 . . . Friction roller
16/643 . . . Lever
16/644 . . . Rack and pinion
16/645 . . . Rack and pinion
16/65 . . . Sash-cord fasteners
16/655 . . . Bendable
16/6555 . . . Chain
16/665 . . . Clamps
16/667 . . . Hooks
16/675 . . . Knot
16/68 . . . Slack-cord holders
16/685 . . . Weight
16/69 . . . Sash-cord guides
16/698 . . . Wheel and casing
16/706 . . . Casings
16/71 . . . Sheet metal, single piece
16/714 . . . Multiple wheel
16/722 . . . Sliding
16/73 . . . Sash weights
16/743 . . . Composite
16/755 . . . Sectional
16/767 . . . Weight and wheel
16/78 . . . Window-bead fasteners
16/82 . . . Counterbalance device, per se
16/84 . . . Spring
16/86 . . . Door escutcheon or similar element
16/90 . . . Paper weight
16/95 . . . Miscellaneous element or attachment
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<thead>
<tr>
<th>Former US Class 24 series</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>24/00 Buckles, buttons, clasps, etc.</td>
<td></td>
</tr>
<tr>
<td>24/10</td>
<td>Miscellaneous</td>
</tr>
<tr>
<td>24/11</td>
<td>Album fasteners</td>
</tr>
<tr>
<td>24/12</td>
<td>Gun band type</td>
</tr>
<tr>
<td>24/13</td>
<td>Article holder attachable to apparel or body</td>
</tr>
<tr>
<td>24/1303</td>
<td>Chatelaine safety hooks</td>
</tr>
<tr>
<td>24/1306</td>
<td>Flower</td>
</tr>
<tr>
<td>24/1309</td>
<td>Pin attached</td>
</tr>
<tr>
<td>24/1312</td>
<td>Napkin</td>
</tr>
<tr>
<td>24/1315</td>
<td>Hook</td>
</tr>
<tr>
<td>24/1318</td>
<td>Neck enclosing</td>
</tr>
<tr>
<td>24/1321</td>
<td>Pencil</td>
</tr>
<tr>
<td>24/1324</td>
<td>Clasp attached</td>
</tr>
<tr>
<td>24/1326</td>
<td>Finger ear, belt attached pencil holder</td>
</tr>
<tr>
<td>24/1329</td>
<td>Pencil holder with paper clip</td>
</tr>
<tr>
<td>24/1332</td>
<td>Combined and convertible pencil holder</td>
</tr>
<tr>
<td>24/1335</td>
<td>Container type pencil holder</td>
</tr>
<tr>
<td>24/1338</td>
<td>Separate pencil holder and pocket engaging clip</td>
</tr>
<tr>
<td>24/1341</td>
<td>Sliding jaw pencil holding clip</td>
</tr>
<tr>
<td>24/1344</td>
<td>Wire pencil holder</td>
</tr>
<tr>
<td>24/1347</td>
<td>Flexible shank pencil holder</td>
</tr>
<tr>
<td>24/135</td>
<td>with movable catch [e.g., pin pivoted lever, roller, etc.]</td>
</tr>
<tr>
<td>24/1353</td>
<td>Pivoted jaw pencil holder</td>
</tr>
<tr>
<td>24/1356</td>
<td>Pin attached</td>
</tr>
<tr>
<td>24/1359</td>
<td>Rule holder</td>
</tr>
<tr>
<td>24/1362</td>
<td>Sleeve holder [e.g., for inner coat]</td>
</tr>
<tr>
<td>24/1365</td>
<td>Pin attached</td>
</tr>
<tr>
<td>24/1368</td>
<td>Arm or leg carried holder</td>
</tr>
<tr>
<td>24/1371</td>
<td>Eyeglass holder including retaining means</td>
</tr>
<tr>
<td>24/1374</td>
<td>Neck supported holder</td>
</tr>
<tr>
<td>24/1376</td>
<td>Holder contains pocket engager [e.g., antitheft device, wallet protector]</td>
</tr>
<tr>
<td>24/1379</td>
<td>Key ring holder</td>
</tr>
<tr>
<td>24/1382</td>
<td>Receptacle type holder</td>
</tr>
<tr>
<td>24/1385</td>
<td>Eyeglass or spectacle case</td>
</tr>
<tr>
<td>24/1388</td>
<td>Open-ended holster type holder</td>
</tr>
<tr>
<td>24/1391</td>
<td>Article held by clip with spring [e.g., leaf, coil] member</td>
</tr>
<tr>
<td>24/1394</td>
<td>Article held by clip</td>
</tr>
<tr>
<td>24/1397</td>
<td>Article held by flexible connector [e.g., chain]</td>
</tr>
<tr>
<td>24/14</td>
<td>Bale and package ties, hose clamps</td>
</tr>
<tr>
<td>24/1402</td>
<td>Packet holders</td>
</tr>
<tr>
<td>24/1404</td>
<td>Cord</td>
</tr>
<tr>
<td>24/1406</td>
<td>Adjustable bands</td>
</tr>
<tr>
<td>24/1408</td>
<td>Closed loops</td>
</tr>
<tr>
<td>24/141</td>
<td>Plastic bands</td>
</tr>
<tr>
<td>24/1412</td>
<td>with tighteningers</td>
</tr>
<tr>
<td>24/1414</td>
<td>Wedge</td>
</tr>
<tr>
<td>24/1416</td>
<td>Winder</td>
</tr>
<tr>
<td>24/1418</td>
<td>Self-locking [dead center or snap action]</td>
</tr>
<tr>
<td>24/142</td>
<td>Adjustable girth</td>
</tr>
<tr>
<td>24/1422</td>
<td>Rack bar</td>
</tr>
<tr>
<td>24/1424</td>
<td>Lever</td>
</tr>
<tr>
<td>24/1427</td>
<td>Worm and tooth</td>
</tr>
<tr>
<td>24/1429</td>
<td>Pivotal worm band clamp</td>
</tr>
<tr>
<td>24/1431</td>
<td>Radial worm band clamp</td>
</tr>
<tr>
<td>24/1433</td>
<td>Integral thread</td>
</tr>
<tr>
<td>24/1435</td>
<td>External thread</td>
</tr>
<tr>
<td>24/1437</td>
<td>Both ends threaded</td>
</tr>
<tr>
<td>24/1439</td>
<td>Radial screw</td>
</tr>
<tr>
<td>24/1441</td>
<td>Tangential screw</td>
</tr>
<tr>
<td>24/1443</td>
<td>Adjustable girth</td>
</tr>
<tr>
<td>24/1445</td>
<td>Step adjustment</td>
</tr>
<tr>
<td>24/1447</td>
<td>Plural separable parts</td>
</tr>
<tr>
<td>24/1449</td>
<td>Wire</td>
</tr>
<tr>
<td>24/1451</td>
<td>Plural separable parts</td>
</tr>
<tr>
<td>24/1453</td>
<td>Pivotal strap parts</td>
</tr>
<tr>
<td>24/1455</td>
<td>Plural wrap</td>
</tr>
<tr>
<td>24/1457</td>
<td>Metal bands</td>
</tr>
<tr>
<td>24/1459</td>
<td>Separate connections</td>
</tr>
<tr>
<td>24/1461</td>
<td>One piece</td>
</tr>
<tr>
<td>24/1463</td>
<td>Sheet metal</td>
</tr>
<tr>
<td>24/1465</td>
<td>Buckle band connection</td>
</tr>
<tr>
<td>24/1467</td>
<td>Swaged sheet metal band connection</td>
</tr>
<tr>
<td>24/1469</td>
<td>End-to-end integral with band connecting means</td>
</tr>
<tr>
<td>24/1471</td>
<td>Pivoted parts</td>
</tr>
<tr>
<td>24/1473</td>
<td>Wedging parts</td>
</tr>
<tr>
<td>24/1476</td>
<td>Wire</td>
</tr>
<tr>
<td>24/1478</td>
<td>Circumferentially swagged band clamp</td>
</tr>
<tr>
<td>24/148</td>
<td>End-to-end integral band end connection</td>
</tr>
<tr>
<td>24/1482</td>
<td>Ratchet and tool tightened band clamp</td>
</tr>
<tr>
<td>24/1484</td>
<td>Spring closed band clamp</td>
</tr>
<tr>
<td>24/1486</td>
<td>Screw locked band clamp</td>
</tr>
<tr>
<td>24/1488</td>
<td>Swaged to lock band ends</td>
</tr>
<tr>
<td>24/149</td>
<td>Wire</td>
</tr>
<tr>
<td>24/1492</td>
<td>Separate connections</td>
</tr>
<tr>
<td>24/1494</td>
<td>Wire</td>
</tr>
<tr>
<td>24/1496</td>
<td>Wooden bands</td>
</tr>
<tr>
<td>24/1498</td>
<td>Plastic band</td>
</tr>
<tr>
<td>24/15</td>
<td>Bag fasteners</td>
</tr>
<tr>
<td>24/152</td>
<td>Swaged bag tie</td>
</tr>
<tr>
<td>24/153</td>
<td>Plastic band bag tie</td>
</tr>
<tr>
<td>24/155</td>
<td>Resilient slot bag tie</td>
</tr>
<tr>
<td>24/157</td>
<td>Twist-to-close bag tie</td>
</tr>
<tr>
<td>24/158</td>
<td>Slides to lock bag end within housing</td>
</tr>
<tr>
<td>24/16</td>
<td>Belt fasteners</td>
</tr>
<tr>
<td>24/1604</td>
<td>Tighteners</td>
</tr>
<tr>
<td>24/1608</td>
<td>Hinged</td>
</tr>
<tr>
<td>24/1612</td>
<td>Ring connected belt ends</td>
</tr>
<tr>
<td>24/1616</td>
<td>Bent over flanged ends</td>
</tr>
<tr>
<td>24/162</td>
<td>Pintle pin connected belt ends</td>
</tr>
<tr>
<td>24/1624</td>
<td>V and round belts</td>
</tr>
<tr>
<td>24/1628</td>
<td>Overlapped belt ends</td>
</tr>
<tr>
<td>24/1632</td>
<td>Sheet metal knuckles, common pintle</td>
</tr>
<tr>
<td>24/1636</td>
<td>Wire knuckles, common pintle</td>
</tr>
<tr>
<td>24/164</td>
<td>Knuckle integral with belt material</td>
</tr>
<tr>
<td>24/1644</td>
<td>Multiple pintles interconnected V-belt type</td>
</tr>
<tr>
<td>24/1648</td>
<td>Lacing</td>
</tr>
<tr>
<td>24/1652</td>
<td>One piece</td>
</tr>
<tr>
<td>24/1656</td>
<td>Deflecting prong</td>
</tr>
<tr>
<td>24/166</td>
<td>Screw clamp</td>
</tr>
<tr>
<td>24/1664</td>
<td>Splices</td>
</tr>
<tr>
<td>24/1668</td>
<td>Wire</td>
</tr>
<tr>
<td>24/1672</td>
<td>Butt connected belt ends</td>
</tr>
<tr>
<td>24/1676</td>
<td>V, round, trapezoidal belts</td>
</tr>
<tr>
<td>24/168</td>
<td>Flanged belt ends, connector hold ends</td>
</tr>
<tr>
<td>24/1684</td>
<td>Lapped ends of endless belts</td>
</tr>
<tr>
<td>24/1688</td>
<td>Hinged ends of endless belts</td>
</tr>
</tbody>
</table>
Former US Class 24 series

24/1692 . . . Wire strands reinforce belts
24/1694 . . . Hook and loop type fastener and zipper belt end connection
24/17 . . . Buttoners
24/18 . . . Cuff holder
24/181 . . . Adjustable
24/183 . . . Sleeve clasp and button for cuff
24/184 . . . Sleeve clasp and clasp for cuff
24/186 . . . Sleeve clasp and pin for cuff
24/188 . . . Sleeve pin and button for cuff
24/189 . . . Pin fastener
24/19 . . . Necktie fastener
24/1903 . . . Bands
24/1907 . . . End-securing pin
24/191 . . . Gripping
24/1914 . . . Depressors
24/1917 . . . . . . Button engaging
24/1921 . . . . . . Pin or spur
24/1924 . . . Button engaging
24/1928 . . . Adjustable
24/1931 . . . Cord loop
24/1934 . . . Pivoted or sliding jaw
24/1938 . . . Pin attached
24/1941 . . . Collar button combined
24/1945 . . . Clasp attached
24/1948 . . . Pin attached
24/1952 . . . Separable fastener
24/1955 . . . Tie, attached hook
24/1959 . . . Magnetic, adhesive, or snap type fastener connects tie to shirt
24/1962 . . . Tie engaging loop with shirt engaging fastener
24/1966 . . . Tie knot engaging and collar attaching
24/1969 . . . Tie clip and shirt clasp attaching
24/1972 . . . Tie clip and fastening pin
24/1976 . . . Tie pin with shirt fastener
24/1979 . . . Tie stiffener with shirt fastener
24/1983 . . . with pivotal jaws having spring means
24/1986 . . . Slider
24/199 . . . Ornamental
24/1993 . . . Key shaped
24/1997 . . . Resilient clasp
24/20 . . . Paper fastener
24/201 . . . with screw threaded or notch engaging securing means
24/202 . . . Resiliently biased
24/203 . . . including means to open or close fastener
24/204 . . . Pivotally mounted on pintle
24/205 . . . One piece
24/206 . . . Mounted on support means
24/207 . . . Adhesive
24/208 . . . Corner fastened
24/209 . . . Paper-penetrating
24/21 . . . Strap tighteners
24/2102 . . . Cam lever and loop
24/2104 . . . Step adjusted
24/2106 . . . Ski boot and garment fasteners
24/2108 . . . Split ring tighter
24/2109 . . . Chain and rope tighteners
24/2111 . . . Tire chain tighteners
24/2113 . . . Strap tighteners
24/2115 . . . . . . Jewelry
24/2117 . . . Strap tighteners
24/2119 . . . Tie chain tighteners
24/2121 . . . Cargo tie down
24/2123 . . . Cover fasteners
24/2125 . . . Chain tighteners
24/2126 . . . Strap tighter machine
24/2128 . . . toggle actuated sliding jaw
24/213 . . . Jewelry
24/2132 . . . Split ring with tighter
24/2134 . . . Concrete form panels
24/2136 . . . Seat belt buckles
24/2138 . . . Chain, cable, wire tighteners, and anchors
24/214 . . . . . . Envelope fasteners
24/2142 . . . . . . Ski boot and garment fasteners
24/2143 . . . Strap-attached folding lever
24/2145 . . . . . . toggle latch
24/2147 . . . Strap tighter
24/2149 . . . . . . Tire antiskid strap tighter
24/2151 . . . . . . Seat belts
24/2153 . . . Split ring fasteners
24/2155 . . . Jewelry-watch straps
24/2157 . . . Tie downs [covers, articles]
24/2158 . . . . . . Cable, wire, rope tighter
24/216 . . . . . . Ski boot and garment fasteners
24/2162 . . . . . . Dress hem raisers
24/2164 . . . Midline
24/2166 . . . Jewelry
24/2168 . . . . . . Seat belt
24/217 . . . Accordion straps
24/2172 . . . Parallel poles clamp
24/2174 . . . form panels for walls
24/2175 . . . Cargo tie down
24/2177 . . . Chain tighteners
24/2179 . . . Split band with tighter
24/2181 . . . Tire chain tighteners
24/2183 . . . Ski, boot, and shoe fasteners
24/2185 . . . Fixed jaw with sliding or pivoted jaw
24/2187 . . . Rack and pinion and circular tighteners
24/2189 . . . Circular flange container clamp
24/2191 . . . Strap stretching tools, tighteners, and sealers
24/2192 . . . Buckle type
24/2194 . . . Integral piece
24/2196 . . . . . . toggle
24/2198 . . . . . . Stocking top
24/22 . . . Trouser guards, clips, straps [e.g., above shoetops]
24/23 . . . Bedclothes holders
24/24 . . . T-head nongripping, fabric engaging type
24/25 . . . Zipper or required component thereof
24/2502 . . . Plural zippers
24/2504 . . . . . . Zipper chain
24/2505 . . . . . . having surface sealing structure
24/2507 . . . . . . having slider or interconnected sliders with access opening for diverse-art member
24/2509 . . . . . . Plural independently movable sliders
24/2511 . . . . . . with distinct, stationary means for anchoring slider
24/2513 . . . . . . and for aligning surfaces or obstructing slider movement
24/2514 . . . . . . with distinct member for sealing surfaces
24/2516 . . . . . . with distinct separable-fastener
24/2518 . . . having coiled or bent continuous wire
interlocking surface
24/252 . . . with stringer tape interwoven or knitted therewith
24/2521 . . . with stringer tape having specific weave or knit pattern
24/2523 . . . with core encircled by coils or bends
24/2525 . . . with mounting portion having structural formations complementary to stitching
24/2527 . . . Attached by stitching
24/2529 . . . String or stringer tape having distinctive property [e.g., heat sensitive]
24/253 . . . with stringer tape having distinctive property [e.g., heat sensitive]
24/2532 . . . having interlocking surface with continuous cross section
24/2534 . . . Opposed interlocking surface having dissimilar cross section
24/2536 . . . having interlocking surface formed from single member with varying cross section
24/2538 . . . Opposed surface having dissimilar cross section
24/2539 . . . Interlocking surface constructed from plural elements in series
24/2541 . . . having either noninterlocking element in, interrupted, or unequal length series
24/2543 . . . with element structural feature unrelated to interlocking or securing portion
24/2545 . . . Dissimilar opposed elements
24/2546 . . . Wire element
24/2548 . . . Prereacted 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 secured 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
Combined diverse multipart fasteners having adhesive fastener having magnetic fastener connector

Plural fasteners having intermediate flaccid

and pin

and buckle

having separate material adjustment means

having separate disconnect means

Pivotal lever type

having disconnect structure

Resilient cooperating means

and pin

Crossed belt accommodating

and clasp

and hook

having disconnect means

having penetrating prong

Buckle having plural receiving slots

including a button fastening element

and separable fastening means for attached fastener

Snap fastener

having roller means

Clasp

having pivoted members

Cam type member

Plural clasps

and toggle operator

Spring biased

Coil

and cam

Coil spring biased

Plural clasps

Resilient type clasp

and cam

Spring biased jaw

Circular work engageable

and pin attachment

and disconnect means

including a button fastening element

and hook

having intermediate connector allowing movement

and adjustment means

having gripping configuration on clasp jaw

Penetrating type

having cam

having separable jaws

and penetrating prong

and pin

having separate pin loss prevention means

Pin coextensive, coplanar, and contiguous with clasp jaw

Pin coextensive, coplanar, and contiguous with clasp jaw

Pin forms part of clasp jaw
24/3668 . . Spiral fastener
24/367 . . Covers
24/3672 . . Metal or plastic caps
24/3674 . . Pads
24/3677 . . Flexible button
24/3679 . . Swivel button
24/3681 . . Tufting type
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
24/3696 . . for cuff or collar
24/3698 . . Fabric embracing
24/37 . . Drawstring, laced-fastener, or separate essential cooperating device therefor
24/3703 . . Includes separate device for holding drawn portion of lacing
24/3705 . . Device engages tie in lacing
24/3708 . . and fully covers tie
24/3711 . . Device engages element or formation on lacing
24/3713 . . having relatively movable holding components or surfaces
24/3716 . . with pivotal connection therebetween
24/3718 . . with integral resilient linking structure therebetween
24/3721 . . . formed from wire
24/3724 . . . having lacing wound thereabout or wedged therein
24/3726 . . with holding means fixedly mounted on lacing
24/3729 . . and forming lacing tips
24/3732 . . Includes lacing holding structure within directing means therefor
24/3734 . . having diverse shaped directing means for lacing
24/3737 . . having lacing directing means in particular pattern
24/3739 . . Includes lacing guiding roller within directing means
24/3742 . . having eyelet type directing means
24/3745 . . with permanently deformed mounting structure
24/3747 . . Mounting structure formed from different material than directing passage
24/375 . . having hook shaped directing means
24/3753 . . and movable component or surface for closing throat
24/3755 . . Mounted by structure allowing bodily movement thereof
24/3758 . . formed from wire
24/3761 . . with mounting structure formed from different material
24/3763 . . with permanently deformed mounting structure
24/3766 . . Expanding stud
24/3768 . . having loop or sleeve shaped directing means
24/3771 . . Entirely formed from flaccid material
24/3774 . . Mounted by structure allowing bodily movement thereof
24/3776 . . formed from wire
24/3779 . . with permanently deformed mounting structure
24/3782 . . Loop or sleeve closed when mounted
24/3784 . . Expanding stud
24/3787 . . having elastic segment in lacing
24/3789 . . having means covering tip of lacing
24/3792 . . Tasseled
24/3795 . . with plural components
24/3797 . . with permanently deformed mounting structure
24/38 . . Strap cable or pipe button
24/39 . . Cord and rope holders
24/3902 . . Chain
24/3904 . . Bead chain fasteners
24/3907 . . Sheathed strand
24/3909 . . Plural-strand cord or rope
24/3911 . . Friction disk
24/3913 . . Knot engaging
24/3916 . . One-piece
24/3918 . . . Wedge slot
24/392 . . . Wire
24/3922 . . . Cord runs through center of coil
24/3924 . . . Sheet material
24/3927 . . . Slack adjuster
24/3929 . . . Rubber
24/3931 . . . Wire
24/3933 . . . Swagged, deformable
24/3936 . . . Pivoted part
24/3938 . . . Lever tension
24/394 . . . Cam lever
24/3942 . . . Laterally shifted rope
24/3944 . . . Cam engaging or disengaging
24/3947 . . . Fixed and movable jaws, movable jaw pulled
24/3949 . . . Link-connected parallel jaws
24/3951 . . . Dual cam
24/3953 . . . Pivotal means with plate aperture
24/3956 . . . Jaws locked together by cam, wedge, lever, or screw
24/3958 . . . Screw clamp
24/396 . . . Screw clamp with snubber
24/3962 . . . Tangential bolt
24/3964 . . . J-shaped bolt
24/3967 . . . Bolt perpendicular to cable axis
24/3969 . . . Sliding part or wedge
24/3971 . . . Rope looped about movable member
24/3973 . . . Rope clamped between cone and socket
24/3976 . . . Sliding ball
24/3978 . . . Screw actuated
24/398 . . . Bendable, ductile
24/3982 . . . Safety release
24/3984 . . . Alignable aperture and spring pressed moving element
24/3987 . . . Loop, adjustable
24/3989 . . . Snubbers, cleats by dielectric loss
24/3991 . . . Loop engaging
24/3993 . . . Ball or roller
24/3996 . . . Sliding wedge
24/3998 . . . Helical preform
24/40 . . . Buckles
24/4002 . . . Harness
24/4005 . . . Combined buckles and snap hooks
24/4007 . . . Lock
24/4009 . . . Key
24/4012 . . . Clamping
24/4014 . . . One-piece
24/4016 . . . Pivoted part or lever
24/4019 . . . Sliding part or wedge
24/4021 . . . Cross bails
24/4023 . . . . Pivot ed stud plate
24/4026 . . . Rigid stud
24/4028 . . . Penetrating tongue
24/403 . . . Guarded
24/4033 . . . One-piece
24/4035 . . . Multiple
24/4037 . . . Pivot ed
24/404 . . . . . Lever actuated
24/4042 . . . . Stud
24/4044 . . . Sliding part or wedge
24/4047 . . . Strap loops and attaching devices
24/4049 . . . Loop shields
24/4051 . . . Garment shielded
24/4053 . . . Combined pressure bar and guard
24/4056 . . . Hook attached
24/4058 . . . Penetrating prong
24/406 . . . One-piece
24/4063 . . . Hook attached
24/4065 . . . Pivot ed
24/4067 . . . Hook attached
24/407 . . . Slide
24/4072 . . . Pivot ed lever
24/4074 . . . Hook attached
24/4077 . . . Looped strap
24/4079 . . . Sliding part of wedge
24/4081 . . . Hook attached
24/4084 . . . Looped strap
24/4086 . . . Looped strap
24/4088 . . . One-piece
24/4091 . . . Hook attached
24/4093 . . . Looped strap
24/4095 . . . Fabric covered
24/4098 . . . Ornamental and/or object supported
24/41 . . . Pierced earring fastener
24/42 . . . Independent, headed, aperture pass-through fastener
24/43 . . . Fastener with revolving component wrapping structure-to-be-secured about fastener
24/44 . . . Clasp, clip, support-clamp, or required component thereof
24/44009 . . . Gripping member adapted for tool actuation or release
24/44017 . . . with specific mounting means for attaching to rigid or semirigid supporting structure or structure-to-be-secured
24/44026 . . . for cooperating with aperture in supporting structure or structure-to-be-secured
24/44034 . . . Dissociable gripping members
24/44043 . . . Channel and inserted bar
24/44051 . . . having operator or locking means
24/4406 . . . Resilient channel or bar
24/44068 . . . having gripping member actuated by fluid force
24/44077 . . . having inserted and receiving interlocking members connected by bendable, nonbiasing strap
24/44085 . . . Discrete flaccid strap
24/44094 . . . with distinct means for preventing separation of members
24/44103 . . . Slidably mounted
24/44111 . . . with separate flaccid flap or pocket for protecting structure-to-be-secured

24/4412 . . . . with separate, cavity-blocking gate on receiving member
24/44128 . . . Resilient inserted or receiving member
24/44137 . . . Inserted or receiving member substantially covered or coated for protection or to promote gripping
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
24/44188 . . . . having wedge shaped, inserted and receiving members
24/44197 . . . . with specific means for attaching to flaccid strap or supporting strap
24/44205 . . . . On the inserted member
24/44214 . . . . having necked button sliding along length of closed, variable width loop
24/44222 . . . having flaccid gripping member
24/44231 . . . . formed from elastic material
24/44239 . . . . Encircling gripping member including semirigid band and operator for tightening
24/44248 . . . . Encircling gripping member including semirigid band and means for adjusting girth
24/44256 . . . . with specifically shaped, nongripping, rigid structure for connecting independently operable clasps, clips, or support-clamps
24/44265 . . . . Gripping member face integral with or rigidly affixed to screw-driving portion
24/44274 . . . . having either discrete flaccid or thin, nonbiasing, integral, connecting hinge
24/44282 . . . . having equally spaced or continual gripping faces revolving about central axis
24/44291 . . . including pivoted gripping member
24/44299 . . . . Pivot ed member also slides
24/44308 . . . . Tapered face
24/44316 . . . . Pivoting gripping member either supports or coacts with sliding engaging face
24/44325 . . . . having three or more pivotally connected gripping members
24/44333 . . . . having toggle operator for moving
24/44342 . . . . having rigid linking arm pivotally connected to each gripping member
24/4435 . . . . with extended lever portion
24/44359 . . . . having lever end modified for attachment to support
24/44368 . . . . Pivot ed gripping member applies camming force
24/44376 . . . . Spring or resiliently biased about pivot
24/44385 . . . . Distinct spring
24/44393 . . . . Attached solely by spring
24/44402 . . . . with operator for moving pivoted member
24/4441 . . . . . Camming or wedging element
24/44419 . . . . . Pivoted or rotated element
24/44427 . . . . . with position locking-means for gripping members
24/44436 . . . . including pivoted arm
24/44444 . . . . having specific surface material or irregularity on or along engaging face
24/44453 . . . . having specific handle structure
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24/4462 . . . . . . Coilspring
24/4447 . . . . . . having coil portion coaxial or parallel with pivotal axis
24/44479 . . . . . . Flat or leaf spring
24/44487 . . . . . . Closed by gravity or weight of structure-to-be-secured
24/44496 . . . . . . with operator means for moving pivoted member
24/44504 . . . . . . Threaded cylindrical rod and mating cavity
24/44513 . . . . . . Camming or wedging element
24/44521 . . . . . . Pivoted or rotated element
24/4453 . . . . . . with position locking-means for gripping members
24/44538 . . . . . . Integral locking-means
24/44547 . . . . . . having inserted and receiving interlocking engaging faces
24/44556 . . . . . . Resilient gripping member
24/44564 . . . . . . having specific surface material or irregularity on or along engaging face
24/44573 . . . . . . including track or way guided and retained gripping member
24/44581 . . . . . . Biased by distinct spring
24/4459 . . . . . . with operator for moving guided member
24/44598 . . . . . . Threaded cylindrical rod and mating cavity
24/44607 . . . . . . Track or way oblique to path of gripping member
24/44615 . . . . . . with position locking-means for gripping members
24/44624 . . . . . . Integral locking-means
24/44632 . . . . . . with specific mounting means for attaching to flaccid supporting structure or structure-to-be-secured
24/44641 . . . . . . having gripping member formed from, biased by, or mounted on resilient member
24/4465 . . . . . . Integrally combined, independently operable, diverse clasps, clips, or support-clamps
24/44569 . . . . . . with specific means for mounting to flaccid supporting structure or structure-to-be-secured
24/44667 . . . . . . Mounting means made entirely from integral wire portion of resilient gripping member
24/44675 . . . . . . Wire coiled about flaccid supporting structure
24/44684 . . . . . . with operator for moving biased engaging face
24/44692 . . . . . . Camming or wedging element
24/44701 . . . . . . Encircling sleeve type element
24/44709 . . . . . . Pivoted or rotated element
24/44718 . . . . . . Element pivots or rotates in plane parallel to plane bisecting opposed engaging faces
24/44726 . . . . . . Elongated element with pivot between cam and handle portions
24/44735 . . . . . . for moving engaging face of U-shaped gripping member
24/44744 . . . . . . with position locking-means for engaging faces
24/44752 . . . . . . Integral locking-means
24/44761 . . . . . . Pivoted lock member
24/44769 . . . . . . Opposed engaging faces on gripping member formed from single piece of resilient material
24/44778 . . . . . . Piece totally forms clasp, clip, or support-clamp and has shaped, wirelike, or bandlike configuration with uniform cross section throughout its length
24/44786 . . . . . . Opposed faces located in and bias towards common plane in nonuse position
24/44795 . . . . . . Resilient gripping member having tightly twisted portion
24/44803 . . . . . . Resilient gripping member having coiled portion
24/44812 . . . . . . Convolutions of coil form faces
24/44821 . . . . . . Relatively movable segments of resilient gripping member and cross in nonuse position
24/44829 . . . . . . Segments form opposed engaging faces
24/44838 . . . . . . having specific handle structure
24/44846 . . . . . . having specific handle structure
24/44855 . . . . . . Terminal end of resilient member having engagement or disengagement enhancing structural modifications
24/44863 . . . . . . having specific surface irregularity on or along engaging face
24/44872 . . . . . . having specific handle structure
24/4488 . . . . . . Movable attached to gripping member
24/44889 . . . . . . Interlocking faces
24/44897 . . . . . . with reinforcing member
24/44906 . . . . . . having specific surface irregularity on or along engaging face
24/44915 . . . . . . Corrugated or toothed face
24/44923 . . . . . . Clasp, clip, or support-clamp cut or shaped from a single sheet of resilient, uniformly thick, planar material
24/44932 . . . . . . having specific surface material or irregularity on or along engaging face
24/4494 . . . . . . having specific handle structure
24/44949 . . . . . . including resilient biasing wire
24/44957 . . . . . . Coiled wire
24/44966 . . . . . . having gripping member shifted by operator
24/44974 . . . . . . Threaded cylindrical rod and mating cavity
24/44983 . . . . . . formed from single rigid piece of material
24/44991 . . . . . . having specific surface irregularity on or along engaging face
24/45 . . . . . . Separable-fastener or required component thereof [e.g., projection and cavity to complete interlock]
24/45005 . . . . . . with third detached member completing interlock [e.g., hook type]
24/4501 . . . . . . Quick connect or release [e.g., spring and detent]
24/45016 . . . . . . for jewelry
24/45021 . . . . . . including eyelet [e.g., shoes]
24/45026 . . . . . . for key holder
24/45031 . . . . . . for tire chain, strap, etc. [e.g., rotatable or sliding spring gate]
24/45037 . . . . . . for apparel and related accessories
24/45042 . . . . . . Button, button related
24/45047 . . . . . . Snap [e.g., key hole type]
24/45052 . . . . . . Post and receiver [e.g., pin and slot]
24/45058 . . . . . . Hook [e.g., within cavity]
24/45063 . . . . . . Belt, strap, etc. [e.g., buckle or snap fastener]
24/45068 . . . . . . Glove
24/45073 . . . . . . Purse, wallet, etc.
24/45079 . . . . . . Belt, strap, harness, etc.
24/45084 . . . . . . for safety belt buckle, strap, harness, etc.
24/45089 . . . . . . Sliding or rotating element
24/45094 . . . . . . Element having key slot
24/45099 . . . . . . Resilient element [e.g., snap type]
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24/45105 . . . . . . for upholstery, panel, trim strip, etc. [e.g., spring biased]
24/4511 . . . . . . Link with pivoted gate
24/45115 . . . . . . Hook
24/4512 . . . . . . Snap with spring bias [e.g., gate]
24/45126 . . . . . . for connecting chains [e.g., opposed pivoted hook]
24/45131 . . . . . . for heavy load bearing device [e.g., chain, rope, cable, etc.]
24/45136 . . . . . . Haim, harness, whiffletree, rein, etc.
24/45141 . . . . . . for chain, rope, cable, etc.
24/45147 . . . . . . Coupler with sliding socket to complete interlock
24/45152 . . . . . . Each mating member having similarly shaped, sized, and operated interlocking or intermeshable face
24/45157 . . . . . . Zipper-type [e.g., slider]
24/45162 . . . . . . for garment [e.g., with ribs and grooves interlocking elements]
24/45168 . . . . . . for container [e.g., bag]
24/45173 . . . . . . Resilient element
24/45178 . . . . . . Snap [e.g., identical elements]
24/45183 . . . . . . Clasp [e.g., spring type]
24/45188 . . . . . . for jewelry [e.g., buckle type]
24/45194 . . . . . . for belt or strap
24/45199 . . . . . . Hook
24/45204 . . . . . . for belt, strap, etc. [e.g., with pivoted gate locking member]
24/45209 . . . . . . for apparel
24/45215 . . . . . . Slot and tab or tongue
24/4522 . . . . . . Sliding or rotating element
24/45225 . . . . . . including member having distinct formations and mating member selectively interlocking therewith
24/4523 . . . . . . Hook
24/45236 . . . . . . Multiple catch [e.g., with pivoted gate]
24/45241 . . . . . . Slot and tab or tongue
24/45246 . . . . . . having teeth or serrations [e.g., sliding with respect to each other]
24/45251 . . . . . . Resilient element [e.g., with spring]
24/45257 . . . . . . Snap with cavity
24/45262 . . . . . . Pin, post and receiver
24/45267 . . . . . . Notched clasp [e.g., with receiving slot]
24/45272 . . . . . . Projection passes through cavity then moves toward noninserted portion of its member to complete interlock [e.g., snap hook]
24/45277 . . . . . . Entire projection member forms loop or ring when interlocked
24/45283 . . . . . . Includes slidable gate closing entrance throat
24/45288 . . . . . . Hook type projection member
24/45293 . . . . . . Plural hooks entering opposite sides of same cavity
24/45298 . . . . . . Hooks formed solely from wire
24/45304 . . . . . . Noninserted portion of projection member includes movably connected gate for closing access throat
24/45309 . . . . . . Threaded gate
24/45314 . . . . . . Revolvably mounted disc shaped gate
24/45319 . . . . . . Pivotally connected gate
24/45325 . . . . . . Gate swings transversely to plane of hook
24/4533 . . . . . . Gate also slides relative to pivot
24/45335 . . . . . . having means biasing gate about pivot
24/4534 . . . . . . and position locking-means for gate
24/45346 . . . . . . Includes distinct biasing spring
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
24/45408 . . . . . . Resilient, self-biased gate
24/45414 . . . . . . with position locking-means for gate
24/45419 . . . . . . Gate and hook formed from plastic
24/45424 . . . . . . Gate and hook formed solely from wire
24/45429 . . . . . . Gate and hook formed from single piece of sheet metal
24/45435 . . . . . . Projection pivotally attached to shank or mounting structure
24/4544 . . . . . . Projection slidably attached to shank or mounting structure
24/45445 . . . . . . Projection self-biased towards shank or mounting structure
24/4545 . . . . . . and formed solely from wire
24/45455 . . . . . . Cooperating with relatively stationary wire gate
24/45461 . . . . . . Interlocking portion actuated or released responsive to preselected condition [e.g., heat, pressure]
24/45466 . . . . . . having electric or fluid powered, actuation or release, of interlock
24/45471 . . . . . . Projection having movable connection between components thereof or variable configuration
24/45476 . . . . . . with additional, similar projection for engaging different cavity
24/45482 . . . . . . and operator therefor
24/45487 . . . . . . including camming or wedging element on projection member
24/45492 . . . . . . Pivoting attached element
24/45497 . . . . . . including pivotal connection between projection components
24/45503 . . . . . . Component slides relative to connection
24/45508 . . . . . . and spring or resilient extension biasing about pivot
24/45513 . . . . . . including slidably guided connection between nonself-biasing projection components
24/45518 . . . . . . and distinct spring biasing component
24/45524 . . . . . . including resiliently biased projection component or surface segment
24/45529 . . . . . . Requiring manual force applied against bias to interlock or disengage
24/45534 . . . . . . having connected leading edge and separated trailing arms
24/45539 . . . . . . Cooperating with cavity having side walls and axially biased component capping end
24/45545 . . . . . . . . . forming total external surface of projection
24/4555 . . . . . . . . . and encircling hollow central area
24/45555 . . . . . . . . . having separate mounting means inserted into area
24/4556 . . . . . . . . . Plastic deformation of means or surface required for mounting
24/45565 . . . . . . . . . having separate mounting means encompassing cross section of projection
24/45571 . . . . . . . . . having dome-shaped head and expansion slit along side
24/45576 . . . . . . . . . and connected surface at tip of head
24/45581 . . . . . . . . . having inserted end formed by oppositely biased surface segments
24/45586 . . . . . . . . . Constructed from wire
24/45592 . . . . . . . . . having both resiliently biased and rigid components forming external surface of projection
24/45597 . . . . . . . . . Projection member including noninserted spring for engaging and pushing against receiving member
24/45602 . . . . . . . . . Receiving member includes either movable connection between interlocking components or variable configuration cavity
24/45607 . . . . . . . . . with additional cavity for engaging different projection
24/45613 . . . . . . . . . having common means actuating or releasing interlocking components or surfaces
24/45618 . . . . . . . . . and interlocking with independently associated or dissociated projection members
24/45623 . . . . . . . . . and operator therefor
24/45628 . . . . . . . . . for plural, oppositely shifting, similar interlocking components or segments
24/45634 . . . . . . . . . Operator includes camming or wedging element
24/45639 . . . . . . . . . including pivotally connected element on receiving member
24/45644 . . . . . . . . . for shifting pivotally connected interlocking component
24/45649 . . . . . . . . . Element and component pivot about same axis
24/45654 . . . . . . . . . for shifting slidably connected and guided, nonself-biasing interlocking component
24/4566 . . . . . . . . . including slidably connected and guided element on receiving member
24/45665 . . . . . . . . . for shifting pivotally connected interlocking component
24/4567 . . . . . . . . . for shifting slidably connected and guided, nonself-biasing, interlocking component
24/45675 . . . . . . . . . having pivotally connected interlocking component
24/45681 . . . . . . . . . Blocking removal of formation on projection from complementary formation on side wall of cavity
24/45686 . . . . . . . . . and position locking-means therefor
24/45691 . . . . . . . . . and relatively movable handle therefor
24/45696 . . . . . . . . . Requiring manual force thereon to interlock or disengage
24/45702 . . . . . . . . . Plural, oppositely shifting, similar interlocking components
24/45707 . . . . . . . . . having aperture therein alignable with parallel access opening
24/45712 . . . . . . . . . having interlocking portion thereof housed continuously within cavity
24/45717 . . . . . . . . . having cavity with side walls and axially biased component capping end
24/45723 . . . . . . . . . having slidably connected, nonself-biasing interlocking component
24/45728 . . . . . . . . . Blocking removal of formation on projection from complementary formation on side wall of cavity
24/45733 . . . . . . . . . and position locking-means therefor
24/45738 . . . . . . . . . and relatively movable handle therefor
24/45743 . . . . . . . . . Requiring manual force thereon to interlock or disengage
24/45749 . . . . . . . . . Plural, oppositely shifting, similar interlocking components
24/45754 . . . . . . . . . having closed aperture therethrough alignable with parallel access opening
24/45759 . . . . . . . . . having flaccid component defining access opening of cavity
24/45764 . . . . . . . . . Component formed solely by flaccid cord
24/4577 . . . . . . . . . with nonflaccid component
24/45775 . . . . . . . . . having resiliently biased interlocking component or segment
24/4578 . . . . . . . . . Cavity or projection rotates about axis of cavity to dissociate
24/45785 . . . . . . . . . Requiring manual force applied against bias to interlock or disengage
24/45791 . . . . . . . . . and partially blocking separate, nonresilient access opening of cavity
24/45796 . . . . . . . . . and closed elongated access opening for guiding transverse projection travel after insertion
24/45801 . . . . . . . . . Nonresilient walls define opening
24/45806 . . . . . . . . . formed from wire
24/45812 . . . . . . . . . and access opening with gapped perimeter for allowing movement of noninserted projection support therepast
24/45817 . . . . . . . . . Cavity constructed solely from wire
24/45822 . . . . . . . . . Partially blocking separate, nonresilient, access opening of cavity
24/45827 . . . . . . . . . and bodily shifted into or out of interlock location by manual force thereon
24/45832 . . . . . . . . . formed from wire
24/45838 . . . . . . . . . having curved or bent engaging section conforming to contour of projection
24/45843 . . . . . . . . . . Similar, distinct sections
24/45848 . . . . . . . . . having distinct sections engaging projection at spaced points
24/45853 . . . . . . . . . including separate, nonprojection-engaging spring for biasing
24/45859 . . . . . . . . . Biased component or segment entirely formed from wire
24/45864 . . . . . . . . . having portion of cavity deformed during mounting
24/45869 . . . . . . . . . and cooperating with separate mounting component
24/45874 . . . . . . . . . having axially extending expansion slit along side of cavity
24/4588 . . . . . . . . . Means for mounting projection or cavity portion
24/45885 . . . . . . Allows bodily movement facilitating interlock
24/4589 . . . . . . About pivotal connection
24/45895 . . . . . . Includes resilient component separate from portion
24/45901 . . . . . . Allows relocation of portion
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
24/45942 . . . . . . having threaded formation
24/45948 . . . . . . having specific structure for cooperating with stitching
24/45953 . . . . . . having shape facilitating impaling of mounting surface
24/45958 . . . . . . Plural distinct cavities or projections
24/45963 . . . . . . Hook type
24/45969 . . . . . . Hook-shaped projection member passing through cavity
24/45974 . . . . . . formed from single piece of sheet metal
24/45979 . . . . . . formed solely from wire
24/45984 . . . . . . Cavity having specific shape
24/4599 . . . . . . including closed elongated access opening for guiding transverse projection travel after insertion
24/45995 . . . . . . having access opening with gapped perimeter for allowing movement of noninserted projection support therepast
24/46 . . . . . Pin or separate essential cooperating device therefor
24/4602 . . . . . with separately operable, manually releasable, nonpenetrating means for mounting [e.g., drapery hook]
24/4604 . . . . . having distinct guiding, holding, or protecting means for penetrated portion
24/4605 . . . . . Means detachable from or flaccidly connected to pin [e.g., hatpin type]
24/4607 . . . . . for pin having plural penetrating portions
24/4609 . . . . . including relatively movable guiding, holding, or protecting components or surfaces
24/4611 . . . . . having operator for moving holding component or surface
24/4613 . . . . . Moves pivoting holding component
24/4614 . . . . . Moves slidably guided, nonself-biasing, holding component
24/4616 . . . . . having pierceable [e.g., cork] or naturally resilient [e.g., rubber] surfaces
24/4618 . . . . . with pivotal connection therebetween
24/462 . . . . . with slidable connection between nonself-biasing components
24/4621 . . . . . having resiliently biased component or surface
24/4623 . . . . . Coiled about longitudinal axis of held portion
24/4625 . . . . . and aperture therein alignable with another spaced aperture of means
24/4627 . . . . . . and nonresilient structure for guiding portion thereto
24/4629 . . . . . . including structure for cooperating with formation [e.g., cavity] formed on penetrating portion
24/463 . . . . . for pin having plural penetrating portions
24/4632 . . . . . Each independently movable towards and into cooperation with means
24/4634 . . . . . including relatively movable guiding, holding, or protecting components or surfaces
24/4636 . . . . . with connection allowing component to rotate about axis of held penetrating portion
24/4638 . . . . . with pivotal connection therebetween
24/4639 . . . . . having position locking means therefor
24/4641 . . . . . Spring or resiliently biased
24/4643 . . . . . with slidable connection between nonself-biasing components
24/4645 . . . . . Component slides parallel to axis of held penetrating portion
24/4646 . . . . . Means engages formation formed on penetrating portion
24/4648 . . . . . having nonresilient and resilient components
24/465 . . . . . Means formed from single resilient wire
24/4652 . . . . . Means formed from resilient sheet metal
24/4654 . . . . . with independent, spaced, intermediate connections, or formations [e.g., coils], about which portion or means move
24/4655 . . . . . Includes slidable connection
24/4657 . . . . . with pivotal connection between penetrating portion and means
24/4659 . . . . . Connection also permits sliding movement
24/4661 . . . . . Resiliently biased about connection
24/4663 . . . . . with slidable connection intermediate penetrating portion and means
24/4664 . . . . . having resilient bridging structure between portion and means
24/4666 . . . . . Means includes structure for cooperating with formation [e.g., cavity] formed on portion
24/4668 . . . . . and penetrating portion formed from wire
24/467 . . . . . Bridging structure includes elongated nonwire element
24/4671 . . . . . Wire also forms coiled bridging structure about which portion moves
24/4673 . . . . . including distinct device for cooperating with coil
24/4675 . . . . . having means also formed from same wire
24/4677 . . . . . with cavity for guiding structure-to-be-secured towards penetrating portion [e.g., stocking support]
24/4679 . . . . . having penetrating portion retractable or of changeable length
24/468 . . . . . having interconnected distinct penetrating portions
24/4682 . . . . . Connection allows movement therebetween
24/4684 . . . . . Slidable connection
24/4686 . . . . . Resilient connection
24/4688 . . . . . formed from common wire
24/4689 . . . . . and pointing in same direction
24/4691 . . . . . Penetrating portion includes relatively movable structure for resisting extraction
Former US Class 24 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 making
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
29/42 . 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-blank stripper
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
Method of mechanical manufacture

Form or holder

Edge-roll forming

Cover stretching

Burnishing

Heated burnishing member

Burnishing tool reciprocates across work surface

Continuous feed

by shot peening or blasting

Upolstered article making

Method

Tufting

with means to clench fastener

with means to insert guide pin or fastener

Cover stretching

Edge-roll forming

form or holder

with follower

Method of mechanical manufacture

Electric device making

including measuring or testing of device or component part

Acoustic transducer

Indicating transducer

Dynamoelectric machine

Commutator or slip ring assembly

Rotor

Superconductor

Antenna or wave energy "plumbing" making

with other electrical component

Electromagnet, transformer or inductor

Magnetic recording reproducing transducer [e.g., tape head, core, etc.]

including disassembly step

Making disc drive

Mounting preformed head/core onto other structure

Mounting multitrack head

with bonding

Fabricating head structure or component thereof

Treating to affect magnetic properties

including measuring or testing

Using reference point/surface to facilitate measuring

with dual gap materials

with significant slider/housing shaping or treating

Depositing magnetic layer or coating

Plural magnetic deposition layers

with etching or machining of magnetic material

Machining magnetic material [e.g., grinding, etching, polishing]

Employing workholding means

by etching

Multitrack heads having integral holding means

with bond/laminating preformed parts, at least two magnetic

Using glass bonding material

with work positioning means

Providing winding

Multilayered winding

by coating

Preformed winding

Specified diverse magnetic materials

Data storage inductor or core

by winding or coiling

by assembling coil and core

including permanent magnet or core

From comminuted material

Laminated

Acoustic transducer

Resistor making

Heater type

Thermally variable

with envelope or housing

Filling with powdered insulation

with direct compression of powdered insulation

Powdering the insulation

by oxidation

with winding

Applying terminal

Coating resistive material on a base

Applying terminal

Strain gauge making

Switch making

Fuse making

Electric battery cell making

including sealing

including laminating of indefinite length material

including adhesively bonding

including coating or impregnating

Conductor or circuit manufacturing

Brush

Beam lead frame or beam lead device

Co-axial cable

On flat or curved insulated base, e.g., printed circuit, etc.

Assembling bases

Assembling formed circuit to base

Assembling to base an electrical component, e.g., capacitor, etc.

by utilizing optical sighting device

with component orienting

and shaping, e.g., cutting or bending, etc.

Different components

by inserting component lead or terminal into base aperture

with deforming of lead or terminal

including metal fusion

by metal fusion

with encapsulating, e.g., potting, etc.

Assembling terminal to base
29/49149 . . . . . . . . . . . by metal fusion bonding
29/49151 . . . . . . . . . . . by deforming or shaping
29/49153 . . . . . . . . . . . with shaping or forcing terminal into base aperture
29/49155 . . . . . . . . . . . Manufacturing circuit on or in base
29/49156 . . . . . . . . . . . with selective destruction of conductive paths
29/49158 . . . . . . . . . . . with molding of insulated base
29/4916 . . . . . . . . . . . Simultaneous circuit manufacturing
29/49162 . . . . . . . . . . . by using wire as conductive path
29/49163 . . . . . . . . . . . with sintering of base
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
29/49171 . . . . . . . . . . . with encapsulating
29/49172 . . . . . . . . . . . by molding of insulating material
29/49174 . . . . . . . . . . . Assembling terminal to elongated conductor
29/49176 . . . . . . . . . . . with molding of electrically insulating material
29/49178 . . . . . . . . . . . by shrinking of cover
29/49179 . . . . . . . . . . . by metal fusion bonding
29/49181 . . . . . . . . . . . by deforming
29/49183 . . . . . . . . . . . of ferrule about conductor and terminal
29/49185 . . . . . . . . . . . of terminal
29/49187 . . . . . . . . . . . with forming eyelet from elongated conductor
29/49188 . . . . . . . . . . . with penetrating portion
29/4919 . . . . . . . . . . . Through insulation
29/49192 . . . . . . . . . . . with insulation removal
29/49194 . . . . . . . . . . . Assembling elongated conductors, e.g., splicing, etc.
29/49195 . . . . . . . . . . . with end-to-end orienting
29/49197 . . . . . . . . . . . including fluid evacuating or pressurizing
29/49199 . . . . . . . . . . . including deforming of joining bridge
29/49201 . . . . . . . . . . . with overlapping orienting
29/49202 . . . . . . . . . . . including oppositely facing end orienting
29/49204 . . . . . . . . . . . Contact or terminal manufacturing
29/49206 . . . . . . . . . . . by powder metallurgy
29/49208 . . . . . . . . . . . by assembling plural parts
29/4921 . . . . . . . . . . . with bonding
29/49211 . . . . . . . . . . . of fused material
29/49213 . . . . . . . . . . . Metal
29/49215 . . . . . . . . . . . by impregnating a porous mass
29/49217 . . . . . . . . . . . by elastic joining
29/49218 . . . . . . . . . . . with deforming
29/4922 . . . . . . . . . . . with molding of insulation
29/49222 . . . . . . . . . . . forming array of contacts or terminals
29/49224 . . . . . . . . . . . with coating
29/49226 . . . . . . . . . . . Electret making
29/49227 . . . . . . . . . . . Insulator making
29/49229 . . . . . . . . . . . Prime mover or fluid pump making
29/49231 . . . . . . . . . . . I.C. [internal combustion] engine making
29/49233 . . . . . . . . . . . Repairing, converting, servicing or salvaging
29/49234 . . . . . . . . . . . Rotary or radial engine making
29/49236 . . . . . . . . . . . Fluid pump or compressor making
29/49238 . . . . . . . . . . . Repairing, converting, servicing or salvaging
29/4924 . . . . . . . . . . . Scroll or peristaltic type
29/49242 . . . . . . . . . . . Screw or gear type, e.g., Moineau type
29/49243 . . . . . . . . . . . Centrifugal type
29/49245 . . . . . . . . . . . Vane type or other rotary, e.g., fan
29/49247 . . . . . . . . . . . Valve lifter making
29/49249 . . . . . . . . . . . Piston making
29/4925 . . . . . . . . . . . Repairing, converting, servicing or salvaging
29/49252 . . . . . . . . . . . Multi-element piston making
29/49254 . . . . . . . . . . . Utilizing a high energy beam, e.g., laser, electron beam
29/49256 . . . . . . . . . . . with assembly or composite article making
29/49258 . . . . . . . . . . . with thermal barrier or heat flow provision
29/49259 . . . . . . . . . . . with fiber reinforced structure
29/49261 . . . . . . . . . . . by composite casting or molding
29/49263 . . . . . . . . . . . by coating or cladding
29/49265 . . . . . . . . . . . Ring groove forming or finishing
29/49266 . . . . . . . . . . . Gudgeon pin, wrist pin, piston pin, or boss therefor
29/49268 . . . . . . . . . . . with other attaching provision for connecting rod
29/4927 . . . . . . . . . . . Cylinder, cylinder head or engine valve sleeve making
29/49272 . . . . . . . . . . . with liner, coating, or sleeve
29/49274 . . . . . . . . . . . Piston ring or piston packing making
29/49275 . . . . . . . . . . . including forging or hammering
29/49277 . . . . . . . . . . . including casting or molding
29/49279 . . . . . . . . . . . including rolling or die forming, e.g., drawing, punching
29/49281 . . . . . . . . . . . including coating or plating
29/49282 . . . . . . . . . . . including grinding or honing
29/49284 . . . . . . . . . . . including machining or angular cutting
29/49286 . . . . . . . . . . . Crankshaft making
29/49288 . . . . . . . . . . . Connecting rod making
29/4929 . . . . . . . . . . . including metallurgical bonding
29/49291 . . . . . . . . . . . including metal forging or die shaping
29/49293 . . . . . . . . . . . Camshaft making
29/49295 . . . . . . . . . . . Push rod or rocker arm making
29/49297 . . . . . . . . . . . Seal or packing making
29/49298 . . . . . . . . . . . Poppet or I.C. engine valve or valve seat making
29/493 . . . . . . . . . . . Valve guide making
29/4930 . . . . . . . . . . . Repairing, converting, servicing or salvaging
29/49304 . . . . . . . . . . . Valve tappet making
29/49306 . . . . . . . . . . . Valve seat making
29/49307 . . . . . . . . . . . Composite or hollow valve stem or head making
29/49309 . . . . . . . . . . . including forging
29/49311 . . . . . . . . . . . including extruding
29/49313 . . . . . . . . . . . including casting
29/49314 . . . . . . . . . . . with assembly or composite article making
29/49316 . . . . . . . . . . . Impeller making
29/49318 . . . . . . . . . . . Repairing or disassembling
29/4932 . . . . . . . . . . . Turbomachine making
29/49321 . . . . . . . . . . . Assembling individual fluid flow interacting members, e.g., blades, vanes, buckets, on rotary support member
29/49323 . . . . . . . . . . . Assembling fluid flow directing devices, e.g., stators, diaphragms, nozzles
29/49325 . . . . . . . . . . . Shaping integrally bladed rotor
29/49327 . . . . . . . . . . . Axial blower or fan
29/49329 . . . . . . . . . . . Centrifugal blower or fan
29/4933 . . . . . . . . . . . Fluid coupling device
29/49332 . . . . . . . . . . . Propeller making
29/49334 . . . . . . . . . . . Utilizing hollow tube blank
29/49336 . . . Blade making
29/49337 . . . Composite blade
29/49339 . . . Hollow blade
29/49341 . . . with cooling passage
29/49343 . . . Passage contains tubular insert
29/49345 . . . Catalytic device making
29/49346 . . . Rocket or jet device making
29/49348 . . . Burner, torch or metallurgical lance making
29/4935 . . . Heat exchanger or boiler making
29/49352 . . . Repairing, converting, servicing or salvaging
29/49353 . . . Heat pipe device making
29/49355 . . . Solar energy device making
29/49357 . . . Regenerator or recuperator making
29/49359 . . . Cooling apparatus making, e.g., air conditioner, refrigerator
29/49361 . . . Tube inside tube
29/49362 . . . Tube wound about tube
29/49364 . . . Tube joined to flat sheet longitudinally, i.e., tube sheet
29/49366 . . . Sheet joined to sheet
29/49368 . . . with inserted tubes
29/49369 . . . Utilizing bond inhibiting material
29/49371 . . . with subsequent fluid expansion
29/49373 . . . Tube joint and tube plate structure
29/49375 . . . including conduit expansion or inflation
29/49377 . . . Tube with heat transfer means
29/49378 . . . Finned tube
29/4938 . . . Common fin traverses plurality of tubes
29/49382 . . . Helically finned
29/49384 . . . Internally finned
29/49385 . . . Made from unitary workpiece, i.e., no assembly
29/49387 . . . Boiler making
29/49389 . . . Header or manifold making
29/49391 . . . Tube making or reforming
29/49393 . . . with metallurgical bonding
29/49394 . . . Accumulator making
29/49396 . . . Condenser, evaporator or vaporizer making
29/49398 . . . Muffler, manifold or exhaust pipe making
29/494 . . . Fluidic or fluid actuated device making
29/49401 . . . Fluid pattern dispersing device making, e.g., ink jet
29/49403 . . . Tapping device making
29/49405 . . . Valve or choke making
29/49407 . . . Repairing, converting, servicing or salvaging
29/49409 . . . Valve seat forming
29/4941 . . . Valve stem or tire valve making
29/49412 . . . with assembly, disassembly or composite article making
29/49414 . . . Joining plural semi-circular components
29/49416 . . . with material shaping or cutting
29/49417 . . . including molding or casting
29/49419 . . . including machining or drilling
29/49421 . . . including metallurgical bonding
29/49423 . . . including metal deforming
29/49425 . . . including metallurgical bonding
29/49426 . . . including metal shaping and diverse operation
29/49428 . . . Gas and water specific plumbing component making
29/4943 . . . Plumbing fixture making
29/49432 . . . Nozzle making
29/49433 . . . Sprayer
29/49435 . . . Flexible conduit or fitting therefor
29/49437 . . . Flue connector device making
29/49439 . . . Trap making
29/4944 . . . Return connector device making
29/49442 . . . T-shaped fitting making
29/49444 . . . Elbow or L-shaped fitting making
29/49446 . . . Ferrule making or reforming
29/49448 . . . Agricultural device making
29/49449 . . . Traction apparatus, e.g., for tractor
29/49451 . . . Harvester guard
29/49453 . . . Pulley making
29/49455 . . . Assembly
29/49456 . . . with shaping
29/49458 . . . Disc splitting to form pulley rim groove
29/4946 . . . Groove forming in sheet metal pulley rim
29/49462 . . . Gear making
29/49464 . . . Assembling of gear into force transmitting device
29/49465 . . . Gear mounting
29/49467 . . . Gear shaping
29/49469 . . . Worm gear
29/49471 . . . Roll forming
29/49472 . . . Punching or stamping
29/49474 . . . Die-press shaping
29/49476 . . . Gear tooth cutting
29/49478 . . . Gear blank making
29/4948 . . . with specific gear material
29/49481 . . . Wheel making
29/49483 . . . Railway or trolley wheel making
29/49485 . . . Multiple part or composite
29/49487 . . . with axle or hub
29/49488 . . . Steering wheel
29/4949 . . . Material winding, e.g., reel, spool
29/49492 . . . Land wheel
29/49494 . . . Assembling tire to wheel body
29/49496 . . . Disc type wheel
29/49497 . . . Assembling wheel disc to rim and hub
29/49499 . . . Assembling wheel disc to rim
29/49501 . . . with disc shaping
29/49503 . . . Integral rim and disc making
29/49504 . . . Disc shaping
29/49506 . . . Tensioned spoke type wheel making
29/49508 . . . Tensioning all spokes simultaneously
29/4951 . . . Tensioning spokes in series
29/49512 . . . Tensioning spokes individually
29/49513 . . . Compression, e.g., nontension, spoke type wheel making
29/49515 . . . Joining spokes to rim and hub
29/49517 . . . Joining spokes to rim
29/49519 . . . Joining spokes to hub
29/4952 . . . Making plural spokes from a single blank
29/49522 . . . Individual spoke making
29/49524 . . . Rim making
29/49526 . . . with assembling
29/49528 . . . Demountable rim making
29/49529 . . . Die-press shaping
29/49531 . . . Roller forming
29/49533 . . . Hub making
29/49535 . . . with assembling
29/49536 . . . Hub shaping
29/49538 . . . Tire making
29/4954 . . . . Wheel trim making, e.g., wheel cover, hubcap
29/49542 . . . . with means for retaining trim member on wheel
29/49544 . . . . Roller making
29/49545 . . . . Repairing or servicing
29/49547 . . . . Assembling preformed components
29/49549 . . . . Work contacting surface element assembled to core
29/49551 . . . . Work contacting surface wound about core
29/49552 . . . . with prestressing of component by heat differential, e.g., shrink, fit
29/49554 . . . . Work contacting surface having annular axial sections
29/49556 . . . . Work contacting surface element assembled to end support members
29/49558 . . . . Includes securing removable cover on roller
29/4956 . . Fabricating and shaping roller work contacting surface element
29/49561 . . . . toothed roller
29/49563 . . . . with coating or casting about a core
29/49565 . . . . One-piece roller making
29/49567 . . . . Dental appliance making
29/49568 . . . . Orthodontic device making
29/4957 . . . . Sound device making
29/49572 . . . . Hearing aid component making
29/49574 . . . . Musical instrument or tuning fork making
29/49575 . . . . including diaphragm or support therefor
29/49577 . . . . Phonograph component making
29/49579 . . . . Watch or clock making
29/49581 . . . . having arbor, pinion, or balance
29/49583 . . . . having indicia, face, or dial
29/49584 . . . . having case, cover, or back
29/49586 . . . . having crown, stem, or pendant
29/49588 . . . . Jewelry or locket making
29/4959 . . . . Human adornment device making
29/49591 . . . . Bracelet making
29/49593 . . . . Finger ring making
29/49595 . . . . Latch, clasp, or fastener component making
29/49597 . . . . Ornamental stock making
29/49599 . . . . Knob or knob shank making
29/496 . . . . Multiperforated metal article making
29/49602 . . . . Coil wound wall screen
29/49604 . . . . Filter
29/49606 . . . . Turnbuckle making
29/49607 . . . . Spring-head clip making
29/49609 . . . . Spring making
29/49611 . . . . for vehicle or clutch
29/49613 . . . . for human comfort
29/49615 . . . . Resilient shock or vibration absorber utility
29/49616 . . . . Structural member making
29/49618 . . . . Restoring existing member, e.g., reinforcing, repairing
29/4962 . . . . Grille making
29/49622 . . . . Vehicular structural member making
29/49623 . . . . Static structure, e.g., a building component
29/49625 . . . . Openwork, e.g., a truss, joist, frame, lattice-type or box beam
29/49627 . . . . Frame component
29/49629 . . . . Panel
29/49631 . . . . Columnar member

29/49632 . . . . Metal reinforcement member for nonmetallic, e.g., concrete, structural element
29/49634 . . . . Beam or girder
29/49636 . . . . Process for making bearing or component thereof
29/49638 . . . . Repairing
29/49639 . . . . Fluid bearing
29/49641 . . . . Linear bearing
29/49643 . . . . Rotary bearing
29/49645 . . . . Thrust bearing
29/49647 . . . . Plain bearing
29/49648 . . . . Self-adjusting or self-aligning, including ball and socket type, bearing and component making
29/4965 . . . . Deforming socket to secure ball
29/49652 . . . . Die-press shaping
29/49654 . . . . having liner
29/49655 . . . . having liner
29/49657 . . . . Socket making
29/49659 . . . . by molding or casting
29/49661 . . . . Nonmetallic socket
29/49663 . . . . by assembling
29/49664 . . . . Ball making
29/49666 . . . . with metallurgical bonding
29/49668 . . . . Sleeve or bushing making
29/4967 . . . . Nonmetallic
29/49671 . . . . Strip or blank material shaping
29/49673 . . . . Die-press shaping
29/49675 . . . . having inner lining layer
29/49677 . . . . having liner
29/49679 . . . . Anti-friction bearing or component thereof
29/4968 . . . . Assembling of race, cage, and rolling anti-friction members
29/49682 . . . . Assembling of race and rolling anti-friction members
29/49684 . . . . with race making
29/49686 . . . . Assembling of cage and rolling anti-friction members
29/49687 . . . . with cage making
29/49689 . . . . Race making
29/49691 . . . . Cage making
29/49693 . . . . Roller making
29/49694 . . . . Ball making
29/49696 . . . . Mounting
29/49698 . . . . Demounting
29/497 . . . . Pre-usage process, e.g., preloading, aligning
29/49702 . . . . Lubricating
29/49703 . . . . Sealing
29/49705 . . . . Coating or casting
29/49707 . . . . Bearing surface treatment
29/49709 . . . . Specific metallic composition
29/4971 . . . . Nonmetallic bearing element
29/49712 . . . . Ball making
29/49714 . . . . Hollow ball
29/49716 . . . . Converting
29/49718 . . . . Repairing
29/49719 . . . . Seal or element thereof
29/49721 . . . . with disassembling
29/49723 . . . . including reconditioning of part
29/49725 . . . . by shaping
29/49726 . . . . Removing material
29/49728 . . . . and by a metallurgical operation, e.g., welding, diffusion bonding, casting
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29/4973 . . . . Replacing of defective part
29/49732 . . . . by attaching repair preform, e.g., remaking, restoring, or patching
29/49734 . . . . and removing damaged material
29/49735 . . . . . . Mechanically attaching preform with separate fastener
29/49737 . . . . . . Metallurgically attaching preform
29/49739 . . . . . . Mechanically attaching preform by separate fastener
29/49741 . . . . . . Screw threaded fastener
29/49742 . . . . . . Metallurgically attaching preform
29/49744 . . . . . . Screw threaded preform
29/49746 . . . . . . by applying fluent material, e.g., coating, casting
29/49748 . . . . . . by shaping, e.g., bending, extruding, turning, etc.
29/4975 . . . . . . including heating
29/49751 . . . . . . Scrap recovering or utilizing
29/49753 . . . . . . Metalworking to consolidate scrap
29/49755 . . . . . . Separating one material from another
29/49757 . . . . . . by burning or heating
29/49758 . . . . . . During simulated operation or operating conditions
29/4976 . . . . . . Temperature
29/49762 . . . . . . Center locating and shaping
29/49764 . . . . . . with testing or indicating
29/49766 . . . . . . torquing threaded assemblage or determining torque herein
29/49767 . . . . . . Determining relative number of threaded member rotations
29/49769 . . . . . . Using optical instrument [excludes mere human eyeballing]
29/49771 . . . . . . Quantitative measuring or gauging
29/49773 . . . . . . by radioactive tracing
29/49774 . . . . . . by vibratory or oscillatory movement
29/49776 . . . . . . Pressure, force, or weight determining
29/49778 . . . . . . with aligning, guiding, or instruction
29/4978 . . . . . . Assisting assembly or disassembly
29/49782 . . . . . . of a slide fastener
29/49783 . . . . . . of slider
29/49785 . . . . . . of interlocking element
29/49787 . . . . . . Obtaining plural composite product pieces from preassembled workpieces
29/49789 . . . . . . Obtaining plural product pieces from unitary workpiece
29/4979 . . . . . . Breaking through weakened portion
29/49792 . . . . . . Dividing through modified portion
29/49794 . . . . . . Dividing on common outline
29/49796 . . . . . . Coating pieces
29/49798 . . . . . . Dividing sequentially from leading end, e.g., by cutting or breaking
29/49799 . . . . . . Providing transitory integral holding or handling portion
29/49801 . . . . Shaping fiber or fibered material
29/49803 . . . . Magnetically shaping
29/49805 . . . . Shaping by direct application of fluent pressure
29/49806 . . . . Explosively shaping
29/49808 . . . . Shaping container end to encapsulate material
29/4981 . . . . Utilizing transitory attached element or associated separate material
29/49812 . . . . Temporary protective coating, impregnation, or cast layer
29/49813 . . . . Shaping mating parts for reassembly in different positions
29/49815 . . . . Disassembling
29/49817 . . . . with other than ancillary treating or assembling
29/49819 . . . . with conveying of work or disassembled work part
29/49821 . . . . by altering or destroying work part or connector
29/49822 . . . . by applying force
29/49824 . . . . to elastically deform work part or connector
29/49826 . . . . Assembling or joining
29/49828 . . . . Progressively advancing of work assembly station or assembled portion of work
29/49829 . . . . Advancing work to successive stations [i.e., assembly line]
29/49831 . . . . Advancing station
29/49833 . . . . Punching, piercing or reaming part by surface of second part
29/49835 . . . . with shaping
29/49837 . . . . of first part
29/49838 . . . . by stringing
29/4984 . . . . Retaining clearance for motion between assembled parts
29/49842 . . . . Between tube-forming helical coils
29/49844 . . . . Through resilient media
29/49845 . . . . by deforming interlock
29/49847 . . . . by folding part into plural ears
29/49849 . . . . by wrapping around
29/49851 . . . . of link closure
29/49853 . . . . of sphere, i.e., ball, in socket
29/49854 . . . . Ball point pen making
29/49856 . . . . Allowing assembled sphere to move in single plane only
29/49858 . . . . of flange into tubular socket
29/4986 . . . . Outwardly deforming internally fitted rod
29/49861 . . . . Sizing mating parts during final positional association
29/49863 . . . . with prestressing of part
29/49865 . . . . by temperature differential [e.g., shrink fit]
29/49867 . . . . of skin on frame member
29/49869 . . . . by flexing
29/4987 . . . . Elastic joining of parts
29/49872 . . . . Confining elastic part in socket
29/49874 . . . . Prestressing rod, filament or strand
29/49876 . . . . by snap fit
29/49877 . . . . of flexible wall, expansible chamber devices [e.g., bellows]
29/49879 . . . . Spaced wall tube or receptacle
29/49881 . . . . of separate helix [e.g., screw thread]
29/49883 . . . . Ribbing
29/49885 . . . . with coating before or during assembling
29/49886 . . . . to roughen surface
29/49888 . . . . Subsequently coating
29/4989 . . . . with spreading of cable strands
29/49892 . . . . Joining plate edge perpendicularly to frame
29/49893 . . . . Peripheral joining of opposed mirror image parts to form a hollow body
29/49895 . . . . Associating parts by use of aligning means [e.g., use of a drift pin or a "fixture"]
29/49897 . . . . Registering mating opposed tool parts [e.g., registering a punch and a cooperating die]
29/49899 . . . . by multiple cooperating aligning means
Former US Class 29 Series

29/49901 . . . . . . Sequentially associating parts on stationary aligning means
29/49902 . . . . . . by manipulating aligning means
29/49904 . . . . . . Assembling a subassembly, then assembling with a second subassembly
29/49906 . . . . . . Metal deforming with nonmetallic bonding
29/49908 . . . . . . Joining by deforming
29/49909 . . . . . . Securing cup or tube between axially extending concentric annuli
29/49911 . . . . . . by expanding inner annulus
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
29/49924 . . . . . . of parallel side-by-side elongated members
29/49925 . . . . . . Inward deformation of aperture or hollow body wall
29/49927 . . . . . . Hollow body is axially joined cup or tube
29/49929 . . . . . . Joined to rod
29/49931 . . . . . . Joined to overlapping ends of plural rods
29/49933 . . . . . . After thinning
29/49934 . . . . . . by axially applying force
29/49936 . . . . . . Surface interlocking
29/49938 . . . . . . Radially expanding part in cavity, aperture, or hollow body
29/4994 . . . . . . Radially expanding internal tube
29/49941 . . . . . . Peripheral edge joining of abutting plates
29/49943 . . . . . . Riveting
29/49945 . . . . . . by driven force fit
29/49947 . . . . . . by applying separate fastener
29/49948 . . . . . . Multipart cooperating fastener [e.g., bolt and nut]
29/4995 . . . . . . Nonthreaded
29/49952 . . . . . . At least one part is nonmetallic
29/49954 . . . . . . Fastener deformed after application
29/49956 . . . . . . Riveting
29/49957 . . . . . . At least one part nonmetallic
29/49959 . . . . . . Nonresilient fastener
29/49961 . . . . . . At least one part nonmetallic
29/49963 . . . . . . Threaded fastener
29/49964 . . . . . . At least one part nonmetallic
29/49966 . . . . . . with supplemental joining
29/49968 . . . . . . Metal fusion joining
29/4997 . . . . . . At least one part nonmetallic
29/49972 . . . . . . with separating, localizing, or eliminating of as-cast defects from a metal casting [e.g., anti-pipe]
29/49973 . . . . . . Compressing ingot while still partially molten
29/49975 . . . . . . Removing defects
29/49977 . . . . . . From center of ingot to leave hollow blank
29/49979 . . . . . . After deforming
29/4998 . . . . . . Combined manufacture including applying or shaping of fluent material
29/49982 . . . . . . Coating
29/49984 . . . . . . and casting
29/49986 . . . . . . Subsequent to metal working
29/49988 . . . . . . Metal casting
29/49989 . . . . . . Followed by cutting or removing material
29/49991 . . . . . . Combined with rolling
29/49993 . . . . . . Filling of opening

29/49995 . . . . . . Shaping one-piece blank by removing material
29/49996 . . . . . . Successive distinct removal operations
29/49998 . . . . . . Work holding
29/50 . . . . . . Convertible metal working machine
29/505 . . . . . . Vise type
29/51 . . . . . . Plural diverse manufacturing apparatus including means for metal shaping or assembling
29/5101 . . . . . . Slide fastener or slide fastener element
29/5102 . . . . . . Binding or covering and cutting
29/5103 . . . . . . Cutting covering material only
29/5104 . . . . . . Type of machine
29/5105 . . . . . . Drill press
29/5107 . . . . . . Drilling and other
29/5108 . . . . . . Portable
29/5109 . . . . . . Lathe
29/511 . . . . . . Grinding attachment
29/5111 . . . . . . Pulley or wheel
29/5112 . . . . . . Convertible
29/5113 . . . . . . Commutator
29/5114 . . . . . . Lathe and tool
29/5115 . . . . . . Planer
29/5116 . . . . . . forging and bending, cutting or punching
29/5117 . . . . . . Fastener [zipper]
29/5118 . . . . . . Riveting
29/512 . . . . . . Ball making
29/5121 . . . . . . Wire working
29/5122 . . . . . . with means to feed work during tool contact
29/5123 . . . . . . including nonrotary flying tool
29/5124 . . . . . . with means to feed work intermittently from one tool station to another
29/5125 . . . . . . Stock turret
29/5126 . . . . . . Swiss type
29/5127 . . . . . . Blank turret
29/5128 . . . . . . Rotary work - vertical axis
29/5129 . . . . . . Rotary work - horizontal axis
29/513 . . . . . . Stationary work
29/5132 . . . . . . Belt drive
29/5133 . . . . . . Crankshaft
29/5134 . . . . . . Collapsible tube
29/5135 . . . . . . Endless belt
29/5136 . . . . . . Separate tool stations for selective or successive operation on work
29/5137 . . . . . . including assembling or disassembling station
29/5138 . . . . . . and means to machine work part to fit cooperating work part
29/5139 . . . . . . and means to sever work prior to disassembling
29/514 . . . . . . comprising means to strip insulation from wire
29/5141 . . . . . . and means to stake electric wire to commutator or armature in assembling of electric motor or generator
29/5142 . . . . . . and means to sever work from supply
29/5143 . . . . . . and means to machine product
29/5145 . . . . . . to sever product to length
29/5146 . . . . . . Common reciprocating support for spaced tools
29/5147 . . . . . . including composite tool
29/5148 . . . . . . including severing means
29/5149 . . . . . . to sever electric terminal from supply strip
29/515 . . . . . . to trim electric component
29/5151 . . . . . . Means comprising hand-manipulatable implement
Former US Class 29 Series

Means to assemble or disassemble, including positioning means

Responsive to operative, e.g., safety device, environment

Responsive to condition of work or product

Multiple, independent conductors

Means comprising hand-manipulatable implement

Means to simultaneously assemble multiple, independent conductors to terminal

Means to simultaneously fasten three or more parts
29/53257 . . . Means comprising hand-manipulatable implement
29/53261 . . . Means to align and advance work part
29/53265 . . . with work-holder for assembly
29/5327 . . . Means to fasten by deforming
29/53274 . . . Means to disassemble electrical device
29/53278 . . . Storage cell or battery
29/53283 . . . Means comprising hand-manipulatable implement
29/53287 . . . Means to place traveler on ring or ring on bobbin of a textile machine
29/53291 . . . Slide fastener
29/53296 . . . Means to assemble stop onto stringer
29/533 . . . Means to assemble slider onto stringer
29/53304 . . . Means to assemble teeth onto stringer
29/53309 . . . Disassembly means
29/53313 . . . Means to interrelatedly feed plural work parts from plural sources without manual intervention
29/53317 . . . Box or pallet assembly means
29/53322 . . . Means to assemble container
29/53326 . . . Handle to container
29/5333 . . . Label to container
29/53335 . . . Pressurized dispensing container
29/53339 . . . Hypodermic syringe
29/53343 . . . including fluid component
29/53348 . . . Running-length work
29/53352 . . . Means including orbiting running-length work supply
29/53357 . . . Pipe section
29/53361 . . . Assembled to article
29/53365 . . . Multiple station assembly apparatus
29/5337 . . . including assembly pallet
29/53374 . . . including turret-type conveyor
29/53378 . . . including converging conveyors
29/53383 . . . and means to fasten work parts together
29/53387 . . . by deforming
29/53391 . . . by elastic joining
29/53396 . . . by friction fit
29/534 . . . Multiple station assembly or disassembly apparatus
29/53404 . . . including turret-type conveyor
29/53409 . . . including converging conveyors
29/53413 . . . and primary central conveyor
29/53417 . . . Means to fasten work parts together
29/53422 . . . by deforming
29/53426 . . . by elastic joining
29/5343 . . . Means to drive self-piercing work part
29/53435 . . . including assembly pallet
29/53439 . . . including provision to utilize thermal expansion of work
29/53443 . . . Means to assemble or disassemble container and fluid component
29/53448 . . . Vehicle wheel
29/53452 . . . Railway wheel
29/53457 . . . Tumbler lock
29/53461 . . . toy doll
29/53465 . . . Film or tape cartridge
29/5347 . . . Crystal to watch or clock
29/53474 . . . Means to insert or extract pen point
29/53478 . . . with magazine supply
29/53483 . . . and magnetic work-holder or positioner
29/53487 . . . Assembling means comprising hand-manipulatable implement
29/53491 . . . One work part comprising living tissue
29/53496 . . . comprising driver for snap-off-mandrel fastener; e.g., Pop [TM] riveter
29/535 . . . One work part comprising nut or screw
29/53504 . . . One work part comprising paper clip
29/53509 . . . Means to assemble tire stud into tire tread
29/53513 . . . Means to fasten by deforming
29/53517 . . . Fastening sinker to fishing line
29/53522 . . . Means to fasten by deforming
29/53526 . . . Running-length work
29/5353 . . . Assembled on core
29/53535 . . . including means to vibrate work
29/53539 . . . including work conveyer
29/53543 . . . including transporting track
29/53548 . . . and work carrying vehicle
29/53552 . . . Valve applying or removing
29/53557 . . . Engine valve unit puller or applier
29/53561 . . . Engine valve spring compressor [only]
29/53565 . . . Plural spring engagement
29/5357 . . . Screw operated
29/53574 . . . Parallel or tong type, side entrance
29/53578 . . . Lever operated
29/53583 . . . Single jaw or valve engagement
29/53587 . . . Plier type
29/53591 . . . to or from wheel rim of resilient tire or tube
29/53596 . . . Removal tool
29/536 . . . Piston ring inserter or remover
29/53604 . . . Plier-type operation
29/53609 . . . with ring encirclement
29/53613 . . . Spring aplier or remover
29/53617 . . . Transmission spring
29/53622 . . . Helical spring
29/53626 . . . Flat spiral spring [e.g., watch or clock type]
29/5363 . . . Circular spring
29/53635 . . . Leaf spring
29/53639 . . . Means to stake watch or clock
29/53643 . . . Plier type
29/53648 . . . Brake lining to brake shoe
29/53652 . . . Tube and coextensive core
29/53657 . . . to apply or remove a resilient article [e.g., tube, sleeve, etc.]
29/53661 . . . Nipple to nursing bottle
29/53665 . . . Well protector to sucker rod
29/5367 . . . Coupling to conduit
29/53674 . . . Loose-leaf sheet binder
29/53678 . . . Compressing parts together face to face
29/53683 . . . Spreading parts apart or separating them from face to face engagement
29/53687 . . . by rotation of work part
29/53691 . . . Means to insert or remove helix
29/53696 . . . Means to string
29/537 . . . tool handle and tool
29/53704 . . . tool chuck and tool
29/53709 . . . Overedge assembling means
29/53713 . . . Belt-hook attacher
29/53717 . . . Annular work
29/53722 . . . with radially acting tool inside annular work
29/53726 . . . with second workpiece inside annular work one workpiece moved to shape the other
Former US Class 29 Series

29/5373 . . . . . . comprising driver for snap-off-mandrel fastener, e.g., Pop [TM] riveter
29/53735 . . . . . . including near side fastener shaping tool
29/53739 . . . . . . Pneumatic- or fluid-actuated tool
29/53743 . . . . . . Liquid
29/53748 . . . . . . and gas
29/53752 . . . . . . having rotary drive mechanism
29/53757 . . . . . . having allochiral actuating handles
29/53761 . . . . . . having repositionable annulus engaging tool
29/53765 . . . . . . including near side fastener shaping tool
29/5377 . . . . . . Riveter
29/53774 . . . . . . Single header
29/53778 . . . . . . Pipe joiner
29/53783 . . . . . . Clip applier
29/53787 . . . . . . Binding or covering
29/53791 . . . . . . Edge binding
29/53796 . . . Puller or pusher means, contained force multiplying operator
29/538 . . . Hubcap and hub
29/53804 . . . Battery post and terminal
29/53809 . . . Cotter pin and cooperating member
29/53813 . . . . . Plier type means
29/53817 . . . . . Valve stem pin or key and another member
29/53822 . . . . . Machine key and another member
29/53826 . . . Arbor-type press means
29/5383 . . . having fluid operator
29/53835 . . . having wedge operator
29/53839 . . . having percussion or explosive operator
29/53843 . . . Tube, sleeve, or ferrule inserting or removing
29/53848 . . . having screw operator
29/53852 . . . . . C-frame
29/53857 . . . . . Central screw, work-engagers around screw
29/53861 . . . . . Work-engager arms along or parallel to screw
29/53865 . . . . . with arm connecting engaging means
29/5387 . . . Pivotal arms
29/53874 . . . . . Pivotal grippers on screw
29/53878 . . . . . Tubular or tube segment forms work-engager
29/53883 . . . . . Screw threaded work-engager
29/53887 . . . . . Movable grippers on screw
29/53891 . . . . . Plate or bar forms work-engager
29/53896 . . . having lever operator
29/539 . . . . . Plier type means
29/53904 . . . Means comprising piston ring group contractor or holder
29/53909 . . . Means comprising hand manipulatable tool
29/53913 . . . Aligner or center
29/53917 . . . Tube with tube
29/53922 . . . Auto wheel with auto chassis
29/53926 . . . Clutch plates
29/5393 . . . . . Means comprising impact receiving tool
29/53935 . . . . . C-frame
29/53939 . . . . . Thread protector [e.g., wheel axle type]
29/53943 . . . . . Hand gripper for direct push or pull
29/53948 . . . . . Centrifugal separator
29/53952 . . . . . Tube sleeve or ferrule applying or removing
29/53957 . . . . . Thread-tapping grip
29/53961 . . . . . with work-holder for assembly
29/53965 . . . for assembling a luminescent mantle

Former US Class 70 series

70/00 Locks
70/10 . . . Miscellaneous
70/20 . . . Attack-actuated defeating mechanisms
70/25 . . . With reset mechanisms
70/30 . . . Hasp
70/308 . . . Combination lock
70/317 . . . Hasp-carried
70/325 . . . Keeper-carried
70/333 . . . Key lock
70/342 . . . Hasp-carried
70/35 . . . Keeper-encasing
70/358 . . . . . Dead bolt
70/367 . . . . . Latching bolt
70/375 . . . . . Dead bolt
70/383 . . . . . Latching bolt
70/392 . . . . . Keeper-carried
70/40 . . . Portable
70/402 . . . . . Fettors
70/404 . . . . . Manacles and cuffs
70/407 . . . . . Nippers
70/409 . . . . . Shackles
70/411 . . . . . Clamps
70/413 . . . . . Padlocks
70/415 . . . . . Combination and/or key-controlled
70/417 . . . . . Combination-controlled
70/42 . . . . . Non-shackle type
70/422 . . . . . Rigid shackle
70/424 . . . . . Sliding
70/426 . . . . . Removable
70/428 . . . . . Pivoted
70/43 . . . . . Sliding detent
70/433 . . . . . Swinging detent
70/435 . . . . . Flexible shackle
70/437 . . . . . Key-controlled
70/439 . . . . . Non-shackle type
70/441 . . . . . Housing extension and cooperating detent
70/443 . . . . . Single stem or shank
70/446 . . . . . Rigid shackle
70/448 . . . . . Divided shackle
70/45 . . . . . . Divided jaw type
70/452 . . . . . Sliding
70/454 . . . . . Removable
70/457 . . . . . Arcuate locus
70/459 . . . . . Both legs engaged
70/461 . . . . . Short leg engaged
70/463 . . . . . Long leg engaged
70/465 . . . . . Pivoted
70/467 . . . . . Sliding detent
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<tr>
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<th>Description</th>
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<td>70/47</td>
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<td>Pivoted end only engaged</td>
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<td>70/474</td>
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<td>70/476</td>
<td>Free end only engaged</td>
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<tr>
<td>70/478</td>
<td>Pivoted end only engaged</td>
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<td>70/48</td>
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<td>Special application</td>
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<td>For antitheft signaling device on protected article</td>
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<td>Tools</td>
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<td>70/5027</td>
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<td>Receptacle</td>
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<td>70/5035</td>
<td>Bag</td>
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<td>70/504</td>
<td>Collapsible throat</td>
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<td>70/5044</td>
<td>Pivoted rigid jaw</td>
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<td>70/5049</td>
<td>Attache or briefcase, portfolio</td>
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<td>70/5053</td>
<td>Interengageable slide fastener type</td>
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<td>70/5058</td>
<td>Trunk and/or suitcase</td>
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<td>70/5062</td>
<td>Projecting fixed or movable lug type</td>
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<td>70/5066</td>
<td>Bolt type</td>
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<td>70/5071</td>
<td>Hasp controlled</td>
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<td>70/5075</td>
<td>Link and lever of hasp type</td>
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<td>70/508</td>
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<tr>
<td>70/5102</td>
<td>Projecting lug type</td>
</tr>
<tr>
<td>70/5106</td>
<td>External catch</td>
</tr>
<tr>
<td>70/5111</td>
<td>Projectable bolt</td>
</tr>
<tr>
<td>70/5115</td>
<td>Multiple bolts</td>
</tr>
<tr>
<td>70/5119</td>
<td>Multidirectional displacement</td>
</tr>
<tr>
<td>70/5124</td>
<td>Swinging and hooked end</td>
</tr>
<tr>
<td>70/5128</td>
<td>Drawer</td>
</tr>
<tr>
<td>70/5133</td>
<td>Dead bolt</td>
</tr>
<tr>
<td>70/5137</td>
<td>Till</td>
</tr>
<tr>
<td>70/5142</td>
<td>Combination</td>
</tr>
<tr>
<td>70/5146</td>
<td>Window</td>
</tr>
<tr>
<td>70/515</td>
<td>Sliding sash</td>
</tr>
<tr>
<td>70/5155</td>
<td>Door</td>
</tr>
<tr>
<td>70/5159</td>
<td>Emergency exit</td>
</tr>
<tr>
<td>70/5164</td>
<td>Links to limit opening</td>
</tr>
<tr>
<td>70/5168</td>
<td>Braces</td>
</tr>
<tr>
<td>70/5173</td>
<td>Sliding door</td>
</tr>
<tr>
<td>70/5177</td>
<td>Extending keeper</td>
</tr>
<tr>
<td>70/5181</td>
<td>Rigid or fixed</td>
</tr>
<tr>
<td>70/5186</td>
<td>Extensible</td>
</tr>
<tr>
<td>70/519</td>
<td>Projecting or extending bolt</td>
</tr>
<tr>
<td>70/5195</td>
<td>Projectable bolt</td>
</tr>
<tr>
<td>70/5199</td>
<td>Swinging door</td>
</tr>
<tr>
<td>70/5204</td>
<td>Interfitting lock housing and keeper</td>
</tr>
</tbody>
</table>
Former US Class 70 series

70/5434 . . . . . . . Dog-controller axially slidable and axially rotatable
70/5438 . . . . . . . Dog-controller rotatable
70/5442 . . . . . . . Key-actuated lock releases dog
70/5447 . . . . . . . Manual bolt-manipulator operation releases dog
70/5451 . . . . . . . Manual bolt-manipulator operation releases dog
70/5456 . . . . . . . Interior manual bolt-manipulator serves as dog-controller
70/546 . . . . . . . For both dogging and undogging
70/5465 . . . . . . . Manual dog-controller
70/5469 . . . . . . . With additional lock actuated dog-controller
70/5473 . . . . . . . Additional dog-controller controls both dogging and undogging
70/5478 . . . . . . . Accessible at door edge
70/5482 . . . . . . . Slidable only
70/5487 . . . . . . . Manual bolt-manipulator is slidable only
70/5491 . . . . . . . Manual bolt-manipulator is lever
70/5496 . . . . . . . Freely movable external manipulator
70/55 . . . . . . . Dogged bolt or connections
70/5504 . . . . . . . Automatic
70/5509 . . . . . . . Snub bolt
70/5513 . . . . . . . By manipulator
70/5518 . . . . . . . Connections only
70/5522 . . . . . . . Gravity projected
70/5527 . . . . . . . Projecting mechanism is lock controlled
70/5531 . . . . . . . Combination and/or key operable
70/5535 . . . . . . . Trip release
70/554 . . . . . . . Cover, lid, cap, encasing shield
70/5544 . . . . . . . Pivot
70/5549 . . . . . . . Cover-carried lock
70/5553 . . . . . . . Dead bolt
70/5558 . . . . . . . Latching bolt
70/5562 . . . . . . . Removable
70/5566 . . . . . . . External locking devices
70/5571 . . . . . . . Freely movable when locked
70/5575 . . . . . . . Directly seating
70/558 . . . . . . . Cover-carried lock
70/5584 . . . . . . . Dead bolt
70/5589 . . . . . . . Latching bolt
70/5593 . . . . . . . Movable seating
70/5597 . . . . . . . Cover-carried lock
70/5602 . . . . . . . Dead bolt
70/5606 . . . . . . . Latching bolt
70/5611 . . . . . . . For control and machine elements
70/5615 . . . . . . . Valve
70/5619 . . . . . . . Locked stationary
70/5624 . . . . . . . Externally mounted locking device
70/5628 . . . . . . . Valve encasing
70/5633 . . . . . . . Housing-carried lock
70/5637 . . . . . . . With padlock
70/5642 . . . . . . . Rod
70/5646 . . . . . . . Rotary shaft
70/565 . . . . . . . Locked stationary
70/5655 . . . . . . . Housing-carried lock
70/5659 . . . . . . . Dead bolt
70/5664 . . . . . . . Latching bolt
70/5668 . . . . . . . Shaft-carried lock
70/5673 . . . . . . . Freely movable when locked
70/5677 . . . . . . . Shaft-carried clutch
70/5681 . . . . . . . Gear
70/5686 . . . . . . . Planetary
70/569 . . . . . . . Lever
70/5695 . . . . . . . Guide
70/5699 . . . . . . . Quadrant
70/5704 . . . . . . . Lever-carried lock
70/5708 . . . . . . . Fixed lever-receiving keeper
70/5712 . . . . . . . Lever-carried lock
70/5717 . . . . . . . Multiple
70/5721 . . . . . . . Externally mounted locking device
70/5726 . . . . . . . With padlock
70/573 . . . . . . . Single
70/5735 . . . . . . . Externally mounted locking device
70/5739 . . . . . . . With padlock
70/5743 . . . . . . . Disconnectable
70/5748 . . . . . . . Foldable
70/5752 . . . . . . . Universal mounting
70/5757 . . . . . . . Handle, handwheel or knob
70/5761 . . . . . . . Retractable or flush handle
70/5765 . . . . . . . Rotary or swinging
70/577 . . . . . . . Locked stationary
70/5774 . . . . . . . Externally mounted locking device
70/5779 . . . . . . . With padlock
70/5783 . . . . . . . Combination lock
70/5788 . . . . . . . Push pin or button
70/5792 . . . . . . . Handle-carried key lock
70/5796 . . . . . . . Coaxially mounted
70/5801 . . . . . . . Axially movable bolt
70/5805 . . . . . . . Freely movable when locked
70/581 . . . . . . . Combination lock
70/5814 . . . . . . . Push pin or button
70/5819 . . . . . . . Handle-carried key lock
70/5823 . . . . . . . Coaxial clutch connection
70/5827 . . . . . . . Axially movable clutch
70/5832 . . . . . . . Lock and handle assembly
70/5836 . . . . . . . Wheel
70/5841 . . . . . . . Rotation blocking
70/5845 . . . . . . . Spoke gap traversing type
70/585 . . . . . . . Brake type
70/5854 . . . . . . . Bolt, nut, stud, stud-cap
70/5858 . . . . . . . Locked stationary
70/5863 . . . . . . . Freely movable when locked
70/5867 . . . . . . . Encased
70/5872 . . . . . . . For cycles
70/5876 . . . . . . . Anchors
70/5881 . . . . . . . Stands
70/5885 . . . . . . . Drive
70/5889 . . . . . . . For automotive vehicles
70/5894 . . . . . . . Plural point
70/5898 . . . . . . . With switch
70/5903 . . . . . . . Hood
70/5907 . . . . . . . With switch
70/5912 . . . . . . . Fuel valve
70/5916 . . . . . . . With switch
70/592 . . . . . . . Cap combined
70/5925 . . . . . . . Transmission
Former US Class 70 series

70/5929 . . . . . . Cover combined
70/5934 . . . . . . Selective-type shift rod, fork or block
70/5938 . . . . . . With switch
70/5942 . . . . . . Planetary type
70/5947 . . . . . . With switch
70/5951 . . . . . . With switch
70/5956 . . . . . . Steering mechanism with switch
70/596 . . . . Pilot wheel control or linkage
70/5965 . . . . Control levers with switch
70/5969 . . . . Other element with switch
70/5973 . . . . Remote control
70/5978 . . . . With switch
70/5982 . . . . Accessories
70/5987 . . . . Spare or mounted wheel or tire
70/5991 . . . . . . Tire or rim only
70/5996 . . . . For seats
70/60 . . . . . . . . Systems
70/625 . . . . . . Operation and control
70/65 . . . . . . Central control
70/675 . . . . . . Serially operable
70/70 . . . . Operating mechanism
70/7006 . . . . Predetermined time interval controlled
70/7011 . . . . Positively initiated delay interval
70/7017 . . . . Interval terminating
70/7023 . . . . Repeating interval
70/7028 . . . . Electric
70/7034 . . . . Clockwork control
70/704 . . . . Continuously operating once initiated
70/7045 . . . . Emergency release
70/7051 . . . . Using a powered device [e.g., motor]
70/7057 . . . . Permanent magnet
70/7062 . . . . Electrical type [e.g., solenoid]
70/7068 . . . . Actuated after correct combination recognized [e.g., numerical, alphabetical, or magnet[s] pattern]
70/7073 . . . . Including use of a key
70/7079 . . . . Key rotated [e.g., Eurocylinder]
70/7085 . . . . Using a dial having indicia or pointer and indicia
70/709 . . . . . . Plural interdependent or plural independently operable tumbler sets
70/7096 . . . . With mechanism having rocker arm or linked bars
70/7102 . . . . . . And details of blocking system [e.g., linkage, latch, pawl, spring]
70/7107 . . . . . . And alternately mechanically actuated by a key, dial, etc.
70/7113 . . . . Projected and retracted electrically
70/7119 . . . . Projected electrically only
70/7124 . . . . Retracted electrically only
70/713 . . . . Dogging manual operator
70/7136 . . . . Key initiated actuation of device
70/7141 . . . . Combination and key
70/7147 . . . . Combination or key
70/7153 . . . . Combination
70/7158 . . . . Individual blocking elements
70/7164 . . . . Selectively operable
70/7169 . . . . Complex movement or puzzle type
70/7175 . . . . Labyrinthian passage
70/7181 . . . . Tumbler type
70/7186 . . . . Plural interdependent sets
70/7192 . . . . Plural independently operable sets
70/7198 . . . . Single tumbler set
70/7203 . . . . With ball or roller
70/7209 . . . . Inter-set sliding tumblers
70/7215 . . . . Individually set sliding tumblers
70/722 . . . . . . Manually operable
70/7226 . . . . . . Associated movable operator
70/7232 . . . . . . Removable
70/7237 . . . . . . Rotary or swinging tumblers
70/7243 . . . . . . Inter-set tumblers
70/7249 . . . . . . Tumblers released
70/7254 . . . . . . Fence held spaced from tumblers
70/726 . . . . . . Individually set
70/7266 . . . . . . Movable selector
70/7271 . . . . . . Associated movable operator
70/7277 . . . . . . . . Step-by-step
70/7282 . . . . . . . . Pin or rod and slot
70/7288 . . . . . . . . Spindle operator
70/7294 . . . . . . . . Concentric spindles
70/7299 . . . . . . . . Axially shiftable spindles
70/7305 . . . . . . . . Manually operable
70/7311 . . . . . . Step-by-step
70/7316 . . . . . . Combination upsetting
70/7322 . . . . . . Permutation
70/7328 . . . . . . Compound tumblers
70/7333 . . . . . . With fastener or holder
70/7339 . . . . . . Pin and socket
70/7345 . . . . . . Removable change element
70/735 . . . . . . Operating elements
70/7356 . . . . . . Fences
70/7362 . . . . . . Bolt or lock housing supported
70/7367 . . . . . . Tumbler structure and position
70/7373 . . . . . . Nested
70/7379 . . . . . . Variant diameter
70/7384 . . . . . . Mounts
70/739 . . . . . . Motion-restraining means
70/7395 . . . . . . Friction holder
70/7401 . . . . . . Spindles
70/7407 . . . . . . Operating indicators
70/7412 . . . . . . Portable combination setting guide
70/7418 . . . . . . Dials
70/7424 . . . . . . Tampering prevention or attach defeating
70/7429 . . . . . . Resonance type
70/7435 . . . . . . Hidden or covered dial
70/7441 . . . . . . Key
70/7446 . . . . . . Multiple keys
70/7452 . . . . . . Selective shutout type
70/7458 . . . . . . Interdependent
70/7463 . . . . . . Master- and change-key
70/7469 . . . . . . Change-key shutout
70/7475 . . . . . . Submaster- and change-key
70/7478 . . . . . . Change-key shutout
70/7486 . . . . . . Single key
70/7492 . . . . . . Tumblerless push or pull key
70/7497 . . . . . . Tumblerless warded
70/7503 . . . . . . Tumbler and ward type
70/7508 . . . . . . Tumbler type
70/7514 . . . . . . Sliding and rotary or swinging tumblers
70/752 . . . . . . Sliding tumblers
70/7525 . . . . . . Longitudinal
70/7531 . . . . . . Transverse
70/7537 . . . . . . Rotary or swinging tumblers

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Former US Class 70 series

70/7542 . . . . . . . Single set
70/7548 . . . . . . . Directly key engaged
70/7554 . . . . . . . Cylinder type with auxiliary tumblers or wards
70/7559 . . . . . . . Cylinder type
70/7565 . . . . . . . Plural tumbler sets
70/7571 . . . . . . . Concentric tumblers
70/7576 . . . . . . . Sliding and rotary plug
70/7582 . . . . . . . Sliding plug
70/7588 . . . . . . . Rotary plug
70/7593 . . . . . . . Sliding tumblers
70/7599 . . . . . . . Transverse of plug
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
70/7778 . . . . . . . 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 slideable 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 . . . . . . . Biting
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 secureors, 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

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Y10T
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
74/1225 . with rotor drives
74/1229 . Gyroscope control
74/1232 . Erecting
74/1236 . by plural diverse forces
74/1239 . by jet
74/1243 . by weight
74/1246 . by friction
74/125 . by magnetic field
74/1254 . by motor torque
74/1257 . Damping
74/1261 . with pick off
74/1264 . Optical
74/1268 . Pneumatic
74/1271 . Conducting liquid
74/1275 . Electrical
74/1279 . Electrical and magnetic
74/1282 . with rotor drive
74/1286 . Vertical gyroscopes
74/1289 . Horizontal gyroscopes
74/1293 . Flexure hinges for gyro
74/1296 . Flywheel structure
74/13 . Machine starters
74/131 . Automatic
74/132 . Separate power meshing
74/133 . Holders
74/134 . Clutch connection
74/136 . Worm and wheel
74/137 . Reduction gearing
74/138 . Radial meshing
74/139 . Cam operated
74/14 . Rotary member or shaft indexing, e.g., tool or work turret
74/1406 . with safety device or drive disconnect
74/1412 . with locating point adjusting
74/1418 . Presellected indexed position
74/1424 . Sequential
74/1429 . Skip position
74/1435 . Held by torque
74/1441 . Geneva or mutilated gear drive
74/1447 . Velocity control
74/1453 . Interlocked rotator and brake
74/1459 . . . Diverse-type brakes
74/1585 . . . . Multiple acting
74/1587 . . . . Grip features
74/1589 . . . . Driving band
74/159 . . . . Clamping
74/1592 . . . . Driven band and gripper
74/1594 . . . . Positive grip
74/1595 . . . . Driving ratchet-bar or rack
74/1597 . . . . Multiple acting
74/1598 . . . . Driven ratchet-bar and power dog
74/16 . Alternating-motion driven device with means during operation to adjust stroke
74/1608 . . . . Constant length stroke with means to displace end limits
74/1616 . . . . Cyclical displacement responsive to the alternating-motion
74/1625 . . . . Stroke adjustable to zero and/or reversible in phasing
74/1633 . . . . Plural driving means to jointly drive the driven device
74/1642 . . . . Device driven from selected points on oscillating link
74/165 . . . . Driving lever with adjustable pivot point
74/1658 . . . . Eccentric and strap drive, shiftable eccentric
74/1667 . . . . Changing the extent of eccentricity
74/1675 . . . . Crank pin drive, shiftable pin
74/1683 . . . . Cam and follower drive
74/1692 . . . . Axial-type cam [e.g., wabble type]
74/17 . Rotary driven device adjustable during operation relative to its supporting structure
74/173 . . . . Screw and nut adjusting means
74/177 . . . . Rack and pinion adjusting means
74/18 . Mechanical movements
74/18008 . . . . Oscillating to reciprocating and alternating rotary
74/18016 . . . . Oscillating to reciprocating and intermittent rotary
74/18024 . . . . Rotary to reciprocating and rotary
74/18032 . . . . Rotary to reciprocating or rotary
74/1804 . . . . Rotary to reciprocating and alternating rotary
74/18048 . . . . Rotary to reciprocating and intermittent rotary
74/18056 . . . . Rotary to or from reciprocating or oscillating
74/18064 . . . . Head motions
74/18072 . . . . Reciprocating carriage motions
74/1808 . . . . Phonograph type
74/18088 . . . . Rack and pinion type
74/18096 . . . . Shifting rack
74/18104 . . . . Shiftable pinion
74/18112 . . . . Segmental pinion
74/1812 . . . . Alternately rotated pinion
74/18128 . . . . Clutchable gears
74/18136 . . . . Bevel
74/18144 . . . . Overcoming dead center
74/18152 . . . . Belt or chain carried member
74/1816 . . . . Crank, lever, toggle, and slide
74/18168 . . . . Crank, lazy-tong, and slide
74/18176 . . . . Crank, pitman, lever, and slide
74/18182 . . . . Pump jack type
74/18184 . . . . Crank, pitman, and lever
74/182 . . . . Multiple levers
74/18208 . . . . Crank, pitman, and slide
74/18216 . . . . Crank, lever, and slide
74/18224 . . . . Rack connections
74/18232 . . . . Crank and lever
74/1824 . . . . Slidable connections
74/18248 . . . . Crank and slide
74/18256 . . . . Slidable connections [e.g., scotch yoke]
74/18264 . . . . Crank and multiple pitmans
74/18272 . . . . Planetary gearing and slide
74/1828 . . . . Cam, lever, and slide
74/18288 . . . . Cam and lever
74/18296 . . . . Cam and slide
74/18304 . . . . Axial cam
74/18312 . . . . Grooved
74/1832 . . . . Multiple screw
74/18328 . . . . Alternately rotated screw
74/18336 . . . . Wabble 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
74/18384 . . . . Crank, lever, and crank
74/18392 . . . . Crank, pitman, and crank
74/184 . . . . Cranks, link connected
74/18408 . . . . Cranks, slidable connections
74/18416 . . . . Rotary to alternating rotary
74/18424 . . . . Mangle connections
74/18432 . . . . Shiftable driven gear
74/1844 . . . . Central teeth
74/18448 . . . . Mutilated gearing connections
74/18456 . . . . Crank, pitman, and lever
74/18464 . . . . Reciprocating rack connections
74/18472 . . . . Crank and pitman actuator
74/1848 . . . . Simple crank actuator
74/18488 . . . . Oscillating rack connections
74/18496 . . . . Mangle actuated
74/18504 . . . . Crank and pitman actuator
74/18512 . . . . Flexible connector type
74/1852 . . . . Associated inertia devices
74/18528 . . . . Rotary to intermittent unidirectional motion
74/18536 . . . . Space machines
74/18544 . . . . Rotary to gyromatic
74/18552 . . . . Unbalanced weight
74/1856 . . . . Reciprocating or oscillating to intermittent unidirectional motion
74/18568 . . . . Reciprocating or oscillating to or from alternating rotary
74/18576 . . . . including screw and nut
74/18584 . . . . Shaft shorter than nut
74/18592 . . . . Auxiliary drive [e.g., fluid piston, etc.] for load
74/186 . . . . Alternate power path operable on failure of primary
74/18608 . . . . Single input split into two intermediate outputs that are subsequently superposed into a single output
74/18616 . . . . Single input, plural outputs
74/18624 . . . . Plural inputs, single output
74/18632 . . . . Plural nuts driving shaft
74/1864 . . . . Shaft and nut driven
74/18648 . . . . Carriage surrounding, guided by, and primarily supported by member other than screw [e.g., linear guide, etc.]
74/18656 . . . . Carriage surrounded, guided, and primarily supported by member other than screw [e.g., linear guide, etc.]
74/18664 . . . . Shaft moves through rotary drive means
74/18672 . . . . Plural screws in series [e.g., telescoping, etc.]
74/1868 . . . . Deflection related
74/18688 . . . . Limit stop
74/18696 . . . . including means to selectively transmit power [e.g., clutch, etc.]
74/18704 . . . . Means to selectively lock or retard screw or nut
74/18712 . . . . Contamination related
74/1872 . . . . . . Imperatorate enclosure
74/18728 . . . . Backlash
74/18736 . . . . Pressurized fluid introduced between nut and screw
74/18744 . . . . Lubrication
74/18752 . . . . Manually driven
74/1876 . . . . including inertia device
74/18768 . . . . with rack and pinion
74/18776 . . . . . . Rectilinear rack
74/18784 . . . . including bevel gears
74/18792 . . . . including worm
74/188 . . . . including spur gear
74/18808 . . . . with rack
74/18816 . . . . . . Curvilinear rack
74/18824 . . . . . . . with biasing means
74/18832 . . . . including flexible drive connector [e.g., belt, chain, strand, etc.]
74/1884 . . . . with sprocket wheel
74/18848 . . . . with pulley
74/18856 . . . . Oscillating to oscillating
74/18864 . . . . Snap action
74/18872 . . . . Plate spring
74/1888 . . . . Geared connections
74/18888 . . . . Reciprocating to or from oscillating
74/18896 . . . . Snap action
74/18904 . . . . Plate spring
74/18912 . . . . Compound lever and slide
74/1892 . . . . Lever and slide
74/18928 . . . . . . Straight line motions
74/18936 . . . . . . . Slidable connections
74/18944 . . . . . . . Link connections
74/18952 . . . . . . . toggle transmissions
74/1896 . . . . Cam connections
74/18968 . . . . . . Flexible connections
74/18976 . . . . Rack and pinion
74/18984 . . . . . . Inclined ramp
74/18992 . . . . Reciprocating to reciprocating
74/19 . . . . . . Gearing
74/19005 . . . . . . . . Nonplanetary gearing differential type [e.g., gearless differentials]
74/19009 . . . . Single gearing unit includes fluid drive
74/19014 . . . . Plural prime movers selectively coupled to common output
74/19019 . . . . Plural power paths from prime mover
74/19023 . . . . Plural power paths to and/or from gearing
74/19028 . . . . Alternate input connections single hand crank
74/19033 . . . . Fluid drive divides or combines alternate paths
74/19037 . . . . One path includes fluid drive
74/19042 . . . . . . Friction-type gearing
74/19047 . . . . . . Worm-type gearing
74/19051 . . . . . . Single driven plural drives
74/19056 . . . . . . Parallel
74/1906 . . . . . . . . Nonparallel
74/19065 . . . . . . Aligned
74/1907 . . . . . . Parallel and aligned
74/19074 . . . . . . Single drive plural driven
74/19079 . . . . . . Parallel
74/19084 . . . . . . Spur
74/19088 . . . . . . Bevel
74/19093 . . . . . . Spur and bevel
74/19098 . . . . . . Helical
74/19102 . . . . . . Belt or chain
74/19107 . . . . . . Nonparallel
74/19112 . . . . . . Aligned
74/19116 . . . . . . Vehicle
74/19121 . . . . . . Concentric
74/19126 . . . . . . Plural drivers plural driven
74/1913 . . . . . . Bevel
74/19135 . . . . . . Spur
74/1914 . . . . . . Alternate drivers and driven
74/19144 . . . . . . Miscellaneous [plural power paths]
74/19149 . . . . . . with fluid drive
74/19153 . . . . . . Condition responsive control
74/19158 . . . . . . with one or more controllers for gearing, fluid drive, or clutch
74/19163 . . . . . . with interrelated controls
74/19167 . . . . . . In series plural interchangeably locked nonplanetary units
74/19172 . . . . . . Reversal of direction of power flow changes power transmission to alternate path
74/19177 . . . . . . Input and output exchange functions
74/19181 . . . . . . toothed gear and recirculated unconnected elements
74/19186 . . . . . . Alternating rotary or continuous
74/19191 . . . . . . Alternating rotary
74/19195 . . . . . . Progressive
74/192 . . . . . . . . Shiftable and/or slidable gears
74/19205 . . . . . . Clutchable gears
74/1921 . . . . . . On single driven member
74/19214 . . . . . . On single driving member
74/19219 . . . . . . Interchangeably locked
74/19223 . . . . . . Disconnectable counter shaft
74/19228 . . . . . . Multiple concentric clutch shafts
74/19233 . . . . . . Plurality of counter shafts
74/19237 . . . . . . Internal-external gears
74/19242 . . . . . . Combined gear and clutch
74/19247 . . . . . . Preselector
74/19251 . . . . . . Control mechanism
74/19256 . . . . . . Automatic
74/1926 . . . . . . Speed responsive
74/19265 . . . . . . Governor
74/1927 . . . . . . with belt gearing
74/19274 . . . . . . torque responsive
74/19279 . . . . . . Cam operated
74/19284 . . . . . . Meshing assisters
74/19288 . . . . . . Double clutch and interposed transmission
74/19293 . . . . . . Longitudinally slidable
74/19298 . . . . . . Multiple spur gears
74/19302 . . . . . . with tumbler gear
74/19307 . . . . . . Selective
74/19312 . . . . . . Direct clutch and drive
74/19316 . . . . . . Progressive
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74/19321 . . . . . . . Direct clutch and drive
74/19326 . . . . . . . Fluid operated
74/1933 . . . . . . . Multiple bevel gears
74/19335 . . . . . . . Single spur gear
74/1934 . . . . . . . Tumbler and cone
74/19344 . . . . . . . Multiple cone
74/19349 . . . . . . . Single bevel gear
74/19353 . . . . . . . Pin or crown gears
74/19358 . . . . . . . Laterally slidable gears
74/19363 . . . . . . . Rotary carriage
74/19367 . . . . . . . Swinging carriage
74/19372 . . . . . . . Single forward and reverse speeds
74/19377 . . . . . . . Slidable keys or clutches
74/19381 . . . . . . . Alternative clutch shaft
74/19386 . . . . . . . Multiple clutch shafts
74/19391 . . . . . . . Progressive
74/19395 . . . . . . . Keys simultaneously slidable
74/194 . . . . . . . . . . Selective
74/19405 . . . . . . . Multiple forward and reverse
74/19409 . . . . . . . Single forward and reverse
74/19414 . . . . . . . Single clutch shaft
74/19419 . . . . . . . Progressive
74/19423 . . . . . . . Multiple key
74/19428 . . . . . . . Spur
74/19433 . . . . . . . Fluid operated
74/19437 . . . . . . . Electrically operated
74/19442 . . . . . . . Single key
74/19447 . . . . . . . Clutch and ratchet
74/19451 . . . . . . . Spur gears
74/19456 . . . . . . . Intermediate clutch
74/1946 . . . . . . . Sliding clutch carrier
74/19465 . . . . . . . Sliding clutch operator
74/1947 . . . . . . . Selective
74/19474 . . . . . . . Multiple key
74/19479 . . . . . . . Spur gears
74/19484 . . . . . . . Single speed forward and reverse
74/19488 . . . . . . . Spur gears
74/19493 . . . . . . . Bevel gears
74/19498 . . . . . . . Bevel and idler gears
74/19502 . . . . . . . Pivotally supported
74/19507 . . . . . . . Windmill turntable
74/19512 . . . . . . . Screw
74/19516 . . . . . . . Spur
74/19521 . . . . . . . Bevel
74/19526 . . . . . . . Wheel type
74/1953 . . . . . . . Wringer type
74/19535 . . . . . . . Follow-up mechanism
74/1954 . . . . . . . Eccentric driving shaft and axle
74/19545 . . . . . . . Central driving shaft in axle
74/1955 . . . . . . . Parallel shafts, adjustable gear mesh
74/19555 . . . . . . . Varying speed ratio
74/1956 . . . . . . . Adjustable
74/19565 . . . . . . . Relative movable axes
74/1957 . . . . . . . Parallel shafts
74/19575 . . . . . . . Automatic control
74/1958 . . . . . . . Parallel shafts
74/19585 . . . . . . . Fixed axes
74/1959 . . . . . . . Parallel shafts
74/19595 . . . . . . . Automatic control
74/196 . . . . . . . Parallel shafts
74/19605 . . . . . . . Reversing means
74/19609 . . . . . . . Governor control
74/19614 . . . . . . . Disconnecting means
74/19619 . . . . . . . Displaceable elements
74/19623 . . . . . . . Backlash take-up
74/19628 . . . . . . . Pressure distributing
74/19633 . . . . . . . Yieldability in gear trains
74/19637 . . . . . . . with brake means for gearing
74/19642 . . . . . . . Directly cooperating gears
74/19647 . . . . . . . Parallel axes or shafts
74/19651 . . . . . . . External type
74/19656 . . . . . . . Pin teeth
74/1966 . . . . . . . Intersecting axes
74/19665 . . . . . . . Bevel gear type
74/1967 . . . . . . . Rack and pinion
74/19674 . . . . . . . Spur and bevel
74/19679 . . . . . . . Spur
74/19684 . . . . . . . Motor and gearing
74/19688 . . . . . . . Bevel
74/19693 . . . . . . . Motor vehicle drive
74/19698 . . . . . . . Spiral
74/19702 . . . . . . . Screw and nut
74/19707 . . . . . . . Plural longitudinally variably spaced nuts
74/19712 . . . . . . . Threadless
74/19716 . . . . . . . Non-linear screw
74/19721 . . . . . . . Thread geometry
74/19726 . . . . . . . Thread pitch varies over axial length
74/1973 . . . . . . . Shaft thread is spirally wound wire
74/19735 . . . . . . . Nut disengageable from screw
74/1974 . . . . . . . Nut segments hinged parallel to shaft
74/19744 . . . . . . . Rolling element engaging thread
74/19749 . . . . . . . Recirculating rolling elements
74/19753 . . . . . . . Plural independent recirculating element paths
74/19758 . . . . . . . Single thread common to plural paths
74/19763 . . . . . . . Roller return path in shaft
74/19767 . . . . . . . Return path geometry
74/19772 . . . . . . . Rolling element deflector
74/19777 . . . . . . . Interconnected or cooperating rollers or roller structure
74/19781 . . . . . . . Non-recirculating rolling elements
74/19786 . . . . . . . Captured sphere
74/19791 . . . . . . . Cylindrical or quasi-cylindrical roller element [e.g., inclined roller, etc.]
74/19795 . . . . . . . Parallel to shaft
74/198 . . . . . . . Perpendicular to shaft
74/19805 . . . . . . . Less than 360 degrees of contact between nut and screw
74/19809 . . . . . . . Independent nut segments
74/19814 . . . . . . . Integral deformable tangs engaging screw
74/19819 . . . . . . . Driven rack or shaft
74/19823 . . . . . . . Screw
74/19828 . . . . . . . Worm
74/19833 . . . . . . . Variable speed
74/19837 . . . . . . . Intermittent motion
74/19842 . . . . . . . Distribution of pressure
74/19847 . . . . . . . Torque actuated safety devices
74/19851 . . . . . . . Gear and rotary bodies
74/19856 . . . . . . . Laterally-spaced wheels
74/1986 . . . . . . . Radially-spaced wheels
74/19865 . . . . . . . with flywheel
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74/1987 . . . Rotary bodies
74/19874 . . . Mutilated
74/19879 . . . Geneva
74/19884 . . . Irregular teeth and bodies
74/19888 . . . External and internal teeth
74/19893 . . . Sectional
74/19898 . . . Backlash take-up
74/19902 . . . Screw and nut
74/19907 . . . Sound deadening
74/19912 . . . Differential disks
74/19916 . . . Multiple disks
74/19921 . . . Separate rim
74/19926 . . . Detachable
74/1993 . . . Segmented rim
74/19935 . . . Sheet metal
74/1994 . . . Diometrically split
74/19944 . . . Shaft-admitting insert
74/19949 . . . Teeth
74/19953 . . . Worm and helical
74/19958 . . . Bevel
74/19963 . . . Spur
74/19967 . . . Yieldable
74/19972 . . . form
74/19977 . . . Antifriction
74/19981 . . . Roller
74/19986 . . . Twisted
74/19991 . . Lubrication
74/19995 . . . Teeth
74/20 . . . Control lever and linkage systems
74/20006 . . . Resilient connections
74/20012 . . . Multiple controlled elements
74/20018 . . . Transmission control
74/20024 . . . Fluid actuator
74/2003 . . . Electrical actuator
74/20037 . . . Occupant propelled vehicle
74/20043 . . . Transmission controlled by flexible cable
74/20049 . . . Transmission controlled by flexible cable
74/20055 . . . Foot operated
74/20061 . . . Multiple foot-operated controls
74/20067 . . . Control convertible between automatic and manual operation
74/20073 . . . Control of plural mechanisms [e.g., control of transmission and control of 4-wheeled drive]
74/20079 . . . Separate control levers
74/20085 . . . Restriction of shift, gear selection, or gear engagement
74/20091 . . . Prevention of reverse shift
74/20098 . . . Separate actuator to disengage restrictor
74/20104 . . . Shift element interlock
74/2011 . . . with detent, recess, notch, or groove
74/20116 . . . Resiliently biased interlock
74/20122 . . . Spherical restrictor
74/20128 . . . Resiliently biased restrictor
74/20134 . . . having vibration damper
74/2014 . . . Manually operated selector [e.g., remotely controlled device, lever, push button, rotary dial, etc.]
74/20146 . . . Control lever on steering column
74/20152 . . . Control lever movable through plural planes
74/20159 . . . Control lever movable through plural planes
74/20165 . . . Spherical mount [e.g., ball and socket]
74/20171 . . . Resiliently biased control lever
74/20177 . . . Particular element [e.g., shift fork, template, etc.]
74/20183 . . . Shift fork structure
74/20189 . . . Foot operated
74/20195 . . . Offset extension
74/20201 . . . Control moves in two planes
74/20207 . . . Multiple controlling elements for single controlled element
74/20213 . . . Interconnected
74/2022 . . . Hand and foot
74/20226 . . . Accelerator
74/20232 . . . Marine
74/20238 . . . Interlocked
74/20244 . . . Push button
74/2025 . . . Rod blocks actuation of rotary member
74/20256 . . . Steering and controls assemblies
74/20262 . . . Rotary control shaft
74/20268 . . . Reciprocating control elements
74/20274 . . . Flexible
74/2028 . . . Handle bar type
74/20287 . . . Flexible control element
74/20293 . . . with horn control
74/20299 . . . Antifricting elements
74/20305 . . . Robotic arm
74/20311 . . . including power cable or connector
74/20317 . . . including electric motor
74/20323 . . . including flaccid drive element
74/20329 . . . Joint between elements
74/20335 . . . Wrist
74/20341 . . . Power elements as controlling elements
74/20348 . . . Planar surface with orthogonal movement and rotation
74/20354 . . . Planar surface with orthogonal movement only
74/2036 . . . Pair of power elements
74/20366 . . . Power and manual controlling elements
74/20372 . . . Manual controlling elements
74/20378 . . . Planar surface with orthogonal movement or rotation
74/20384 . . . Levers
74/2039 . . . Pair of levers
74/20396 . . . Hand operated
74/20402 . . . Flexible transmitter [e.g., Bowden cable]
74/20408 . . . Constant tension sustaining
74/20414 . . . Hydraulic control
74/2042 . . . and hand operator
74/20426 . . . Slidable
74/20432 . . . for moving a mirror
74/20438 . . . Single rotatable lever [e.g., for bicycle brake or derailleur]
74/20444 . . . including rolling antifriction elements
74/2045 . . . and sheath support, connector, or anchor
74/20456 . . . Specific cable or sheath structure
74/20462 . . . Specific cable connector or guide
74/20468 . . . Sliding rod
74/20474 . . . Rotatable rod, shaft, or post
74/2048 . . . Gear, drum, and cable
74/20486 . . . Drum and cable
Elements

Variable output force

Handles

Detents

Signal

Accelerator

Handle bars

Lever carried rack

Interrelated lever release

Gear

Friction

Lever engaging

Lever engaging rack

Pivoted

Lever carried pawl

Handle release

Finger lever release

Slidable

Pedal controlled

Lever carried rack

Pivoted

Pedal controlled

Handles

Extension

Hand crank

Extensible

Collapsible

Shaft connections

Engine starter type

Holders

Handle bars

Spring biased or supported

Folding or adjustable

Sectional

Simultaneously movable

Continuous

with handle latch

Attachments and accessories

Handholds and grips

Hand wheels

Knob or dial

Slidable

Pivoted

Releasable

Handles

Rim grips and covers

Caps and covers

Rocker arms

Pedals

Treadles

Extension

Offset

Pads and covers

Foot rests

Controller checks

Slot closers and lever guards

Elements

Cams

Adjustable

Flexible strip

Memory devices

Timer devices

Follower

Balancing for drum, e.g., washing machine or arm-type structure, etc., centrifuge, etc.

Eccentric

Plural, movable relative to each other [including ball[s]]

Concentric

Adjustable

Radially

having anti-friction means, e.g., roller bearing, lubrication, etc.

Power generating-type flywheel

Structural detail, e.g., material, configuration, superconductor, discs, laminated, etc.

Containing fiber or filament

Flywheel, motion smoothing-type

with fluid balancing means

and pressure compensation

and elastic device

and bearings

with electrical or magnetic damping

Damping using swinging masses, e.g., pendulum type, etc.

Damping by increasing frictional force

Damping by absorbing vibration force [via rubber, elastomeric material, etc.]

Structural detail, e.g., fiber, held by magnet, etc.

Pawls and ratchets

Noiseless

Pivoted pawls

Single tooth

Flexible single tooth

Multiple tooth

Sliding paws

Pinmans and connecting rods

Radial

Yieldable

Longitudinal springs

Fluid cushion

Automatic release

toggle link type

Longitudinally adjustable
Turning

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 . . Pivot 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 . . Pivot 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 . . . Pivot 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]
Former US Class 83 series

83/0453 . . . By fluid application
83/0457 . . . By retaining or reinserting product in workpiece
83/0462 . . . By accelerating travel
83/0467 . . . By separating products from each other
83/0472 . . . By moving work support to which a tacky product is adhered
83/0476 . . . Including stacking of plural workpieces
83/0481 . . . Puncturing
83/0486 . . . With manipulation of tool protective strip [e.g., backing strip]
83/0491 . . . Cutting of interdigitating products
83/0495 . . . Making and using a registration cut
83/05 . . . With reorientation of tool between cuts
83/0505 . . . With reorientation of work between cuts
83/051 . . . Relative to same tool
83/0515 . . . During movement of work past flying cutter
83/0519 . . . Cyclically varying rate of tool or work movement
83/0524 . . . Plural cutting steps
83/0529 . . . Blanking and cutting
83/0534 . . . Cutting to join blanked holes
83/0538 . . . Repetitive transverse severing from leading edge of work
83/0543 . . . Alternately forming products of less than total width of work
83/0548 . . . With longitudinal severing
83/0553 . . . Effected by plural steps
83/0558 . . . Along zigzag or undulant line or cut
83/0562 . . . Prior to transverse severing
83/0567 . . . Nonrectilinear cutting
83/0572 . . . Plural cutting steps effect progressive cut
83/0577 . . . Repetitive blanking
83/0581 . . . Cutting part way through from opposite sides of work
83/0586 . . . Effecting diverse or sequential cuts in same cutting step
83/0591 . . . Cutting by direct application of fluent pressure to work
83/0596 . . . Cutting wall of hollow work
83/06 . . . Blanking
83/0605 . . . Cut advances across work surface
83/061 . . . With manually actuated means to disturb cyclic operation
83/081 . . . With randomly actuated stopping means
83/083 . . . With means to permit subsequent hand operation
83/084 . . . With stop-signal-responsive means to actuate auxiliary cutter
83/086 . . . With sensing of product or product handling means
83/088 . . . Responsive to tool detector or work-feed-means detector
83/089 . . . Responsive to tool characteristic
83/091 . . . Responsive to work sensing means
83/093 . . . Of buckled work
83/094 . . . Running loop
83/096 . . . Detector supported on or urged against work
83/098 . . . Resiliently biased
83/099 . . . Manually operated
83/101 . . . With stopping means effective on completion of predetermined number of tool cycles
83/121 . . . With means to accomplish delayed stopping after cessation of cyclic operation

83/141 . . . With means to monitor and control operation [e.g., self-regulating means]
83/145 . . . Including means to monitor product
83/148 . . . Including means to correct the sensed operation
83/152 . . . And modify another operation
83/155 . . . Optimizing product from unique workpiece
83/159 . . . Including means to compensate tool speed for work-feed variations
83/162 . . . With control means responsive to replaceable or selectable information program
83/164 . . . For cutting component of animal; e.g., hair clipper
83/166 . . . Removable element carries program
83/169 . . . Indeterminate length, web or strand
83/171 . . . Magnetic
83/173 . . . Arithmetically determined program
83/175 . . . With condition sensor
83/178 . . . Responsive to work
83/18 . . . With operator input means
83/182 . . . With means to weigh product
83/202 . . . With product handling means
83/2022 . . . Initiated by means responsive to product or work
83/2024 . . . Responsive to work
83/2027 . . . Initiated by means directly responsive to tool movement
83/2029 . . . In return motion of tool
83/2031 . . . Including means to drape the product
83/2033 . . . Including means to form or hold pile of product pieces
83/2035 . . . In nested relation
83/2037 . . . In stacked or packed relation
83/204 . . . Stacker sweeps along product support
83/2042 . . . Including cut pieces overlapped on delivery means
83/2044 . . . And means to separate product portions
83/2046 . . . Including means to move stack bodily
83/2048 . . . By movement of stack holder
83/205 . . . . . . . . . . By timed relocation of holder along path of stack gcsheme-change-itemth
83/2053 . . . . . . . . . . Interrelated adjustment of holder movement and work-feeder
83/2055 . . . . . . . . . . And means to resist stack movement
83/2057 . . . . . . . . . . Including means to deliver individual pieces to a stack holder
83/2059 . . . . . . . . . . With spindle to enter a hole or to make hole in product
83/2061 . . . . . . . . . . By face-engaging means to push product broadside into stacked relation
83/2063 . . . . . . . . . . Upon emergence from hollow cutter
83/2066 . . . . . . . . . . By fluid current
83/2068 . . . . . . . . . . Plural blasts directed against plural product pieces
83/207 . . . . . . . . . . By suction means
83/2072 . . . . . . . . . . By brush means
83/2074 . . . . . . . . . . Including means to divert one portion of product from another
83/2077 . . . . . . . . . . By kerf entering guide
83/2079 . . . . . . . . . . Remaining or re-inserted product portion from base material
83/2081 . . . . . . . . . . Gravity type
83/2083 . . . . . . . . . . Reflecting guide
83/2085 . . . . . . . . . . Positionable gate in product flow path
83/2087 . . . . . . . . . . Diverging product movers
83/209 . . . Including means to replace product in base material after cutting
83/2092 . . . Means to move, guide, or permit free fall or flight of product
83/2094 . . . Means to move product at speed different from work speed
83/2096 . . . Means to move product out of contact with tool
83/2098 . . . With means to effect subsequent conveying or guiding
83/21 . . . Out of contact with a rotary tool
83/2103 . . . Mover surrounds axis of tool rotation
83/2105 . . . Mover mounted on rotary tool
83/2107 . . . For radial movement of product
83/2109 . . . Resiliently mounted
83/2111 . . . Mover is resiliently mounted
83/2113 . . . Pivoted mover
83/2116 . . . And plural rotating tools
83/2118 . . . Stationary mover
83/212 . . . And plural rotating tools
83/2122 . . . By ejector within a hollow cutter
83/2124 . . . And means to strip the outer surface of a cutter
83/2127 . . . Ejector operated with return stroke of cutter
83/2129 . . . By means carried by cooperating cutter
83/2131 . . . By cam-operated ejector
83/2133 . . . By resiliently biased ejector
83/2135 . . . Moving stripper timed with tool stroke
83/2137 . . . And alternatively movable to or from operating position
83/214 . . . Latched stripper released by tool return
83/2142 . . . Plural strippers operative upon plural tools
83/2144 . . . Single stripper operative upon plural tools
83/2146 . . . Spring arm stripper
83/2148 . . . Linkage actuated
83/215 . . . Carried by moving tool element or its support
83/2153 . . . Fluid pressure actuated stripper
83/2155 . . . Stripper biased against product
83/2157 . . . Elastomeric stripper contacting product
83/2159 . . . By spring means
83/2161 . . . By free weight of stripper
83/2163 . . . Stripper biased against product
83/2166 . . . Spring biased stripper
83/2168 . . . Manually operated stripper
83/217 . . . Stationary stripper
83/2172 . . . Stripper encircles moving tool
83/2174 . . . Blockable exit port
83/2177 . . . Tool conforming member interposed between tool and work
83/2179 . . . Including means to move, or resist movement of, cut pieces along delivery chute
83/2181 . . . Active delivery means mounted on tool support
83/2183 . . . Product mover including gripper means
83/2185 . . . Suction gripper
83/2187 . . . Reciprocating product handler
83/219 . . . Rotating or oscillating product handler
83/2192 . . . Endless conveyor
83/2194 . . . And means to remove product therefrom
83/2196 . . . Roller[s]
83/2198 . . . Tiltable or withdrawable support
83/22 . . . Means to move product laterally
83/2203 . . . Oscillating means
83/2205 . . . Reciprocating means
83/2207 . . . Means to move product in a nonrectilinear path
83/2209 . . . Guide
83/2211 . . . Abutment in path of product being moved by work feeder
83/2213 . . . Product-diverting conduit in or from hollow tool
83/2216 . . . Inclined conduit, chute or plane
83/2218 . . . Abutment interposed in path of free fall or flight of product
83/222 . . . With receptacle or support for cut product
83/2242 . . . With means to clean work or tool
83/2263 . . . With means to apply transient nonpropellant fluent material to tool or work
83/2283 . . . With means to control or modify temperature of apparatus or work
83/2293 . . . Of tool
83/2303 . . . With tool sharpener or smoother
83/2313 . . . Spatially fixed tool
83/2323 . . . With means to stretch work temporarily
83/2343 . . . With means to deform work temporarily
83/2364 . . . By fluid blast and/or suction
83/2384 . . . By tool inside hollow work
83/2385 . . . Work pre-packed with internal tool[s]
83/2386 . . . With expanding mandrel
83/2387 . . . Interrelated tool feed means and means to actuate work immobilizer
83/2388 . . . Actuated clamp element and work holder coact to position work
83/2389 . . . Synchronized tool and work feeding means
83/2391 . . . With means to position tool[s] for cutting
83/2392 . . . One tool [either internal or external] having compound motion
83/2393 . . . Annulus and disc-type tool pair
83/2394 . . . One tool having unidirectional rotary motion
83/2395 . . . One tool having only rectilinear motion[s]
83/2396 . . . Annulus and disc-type tool pair
83/2397 . . . A tool has a sequence of motion in plural paths
83/2398 . . . Internal tool is an active cutter
83/240 . . . Multiple external active tools
83/2401 . . . Tools operate in a substantially common transverse plane of cut
83/2402 . . . With tool actuating cams on a common support
83/2403 . . . With manually actuated means to position or facilitate positioning of work
83/2404 . . . By means to misalign aligned apertured tools
83/2408 . . . Combined with another type tool of the class
83/2412 . . . Rectilinear relative movement only
83/2416 . . . Rotary relative movement solely about a single pivot
83/242 . . . With plural apertures in one or both carriers
83/2424 . . . By increased tensioning of work-enclosing wire
83/2444 . . . Tool engages work during dwell of intermittent workfeed
83/2443 . . . Unicyclic
83/2445 . . . Convertible to and from unicyclic
83/2448 . . . Controlled by mechanical means
83/2445 . . . With work-moving clamp jaw
Former US Class 83 series

83/4453 . . . Work moved solely by movable abutment
83/4455 . . . Operation initiated by work-driven detector means to measure work length
83/4458 . . . Work-sensing means to control work-moving or work-stopping means
83/446 . . . With means to initiate tool feed by same control impulse
83/4463 . . . Work-sensing means to initiate tool feed
83/4465 . . . With work-stopping abutment in sensing means
83/4468 . . . Plural tools at same station, one positioned for continuous engagement with work
83/447 . . . Plural tools successively actuated at same station
83/4473 . . . During one dwell period
83/4475 . . . Tool has motion additional to cutting stroke during tool cycle
83/4478 . . . Tool has additional motion during work dwell
83/448 . . . . Included in plural cutting cycles
83/4483 . . . Tool has work-feeding motion
83/4486 . . . With variable direction of work-feed from cycle to cycle
83/4488 . . . In one of certain selected directions
83/4491 . . . Interlock between tool actuating and work feed means
83/4493 . . . Tool motion initiates work feed and vice versa
83/4496 . . . Stored energy means for moving work or tool, loaded by tool or work
83/4498 . . . Work feed means actuates energy storage device for tool
83/4501 . . . Work feed means controlled by means mounted on tool or tool support
83/4503 . . . Such means drives the work feed means
83/4506 . . . Work feed means carried by tool or tool support
83/4508 . . . With supplemental work feed means
83/4511 . . . On return stroke of tool
83/4513 . . . Work feed means halted by means on tool or tool support
83/4516 . . . Work-feed mechanism in nonfeed motion effects or initiates tool actuation
83/4518 . . . By striking tool actuator
83/4521 . . . Nonfeed motion is reverse to feed motion
83/4523 . . . With means to vary number of work-feed increments between tool strokes
83/4526 . . . Dwell caused by imposing reverse motion on portion of flexible moving work
83/4529 . . . With uninterrupted flow of work from supply source
83/4531 . . . Work feed increment shorter than longitudinal tool field
83/4534 . . . Unequal work feed increments in recurring series
83/4536 . . . Work carriage carries ratchet means to determine increments
83/4539 . . . Means to change tool position, or length or datum position of work- or tool-feed increment
83/4541 . . . With means to vary magnitude of work-feed increment
83/4544 . . . Multi-increment type [e.g., ticket issuing]
83/4546 . . . Length selector initiates machine operation
83/4549 . . . By change in length of one member of feed-driving linkage
83/4551 . . . Rotating member
83/4554 . . . By change of effective shape of driving or driven surface of element of work-feed mechanism
83/4556 . . . By adjustment of fixed stop
83/4559 . . . With means to vary magnitude or base position of tool stroke
83/4561 . . . With means to facilitate manual repositioning [shift] of work
83/4564 . . . With means to produce plurality of work-feed increments per tool cycle
83/4567 . . . Including supplemental work-feed means
83/4569 . . . Manual
83/4572 . . . With stop adapted to engage abutment surface on work
83/4574 . . . . . . Plurality of work stops successively effective
83/4577 . . . Work fed successively to plural tools
83/4579 . . . With change of direction between tools
83/4582 . . . With change of direction between tools
83/4584 . . . Dwell defined only by “dead-center” of rotating crank
83/4587 . . . Dwell initiated by disengagement of surface of moving frictional feed means from work
83/4589 . . . Feed means has interrupted frictional surface
83/4592 . . . Feed means has rotary motion
83/4594 . . . Dwell caused by clamping or blocking work during continuous operation of feed means
83/4597 . . . With means to control magnitude of work-feed increment or work acceleration
83/4599 . . . . . . Means to prevent random or excessive work feeds
83/4602 . . . Full stroke required of feed means
83/4604 . . . Work feed functions as tool support
83/4607 . . . With rotary work-carrier
83/461 . . . With abutment to position work being fed with respect to cutter
83/4612 . . . With slip between positioned work and feed means
83/4615 . . . Work guide and feed means have open side
83/4617 . . . Work feed means modified to maintain clearance from tool
83/462 . . . . . . Plurality of work feed means in separate paths
83/4622 . . . . . . Intermittent drive type of gearing for work-feed means
83/4625 . . . . . . Gearing modified to lock the work-feed means
83/4627 . . . . . . Mutilated gear in mesh with gear driving work-feed means
83/463 . . . Work-feed element contacts and moves with work
83/4632 . . . Comprises a work-moving gripper
83/4635 . . . Comprises element entering aperture in, or engaging abutment surface on, work
83/4637 . . . With means to guide, position, or present work to work-feed means
83/464 . . . . . . Means to transport work to work-feed means
83/4642 . . . . . . Including means to pick articles from pack or stack
83/4645 . . . With means to clamp work during dwell
83/4647 . . . One-revolution clutch in tool drive
83/465 . . . Cutting motion of tool has component in direction of moving work
83/4653 . . . With means to initiate intermittent tool action
83/4656 . . . Tool moved in response to work-sensing means
83/4659 . . . . With means to vary "length" of product
83/4662 . . . . To vary an end-product "length" [e.g., "crop cut"]
83/4664 . . . . With photo-electric work-sensing means
83/4667 . . . . With trip-switch work-sensing means
83/467 . . . . To initiate feed movement of tool
83/4673 . . . . And to initiate flying movement of tool
83/4676 . . . . With work-responsive means to initiate flying movement of tool
83/4679 . . . . With flying work-gripper means related to tool carrier
83/4682 . . . . With means controlling flying speed dependent on work speed
83/4685 . . . . With means to vary frequency of initiation
83/4688 . . . . By orbitally traveling trigger pin[s]
83/4691 . . . . Interrelated control of tool and work-feed drives
83/4693 . . . . With means to concurrently adjust flying frequency and retain flying speed of tool
83/4696 . . . . Plural diverse flying cutters
83/4699 . . . . Combined with other type cutter
83/4702 . . . . With slitter
83/4705 . . . . Plural separately mounted flying cutters
83/4708 . . . . With means to render cutter pass[es] ineffective
83/4711 . . . . With means to produce "mis-cut"
83/4714 . . . . Oscillating work shifter adjacent cutter
83/4717 . . . . Work actuated senser initiates shifter
83/472 . . . . Wire tool
83/4722 . . . . On tool support having reciprocation parallel to direction of work-feed
83/4725 . . . . And rotation about axis parallel to direction of work-feed
83/4728 . . . . Tool flies by engagement with the work
83/4731 . . . . Tool merely flexes with moving work
83/4734 . . . . Flying support or guide for work
83/4737 . . . . With tool speed regulator
83/474 . . . . With work feed speed regulator
83/4743 . . . . With means to vary cyclically speed of work
83/4746 . . . . Spring return of tool in counterfe direction
83/4749 . . . . Tool mounted on oscillating standard
83/4751 . . . . Both tools of couple on single standard
83/4754 . . . . One tool swings out of work path on return stroke
83/4757 . . . . Tool carrier shuttles rectilinearly parallel to direction of work feed
83/476 . . . . Including means to secure work to carrier
83/4763 . . . . Both members of cutting pair on same carrier
83/4766 . . . . Orbital motion of cutting blade
83/4769 . . . . Work feeder mounted on tool support
83/4772 . . . . Gripper-type feeder
83/4775 . . . . Tool speed varied within each orbital cycle
83/4778 . . . . Work feed gripper carried on endless belt
83/478 . . . . Endless belt or chain tool carrier
83/4783 . . . . Constantly oriented tool with arcuate cutting path
83/4786 . . . . Cutting couple type
83/4789 . . . . Rotatable disc-type tool on orbiting axis
83/4792 . . . . Idling disc
83/4795 . . . . Rotary tool
83/4798 . . . . Segmented disc slitting or slotting tool
83/4801 . . . . With undulant cutting edge [e.g., "pinking" tool]
83/4804 . . . . Single tool action drive
83/4807 . . . . With one-revolution drive
83/4809 . . . . With loop former preceding tool
83/4812 . . . . Compound movement of tool during tool cycle
83/4815 . . . . Axial reciprocation of tool
83/4818 . . . . Interconnected work feeder and tool driver
83/4821 . . . . Side cutting helical blade
83/4824 . . . . With means to cause progressive transverse cutting
83/4827 . . . . With helical cutter blade
83/483 . . . . With cooperating rotary cutter or backup
83/4833 . . . . Cooperating tool axes adjustable relative to each other
83/4836 . . . . With radial overlap of the cutting members
83/4838 . . . . With anvil backup
83/4841 . . . . With resilient anvil surface
83/4844 . . . . Resiliently urged cutter or anvil member
83/4847 . . . . With cooperating stationary tool
83/485 . . . . Cutter with timed stroke relative to moving work
83/487 . . . . Work swings about progressively cutting tool during tool stroke
83/489 . . . . Tool actuated by movable work support
83/49 . . . . Traveling cutter
83/492 . . . . With means to vary timing of tool feed
83/494 . . . . Uniform periodic tool actuation
83/496 . . . . With periodic lateral feed of tool or work
83/498 . . . . With plural tool stations
83/50 . . . . Reciprocating tool
83/501 . . . . With plural tools on a single tool support
83/503 . . . . With plural tool stations
83/505 . . . . Operation controlled by means responsive to product
83/515 . . . . Actuation of tool controlled
83/525 . . . . Operation controlled by detector means responsive to work
83/527 . . . . With means to control work-responsive signal system
83/528 . . . . To delay response to work-senser
83/53 . . . . To change length of product
83/531 . . . . With plural work-sensing means
83/533 . . . . With photo-electric work-sensing means
83/535 . . . . Release of interlock controlled
83/536 . . . . Movement of work controlled
83/538 . . . . Positioning of tool controlled
83/54 . . . . Actuation of tool controlled by work-driven means to measure work length
83/541 . . . . Actuation of tool controlled in response to work-sensing means
83/543 . . . . Sensing means responsive to work indicium or irregularity
83/544 . . . . With trip-switch in work-sensing mechanism
83/546 . . . . Interrelated tool actuating and work guide moving means
83/566 . . . . Interrelated tool actuating means and means to actuate work immobilizer
83/5669 . . . . Work clamp
83/5678 . . . . Tool deflected by guide on tightened clamp
83/5687 . . . . With means to control clamping force
83/5696 . . . . Clamp driven by reaction from tool force
83/5705 . . . . With means providing for plural steps in clamping stroke
83/5715 . . . . With sequencing means
83/5724 . . . With provision for manual control of clamp
83/5733 . . . Tool or tool support on movable clamp jaw
83/5742 . . . Clamp moved by direct impact of tool or tool support
83/5751 . . . Clamp retracted by impact of tool or tool support
83/576 . . . Clamp actuating means driven by tool or tool support
83/5769 . . . Clamp yieldably driven by tool or tool support
83/5778 . . . With resilient drive element
83/5787 . . . Clamp driven by yieldable means
83/5796 . . . Drive means is resilient
83/5805 . . . Fluid pressure yieldable drive means
83/5815 . . Work-stop abutment
83/5824 . . Oppositely effective abutments
83/5833 . . With cyclic means to alter work-stopping position
83/5842 . . Stop partakes of tool motion
83/5851 . . Carried by tool or tool support
83/586 . . Interrelated tool actuating means and means to actuate work-mover stop
83/606 . . Interrelated tool actuating means and guard means
83/613 . . Work guard
83/619 . . Cutter guide slot closer
83/626 . . Operation of member controlled by means responsive to position of element remote from member [e.g., interlock]
83/637 . . With means to initiate operation of member
83/647 . . With means to convey work relative to tool station
83/6472 . . By fluid current
83/6473 . . Centrifugal feed to tangential tool [e.g., "Beria" type]
83/6475 . . With means to regulate work-feed speed
83/6476 . . Including means to move work from one tool station to another
83/6478 . . Tool stations angularly related
83/648 . . Work manipulated between tool stations
83/6481 . . With static tool
83/6483 . . Tool stations staggered relative to one another
83/6484 . . Punch or die station
83/6486 . . Notcher or pinker station
83/6488 . . Work reciprocated past double-edged knife
83/649 . . Slitter station
83/6491 . . And transverse cutter station
83/6492 . . Plural passes of diminishing work piece through tool station
83/6494 . . Work alternately, angularly re-oriented relative to tool station
83/6496 . . By additional means to engage work and orient it relative to tool station
83/6497 . . By roller or roll-like element
83/6499 . . Work rectilinearly reciprocated through tool station
83/65 . . With means to cause or permit angular re-orientation of work about axis parallel to plane of cut
83/6502 . . By endless member having work-engaging teeth
83/6504 . . By member having work-engaging tooth
83/6505 . . Including plural work-engaging teeth
83/6507 . . . . . . . Fluid operated
83/6508 . . . . With means to cause movement of work transversely toward plane of cut
83/651 . . . . By means to cause movement toward and away from plane of cut
83/6512 . . . . Actuated by movement of a member on reciprocating means
83/6513 . . . . Actuated by passive means which is external to reciprocating means
83/6515 . . . . By means to define increment of movement toward plane of cut
83/6516 . . . . Interrelated with movement of reciprocating means
83/6518 . . . . By pusher mechanism
83/652 . . . . With additional work holding or positioning means
83/6521 . . . . Work holding means includes actuator
83/6523 . . . . Including plural, simultaneously acting pusher elements
83/6524 . . . . Independently adjustable
83/6526 . . . . With additional means to retract elements
83/6528 . . . . Power derived from movement of reciprocating means
83/6529 . . . . Power derived from fluid pressure means
83/6531 . . . . Movement by screw means
83/6532 . . . . Movement by rack and pinion or pawl
83/6534 . . . . With handle
83/6536 . . . . By carriage
83/6537 . . . . By cable or belt drive
83/6539 . . . . With means for transverse positioning of work on a moving conveyor
83/654 . . . . With work-constraining means on work conveyor [i.e., "work-carrier"]
83/6542 . . . . Plural means to constrain plural work pieces
83/6544 . . . . End of work protrudes through aperture in carrier
83/6545 . . . . With means to guide work-carrier in nonrectilinear path
83/6547 . . . . About axis fixed relative to tool station
83/6548 . . . . Infeed
83/655 . . . . About vertical axis
83/6552 . . . . Cut normal to axis
83/6553 . . . . Work-guide tube
83/6555 . . . . Cut normal to axis
83/6556 . . . . Oscillating work-carrier
83/6558 . . . . Multiple cutters
83/656 . . . . Coaxial rotary cutters
83/6561 . . . . Work stationary during cut
83/6563 . . . . With means to orient or position work carrier relative to tool station
83/6564 . . . . By pattern or templet
83/6566 . . . . By indexing means
83/6568 . . . . With additional work-locating means on work-carrier
83/6569 . . . . With means to stop work conveyor
83/6571 . . . . With means to store work articles
83/6572 . . . . With additional means to engage work and orient it relative to tool station
83/6574 . . . . By work-stopping abutment
83/6576 . . . . By opposed lateral guide means
83/6577 . . . With means to adjust additional means
83/6579 . . . With means to press work to work-carrier
83/658 . . . With projections on work-carrier [e.g., pin wheel]
83/6582 . . . Tool between tandem arranged work carrying means
83/6584 . . . Cut made parallel to direction of and during work movement
83/6585 . . . Including nonconcurrently acting tool
83/6587 . . . Including plural, laterally spaced tools
83/6588 . . . Tools mounted on common tool support
83/659 . . . Tools axially shiftable on support
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
83/705 . . . 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
83/717 . . . By lever means
83/7176 . . . By screw-threaded means
83/7183 . . . Including "figure-8" band
83/7189 . . . Comprising plural bands
83/7195 . . . Including means to adjust relationship between band and work-support surface
83/7201 . . . By varying angle between band and work-support surface
83/7208 . By tilting band carrier
83/7214 . . . About point of intersection of cutting span and work-support surface
83/722 . . . By varying distance between band and work-support surface
83/7226 . . . With means to guard the tension
83/7233 . . . Including means to retard undriven pulley or sprocket
83/7239 . . . With means to vary distance between pulley or sprocket axes
83/7245 . . . And angular relationship of axes
83/7251 . . . Including means to yieldably bias pulley
83/7258 . . . By fluid means
83/7264 . . . With special blade guide means
83/727 . With means to guide moving work
83/728 . . . In pivotal or arcuate movement
83/73 . . . Guide fixed to or integral with stationary tool element
83/731 . . . Tool element cooperates with a second tool
83/732 . . . With guard
83/734 . . . With attachment or operative connection to tool carrier
83/735 . With attachment or operative connection to passive tool guide
83/736 . . . Guide cooperates with template or straight edge secured to work
83/738 . . . Curved or deflecting guide
83/739 . . . Positively confines or otherwise determines path of work
83/74 . . . Adapted to permit maneuvering of work at tool zone

83/741 . . . With movable or yieldable guide element
83/743 . . . Opposed to work-supporting surface
83/744 . . . Plural guide elements
83/745 . . . Opposed
83/747 . . . Opposed to work-supporting surface
83/748 . . . With work immobilizer
83/7487 . . . Means to clamp work
83/7493 . . . Combined with, peculiarly related to, other element
83/75 . . . With or to tool guide
83/7507 . . . Guide for traveling cutter
83/7513 . . . Tool or tool support on movable clamp jaw
83/752 . . . With means providing for plural steps in clamping stroke
83/7527 . . . With equalizer or self-aligning jaw
83/7533 . . . With biasing or counterbalancing means
83/754 . . . Clamp driven by yieldable means
83/7547 . . . Liquid pressure actuating means
83/7553 . . . Including means to retain clamp jaw in position
83/756 . . . Self-locking drive means
83/7567 . . . Manually actuated drive means
83/7573 . . . Including clamping face of specific structure
83/758 . . . With means to adjust clamp position or stroke
83/7587 . . . Gapped work-constrainer
83/7607 . . . Work-stop abutment
83/76 . . . With scale or indicator
83/7601 . . . Normal to plane of cut
83/7613 . . . Adjustable
83/762 . . . Angularly relative to plane of cut; e.g., miter
83/7627 . . . With traversing cutter guide; e.g., cut-off saw
83/7633 . . . Collapsible
83/764 . . . Retractable
83/7647 . . . Adjustable
83/7653 . . . Having curved cutting edge to make arcuate cut, plural nonaligned intersecting cutting edges, or spaced punches
83/766 . . . Spaced edges
83/7667 . . . Having curved cutting edge to make arcuate cut, plural nonaligned intersecting cutting edges, or spaced punches
83/7673 . . . Spaced edges
83/768 . . . Rotatable disc tool pair or tool and carrier
83/7684 . . . With means to support work relative to tool[s]
83/7688 . . . Plural tool elements successively actuated at same station
83/7693 . . . Tool moved relative to work-support during cutting
83/7697 . . . Tool angularly adjustable relative to work-support
83/7701 . . . Supporting surface and tool axis angularly related
83/7705 . . . Adjustable angular relationship
83/7709 . . . Unidirectionally movable work support
83/7713 . . . With opposed work-presser
83/7718 . . . Presser co-axial with tool
83/7722 . . . Support and tool relatively adjustable
83/7726 . . . By movement of the tool
83/773 . . . Work-support includes passageway for tool [e.g., slotted table]
83/7734 . . . With guard for tool
83/7738 . . . Optional tool pairs alternatively operative
83/7743 . . . One element of tool pairs common to all pairs
83/7747 . . . With means to permit replacement of tool
83/7751 . . . Means to separate elements of tool pair
83/7755 . . . Carrier for rotatable tool movable during cutting
83/7759 . . . Unicyclic movement
83/7763 . . . Tool carrier reciprocable rectilinearly
83/7768 . . . With means to adjust path of reciprocation
83/7772 . . . Angular relative to previous path
83/7776 . . . With means to reciprocate carrier
83/7778 . . . And means to rotate tool
83/7784 . . . With means to rotate tool
83/7788 . . . Tool carrier oscillated or rotated
83/7793 . . . Means to rotate or oscillate tool
83/7797 . . . Including means to rotate both elements of tool pair
83/7801 . . . Including means to rotate both elements at different speeds
83/7805 . . . And means to change speed of rotation
83/7809 . . . Tool pair comprises rotatable tools
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
83/7826 . . . With shifting mechanism for at least one element of tool pair
83/783 . . . Tool pair comprises contacting overlapped discs
83/7834 . . . With means to effect axial pressure on pair
83/7838 . . . With means to change axial pressure
83/7843 . . . With means to change overlap of discs
83/7847 . . . Tool element axially shiftable
83/7851 . . . Tool pair comprises disc and cylindrical anvil
83/7855 . . . With adjustable means to urge tool elements together
83/7859 . . . Elements of tool pair adjustably spaced
83/7863 . . . Tool pair comprises rotatable tool and nonrotatable tool
83/7868 . . . Tool element selectively operative
83/7872 . . . Tool element mounted for adjustment
83/7876 . . . Plural, axially spaced tool elements
83/788 . . Tool pair comprises rotatable anvil and fixed-type tool
83/793 . . Anvil has motion in addition to rotation [i.e., traveling anvil]
83/798 . . Additional motion is along fixed arcuate path
83/803 . . With plural anvils
83/808 . Two tool pairs, driver for one pair moves relative to driver for other pair
83/811 . . One tool support acts as driver for other
83/814 . . Punch and shear
83/817 . . With variable spacing between tool pairs
83/819 . . With intermediate work support
83/822 . . Punch and shear
83/825 . . Successively acting
83/828 . . With illuminating or viewing means for work
83/839 . . Mirror or lens
83/849 . . With signal, scale, or indicator
83/85 . . Signal; e.g., alarm
83/851 . . Indicator comprising work or product
83/852 . . Responsive to force
83/853 . . Indicates tool position
83/855 . . Relative to another element

83/856 . . . To work-engaging member
83/857 . . . Calibrated scale or indicator
83/858 . . . Indicates dimension of work being cut
83/859 . . . Dynamic indicator
83/86 . . . To another tool assembly
83/861 . . . To cooperating tool
83/862 . . . To another component of tool assembly
83/863 . . . Adjustable guide for traversing tool; e.g., radial saw guide or miter saw guide
83/865 . . . Indicates work characteristic
83/866 . . . Indicates wear
83/867 . . . Bubble level
83/868 . . . Counter
83/869 . . . Means to drive or to guide tool
83/8691 . . . Unicyclic
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
83/8702 . . . Chicker die press
83/8703 . . . With die handling attachment
83/8704 . . . With reciprocating presser
83/8706 . . . Laterally movable to selective operative positions
83/8707 . . . Pivotal or revolving only
83/8709 . . . With means to impart, limit, or control pivotal motion of presser
83/871 . . . Interrelated with presser reciprocating means
83/8712 . . . With means to mount presser for oscillation about column
83/8713 . . . With adjustable bed block
83/8714 . . . Including presser member reinforcing, or flexure compensating, means
83/8716 . . . With manually actuated control apparatus for reciprocation of presser member
83/8717 . . . By deforming resilient tool or tool support
83/8719 . . . With transmission yieldable on overload
83/872 . . . With guard means
83/8722 . . . Static
83/8723 . . . Adjustable
83/8725 . . . Including movable, tool protecting, cushioning sheet
83/8726 . . . Single tool with plural selective driving means
83/8727 . . . Plural tools selectively engageable with single drive
83/8729 . . . Predetermined sequence of selection
83/873 . . . Of paired tools
83/8732 . . . Turret of tools
83/8733 . . . Tool movable to cooperate selectively with one of a plurality of mating tools
83/8735 . . . With means providing for plural steps in tool stroke
83/8736 . . . Sequential cutting motions
83/8737 . . . With tool positioning means synchronized with cutting stroke
83/8739 . . . Anvil moves into and out of operative position
83/874 . . . Straight line positioning
83/8742 . . . Tool pair positionable as a unit
83/8743 . . . Straight line positioning
83/8745 . . . Tool and anvil relatively positionable
83/8746 . . . Straight line
83/8748 . . . Tool displaceable to inactive position [e.g., for work loading]
83/8749 . . . By pivotal motion
83/875 . . . With templet surface following tool
83/8752 . . . Tool moves work to and against cooperating tool
83/8753 . . . With means to clamp or bind work to moving tool
83/8755 . . . One tool resiliently mounted or biased
83/8756 . . . Work forced through tool aperture or between spaced cooperating tools
83/8758 . . . Manually actuated work-moving tool
83/8759 . . . With means to connect or disconnect tool and its drive
83/8761 . . . Continuously moving drive means [e.g., “gag”]
83/8762 . . . Hand actuated connecting means
83/8763 . . . Convertible from tool path to another or from implement to machine
83/8765 . . . Magnet- or solenoid-actuated tool
83/8766 . . . Tool movement modifies actuating circuit
83/8768 . . . Solenoid core is tool or tool support
83/8769 . . . Cutting tool operative in opposite directions of travel
83/8771 . . . Motion direction of tool influenced by resistance of work
83/8772 . . . One tool edge of tool pair encompasses work [e.g., wire cutter]
83/8773 . . . Bevel or miter cut
83/8775 . . . With tool tensioning means
83/8776 . . . Constantly urged tool or tool support [e.g., spring biased]
83/8778 . . . Ledger blade
83/8779 . . . Oscillating tool urged axially
83/8781 . . . And urged about pivotal axis
83/8782 . . . Stored energy furnishes cutting force
83/8784 . . . With reset
83/8785 . . . Through return [noncutting] stroke
83/8786 . . . Oscillating tool
83/8788 . . . Tool return mechanism separate from tool advance mechanism
83/8789 . . . With simple revolving motion only
83/8791 . . . Tool mounted on radial face of rotor
83/8792 . . . Variable speed during one revolution [e.g., intermittent]
83/8794 . . . Revolving tool moves through recess in work holder or cooperating tool
83/8795 . . . . . . Progressively cutting
83/8796 . . . Progressively cutting
83/8798 . . . With simple oscillating motion only
83/8799 . . . Plural tool pairs
83/8801 . . . Plural tools on single oscillating arm [i.e., tool holder]
83/8802 . . . And means to move cooperating cutter member
83/8804 . . . Tool driver movable relative to tool support
83/8805 . . . Cam or eccentric revolving about fixed axis
83/8807 . . . Gear or ratchet pawl drives toothed tool support
83/8808 . . . Toggle links, one link pivoted to tool support
83/8809 . . . Fixed axis lever
83/8811 . . . . . . Adjustable mechanical advantage
83/8812 . . . Cutting edge in radial plane
83/8814 . . . Adjustable
83/8815 . . . With guide means for the cutting member
83/8817 . . . Axially extending cutting edge
83/8818 . . . Axially progressing cut
83/882 . . . . . . Adjustable
83/8821 . . . With simple rectilinear reciprocating motion only
83/8822 . . . Edge-to-edge of sheet or web [e.g., traveling cutter]
83/8824 . . . With provision for dynamic balance
83/8825 . . . With lost motion in tool drive
83/8827 . . . Means to vary force on, or speed of, tool during stroke
83/8828 . . . Plural tools with same drive means
83/883 . . . . . . Tools positioned by template
83/8831 . . . Plural distinct cutting edges on same support
83/8832 . . . Concentrically mounted
83/8834 . . . . . . Successively acting
83/8835 . . . And means to move cooperating cutting member
83/8837 . . . With application of force to opposite ends of tool supporting crosshead
83/8838 . . . By relatively movable fixed axis levers
83/884 . . . . . . By connecting rod articulated with tool support
83/8841 . . . Tool driver movable relative to tool support
83/8843 . . . . . . Cam or eccentric revolving about fixed axis
83/8844 . . . Gear actuated tool support
83/8845 . . . . . . Toggle links, one link pivoted to tool support
83/8847 . . . Screw actuated tool support
83/8848 . . . . . . Connecting rod articulated with tool support
83/885 . . . . . . Fixed axis lever
83/8851 . . . . . . Adjustable mechanical advantage
83/8853 . . . . . . Including details of guide for tool or tool support
83/8854 . . . . . . Progressively cutting
83/8855 . . . . . . With spaced guide pins [e.g., die set leader pins]
83/8857 . . . . . . With inclined guides
83/8858 . . . Fluid pressure actuated
83/886 . . . . . . Utilizing fluid amplifier
83/8861 . . . Diaphragm
83/8863 . . . Explosive fluid
83/8864 . . . . . . Plural cylinders
83/8866 . . . Offset cutter
83/8867 . . . With means to adjust tool position on tool holder
83/8868 . . . . . . Adjustably mounted cooperating tool
83/887 . . . . . . Parallel draw-cut [e.g., translatory]
83/8871 . . . Link suspension
83/8873 . . . Straight line motion combined with tilting in plane of stroke
83/8874 . . . Uniplanar compound motion
83/8876 . . . Reciprocating plus work approach [e.g., saw type]
83/8877 . . . With gyroratory drive
83/8878 . . . Guide
83/888 . . . . . . With nonrigidly positioned member
83/8881 . . . With anti-friction means
83/8883 . . . . . . Roller with peripheral flange or groove
83/8884 . . . . . . Disc
Former US Class 83 series

83/8886 . . . With means to vary space between opposed members
83/8887 . . . By rectilinear movement of member
83/8889 . . . With means to adjust position
83/889 . Tool with either work holder or means to hold work supply
83/896 . . . Rotatable wound package supply
83/902 . . . Plural supply sources
83/909 . Cutter assemblage or cutter element therefor [e.g., chain saw chain]
83/913 . With means permitting removal of cutter element
83/917 . . . Having diverse cutting elements
83/921 . . . And noncutting depth gauge
83/925 . . . Having noncutting depth gauge
83/929 . Tool or tool with support
83/9292 . . . Wire tool
83/9295 . . . Work supported tool [e.g., clicker die]
83/9297 . . . With product ejection facilitator
83/93 . With tool manipulating portion
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
83/9314 . . . Pointed perforators
83/9317 . . . Endless band or belt type
83/9319 . . . Toothed blade or tooth therefor
83/9321 . . . With means to vary tooth position
83/9324 . . . With additional cutting means
83/9326 . . . Plural separable sections
83/9329 . . . Tooth separable from blade
83/9331 . . . By independent connecting element
83/9333 . . . Transversely movable
83/9336 . . . Arcutely movable
83/9338 . . . With additional element to prevent movement of connecting element
83/9341 . . . Rectilneary movable
83/9343 . . . By deformation
83/9346 . . . Uniformly varying teeth or tooth spacing
83/9348 . . . Undulating tooth arrangement
83/935 . . . Plural tooth groups
83/9353 . . . Including raker tooth group
83/9355 . . . Including intermediate raker tooth
83/9358 . . . Series of dissimilar teeth
83/936 . . . Series of allochiral teeth
83/9362 . . . Teeth having transversely curved cutting edge
83/9365 . . . Teeth having cutting edge parallel to blade surface
83/9367 . . . Teeth having cutting edge perpendicular to blade surface
83/937 . Tool mounted by and between spaced arms
83/9372 . . . Rotatable type
83/9374 . . . With spacer interposed between shaft-mounted tools
83/9377 . . . Mounting of tool about rod-type shaft
83/9379 . . . At end of shaft
83/9382 . . . Punching plus nonpunching tool
83/9384 . . . Notching plus nonnotching tool
83/9387 . . . Punching tool
83/9389 . . . Shear type
83/9391 . . . Notching tool

83/9394 . . . Helical tool
83/9396 . . . Shear type
83/9399 . . . Cutting edge wholly parallel to axis of rotation
83/9401 . . . Cutting edge wholly normal to axis of rotation
83/9403 . . . Disc type
83/9406 . . . Radially adjustable tool
83/9408 . . . Spaced cut forming tool
83/9411 . . . Cutting couple type
83/9413 . . . Spiral type cutter
83/9416 . . . To punch and cut punched article
83/9418 . . . Punching plus nonpunching tool
83/942 . . . Notching plus nonnotching tool
83/9423 . . . Punching tool
83/9425 . . . Tool pair
83/9428 . . . Shear-type male tool
83/943 . . . Multiple punchings
83/9432 . . . Plural spaced successively operative shearing portions
83/9435 . . . Progressive cutting
83/9437 . . . Shear-type female tool
83/944 . . . Multiple punchings
83/9442 . . . Notching tool
83/9444 . . . Shear type
83/9447 . . . Shear type
83/9449 . . . Spaced cut forming tool
83/9452 . . . With tool contour adjusting means
83/9454 . . . Reciprocable type
83/9457 . . . Joint or connection
83/9459 . . . Magnetic connection
83/9461 . . . Resiliently biased connection
83/9464 . . . For rotary tool
83/9466 . . . Flexible sleevelike tool
83/9469 . . . Adjustable
83/9471 . . . Rectilinearly
83/9473 . . . For rectilinearly reciprocating tool
83/9476 . . . Tool is single element with continuous cutting edge [e.g., punch, etc.]
83/9478 . . . Tool is single element reciprocable generally perpendicularly to elongate cutting edge [e.g., shear, etc.]
83/9481 . . . Tool is single element reciprocable along elongate cutting edge [e.g., saw blade, etc.]
83/9483 . . . Adjustable
83/9486 . . . Rectilinearly
83/9488 . . . Adjustable
83/949 . . . Rectilinearly
83/9493 . . . Stationary cutter
83/9495 . . . Nonparallel cutting edges
83/9498 . . . Parallel cutting edges
83/95 . . . Machine frame
83/96 . . . Guard
83/97 . . . Miscellaneous

Former US Class 117 Series

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
Former US Class 117 Series

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
117/1086 . . . including heating or cooling details
117/1092 . . . Shape defined by a solid member other than seed or product [e.g., Bridgman-Stockbarger]
117/1096 . . . including pressurized crystallization means [e.g., hydrothermal]

Former US Class 137 series

137/00 Fluid handling
137/0318 . Processes
137/0324 . . . With control of flow by a condition or characteristic of a fluid
137/0329 . . . Mixing of plural fluids of diverse characteristics or conditions
137/0335 . . . Controlled by consistency of mixture
137/034 . . . Controlled by conductivity of mixture
137/0346 . . . Controlled by heat of combustion of mixture
137/0352 . . . Controlled by pressure
137/0357 . . . For producing uniform flow
137/0363 . . . For producing proportionate flow
137/0368 . . . By speed of fluid
137/0374 . . . For regulating boiler feed water level
137/0379 . . . By fluid pressure
137/0385 . . . Carbonated beverage handling processes
137/0391 . . . Affecting flow by the addition of material or energy
137/0396 . . . Involving pressure control
137/0402 . . . Cleaning, repairing, or assembling
137/0407 . . . Repairing or assembling hydrant [e.g., fireplug, etc.]
137/0413 . . . Gas or water meter repairing or assembling
137/0419 . . . Fluid cleaning or flushing
137/0424 . . . Liquid cleaning or flushing
137/043 . . . Valve or valve seat cleaning
137/0435 . . . Mechanical cleaning [e.g., pig, etc.]
137/0441 . . . Repairing, securing, replacing, or servicing pipe joint, valve, or tank
137/0447 . . . Including joint or coupling
137/0452 . . . Detecting or repairing leak
137/0458 . . . Tapping pipe, keg, or tank
137/0463 . . . Particular aperture forming means
137/0469 . . . Cutter or cutting tool
137/0475 . . . Having deformable or inflatable means
137/048 . . . With content loading or unloading [e.g., dispensing, discharge assistant, etc.]
137/0486 . . . Specific valve or valve element mounting or repairing
137/0491 . . . Valve or valve element assembling, disassembling, or replacing
137/0497 . . . Fluid actuated or retarded
137/0502 . . . Multi way valve
137/0508 . . . Ball valve or rotary ball valve
137/0514 . . . Gate valve
137/0519 . . . Plug valve
137/0525 . . . Butterfly valve
137/053 . . . Float valve
137/0536 . . Highspeed fluid intake means [e.g., jet engine intake]
137/0645 . . . With condition responsive control means
137/0753 . . Control by change of position or inertia of system
137/0777 . . . With second control
137/0801 . . . Position relative body of water [e.g., marine governors]
137/0826 . . . Float controlled
137/085 . . . Pressure or head controlled
137/0874 . . . Vent opening or closing on tipping container
137/0898 . . . By shifting of liquid level
137/0923 . . . By pendulum or swinging member
137/0947 . . . With servo connection to valve
137/0971 . . . Speed responsive valve control
137/0989 . . . Acceleration responsive valve control
137/1007 . . . With manual valve control
137/1026 . . . Speed change and excess speed valve control
137/1044 . . . With other condition responsive valve control
137/1062 . . . Governor drive failure responsive
137/108 . . . Centrifugal mass type [exclusive of liquid]
137/1098 . . . With multiple valves
137/1116 . . . Periodically actuated valve
137/1135 . . . Rotating valve and rotating governor
137/1153 . . . Excess speed responsive
137/1171 . . . With fluid servo-motor
137/1189 . . . Freeze condition responsive safety systems
137/1244 . . . With freeze waste
137/1298 . . . Stop and waste
137/1353 . . . Low temperature responsive drains
137/1407 . . . Combustion failure responsive fuel safety cut-off for burners
137/1516 . . . Thermo-electric
137/1624 . . . Destructible or deformable element controlled
137/1632 . . . Destructible element
137/1639 . . . Combined destructible and fusible element
137/1647 . . . Explosive actuation
137/1654 . . . Separable valve coupling or conduit
137/1662 . . . Tensile or sheer pin or bolt
137/1669 . . . Tensile or sheer pin or bolt
137/1677 . . . Pressure causes pin or bolt to destruct
137/1684 . . . With alarm or indicator
137/1692 . . . Rupture disc
137/1699 . . . Means for holding entire disc after rupture
137/1707 . . . Disc burst after destruction of additional element
137/1714 . . . Direct pressure causes disc to burst
137/1722 . . . Two-way rupture disc
137/1729 . . . Dome shape
137/1737 . . . Reverse buckling
137/1744 . . . Specific weakening point
137/1752 . . . Integral disc assembly
137/1759 . . . Knife or cutter causes disc to break
137/1767 . . . Movable knife or cutter
137/1774 . . . With counterbalancing element
137/1782 . . . Frangible element returns pressure responsive valve
137/1789 . . . Having pressure responsive valve
137/1797 . . . Heat destructible or fusible
137/1804 . . . With second sensing means
137/1812 . . . In fluid flow path
137/1819 . . . Safety cut-off
137/1827 . . . With heater for destructible or fusible element
137/1834 . . . With external closing means
137/1842 . . . Ambient condition change responsive
137/1866 . . . For controlling soil irrigation
137/189 . . . Soil moisture sensing
137/1915 . . . Burner gas cutoff
137/1939 . . . Atmospheric
137/1963 . . . Temperature
137/1987 . . . With additional diverse control
137/2012 . . . Pressure
137/2036 . . . Underwater
137/206 . . . Flow affected by fluid contact, energy field or coanda effect [e.g., pure fluid device or system]
137/2065 . . . Responsive to condition external of system
137/2071 . . . And causing change or correction of sensed condition
137/2076 . . . Utilizing diverse fluids
137/2082 . . . Utilizing particular fluid
137/2087 . . . Means to cause rotational flow of fluid [e.g., vortex generator]
137/2093 . . . Plural vortex generators
137/2098 . . . Vortex generator as control for system
137/2104 . . . Vortex generator in interaction chamber of device
137/2109 . . . By tangential input to axial output [e.g., vortex amplifier]
137/2115 . . . With means to vary input or output of device
137/212 . . . System comprising plural fluidic devices or stages
137/2125 . . . Plural power inputs [e.g., parallel inputs]
137/2131 . . . Variable or different-value power inputs
137/2136 . . . Pulsating power input and continuous-flow power input
137/2142 . . . With variable or selectable source of control-input signal
137/2147 . . . To cascaded plural devices
137/2153 . . . With feedback passage[s] between devices of cascade
137/2158 . . . With non-fluid energy field affecting input [e.g., transducer]
137/2164 . . . Plural power inputs to single device
137/2169 . . . Intersecting at interaction region [e.g., comparator]
137/2174 . . . Co-lineal, 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 output pressure
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 . . . Movables or part of device
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
Former US Class 137 series

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
137/2594 . . . Choke
137/2597 . . . Variable choke resistance
137/2599 . . . Venturi
137/2602 . . . Flapper
137/2605 . . . Pressure responsive
137/2607 . . . With pressure reducing inlet valve
137/261 . . . Relief port through common sensing means
137/2612 . . . Common sensor for both bypass or relief valve and other branch valve
137/2615 . . . Bypass or relief valve opens as other branch valve closes
137/2617 . . . Bypass or relief valve biased open
137/262 . . . Increasing pressure progressively closes then reopens by-pass or relief valve
137/2622 . . . Bypass or relief valve responsive to pressure downstream of outlet valve
137/2625 . . . Pilot valve
137/2627 . . . Outlet valve carried by bypass or relief valve
137/263 . . . Plural sensors for single bypass or relief valve
137/2632 . . . Sensors interconnected by timing or restrictive orifice
137/2635 . . . Pilot valve operated
137/2637 . . . Mechanical movement between sensor and valve
137/264 . . . Electrical control
137/2642 . . . Sensor rigid with valve
137/2645 . . . Flexible sensor
137/2647 . . . Pressure responsive outlet valve
137/265 . . . Plural outflows
137/2652 . . . Single actuator operates plural outlets simultaneously
137/2655 . . . Biased open isolation valve
137/2657 . . . Flow rate responsive
137/266 . . . Primer valve
137/2663 . . . Pressure responsive
137/2665 . . . With external control for correlating valve [e.g., manual]
137/2668 . . . Alternate or successively substituted outflow
137/267 . . . Control by filling auxiliary gravitating or float operating tank
137/2673 . . . Control by filling outlet tank or receiver
137/2675 . . . Float controlled
137/2678 . . . Four port reversing valve
137/268 . . . Responsive to pressure or flow interruption
137/2683 . . . Plural outlets control with automatic reset
137/2685 . . . Manually set to a single outflow position
137/2688 . . . Flow rate responsive
137/269 . . . Flow sensing turbine
137/2693 . . . Pressure responsive
137/2695 . . . Responsive to outlet pressure
137/2698 . . . Electrical control
137/27 . . . Liquid level responsive
137/270 . . . Pressure responsive
137/2703 . . . Flow rate responsive
137/2705 . . . Pressure differential
137/2708 . . . Plural sensors
137/271 . . . For single valve
137/2713 . . . Siphons
137/272 . . . Plural
137/2727 . . . Tank truck mounted
137/2733 . . . Sequentially discharging in parallel
137/274 . . . From plural tanks
137/2747 . . . Main siphon with auxiliary starting, stopping or resetting siphon
137/2754 . . . Sinking or bucket-type float operated main siphon, float emptying auxiliary siphon
137/2761 . . . With discharge-controlling receiver
137/2766 . . . With float
137/2774 . . . Periodic or accumulation responsive discharge
137/2781 . . . With manual control
137/2788 . . . Control by filling auxiliary tank
137/2795 . . . Float-operated inlet to siphon
137/2802 . . . Release of trapped air
137/2808 . . . Through float-operated vent
137/2815 . . . Through liquid trap seal
137/2829 . . . With strainer, filter, separator or sediment trap
137/2836 . . . With recorder, register, signal, indicator or inspection window
137/2842 . . . With flow starting, stopping or maintaining means
137/2849 . . . Siphon venting or breaking
137/2856 . . . With leakage or entrained air removal
137/2863 . . . Pressure applied to liquid in supply chamber
137/287 . . . Plunge or immersion starting
137/2877 . . . Pump or liquid displacement device for flow passage
137/2883 . . . Piston
137/289 . . . Co-axial within flow passage
137/2897 . . . Collapsible bulb
137/2904 . . . Siphon inlet movable to and from seat
137/2911 . . . With valve or closure in-flow passage
137/2917 . . . With means for mounting and/or positioning relative to siphon chamber
Former US Class 137 series

137/2924 . . . Elements
137/2931 . . . Diverse fluid containing pressure systems
137/2934 . . . Gas lift valves for wells
137/2937 . . . Gas pressure discharge of liquids feed traps [e.g., to boiler]
137/294 . . . Gas pressure controlled by amount of liquids in boiler or discharge receiver
137/2943 . . . Pressure connection at liquid level in boiler or discharge receiver
137/2947 . . . Gas pressure controlled by amount of liquid in trap
137/295 . . . Plural trap chambers
137/2953 . . . Gravitating
137/2956 . . . Gravitating vessel
137/2959 . . . Sinking or bucket type float
137/2962 . . . Pivoted vessel with fluid passage through pivot
137/2965 . . . Float responsive
137/2968 . . . Liquid control valve positively actuated
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
137/355 . . . 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 expandable 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
Former US Class 137 series

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
137/4463 . . . . Liquid seal in liquid flow line; flow liquid forms seal
137/4471 . . . . Valves
137/4478 . . . . Line condition change responsive
137/4486 . . . . Plural valves or valve seats
137/4493 . . . . Pivoted valve
137/4501 . . . . Ball valve
137/4508 . . . . Seats vertically up
137/4516 . . . . Seal replenishers
137/4523 . . . . Plural inlet
137/4531 . . . . Divided and recombined passages
137/4538 . . . . Tangential inlet flow
137/4546 . . . . Downward partition encircles projecting outlet
137/4553 . . . . Submerged inlet pipe end
137/4561 . . . . Hinged seal bowl
137/4568 . . . . Distinct seal bowl in flow line connected casing
137/4576 . . . . U-seals
137/4583 . . . . Topside access beneath cover plate closed floor opening
137/4591 . . . . Enlarged upflow leg
137/4598 . . . . Topside access opening
137/4606 . . . . Even diameter legs
137/4613 . . . . Access opening
137/4621 . . . . Seal for relatively movable valving parts
137/4628 . . . . Horizontally moving valve
137/4636 . . . . Rotary
137/4643 . . . . Liquid valves
137/4651 . . . . Branched passage for sealing liquid
137/4658 . . . . With auxiliary means for varying liquid level
137/4666 . . . . With baffle
137/4673 . . . . Plural tanks or compartments with parallel flow
137/469 . . . . Sequentially filled and emptied [e.g., holding type]
137/4707 . . . . With relative rotation of tank group and filling head
137/4723 . . . . With rotary filling and emptying head

137/474 . . . . . . With housings, supports or stacking arrangements
137/4757 . . . . . . Battery or electrolytic cell replenishment
137/4774 . . . . . . Barometric supply
137/4779 . . . . . . Flow dividing compartments
137/4807 . . . . . . Tank type manifold [i.e., one tank supplies or receives from at least two others]
137/4824 . . . . . . Tank within tank
137/4841 . . . . . . With cross connecting passage
137/4857 . . . . . . With manifold or grouped outlets
137/4874 . . . . . . Tank truck type
137/4891 . . . . . . With holder for solid, flaky or pulverized material to be dissolved or entrained
137/5109 . . . . . . Convertible
137/5153 . . . . . . Reversible check
137/5196 . . . . . . Unit orientable in a single location between plural positions
137/524 . . . . . . Reversible stop and vent or waste
137/5283 . . . . . . Units interchangeable between alternate locations
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
137/5362 . . . . . . Extensible spout
137/5368 . . . . . . Spout articulated to riser
137/5374 . . . . . . Plural riser
137/538 . . . . . . Expansible chamber operated by valve actuator for draining riser
137/5386 . . . . . . With pump or ejector
137/5392 . . . . . . Removable valve and valve seat
137/5397 . . . . . . With extension to facilitate removal
137/5403 . . . . . . Removable valve with supplemental check valve
137/5409 . . . . . . Movable riser actuated valve
137/5415 . . . . . . Reciprocating riser
137/5421 . . . . . . Piston type valve
137/5427 . . . . . . Balanced valve
137/5433 . . . . . . Valve actuator extends laterally from bottom of riser
137/5438 . . . . . . Valve actuator outside riser
137/5444 . . . . . . Lever actuator
137/545 . . . . . . With casing, flush with ground or pavement surface
137/5456 . . . . . . With casing
137/5462 . . . . . . Flush with ground or pavement surface
137/5468 . . . . . . Cap, cover or hood
137/5474 . . . . . . With heater
137/5479 . . . . . . With actuator lubricating means
137/5485 . . . . . . With valve at outlet
137/5491 . . . . . . With supplemental valve
137/5497 . . . . . . Protection against freezing
137/5503 . . . . . . Stop and waste
137/5509 . . . . . . With disabling means
137/5515 . . . . . . Separate relatively movable valves with single actuator
137/5521 . . . . . . Unidirectional abutting connection between main valve or actuator and waste valve
137/5526 . . . . . . With screw or gear in actuating mechanism
137/5532 . . . . . . Reciprocating relatively fixed valves
137/5538 . . . . . . Waste through lower valve guide
137/5544 . . . Reversing valves - regenerative furnace type
137/5617 . . . With cooling
137/5689 . . . Rotary reversing valve
137/5762 . . . With leakage or drip collecting
137/5835 . . . Relatively movable receptacle or drain pipe and outlet
137/5907 . . . Collector for waste liquid derived from solid, gas or vapor
137/598 . . . With repair, tapping, assembly, or disassembly means
137/5983 . . . Blow out preventer or choke valve device [e.g., oil well flow controlling device, etc.]
137/5987 . . . Solenoid or electromagnetically operated valve
137/599 . . . Pressure regulating type valve
137/5994 . . . Diaphragm type
137/5997 . . . Gas or water meter replacing
137/60 . . . Assembling or disassembling flexible tube or sleeve type valve
137/6004 . . . Assembling or disassembling float or float valve
137/6007 . . . Assembling or disassembling multi way valve
137/6011 . . . Assembling, disassembling, or removing cartridge type valve [e.g., insertable and removable as a unit, etc.]
137/6014 . . . Faucet type [e.g., domestic water use, etc.]
137/6017 . . . Including removable valve head and seat unit
137/6021 . . . Including mechanical movement actuator
137/6024 . . . Particular handle or handle fastening means
137/6028 . . . Assembling or disassembling pivoted valve
137/6031 . . . Assembling or disassembling rotary valve
137/6035 . . . Rotary ball valve
137/6038 . . . Particular valve seat or interface seal
137/6041 . . . Replaceable
137/6045 . . . With top entry valve
137/6048 . . . Butterfly valve
137/6052 . . . Having valve head or seat packing
137/6055 . . . With head and stem collections
137/6058 . . . Plug valve
137/6062 . . . Having retainer at actuator end
137/6065 . . . Assembling or disassembling reciprocating valve
137/6069 . . . Having particularly packed or sealed mechanical movement actuator
137/6072 . . . Gate valve
137/6075 . . . Bifaced
137/6079 . . . Having particular valve seat
137/6082 . . . Including seal
137/6086 . . . Assembling or disassembling check valve
137/6089 . . . With mechanical movement between actuator and valve
137/6092 . . . Plural motions of valve
137/6096 . . . Lever type
137/6099 . . . Gear type
137/6103 . . . Cam type
137/6106 . . . Screw type
137/6109 . . . Tool for applying or removing valve or valve member
137/6113 . . . Including sealing feature
137/6116 . . . With holding means functioning only during transportation assembly or disassembly
137/612 . . . Tapping a pipe, keg, or apertured tank under pressure
137/6123 . . . With aperture forming means
137/6126 . . . Imperforate closure removing and holding tap
137/5544 . . . With valved closure or bung
137/613 . . . Combined rotary and longitudinal movement of valve
137/6137 . . . Longitudinal movement of valve
137/614 . . . Rotary movement of valve
137/6144 . . . With core ejectors
137/6147 . . . Impact operated
137/615 . . . Foot valve extraction from top of enclosure
137/6154 . . . With disassembly tool engaging feature
137/6157 . . . Wrench engaging lugs
137/6161 . . . With provision of alternate wear parts
137/6164 . . . Valve heads and/or seats
137/6167 . . . Opposite duplicate surfaces of unitary structure
137/6171 . . . . . . Homogeneous material
137/6174 . . . . . . Valve heads
137/6178 . . . . . . Different portions of continuous surfaces
137/6181 . . . . . . Successively used adjacent independent elements
137/6184 . . . . . . Removable valve with normally disabled supplemental check valve
137/6188 . . . . . . Check valve disabled by normally movable main valve part
137/6191 . . . . . . Ball check
137/6195 . . . . . . Spring bias
137/6198 . . . . . . Non-valving motion of the valve or valve seat
137/6253 . . . . . . Rotary motion of a reciprocating valve
137/6307 . . . . . . Turbine on valve
137/6362 . . . . . . Manual rotating means
137/6416 . . . . . . With heating or cooling of the system
137/6443 . . . . . . With burner
137/647 . . . . . . Flue extending through fluid
137/6497 . . . . . . Hot and cold water system having a connection from the hot to the cold channel
137/6525 . . . . . . Air heated or cooled [fan, fins, or channels]
137/6552 . . . . . . With diversion of part of fluid to heat or cool the device or its contents
137/6579 . . . . . . Circulating fluid in heat exchange relationship
137/6606 . . . . . . With electric heating element
137/6633 . . . . . . With fluid system support for workman or non-system material
137/6851 . . . . . . With casing, support, protector or static constructional installations
137/6855 . . . . . . Vehicle
137/6858 . . . . . . Locomotive
137/6862 . . . . . . Boiler or steam dome
137/6866 . . . . . . Railway car
137/6869 . . . . . . Car frame
137/6873 . . . . . . End of car
137/6877 . . . . . . Roof, wall or floor
137/6881 . . . . . . Automotive
137/6884 . . . . . . Steering post or wheel
137/6888 . . . . . . Dash
137/6892 . . . . . . Floor or frame
137/6895 . . . . . . Fender or running board
137/6899 . . . . . . With hose reel storage means
137/6903 . . . . . . Guided by means of track or guideway
137/6906 . . . . . . Aerial or water-supported [e.g., airplane or ship, etc.]
137/691 . . . . . . With retractable or nonuse-positionable support wheel
Former US Class 137 series

- Vehicle supports fluid compressor and compressed fluid storage tank
- With hose storage or retrieval means
- With means for plural hoses
- With flow regulation responsive to hose movement
- Reel type
- With retrieval means
- Power stop or brake
- Responsive to position of hose in casing
- Biased to retracted position
- Boom type
- Weighted
- Reel with support therefor
- Ground supported
- Basket or holder for folded coiled hose
- Static constructional installations
- Buildings
- Outside access to portions of the system
- Escutcheon type support
- Wall
- Recessed gas outlet box
- Floor installation
- Ground supporting enclosure
- Valve and meter wells
- With means to center well on valve
- Detachable base plate
- Vertical casing aligned by valve casing
- Combined with actuator
- Telescopic well casing
- Telescopic well casing
- Covers
- Pipe line transport
- Tapering or tower type
- Furniture and housing furnishings
- Jacketed
- Tank supports
- Guards and shields
- Resilient abutment for preventing breakage
- Nozzle abutment for scratch or damage prevention
- Cover for beer cooler aperture for faucet
- Sanitary covers or shields
- Valve guards
- With means for accommodating a detachable actuator
- With lock or seal
- Common lock and valve actuator
- Combination lock
- Biased valve
- Mechanical movement between lock and valve
- Locks against rotary motion
- Liquid level responsive or maintaining systems
- Washing machine cycle control
- Liquid excluding devices for gas inlet or outlets
- With second diverse control
- Manual control
- Control of both inflow and outflow of tank
- Electrical characteristic sensing
- With control fluid connection at desired liquid level
- Control of outflow from tank
- Self-emptying tank
- By float
- Low level safety cut-off
- With supplemental or safety closing means or bias
- Sinking or bucket type float
- Servo relay operation
- Gravitating tank
- By weight of accumulated fluid
- In sinking or bucket type float
- Oil burner fuel overflow preventing safety cut-offs
- In communicating measuring vessel
- Top and bottom connections
- In gravitating tank
- By float controlled valve
- Valve opened by external means, closing or controlling by float
- Single float controls plural valves
- Servo relay operation
- Fluid pressure
- Flexible diaphragm valve
- From tank
- Quick acting
- Pilot float released
- Over center mechanism
- Shifting weight
- Trip mechanism
- Weight or spring bias
- Lost motion mechanism
- Plural floats
- With counter-balance
- Within tank
- Level adjustment or selection means
- With float leakage disposal
- In separate communicating float chamber
- Rectilinearly traveling float
- Float co-axial with valve or port
- Float is spreader or anti-splash means
- Float surrounds inlet pipe
- Float rigid with valve
- Float arm operated valve
- With valve retarder or cushion means
- With flow guide or restrictor
- External hood or deflector or annular outlet surrounding the inlet pipe
- Movable nozzle or inlet terminal
- Valve removable from outside container
- With U-shaped inlet pipe having terminal valve
- With refill pipe
- Assembly mounted on and having reciprocating valve element coaxial with inlet pipe
- Horizontal or side entering pipe
- Vertical inlet riser
- With toggle or second lever connected to valve
- With interposed cam, gear or threaded connection
- Rotary valve element
Former US Class 137 series

- 137/7485 . . . Pivoted valve
- 137/7488 . . . Ball valves
- 137/7491 . . . Balanced valves
- 137/7494 . . . Flexible valve
- 137/7498 . . . Barometric
- 137/7501 . . . With shut-off between supply tank and receiver
- 137/7504 . . . Removable valve head and seat unit
- 137/7559 . . . Pump type
- 137/7613 . . . Threaded into valve casing
- 137/7668 . . . Retained by bonnet or closure
- 137/7722 . . . Line condition change responsive valves
- 137/7723 . . . Safety cut-off requiring reset
- 137/7724 . . . Thermal
- 137/7725 . . . Responsive to both high and low pressure or velocity
- 137/7726 . . . Responsive to change in rate of flow
- 137/7727 . . . Excessive flow cut-off
- 137/7728 . . . High pressure cut-off
- 137/7729 . . . Reset by pressure equalization valve or by-pass
- 137/773 . . . Fluid released trip
- 137/7731 . . . Fluid counter-biased or unseated valve
- 137/7732 . . . With mechanical stop against reopening
- 137/7733 . . . With fluid pressure seating of valve
- 137/7734 . . . Fluid opened valve requiring reset
- 137/7736 . . . Consistency responsive
- 137/7737 . . . Thermal responsive
- 137/7738 . . . Pop valves
- 137/7739 . . . Pop closing valves
- 137/774 . . . Pop pressure reactor in inflow to valve
- 137/7741 . . . Pop pressure reactor in branched released path
- 137/7742 . . . Separate relief valves or valves for each branch
- 137/7743 . . . Lost motion between pop pressure reactor and valve
- 137/7744 . . . Adjustable choke
- 137/7745 . . . Annular lip or baffle
- 137/7746 . . . On movable valve part
- 137/7747 . . . Screw threaded
- 137/7748 . . . Combustion engine induction type
- 137/7749 . . . Valve in auxiliary inlet to induction line
- 137/775 . . . With manual modifier
- 137/7751 . . . With suction compensator
- 137/7752 . . . With separate reactor surface
- 137/7753 . . . Unbalanced pivoted valve [e.g., unbalanced butterfly type]
- 137/7754 . . . Line flow effect assisted
- 137/7755 . . . Reactor surface normal to flow
- 137/7756 . . . Reactor surface separated from flow by apertured partition
- 137/7757 . . . Through separate aperture
- 137/7758 . . . Pilot or servo controlled
- 137/7759 . . . Responsive to change in rate of fluid flow
- 137/776 . . . Control by pressures across flow line valve
- 137/7761 . . . Electrically actuated valve
- 137/7762 . . . Fluid pressure type
- 137/7764 . . . Choked or throttled pressure type
- 137/7765 . . . Pilot valve within main valve head
- 137/7766 . . . Choked passage through main valve head
- 137/7767 . . . Loose fitting piston
- 137/7768 . . . Pilot controls supply to pressure chamber
- 137/7769 . . . Single acting fluid servo
- 137/777 . . . Spring biased
- 137/7771 . . . Bi-directional flow valves
- 137/7772 . . . One head and seat carried by head of another
- 137/7773 . . . Supporting valve only spring biased
- 137/7774 . . . Supporting valve spring carried by supporting valve
- 137/7775 . . . Spring stop on supported valve stem
- 137/7776 . . . Spring abuts guide for supported valve stem
- 137/7777 . . . Both valves spring biased
- 137/7778 . . . Axes of ports perpendicular
- 137/7779 . . . Axes of ports parallel
- 137/778 . . . Axes of ports co-axial
- 137/7781 . . . With separate connected fluid reactor surface
- 137/7782 . . . With manual or external control for line valve
- 137/7783 . . . Valve closes in responses to reverse flow
- 137/7784 . . . Responsive to change in rate of fluid flow
- 137/7785 . . . Valve closes in response to excessive flow
- 137/7786 . . . Turbine or swiveling vane type reactor
- 137/7787 . . . Expansible chamber subject to differential pressures
- 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
- 137/7793 . . . With opening bias [e.g., pressure regulator]
- 137/7794 . . . With relief valve
- 137/7795 . . . Multi-stage
- 137/7796 . . . Senses inlet pressure
- 137/7797 . . . Bias variable during operation
- 137/7798 . . . Ancillary reactor surface responds to inlet pressure
- 137/7799 . . . Liquid transfer
- 137/78 . . . Weight
- 137/7801 . . . Balanced valve
- 137/7802 . . . Liquid level responsive gas flow control
- 137/7803 . . . With protective separator
- 137/7804 . . . Main flow through isolated reactor chamber
- 137/7805 . . . Through external pipe
- 137/7806 . . . Modified valve casing
- 137/7807 . . . Adjustable external lever
- 137/7808 . . . Apertured reactor surface surrounds flow line
- 137/7809 . . . Reactor surface separated by apertured partition
- 137/781 . . . In valve stem
- 137/7811 . . . Also through reactor surface
- 137/7812 . . . Valve stem passes through the aperture
- 137/7813 . . . Plural reactor surfaces
- 137/7814 . . . Reactor is an inverted cup having liquid seal
- 137/7815 . . . With movement dampener
- 137/7816 . . . Valve head in inlet chamber
- 137/7818 . . . Valve head in inlet chamber
- 137/7819 . . . Rectilinear valve stem rigid with reactor surface
- 137/782 . . . Reactor surface is diaphragm
- 137/7821 . . . With valve closing bias
- 137/7822 . . . Reactor surface closes chamber
- 137/7823 . . . Valve head in inlet chamber
- 137/7824 . . . Reactor surface is inverted cup [float]
- 137/7825 . . . Rectilinear valve stem rigid with reactor surface
Former US Class 137 series

137/7826 . . . . With valve closing bias
137/7827 . . . . In reactor chamber
137/7828 . . . Valve head on yoke
137/7829 . . . Yoke has valve closing bias
137/783 . . . Reactor operatively connected to valve by mechanical movement
137/7831 . . . With mechanical movement between actuator and valve
137/7832 . . . Plural valves biased closed
137/7833 . . . With means for mounting or connecting to system
137/7834 . . . Valve seat or external sleeve moves to open valve
137/7835 . . . Valve seating in direction of flow
137/7836 . . . Flexible diaphragm or bellows reactor
137/7837 . . . Direct response valves [i.e., check valve type]
137/7838 . . . Plural
137/7839 . . . Dividing and recombining in a single flow path
137/784 . . . Integral resilient member forms plural valves
137/7841 . . . One valve carries head and seat for second valve
137/7842 . . . Diverse types
137/7843 . . . Integral resilient member forms plural valves
137/7845 . . . With common biasing means
137/7846 . . . Mechanically interconnected
137/7847 . . . With leak passage
137/7848 . . . Permits flow at valve interface
137/7849 . . . Bypass in valve casing
137/785 . . . With retarder or dashpot
137/7851 . . . End of valve forms dashpot chamber
137/7852 . . . End of valve moves inside dashpot chamber
137/7853 . . . Enlarged piston on end of valve stem
137/7854 . . . In couplings for coaxial conduits, e.g., drill pipe check valves
137/7855 . . . Valve seat threaded into a coupling element
137/7856 . . . Valve seat formed on or carried by a coupling element
137/7857 . . . Valve seat clamped between coupling elements
137/7858 . . . With means for selecting area of valve or seat
137/7859 . . . Single head, plural ports in parallel
137/786 . . . Concentric ports
137/7861 . . . Annular head
137/7862 . . . Central post on seat
137/7863 . . . Stop
137/7864 . . . With guide
137/7865 . . . Guide
137/7866 . . . Plural seating
137/7867 . . . Sequential
137/7868 . . . Resilient gasket
137/7869 . . . Biased open
137/787 . . . Oppositely swinging vanes
137/7871 . . . Weight biased
137/7873 . . . Ball valves
137/7874 . . . Edge pivoted valve
137/7875 . . . Pivoted valves
137/7876 . . . With external means for opposing bias
137/7877 . . . With means for retaining external means in bias opposing position
137/7878 . . . With bias adjustment indicator

137/7879 . . . Resilient material valve
137/788 . . . Having expansible port
137/7881 . . . Apertured plate
137/7882 . . . Having exit lip
137/7883 . . . With biasing means
137/7884 . . . Side vent
137/7885 . . . Multiple slit
137/7886 . . . Internally extending mount
137/7887 . . . Center flexing strip
137/7888 . . . With valve member flexing about securement
137/7889 . . . Sleeve
137/789 . . . Central mount
137/7891 . . . Flap or reed
137/7892 . . . With stop
137/7893 . . . With spring
137/7894 . . . With weight
137/7895 . . . Peripherally secured diaphragm
137/7896 . . . Annulus
137/7897 . . . Vacuum relief type
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
137/7903 . . . Weight biased
137/7904 . . . Reciprocating valves
137/7905 . . . Plural biasing means
137/7906 . . . Cam means for adjusting and fixing bias
137/7907 . . . Varying effective lever arm
137/7908 . . . Weight biased
137/7909 . . . Valve body is the weight
137/791 . . . Ball valves
137/7911 . . . Removable cage
137/7912 . . . Separable seat
137/7913 . . . Guided head
137/7914 . . . Cage
137/7915 . . . Guide stem
137/7916 . . . With closing stop
137/7917 . . . Oppositely disposed
137/7918 . . . Head slideable on guide rod
137/7919 . . . Guide and seat integral unit
137/792 . . . Guide and closure integral unit
137/7921 . . . Weight coaxial with valve
137/7922 . . . Spring biased
137/7923 . . . With means to protect spring from fluid
137/7924 . . . Spring under tension
137/7925 . . . Piston-type valves
137/7927 . . . Ball valves
137/7928 . . . With follower
137/7929 . . . Spring coaxial with valve
137/793 . . . Broken valve parts retainer
137/7931 . . . Spring in inlet
137/7932 . . . Valve stem extends through fixed spring abutment
137/7933 . . . Yoke or cage-type support for valve stem
137/7934 . . . Spring abuts removable valve stem guide
137/7935 . . . Head slides on guide-rod concentric with spring
137/7936 . . . Spring guides valve head
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137/7937 . . . . . . Cage-type guide for stemless valves
137/7938 . . . . . . Guide means integral and coplanar with valve disk
137/7939 . . . . . . Head between spring and guide
137/794 . . . . . . With means for separating solid material from the fluid
137/7976 . . . . . . Plural separating elements
137/8013 . . . . . . Sediment chamber
137/8049 . . . . . . Movable strainer
137/8085 . . . . . . Hollow strainer, fluid inlet and outlet perpendicular to each other
137/8122 . . . . . . Planar strainer normal to flow path
137/8158 . . . . . . With indicator, register, recorder, alarm or inspection means
137/8175 . . . . . . Plural
137/8192 . . . . . . Unobvious - "combination lock" type
137/8208 . . . . . . Time
137/8225 . . . . . . Position or extent of motion indicator
137/8242 . . . . . . Electrical
137/8259 . . . . . . Selection from plural branches
137/8275 . . . . . . Indicator element rigidly carried by the movable element whose position is indicated
137/8292 . . . . . . Movable indicator element is a pointer
137/8309 . . . . . . Pointer integral with handle
137/8326 . . . . . . Fluid pressure responsive indicator, recorder or alarm
137/8342 . . . . . . Liquid level responsive indicator, recorder or alarm
137/8359 . . . . . . Inspection means
137/8376 . . . . . . Combined
137/8593 . . . . . . Systems
137/85938 . . . . . . Non-valved flow dividers
137/85946 . . . . . . Faucet connected, sink drained
137/85954 . . . . . . Closed circulating system
137/85962 . . . . . . With thermal circulating means [thermosiphons]
137/8597 . . . . . . Main line as motive fluid for follower-type feeder
137/85978 . . . . . . With pump
137/85986 . . . . . . Pumped fluid control
137/85994 . . . . . . Manual
137/86002 . . . . . . Fluid pressure responsive
137/8601 . . . . . . And pilot valve
137/86019 . . . . . . Direct response valve
137/86027 . . . . . . Electric
137/86035 . . . . . . Combined with fluid receiver
137/86043 . . . . . . Reserve or surge receiver
137/86051 . . . . . . Compressed air supply unit
137/86059 . . . . . . Hydraulic power unit
137/86067 . . . . . . Fluid sump
137/86075 . . . . . . And jet-aspiration type pump
137/86083 . . . . . . Vacuum pump
137/86091 . . . . . . Resiliently mounted pump
137/86099 . . . . . . Hand pump
137/86107 . . . . . . Multiple inlet with multiple outlet
137/86115 . . . . . . Downstream cyclic distributor
137/86123 . . . . . . Distributor part unitary with movable pump part
137/86131 . . . . . . Plural
137/86139 . . . . . . Serial
137/86147 . . . . . . With single motive input
137/86155 . . . . . . One pump driven by motive fluid from the other
137/86163 . . . . . . Parallel
137/86171 . . . . . . With pump bypass
137/86179 . . . . . . Drain valve actuator mounted on pump
137/86187 . . . . . . Plural tanks or compartments connected for serial flow
137/86196 . . . . . . Separable with valve-connected passage
137/86204 . . . . . . Fluid progresses by zigzag flow
137/86212 . . . . . . Plural compartments formed by baffles
137/8622 . . . . . . Plural top-to-bottom connected tanks
137/86228 . . . . . . With communicating opening in common walls of tanks or compartments
137/86236 . . . . . . Tank with movable or adjustable outlet or overflow pipe
137/86244 . . . . . . Horizontally traversing outlet
137/86252 . . . . . . Float-supported outlet
137/8626 . . . . . . Swinging outlet pipe or spout
137/86268 . . . . . . With running joint between movable parts of system
137/86276 . . . . . . Movable tank
137/86284 . . . . . . With antisplash means not in flow passage
137/86292 . . . . . . System with plural openings, one a gas vent or access opening
137/863 . . . . . . Access and outlet
137/86308 . . . . . . Tank access opening and bottom outlet
137/86316 . . . . . . Access opening interlock or telltale on outlet valve actuator
137/86324 . . . . . . Tank with gas vent and inlet or outlet
137/86332 . . . . . . Vent and inlet or outlet in unitary mounting
137/8634 . . . . . . With vented outlet
137/86348 . . . . . . Tank with internally extending flow guide, pipe or conduit
137/86356 . . . . . . Nondraining overflow type
137/86364 . . . . . . Inverted "U" passage
137/86372 . . . . . . Inlet internally extending
137/86381 . . . . . . Head-establishing standpipe or expansion chamber [e.g., surge tanks]
137/86389 . . . . . . Programmer or timer
137/86397 . . . . . . With independent valve controller
137/86405 . . . . . . Repeating cycle
137/86413 . . . . . . Self-cycling
137/86421 . . . . . . Variable
137/86429 . . . . . . Attachable and removable element
137/86437 . . . . . . Adjustable cam
137/86445 . . . . . . Plural, sequential, valve actuations
137/86453 . . . . . . Plural trips or trip actuations
137/86461 . . . . . . Variable cycle
137/86469 . . . . . . Clock alarm mechanism controlled
137/86477 . . . . . . Biased latch, cam operated
137/86485 . . . . . . Line condition change responsive release of valve
137/86493 . . . . . . Multi-way valve unit
137/86501 . . . . . . Sequential distributor or collector type
137/86509 . . . . . . Sequentially progressive opening or closing of plural ports
137/86517 . . . . . . With subsequent closing of first port
137/86525 . . . . . . Flow combining with flow dividing
137/86533 . . . . . . Rotary
137/86541 . . . . . . Plug
137/86549 . . . . . . Selective reciprocation or rotation
137/86558 . . . . . . Plural noncommunicating flow paths
137/86566 . . . . . . Rotary plug
137/86574 . . . . . . Supply and exhaust
137/86582 . . . . . . Pilot-actuated

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137/8659 . . . . Variable orifice-type modulator
137/86598 . . . . Opposed orifices; interposed modulator
137/86606 . . . . Common to plural valve motor chambers
137/86614 . . . . Electric
137/86622 . . . . Motor-operated
137/8663 . . . . Fluid motor
137/86638 . . . . Rotary valve
137/86646 . . . . Plug type
137/86654 . . . . For plural lines
137/86662 . . . . Axial and radial flow
137/8667 . . . . Reciprocating valve
137/86678 . . . . Combined disk or plug and gate or piston
137/86686 . . . . Plural disk or plug
137/86694 . . . . Piston valve
137/86702 . . . . With internal flow passage
137/8671 . . . . With annular passage [e.g., spool]
137/86718 . . . . Dividing into parallel flow paths with recombining
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
137/86783 . . . . Unequal heads
137/86791 . . . . Piston
137/86799 . . . . With internal flow passage
137/86807 . . . . Sequential opening or closing of serial ports in single flow line
137/86815 . . . . Multiple inlet with single outlet
137/86823 . . . . Rotary valve
137/86831 . . . . Selective opening of plural ports
137/86839 . . . . Four port reversing valves
137/86847 . . . . Pivoted valve unit
137/86855 . . . . Gate
137/86863 . . . . Rotary valve unit
137/86871 . . . . Plug
137/86879 . . . . Reciprocating valve unit
137/86887 . . . . Combined disk or plug and gate or piston
137/86895 . . . . Plural disk or plug
137/86903 . . . . Plural petcocks
137/86911 . . . . Sequential distributor or collector type
137/86919 . . . . Sequentially closing and opening alternately seating flow controllers
137/86928 . . . . Sequentially progressive opening or closing of plural valves
137/86936 . . . . Pressure equalizing or auxiliary shunt flow
137/86944 . . . . One valve seats against other valve [e.g., concentric valves]
137/86952 . . . . Locomotive throttle
137/8696 . . . . Gate
137/86968 . . . . With balancing chamber
137/86976 . . . . First valve moves second valve
137/86984 . . . . Actuator moves both valves
137/86992 . . . . With subsequent closing of first opened port
137/87 . . . . Simultaneously moved port controllers
137/87008 . . . . Screw-actuated differential valves
137/87016 . . . . Lost motion
137/87024 . . . . Cam determines sequence
137/87032 . . . . Rotary concentric valves
137/8704 . . . . First valve actuates second valve
137/87048 . . . . With preselecting means for plural valve actuator
137/87056 . . . . With selective motion for plural valve actuator
137/87064 . . . . Oppositely movable cam surfaces
137/87072 . . . . Rotation about either of two pivotal axes
137/8708 . . . . Rotation of actuator arm about its pivot and its axis
137/87088 . . . . Reciprocating along and rotation about same axis
137/87096 . . . . Valves with separate, correlated actuators
137/87105 . . . . Correlated across separable flow path joint
137/87113 . . . . Interlocked
137/87121 . . . . Coaxial stems
137/87129 . . . . Rotary
137/87137 . . . . And reciprocating
137/87145 . . . . Concentric, central valve removable
137/87153 . . . . Plural noncommunicating flow paths
137/87161 . . . . With common valve operator
137/87169 . . . . Supply and exhaust
137/87177 . . . . With bypass
137/87185 . . . . Controlled by supply or exhaust valve
137/87193 . . . . Pilot-actuated
137/87201 . . . . Common to plural valve motor chambers
137/87209 . . . . Electric
137/87217 . . . . Motor
137/87225 . . . . Fluid motor
137/87233 . . . . Biased exhaust valve
137/87241 . . . . Biased closed
137/87249 . . . . Multiple inlet with multiple outlet
137/87257 . . . . Hydraulic brake line [e.g., hill holders]
137/87265 . . . . Dividing into parallel flow paths with recombining
137/87273 . . . . With fluid coupling [e.g., railway car hose coupling, truck-trailer oil system coupling, etc.]
137/87281 . . . . System having plural inlets
137/8729 . . . . Having digital flow controller
137/87298 . . . . Having digital flow controller
137/87306 . . . . Having plural branches under common control for separate valve actuators
137/87314 . . . . Electromagnetic or electric control [e.g., digital control, bistable electro control, etc.]
137/87322 . . . . With multi way valve having serial valve in at least one branch
137/8733 . . . . Fluid pressure regulator in at least one branch
137/87338 . . . . Flow passage with bypass
137/87346 . . . . Including mixing feature
137/87354 . . . . Including flowmeter
137/87362 . . . . Including cleaning, treating, or heat transfer feature
137/8737 . . . . Water treatment feature
137/87378 . . . . Second valve assembly carried by first valve head
137/87386 . . . . With rotary plug having variable restrictor
137/87394 . . . . Carried valve is direct response valve [e.g., check valve, etc.]
137/87402 . . . . With foam controlling means [e.g., beer, soda faucets]
137/8741 . . . . With common operator
137/87418 . . . . Balanced valve
137/87426 . . . . Single resilient member actuates or forms plural passages
137/87434 . . . . Valves deform to close passage
137/87442 . . . Rotary valve
137/8745 . . . . Including rigid plate with flexible or resilient seal
137/87458 . . . Axes of rotation of valves intersect at point
137/87467 . . . Axes of rotation parallel
137/87475 . . . Adjacent plate valves always parallel
137/87483 . . . Adjacent plate valves counter rotate
137/87491 . . . Mechanical movement between actuator and non-rotary valve
137/87499 . . . Fluid actuated or retarded
137/87507 . . . Electrical actuator
137/87515 . . . Mechanical movement between actuator and valve
137/87523 . . . Rotary valve
137/87531 . . . Butterfly valve
137/87539 . . . Having guide or restrictor
137/87547 . . . Manually variable
137/87555 . . . Having direct response valve [e.g., check valve, etc.]
137/87563 . . . With reverse flow direction
137/87571 . . . Multiple inlet with single outlet
137/87579 . . . Faucet attachment
137/87587 . . . Combining by aspiration
137/87595 . . . Combining of three or more diverse fluids
137/87603 . . . Plural motivating fluid jets
137/87611 . . . Flow control by varying position of a fluid inlet relative to entrainment chamber
137/87619 . . . With selectively operated flow control means in inlet
137/87627 . . . Flow control means is located in aspirated fluid inlet
137/87635 . . . Single actuator operates flow control means located in both motivating fluid and aspirated fluid inlets
137/87643 . . . With condition responsive valve
137/87652 . . . With means to promote mixing or combining of plural fluids
137/8766 . . . With selectively operated flow control means
137/87668 . . . Single actuator operates plural flow control means
137/87676 . . . With flow control
137/87684 . . . Valve in each inlet
137/87692 . . . With common valve operator
137/877 . . . With flow control means for branched passages
137/87708 . . . With common valve operator
137/87716 . . . For valve having a flexible diaphragm valving member
137/87724 . . . For valve having a ball head
137/87732 . . . With gearing
137/8774 . . . Threaded actuator
137/87748 . . . Pivoted or rotary motion converted to reciprocating valve head motion
137/87756 . . . Spring biased
137/87764 . . . Having fluid actuator
137/87772 . . . With electrical actuation
137/8778 . . . Spring biased
137/87788 . . . With valve or movable deflector at junction
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
137/87989 . . . Delivery cock with terminal valve
137/87997 . . . Alternately seating
137/88005 . . . Biased valve
137/88014 . . . Opposed screw
137/88022 . . . One valve head provides seat for other head
137/8803 . . . Also carries head of other valve
137/88038 . . . One valve head carries other valve head
137/88046 . . . Biased valve with external operator
137/88054 . . . Direct response normally closed valve limits direction of flow
137/88062 . . . Coaxial oppositely directed seats
137/8807 . . . Articulated or swinging flow conduit
137/88078 . . . Actuates valve
137/88086 . . . Plural motions of valve
137/88094 . . . Reciprocating valve
137/88102 . . . Rotary valve
137/881 . . . Frangible
137/9029 . . . With coupling
137/9138 . . . Flexible
137/9247 . . . With closure
137/9464 . . . Faucets and spouts
137/9682 . . . Miscellaneous

Former US Class 137 Series

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
152/10333 . . . . Radial bolt secured
152/10342 . . . . Abutting sections
152/10351 . . . . with annular internal binders
152/1036 . . . . Interfitting
152/10369 . . . . Indented at joints
152/10378 . . . . Casing enclosed core
152/10387 . . . . Separate core
152/10396 . . . . Removable
152/10405 . . . . Sponge rubber
152/10414 . . . . with core compression
152/10423 . . . . Superimposed rings
152/10432 . . . . Sectional transversely
152/10441 . . . . Balls
152/1045 . . . . Integral structure
152/10459 . . . . Recessed
152/10468 . . . . Chambered
152/10477 . . . . Perforated
152/10486 . . . . Chambered
152/10495 . . . . Pneumatic tire or inner tube
152/10504 . . . . Asymmetric tire
152/10513 . . . . Tire reinforcement material characterized by
short length fibers or the like
152/10522 . . . . Multiple chamber
152/10531 . . . . Cylinder and piston
152/1054 . . . . Mutually free walls
152/10549 . . . . Interfitting
152/10558 . . . . Balls
152/10567 . . . . with simultaneous inflating means
152/10576 . . . . Annular chambers
152/10585 . . . . with simultaneous inflating means
152/10594 . . . . Mutually free walls
152/10603 . . . . with simultaneous inflating means
152/10612 . . . . with simultaneous inflating means
152/10621 . . . . Sectional casings
152/1063 . . . . Circumferential

152/10639 . . . . Rigid inner sections
152/10648 . . . . with means restricting relative movement
between tire and inner tube [e.g., anti-creep
feature, etc.]
152/10657 . . . . with means to protect inner tube from rim
152/10666 . . . . Automatic sealing of punctures [e.g., self-
healing, etc.]
152/10675 . . . . Using flowable coating or composition
152/10684 . . . . On inner surface of tubeless tire
152/10693 . . . . . Sealant in plural layers or plural pockets
152/10702 . . . . . within or part of construction of inflating
inner tube
152/10711 . . . . . Sealant in plural layers or plural pockets
152/1072 . . . . . by compression
152/10729 . . . . . with reinflating means
152/10738 . . . . . with means to protect tire from rim
152/10747 . . . . . Means other than rim closing the tire opening
152/10756 . . . . . Positive casing closure
152/10765 . . . . . Characterized by belt or breaker structure
152/10774 . . . . . Consisting of only one ply
152/10783 . . . . . Reinforcing plies made up from wound
narrow ribbons
152/10792 . . . . . Structure where each bias angle reinforcing
cord ply has no opposingly angled ply
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
152/1081 . . . . . Breaker or belt characterized by the chemical
composition or physical properties of
elastomer or the like
152/10819 . . . . . Characterized by the structure of the bead
portion of the tire
152/10828 . . . . . Chafer or sealing strips
152/10837 . . . . . Bead characterized by the radial extent of
apex, flipper or chafer into tire sidewall
152/10846 . . . . . Bead characterized by the chemical
composition and or physical properties of
elastomers or the like
152/10855 . . . . . Characterized by the carcass, carcass material,
or physical arrangement of the carcass
materials
152/10864 . . . . . Sidewall stiffening or reinforcing means
other than main carcass plies or foldups
thereof about beads
152/10873 . . . . . with two or more differing cord materials
152/10882 . . . . . Patches
152/10891 . . . . . Mechanically secured
152/109 . . . . . Inside and outside, bolt connected
152/10909 . . . . . with plugs
152/10918 . . . . . Bandages
152/10927 . . . . . Mechanically secured
152/10936 . . . . . to felty or rim

Former US Class 156 Series

156/00 Adhesive bonding and miscellaneous chemical
manufacture
156/10 . . . Methods of surface bonding and/or assembly
therefor
156/1002 . . . with permanent bending or reshaping or surface
deformation of self sustaining lamina
156/1003 . . . by separating laminae between spaced secured
areas [e.g., honeycomb expanding]
156/1005 . . . by inward collapsing of portion of hollow body
156/1007 . . . Running or continuous length work
156/1008 . . . Longitudinal bending
156/101 . . . Prior to or during assembly with additional lamina
156/1011 . . . Overedge bending or overedge folding
156/1013 . . . and edge-joining of one piece blank to form tube
156/1015 . . . Folding
156/1016 . . . Transverse corrugating
156/1018 . . . Subsequent to assembly of laminae
156/102 . . . with deformation or cutting of corrugated lamina
156/1021 . . . Treating material of corrugated lamina or dry adhesive thereon to render tacky
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 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., jabbing, 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
156/1396 . . . . Roller applicator
156/14 . . . Surface bonding means and/or assembly means with shaping, scarfifying, or cleaning joining surface only
156/15 . . . Combined or convertible surface bonding means and/or assembly means
156/16 . . . Surface bonding means and/or assembly means with bond interfering means [slip sheet, etc.]
156/17 . . . Surface bonding means and/or assembly means with work feeding or handling means
156/1702 . . . For plural parts or plural areas of single part
156/1705 . . . Lamina transferred to base from adhered flexible web or sheet type carrier
156/1707 . . . Discrete spaced laminae on adhered carrier
156/171 . . . . Means serially presenting discrete base articles or separate portions of a single article
156/1712 . . . Indefinite or running length work
156/1715 . . . . Means joining indefinite length work edge to edge
156/1717 . . . . Means applying adhesively secured tape to seam
156/172 . . . . Means applying fluid adhesive to work edge
156/1722 . . . Means applying fluent adhesive or adhesive activating material between layers
156/1724 . . . . At spaced areas
156/1727 . . . . Plural indefinite length or running length workpieces
156/1729 . . . . Fluid applied to nip between indefinite length webs
156/1732 . . . . Fluid applied to plural workpieces
156/1734 . . . . Means bringing articles into association with web
156/1737 . . . . Discontinuous, spaced area, and/or patterned pressing
156/1739 . . . . Webs of different width, longitudinally aligned
156/1741 . . . . Progressive continuous bonding press [e.g., roll couples]
156/1744 . . . . Means bringing discrete articles into assembled relationship
156/1746 . . . . Plural lines and/or separate means assembling separate sandwiches
156/1749 . . . . All articles from single source only
156/1751 . . . . At least three articles
156/1754 . . . . At least two applied side by side to common base
156/1756 . . . . . Plural ranks
156/1759 . . . . . Sheet form common base
156/1761 . . . . . Stacked serially
156/1763 . . . . . Magazine stack directly contacting separate work
156/1766 . . . . . Magazine movable to work
156/1768 . . . . Means simultaneously conveying plural articles from a single source and serially presenting them to an assembly station
156/1771 . . . . Turret or rotary drum-type conveyor
156/1773 . . . . For flexible sheets
156/1776 . . . . Means separating articles from bulk source
156/1778 . . . . Stacked sheet source
156/178 . . . . . Rotary or pivoted picker
156/1783 . . . . Translating picker
156/1785 . . . Magazine stack directly contacting work
156/1788 . . . Work traversing type and/or means applying work to wall or static structure
156/179 . . . . with liquid applying means
156/1793 . . . . Grip or clamp for web end
156/1795 . . . Implement carried web supply
156/1798 . . . . with liquid adhesive or adhesive activator applying means
156/18 . . . Surface bonding means and/or assembly means with handle or handgrip
156/19 . . . Delaminating means
156/1906 . . . Delaminating means responsive to feed or shape at delamination
156/1911 . . . Heating or cooling delaminating means [e.g., melting means, freezing means, etc.]
156/1917 . . . Electromagnetic radiation delaminating means [e.g., microwave, uv, ir, etc.]
156/1922 . . . Vibrating delaminating means
156/1928 . . . Differential fluid pressure delaminating means
156/1933 . . . Spraying delaminating means [e.g., atomizer, etc.
156/1939 . . . . Air blasting delaminating means
156/1944 . . . . Vacuum delaminating means [e.g., vacuum chamber, etc.]
156/195 . . . Delaminating roller means
156/1956 . . . . Roller pair delaminating means
156/1961 . . . Severing delaminating means [e.g., chisel, etc.]
156/1967 . . . Cutting delaminating means
156/1972 . . . . Shearing delaminating means
156/1978 . . . Delaminating bending means
156/1983 . . . . Poking delaminating means
156/1989 . . . . Corner edge bending delaminating means
156/1994 . . . . Means for delaminating from release surface

Methods

Former US Class 225 series

225/00 Severing by tearing or breaking
225/10 . Methods
Breaking or tearing apparatus

Former US Class 225 series

225/12 . . . With preliminary weakening
225/14 . . . Longitudinally of direction of feed
225/16 . . . Transversely of continuously fed work
225/18 . . . Progressively to or from one side edge
225/20 . . . Severing by manually forcing against fixed edge
225/201 . . . With other type severing means
225/202 . . . With timer-released means for preventing work feed-out
225/203 . . . Including means to effect bias cut
225/205 . . . With feed-out of predetermined length from work supply
225/206 . . . Including means to select or adjust feed-out length
225/207 . . . Including feed-out stop for manually pulled work
225/208 . . . Stop abuts work edge or work-mounted article
225/209 . . . With feed-out of lead-end to aid initial grasping
225/21 . . . Merely to provide lead-end for manual grasping
225/211 . . . Manually operated feed-out mechanism
225/213 . . . With indicator
225/214 . . . Indicates length to be severed from supply
225/215 . . . With blade-edge guard
225/216 . . . Movable
225/217 . . . Work stripped from blade by relatively movable means
225/218 . . . Including movable blade
225/22 . . . With means to move work toward or into severing position
225/221 . . . With means to strip adhering work therefrom
225/222 . . . With work-immobilizing paster surface
225/223 . . . With finger-access opening
225/224 . . . With means to hold pad or stack of individual sheets
225/225 . . . With means to separate severed end of stub from supply package
225/226 . . . With changeable blade-edge contour
225/228 . . . Slidable notcher
225/229 . . . Blade slidable along plane of work surface
225/23 . . . Zigzag-folded supply package
225/231 . . . Separate blades usable alternatively or sequentially on same work supply
225/232 . . . Plural supply sources
225/233 . . . On turret-type support with single blade
225/234 . . . With movable blade registrable selectively with each source
225/236 . . . With plural blades
225/237 . . . With individual blade for each source
225/238 . . . With housing for work supply
225/239 . . . Liquid-, gas-, or light-tight work passage
225/24 . . . With inspection window or transparent panel
225/241 . . . With mounting means for housing
225/243 . . . Blade on pivoted closure for housing
225/244 . . . Sectional telescoping housing
225/245 . . . Including removable cap or sleeve enclosure for spoooled work supply
225/246 . . . Including special support for wound supply package
225/247 . . . Bearing or trunnions to engage package core
225/248 . . . Single blank container
225/249 . . . Blade unitary with container

225/25 . . . . With closure fastener
225/252 . . . . With brake or tensioner
225/253 . . . . Restricted or restrictable work outlet
225/254 . . . . With finger-access opening to facilitate work feed-out
225/255 . . . . With internal guide
225/256 . . . . Blade carrier bodily and slidably supported on running length work
225/257 . . . . Blade mounted on hand-held wound package
225/259 . . . . With lead-end stripper for tacky adhesive work
225/26 . . . . By resiliently embracing outer circumference of package
225/261 . . . . Work supply nonrotatably wound on flanged spool
225/262 . . . . Circumferentially movable blade radially retained by beaded or grooved flanges
225/263 . . . . Blade carrier supports hollow spool for rotation
225/264 . . . . Flange edge notched to provide or coact with cutter
225/266 . . . . With clamp for lead-end of strand-type work
225/267 . . . . Strand clamped against flange
225/268 . . . . By resiliently engaging package ends or interior of core
225/269 . . . . Blade carrier supports package for rotation
225/27 . . . . Movable blade continually biased toward wound web supply package
225/271 . . . . Including temporary bias-disabling means
225/272 . . . . Including stripper to separate lead-end from package
225/274 . . . . Weight of bodily movable package contributes to blade-biasing force
225/275 . . . . Blade slidably guided
225/276 . . . . Blade movable to severing position by moving work
225/277 . . . . With simultaneous application of brake or clamp
225/278 . . . . Applied to running length work
225/279 . . . . Opposed movable jaws
225/28 . . . Wound package bodily biased toward fixed blade
225/282 . . . With fixed blade and support for wound package
225/283 . . . . Body- or belt-attached
225/284 . . . . With brake applied to supply package
225/285 . . . . With guide spaced from blade edge to provide lead-end therebetween
225/286 . . . . With work-abutment stop
225/287 . . . . With brake or clamp
225/289 . . . . Thread cutter and clamp attachment for sewing machine presser foot
225/29 . . . . Applied to running length work
225/291 . . . . Spaced from blade edge to provide lead-end therebetween
225/292 . . . . Blade manually movable to expose lead-end
225/293 . . . . Manually applied, spring returned
225/294 . . . . With guide for running length work
225/295 . . . . Blade manually movable to or from severing position
225/297 . . . . With means to facilitate lead-end grasping
225/298 . . . . Blades or severing devices
225/299 . . . . Adjustable blade-edge contour
225/30 . . . . Breaking or tearing apparatus
225/304 . . . . Including means to apply thermal shock to work
Former US Class 225 series

279/00 Chucks or sockets
279/00 . Chucks or sockets
279/10 . Expanding
279/1004 . Collet type
279/1006 . Fixed jaws and moving cam
279/1012 . Fixed cam and moving jaws
279/1016 . Jaws mounted on flexible member; i.e., diaphragm
279/1021 . Fluid-pressure actuator
279/1024 . Directly expanding jaws
279/1029 . Jaw is expansible chamber; i.e., bladder type
279/1033 . Expanding jaws via mechanical connection
279/1037 . Axially moving actuator
279/1041 . Wedge
279/1045 . Internal cone
279/1049 . with jaw positively interlocked with wedge; e.g., dovetail or T-slot
279/1054 . with resilient means contacting nonresilient jaw
279/1058 . Constricting band, annulus, or clip
279/1062 . Togg/e
279/1066 . Axially compressible element expands radially
279/1071 . Lever
279/1074 . Rotary actuator
279/1079 . Clutch or self-actuating type
279/1083 . Jaw structure
279/1087 . Resilient
279/1091 . Ball or roller
279/1095 . Pivoted
279/11 . Vacuum
279/12 . with fluid-pressure actuator
279/1208 . with measuring, indicating or control means
279/1216 . Jaw is expansible chamber; i.e., bladder type
279/1224 . Pneumatic type
279/1233 . Jaws mounted on flexible member; i.e., diaphragm
279/1241 . Socket type
279/1249 . Collet
279/1258 . Fixed cam and moving jaws
279/1266 . Moving cam and fixed jaws
279/1274 . Radially reciprocating jaws
279/1283 . Fluid pressure directly moves jaws
279/1291 . Fluid pressure moves jaws via mechanical connection

Former US Class 279 Series

279/13 . Angularly adjustable or indexing
279/14 . Eccentric
279/15 . Threaded grip
279/16 . Longitudinal screw clamp
279/17 . Socket type
279/17008 . Multiple alternative
279/17017 . Self-centering of floating
279/17025 . Radially reciprocating jaws
279/17034 . Transverse holder and setscrew
279/17042 . Lost motion
279/17051 . Swinging external yoke or detent
279/17059 . Rotary socket
279/17068 . Rotary socket
279/17076 . Spreading elements
279/17085 . Key retainer
279/17094 . Sleeve type retainer
279/17102 . Sleeve in socket
279/17111 . Fluid-conduit drill holding
279/17119 . Feed type
279/17128 . Self-grasping
279/17136 . Yielding grasping jaws
279/17145 . Ball or roller
279/17153 . Spring jaws
279/17162 . Yielding detent
279/17171 . One-way-clutch type
279/17179 . Wedge
279/17188 . Side detent
279/17196 . Ball or roller
279/17205 . Conical clamp threaded in socket
279/17213 . Transversely oscillating jaws
279/17222 . Screw actuated
279/17231 . Pivoted jaws
279/17239 . Moving-cam actuator
279/17247 . Threaded cam sleeve
279/17256 . Reciprocating cam sleeve
279/17264 . Fixed cam and moving jaws
279/17273 . Axial screw actuator
279/17282 . Threaded-sleeve actuator
279/17291 . Resilient split socket
279/17299 . Threaded cam sleeve
279/17307 . Reciprocating cam sleeve
279/17316 . Unitary
279/17324 . Split at one end only
279/17333 . Transverse screw actuator
279/17341 . Cam actuator
279/17351 . Split end to end
279/17358 . with jaw pads or insert
279/17367 . Nonresilient member biased by a resilient member
279/17376 . Resilient member reinforced by another resilient member
279/17384 . with means to exclude contaminants; e.g., seal, shield
279/17393 . One movable side
279/17401 . Sleeved
279/17411 . Spring biased jaws
279/17418 . Unitary
279/17427 . Split at one end only
279/17435 . Split at both ends
279/17444 . Split end to end
279/17452 . with jaw pads or insert
Former US Class 279 Series

279/17461 . . . Nonresilient member biased by a resilient member
279/17471 . . . Resilient member reinforced by another resilient member
279/17478 . . . with means to exclude contaminants; e.g., seal, shield
279/17487 . . . Moving-cam actuator
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279/17512 . . . Loose jaws
279/17521 . . . Reciprocating cam sleeve
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279/17538 . . . Threaded-sleeve actuator
279/17547 . . . Axial screw actuator
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279/17623 . . . Threaded sleeve and jaw
279/17632 . . . Conical sleeve
279/17641 . . . Threaded central cone and jaw
279/17649 . . . Threaded sleeve and body
279/17658 . . . Reciprocating jaw advancing sleeve
279/17666 . . . Radially reciprocating jaws
279/17675 . . . Transverse-screw actuated
279/17683 . . . Interlaced jaws
279/17692 . . . Moving-cam actuator
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279/17726 . . . . Roller and rocking jaw
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279/17811 . . . Reciprocating sleeve
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279/17846 . . . Single transverse bolt
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279/17863 . . . Shouldered-tang holding
279/17871 . . . Cap
279/17881 . . . Screw
279/17888 . . . Tang offset within socket
279/17897 . . . Tang offset without socket
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279/17914 . . . Friction grip
279/17923 . . . Transverse pin
279/17931 . . . Screw threaded
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279/17948 . . . Threaded sleeve

... Miscellaneous

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
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279/185 . . . Internal-cone actuated
279/188 . . . Toggle actuated
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279/1986 . . . Jaws
279/1993 . . . with means to facilitate jaw removal
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279/3451 . . . Nonseparable or built-in
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292/302 . . . . Screw catch
292/304 . . . . Sliding catch
292/305 . . . . Swinging catch
292/306 . . . . Gear
292/307 . . . . Sliding catch
292/308 . . . . Swinging catch
292/31 . . . . Hasps
292/314 . . . . Sliding catch
292/319 . . . . Seal
292/323 . . . . Swinging catch
292/327 . . . . Seal
292/331 . . . . Seal catch
292/336 . . . . Seal-rupturing devices
292/34 . . . . Portable
292/37 . . . . Portable securer plate or bar
292/373 . . . . Sliding and swinging holding member
292/376 . . . . Screw-holding member
292/379 . . . . Sliding holding member
292/382 . . . . Screw-operating means
292/385 . . . . Screw catch
292/388 . . . . Sliding catch
292/391 . . . . Swinging catch
292/394 . . . . Swinging holding member
292/397 . . . . Catch devices
292/40 . . . . Rings
292/42 . . . . Rigid engaging means
292/426 . . . . Screw catch
292/432 . . . . Sliding catch
292/438 . . . . Spring-arm catch
292/444 . . . . Swinging catch
292/45 . . . . Rod clamps
292/47 . . . . Friction-plate catch
292/48 . . . . Seals
292/481 . . . . Compressible disk
292/483 . . . . Reinforced
292/484 . . . . Multiple
292/485 . . . . Sheet metal
292/487 . . . . Hard and soft metal
292/488 . . . . Sheet metal
292/49 . . . . Compressible rivets and eyelets
292/491 . . . . Distorted shackle
292/492 . . . . Driving
292/494 . . . . Interengaging shackle ends, inclosing housing
292/4945 . . . . Rigid shackle ends
292/495 . . . . Resilient and rigid engaging means
292/496 . . . . Resilient engaging means
292/497 . . . . Resilient shackle ends
292/498 . . . . Rigid engaging means
292/499 . . . . Resilient engaging means
292/50 . . . . Single piece, spring catch
292/502 . . . . Slitshackle catch shackle operated
292/503 . . . . Split-ring catch, shackle operated
292/505 . . . . Strap-end fasteners
292/506 . . . . Rigid disk, distorted shackle
292/507 . . . . Tag type
292/509 . . . . Encasing
292/51 . . . . Seal bolts
292/513 . . . . Shackles
292/516 . . . . Sliding catch, seal
Former US Class 292 series

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

Former US Class 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 divider
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
307/428 . . . 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
Former US Class 307 series

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 . . . Switch actuation
307/937 . . . Switch function
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 . . Acts retainer or blocker
403/1666 . . tool-engaging or accommodating means or with tool
403/1674 . . for latch or retainer
403/1683 . . Releasable 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 . . Using 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 . . . . . . . . . Brached
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
403/32336 . . . Engaging notch or recess in outer periphery of component
403/32344 . . . Side of rod engages recess in radial face
403/32352 . . . Pivoted detent
403/32361 . . . Engaging recess in radial face
403/32368 . . . including radial interengaging tongue and slot or serrations
403/32377 . . . Radially spaced arcuate slot engages fastener
403/32385 . . . Locked by plural motions of one member
403/32393 . . . including bridging keeper
403/32401 . . . Locked by nesting parts
403/32409 . . . Members locked in axial alignment
403/32418 . . . Plural distinct positions
403/32426 . . . Plural distinct positions
403/32434 . . . Unidirectional movement, e.g., ratchet, etc.
403/32442 . . . At least one discrete position
403/32451 . . . Step-by-step adjustment
403/32459 . . . Retainer extends through aligned recesses
403/32467 . . . Telescoping members
403/32475 . . . having detent
403/32483 . . . Spring biased
403/32491 . . . Threaded
403/32501 . . . Cam or wedge
403/32508 . . . having transverse pin
403/32516 . . . Remotely actuated
403/32524 . . . Self-locking
403/32532 . . . Clamped members
403/32541 . . . Rotatable members resiliently biased to one position
403/32549 . . . including limit means
403/32557 . . . for pivotal motion
403/32565 . . . Ball and socket with restricted movement about one axis
403/32573 . . . Ball stud passes through confining opening
403/32581 . . . Pin and slot
403/32591 . . . Opposed stops on one member
403/32598 . . . Threaded interface
403/32606 . . . Pivoted
403/32614 . . . including circumferential biasing or damping means
403/32622 . . . Rocking or rolling contact
403/32631 . . . Universal ball and socket
403/32639 . . . including internal tie means
403/32647 . . . Plural concave surfaces with diverse curvature
403/32655 . . . Interposed concavo-convex component
403/32663 . . . Outer surfaces
403/32672 . . . Swiveled ball parts or seat
403/32681 . . . Composite ball
403/32688 . . . Spring biased segments
403/32696 . . . Nonmetallic part
403/32704 . . . Stud extends into ball
403/32713 . . . Elastomerically biased or backed components
403/32721 . . . Elastomeric seat
403/32729 . . .Externally packed
403/32737 . . . including liner, shim, or discrete seat
403/32745 . . . Spring acts through wedging surfaces
403/32754 . . . Variably preloaded
403/32762 . . . Spring-biased seat opposite ball stud
403/32771 . . . Porous
403/32778 . . . Completely spacing the members
403/32786 . . . Divided socket-type coupling
403/32795 . . . Bifurcated socket
403/32803 . . . Separable socket sections
403/32811 . . . Spring-biased
403/32819 . . . including tension or take-up means
403/32827 . . . Interposed spring means coaxial with pivot
403/32836 . . . Acting through tapered surface on bearing component
403/32844 . . . Manually variable
403/32852 . . . External of bearing assembly, e.g., antirattler, etc.
403/32861 . . . T-pivot, e.g., wrist pin, etc.
403/32868 . . . Floating pin
403/32877 . . . Pin is integral with or secured to inner member
403/32885 . . . Expanded pin or end
403/32893 . . . including distinct pin retainer
403/32901 . . . Unitary clip or plug
403/32909 . . . Threaded pin end
403/32918 . . . fork and tongue
403/32926 . . . with interposed antifriction means
403/32934 . . . Oppositely laterally movable tines
403/32942 . . . On oblique interface
403/32951 . . . Transverse pin or stud
403/32959 . . . Travoses interposed facing component
403/32967 . . . Attached to or integral with one member
403/32975 . . . Rotatable
403/32983 . . . Rod in socket
403/32991 . . . Axially spring-biased coaxial members
403/33 . . . Transverse rod to spaced plate surfaces
403/335 . . . Retainer utilizes or abuts plural plates
403/34 . Branched
403/341 . . Three or more radiating members
403/342 . . Polyhedral
403/343 . . . Unilateral of plane
403/344 . . . Plural pairs of axially aligned members
403/345 . . . Coplanar
403/346 . . . . Additional rod held by encompassing means
403/347 . . . Polyhedral
403/348 . . . Parallel rods
403/349 . . . Coplanar
403/35 . . Diverse material coupling member
403/36 . . Three or more serial joints, at least one diverse
403/362 . . . Nonaligned axes
403/364 . . . Separable intermediate joint
403/366 . . . Axially acting connector
403/368 . . . Screw or cam
403/37 . . . Joint involving plural layers of single rod
403/38 . . . Laterally related rods independently joined to transverse surface
403/39 . . Rod to member to side, e.g., plate, rod side, etc.

(Frozen) WARNING

Groups Y10T 403/39 - Y10T 403/3993 are no longer used for the classification of documents as of August 1, 2018.

The content of these groups is being reclassified into groups F16B 7/00, F16B 9/00, F16B 17/00, F16B 2200/00, other F16B groups as appropriate and Y10T 403/46.

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

403/3906 . . Rod side to member to side
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 in situ
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
403/3981 . . . . 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 should on inner member
403/457 . . . . including axially acting compressing means
403/458 . . . . Composite bushing with elastomeric component
403/459 . . . . Helical spring type coupling
403/46 . . . Rod end to transverse side of member
403/4602 . . . Corner joint
403/4605 . . . Stirrup

(Frozen) WARNING

Groups Y10T 403/4605 - Y10T 403/4648 are no longer used for the classification of documents as of August 1, 2018.

The content of these groups is being reclassified into groups F16B 7/00, F16B 9/00, F16B 17/00, F16B 2200/00, other F16B groups as appropriate and Y10T 403/46.

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

403/4608 . . . Structure attached to rod end encompasses side
403/4611 . . . Clamped saddle
403/4614 . . . Yoke or ring
403/4617 . . . . having radial screw at bight
403/4621 . . . . including saddle
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.,
   (Frozen)
necked, etc.
403/4645 . . . From rod side
   (Frozen)
403/4648 . . . Utilizing opposite sides of member
   (Frozen)
403/47 . . . Molded joint
403/471 . . . And independent connection
403/472 . . . including mechanical interlock
403/473 . . . Socket or open cup for bonding material
403/475 . . . Member cast in situ
403/477 . . . Fusion bond, e.g., weld, etc.
403/478 . . . Metallic fusion material
403/479 . . . . Added bonding material, e.g., solder, braze, etc.
403/48 . . . Shrunk fit
403/49 . . . Member deformed in situ
403/4908 . . . Separating element between strands of member
403/4916 . . . Interposed deforming element contacts socket
   bottom
403/4924 . . . Inner member is expanded by longitudinally
   inserted element
403/4933 . . . by separate, deformable element
403/4941 . . . Deformation occurs simultaneously with action of
   separate, diverse function, joint component
403/4949 . . . Deforming component is inserted section
403/4958 . . . Separate deforming means remains with joint
   assembly
403/4966 . . . Deformation occurs simultaneously with
   assembly
403/4974 . . . by piercing
403/4983 . . . Diverse resistance to lateral deforming force
403/4991 . . . Both members deformed
403/50 . . . Bridged by diverse connector
403/51 . . . including spaced, diverse connections
403/52 . . . including distinct packing
403/53 . . . Split end with laterally movable opposed portions
403/535 . . . with separate force-applying means
403/54 . . . Flexible member is joint component
403/55 . . . Member ends joined by inserted section
403/551 . . . Externally bridged
403/553 . . . Laterally inserted section
403/555 . . . Angle section
403/556 . . . Section threaded to member
403/557 . . . Expansible section
403/559 . . . Fluted or splined section
403/56 . . . Thread adaptor
403/57 . . . Distinct end coupler
403/5706 . . . Diverse serial connections
403/5713 . . . Axially cleft coupler
403/5721 . . . Single actuator for plural connections
403/5726 . . . Axially biased end portions
403/5733 . . . Plural opposed sockets
403/5741 . . . Separate screw or pin-type connections
403/5746 . . . Continuous thread
403/5753 . . . having separable end caps or plugs
403/5761 . . . Interrupted periphery, e.g., split or segmental, etc.
403/5766 . . . Axially divided segments
403/5773 . . . Interfitting
403/5781 . . . Bolted
403/5786 . . . Split
403/5793 . . . including member wedging or camming means
403/58 . . . including ancillary means blocking disconnection of
   joint
403/581 . . . Blocker for assembled joint retainer
403/583 . . . . Blocker keeper
403/585 . . . . Blocked key
403/587 . . . . Blocker is catch or key
403/589 . . . . Cam or thread lock
403/59 . . . . Manually releaseable latch type
403/591 . . . . having operating mechanism
403/592 . . . . Ball detent
403/593 . . . . Remotely actuated
403/595 . . . . Lever
403/597 . . . . Swiveled bolt
403/598 . . . . Transversely sliding pin
403/599 . . . . Spring biased manipulator
403/60 . . . . Biased catch or latch
403/602 . . . . by separate spring
403/604 . . . . Radially sliding catch
403/606 . . . . Leaf spring
403/608 . . . . Pivot
403/61 . . . . Side slide: elongated co-linear members
403/62 . . . . Annular recess is joint component
403/63 . . . . Convergent interface
403/635 . . . . Tapered
403/65 . . . . Scarf
403/655 . . . . Mirror images
403/66 . . . . Interfitted members with external bridging piece
403/67 . . . . Thimble: screw or cam
403/68 . . . . Screw or cam
403/69 . . . . Axially split or separable member
403/70 . . . . Interfitted members
403/7001 . . . . Crossed rods
403/7003 . . . . One rod is encompassed by the other
403/7005 . . . . Lugged member, rotary engagement
403/7007 . . . . Bayonet joint
403/7009 . . . . Rotary binding cam or wedge
403/7011 . . . . Radially interposed shim or bushing
403/7013 . . . . Arcuate slip
403/7015 . . . . Assembled by plural manipulations of member
403/7016 . . . . Diometric end slot is joint component
403/7018 . . . . including separably interposed key
403/7021 . . . . Axially extending
403/7022 . . . . . Resilient
403/7024 . . . . . Longitudinally stepped or tapered
403/7026 . . . . . Longitudinally splined or fluted rod
403/7028 . . . . . Splayed or having a cam surface for anti-
   backlash
403/7031 . . . . . Rod designed to be manipulable, e.g., twistable,
   within coupling for quick disconnect
403/7032 . . . . . including a means, e.g., spring biased portion,
   for misalignment correction
403/7033 . . . . . including a lock or retainer
403/7035 . . . . . Specific angle or shape of rib, key, groove, or
   shoulder
403/7037 . . . . . Externally shouldered or headed rod
403/7041 . . . . . including set screw
403/7043 . . . . . Interfitted angle or channel bars
403/7045 . . . . . Interdigitated ends
403/7047 . . . . . Radially interposed shim or bushing
403/7049 . . . . . Biased by distinct radially acting means
403/7051 . . . . . Wedging or camming
403/7052 . . . . . Engaged by axial movement
Former US Class 403 Series

403/7054 . . . . . . . Plural, circumferentially related shims between members
403/7056 . . . . . . . Threaded actuator
403/7058 . . . . . . . Split or slotted bushing
403/7061 . . . . . . . Resilient
403/7062 . . . . . . . Clamped members
403/7064 . . . . . . . by wedge or cam
403/7066 . . . . . . . having actuator
403/7067 . . . . . . . Threaded actuator
403/7069 . . . . . . . Axially oriented
403/7071 . . . . . . . Lever actuator
403/7073 . . . . . . . Peripheral enlargement, depression, or slot on one member is joint component
403/7075 . . . . . . . including discrete retainer
403/7077 . . . . . . . for telescoping members
403/7079 . . . . . . . Transverse pin
403/7081 . . . . . . . Multiple retainers
403/7083 . . . . . . . having means to prevent removal of retainer
403/7084 . . . . . . . Bolt, rivet, or screw
403/7086 . . . . . . . Wedge pin
403/7088 . . . . . . . Sliding pin
403/7091 . . . . . . . Expansible retainer
403/7092 . . . . . . . for interlitted side faces
403/7096 . . . . . . . Rigid angle
403/7098 . . . . . . . Non-circular rod section is joint component
403/71 . . . . . . . Rod side to plate or pin
403/7105 . . . . . . . Connected by double clamp
403/7111 . . . . . . . Shackle is integral with or independently attached to proximate side of plate or other side
403/7117 . . . . . . . Flanged or grooved rod
403/7123 . . . . . . . Traversed by connector
403/7129 . . . . . . . Laterally spaced rods
403/7135 . . . . . . . by separable shi 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 . . . . . . . Annull 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
407/178 . . . . . . . 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

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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

Former US Class 407 Series

408/00 Cutting by use of rotating axially moving tool

408/03 . . . Processes
408/04 . . . Bit detachable
408/05 . . . with means to weigh or test work or product
408/08 . . . with means to regulate operation by use of templet,
   tape, card, or other replaceable information supply
408/10 . . . with interlock between machine elements
408/13 . . . with randomly-actuated stopping means
408/14 . . . Responsive to condition of Tool or tool-drive
408/15 . . . Responsive to condition of work or product
408/16 . . . with control means energized in response to
   activator stimulated by condition sensor
408/165 . . . to control Tool rotation
408/17 . . . to control infeed
408/172 . . . Responsive to Tool
408/173 . . . Responsive to work
408/175 . . . to control relative positioning of Tool and work
408/18 . . . with stopping upon completion of prescribed
   operation
408/20 . . . Responsive to condition of work or product
408/21 . . . with signal, indicator, illuminator or optical means
408/23 . . . including means to cause Tool to progressively
   vibrate toward work
408/26 . . . with means to condition tool
408/29 . . . with means to deForm work temporarily
408/31 . . . Convertible cutting means
408/33 . . . Utilizing common cutting Tool
408/34 . . . Combined cutting means
408/344 . . . including Tool operating on rotating work
408/348 . . . Plural other type cutting means
408/35 . . . . including plural rotating tools
408/352 . . . including rotating cutter other than rotating,
   axially moving Tool
408/353 . . . Crystalline cutter
408/355 . . . Utilized in cutting work or product to length
408/3555 . . . . . . Adapted to cut entire thickness of work at
   one pass
408/356 . . . including plunging [single stroke] cutter
408/36 . . . Machine including plural tools
408/365 . . . Axes of tools moving with work during operation
408/367 . . . including means to infeed Tool and means to
   infeed work or including coaxial tools
408/368 . . . Plural work stations
408/37 . . . Turret of tools
408/375 . . . Coaxial tools
408/378 . . . Coaxial, opposed tools
408/3784 . . . . with additional, converging Tool
408/3788 . . . . Plural pairs of coaxial, opposed tools
408/3792 . . . . with means to sequentially feed tools toward work
408/3796 . . . . with interconnected means to simultaneously feed tools
408/38 . . . . . . . . Plural, simultaneously operational tools
408/3806 . . . . with plural simultaneously operational work stations
408/3809 . . . . Successively acting on workpiece
408/381 . . . . . . . . Pivotedly mounted, work-advancing, work-supporting means, pivot-axis parallel to tool-axis
408/3811 . . . . with provision for adjustment of relationship of axes
408/3817 . . . . at least one Tool driven by orbiting wrist plate
408/3822 . . . . at least one Tool including flexible drive connection
408/3828 . . . . with work-infeed
408/3833 . . . . with means to advance work relative to Tool
408/3839 . . . . with presser-foot
408/3844 . . . . with tool-opposing, work-engaging surface
408/385 . . . . . . . . Rotatable about parallel axes
408/39 . . . . . . . . with radially outer limit of cutting edge moving to define cylinder partially, but not entirely encircled by work
408/42 . . . . . . . . Axis of Tool moving with work during operation
408/44 . . . . . . . . with means to apply transient, fluent medium to work or product
408/45 . . . . . . . . including Tool with duct
408/453 . . . . . . . . and means to move gaseous fluid by application of vacuum
408/455 . . . . . . . . Conducting channel extending to end of Tool
408/458 . . . . . . . . including nozzle
408/46 . . . . . . . . including nozzle
408/47 . . . . . . . . with work-infeed means
408/476 . . . . . . . . Driven by fluid motor
408/482 . . . . . . . . Driven by means having sliding engagement therewith
408/488 . . . . . . . . Driven by lever or connecting link
408/494 . . . . . . . . and gear to drive infeed means
408/50 . . . . . . . . with product handling or receiving means
408/51 . . . . . . . . Ejector
408/52 . . . . . . . . with work advancing or guiding means
408/54 . . . . . . . . Means to intermittently advance work
408/545 . . . . . . . . Rotary, work-supporting means
408/55 . . . . . . . . with work-engaging structure other than Tool or tool-support
408/551 . . . . . . . . with means actuated by work to release Tool from fixed position in Tool support
408/552 . . . . . . . . Adapted to engage work at tool-axis
408/553 . . . . . . . . Centering means adapted to be replaced by Tool
408/554 . . . . . . . . Magnetic or suction means
408/556 . . . . . . . . Tool supporting wheel
408/5565 . . . . . . . . Wheel-axis parallel to tool-axis
408/557 . . . . . . . . Frictionally engaging sides of opening in work
408/558 . . . . . . . . Opening coaxial with Tool
408/5583 . . . . . . . . Engaging sides of opening being enlarged by Tool
408/5584 . . . . . . . . Engaging surface axially advanced of tool-action
408/5586 . . . . . . . . Engaging surface subsequent to tool-action on that surface
408/5587 . . . . . . . . Valve fitting
408/559 . . . . . . . . Funnel like work-engaging surface cooperating with protuberance on work
408/56 . . . . . . . . Adapted to "form" recession in work
408/5605 . . . . . . . . Recession at tool-axis
408/561 . . . . . . . . Having tool-opposing, work-engaging surface
408/5612 . . . . . . . . Tool having shiftable tool-axis
408/5614 . . . . . . . . Angularly adjustable surface
408/5616 . . . . . . . . Adjustable about axis that is parallel to tool-axis
408/5617 . . . . . . . . Laterally adjustable surface
408/5619 . . . . . . . . Flexible or concatenated member
408/5621 . . . . . . . . Connected to Tool through opening being enlarged by Tool
408/5622 . . . . . . . . Plural, coaxially opposing, work-engaging means
408/5623 . . . . . . . . with presser foot
408/56238 . . . . . . . . Encompassed by Tool during cut
408/56245 . . . . . . . . including tool-guide [or bushing]
408/56253 . . . . . . . . Base supported machine
408/5626 . . . . . . . . with means to move Tool relative to other work-engaging structure along tool-axis
408/5627 . . . . . . . . Having sliding engagement therewith
408/56275 . . . . . . . . Screw coaxial with Tool
408/5628 . . . . . . . . Tool having screw-thread engaging frame to cause infeed
408/563 . . . . . . . . Work-gripping clamp
408/5633 . . . . . . . . Adapted to coaxially grip round work
408/56337 . . . . . . . . Oppositely moving lateral clamps
408/5634 . . . . . . . . Three or more moving clamps
408/56343 . . . . . . . . Base supported clamp
408/5635 . . . . . . . . Oppositely moving lateral clamps
408/5638 . . . . . . . . Adjustable relative to tool-axis
408/564 . . . . . . . . Movable relative to Tool along tool-axis
408/5647 . . . . . . . . including means to move Tool
408/5653 . . . . . . . . with means to bias Tool away from work
408/566 . . . . . . . . Axially fixed to Tool
408/5665 . . . . . . . . Work-engaging surface parallel to tool-axis
408/567 . . . . . . . . Adjustable, tool-guiding jig
408/568 . . . . . . . . Guide bushing
408/569 . . . . . . . . Bushing
408/57 . . . . . . . . Tool-support with means to receive tool-position indicator
408/60 . . . . . . . . Plural tool-assemblages
408/62 . . . . . . . . Coaxial
408/625 . . . . . . . . Spring biased
408/63 . . . . . . . . Tool or tool-support with torque-applying ratchet
408/637 . . . . . . . . with thrust applying means
408/639 . . . . . . . . Reversible ratchet
408/641 . . . . . . . . Double-acting ratchet
408/643 . . . . . . . . Reversible ratchet
408/65 . . . . . . . . Means to drive tool
408/655 . . . . . . . . with specific Tool structure
408/66 . . . . . . . . Friction gearing
408/665 . . . . . . . . Universal or flexible drive connection to rotate Tool
408/67 . . . . . . . . Belt and pulley
408/675 . . . . . . . . including means to move Tool along tool-axis
408/6757 . . . . . . . . Fluid means
408/6764 . . . . . . . . Laterally adjustable Tool
408/6771 . . . . . . . . with clutch means
408/6774 . . . . . . . . including plural speed drive
408/6776 . . . . . . . . Actuated by Tool movement
Former US Class 408 Series

408/6779 . . . Rack and pinion
408/6786 . . . Manually moved lever
408/6793 . . . Screw coaxial with Tool
408/68 . Tool or tool-support with thrust-applying machine-engaging screw
408/70 . Tool or tool-support with torque-applying clutch
408/72 . . . Friction clutch
408/73 . Tool or tool-support with torque-applying spline
408/75 . . . Relative motion of splined shaft and tool-support causing release of Tool from operating position
408/76 . Tool-carrier with vibration-damping means
408/78 . Tool of specific diverse material
408/81 . Tool having crystalline cutting edge
408/83 . Tool-support with means to move Tool relative to tool-support
408/85 . . . to move radially
408/852 . . . with Tool releasing trigger
408/853 . . . and separate Tool setting means
408/854 . . . to move eccentrically mounted Tool
408/855 . . . Tool-support including plural, adjustable sections
408/856 . . . Moving means including pinion engaging rack-like surface of Tool
408/858 . . . Moving means including wedge, screw or cam
408/8583 . . . with resiliently urged Tool
408/8587 . . . 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 . . . Pivotable 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 . . . Pivotable 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
Former US Class 409 Series

409/00  Gear cutting, milling, or planing
409/10  Gear cutting
409/100159 . . . with regulation of operation by use of templet, card, or other replaceable information supply
409/100318 . . . including follower for templet
409/100477 . . . and burnishing simultaneously
409/100636 . . . with compensation for backlash in drive means
409/100795 . . . with work or product advancing
409/100954 . . . Utilizing transfer arm
409/101113 . . . Gear chamfering or deburring
409/101272 . . . Using relatively reciprocating or oscillating cutter
409/101431 . . . Gear tooth shape generating
409/10159 . . . Hobbing
409/101749 . . . Process
409/101908 . . . Generating tooth for bevel gear
409/102067 . . . including means to shift hob between cutting passes
409/102226 . . . with control means energized in response to activator stimulated by condition sensor
409/102385 . . . Plural hobs
409/102544 . . . including infeed means
409/102703 . . . to infeed along axis of work rotation
409/102862 . . . Infeed of cutter
409/103021 . . . and infeed radially of axis of work rotation
409/10318 . . . Vertically
409/103339 . . . to infeed radially of axis of work rotation
409/103498 . . . Infeed of cutter
409/103657 . . . and infeed tangentially of work axis
409/103816 . . . Milling with radial faced tool
409/103975 . . . Process
409/104134 . . . Adapted to cut bevel gear
409/104293 . . . with means to continuously rotate work and means to co-form all teeth of gear
409/104452 . . . Bevel gear having nonparallel opposing tooth flanks
409/104611 . . . Including rotary cutter cradle
409/10477 . . . by relative axial movement between synchronously indexing or rotating work and cutter
409/104929 . . . Crowning
409/105088 . . . Displacing cutter axially relative to work [e.g., gear shaving, etc.]
409/105247 . . . Using gear shaper-cutter
409/105406 . . . Plural distinct cutting edges
409/105565 . . . 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 furbishing 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 infed the work relative to the cutter
409/300728 . . . Means to infed 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
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409/301344 . . . . . About work axis
409/3014 . . . . . . . . Pivotedly supported for vertical movement
409/301456 . . . . . and means to countercouple balance carrier
409/301512 . . . . . including plural cutters
409/301568 . . . . . by use of pivotally 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 cutters 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
409/303336 . . . . . 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

Templet, tracer, or cutter together including cutter and tracer fixed to move movement of cutter and work and provision for circumferential relative intervention including means for operation without manual intervention
Duplicating means to make a double curvature foil
Randomly manipulated, work supported, or work with provision for circumferential relative movement of cutter and work
Means to remove scale or raised surface imperfection
Means to remove flash or burr
Means to remove chip
Means to trim edge
Means to remove scale or raised surface imperfection
Means to remove chip
Means to trim edge
Means to remove scale or raised surface imperfection
Means to remove chip
Means to trim edge
Means to remove scale or raised surface imperfection
Means to remove chip
Means to trim edge

For cutting longitudinal groove in shaft [e.g., keyway, etc.]
with work supported guide means
to guide tool to move in arcuate path
with work follower
Randomly manipulated
End mill [e.g., router, etc.]
including means to infeed rotary cutter toward work
with means to limit penetration into work
Axially
with infed control means energized in response to activator stimulated by condition sensor
In response to cutter condition
In response to work condition
and laterally
Simultaneously
Plural cutters
with infed control means energized in response to activator stimulated by condition sensor
In response to cutter condition
In response to work condition
with means to change rate of infeed
work holder
Indexable
Machining arcuate surface
with means to move cutter eccentrically
Angularly adjustable cutter head
including gantry-type cutter-carrier
Plural cutters
including means to adjustably position cutter
with work holder or guide
Linear adjustment
with control for adjustment means responsive to activator stimulated by condition sensor
Responsive to position of cutter
and means to clamp cutter support in adjusted position
with position indicator or limit means
and angular adjustment
including gantry-type cutter-carrier
Plural cutters
with position indicator or limit means
with right angle cutter drive
Compound angular adjustment
Plural cutters
with limit means to aid in positioning of cutter bit or work [e.g., gauge, stop, etc.]
Work support
with position indicator or stop
Indexable
including dividing head
Multiple row dividing head
with angular adjustment
with work holder or guide
including cutter limited to rotary motion
with means to adjust work support vertically
including cutter limited to rotary motion
Cutter turning about vertical axis
Detachable or repositionable tool head
cutter spindle or spindle support
with cutter holder
and draw bar
with cutter holder
Machine frame
Overarm harness structure
including counterbalancing means
including means to compensate for deformation
Deflection of cutter spindle
Convertible from lathe
including relatively movable components and means to relatively immobilize these components
Tailstock
Broaching
Process
with control means energized in response to activator stimulated by condition sensor
Responsive to condition of work or product
with means to distribute cutter infed force
with means to select cutter or to select or modify cutter drive
with means to clean, lubricate, or modify temperature of work or cutter
with product handling means
Between plural broaching stations
Means to eject broached product
Chip removal means
with safety means for overload or safety interlock
with work immobilizer and means to activate work immobilizer interrelated with cutter infed, work infed, or work advance
with work infeed or advancing means and means to clamp the work thereto, which clamping means is interrelated with work or cutter infed
Means to remove flash or burr
Means for cutting groove
Arcuate groove in cylindrical surface
Rifling
Orbital carrier for cutter
Orbital carrier for work
with means to cyclically manipulate cutter or cutter support
reorient, introduce, or remove cutter
Cutter released to interim support at termination of cutting stroke
to remove and return cutter to cutter support
with plural cutters
with means to advance, infed, or manipulate work
Interrelated with cutter infed
including means supporting work and additional means opposing infed force
including work indexing means for sequential cutting of different surfaces of a single workpiece
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 template, 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, scarifying, 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 arcually reposition the cutter
409/504592 . . . with work infeed and means to arcually 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 pivotal cutter or cutter support

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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 . Silicone compound [i.e., organosilicon]
428/1018 . Polyamide
428/1023 . Polyimide
428/1027 . Polyimidefluoride
428/1032 . Polyimidmetal
428/1036 . with viewing layer of specified composition
428/1041 . Polarizer or dye containing viewing layer
428/1045 . Silicone compound [e.g., glass, organosilicon, etc.]
428/105 . Ester [e.g., polycarbonate, polycrylate, 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 . Silicone 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

409/4070
Inorganic substrate layer [e.g., ceramic, metallic, glass, etc.]
Magnetic recording head
Magnetoresistive
having tunnel junction effect
Multilayer
Super lattice [e.g., giant magneto resistance [GMR] or colossal magneto resistance [CMR], etc.]
Single film
with defined structural feature
Magnetic layer composition
Substrate composition
with protective film
with defined laminate structural detail
Head with slider structure
with head pole component
with interlaminar component [e.g., adhesion layer, etc.]
All metal or with adjacent metals
Component of composite having metal continuous phase interengaged with nonmetal continuous phase
having metal particles
having composition or density gradient or differential porosity
Composite; i.e., plural, adjacent, spatially distinct metal components [e.g., layers, etc.]
Fiber, asbestos, or cellulose in or next to particulate component
Porous component
Nonmetal component
Entirely inorganic
Nonparticulate metal component
Plural nonparticulate metal components
Next to each other
Nonmetal in particulate component
Plural particulate metal components
Nonparticulate component encloses particles
Particles discontinuous
Separated by nonmetal matrix or binder [e.g., welding electrode, etc.]
Nonparticulate component has Ni-, Cu-, or Zn-base
Nonparticulate component has Fe-base
Next to Fe-containing particles
Nonmetal particles in particulate component
Nonmetal particles in a component
Interconnected void structure [e.g., permeable, etc.]
Continuous interengaged phases of plural metals, or oriented fiber containing
Nonmetal containing
Mo or W containing
Comosite powder [e.g., coated, etc.]
having marginal feature for indexing or weakened portion for severing
For severing perpendicular to longitudinal dimension
Width or thickness variation or marginal cuts repeating longitudinally
Variation in both width and thickness
Marginal slots [i.e., deeper than wide]
Shaped configuration for melting [e.g., package, etc.]
Intermediate article [e.g., blank, etc.]
Panel having nonrectangular perimeter
Disk
Symmetrical
Only one plane of symmetry
having outward flange, gripping means or interlocking feature
having discrete fastener, marginal fastening, taper, or end structure
Same structure at both ends of plural taper
Single taper [e.g., ingot, etc.]
Workpiece with longitudinal passageway or stopweld material [e.g., for tubular stock, etc.]
Workpiece mimicking finished stock having nonrectangular or noncircular cross section
Workpiece of parallel, nonfastened components [e.g., fagot, pile, etc.]
Arranged to avoid lateral displacement
Composite
with provision for limited relative movement between components
Helical or with helical component
Honeycomb, or with grain orientation or elongated elements in defined angular relationship in respective components [e.g., parallel, intersecting, etc.]
Plural layers discontinuously bonded [e.g., spotweld, mechanical fastener, etc.]
Nonplanar, uniform-thickness material having symmetrical channel shape or reverse fold [e.g., making acute angle, etc.]
having aperture or cut
Struck-out portion type
having member which crosses the plane of another member [e.g., T or X cross section, etc.]
Defined configuration of both thickness and nonthickness surface or angle therebetween [e.g., rounded corners, etc.]
having variation in thickness
Discontinuous surface component
Longitudinally smooth and symmetrical
Nonplanar uniform thickness or nonlinear uniform diameter [e.g., L-shape]
Intersecting corrugating or dimples not in a single line [e.g., waffle form, etc.]
Mass of only fibers
Foil or filament smaller than 6 mils
Composite
Embodying fibers interengaged or between layers [e.g., paper, etc.]
Macroscopically anomalous interface between layers
having composition, density, or hardness gradient
having magnetic properties, or preformed fiber orientation coordinate with shape
Microscopic interfacial wave or roughness
Porous [e.g., foamed, spongy, cracked, etc.]
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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
428/12639 . . . Adjacent, identical composition, components
428/12646 . . . Group VIII or IB metal-base
428/12653 . . . Fe, containing 0.01-1.7% carbon [i.e., steel]
428/1266 . . . O, S, or organic compound in metal component
428/12667 . . . Oxide of transition metal or Al
428/12674 . . . Ge- or Si-base component
428/12681 . . . Ga-, In-, Tl- or Group VA metal-base component
428/12687 . . . Pb- and Sn-base components: alternative to or next to each other
428/12694 . . . and next to Cu- or Fe-base component
428/12701 . . . Pb-base component
428/12708 . . . Sn-base component
428/12715 . . . Next to Group IB metal-base component
428/12722 . . . Next to Group VIII metal-base component
428/12729 . . . Group IIA metal-base component
428/12736 . . . Al-base component
428/12743 . . . Next to refractory [Group IVB, VB, or VIB] metal-base component
428/1275 . . . Next to Group VIII or IB metal-base component
428/12757 . . . Fe
428/12764 . . . Next to Al-base component
428/12771 . . . Transition metal-base component
428/12778 . . . Alternative base metals from diverse categories
428/12785 . . . Group IIB metal-base component
428/12792 . . . Zn-base component
428/12799 . . . Next to Fe-base component [e.g., galvanized]
428/12806 . . . Refractory [Group IVB, VB, or VIB] metal-base component

428/12812 . . . Diverse refractory group metal-base components: alternative to or next to each other
428/12819 . . . Group VB metal-base component
428/12826 . . . Group VIB metal-base component
428/12833 . . . Alternative to or next to each other
428/1284 . . . W-base component
428/12847 . . . Cr-base component
428/12854 . . . Next to Co-, Fe-, or Ni-base component
428/12861 . . . Group VIII or IB metal-base component
428/12868 . . . Group IB metal-base component alternative to platinum group metal-base component [e.g., precious metal, etc.]
428/12875 . . . Platinum group metal-base component
428/12882 . . . Cu-base component alternative to Ag-, Au-, or Ni-base component
428/12889 . . . Au-base component
428/12896 . . . Ag-base component
428/12903 . . . Cu-base component
428/1291 . . . Next to Co-, Cu-, or Ni-base component
428/12917 . . . Next to Fe-base component
428/12924 . . . Fe-base has 0.01-1.7% carbon [i.e., steel]
428/12931 . . . Co-, Fe-, or Ni-base components, alternative to each other
428/12937 . . . Co- or Ni-base component next to Fe-base component
428/12944 . . . Ni-base component
428/12951 . . . Fe-base component
428/12958 . . . Next to Fe-base component
428/12965 . . . Both containing 0.01-1.7% carbon [i.e., steel]
428/12972 . . . Containing 0.01-1.7% carbon [i.e., steel]
428/12979 . . . Containing more than 10% nonferrous elements [e.g., high alloy, stainless]
428/12986 . . . Adjacent functionally defined components
428/12993 . . . Surface feature [e.g., rough, mirror]
428/13 . . . Hollow or container type article [e.g., tube, vase, etc.]
428/1303 . . . Paper containing [e.g., cardboard, cardboard, fiberboard, etc.]
428/1307 . . . Bag or tubular film [e.g., pouch, flexible food casing, envelope, etc.]
428/131 . . . Glass, ceramic, or sintered, fused, fired, or calcined metal oxide or metal carbide containing [e.g., porcelain, brick, cement, etc.]
428/1314 . . . Contains fabric, fiber particle, or filament made of glass, ceramic, or sintered, fused, fired, or calcined metal oxide, or metal carbide or other inorganic compound [e.g., fiber glass, mineral fiber, sand, etc.]
428/1317 . . . Multilayer [continuous layer]
428/1321 . . . Polymer or resin containing [i.e., natural or synthetic]
428/1324 . . . Flexible food casing [e.g., sausage type, etc.]
428/1328 . . . Shrinkable or shrunk [e.g., due to heat, solvent, volatile agent, restraint removal, etc.]
428/1331 . . . Single layer [continuous layer]
428/1334 . . . Nonself-supporting tubular film or bag [e.g., pouch, envelope, packet, etc.]
428/1338 . . . Elemental metal containing
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428/1341 . . . Contains vapor or gas barrier, polymer derived from vinyl chloride or vinylidene chloride, or polymer containing a vinyl alcohol unit
428/1345 . . . Single layer [continuous layer]
428/1348 . . . Cellular material derived from plant or animal source [e.g., wood, cotton, wool, leather, etc.]
428/1352 . . . Polymer or resin containing [i.e., natural or synthetic]
428/1355 . . . Elemental metal containing [e.g., substrate, foil, film, coating, etc.]
428/1359 . . . Three or more layers [continuous layer]
428/1362 . . . Textile, fabric, cloth, or pile containing [e.g., web, net, woven, knitted, mesh, nonwoven, matted, etc.]
428/1366 . . . Textile, fabric, cloth, or pile is sandwiched between two distinct layers of material unlike the textile, fabric, cloth, or pile layer
428/1369 . . . Fiber or fibers wound around each other or into a self-sustaining shape [e.g., yarn, braid, fibers shaped around a core, etc.]
428/1372 . . . Randomly noninterengaged or randomly contacting fibers, filaments, particles, or flakes
428/1376 . . . Foam or porous material containing
428/1379 . . . Contains vapor or gas barrier, polymer derived from vinyl chloride or vinylidene chloride, or polymer containing a vinyl alcohol unit
428/1383 . . . Vapor or gas barrier, polymer derived from vinyl chloride or vinylidene chloride, or polymer containing a vinyl alcohol unit is sandwiched between layers [continuous layer]
428/1386 . . . Natural or synthetic rubber or rubber-like compound containing
428/139 . . . Open-ended, self-supporting conduit, cylinder, or tube-type article
428/1393 . . . Multilayer [continuous layer]
428/1397 . . . Single layer [continuous layer]
428/14 . . . Layer or component removable to expose adhesive
428/1405 . . . Capsule or particulate matter containing [e.g., sphere, flake, microballoon, etc.]
428/141 . . . Bituminous
428/1414 . . . Ceramic, glass, glasslike, vitreous
428/1419 . . . Wax containing
428/1424 . . . Halogen containing compound
428/1429 . . . Fluorine
428/1433 . . . Coloring agent containing
428/1438 . . . Metal containing
428/1443 . . . Aluminum
428/1448 . . . Coloring agent containing
428/1452 . . . Polymer derived only from ethylenically unsaturated monomer
428/1457 . . . Silicon
428/1462 . . . Polymer derived from material having at least one acrylic or alkacylic 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

428/2397 . . . Sheet, web, or layer weakened to permit separation through thickness
428/2396 . . . Two dimensionally sectional layer
428/2395 . . . with frame, casing, or perimeter structure
428/2394 . . . Transparent or translucent layer or section
428/2393 . . . Next to unitary web or sheet of equal or greater extent
428/2392 . . . Continuous two dimensionally sectional layer
428/2391 . . . Glass, ceramic, or metal sections [e.g., floor or wall tile, etc.]
428/2390 . . . Cellulosic sections [e.g., parquet floor, etc.]
428/2389 . . . Nonrectangular
428/2388 . . . Sections connected flexibly with external fastener
428/2387 . . . Three or more coplanar interfitted sections with securing means
428/2386 . . . Longitudinally sectional layer of three or more sections
428/2385 . . . Next to unitary sheet of equal or greater extent
428/2384 . . . Continuous sectional layer
428/2383 . . . Sheets or webs edge spliced or joined
428/2382 . . . Sheets or webs coplanar
428/2381 . . . Double faced corrugated sheets or webs connected
428/2380 . . . Beveled, stepped, or skived in thickness
428/2379 . . . with noncoplanar reinforcement
428/2378 . . . Pile or nap surface sheets connected
428/2377 . . . Patched hole or depression
428/2376 . . . Circular sheet or circular blank
428/2375 . . . Gear
428/2374 . . . Frictional
428/2373 . . . End closure
428/2372 . . . Seal, gasket, or packing
428/2371 . . . Ornamental, decorative, pattern, or indicia
428/2370 . . . Aperture containing
428/2369 . . . Edge structure
428/2368 . . . Nonparticulate element embedded or inlaid in substrate and visible
428/2367 . . . Sheet including cover or casing
428/2366 . . . Filled with gas other than air; or under vacuum
428/2365 . . . Encased layer derived from inorganic settable ingredient
428/2364 . . . Foam or expanded material encased
428/2363 . . . including elements cooperating to form cells
428/2362 . . . Honeycomb type cells extend perpendicularly to nonthickness layer
428/2361 . . . Noninterengaged fibered material encased [e.g., mat, batt, etc.]
428/2360 . . . Metal cover or casing
428/2359 . . . Complete cover or casing
428/2358 . . . Pile or nap type surface or component
428/2357 . . . Interlaminar
428/2356 . . . With particles
428/2355 . . . Edge feature or configured or discontinuous surface
428/2354 . . . Differential pile length or surface
428/2353 . . . Flock surface
428/2352 . . . Nap type surface
428/2351 . . . Particular shape or structure of pile
428/2350 . . . U-, V-, or W-shaped or continuous strand, filamentary material
428/2349 . . . Continuous strand with adhesive bond to backing
428/2348 . . . Particular shape or structure of pile
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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
428/24504 . . . 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, N2 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.]
428/249977 . . . 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 . . . Integrially formed skin
428/24999 . . . Inorganic
428/249991 . . . Synthetic resin or natural rubbers
428/249992 . . . Linear or thermoplastic
428/249993 . . . Hydrocarbon polymer
428/249994 . . . Composite having a component wherein a constituent is liquid or is contained within preformed walls [e.g., impregnant-filled, previously void containing component, etc.]
428/249995 . . . Constituent is in liquid form
428/249996 . . . Ink in pores
428/249997 . . . Encapsulated liquid
428/249998 . . . Indefinite plurality of similar impregnated thin sheets [e.g., "decorative laminate" type, etc.]
428/249999 . . . Differentially filled foam, filled plural layers, or filled layer with coat of filling material
428/25 . . . Web or sheet containing structurally defined element or component and including a second component containing structurally defined particles
428/251 . . . Mica
428/252 . . . Glass or ceramic [i.e., fired or glazed clay, cement, etc.] [porcelain, quartz, etc.]
428/253 . . . Cellulosic [e.g., wood, paper, cork, rayon, etc.]
428/254 . . . Polymeric or resinous material
428/256 . . . Heavy metal or aluminum or compound thereof
428/257 . . . Iron oxide or aluminum oxide
428/258 . . . Alkali metal or alkaline earth metal or compound thereof
428/259 . . . Silicic material
428/26 . . . Web or sheet containing structurally defined element or component, the element or component having a specified physical dimension
428/261 . . . In terms of molecular thickness or light wave length
428/263 . . . Coating layer not in excess of 5 mils thick or equivalent
428/264 . . . Up to 3 mils
428/265 . . . 1 mil or less
428/266 . . . of base or substrate
428/268 . . . Monolayer with structurally defined element
428/269 . . . including synthetic resin or polymer layer or component
428/27 . . . Web or sheet containing structurally defined element or component, the element or component having a specified weight per unit area [e.g., gms/sq cm, lbs/sq ft, etc.]
428/273 . . . of coating
428/277 . . . Cellulosic substrate
428/28 . . . Web or sheet containing structurally defined element or component and having an adhesive outermost layer
428/2804 . . . Next to metal
428/2809 . . . including irradiated or wave energy treated component
428/2813 . . . Heat or solvent activated or sealable
428/2817 . . . Heat sealable
428/2822 . . . . Wax containing
428/2826 . . . Synthetic resin or polymer
428/283 . . . Water activated
428/2835 . . . including moisture or waterproof component
428/2839 . . . with release or antistick coating
428/2843 . . . including a primer layer
428/2848 . . . Three or more layers
428/2852 . . . Adhesive compositions
428/2857 . . . including metal or compound thereof or natural rubber
428/2861 . . . having readily strippable combined with readily readearable properties [e.g., stick-ons, etc.]
428/2865 . . . including monomer or polymer of carbohydrate [e.g., starch, dextrin, etc.] Or protein [e.g., casein, animal protein, etc.] Or derivative thereof
428/287 . . . including epoxy group or epoxy polymer
428/2874 . . . including aldehyde or ketone condensation polymer [e.g., urea formaldehyde polymer, melamine formaldehyde polymer, etc.]
428/2878 . . . including addition polymer from unsaturated monomer
428/2883 . . . including addition polymer of diene monomer [e.g., SBR, SIS, etc.]
428/2887 . . . including nitrogen containing polymer [e.g., polyacrylonitrile, polymethacrylonitrile, etc.]
428/2891 . . . including addition polymer from alpha-beta unsaturated carboxylic acid [e.g., acrylic acid, methacrylic acid, etc.] Or derivative thereof
428/2896 . . . including nitrogen containing condensation polymer [e.g., polyurethane, polyisocyanate, etc.]
428/2899 . . . Coated or structurally defined flake, particle, cell, strand, strand portion, rod, filament, macroscopic fiber or mass thereof
428/2902 . . . Channel shape
428/2904 . . . Staple length fiber
428/2905 . . . Plural and with bonded intersections only
428/2907 . . . with coating or impregnation
428/2909 . . . Nonlinear [e.g., crimped, coiled, etc.]
428/2911 . . . Mica flake
428/2913 . . . Rod, strand, filament or fiber
428/2915 . . . including textile, cloth or fabric
428/2916 . . . including boron or compound thereof [not as steel]
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428/2918 . . . including free carbon or carbide or therewith [not as steel]
428/292 . . . In coating or impregnation
428/2922 . . . Nonlinear [e.g., crimped, coiled, etc.]
428/2924 . . . Composite
428/2925 . . . Helical or coiled
428/2927 . . . including structurally defined particulate matter
428/2929 . . . Bicomponent, conjugate, composite or collateral fibers or filaments [i.e., coextruded sheath-core or side-by-side type]
428/2931 . . . Fibers or filaments nonconcentric [e.g., side-by-side or eccentric, etc.]
428/2933 . . . Coated or with bond, impregnation or core
428/2935 . . . Discontinuous or tubular or cellular core
428/2936 . . . Wound or wrapped core or coating [i.e., spiral or helical]
428/2938 . . . Coating on discrete and individual rods, strands or filaments
428/294 . . . including metal or compound thereof [excluding glass, ceramic and asbestos]
428/2942 . . . Plural coatings
428/2944 . . . Free metal in coating
428/2945 . . . Natural rubber in coating
428/2947 . . . Synthetic resin or polymer in plural coatings, each of different type
428/2949 . . . Glass, ceramic or metal oxide in coating
428/2951 . . . Metal with weld modifying or stabilizing coating [e.g., flux, slag, producer, etc.]
428/2953 . . . Titanium compound in coating
428/2955 . . . Silicic material in coating
428/2956 . . . Glass or silicic fiber or filament with metal coating
428/2958 . . . Metal or metal compound in coating
428/296 . . . Rubber, cellulosic or silicic material in coating
428/2962 . . . Silane, silicone or siloxane in coating
428/2964 . . . Artificial fiber or filament
428/2965 . . . Cellulosic
428/2967 . . . Synthetic resin or polymer
428/2969 . . . Polyamide, polyimide or polyester
428/2971 . . . Impregnation
428/2973 . . . Particular cross section
428/2975 . . . Tubular or cellular
428/2976 . . . Longitudinally varying
428/2978 . . . Surface characteristic
428/298 . . . Physical dimension
428/2982 . . . Particulate matter [e.g., sphere, flake, etc.]
428/2984 . . . Microcapsule with fluid core [includes liposome]
428/2985 . . . Solid-walled microcapsule from synthetic polymer
428/2987 . . . Addition polymer from unsaturated monomers only
428/2989 . . . Microcapsule with solid core [includes liposome]
428/2991 . . . Coated
428/2993 . . . Silicic or refractory material containing [e.g., tungsten oxide, glass, cement, etc.]
428/2995 . . . Silane, siloxane or silicone coating
428/2996 . . . Glass particles or spheres
428/2998 . . . including synthetic resin or polymer
428/30 . Self-sustaining carbon mass or layer with impregnant or other layer
428/31 . Surface property or characteristic of web, sheet or block
428/315 . Surface modified glass [e.g., tempered, strengthened, etc.]
428/31504 . Composite [nonstructural laminate]
428/31507 . Of polycarbonate
428/31511 . Of epoxy ether
428/31515 . As intermediate layer
428/31518 . Next to glass or quartz
428/31522 . Next to metal
428/31525 . Next to glass or quartz
428/31529 . Next to metal
428/31533 . Of polyhydroether
428/31536 . Including interfacial reaction product of adjacent layers
428/3154 . Of fluorinated addition polymer from unsaturated monomers
428/31544 . . . Addition polymer is perhalogenated
428/31547 . . . Of polysiocyanurate
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.]
428/31569 . . . Next to natural rubber
428/31573 . . . Next to addition polymer of ethylenically unsaturated monomer
428/31576 . . . . Ester monomer type [polyvinylacetate, etc.]
428/3158 . . . . Halide monomer type [polyvinyl chloride, etc.]
428/31583 . . . . Nitrile monomer type [polyacrylonitrile, etc.]
428/31587 . . . . Hydrocarbon polymer [polyethylene, polybutadiene, etc.]
428/31591 . . . Next to cellulosic
428/31594 . . . Next to aldehyde or ketone condensation product [phenol-aldehyde, etc.]
428/31598 . . . Next to silicon-containing [silicone, cement, etc.] layer
428/31601 . . . . Quartz or glass
428/31605 . . . Next to free metal
428/31609 . . . Particulate metal or metal compound-containing
428/31612 . . . . As silicone, silane or siloxane
428/31616 . . . Next to polyester [e.g., alkyd]
428/3162 . . . . Cross-linked polyester [e.g., glycerol maleate-styrene, etc.]
428/31623 . . . Next to polyamide or polyimide
428/31627 . . . Next to aldehyde or ketone condensation product
428/3163 . . . . Next to acetal of polymerized unsaturated alcohol [e.g., formal butyral, etc.]
428/31634 . . . Next to cellulosic
428/31638 . . . . Cellulosic ester
428/31641 . . . Next to natural rubber, gum, oil, resin, wax, bituminous or tarry residue
428/31645 . . . Next to addition polymer from unsaturated monomers
428/31649 . . . . Ester, halide or nitrile of addition polymer
428/31652 . . . Of asbestos
428/31656 . . . With metal layer
428/31659 . . . With cellulosic layer
428/31663 . . . As siloxane, silicone or silane
428/31667 . . . Next to addition polymer from unsaturated monomers, or aldehyde or ketone condensation product
428/3167 . . . Of cork
428/31674 . . . Including natural oil or gum or rosin [e.g., linoleum, etc.]
428/31678 . . . Of metal
428/31681 . . . Next to polyester, polyamide or polyimide [e.g., alkyd, glue, or nylon, etc.]
428/31685 . . . Natural source polyamide [e.g., casein, gelatin, etc.]
428/31688 . . . Next to aldehyde or ketone condensation product
428/31692 . . . Next to addition polymer from unsaturated monomers
428/31696 . . . Including polyene monomers [e.g., butadiene, etc.]
428/31699 . . . Ester, halide or nitrile of addition polymer
428/31703 . . . Next to cellulose
428/31707 . . . Next to natural rubber
428/3171 . . . With natural rubber next to second layer of natural rubber
428/31714 . . . Next to natural gum, natural oil, lac or wax
428/31717 . . . Next to bituminous or tarry residue
428/31721 . . . Of polyamide
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 cellulose
428/31775 . . . Paper
428/31779 . . . Next to cellulose
428/31783 . . . Paper or wood
428/31786 . . . Of polyester [e.g., alkyd, etc.]
428/3179 . . . Next to cellulose
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 cellulose
428/31808 . . . Cellulosic is paper
428/31812 . . . Glassine paper
428/31815 . . . Of bituminous or tarry residue
428/31819 . . . Next to cellulose
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 cellulose
428/31844 . . . Of natural gum, rosin, natural oil or lac
428/31848 . . . Next to cellulose
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 cellulose
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 polylene polymer
428/3192 . . . Next to vinyl or vinylidene chloride polymer
428/31924 . . . Including polylene monomers
428/31928 . . . Ester, halide or nitrile of addition polymer
428/31931 . . . Polylene 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 cellulose
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 cellulose next to another carbohydrate
428/31978 . . . Cellulose next to another cellulose
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
Former US Class 428 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 Simultative 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 Amine and quaternary ammonium

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 Inorganic phosphorus compound in body fluid

436/17 Nitrogen containing

436/170769 N-Nitroso containing [e.g., nitrosamine, etc.]

436/171538 Urea or blood urea nitrogen

436/172307 Cyanide or isocyanide

436/173076 Nitrite or nitrate

436/173845 Amine and quaternary ammonium

436/174614 Tertiary amine

436/175383 Ammonia

436/176152 Total nitrogen determined

436/176921 As part of an elemental analysis

436/177692 Oxides of nitrogen

436/178459 Only nitrogen dioxide

436/179228 Both nitrogen oxide and dioxide

436/18 Sulfur containing

436/182 Organic or sulphydryl containing [e.g., mercaptan, hydrogen, sulfide, etc.]

436/184 Only hydrogen sulfide

436/186 Sulfur dioxide

436/188 Total or elemental sulfur

436/19 Halogen containing

436/193333 In aqueous solution

436/196666 Carbon containing compound [e.g., vinylchloride, etc.]

436/20 Oxygen containing

436/200833 Carbonyl, ether, aldehyde or ketone containing

436/201666 Carboxylic acid

436/202499 Formaldehyde or acetone

436/203322 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

436/25 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.]
Coating or impregnation is specified as microporous but is not a foam
Coating or impregnation collects radionuclide or heavy metal
Coating or impregnation specified as water repellent
Also specified as oil repellent
Organosilicon containing
Fluorocarbon containing
Nitrogen containing
Natural oil or wax containing
Coating or impregnation is specified as weather proof, water vapor resistant, or moisture resistant
Coating or impregnation is specified as water proof
Organosilicon containing
Fluorocarbon containing
Coating or impregnation improves soil repellency, soil release, or anti-soil redeposition qualities of fabric
Fluorocarbon containing
Linear polyether group chain containing
Coating or impregnation provides a fragrance or releases an odor intended to be perceptible to humans
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
Fluorocarbon containing
Organosilicon containing
Natural oil or wax containing
Coating or impregnation is anti-slip or friction-increasing other than specified as an abrasive
Coating or impregnation functions to soften the feel of or improve the "hand" of the fabric
Coating or impregnation improves stiffness of the fabric other than specified as a size
Coating or impregnation improves elasticity, bendability, resiliency, flexibility, or shape retention of the fabric
Improves elasticity
Improves shrink resistance
Coating or impregnation provides crease-resistance or wash and wear characteristics
Coating or impregnation specified as a size
Coating or impregnation improves snag or pull resistance of the fabric
Coating or impregnation increases electrical conductivity or anti-static quality
Elemental carbon containing
Linear polyether group chain containing
Nitrogen and phosphorus containing
Phosphorus containing
Nitrogen containing
Sulphur containing
Coating or impregnation is electrical insulation-providing, -improving, or -increasing, or conductivity-reducing
Coating or impregnation is water absorbency-increasing or hydrophilicity-increasing or hydrophilicity-impacting
Polyether group containing
Coating or impregnation absorbs sound
Coating or impregnation absorbs chemical material other than water
Chemical material is one used in biological or chemical warfare
Coating or impregnation functions biologically [e.g., insect repellent, antiseptic, insecticide, bactericide, etc.]
Inhibits mildew
Insect repellent
Coating or impregnation is chemically inert or of stated nonreactance
Oxygen or ozone resistant
Organic solvent resistant [e.g., dry cleaning fluid, etc.]
Acid or alkali resistant
Coating or impregnation contains an optical bleach or brightener or functions as an optical bleach or brightener [e.g., it masks fabric yellowing, etc.]
Coating or impregnation provides protection from radiation [e.g., U.V., visible light, I.R., micriscHEME-change-itemave, high energy particle, etc.] or heat retention thru radiation absorption
Radiation reflective
Radiation absorptive
Coating or impregnation is resistant to penetration by solid implements
Ballistic resistant
Coating or impregnation provides heat or fire protection
Coated or impregnated asbestos fabric
Coating or impregnation is specified as an intumescent material
Antimony containing
Boron containing
Phosphorus containing
Phosphorus and nitrogen containing compound
A phosphorus containing compound and a nitrogen containing compound
Phosphorus and halogen containing compound
A phosphorus containing compound and a halogen containing compound
Halogen containing
Nitrogen containing
Coating or impregnation provides wear or abrasion resistance
Coating or impregnation intended to function as an adhesive to solid surfaces subsequently associated therewith
Heat-activatable adhesive
Pressure-sensitive adhesive
Coated or impregnated natural fiber fabric [e.g., cotton, wool, silk, linen, etc.]
Coated or impregnated cellulosic fiber fabric
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>442/2779</td>
<td>Coating or impregnation contains an acrylic polymer or copolymer [e.g., polyacrylonitrile, polyacrylic acid, etc.]</td>
</tr>
<tr>
<td>442/2787</td>
<td>Coating or impregnation contains a vinyl polymer or copolymer</td>
</tr>
<tr>
<td>442/2795</td>
<td>Coating or impregnation contains an epoxy polymer or copolymer or polyether</td>
</tr>
<tr>
<td>442/2803</td>
<td>Polymeric coating or impregnation from a silane or siloxane not specified as lubricant or water repellent</td>
</tr>
<tr>
<td>442/2811</td>
<td>Coating or impregnation contains polyimide or polyamide</td>
</tr>
<tr>
<td>442/282</td>
<td>Coating or impregnation contains natural gum, rosin, natural oil, or wax</td>
</tr>
<tr>
<td>442/2828</td>
<td>Coating or impregnation contains aldehyde or ketone condensation product</td>
</tr>
<tr>
<td>442/2836</td>
<td>Phenol-aldehyde condensate</td>
</tr>
<tr>
<td>442/2844</td>
<td>Melamine-aldehyde condensate</td>
</tr>
<tr>
<td>442/2852</td>
<td>Amide-aldehyde condensate [e.g., modified urea-aldehyde condensate, etc.]</td>
</tr>
<tr>
<td>442/2861</td>
<td>Coated or impregnated synthetic organic fiber fabric</td>
</tr>
<tr>
<td>442/2869</td>
<td>Coated or impregnated regenerated cellulose fiber fabric</td>
</tr>
<tr>
<td>442/2877</td>
<td>Coated or impregnated polyvinyl alcohol fiber fabric</td>
</tr>
<tr>
<td>442/2885</td>
<td>Coated or impregnated acrylic fiber fabric</td>
</tr>
<tr>
<td>442/2893</td>
<td>Coated or impregnated polyamide fiber fabric</td>
</tr>
<tr>
<td>442/2902</td>
<td>Aromatic polyamide fiber fabric</td>
</tr>
<tr>
<td>442/291</td>
<td>Coated or impregnated polyolefin fiber fabric</td>
</tr>
<tr>
<td>442/2918</td>
<td>Polypropylene fiber fabric</td>
</tr>
<tr>
<td>442/2926</td>
<td>Coated or impregnated inorganic fiber fabric</td>
</tr>
<tr>
<td>442/2934</td>
<td>Coating or impregnation contains vinyl polymer or copolymer</td>
</tr>
<tr>
<td>442/2943</td>
<td>Vinyl acetate polymer or copolymer</td>
</tr>
<tr>
<td>442/2951</td>
<td>Coating or impregnation contains epoxy polymer or copolymer or polyether</td>
</tr>
<tr>
<td>442/2959</td>
<td>Coating or impregnation contains aldehyde or ketone condensation product</td>
</tr>
<tr>
<td>442/2967</td>
<td>Amide-aldehyde condensate</td>
</tr>
<tr>
<td>442/2975</td>
<td>Coated or impregnated ceramic fiber fabric</td>
</tr>
<tr>
<td>442/2984</td>
<td>Coated or impregnated carbon or carbonaceous fiber fabric</td>
</tr>
<tr>
<td>442/2992</td>
<td>Coated or impregnated glass fiber fabric</td>
</tr>
<tr>
<td>442/30</td>
<td>Woven fabric [i.e., woven strand or strip material]</td>
</tr>
<tr>
<td>442/3008</td>
<td>Woven fabric has an elastic quality</td>
</tr>
<tr>
<td>442/3016</td>
<td>Including a preformed layer other than the elastic woven fabric [e.g., fabric or film or foil or sheet layer, etc.]</td>
</tr>
<tr>
<td>442/3024</td>
<td>Including elastic strand or strip</td>
</tr>
<tr>
<td>442/3033</td>
<td>Including a strip or ribbon</td>
</tr>
<tr>
<td>442/3041</td>
<td>Woven fabric comprises strips or ribbons only</td>
</tr>
<tr>
<td>442/3049</td>
<td>Including strand precoated with other than free metal or alloy</td>
</tr>
<tr>
<td>442/3057</td>
<td>Multiple coatings</td>
</tr>
<tr>
<td>442/3065</td>
<td>Including strand which is of specific structural definition</td>
</tr>
<tr>
<td>442/3073</td>
<td>Strand material is core-spun [not sheath-core bicomponent strand]</td>
</tr>
<tr>
<td>442/3081</td>
<td>Core is synthetic material</td>
</tr>
<tr>
<td>442/3089</td>
<td>Cross-sectional configuration of strand material is specified</td>
</tr>
<tr>
<td>442/3098</td>
<td>Cross-sectional configuration varies longitudinally along the strand</td>
</tr>
<tr>
<td>442/3106</td>
<td>Hollow strand material</td>
</tr>
<tr>
<td>442/3114</td>
<td>Cross-sectional configuration of the strand material is other than circular</td>
</tr>
<tr>
<td>442/3122</td>
<td>Cross-sectional configuration is multilobal</td>
</tr>
<tr>
<td>442/313</td>
<td>Strand material formed of individual filaments having different chemical compositions</td>
</tr>
<tr>
<td>442/3138</td>
<td>Including inorganic filament</td>
</tr>
<tr>
<td>442/3146</td>
<td>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</td>
</tr>
<tr>
<td>442/3154</td>
<td>Sheath-core multicomponent strand material</td>
</tr>
<tr>
<td>442/3163</td>
<td>Islands-in-sea multicomponent strand material</td>
</tr>
<tr>
<td>442/3171</td>
<td>Strand material is a blend of polymeric material and a filler material</td>
</tr>
<tr>
<td>442/3179</td>
<td>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</td>
</tr>
<tr>
<td>442/3187</td>
<td>Triaxially woven fabric</td>
</tr>
<tr>
<td>442/3195</td>
<td>Three-dimensional weave [e.g., x-y-z planes, multi-planar warps and/or wefts, etc.]</td>
</tr>
<tr>
<td>442/3203</td>
<td>Multi-planar warp layers</td>
</tr>
<tr>
<td>442/3211</td>
<td>Multi-planar weft layers</td>
</tr>
<tr>
<td>442/322</td>
<td>Warp differs from weft</td>
</tr>
<tr>
<td>442/3228</td>
<td>Materials differ</td>
</tr>
<tr>
<td>442/3236</td>
<td>Including inorganic strand material</td>
</tr>
<tr>
<td>442/3244</td>
<td>Including natural strand material [e.g., cotton, wool, etc.]</td>
</tr>
<tr>
<td>442/3252</td>
<td>Including synthetic polymeric strand material</td>
</tr>
<tr>
<td>442/326</td>
<td>Including synthetic polymeric strand material</td>
</tr>
<tr>
<td>442/3268</td>
<td>Including natural strand material</td>
</tr>
<tr>
<td>442/3276</td>
<td>Including polyamide strand material</td>
</tr>
<tr>
<td>442/3285</td>
<td>Including polyester strand material</td>
</tr>
<tr>
<td>442/3293</td>
<td>Warp and weft are identical and contain at least two chemically different strand materials</td>
</tr>
<tr>
<td>442/3301</td>
<td>Coated, impregnated, or autogenous bonded</td>
</tr>
<tr>
<td>442/3309</td>
<td>Woven fabric contains inorganic strand material</td>
</tr>
<tr>
<td>442/3317</td>
<td>Woven fabric contains synthetic polymeric strand material</td>
</tr>
<tr>
<td>442/3325</td>
<td>Including a foamed layer or component</td>
</tr>
<tr>
<td>442/3333</td>
<td>Including a free metal or alloy constituent</td>
</tr>
<tr>
<td>442/3341</td>
<td>Plural foam layers</td>
</tr>
<tr>
<td>442/335</td>
<td>Plural fabric layers</td>
</tr>
<tr>
<td>442/3358</td>
<td>Including a nonwoven fabric layer</td>
</tr>
<tr>
<td>442/3366</td>
<td>Woven fabric is coated, impregnated, or autogenously bonded</td>
</tr>
<tr>
<td>442/3374</td>
<td>Coating or impregnation includes particulate material other than fiber</td>
</tr>
<tr>
<td>442/3382</td>
<td>Including a free metal or alloy constituent</td>
</tr>
<tr>
<td>442/339</td>
<td>Metal or metal-coated strand</td>
</tr>
<tr>
<td>442/3398</td>
<td>Vapor or sputter deposited metal layer</td>
</tr>
<tr>
<td>442/3407</td>
<td>Chemically deposited metal layer [e.g., chemical precipitation or electrochemical deposition or plating, etc.]</td>
</tr>
</tbody>
</table>
Former US Class 442 series

442/3415 . . . Preformed metallic film or foil or sheet [film or foil or sheet had structural integrity prior to association with the woven fabric]
442/3423 . . . Plural metallic films or foils or sheets
442/3431 . . . Plural fabric layers
442/3439 . . . Including a nonwoven fabric layer
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]
442/3455 . . . Including particulate material other than fiber
442/3463 . . . Plural fabric layers
442/3472 . . . Woven fabric including an additional woven fabric layer
442/348 . . . Mechanically needled or hydroentangled
442/3488 . . . Four or more layers
442/3496 . . . Coated, impregnated, or autogenously bonded
442/3504 . . . Woven fabric layers comprise chemically different strand material
442/3512 . . . Three or more fabric layers
442/352 . . . 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
Former US Class 442 series

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
442/51 . . . From natural organic fiber [e.g., wool, etc.]
442/53 . . . Including particulate material other than fiber
442/54 . . . At least three layers
442/56 . . . From synthetic organic fiber
442/57 . . . Including particulate material other than fiber
442/59 . . . At least three layers
442/60 . . . Nonwoven fabric [i.e., nonwoven strand or fiber material]
442/601 . . . Nonwoven fabric has an elastic quality
442/602 . . . Nonwoven fabric comprises an elastic strand or fiber material
442/603 . . . Including strand or fiber material precoated with other than free metal or alloy
442/604 . . . Strand or fiber material is glass
442/605 . . . Strand or fiber material is inorganic
442/607 . . . Strand or fiber material is synthetic polymer
442/608 . . . Including strand or fiber material which is of specific structural definition
442/609 . . . Cross-sectional configuration of strand or fiber material is specified
442/61 . . . Cross-sectional configuration varies longitudinally along strand or fiber material
442/611 . . . Cross-sectional configuration of strand or fiber material is other than circular
442/612 . . . Hollow strand or fiber material
442/613 . . . Microcellular strand or fiber material
442/614 . . . Strand or fiber material specified as having microdimensions [i.e., microfiber]
442/615 . . . Strand or fiber material is blended with another chemically different microfiber in the same layer
442/616 . . . Blend of synthetic polymeric and inorganic microfibers
442/618 . . . Blend of chemically different inorganic microfibers
442/619 . . . Including other strand or fiber material in the same layer not specified as having microdimensions
442/62 . . . Including another chemically different microfiber in a separate layer
442/621 . . . Including other strand or fiber material in a different layer not specified as having microdimensions
442/622 . . . Microfiber is a composite fiber
442/623 . . . Microfiber is glass
442/624 . . . Microfiber is carbon or carbonaceous
442/625 . . . Autogenously bonded
442/626 . . . Microfiber is synthetic polymer
442/627 . . . Strand or fiber material is specified as non-linear [e.g., crimped, coiled, etc.]
442/629 . . . Composite strand or fiber material
442/63 . . . Carbon or carbonaceous strand or fiber material
442/631 . . . Glass strand or fiber material
442/632 . . . A single nonwoven layer comprising non-linear synthetic polymeric strand or fiber material and strand or fiber material not specified as non-linear
442/633 . . . Synthetic polymeric strand or fiber material is of staple length
442/634 . . . A nonwoven fabric having a layer comprising non-linear synthetic polymeric strand or fiber material and a separate and distinct layer comprising strand or fiber material which is not specified as non-linear
442/635 . . . Synthetic polymeric strand or fiber material
442/636 . . . Synthetic polymeric strand or fiber material is of staple length
442/637 . . . Including strand or fiber material which is a monofilament composed of two or more polymeric materials in physically distinct relationship [e.g., sheath-core, side-by-side, islands-in-sea, fibrils-in-matrix, etc.] or composed of physical blend of chemically different polymeric materials or a physical blend of a polymeric material and a filler material
442/638 . . . Side-by-side multicomponent strand or fiber material
442/64 . . . Islands-in-sea multicomponent strand or fiber material
442/641 . . . Sheath-core multicomponent strand or fiber material
442/642 . . . Strand or fiber material is a blend of polymeric material and a filler material
442/643 . . . Including parallel strand or fiber material within the nonwoven fabric
442/644 . . . Parallel strand or fiber material is glass
442/645 . . . Parallel strand or fiber material is inorganic [e.g., rock wool, mineral wool, etc.]
442/646 . . . Parallel strand or fiber material is naturally occurring [e.g., cotton, wool, etc.]
442/647 . . . Including a foamed layer or component
442/648 . . . Including a free metal or alloy constituent
442/649 . . . Plural foamed layers
442/651 . . . Plural fabric layers
442/652 . . . Nonwoven fabric is coated, impregnated, or autogenously bonded
442/653 . . . Including particulate material other than fiber
442/654 . . . Including a free metal or alloy constituent
442/655 . . . Metal or metal-coated strand or fiber material
442/656 . . . Preformed metallic film or foil or sheet [film or foil or sheet had structural integrity prior to association with the nonwoven fabric]
442/657 . . . Vapor, chemical, or spray deposited metal layer
442/658 . . . Particulate free metal or alloy constituent
442/659 . . . Including an additional nonwoven fabric
442/66 . . . Additional nonwoven fabric is a spun-bonded fabric
442/662 . . . Needled
442/663 . . . Hydroentangled
442/664 . . . Including a wood fiber containing layer
442/665 . . . Including a layer derived from a water-settled material [e.g., cement, gypsum, etc.]
442/666 . . . Mechanically interengaged by needling or impingement of fluid [e.g., gas or liquid stream, etc.]
442/667 . . . Needled
442/668 . . . Separate nonwoven fabric layers comprise chemically different strand or fiber material
442/669 . . . At least one layer of inorganic strand or fiber material and at least one layer of synthetic polymeric strand or fiber material
442/67 . . . Multiple nonwoven fabric layers composed of the same inorganic strand or fiber material
442/671 . . . Multiple nonwoven fabric layers composed of the same polymeric strand or fiber material
442/673 . . . Including particulate material other than fiber
442/674 . . . Nonwoven fabric with a preformed polymeric film or sheet
442/675 . . . Ester condensation polymer sheet or film [e.g., polyethylene terephthalate, etc.]
442/676 . . . Vinyl polymer or copolymer sheet or film [e.g., polyvinyl chloride, polyvinylidene chloride, polyvinyl acetate, etc.]
442/677 . . . Fluorinated olefin polymer or copolymer sheet or film [e.g., Teflon®, etc.]
442/678 . . . Olefin polymer or copolymer sheet or film [e.g., polypropylene, polyethylene, ethylene-butylene copolymer, etc.]
442/679 . . . Natural or synthetic rubber sheet or film
442/68 . . . Melt-blown nonwoven fabric
442/681 . . . Spun-bonded nonwoven fabric
442/682 . . . Needled nonwoven fabric
442/684 . . . Containing at least two chemically different strand or fiber materials
442/685 . . . Containing inorganic and polymeric strand or fiber materials
442/686 . . . Containing polymeric and natural strand or fiber materials
442/687 . . . Containing inorganic strand or fiber material
442/688 . . . Containing polymeric strand or fiber material
442/689 . . . Hydroentangled nonwoven fabric
442/69 . . . Autogenously bonded nonwoven fabric
442/691 . . . Inorganic strand or fiber material only
442/692 . . . Containing at least two chemically different strand or fiber materials
442/693 . . . Including a paper layer
442/695 . . . Including a wood containing layer

442/696 . . . Including strand or fiber material which is stated to have specific attributes [e.g., heat or fire resistance, chemical or solvent resistance, high absorption for aqueous compositions, water solubility, heat shrinkability, etc.]
442/697 . . . Containing at least two chemically different strand or fiber materials
442/698 . . . Containing polymeric and natural strand or fiber materials
442/699 . . . Including particulate material other than strand or fiber material

Former US Class 464 Series

464/00 Rotary shafts, gudgeons, and flexible couplings for rotary shafts
464/10 . having heating or cooling means
464/20 . with auxiliary 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 IntereUated power delivery controls, including engine control
477/10 . Steering by driving
477/20 . Plural engines
477/23 . Electric engine
477/24 . . . with brake control
477/26 . . . with clutch control
477/27 . . . with clutch control
477/30 . Electric engine
477/32 . . . with clutch control
477/322 . . . with brake control
477/3225 . . . . Stopped at end of cycle
477/325 . . . . 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
Former US Class 477 Series

- Transmission control
- Differential transmission
- Plural outputs
- Continuously variable friction transmission
- with fluid drive
- with clutch control
- with brake control
- Interrelated control of diverse transmissions
- Constant speed output
- Controlled by engine map
- Belt-type
- Fluid pressure control
- Ratio change controlled
- Engine coast braking
- with electric valve control
- Duty ratio control
- Fluid pressure control
- Fluid resistance inhibits rotation of planetary transmission element
- including fluid drive
- Impeller-turbine-type
- Engine controlled
- with countershaft gearing
- and turbine shaft brake
- and clutch control
- Control of or by fluid drive
- with hydrodynamic braking
- with nonratio brake
- Control responsive to fluid drive
- with clutch control
- Engaged during shift
- Speed responsive
- Electrical
- with fluid unit vane control
- Fill and empty-type fluid units
- Ratio control
- with planetary transmission control
- with clutch control
- brake control
- Temperature responsive control
- Engine controlled
- Clutch controlled
- Gearing controlled
- Temperature responsive control
- Clutch, engine, and transmission controlled
- Electronic digital control
- Clutch and transmission controlled
- Speed responsive control
- with manual override
- Vacuum actuated clutch
- Clutch and engine controlled
- Speed responsive control
- Plural speed signals
- Clutch controlled
- Electric clutch
- Vacuum actuated clutch
- Electric control
- Engine controlled
- Speed responsive
- with brake control

- Anti-creep
- Brake controls transmission
- Pressure controlled
- One control blocks another
- Control by sensed ambient condition, pattern indicia, external signal, or temperature
- Temperature control
- Engine starting interlock
- Exhaust emission control
- Engine ignition control for transmission change
- Ignition advanced or retarded
- Ignition intermitting and safety means limiting duration of intermission
- Ignition intermitting controlled by manifold pressure
- Ignition intermitting initiated by positioning accelerator
- Initiation inhibited by sensed condition
- Engine controlled by transmission
- Constant output shaft speed
- Diminution during transmission change
- Responsive to transmission output condition
- Transmission setting contingent
- Change to neutral idles engine
- Engine input variable in neutral
- Anticreep
- Transmission controlled by engine
- Shift from neutral shock control
- Pressure controlled
- Engine [coast] braking
- Electric valve control
- by acceleration
- by input manifold pressure or engine fuel control
- Selector-type
- with positive shift means
- with synchronization
- Prevents unsafe or unintentional shift
- Reverse inhibitor
- Shift valve control
- Hysteresis
- Electric control
- Plural shift valves
- Electric control
- Downshift control
- Kickdown
- Selector valve override
- Downshift control
- Kickdown
- Selector valve override
- Electric control
- Downshift control
- Downshift control
- Double acting servo
- Speed responsive control
- Electric valve control
Former US Class 477 Series

477/69377 ........ with fluid accumulator
477/69378 ........ Engine parameter controls back pressure
477/69379 ........ Electric valve control
477/6938 ........ Double acting servo
477/69383 ........ Speed responsive control
477/69387 ........ Electric valve control
477/6939 ........ Transmission pressure controlled
477/69393 ........ Variable capacity pump
477/69395 ........ Line pressure controlled
477/693958 ........ Responsive to speed
477/693962 ........ Electric valve control
477/693964 ........ Duty ratio control
477/693965 ........ Transmission setting contingent
477/693973 ........ Electric valve control
477/69398 ........ Electric valve control
477/694 ........ Engine control linkage mounted on manual
gearshift lever
477/70 ........ Clutch control
477/71 ........ with starter
477/73 ........ with fluid drive
477/735 ........ Speed responsive control
477/74 ........ with brake control
477/743 ........ Clutch controlled
477/745 ........ and brake controlled
477/747 ........ Engine controlled
477/747 ........ Condition responsive control
477/75 ........ 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 ........ Sensing condition responsive control of engine of

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

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