

**CPC****COOPERATIVE PATENT CLASSIFICATION****B21F**

**WORKING AND PROCESSING OF WIRE** ( { reducing diameter by } rolling of metal [B21B](#); by drawing, auxiliary operations used in connection with metal working without essentially removing material [B21C](#))

**Guidance heading:** Wire working characterised by operations performed

**B21F 1/00**

**Bending wire other than coiling; Straightening wire**

- B21F 1/002 . { by means of manually operated devices, e.g. pliers }
- B21F 1/004 . { by means of press-type tooling }
- B21F 1/006 . { in 3D with means to rotate the tools about the wire axis }
- B21F 1/008 . { in 3D with means to rotate the wire about its axis }
- B21F 1/02 . Straightening
- B21F 1/023 . . { in a device rotating about the wire axis }
- B21F 1/026 . . { Straightening and cutting }
- B21F 1/04 . Undulating
- B21F 1/06 . Bending wire-eyes

**B21F 3/00**

**Coiling wire into particular forms**

- B21F 3/02 . helically
- B21F 3/027 . . with extended ends formed in a special shape, e.g. for clothes-pegs
- B21F 3/04 . . externally on a mandrel or the like
- B21F 3/06 . . internally on a hollow form
- B21F 3/08 . to flat spiral
- B21F 3/10 . to spirals other than flat, e.g. conical
- B21F 3/12 . of interconnected helical springs

**B21F 5/00**

**Upsetting wire** { or pressing operations affecting the wire cross-section } (in the manufacture of nails or pins [B21G 3/12](#))

- B21F 5/005 . { Upsetting wire }

<b>B21F 7/00</b>	<b>Twisting wire; Twisting wire together</b> (for connections of limited size <a href="#">B21F 15/04</a> )
<b>B21F 9/00</b>	<b>Straining wire</b> (straining pre-stressing wires for concrete <a href="#">E04G 21/12</a> ; connections or attachments adapted for straining <a href="#">F16G 11/00</a> ; { bundling machines or tools <a href="#">B65B 13/00</a> })
B21F 9/002	. { to maintain tension in the wire, e.g. to pull the wire taut }
B21F 9/005	. { to affect the material properties of the wire }
B21F 9/007	. { to induce a plastic deformation of the wire }
B21F 9/02	. by tools adapted also for making connections
<b>B21F 11/00</b>	<b>Cutting wire</b> (hand cutting tools <a href="#">B26B</a> )
B21F 11/005	. { springs }
<b>B21F 13/00</b>	<b>Splitting wire</b>
<b>B21F 15/00</b>	<b>Connecting wire to wire or other metallic material or objects; Connecting parts by means of wire</b> (tools for both straining and connecting <a href="#">B21F 9/00</a> ; jacketing or reinforcing <a href="#">B21F 17/00</a> ; manufacture of wire network <a href="#">B21F 27/00</a> ; in making bands <a href="#">B21F 43/00</a> ) { bundling machines or tools <a href="#">B65B 13/00</a> ; for semiconductors <a href="#">H01L 24/85</a> }
B21F 15/02	. wire with wire
B21F 15/04	.. without additional connecting elements or material, e.g. by twisting
B21F 15/06	.. with additional connecting elements or material {( <a href="#">B21F 27/08</a> takes precedence)}
B21F 15/08	... making use of soldering or welding {( <a href="#">B21F 27/10</a> takes precedence)}
B21F 15/10	. wire with sheet metal
<b>B21F 17/00</b>	<b>Jacketing or reinforcing articles with wire</b> (by winding <a href="#">B65H 54/00</a> , <a href="#">B65H 81/00</a> ; by braiding <a href="#">D04C</a> )
<b>B21F 19/00</b>	<b>Metallic coating of wire</b> (by extruding <a href="#">B21C 23/24</a> ; by soldering or welding, e.g. cladding or plating <a href="#">B23K</a> ; by other non-mechanical means <a href="#">C23</a> ; electroplating <a href="#">C25D</a> )
<b>B21F 23/00</b>	<b>Feeding wire in wire-working machines or apparatus</b> (applicable also to feeding rods or strips <a href="#">B21D 43/00</a> )
B21F 23/002	. { Feeding means specially adapted for handling various diameters of wire or rod }

- B21F 23/005 . { Feeding discrete lengths of wire or rod }
- B21F 23/007 .. { using pick-up means, e.g. for isolating a predefined number of wires from a bundle }

**Guidance heading:** Wire working characterised by the particular articles produced

**B21F 25/00 Making barbed wire**

**B21F 27/00 Making wire network, i.e. wire nets** (meshed-ring network [B21F 31/00](#); in making bands [B21F 43/00](#); using looms [D03D](#))

- B21F 27/005 . { Wire network per se }
- B21F 27/02 . without additional connecting elements or material at crossings, e.g. connected by knitting
- B21F 27/04 .. Manufacturing on machines with rotating blades or formers
- B21F 27/06 .. Manufacturing on twister-gear machines
- B21F 27/08 . with additional connecting elements or material at crossings
- B21F 27/10 .. with soldered or welded crossings {(resistance spot welding machines for manufacturing of metallic grids or mats [B23K 11/008](#))}
- B21F 27/12 . Making special types or portions of network by methods or means specially adapted therefor
- B21F 27/121 .. { of tubular form, e.g. as reinforcements for pipes or pillars }
- B21F 27/122 ... { by attaching a continuous stirrup to longitudinal wires }
- B21F 27/124 .... { applied by rotation }
- B21F 27/125 ... { by attaching individual stirrups to longitudinal wires }
- B21F 27/127 ... { by bending preformed mesh }
- B21F 27/128 .. { of three-dimensional form by connecting wire networks, e.g. by projecting wires through an insulating layer }
- B21F 27/14 .. Specially bending or deforming free wire ends
- B21F 27/16 .. for spring mattresses
- B21F 27/18 .. of meshed work for filters or sieves
- B21F 27/20 .. of plaster-carrying network
- B21F 27/22 .. of network for wire-reinforced glass or the like

**B21F 29/00 Making fencing or like material made partly of wire** ([B21F 25/00](#), [B21F 27/00](#) take precedence)

- B21F 29/02 . comprising bars or the like connected by wires

<b>B21F 31/00</b>	<b>Making meshed-ring network from wire</b>
<b>B21F 33/00</b>	<b>Tools or devices specially designed for handling or processing wire fabrics or the like</b>
B21F 33/002	. { Coiling or packing wire network }
B21F 33/005	. { Cutting wire network }
B21F 33/007	. { Connecting wire network }
B21F 33/02	. Mounting of wire network on frames
B21F 33/025	. . { Mounting of mattress innersprings on borderframes }
B21F 33/04	. Connecting ends of helical springs for mattresses
<b>B21F 35/00</b>	<b>Making springs from wire</b> (by coiling wire <a href="#">B21F 3/00</a> ; making resilient rings <a href="#">B21F 37/02</a> )
B21F 35/003	. { Multi-filament springs, e.g. made of stranded, braided, cable or multi-filament material }
B21F 35/006	. { Double twist coil springs }
B21F 35/02	. Bending or deforming ends of coil springs to special shape
B21F 35/04	. Making flat springs, e.g. sinus springs
<b>B21F 37/00</b>	<b>Manufacture of rings from wire</b> (in chain making <a href="#">B21L</a> ; making of tyre beads <a href="#">B29D 30/48</a> )
B21F 37/02	. of resilient rings, e.g. key-rings
B21F 37/04	. of washers ( <a href="#">B21F 37/02</a> takes precedence)
<b>B21F 39/00</b>	<b>Making wheel spokes from wire</b>
<b>B21F 41/00</b>	<b>Making umbrella frames or members from wire</b>
<b>B21F 43/00</b>	<b>Making bands, e.g. bracelets, or wire</b> (making chains <a href="#">B21L</a> ; using looms <a href="#">D03D</a> )
<b>B21F 45/00</b>	<b>Wire-working in the manufacture of other particular articles</b> (of pins, needles, nails, hairpins <a href="#">B21G</a> ; of chains <a href="#">B21L</a> ; { for semiconductor devices <a href="#">H01L 24/42</a> })

B21F 45/002	. { of frames for spectacles }
B21F 45/004	. { Mounting bails on containers }
B21F 45/006	. { of concrete reinforcement fibres }
B21F 45/008	. { of medical instruments, e.g. stents, corneal rings (medical science <a href="#">A61</a> ) }
B21F 45/02	. of clothes hangers
B21F 45/04	. of elements, e.g. levers or links, for bottle stoppers
B21F 45/06	. of flexible shafts or hollow conduits, e.g. for Bowden mechanisms
B21F 45/08	. of loom heddles
B21F 45/10	. of cards for fabric-napping machines
B21F 45/12	. of fishing hooks
B21F 45/14	. of end-pieces for laces or ropes
B21F 45/16	. of devices for fastening or securing purposes
B21F 45/18	. . of slide fastener elements
B21F 45/20	. . of springs hooks; of spring safety hooks
B21F 45/22	. . of paper fasteners or clips ( <a href="#">staples B21F 45/24</a> )
B21F 45/24	. . of staples; of belt-fastening elements
B21F 45/26	. . of buttons
B21F 45/28	. . . of "patent-fastener" or press-button type
<b>B21F 99/00</b>	<b>Subject matter not provided for in other groups of this subclass</b>