

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

WORKING OR PROCESSING OF METAL WIRE ({reducing diameter by} rolling of metal [B21B](#); by drawing, auxiliary operations used in connection with metal-working without essentially removing material [B21C](#); bundling articles [B65B 13/00](#))

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}

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