

# CPC COOPERATIVE PATENT CLASSIFICATION

## F16B DEVICES FOR FASTENING OR SECURING CONSTRUCTIONAL ELEMENTS OR MACHINE PARTS TOGETHER, e.g. NAILS, BOLTS, CIRCLIPS, CLAMPS, CLIPS, WEDGES, JOINTS OR JOINTING

### 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](#).

### WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these 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 7/16</a>	covered by	<a href="#">F16B 7/14</a>
<a href="#">F16B 13/10</a>	covered by	<a href="#">F16B 13/08</a>
<a href="#">F16B 13/13</a>	covered by	<a href="#">F16B 13/002</a> , <a href="#">F16B 13/12</a>
<a href="#">F16B 21/14</a>	covered by	<a href="#">F16B 21/12</a> , <a href="#">F16B 21/125</a>
<a href="#">F16B 25/02</a>	covered by	<a href="#">F16B 25/00</a>
<a href="#">F16B 25/04</a>	covered by	<a href="#">F16B 25/00</a>
<a href="#">F16B 25/06</a>	covered by	<a href="#">F16B 25/00</a>
<a href="#">F16B 25/08</a>	covered by	<a href="#">F16B 25/00</a>
<a href="#">F16B 33/04</a>	covered by	<a href="#">F16B 33/02</a>
<a href="#">F16B 37/10</a>	covered by	<a href="#">F16B 37/0842</a> , <a href="#">F16B 37/0871</a>

<b>1/00</b>	<b>Devices for securing together, or preventing relative movement between, constructional elements or machine parts</b>	<b>1/0071</b>	<b>. {with markings, colours, indicators or the like (for indicating tensile load <a href="#">F16B 31/02</a>)}</b>
<a href="#">2001/0007</a>	. {Fasteners made by sintering powders}	<a href="#">2001/0078</a>	. {having differing thermal expansion coefficients}
<a href="#">1/0014</a>	. {by the use of a shape-memory material}	<a href="#">2001/0085</a>	. {Ceramic-to-metal-connections}
<a href="#">2001/0021</a>	. {Friction-reducing coatings}	<a href="#">2001/0092</a>	. {with means for avoiding incorrect assembly or positioning}
<a href="#">2001/0028</a>	. {by the use of a material of the hooks-and-loops type}	<b>1/02</b>	. Means for securing elements of mechanisms after operation (means for bringing members to rest <a href="#">F16D</a> )
<a href="#">2001/0035</a>	. {by the use of a magnetic material}	<b>1/04</b>	. . disengaged by movement of the actuating member of the element (locking of actuators <a href="#">G05G</a> , e.g. <a href="#">G05G 5/00</a> )
<a href="#">2001/0042</a>	. {by the use of an explosive charge ( <a href="#">F16B 19/125</a> , <a href="#">F16B 31/005</a> take precedence)}		
<a href="#">1/005</a>	. {by the use of a hydraulic action}		
<a href="#">1/0057</a>	. {by the use of a pneumatic action}		
<a href="#">2001/0064</a>	. {and establishing a good electrical connection}		

**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 part at different temperature; Force fits** (restricted to metal parts or objects [B23P 11/02](#)); **Non-releasable friction-grip fastenings** ([F16B 2/00](#) takes precedence; {using members with a shape-memory material [F16B 1/0014](#)})
- 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 17/002](#) 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 (not used, see subgroups)}
  - 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 17/002 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 ( <a href="#">F16B 7/0473</a> takes precedence)}	7/22	. using hooks or like elements
7/046	. . . . {by rotating an eccentric-mechanism}	<b>9/00</b>	<b>Connections of rods or tubular parts to flat surfaces at an angle</b> ( <a href="#">F16B 17/002</a> takes precedence); friction-grip releasable fastenings in general <a href="#">F16B 2/00</a> ; making press-fit connections <a href="#">B23P 11/00</a> , <a href="#">B23P 19/00</a> ; fluid-tight connecting of pipes to reservoirs, sheets, or the like <a href="#">F16L</a> , e.g. joining pipes to walls <a href="#">F16L 41/00</a> )
7/0466	. . . . {by a screw-threaded stud with a conical tip acting on an inclined surface}	9/02	. Detachable connections
7/0473	. . . . {with hook-like parts gripping, e.g. by expanding, behind the flanges of a profile}	9/023	. . {using clamps or clips}
7/048	. . . {for rods or for tubes without using the innerside thereof}	9/026	. . {using screw-thread elements}
7/0486	. . . . {forming an abutting connection of at least one tube}	<b>11/00</b>	<b>Connecting constructional elements or machine parts by sticking or pressing them together, e.g. cold pressure welding</b> (non-electric welding in general <a href="#">B23K</a> ; methods of using adhesives independently of the form of the surfaces joined <a href="#">C09J 5/00</a> )
7/0493	. . . . {forming a crossed-over connection}	11/002	. {by pressing the elements together so as to obtain plastic deformation (shrinkage connections, force fits <a href="#">F16B 4/00</a> ; pin-and-hole connections <a href="#">F16B 17/00</a> )}
7/06	. Turnbuckles (for cables, ropes, or wire <a href="#">F16G 11/12</a> )	11/004	. {by cold pressure welding}
7/10	. Telescoping systems ({for vertically adjustable chairs <a href="#">A47C 3/20</a> ; telescopic steering columns <a href="#">B62D 1/18</a> }; for scaffolding <a href="#">E04G 25/04</a> ; {telescopic masts, poles or the like <a href="#">E04H 12/182</a> ; telescopic door or window holders <a href="#">E05C 17/30</a> }; telescope props for mining <a href="#">E21D 15/14</a> - <a href="#">E21D 15/46</a> ; stands or trestles as supports for apparatus or articles placed thereon ( <a href="#">F16M 11/26</a> )}	11/006	. {by gluing (gluing of plastics material <a href="#">B29C 65/48</a> )}
7/105	. . {locking in discrete positions, e.g. in extreme extended position}	11/008	. . {of tubular elements or rods in coaxial engagement}
7/14	. . locking in intermediate {non-discrete} positions {(the rod or tube being locked by a tilting clip <a href="#">F16B 2/246</a> )}	<b>12/00</b>	<b>Jointing of furniture or the like, e.g. hidden from exterior</b> ( <a href="#">F16B 2/00</a> - <a href="#">F16B 11/00</a> take precedence; fastening means per se <a href="#">F16B 13/00</a> - <a href="#">F16B 47/00</a> ; wood-working <a href="#">B27</a> )
7/1409	. . . {with balls or rollers urged by an axial displacement of a wedge or a conical member}	12/02	. Joints between panels and corner posts
7/1418	. . . {with a clamping collar or two split clamping rings tightened by a screw or a cammed latch member}	12/04	. Non-loosenable joints for non-metal furniture parts, e.g. glued
7/1427	. . . {with cammed or eccentric surfaces co-operating by relative rotation of the telescoping members or by rotation of an external collar}	2012/043	. . {using carpentry joints other than mortise and tenon joints, e.g. using multiple tenons}
7/1436	. . . . {with rollers or balls}	2012/046	. . {using mortise and tenon joints}
7/1445	. . . {with a rubber bushing gripping inside the outer telescoping member by a radial expansion due to its axial compression ( <a href="#">F16B 7/1463</a> takes precedence)}	12/06	. Non-loosenable joints for metal furniture parts
7/1454	. . . {with a clamp locking the telescoping members by swinging a handle provided with a locking cam ( <a href="#">F16B 7/1418</a> takes precedence)}	12/08	. . without use of separate connecting elements
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}	12/10	. using pegs, bolts, tenons, clamps, clips, or the like (glued <a href="#">F16B 12/04</a> ; fastening means per se <a href="#">F16B 15/00</a> - <a href="#">F16B 47/00</a> )
7/1472	. . . {with a clamping screw perpendicular to the axis of the telescoping members}	2012/103	. . {Sleeves or dowels for connection fittings}
7/1481	. . . {with a gripping helical spring}	2012/106	. . {Connection bolts for connection fittings}
7/149	. . . {with a sleeve or ring having a tapered or conical surface ( <a href="#">F16B 7/1463</a> takes precedence)}	12/12	. . for non-metal furniture parts, e.g. made of wood, of plastics
2007/16	. . . {locking only against movement in one direction}	12/125	. . . {using mortise and tenon joints}
7/18	. using screw-thread elements {( <a href="#">F16B 7/025</a> takes precedence; for turnbuckles <a href="#">F16B 7/06</a> )}	12/14	. . . using threaded bolts or screws
7/182	. . {for coaxial connections of two rods or tubes}	2012/145	. . . . {Corner connections}
7/185	. . {with a node element}	12/16	. . . . using self-tapping screws
7/187	. . {with sliding nuts or other additional connecting members for joining profiles provided with grooves or channels (channel nuts per se <a href="#">F16B 37/045</a> )}	12/18	. . . . using drawing bars
7/20	. using bayonet connections	12/20	. . . using clamps, clips, wedges, sliding bolts, or the like
		12/2009	. . . . {actuated by rotary motion}
		2012/2018	. . . . {pin and drum securing device; drum has cam surface to engage the head of the pin}
		12/2027	. . . . {with rotating excenters or wedges}
		12/2036	. . . . {with rotating excenters or wedges acting on a head of a pin or screw}
		2012/2045	. . . . {pin and drum securing device; drum has screw to engage the head of the pin}
		12/2054	. . . . {with engaging screw threads as securing means for limiting movement}



12/2063	. . . . . {with engaging screw threads as tightening means}	13/004	. . {with a drilling sleeve driven against a tapered or spherical plug}
2012/2072	. . . . . {Pin and drum securing devices; Drums having lever with cam surface to engage the head of the pin}	13/005	. {formed in integral series but easily separable}
2012/2081	. . . . . {having a fitting providing slanted access for a screwdriver as actuator}	2013/006	. {with sealing means}
2012/209	. . . . . {having an integrated lever as actuator}	2013/007	. {to be fastened in undercut holes}
12/22	. . . using keyhole-shaped slots and pins	2013/008	. {used for mining purposes}
12/24	. . . using separate pins, dowels, or the like	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}
12/26	. . . using snap-action elements	13/02	. in one piece with protrusion or ridges on the shaft
12/28	. . for metal furniture parts	13/025	. . {of rolled sheet material}
12/30	. . . using threaded bolts	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; friction-grip releasable fastenings in general <a href="#">F16B 2/00</a> )
12/32	. . . using clamps, clips, wedges, sliding bolts, or the like	13/045	. . {having axially compressing parts allowing the clamping of an object tightly to the wall}
12/34	. . . 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)}
12/36	. . . using separate pins, dowels or the like	13/061	. . . {of the buckling type}
12/38	. . . using snap-action elements	13/063	. . . {by the use of an expander}
12/40	. Joints for furniture tubing	13/065	. . . . {fastened by extracting the screw, nail or the like}
2012/403	. . {with inserts for joining tubes coaxially}	13/066	. . . . {fastened by extracting a separate expander-part, actuated by the screw, nail or the like}
2012/406	. . {Cove joints for joining two cylindrical members}	13/068	. . . . . {expanded in two or more places}
12/42	. . connecting furniture tubing to non-tubular parts ( <a href="#">connecting table tops to underframes A47B 13/003</a> )	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
12/44	. Leg joints; Corner joints	13/0808	. . . {by a toggle-mechanism}
2012/443	. . {with two-dimensional corner element, the legs thereof being inserted in hollow frame members}	13/0816	. . . {with a wedging drive-pin}
2012/446	. . {with three-dimensional corner element, the legs thereof being inserted in hollow frame members}	13/0825	. . . {with a locking element, e.g. sleeve, ring or key co-operating with a cammed or eccentric surface of the dowel body}
12/46	. . Non-metal corner connections	13/0833	. . . {with segments or fingers expanding or tilting into an undercut hole ( <a href="#">F16B 13/0858</a> takes precedence)}
2012/463	. . . {for wooden members without additional elements}	13/0841	. . . {with a deformable sleeve member driven against the abutting surface of the head of the bolt or of a plug}
2012/466	. . . {using mortise and tenon joints}	13/085	. . . {with a drive-nail deflected by an inclined surface in the dowel body ( <a href="#">nails with spreading shaft F16B 15/04</a> )}
12/48	. . Non-metal leg connections ( <a href="#">F16B 12/46</a> takes precedence)	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)}
12/50	. . Metal corner connections	13/0866	. . . {with prongs penetrating into the wall of the hole by a retractile movement of a threaded member}
2012/505	. . . {having a corner insert which is inserted in mitered profiled members}	13/0875	. . . {with elastic discs or spring washers anchoring in the hole}
12/52	. . Metal leg connections ( <a href="#">F16B 12/50</a> takes precedence)	13/0883	. . . {with split rings or wire between the threads of the dowel body or in grooves near a conical surface ( <a href="#">F16B 13/0825</a> takes precedence)}
12/54	. Fittings for bedsteads or the like	13/0891	. . . {with a locking element, e.g. wedge, key or ball moving along an inclined surface of the dowel body ( <a href="#">F16B 13/0816</a> , <a href="#">F16B 13/0825</a> , <a href="#">F16B 13/0883</a> take precedence)}
12/56	. . Brackets for bedsteads; Coupling joints consisting of bolts or the like; Latches therefor	2013/10	. . {with gripping parts moved into their final position in relation to the body of the device by a separate operation}
12/58	. . Tapered connectors for bed rails	2013/105	. . . {with a toggle-mechanism}
12/60	. . Fittings for detachable side panels		
<b>13/00</b>	<b>Dowels or other devices fastened in walls or the like by inserting them in holes made therein for that purpose (<a href="#">nails 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>)</b>		
13/001	. {with means for preventing rotation of the dowel}		
13/002	. {self-cutting}		
13/003	. . {with a separate drilling bit attached to or surrounded by the dowel element}		

- 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 (claw dowels for building structures [E04B 1/49](#); machines for driving in nail plates [B27F 7/15](#))}
- 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** (construction of pins, bolts or rivets [F16B 19/00](#); riveting [F16B 19/04](#); means for preventing withdrawal of a pin, spigot or the like from its operative position, stud-and-socket releasable fastenings [F16B 21/00](#))
- 17/002 . {Non-releasable connections, i.e. by means of plastic deformation}
- 17/004 . . {of rods or tubes mutually}
- 17/006 . . {of rods or tubes to sheets or plates}
- 17/008 . . {of sheets or plates mutually}
- 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 fastened, 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}
- 2021/14 . . . {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}	27/00	<b>Bolts, screws, or nuts formed in integral series but easily separable, particularly for use in automatic machines</b> {(Arrangements for feeding screws or nuts in spanners, wrenches or screw-drivers with built-in magazines <a href="#">B25B 23/06</a> )}
23/0076	• {causing slipping of the tool in loosening rotation, i.e. disabling unscrewing unless another tool is used ( <a href="#">F16B 31/027</a> takes precedence)}	29/00	<b>Screwed connection with deformation of nut or auxiliary member while fastening</b> ({Nuts fastened to surfaces by riveting <a href="#">F16B 37/065</a> }; members deformed for locking screws, bolts or nuts <a href="#">F16B 39/22</a> )}
23/0084	• {with a threaded engagement between the head of the bolt or screw and the tool}	31/00	<b>Screwed connections specially modified in view of tensile load; Break-bolts</b> (shape of thread { <a href="#">F16B 33/02</a> ; in couplings <a href="#">F16D 9/00</a> })
23/0092	• {with a head engageable by two or more different tools ( <a href="#">F16B 23/0076</a> takes precedence)}	2031/002	• {Breakbolts loosening due to an electromagnetic action}
<b>25/00</b>	<b>Screws that cut thread in the body into which they are screwed, e.g. wood screws</b> {( <a href="#">F16B 35/065</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> )}	31/005	• {Breakbolts loosening due to the action of an explosive charge}
25/0005	• {of the helical wire type (Threaded wire-inserts <a href="#">F16B 37/12</a> )}	31/007	• {Break-bolts loosening at high temperature}
25/001	• {characterised by the material of the body into which the screw is screwed}	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 <a href="#">G01L 5/24</a> )}
25/0015	• • {the material being a soft organic material, e.g. wood or plastic ( <a href="#">F16B 25/0031</a> takes precedence)}	31/021	• • {by means of a frangible part ( <a href="#">F16B 31/025</a> , <a href="#">F16B 31/028</a> take precedence; break members in torque limiters or torque indicators in wrenches or screwdrivers <a href="#">B25B 23/1415</a> )}
25/0021	• • {the material being metal, e.g. sheet-metal or aluminium ( <a href="#">F16B 25/0031</a> takes precedence)}	2031/022	• • {using an ultrasonic transducer}
25/0026	• • {the material being a hard non-organic material, e.g. stone, concrete or drywall ( <a href="#">F16B 25/0031</a> takes precedence)}	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}
25/0031	• • {the screw being designed to be screwed into different materials, e.g. a layered structure or through metallic and wooden parts}	31/025	• • {with a gauge pin in a longitudinal bore in the body of the bolt}
25/0036	• {characterised by geometric details of the screw}	31/027	• • {with a bolt head causing the fastening or the unfastening tool to lose the grip when a specified torque is exceeded}
25/0042	• • {characterised by the geometry of the thread, the thread being a ridge wrapped around the shaft of the screw}	31/028	• • {with a load-indicating washer or washer assembly}
25/0047	• • • {the ridge being characterised by its cross-section in the plane of the shaft axis}	31/04	• for maintaining {a} tensile load
25/0052	• • • {the ridge having indentations, notches or the like in order to improve the cutting behaviour}	31/043	• • {Prestressed connections tensioned by means of liquid, grease, rubber, explosive charge, or the like ( <a href="#">hydraulic bolt tensioners B25B 29/02</a> )}
25/0057	• • • {the screw having distinct axial zones, e.g. multiple axial thread sections with different pitch or thread cross-sections}	2031/046	• • • {by means of an explosive charge}
25/0063	• • • • {with a non-threaded portion on the shaft of the screw}	31/06	• having regard to possibility of fatigue rupture
25/0068	• • • {with multiple-threads, e.g. a double thread screws}	<b>33/00</b>	<b>Features common to bolt and nut</b>
25/0073	• • • {characterised by its pitch, e.g. a varying pitch}	33/002	• {Means for preventing rotation of screw-threaded elements ( <a href="#">F16B 39/00</a> takes precedence)}
25/0078	• • {with a shaft of non-circular cross-section or other special geometric features of the shaft}	33/004	• {Sealing; Insulation (by means of washers <a href="#">F16B 43/001</a> )}
25/0084	• • {characterised by geometric details of the tip}	33/006	• {Non-metallic fasteners using screw-thread}
25/0089	• • {the screw having wings}	33/008	• {Corrosion preventing means}
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}	33/02	• Shape of thread; Special thread-forms ({ <a href="#">F16B 25/00</a> takes precedence; used to remove paint or dirt layers <a href="#">F16B 35/007</a> , <a href="#">F16B 37/002</a> }; used as screw-locking device <a href="#">F16B 39/30</a> )}
25/10	• Screws performing an additional function to thread-forming, e.g. drill screws {or self-piercing screws}	2033/025	• • {with left-hand thread}
25/103	• • {by means of a drilling screw-point, i.e. with a cutting and material removing action}	2033/04	• • {in view of tensile load}
25/106	• • {by means of a self-piercing screw-point, i.e. without removing material}		



33/06	<ul style="list-style-type: none"> <li>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>)}</li> </ul>	37/046	<ul style="list-style-type: none"> <li>. . . {with resilient means for urging the nut inside the channel}</li> </ul>
<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> )	37/047	<ul style="list-style-type: none"> <li>. . . {Barrel nuts}</li> </ul>
	<b>NOTE</b>	37/048	<ul style="list-style-type: none"> <li>. . . {Non-releasable devices (<a href="#">F16B 37/044</a>, <a href="#">F16B 37/045</a> and <a href="#">F16B 37/06</a> take precedence)}</li> </ul>
	The fastening of heads of screws or heads of bolts to surfaces is classified in <a href="#">F16B 37/04</a>	37/06	<ul style="list-style-type: none"> <li>. . by means of welding or riveting</li> </ul>
35/002	<ul style="list-style-type: none"> <li>{onto which threads are cut during screwing (<a href="#">F16B 37/002</a> takes precedence)}</li> </ul>	37/061	<ul style="list-style-type: none"> <li>. . . {by means of welding}</li> </ul>
35/005	<ul style="list-style-type: none"> <li>{Set screws; Locking means therefor}</li> </ul>	37/062	<ul style="list-style-type: none"> <li>. . . {by means of riveting}</li> </ul>
35/007	<ul style="list-style-type: none"> <li>{Removing paint or dirt layers covering the threaded part of nut-like members}</li> </ul>	37/064	<ul style="list-style-type: none"> <li>. . . . {with the use of separate rivets}</li> </ul>
35/02	<ul style="list-style-type: none"> <li>divided longitudinally</li> </ul>	37/065	<ul style="list-style-type: none"> <li>. . . . {by deforming the material of the nut}</li> </ul>
35/04	<ul style="list-style-type: none"> <li>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>)</li> </ul>	37/067	<ul style="list-style-type: none"> <li>. . . . . {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}</li> </ul>
35/041	<ul style="list-style-type: none"> <li>. . {Specially-shaped shafts (shape of thread <a href="#">F16B 33/02</a>)}</li> </ul>	37/068	<ul style="list-style-type: none"> <li>. . . . {by deforming the material of the support, e.g. the sheet or plate}</li> </ul>
35/042	<ul style="list-style-type: none"> <li>. . . {for retention or rotation by a tool, e.g. of polygonal cross-section}</li> </ul>	37/08	<ul style="list-style-type: none"> <li>. Quickly-detachable {or mountable} nuts, e.g. consisting of two or more parts; Nuts movable along the bolt after tilting the nut {not used, see subgroups}</li> </ul>
35/044	<ul style="list-style-type: none"> <li>. . . {Specially-shaped ends}</li> </ul>	37/0807	<ul style="list-style-type: none"> <li>. . {Nuts engaged from the end of the bolt, e.g. axially slidable nuts}</li> </ul>
35/045	<ul style="list-style-type: none"> <li>. . . . {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>)}</li> </ul>	37/0814	<ul style="list-style-type: none"> <li>. . . {movable along the bolt after tilting the nut}</li> </ul>
35/047	<ul style="list-style-type: none"> <li>. . . . {for preventing cross-threading, i.e. preventing skewing of bolt and nut}</li> </ul>	37/0821	<ul style="list-style-type: none"> <li>. . . {in two halves pivotally connected}</li> </ul>
35/048	<ul style="list-style-type: none"> <li>. . . {Specially-shaped necks (<a href="#">F16B 35/06</a> takes precedence)}</li> </ul>	37/0828	<ul style="list-style-type: none"> <li>. . . {with a longitudinal slit through the annular wall of the nut for enabling expansion of the nut, e.g. for easy removal}</li> </ul>
35/06	<ul style="list-style-type: none"> <li>. . 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>)</li> </ul>	37/0835	<ul style="list-style-type: none"> <li>. . . {with balls engaging threads or grooves on the shaft of the bolt}</li> </ul>
35/065	<ul style="list-style-type: none"> <li>. . . {with self-countersink-cutting means}</li> </ul>	37/0842	<ul style="list-style-type: none"> <li>. . . {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>)}</li> </ul>
<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> )}	37/085	<ul style="list-style-type: none"> <li>. . . {with at least one unthreaded portion in both the nut and the bolt}</li> </ul>
37/002	<ul style="list-style-type: none"> <li>{cutting threads during screwing; removing paint or dirt layers covering threaded shanks}</li> </ul>	37/0857	<ul style="list-style-type: none"> <li>. . . {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)}</li> </ul>
37/005	<ul style="list-style-type: none"> <li>{into which threads are cut during screwing}</li> </ul>	37/0864	<ul style="list-style-type: none"> <li>. . . {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)}</li> </ul>
2037/007	<ul style="list-style-type: none"> <li>{with a blind hole}</li> </ul>	37/0871	<ul style="list-style-type: none"> <li>. . {engaging the bolt laterally, i.e. without the need to engage the end of the bolt}</li> </ul>
37/02	<ul style="list-style-type: none"> <li>made of thin sheet material (fastening to surfaces <a href="#">F16B 37/04</a>; {used as lock-nuts <a href="#">F16B 39/14</a>)}</li> </ul>	37/0878	<ul style="list-style-type: none"> <li>. . . {in one piece, e.g. C-shaped nuts}</li> </ul>
37/04	<ul style="list-style-type: none"> <li>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>)}</li> </ul>	37/0885	<ul style="list-style-type: none"> <li>. . . {in two halves hingedly connected}</li> </ul>
37/041	<ul style="list-style-type: none"> <li>. . {Releasable devices (<a href="#">F16B 37/044</a>, <a href="#">F16B 37/045</a> take precedence)}</li> </ul>	37/0892	<ul style="list-style-type: none"> <li>. . . {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)}</li> </ul>
37/042	<ul style="list-style-type: none"> <li>. . . {locking by rotation}</li> </ul>	37/12	<ul style="list-style-type: none"> <li>. 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>)}</li> </ul>
37/043	<ul style="list-style-type: none"> <li>. . . {with snap action}</li> </ul>	37/122	<ul style="list-style-type: none"> <li>. . {Threaded inserts, e.g. "rampa bolts"}</li> </ul>
37/044	<ul style="list-style-type: none"> <li>. . {Nut cages}</li> </ul>	37/125	<ul style="list-style-type: none"> <li>. . . {the external surface of the insert being threaded}</li> </ul>
37/045	<ul style="list-style-type: none"> <li>. . {specially adapted for fastening in channels, e.g. sliding bolts, channel nuts}</li> </ul>	37/127	<ul style="list-style-type: none"> <li>. . . . {and self-tapping}</li> </ul>
		37/14	<ul style="list-style-type: none"> <li>. Cap nuts; Nut caps or bolt caps</li> </ul>
		37/145	<ul style="list-style-type: none"> <li>. . {Sleeve nuts, e.g. combined with bolts}</li> </ul>

- 39/16 . . . 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](#))
- 45/02 . Hooks with a pivoting {or elastically bending} closing member
  - 45/025 . . {manoeuvrable remotely with a cable, chain, rod or the like}
  - 45/04 . Hooks with a sliding closing member
  - 45/06 . Hooks with two symmetrically-pivoting hook parts
- 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}