

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](#) }

B21F 7/00 **Twisting wire; Twisting wire together** ([for connections of limited size B21F 15/04](#))

- B21F 9/00** **Straining wire** (straining pre-stressing wires for concrete [E04G 21/12](#); connections or attachments adapted for straining [F16G 11/00](#); {bundling machines or tools [B65B 13/00](#) })
- 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
- B21F 11/00** **Cutting wire** (hand cutting tools [B26B](#))
- B21F 11/005 . {springs }
- B21F 13/00** **Splitting wire**
- B21F 15/00** **Connecting wire to wire or other metallic material or objects; Connecting parts by means of wire** (tools for both straining and connecting [B21F 9/00](#); jacketing or reinforcing [B21F 17/00](#); manufacture of wire network [B21F 27/00](#); in making bands [B21F 43/00](#)) { bundling machines or tools [B65B 13/00](#); for semiconductors [H01L 24/85](#) }
- 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 { ([B21F 27/08](#) takes precedence) }
- B21F 15/08 . . . making use of soldering or welding { ([B21F 27/10](#) takes precedence) }
- B21F 15/10 . wire with sheet metal
- B21F 17/00** **Jacketing or reinforcing articles with wire** (by winding [B65H 54/00](#), [B65H 81/00](#); by braiding [D04C](#))
- B21F 19/00** **Metallic coating of wire** (by extruding [B21C 23/24](#); by soldering or welding, e.g. cladding or plating [B23K](#) ; by other non-mechanical means [C23](#) ; electroplating [C25D](#))
- B21F 23/00** **Feeding wire in wire-working machines or apparatus** (applicable also to feeding rods or strips [B21D 43/00](#))
- 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
B21F 31/00	Making meshed-ring network from wire
B21F 33/00	Tools or devices specially designed for handling or processing wire fabrics or the like
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
- B21F 35/00** **Making springs from wire** (by coiling wire [B21F 3/00](#); making resilient rings [B21F 37/02](#))
- 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
- B21F 37/00** **Manufacture of rings from wire** (in chain making [B21L](#) ; making of tyre beads [B29D 30/48](#))
- B21F 37/02 . of resilient rings, e.g. key-rings
- B21F 37/04 . of washers ([B21F 37/02](#) takes precedence)
- B21F 39/00** **Making wheel spokes from wire**
- B21F 41/00** **Making umbrella frames or members from wire**
- B21F 43/00** **Making bands, e.g. bracelets, or wire** (making chains [B21L](#) ; using looms [D03D](#))
- B21F 45/00** **Wire-working in the manufacture of other particular articles** (of pins, needles, nails, hairpins [B21G](#) ; of chains [B21L](#) ; { for semiconductor devices [H01L 24/42](#) })
- 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 [A61](#)) }
- 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 ([staples B21F 45/24](#))
- B21F 45/24
 - . . of staples; of belt-fastening elements
- B21F 45/26
 - . . of buttons
- B21F 45/28
 - . . . of "patent-fastener" or press-button type
- B21F 99/00**
 - Subject matter not provided for in other groups of this subclass**