

# CPC COOPERATIVE PATENT CLASSIFICATION

## F MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING (NOTE omitted)

### ENGINEERING IN GENERAL

#### F16 ENGINEERING ELEMENTS AND UNITS; GENERAL MEASURES FOR PRODUCING AND MAINTAINING EFFECTIVE FUNCTIONING OF MACHINES OR INSTALLATIONS; THERMAL INSULATION IN GENERAL

#### F16B DEVICES FOR FASTENING OR SECURING CONSTRUCTIONAL ELEMENTS OR MACHINE PARTS TOGETHER, e.g. NAILS, BOLTS, CIRCLIPS, CLAMPS, CLIPS OR WEDGES; JOINTS OR JOINTING ([couplings for transmitting rotation F16D](#))

##### NOTES

1. Attention is drawn to:
  - a. the Note following group [E04B 1/38](#);
  - b. the following places:
 

<a href="#">A44B</a>	Buckles, slide fasteners
<a href="#">A47G 3/00</a>	Ornamental heads for nails, screws, or the like
<a href="#">B42F 3/00</a>	Means, not using staples, for attaching sheets temporarily together
<a href="#">{C14B 17/08}</a>	{Fastening devices, e.g. clips for leather-stretching used in apparatus or machines for manufacturing or treating skins, hides, leathers or furs}
<a href="#">E01B 9/10</a>	Screws or bolts for railway sleepers
<a href="#">E01B 11/00</a>	Rail joints
<a href="#">E04</a>	Connections for building
<a href="#">E04D 13/08</a>	Clamping means for down pipes for roof drainage
<a href="#">E04G 5/04</a>	Fastening scaffolds against buildings
<a href="#">E04G 7/00</a>	Scaffolding couplings
<a href="#">E05C</a>	Bolts for fasteners for wings, specially for doors or windows
<a href="#">F16C 29/10</a>	Locking bearings for parts moving only linearly
<a href="#">F16G 17/00</a>	Hooks as integral parts of chains
<a href="#">F16L</a>	Pipe joints
<a href="#">F16L 3/00</a>	Supports for pipes, cables or protective tubing, e.g. hangers, holders, clamps, cleats, clips, brackets
<a href="#">F16L 33/02</a>	Clips for connecting hoses to rigid members
<a href="#">H01F 7/00</a>	Magnetic holding devices
<a href="#">H02N 13/00</a>	Electrostatic holding devices.
2. Groups [F16B 2/00](#) - [F16B 47/00](#) take precedence over group [F16B 1/00](#).
3. {In this main group, it is desirable to add the indexing codes of [F16B 2200/00](#)}

##### WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
 

<a href="#">F16B 7/08</a>	covered by	<a href="#">F16B 5/12</a> , <a href="#">F16B 7/04</a> , <a href="#">F16L 3/00</a>
<a href="#">F16B 7/12</a>	covered by	<a href="#">F16B 7/105</a>
<a href="#">F16B 13/13</a>	covered by	<a href="#">F16B 13/002</a> , <a href="#">F16B 13/12</a>
<a href="#">F16B 25/02</a>	covered by	<a href="#">F16B 25/103</a>
<a href="#">F16B 25/04</a>	covered by	<a href="#">F16B 25/00</a> , <a href="#">F16B 25/106</a>
<a href="#">F16B 25/06</a>	covered by	<a href="#">F16B 25/00</a> , <a href="#">F16B 25/106</a>
<a href="#">F16B 25/08</a>	covered by	<a href="#">F16B 25/00</a> , <a href="#">F16B 25/106</a>
<a href="#">F16B 37/10</a>	covered by	<a href="#">F16B 37/0842</a> , <a href="#">F16B 37/0871</a>
2. {In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.}

1/00 **Devices for securing together, or preventing relative movement between, constructional elements or machine parts**

1/02 . Means for securing elements of mechanisms after operation ([means for bringing members to rest F16D](#))

- 1/04 . . disengaged by movement of the actuating member of the element ([locking of actuators G05G](#), e.g. [G05G 5/00](#))

**Fastenings for constructional elements or machine parts in general** ([couplings for transmitting rotation F16D](#))

- 2/00 Friction-grip releasable fastenings** (for cables or ropes, e.g. cleats [F16G 11/00](#)) {(connections of rods or tubes, e.g. of non-circular section, mutually, including resilient connections [F16B 7/00](#))}
- 2/005 . {Means to increase the friction-coefficient}
- 2/02 . Clamps, i.e. with gripping action effected by positive means other than the inherent resistance to deformation of the material of the fastening
- 2/04 . . internal, i.e. with spreading action ([F16B 2/14](#) - [F16B 2/18](#) take precedence)
- 2/06 . . external, i.e. with contracting action ([F16B 2/14](#) - [F16B 2/18](#) take precedence)
- 2/065 . . . {using screw-thread elements ([F16B 2/08](#) - [F16B 2/12](#) take precedence)}
- 2/08 . . . using bands
- 2/10 . . . using pivoting jaws
- 2/12 . . . using sliding jaws
- 2/14 . . using wedges
- 2/16 . . using rollers or balls {(clamps for rods or tubes telescopically engaged [F16B 7/1409](#); used in anti-theft monitors, e.g. as used for articles of clothing in shops [E05B 73/0017](#))}
- 2/18 . . using cams, levers, eccentrics, or toggles {(for connections of rods or tubes engaged telescopically [F16B 7/1418](#), [F16B 7/1427](#), [F16B 7/1454](#))}
- 2/185 . . . {using levers}
- 2/20 . Clips, i.e. with gripping action effected solely by the inherent resistance to deformation of the material of the fastening
- 2/205 . . {with two stable positions}
- 2/22 . . of resilient material, e.g. rubbery material ([F16B 2/205](#) takes precedence)
- 2/24 . . . of metal
- 2/241 . . . . {of sheet metal}
- 2/243 . . . . . {internal, i.e. with spreading action}
- 2/245 . . . . . {external, i.e. with contracting action}
- 2/246 . . . . . {the clip being released by tilting the clip or a part thereof to a position in which the axis of the openings surrounding the gripped elements is parallel to, or coincides with, the axis of the gripped elements}
- 2/248 . . . . {of wire}
- 2/26 . . of pliable, non-resilient material, e.g. plant tie
- 3/00 Key-type connections; Keys** ([F16B 2/00](#) takes precedence; for rods or tubes mutually [F16B 7/00](#))
- 3/005 . {the key being formed by solidification of injected material (joining of preformed parts by applying molten plastics [B29C 65/40](#); non-disconnectible pipe joints obtained using a hardenable filler [F16L 13/11](#))}
- 3/04 . using keys formed of wire or other flexible material, to be inserted through an opening giving access to grooves in the adjacent surfaces of the parts to be connected
- 3/06 . using taper sleeves

- 4/00 Shrinkage connections, e.g. assembled with the parts at different temperature; Force fits** (restricted to metal parts or objects [B23P 11/02](#)); **Non-releasable friction-grip fastenings** ([F16B 2/00](#) takes precedence)
- 4/002 . {engaging or disengaging by means of fluid pressure}
- 4/004 . {Press fits, force fits, interference fits, i.e. fits without heat or chemical treatment ([F16B 4/002](#) takes precedence)}
- 4/006 . {Shrinkage connections, e.g. assembled with the parts being at different temperature}
- 4/008 . . {using heat-recoverable, i.e. shrinkable, sleeves}
- 5/00 Joining sheets or plates {, e.g. panels,} to one another or to strips or bars parallel to them** ([F16B 17/00](#) takes precedence;) by sticking together [F16B 11/00](#); dowel connections [F16B 13/00](#); pins, including deformable elements [F16B 19/00](#); covering of walls [E04F 13/00](#); fastening signs, plates, panels or boards to a supporting structure, fastening readily-detachable elements, e.g. letters to signs, plates, panels, or boards, [G09F 7/00](#))
- 5/0004 . {Joining sheets, plates or panels in abutting relationship ([F16B 5/01](#) takes precedence)}
- 5/0008 . . {by moving the sheets, plates or panels substantially in their own plane, perpendicular to the abutting edge}
- 5/0012 . . . {a tongue on the edge of one sheet, plate or panel co-operating with a groove in the edge of another sheet, plate or panel}
- 5/0016 . . . . {with snap action}
- 5/002 . . . {both sheets, plates or panels having a groove, e.g. with strip-type connector}
- 5/0024 . . . {the sheets, plates or panels having holes, e.g. for dowel-type connections}
- 5/0028 . . . {using I-shaped connectors (with flanges moving towards each other [F16B 5/0068](#))}
- 5/0032 . . {by moving the sheets, plates, or panels or the interlocking key parallel to the abutting edge}
- 5/0036 . . . {and using hook and slot or keyhole-type connections}
- 5/004 . . . {and using C-shaped clamps}
- 5/0044 . . . {and using interlocking keys of circular, square, rectangular or like shape}
- 5/0048 . . . . {hinge-like}
- 5/0052 . . . {the interlocking key acting as a dovetail-type key}
- 5/0056 . . {by moving the sheets, plates or panels or the interlocking key perpendicular to the main plane}
- 5/006 . . . {and using ring-shaped clamps}
- 5/0064 . . . {and using C-shaped clamps}
- 5/0068 . . . {and using I-shaped clamps with flanges moving towards each other}
- 5/0072 . . . . {and using screw-thread}
- 5/0076 . . . {and using expanding clamps}
- 5/008 . . {by a rotating or sliding and rotating movement}
- 5/0084 . . {characterised by particular locking means}
- 5/0088 . . . {with locking means moving substantially perpendicular to the main plane, e.g. pins, screws}
- 5/0092 . . . {with locking means rotating about an axis parallel to the main plane and perpendicular to the abutting edge, e.g. screw, bayonet}

- 5/0096 . . {by using permanent deformation}
- 5/01 . . by means of fastening elements specially adapted for honeycomb panels
- 5/02 . . by means of fastening members using screw-thread ([F16B 5/0004](#) takes precedence); construction of screw-threaded connections [F16B 25/00](#) - [F16B 39/00](#))
- 5/0208 . . {using panel fasteners, i.e. permanent attachments allowing for quick assembly}
- 5/0216 . . {the position of the plates to be connected being adjustable}
- 5/0225 . . . {allowing for adjustment parallel to the plane of the plates}
- 5/0233 . . . {allowing for adjustment perpendicular to the plane of the plates}
- 5/0241 . . {with the possibility for the connection to absorb deformation, e.g. thermal or vibrational}
- 5/025 . . {specially designed to compensate for misalignment or to eliminate unwanted play}
- 5/0258 . . {using resiliently deformable sleeves, grommets or inserts ([F16B 43/001](#) takes precedence)}
- 5/0266 . . {using springs}
- 5/0275 . . {the screw-threaded element having at least two axially separated threaded portions ([F16B 5/0283](#) takes precedence)}
- 5/0283 . . {with an externally threaded sleeve around the neck or the head of the screw-threaded element for adjustably fastening a plate or frame or the like to a fixed element}
- 5/0291 . . {the threaded element being driven through the edge of a sheet plate with its axis in the plane of the plate}
- 5/04 . . by means of riveting ([rivets F16B 19/04](#))
- 5/045 . . {without the use of separate rivets}
- 5/06 . . by means of clamps or clips ([F16B 5/0004](#) takes precedence); friction-grip releasable fastenings in general [F16B 2/00](#))
- 5/0607 . . {joining sheets or plates to each other ([F16B 5/0692](#), [F16B 21/082](#) take precedence)}
- 5/0614 . . . {in angled relationship}
- 5/0621 . . . {in parallel relationship (fastened by a drive-pin [F16B 19/1081](#); fastened by a device locking by rotation [F16B 21/02](#))}
- 5/0628 . . . . {allowing for adjustment parallel or perpendicular to the plane of the sheets or plates}
- 5/0635 . . . . {fastened over the edges of the sheets or plates}
- 5/0642 . . . . {the plates being arranged one on top of the other and in full close contact with each other}
- 5/065 . . . . {the plates being one on top of the other and distanced from each other, e.g. by using protrusions to keep contact and distance}
- 5/0657 . . . . {at least one of the plates providing a raised structure, e.g. of the doghouse type, for connection with the clamps or clips of the other plate}
- 5/0664 . . . . {at least one of the sheets or plates having integrally formed or integrally connected snap-in-features}
- 2005/0671 . . . . {with unlocking by rotation}
- 2005/0678 . . . . {in abutting relationship}
- 5/0685 . . . {Joining sheets or plates to strips or bars ([F16B 5/0692](#) takes precedence)}
- 5/0692 . . . {joining flexible sheets to other sheets or plates or to strips or bars (tent fastenings [E04H 15/64](#); coping elements for swimming pools with fixing means for sealing foil [E04H 4/142](#); greenhouses of flexible synthetic material [A01G 9/1407](#); end or aperture-closing arrangements or devices for sacks or bags [B65D 33/16](#))}
- 5/07 . . by means of multiple interengaging protrusions on the surfaces, e.g. hooks, coils,
- 5/08 . . by means of welds or the like ([welding B23K](#))
- 5/10 . . by means of bayonet connections ([F16B 5/0092](#) takes precedence); fastening devices locking by rotation [F16B 21/02](#))
- 5/12 . . Fastening strips or bars to sheets or plates, e.g. rubber strips, decorative strips for motor vehicles, by means of clips (friction-grip releasable fastenings in general [F16B 2/00](#); fastening rods or tubular parts to flat surfaces at an angle [F16B 9/00](#))
- 5/121 . . . {fastened over the edge(s) of the sheet(s) or plate(s)}
- 5/123 . . . {Auxiliary fasteners specially designed for this purpose}
- 5/125 . . . . {one of the auxiliary fasteners is comprising wire or sheet material or is made thereof}
- 5/126 . . . {at least one of the sheets, plates, bars or strips having integrally formed or integrally connected snap-in-features}
- 5/128 . . . {a strip with a C- or U-shaped cross section being fastened to a plate such that the fastening means remain invisible, e.g. the fastening being completely enclosed by the strip}
- 7/00 Connections of rods or tubes, e.g. of non-circular section, mutually, including resilient connections ([F16B 11/008](#), [F16B 17/00](#) take precedence); umbrella frames [A45B 25/02](#); welding or soldering of connections [B23K](#); vehicle connections in general [B60D](#); railway couplings [B61G](#); bicycle frames [B62K](#); couplings for transmitting rotation [F16D](#); couplings for tubes conveying fluids [F16L](#))**
- 7/02 . . with conical parts
- 7/025 . . . {with the expansion of an element inside the tubes due to axial movement towards a wedge or conical element (for rods or tubes telescopically engaged [F16B 7/1463](#))}
- 7/04 . . Clamping or clipping connections (friction-grip releasable fastenings in general [F16B 2/00](#))
- 7/0406 . . . {for rods or tubes being coaxial ([F16B 7/10](#) takes precedence)}
- 7/0413 . . . . {for tubes using the innerside thereof ([F16B 7/025](#) takes precedence)}
- 7/042 . . . . {with a locking element, e.g. pin, ball or pushbutton, engaging in a hole in the wall of at least one tube}
- 7/0426 . . . . {for rods or for tubes without using the innerside thereof}
- 7/0433 . . . {for rods or tubes being in parallel relationship}
- 7/044 . . . {for rods or tubes being in angled relationship}
- 7/0446 . . . . {for tubes using the innerside thereof ([F16B 7/025](#) takes precedence)}
- 7/0453 . . . . {the tubes being drawn towards each other ([F16B 7/0473](#) takes precedence)}
- 7/046 . . . . . {by rotating an eccentric-mechanism}

- 7/0466 . . . . {by a screw-threaded stud with a conical tip acting on an inclined surface}
- 7/0473 . . . . {with hook-like parts gripping, e.g. by expanding, behind the flanges of a profile}
- 7/048 . . . {for rods or for tubes without using the innerside thereof}
- 7/0486 . . . . {forming an abutting connection of at least one tube}
- 7/0493 . . . . {forming a crossed-over connection}
- 7/06 . Turnbuckles (for cables, ropes, or wire [F16G 11/12](#))
- 7/10 . Telescoping systems ({for vertically adjustable chairs [A47C 3/20](#); telescopic steering columns [B62D 1/18](#)}; for scaffolding [E04G 25/04](#); {telescopic masts, poles or the like [E04H 12/182](#); telescopic door or window holders [E05C 17/30](#)}; telescope props for mining [E21D 15/14](#) - [E21D 15/46](#); stands or trestles as supports for apparatus or articles placed thereon {[F16M 11/26](#)})
- 7/105 . . {locking in discrete positions, e.g. in extreme extended position}
- 7/14 . . locking in intermediate {non-discrete} positions {(the rod or tube being locked by a tilting clip [F16B 2/246](#))}
- 7/1409 . . . {with balls or rollers urged by an axial displacement of a wedge or a conical member}
- 7/1418 . . . {with a clamping collar or two split clamping rings tightened by a screw or a cammed latch member}
- 7/1427 . . . {with cammed or eccentric surfaces co-operating by relative rotation of the telescoping members or by rotation of an external collar}
- 7/1436 . . . . {with rollers or balls}
- 7/1445 . . . {with a rubber bushing gripping inside the outer telescoping member by a radial expansion due to its axial compression ([F16B 7/1463](#) takes precedence)}
- 7/1454 . . . {with a clamp locking the telescoping members by swinging a handle provided with a locking cam ([F16B 7/1418](#) takes precedence)}
- 7/1463 . . . {with the expansion of an element inside the outer telescoping member due to the axial movement towards a wedge or a conical member}
- 7/1472 . . . {with a clamping screw perpendicular to the axis of the telescoping members}
- 7/1481 . . . {with a gripping helical spring}
- 7/149 . . . {with a sleeve or ring having a tapered or conical surface ([F16B 7/1463](#) takes precedence)}
- 7/16 . . . locking only against movement in one direction
- 7/18 . using screw-thread elements {([F16B 7/025](#) takes precedence; for turnbuckles [F16B 7/06](#))}
- 7/182 . . {for coaxial connections of two rods or tubes}
- 7/185 . . {with a node element}
- 7/187 . . {with sliding nuts or other additional connecting members for joining profiles provided with grooves or channels (channel nuts [per se F16B 37/045](#))}
- 7/20 . using bayonet connections
- 7/22 . using hooks or like elements
- 9/00** **Connections of rods or tubular parts to flat surfaces at an angle** ({with a part of or on one member entering a hole in the other and involving plastic deformation [F16B 17/006](#)}; friction-grip releasable fastenings in general [F16B 2/00](#); making press-fit connections [B23P 11/00](#), [B23P 19/00](#); fluid-tight connecting of pipes to reservoirs, sheets, or the like [F16L](#), e.g. joining pipes {or rods conveying fluids} to walls [F16L 41/00](#))
- 9/01 . {Welded or bonded connections}
- 9/02 . Detachable connections {([F16B 9/05](#) - [F16B 9/09](#) take precedence)}
- 9/05 . {by way of an intermediate member}
- 9/052 . . {the intermediate member having a radial flange secured to the flat surface}
- 9/054 . . {the intermediate member being threaded}
- 9/056 . . {the intermediate member extending through the flat surface; the rod or tubular part extending through the flat surface}
- 9/058 . . {the intermediate member being secured to the rod by transverse fasteners}
- 9/07 . {involving plastic or elastic deformation when assembling (involving plastic deformation with a part of or on one member entering a hole in the other [F16B 17/006](#))}
- 9/09 . {rods and flat surfaces interengaging by projections and mating sockets}
- 11/00** **Connecting constructional elements or machine parts by sticking or pressing them together, e.g. cold pressure welding (non-electric welding in general [B23K](#); methods of using adhesives independently of the form of the surfaces joined [C09J 5/00](#))**
- 11/002 . {by pressing the elements together so as to obtain plastic deformation (shrinkage connections, force fits [F16B 4/00](#); pin-and-hole connections involving plastic deformation [F16B 17/00](#))}
- 11/004 . {by cold pressure welding}
- 11/006 . {by gluing (gluing of plastics material [B29C 65/48](#))}
- 11/008 . . {of tubular elements or rods in coaxial engagement}
- 12/00** **Jointing of furniture or the like, e.g. hidden from exterior ([F16B 2/00](#) - [F16B 11/00](#) take precedence; fastening means [per se F16B 13/00](#) - [F16B 47/00](#); wood-working [B27](#))**
- 12/02 . Joints between panels and corner posts
- 12/04 . Non-loosenable joints for non-metal furniture parts, e.g. glued
- 2012/043 . . {using carpentry joints other than mortise and tenon joints, e.g. using multiple tenons}
- 2012/046 . . {using mortise and tenon joints}
- 12/06 . Non-loosenable joints for metal furniture parts
- 12/08 . . without use of separate connecting elements
- 12/10 . using pegs, bolts, tenons, clamps, clips, or the like (glued [F16B 12/04](#); fastening means [per se F16B 15/00](#) - [F16B 47/00](#))
- 2012/103 . . {Sleeves or dowels for connection fittings}
- 2012/106 . . {Connection bolts for connection fittings}
- 12/12 . . for non-metal furniture parts, e.g. made of wood, of plastics
- 12/125 . . . {using mortise and tenon joints}
- 12/14 . . . using threaded bolts or screws

2012/145	. . . . {Corner connections}	13/00	<b>Dowels or other devices fastened in walls or the like by inserting them in holes made therein for that purpose</b> (nails <a href="#">F16B 15/00</a> ; self-locking pins or bolts in general, stud-and-socket releasable fastenings <a href="#">F16B 21/00</a> ; dowels or bolts for railroad sleepers <a href="#">E01B 9/00</a> ; ans means for anchoring structural elements or bulkheads specially adapted to foundation engineering <a href="#">E02D 5/74</a> ; bolts or dowels used while laying bricks or casting concrete sleepers <a href="#">E04B 1/38</a> ; setting anchoring bolts in shafts, tunnels or galleries <a href="#">E21D 20/00</a> ; anchoring bolts for shafts, tunnels or galleries <a href="#">E21D 21/00</a> )
12/16	. . . . using self-tapping screws	13/001	. {with means for preventing rotation of the dowel}
12/18	. . . . using drawing bars	13/002	. {self-cutting}
12/20	. . . using clamps, clips, wedges, sliding bolts, or the like	13/003	. . {with a separate drilling bit attached to or surrounded by the dowel element}
12/2009	. . . . {actuated by rotary motion}	13/004	. . {with a drilling sleeve driven against a tapered or spherical plug}
2012/2018	. . . . {pin and drum securing device; drum has cam surface to engage the head of the pin}	13/005	. {formed in integral series but easily separable}
12/2027	. . . . . {with rotating excenters or wedges}	2013/006	. {with sealing means}
12/2036	. . . . . {with rotating excenters or wedges acting on a head of a pin or screw}	2013/007	. {to be fastened in undercut holes}
2012/2045	. . . . . {pin and drum securing device; drum has screw to engage the head of the pin}	2013/008	. {used for mining purposes}
12/2054	. . . . . {with engaging screw threads as securing means for limiting movement}	2013/009	. {Double sleeve dowels, i.e. the first sleeve is fixed in a hole by the action of a second sleeve and one of the sleeves receives a nail, a screw or the like}
12/2063	. . . . . {with engaging screw threads as tightening means}	13/02	. in one piece with protrusions or ridges on the shaft
2012/2072	. . . . . {Pin and drum securing devices; Drums having lever with cam surface to engage the head of the pin}	13/025	. . {of rolled sheet material}
2012/2081	. . . . . {having a fitting providing slanted access for a screwdriver as actuator}	13/04	. with parts gripping in the hole or behind the reverse side of the wall after inserting from the front ( <a href="#">F16B 13/002</a> and <a href="#">F16B 13/12</a> take precedence; <a href="#">friction-grip releasable fastenings in general F16B 2/00</a> )
2012/209	. . . . . {having an integrated lever as actuator}	13/045	. . {having axially compressing parts allowing the clamping of an object tightly to the wall}
12/22	. . . using keyhole-shaped slots and pins	13/06	. . combined with expanding sleeve ( <a href="#">F16B 13/045</a> and <a href="#">F16B 13/08</a> take precedence)
12/24	. . . using separate pins, dowels, or the like	13/061	. . . {of the buckling type}
12/26	. . . using snap-action elements	13/063	. . . {by the use of an expander}
12/28	. . for metal furniture parts	13/065	. . . . {fastened by extracting the screw, nail or the like}
12/30	. . . using threaded bolts	13/066	. . . . {fastened by extracting a separate expander-part, actuated by the screw, nail or the like}
12/32	. . . using clamps, clips, wedges, sliding bolts, or the like	13/068	. . . . . {expanded in two or more places}
12/34	. . . using keyhole-shaped slots and pins	13/08	. . with separate {or non-separate} gripping parts moved into their final position in relation to the body of the device without further manual operation
12/36	. . . using separate pins, dowels or the like	13/0808	. . . {by a toggle-mechanism}
12/38	. . . using snap-action elements	13/0816	. . . {with a wedging drive-pin}
12/40	. Joints for furniture tubing	13/0825	. . . {with a locking element, e.g. sleeve, ring or key co-operating with a cammed or eccentric surface of the dowel body}
2012/403	. . {with inserts for joining tubes coaxially}	13/0833	. . . {with segments or fingers expanding or tilting into an undercut hole ( <a href="#">F16B 13/0858</a> takes precedence)}
2012/406	. . {Cove joints for joining two cylindrical members}	13/0841	. . . {with a deformable sleeve member driven against the abutting surface of the head of the bolt or of a plug}
12/42	. . connecting furniture tubing to non-tubular parts ( <a href="#">connecting table tops to underframes A47B 13/003</a> )	13/085	. . . {with a drive-nail deflected by an inclined surface in the dowel body (nails with spreading shaft <a href="#">F16B 15/04</a> )}
12/44	. Leg joints; Corner joints	13/0858	. . . {with an expansible sleeve or dowel body driven against a tapered or spherical expander plug ( <a href="#">F16B 13/004</a> takes precedence)}
2012/443	. . {with two-dimensional corner element, the legs thereof being inserted in hollow frame members}		
2012/446	. . {with three-dimensional corner element, the legs thereof being inserted in hollow frame members}		
12/46	. . Non-metal corner connections		
2012/463	. . . {for wooden members without additional elements}		
2012/466	. . . {using mortise and tenon joints}		
12/48	. . Non-metal leg connections ( <a href="#">F16B 12/46</a> takes precedence)		
12/50	. . Metal corner connections		
2012/505	. . . {having a corner insert which is inserted in mitered profiled members}		
12/52	. . Metal leg connections ( <a href="#">F16B 12/50</a> takes precedence)		
12/54	. Fittings for bedsteads or the like		
12/56	. . Brackets for bedsteads; Coupling joints consisting of bolts or the like; Latches therefor		
12/58	. . Tapered connectors for bed rails		
12/60	. . Fittings for detachable side panels		

- 13/0866 . . . {with prongs penetrating into the wall of the hole by a retractile movement of a threaded member}
- 13/0875 . . . {with elastic discs or spring washers anchoring in the hole}
- 13/0883 . . . {with split rings or wire between the threads of the dowel body or in grooves near a conical surface ([F16B 13/0825](#) takes precedence)}
- 13/0891 . . . {with a locking element, e.g. wedge, key or ball moving along an inclined surface of the dowel body ([F16B 13/0816](#), [F16B 13/0825](#), [F16B 13/0883](#) take precedence)}
- 13/10 . . with separate gripping parts moved into their final position in relation to the body of the device by a separate operation ([F16B 13/06](#) takes precedence)
- 13/12 . Separate metal {or non-separate or non-metal} dowel sleeves fastened by inserting the screw, nail or the like {([F16B 13/0808](#) takes precedence)}
- 13/122 . . {made from a sheet-metal blank}
- 13/124 . . {fastened by inserting a threaded element, e.g. screw or bolt ([F16B 13/122](#), [F16B 13/128](#) take precedence)}
- 13/126 . . {fastened by inserting an unthreaded element, e.g. pin or nail ([F16B 13/122](#), [F16B 13/128](#) take precedence)}
- 13/128 . . {with extending protrusions, e.g. discs, segments, ridges, fingers or tongues ([F16B 13/122](#) takes precedence)}
- 13/14 . Non-metallic plugs or sleeves {(not used, see [F16B 13/002](#)- [F16B 13/12](#))}; Use of liquid, loose solid or kneadable material therefor
- 13/141 . . {Fixing plugs in holes by the use of settable material}
- 13/142 . . . {characterised by the composition of the setting material or mixture ([F16B 13/143](#) takes precedence)}
- 13/143 . . . {using frangible cartridges or capsules containing the setting components}
- 13/144 . . . . {characterised by the shape or configuration or material of the frangible cartridges or capsules}
- 13/145 . . . . {characterised by the composition of the setting agents contained in the frangible cartridges or capsules}
- 13/146 . . . {with a bag-shaped envelope or a tubular sleeve closed at one end, e.g. with a sieve-like sleeve, or with an expandable sheath}
- 2013/147 . . . {Grout with reinforcing elements or with fillers, e.g. fibres, flakes, balls, wires}
- 2013/148 . . . {Means for inhibiting adhesion between dowel or anchor bolt parts and the surrounding grouting composition}
- Fastening means without screw-thread** (horseshoe nails [A01L 7/10](#); nails for footwear [A43B 23/20](#); thumb-tacks [B43M 15/00](#); for building constructions [E04B 1/38](#); for hand railings [E04F 11/18](#); for fencing [E04H 17/00](#))
- 15/00 Nails; Staples** (surgical staples [A61B 17/064](#); manufacture of nails or staples [B21G](#) {}; drawing-pins, thumb-tacks [B43M 15/00](#)); railway spikes [E01B 9/06](#))
- 15/0007 . {with two nail points extending in opposite directions, in order to fix two workpieces together}
- 15/0015 . {Staples}
- 15/0023 . {Nail plates}
- 15/003 . . {with teeth cut out from the material of the plate}
- 15/0038 . . . {only on the perimeter of the plate}
- 15/0046 . . . {from the body of the plate}
- 15/0053 . . {with separate nails attached to the plate}
- 2015/0061 . . {Multipiece-plates}
- 2015/0069 . . {with nails on both sides}
- 2015/0076 . . {with provisions for additional fastening means, e.g. hooks, holes for separate screws or nails, adhesive}
- 2015/0084 . . {with marks to indicate where to strike with the hammer}
- 15/0092 . {Coated nails or staples}
- 15/02 . with specially-shaped heads, e.g. with enlarged surfaces (ornaments for furniture [A47B 95/04](#); removable ornamental heads for nails [A47G 3/00](#))
- 15/04 . with spreading shaft {(dowels with a drive-nail deflected by an inclined surface in the dowel body [F16B 13/085](#))}
- 15/06 . with barbs, e.g. for metal parts; Drive screws
- 15/08 . formed in integral series but easily separable
- 17/00 Connecting constructional elements or machine parts by a part of or on one member entering a hole in the other {and involving plastic deformation}**(riveting [F16B 19/04](#))
- 17/004 . {of rods or tubes mutually}
- 17/006 . {of rods or tubes to sheets or plates}
- 17/008 . {of sheets or plates mutually (joining sheets by riveting without the use of separate rivets [F16B 5/045](#))}
- 19/00 Bolts without screw-thread; Pins, including deformable elements** (in screwed connections [F16B 29/00](#)); Rivets (means for preventing withdrawal [F16B 21/00](#))
- 19/002 . {Resiliently deformable pins ([F16B 21/06](#) takes precedence)}
- 19/004 . . {made in one piece ([F16B 21/084](#) takes precedence)}
- 2019/006 . . {made in a plurality of pieces}
- 19/008 . {with sealing means}
- 19/02 . Bolts or sleeves for positioning of machine parts, e.g. notched taper pins, fitting pins, sleeves, eccentric positioning rings
- 19/04 . Rivets; Spigots or the like fastened by riveting (lead seals [G09F 3/00](#))
- 2019/045 . . {Coated rivets}
- 19/05 . . Bolts fastening by swaged-on collars ([F16B 19/08](#) takes precedence)
- 2019/055 . . . {deformed by an electro-magnetic action}
- 19/06 . . Solid rivets made in one piece
- 19/08 . . Hollow rivets; Multi-part rivets
- 19/083 . . . {Self-drilling rivets}
- 19/086 . . . {Self-piercing rivets}
- 19/10 . . . fastened by expanding mechanically
- NOTES**
1. Subject matter relating to hollow or single-part rivets fastened by a pull-through mandrel is classified in [F16B 19/1045](#)
  2. Subject matter relating to hollow or single-part rivets fastened by a drive pin is classified in [F16B 19/1081](#)

- 2019/1009 . . . . {hollow or single-part rivets fastened by a pull-through mandrel}
- 2019/1018 . . . . {hollow or single-part rivets fastened by a drive pin}
- 19/1027 . . . . {Multi-part rivets}
- 19/1036 . . . . {Blind rivets}
- 19/1045 . . . . . {fastened by a pull - mandrel or the like (F16B 19/109 takes precedence)}
- 19/1054 . . . . . {the pull-mandrel or the like being frangible}
- 19/1063 . . . . . {with a sleeve or collar sliding over the hollow rivet body during the pulling operation}
- 19/1072 . . . . . {the pull-mandrel or the like comprising a thread and being rotated with respect to the rivet, thereby mechanically expanding and fastening the rivet (nuts fastened by riveting F16B 37/067)}
- 19/1081 . . . . . {fastened by a drive-pin (F16B 19/109 takes precedence)}
- 19/109 . . . . . {Temporary rivets, e.g. with a spring-loaded pin (special clamping devices for workpieces to be riveted together, e.g. operating through the rivet holes B21J 15/42; hand tools for temporarily connecting sheets before or during assembly operations B25B 31/005)}
- 19/12 . . . fastened by fluid pressure, including by explosion (bolts shot by means of detonation-operated nailing tools into concrete constructions, metal walls or the like F16B 19/14)
- 19/125 . . . . {fastened by explosion}
- 19/14 . . Bolts or the like for shooting into concrete constructions, metal walls or the like by means of detonation-operated nailing tools (tools therefor B25C, B27F)
- 21/00 Means for preventing relative axial movement of a pin, spigot, shaft or the like and a member surrounding it (riveted or deformable spigots F16B 19/04; for gudgeon pins F16J 1/18); Stud-and-socket releasable fastenings**
- 21/02 . . Releasable fastening devices locking by rotation (with snap-action F16B 21/06; studs or coupling pins with resilient protrusions F16B 21/08)
- 21/04 . . with bayonet catch
- 21/06 . . Releasable fastening devices with snap-action {(quickly-detachable or mountable nuts to threaded bolts F16B 37/0842)}
- 21/065 . . {with an additional locking element}
- 21/07 . . in which the socket has a resilient part {(F16B 21/065 takes precedence)}
- 21/071 . . . {the socket being integrally formed with a component to be fasted, e.g. a sheet, plate or strip}
- 21/073 . . . {the socket having a resilient part on its inside}
- 21/075 . . . . {the socket having resilient parts on its inside and outside}
- 21/076 . . . {the socket having a resilient part on its outside (F16B 21/075 takes precedence)}
- 21/078 . . . {the socket having a further molded-in or embedded component, e.g. a ring with snap-in teeth molded into it (F16B 21/065 takes precedence)}
- 21/08 . . . in which the stud, pin, or spigot has a resilient part ((F16B 21/065, F16B 21/125, F16B 21/165, F16B 37/043 take precedence); wall-dowels F16B 13/00)
- 21/082 . . . {the stud, pin or spigot having two resilient parts on its opposite ends in order to connect two elements}
- 21/084 . . . {with a series of flexible ribs or fins extending laterally from the shank of the stud, pin or spigot, said ribs or fins deforming predominantly in a direction parallel to the direction of insertion of the shank}
- 21/086 . . . {the shank of the stud, pin or spigot having elevations, ribs, fins or prongs intended for deformation or tilting predominantly in a direction perpendicular to the direction of insertion}
- 21/088 . . . {the stud, pin or spigot being integrally formed with the component to be fastened, e.g. forming part of the sheet, plate or strip}
- 21/09 . . Releasable fastening devices with a stud engaging a keyhole slot
- 21/10 . . by separate parts ((F16B 21/06 takes precedence); key-type connection F16B 3/00; locking screws or nuts against rotation by such means F16B 39/04)
- 21/12 . . with locking-pins or split-pins thrust into holes
- 21/125 . . . {radially resilient or with a snap-action member, e.g. elastic tooth, pawl with spring, resilient coil or wire}
- 21/14 . . . Details of locking-pins or split-pins
- 21/16 . . with grooves or notches in the pin or shaft
- 21/165 . . . {with balls or rollers (for connections of rods or tubes engaged telescopically F16B 7/1409)}
- 21/18 . . . with circlips or like resilient retaining devices, {i.e. resilient in the plane of the ring or the like}; Details (spring-washers for locking nuts F16B 39/24; adjusting rings F16B 43/00)
- 21/183 . . . . {internal, i.e. with spreading action}
- 21/186 . . . . {external, i.e. with contracting action}
- 21/20 . . for bolts or shafts without holes, grooves, or notches for locking members {(by rings resilient in their plane F16B 21/18)}
- 21/205 . . . {the connecting means having gripping edges in the form of a helix}
- Fastening means using screw-thread** (wall-dowels F16B 13/00; manufacture of threaded fastening means B21H, B21K, B23G; screws or bolts for railway sleepers E01B 9/10; screw mechanisms F16H)
- 23/00 Specially shaped {nuts or} heads of bolts or screws for rotations by a tool {(detachable ornamental heads for screws A47G 3/00; screwdrivers, wrenches B25B)}**
- 23/0007 . . {characterised by the shape of the recess or the protrusion engaging the tool (F16B 23/0069 and F16B 23/0076 take precedence)}
- 23/0015 . . . {substantially rectangular, e.g. one-slot head}
- 23/0023 . . . {substantially cross-shaped}
- 23/003 . . . {star-shaped or multi-lobular, e.g. Torx-type, twelve-point star}

- 23/0038 . . {substantially prismatic with up to six edges, e.g. triangular, square, pentagonal, Allen-type cross-sections}
- 23/0046 . . {having one eccentric circular or polygonal recess or protrusion}
- 23/0053 . {with a conical or prismatic recess for receiving a centering pin of the tool apparatus}
- 23/0061 . {with grooves, notches or splines on the external peripheral surface designed for tools engaging in radial direction (F16B 23/003 takes precedence)}
- 23/0069 . {with holes to be engaged with corresponding pins on the tool or protruding pins to be engaged with corresponding holes on the tool}
- 23/0076 . {causing slipping of the tool in loosening rotation, i.e. disabling unscrewing unless another tool is used (F16B 31/027 takes precedence)}
- 23/0084 . {with a threaded engagement between the head of the bolt or screw and the tool}
- 23/0092 . {with a head engageable by two or more different tools (F16B 23/0076 takes precedence)}
- 25/00** **Screws that cut thread in the body into which they are screwed, e.g. wood screws** {(F16B 35/065 takes precedence; joining sheets or plates using screws with two separate threads F16B 5/0275, using screws with adjustment sleeves F16B 5/0283)}
- 25/0005 . {of the helical wire type (threaded wire-inserts F16B 37/12)}
- 25/001 . {characterised by the material of the body into which the screw is screwed}
- 25/0015 . . {the material being a soft organic material, e.g. wood or plastic (F16B 25/0031 takes precedence)}
- 25/0021 . . {the material being metal, e.g. sheet-metal or aluminium (F16B 25/0031 takes precedence)}
- 25/0026 . . {the material being a hard non-organic material, e.g. stone, concrete or drywall (F16B 25/0031 takes precedence)}
- 25/0031 . . {the screw being designed to be screwed into different materials, e.g. a layered structure or through metallic and wooden parts}
- 25/0036 . {characterised by geometric details of the screw}
- 25/0042 . . {characterised by the geometry of the thread, the thread being a ridge wrapped around the shaft of the screw}
- 25/0047 . . . {the ridge being characterised by its cross-section in the plane of the shaft axis}
- 25/0052 . . . {the ridge having indentations, notches or the like in order to improve the cutting behaviour}
- 25/0057 . . . {the screw having distinct axial zones, e.g. multiple axial thread sections with different pitch or thread cross-sections}
- 25/0063 . . . . {with a non-threaded portion on the shaft of the screw}
- 25/0068 . . . . {with multiple-threads, e.g. a double thread screws}
- 25/0073 . . . . {characterised by its pitch, e.g. a varying pitch}
- 25/0078 . . {with a shaft of non-circular cross-section or other special geometric features of the shaft}
- 25/0084 . . {characterised by geometric details of the tip}
- 25/0089 . . {the screw having wings}
- 25/0094 . . {the screw being assembled or manufactured from several components, e.g. a tip out of a first material welded to shaft of a second material}
- 25/10 . . Screws performing an additional function to thread-forming, e.g. drill screws {or self-piercing screws}
- 25/103 . . {by means of a drilling screw-point, i.e. with a cutting and material removing action}
- 25/106 . . {by means of a self-piercing screw-point, i.e. without removing material}
- 27/00** **Bolts, screws, or nuts formed in integral series but easily separable, particularly for use in automatic machines** {(arrangements for feeding screws or nuts in spanners, wrenches or screw-drivers with built-in magazines B25B 23/06)}
- 29/00** **Screwed connection with deformation of nut or auxiliary member while fastening** ({Nuts fastened to surfaces by riveting F16B 37/065}; members deformed for locking screws, bolts or nuts F16B 39/22)
- 31/00** **Screwed connections specially modified in view of tensile load; Break-bolts** (shape of thread {F16B 33/02; in couplings F16D 9/00})
- 2031/002 . {Breakbolts loosening due to an electromagnetic action}
- 31/005 . {Breakbolts loosening due to the action of an explosive charge}
- 31/007 . {Break-bolts loosening at high temperature}
- 31/02 . for indicating {the attainment of a particular tensile load} or limiting tensile load {(apparatus for, or method of, determining value of torque or twisting moment for tightening a nut or other member similarly stressed G01L 5/24)}
- 31/021 . . {by means of a frangible part (F16B 31/025, F16B 31/028 take precedence; break members in torque limiters or torque indicators in wrenches or screwdrivers B25B 23/1415)}
- 2031/022 . . {using an ultrasonic transducer}
- 31/024 . . {with the bottom of the nut or of the head of the bolt having gaps which close as the bolt tension increases, e.g. with lips or with a load-indicating flange}
- 31/025 . . {with a gauge pin in a longitudinal bore in the body of the bolt}
- 31/027 . . {with a bolt head causing the fastening or the unfastening tool to lose the grip when a specified torque is exceeded}
- 31/028 . . {with a load-indicating washer or washer assembly}
- 31/04 . for maintaining {a} tensile load
- 31/043 . . {Prestressed connections tensioned by means of liquid, grease, rubber, explosive charge, or the like (hydraulic bolt tensioners B25B 29/02)}
- 2031/046 . . . . {by means of an explosive charge}
- 31/06 . having regard to possibility of fatigue rupture
- 33/00** **Features common to bolt and nut**
- 33/002 . {Means for preventing rotation of screw-threaded elements (F16B 39/00 takes precedence)}
- 33/004 . {Sealing; Insulation (by means of washers F16B 43/001)}
- 33/006 . {Non-metallic fasteners using screw-thread}
- 33/008 . {Corrosion preventing means}
- 33/02 . Shape of thread; Special thread-forms ({F16B 25/00 takes precedence; used to remove paint or dirt layers F16B 35/007, F16B 37/002}; used as screw-locking device F16B 39/30)

2033/025	. . {with left-hand thread}	37/045	. . {specially adapted for fastening in channels, e.g. sliding bolts, channel nuts}
33/04	. . in view of tensile load	37/046	. . . {with resilient means for urging the nut inside the channel}
33/06	. Surface treatment of parts furnished with screw-thread, e.g. for preventing seizure {or fretting (corrosion preventing means <a href="#">F16B 33/008</a> ; settable coatings for locking threaded members <a href="#">F16B 39/225</a> ; deformable coatings for locking threaded members <a href="#">F16B 39/34</a> )}	37/047	. . . {Barrel nuts}
<b>35/00</b>	<b>Screw-bolts; Stay-bolts; Screw-threaded studs; Screws; Set screws</b> ({ <a href="#">F16B 33/008</a> takes precedence; joining sheets or plates using screws with two separate threads <a href="#">F16B 5/0275</a> ; using screws with adjustment sleeves <a href="#">F16B 5/0283</a> }; thread cutting screws <a href="#">F16B 25/00</a> )	37/048	. . {Non-releasable devices ( <a href="#">F16B 37/044</a> , <a href="#">F16B 37/045</a> and <a href="#">F16B 37/06</a> take precedence)}
	<b>NOTE</b>	37/06	. . by means of welding or riveting
	The fastening of heads of screws or heads of bolts to surfaces is classified in <a href="#">F16B 37/04</a>	37/061	. . . {by means of welding}
35/002	. {onto which threads are cut during screwing ( <a href="#">F16B 37/002</a> takes precedence)}	37/062	. . . {by means of riveting}
35/005	. {Set screws; Locking means therefor}	37/064	. . . . {with the use of separate rivets}
35/007	. {Removing paint or dirt layers covering the threaded part of nut-like members}	37/065	. . . . {by deforming the material of the nut}
35/02	. divided longitudinally	37/067	. . . . . {the material of the nut being deformed by a threaded member generating axial movement of the threaded part of the nut, e.g. blind rivet type}
35/04	. with specially-shaped head or shaft in order to fix the bolt on or in an object (locking the bolt against turning in the object by the use of accessory parts <a href="#">F16B 39/00</a> )	37/068	. . . . . {by deforming the material of the support, e.g. the sheet or plate}
35/041	. . {Specially-shaped shafts (shape of thread <a href="#">F16B 33/02</a> )}	37/08	. Quickly-detachable {or mountable} nuts, e.g. consisting of two or more parts; Nuts movable along the bolt after tilting the nut
35/042	. . . {for retention or rotation by a tool, e.g. of polygonal cross-section}	37/0807	. . {Nuts engaged from the end of the bolt, e.g. axially slidable nuts}
35/044	. . . {Specially-shaped ends}	37/0814	. . . {movable along the bolt after tilting the nut}
35/045	. . . . {for retention or rotation by a tool (specially shaped heads of bolts or screws for rotation by a tool <a href="#">F16B 23/00</a> )}	37/0821	. . . {in two halves pivotally connected}
35/047	. . . . {for preventing cross-threading, i.e. preventing skewing of bolt and nut}	37/0828	. . . {with a longitudinal slit through the annular wall of the nut for enabling expansion of the nut, e.g. for easy removal}
35/048	. . . {Specially-shaped necks ( <a href="#">F16B 35/06</a> takes precedence)}	37/0835	. . . {with balls engaging threads or grooves on the shaft of the bolt}
35/06	. . Specially-shaped heads (special shape in order to rotate the bolt <a href="#">F16B 23/00</a> {}; separate hook adaptors for bolts <a href="#">F16B 43/025</a> )	37/0842	. . . {fastened to the threaded bolt with snap-on-action, e.g. push-on nuts for stud bolts ( <a href="#">F16B 37/0857</a> takes precedence; snap-on-action of a pin, spigot, shaft or the like and a member surrounding it <a href="#">F16B 21/06</a> )}
35/065	. . . {with self-countersink-cutting means}	37/085	. . . {with at least one unthreaded portion in both the nut and the bolt}
<b>37/00</b>	<b>Nuts or like thread-engaging members</b> ({specially shaped for rotations by a tool <a href="#">F16B 23/00</a> )}	37/0857	. . . {with the threaded portions of the nut engaging the thread of the bolt by the action of one or more springs or resilient retaining members ( <a href="#">F16B 37/0821</a> and <a href="#">F16B 37/0835</a> take precedence)}
37/002	. {cutting threads during screwing; removing paint or dirt layers covering threaded shanks}	37/0864	. . . {with the threaded portions of the nut engaging the thread of the bolt by pressing or rotating an external retaining member such as a cap, a nut, a ring or a sleeve ( <a href="#">F16B 37/0835</a> takes precedence)}
37/005	. {into which threads are cut during screwing}	37/0871	. . {engaging the bolt laterally, i.e. without the need to engage the end of the bolt}
2037/007	. {with a blind hole}	37/0878	. . . {in one piece, e.g. C-shaped nuts}
37/02	. made of thin sheet material (fastening to surfaces <a href="#">F16B 37/04</a> {}; used as lock-nuts <a href="#">F16B 39/14</a> )}	37/0885	. . . {in two halves hingedly connected}
37/04	. Devices for fastening nuts to surfaces, e.g. sheets, plates (nuts fastened behind a wall by a toggle-mechanism <a href="#">F16B 13/0808</a> ; threaded inserts <a href="#">F16B 37/122</a> ; measures against loss of bolts, nuts or pins <a href="#">F16B 41/002</a> )}	37/0892	. . . {in two or more pieces, e.g. assemblies made by two C-shaped nuts mutually interlocked, or retained by an additional member ( <a href="#">F16B 37/0885</a> takes precedence)}
37/041	. . {Releasable devices ( <a href="#">F16B 37/044</a> , <a href="#">F16B 37/045</a> take precedence)}	37/12	. with thread-engaging surfaces formed by inserted coil-springs, discs, or the like; Independent pieces of wound wire used as nuts; Threaded inserts for holes ({mounting devices <a href="#">B25B 27/143</a> )}
37/042	. . . {locking by rotation}	37/122	. . {Threaded inserts, e.g. "rampa bolts"}
37/043	. . . {with snap action}	37/125	. . . {the external surface of the insert being threaded}
37/044	. . {Nut cages}	37/127	. . . . {and self-tapping}
		37/14	. Cap nuts; Nut caps or bolt caps

- 37/145 . . {Sleeve nuts, e.g. combined with bolts}
- 37/16 . Wing-nuts ([F16B 37/14](#) takes precedence)
- 39/00** **Locking of screws, bolts or nuts** ({[F16B 35/005](#) takes precedence}; locking of bottle closures [B65D](#); locking of rail-fastening bolts for permanent ways [E01B 9/12](#); locking of fastening means for railway fishplates [E01B 11/38](#); locking devices for valves or cocks [F16K](#))
- NOTE**
- In this group, heads of screws or bolts are put on a par with nuts as far as pertains to locking; an object into which a screw is threaded is put on a par with a nut.
- 39/01 . specially adapted to prevent loosening at extreme temperatures
- 39/02 . in which the locking takes place after screwing down ([F16B 39/01](#) takes precedence; split-pins, circlips, or the like for preventing relative axial movement only [F16B 21/10](#); fastening nuts by welding or riveting [F16B 37/06](#))
- 39/021 . . {by injecting a settable material after the screwing down}
- 39/023 . . {by driving a conic or wedge-shaped expander through the threaded element}
- 39/025 . . {by plastic deformation of a part of one of the threaded elements into a notch or cavity of the other threaded element ([F16B 39/103](#) and [F16B 39/106](#) take precedence)}
- 39/026 . . {by swaging the nut on the bolt, i.e. by plastically deforming the nut}
- 39/028 . . {by means of an auxiliary bolt or threaded element whose action provokes the deformation of the main bolt or nut and thereby its blocking}
- 39/04 . . with a member penetrating the screw-threaded surface of at least one part, e.g. a pin, a wedge, cotter-pin, screw
- 39/06 . . . with a pin or staple parallel to the bolt axis
- 39/08 . . with a cap interacting with the nut, connected to the bolt by a pin or cotter pin
- 39/10 . . by a plate, {spring, wire} or ring immovable with regard to the bolt or object {and mainly perpendicular to the axis of the bolt} ([F16B 39/08](#) takes precedence)
- 39/101 . . . {with a plate, spring, wire or ring holding two or more nuts or bolt heads which are mainly in the same plane}
- 39/103 . . . {with a locking cup washer, ring or sleeve surrounding the nut or bolt head and being partially deformed on the nut or bolt head, or on the object itself}
- 39/105 . . . . {locking the bolt head or nut into a hole or cavity, e.g. with the cup washer, ring or sleeve deformed into a dimple in the cavity}
- 39/106 . . . {with a deformable locking element, e.g. disk or pin above the bolt head or nut, flattened into a hole or cavity within which the bolt head or nut is positioned}
- 39/108 . . . {with a locking washer under the nut or bolt head having at least one tongue or lug folded against the nut or bolt head, or against the object itself ([F16B 39/103](#) takes precedence)}
- 39/12 . . by means of locknuts
- 39/122 . . . {foreseen with mating surfaces inclined, i.e. not normal, to the bolt axis}
- 39/124 . . . . {with helically inclined mating surfaces}
- 39/126 . . . {causing radial forces on the bolt-shaft ([F16B 39/36](#) takes precedence)}
- 39/128 . . . . {by means of eccentric or spiral interengaging parts}
- 39/14 . . . made of thin sheet material or formed as spring-washers (locknuts *per se* made of thin sheet metal [F16B 37/02](#))
- 39/16 . . . in which the screw-thread of the locknut differs from that of the nut
- 39/18 . . . . in which the locknut grips with screw-thread in the nuts as well as on the bolt
- 39/20 . . by means of steel wire or the like ([F16B 39/10](#) takes precedence)
- 39/22 . in which the locking takes place during screwing down or tightening ([F16B 39/01](#) takes precedence)
- 39/225 . . {by means of a settable material}
- 39/24 . . by means of washers, spring washers, or resilient plates that lock against the object (locking to the screw-thread [F16B 39/14](#) {, [F16B 39/34](#)}, [F16B 39/36](#))
- 39/26 . . . with spring washers fastened to the nut or bolt-head
- 39/28 . . by special members on, or shape of, the nut or bolt ([F16B 39/26](#) takes precedence; locknuts [F16B 39/12](#))
- 39/282 . . . Locking by means of special shape of work-engaging surfaces, e.g. notched or toothed nuts
- 39/2825 . . . . {causing the bolt to tilt}
- 39/284 . . . Locking by means of elastic deformation ({[F16B 39/2825](#), [F16B 39/36](#)}, [F16B 39/38](#) take precedence)
- 39/286 . . . . caused by saw cuts
- 39/30 . . . Locking exclusively by special shape of the screw-thread
- 39/32 . . . Locking by means of a pawl or pawl-like tongue
- 39/34 . . . Locking by deformable inserts or like parts
- 39/36 . . . with conical locking parts, which may be split, including use of separate rings co-operating therewith
- 39/38 . . . with a second part of the screw-thread which may be resiliently mounted ([F16B 39/30](#) takes precedence)
- 41/00** **Measures against loss of bolts, nuts, or pins; Measures against unauthorised operation of bolts, nuts or pins** ({locking of screws, bolts or nuts [F16B 39/00](#);} seals [G09F 3/00](#))
- 41/002 . {Measures against loss of bolts, nuts or pins (devices for fastening nuts to surfaces [F16B 37/04](#))}
- 41/005 . {Measures against unauthorised operation of bolts, nuts or pins ([F16B 23/0007](#), [F16B 23/0061](#), [F16B 23/0069](#), [F16B 23/0076](#) and [F16B 31/02](#) take precedence; locks, keys [E05B](#); for valves, taps or cocks [F16K 35/00](#); for pipe-joints with swivel-nuts [F16L 19/005](#))}
- 41/007 . . {by means of two housings hingedly connected which enclose the bolt head}

- 43/00 Washers or equivalent devices; Other devices for supporting bolt-heads or nuts** ([circlips F16B 21/18](#); {for indicating tensile load [F16B 31/02](#); forming a whole with the bolt or nut [F16B 33/00](#); locking bolts or nuts by means of a fixed plate or ring, or washer-like resilient plates [F16B 39/10](#), [F16B 39/24](#)})
- 43/001 . {for sealing or insulation}
  - 43/002 . {with special provisions for reducing friction}
  - 43/003 . {with a special hole shape in order to allow a quick mounting or dismounting of the washer, e.g. with a keyhole slot ([F16B 43/005 takes precedence](#))}
  - 43/004 . {with a radial cut in order to improve elasticity of the washer ([F16B 43/005 takes precedence](#))}
  - 43/005 . {engaging the bolt laterally to allow a quick mounting or dismounting of the washer, i.e. without the need to engage over the end of the bolt ([F16B 43/009 takes precedence](#))}
  - 43/006 . . {in two or more parts hingedly connected}
  - 43/007 . . {in two or more parts}
  - 2043/008 . {with a cavity for receiving the bolt head in order to make a flush surface}
  - 43/009 . {with a wedging effect in order to adjust the height of the washer}
  - 43/02 . with special provisions for engaging surfaces which are not perpendicular to a bolt axis or do not surround the bolt
  - 43/025 . . {for surfaces not surrounding the bolt, e.g. hook adaptors for bolts}
- 45/00 Hooks; Eyes** (if the attaching parts or means are concerned, groups [F16B 13/00](#), [F16B 15/00](#), [F16B 19/00](#), [F16B 25/00](#), [F16B 35/00](#), [F16B 47/00](#) take precedence; for hanging pictures or the like [A47G 1/16](#); towing hooks for ships [B63B 21/58](#); for hoisting or hauling purposes [B66C](#); hooks or eyes with integral parts designed to facilitate quick attachment to cables or ropes at any point [F16G 11/14](#))
- 45/002 . {Eyes}
  - 45/005 . {characterised by the material}
  - 45/008 . . {plastics}
  - 45/012 . . {wire}
  - 45/015 . . {sheet metal}
  - 45/02 . Hooks with pivoting {or elastically bending} closing member
    - 45/021 . . {the closing member being operable remotely, e.g. by cables, chains or rods}
    - 45/022 . . {the closing member pivoting about an axis lying in the plane of the hook}
    - 45/023 . . {the closing member pivoting about an axis perpendicular to the plane of the hook}
    - 45/024 . . {and having means biasing the closing member about the pivot}
      - 45/026 . . . {and including a coil type spring}
    - 45/027 . . {and having position-locking means for the closing member}
      - 45/028 . . . {the position-locking means being pivotally connected}
      - 45/029 . . . {the position-locking means being slidably mounted}
    - 45/031 . . {the closing member closing when a structure to be secured is tensioned}
    - 45/032 . . {whereby the closing member is slidable relative to the pivot}
  - 45/033 . . {the closing member being revolvably mounted and having a disc shape}
  - 45/034 . . {the closing member constituting the hook shaped portion of the hook}
  - 45/035 . . {the hook forming a loop or ring when interlocked with the closing member, i.e. the entire structure of the hook being loop shaped}
    - 45/036 . . {with an elastically bending closing member}
  - 45/037 . . {Multiple locking cavities, each having a pivoting closing member}
    - 45/04 . Hooks with sliding closing member
      - 45/043 . . {the closing member being operable remotely, e.g. by cables, chains or rods}
      - 45/045 . . {provided with position-locking means for the closing member}
        - 45/047 . . . {in the form of a threaded closing member}
      - 45/049 . . {provided with means biasing the closing member}
        - 45/051 . . {provided with a guide of the closing member encircling a shank of the hook}
        - 45/053 . . {provided with a cavity in a shank of the hook forming a track or way for the closing member}
        - 45/055 . . {the closing member constituting the hook-shaped portion of the hook}
          - 45/057 . . {the hook forming a loop or ring when interlocked with the closing member, i.e. the entire structure of the hook being loop shaped}
        - 45/059 . . {Multiple locking cavities, each having a sliding closing member}
      - 45/06 . Hooks with two symmetrically-pivoting hook parts {within the same locking cavity ([F16B 45/035 takes precedence](#))}

**47/00 Suction cups for attaching purposes; Equivalent means using adhesives** ({devices using adhesives, suction or magnetism for hanging or supporting pictures or the like [A47G 1/17](#); vacuum work holders [B25B 11/005](#); anchoring of ships using suction [B63B 21/27](#); suction cups for handling glass [B65G 49/061](#); load-engaging elements for cranes using suction means [B66C 1/02](#))}

      - 47/003 . {using adhesives for attaching purposes (using adhesives for connecting constructional elements [F16B 11/006](#))}
      - 47/006 . {the suction cups being activated by the rotation of a cranked lever arm}

**2200/00 Constructional details of connections not covered for in other groups of this subclass**

      - 2200/10 . Details of socket shapes
      - 2200/20 . Connections with hook-like parts gripping behind a blind side of an element to be connected
        - 2200/205 . . the hook being a separate retainer
        - 2200/30 . Dovetail-like connections
        - 2200/40 . Clamping arrangements where clamping parts are received in recesses of elements to be connected
          - 2200/403 . . Threaded clamping parts
          - 2200/406 . . Clamping parts being collars, bushings or wedges
        - 2200/50 . Flanged connections
          - 2200/503 . . the flange being separate from the elements to be connected
          - 2200/506 . . bolted or riveted
          - 2200/509 . . clamped
        - 2200/60 . Coupler sealing means
        - 2200/63 . Frangible connections

- 2200/65 . Miter joints
- 2200/67 . Rigid angle couplings
- 2200/69 . Redundant disconnection blocking means
- 2200/71 . . Blocking disengagement of catches or keys
- 2200/73 . . Cam locks or thread locks
- 2200/75 . Fasteners made by sintering powders
- 2200/77 . Use of a shape-memory material
- 2200/79 . Friction-reducing coatings
- 2200/81 . Use of a material of the hooks-and-loops type
- 2200/83 . Use of a magnetic material
- 2200/85 . Ceramic-to-metal-connections
- 2200/89 . Use of a hydraulic action
- 2200/91 . Use of a pneumatic action
- 2200/93 . Fastener comprising feature for establishing a good electrical connection, e.g. electrostatic discharge or insulation feature
- 2200/95 . with markings, colours, indicators or the like
- 2200/97 . having differing thermal expansion coefficients
- 2200/99 . Fasteners with means for avoiding incorrect assembly or positioning