

ECLA EUROPEAN CLASSIFICATION

B21F WORKING AND PROCESSING OF WIRE ([N: reducing diameter by] rolling of metal B21B; by drawing, auxiliary operations used in connection with metal working without essentially removing material B21C)

Guide heading: Wire working characterised by operations performed

B21F1/00 Bending wire other than coiling; Straightening wire

- B21F1/00B . [N: by means of manually operated devices, e.g. pliers]
- B21F1/00D . [N: by means of press-type tooling] [N1204]
- B21F1/00F . [N: in 3D with means to rotate the tools about the wire axis] [N1204]
- B21F1/00H . [N: in 3D with means to rotate the wire about its axis] [N1204]
- B21F1/02 . Straightening
 - B21F1/02B . . [N: in a device rotating about the wire axis] [N1204]
 - B21F1/02C . . [N: Straightening and cutting]
- B21F1/04 . Undulating
- B21F1/06 . Bending wire-eyes

B21F3/00 Coiling wire into particular forms

- B21F3/02 . helically
 - B21F3/027 . . with extended ends formed in a special shape, e.g. for clothes-pegs
 - B21F3/04 . . externally on a mandrel or the like
 - B21F3/06 . . internally on a hollow form
- B21F3/08 . to flat spiral
- B21F3/10 . to spirals other than flat, e.g. conical
- B21F3/12 . of interconnected helical springs

B21F5/00 Upsetting wire [N: or pressing operations affecting the wire cross-section] (in the manufacture of nails or pins B21G3/12) [N1204]

- B21F5/00B . [N: Upsetting wire] [N1204]

B21F7/00 Twisting wire; Twisting wire together (for connections of limited size B21F15/04)

- B21F9/00** **Straining wire** (straining pre-stressing wires for concrete [E04G21/12](#); connections or attachments adapted for straining [F16G11/00](#); [N: [bundling machines or tools B65B13/00](#)])
- B21F9/00B . [N: to maintain tension in the wire, e.g. to pull the wire taut] [N1204]
- B21F9/00D . [N: to affect the material properties of the wire] [N1204]
- B21F9/00F . [N: to induce a plastic deformation of the wire] [N1204]
- B21F9/02 . by tools adapted also for making connections
- B21F11/00** **Cutting wire** (hand cutting tools [B26B](#))
- B21F11/00B . [N: [springs](#)]
- B21F13/00** **Splitting wire**
- B21F15/00** **Connecting wire to wire or other metallic material or objects; Connecting parts by means of wire** (tools for both straining and connecting [B21F9/00](#); jacketing or reinforcing [B21F17/00](#); manufacture of wire network [B21F27/00](#); in making bands [B21F43/00](#)) [N: [bundling machines or tools B65B13/00](#); for semiconductors [H01L24/85](#)] [M1204]
- B21F15/02 . wire with wire
- B21F15/04 . . without additional connecting elements or material, e.g. by twisting
- B21F15/06 . . with additional connecting elements or material [N: (B21F27/08 takes precedence)] [N1204]
- B21F15/08 . . . making use of soldering or welding [N: (B21F27/10 takes precedence)] [N1204]
- B21F15/10 . wire with sheet metal
- B21F17/00** **Jacketing or reinforcing articles with wire** (by winding [B65H54/00](#), [B65H81/00](#); by braiding [D04C](#))
- B21F19/00** **Metallic coating of wire** (by extruding [B21C23/24](#); by soldering or welding, e.g. cladding or plating [B23K](#); by other non-mechanical means [C23](#); electroplating [C25D](#))
- B21F23/00** **Feeding wire in wire-working machines or apparatus** (applicable also to feeding rods or strips [B21D43/00](#))
- B21F23/00C . [N: [Feeding means specially adapted for handling various diameters of wire or rod](#)] [N9712]
- B21F23/00D . [N: [Feeding discrete lengths of wire or rod](#)] [N9712]
- B21F23/00D2 . . [N: using pick-up means, e.g. for isolating a predefined number of wires from a bundle] [N1204]

Guide heading:	<u>Wire working characterised by the particular articles produced</u>
B21F25/00	Making barbed wire
B21F27/00	Making wire network, i.e. wire nets (meshed-ring network B21F31/00 ; in making bands B21F43/00 ; using looms D03D)
B21F27/00B	. [N: Wire network per se]
B21F27/02	. without additional connecting elements or material at crossings, e.g. connected by knitting
B21F27/04	. . Manufacturing on machines with rotating blades or formers
B21F27/06	. . Manufacturing on twister-gear machines
B21F27/08	. with additional connecting elements or material at crossings
B21F27/10	. . with soldered or welded crossings [N: (resistance spot welding machines for manufacturing of metallic grids or mats B23K11/00F10)]
B21F27/12	. Making special types or portions of network by methods or means specially adapted therefor
B21F27/12B	. . [N: of tubular form, e.g. as reinforcements for pipes or pillars]
B21F27/12B2	. . . [N: by attaching a continuous stirrup to longitudinal wires] [N0203]
B21F27/12B2R [N: applied by rotation] [N0203]
B21F27/12B4	. . . [N: by attaching individual stirrups to longitudinal wires] [N0203]
B21F27/12B6	. . . [N: by bending preformed mesh] [N0203]
B21F27/12D	. . [N: of three-dimensional form by connecting wire networks, e.g. by projecting wires through an insulating layer] [N9611]
B21F27/14	. . Specially bending or deforming free wire ends
B21F27/16	. . for spring mattresses
B21F27/18	. . of meshed work for filters or sieves
B21F27/20	. . of plaster-carrying network
B21F27/22	. . of network for wire-reinforced glass or the like
B21F29/00	Making fencing or like material made partly of wire (B21F25/00 , B21F27/00 take precedence)
B21F29/02	. comprising bars or the like connected by wires
B21F31/00	Making meshed-ring network from wire
B21F33/00	Tools or devices specially designed for handling or processing wire fabrics or the like
B21F33/00B	. [N: Coiling or packing wire network]

- B21F33/00C . [N: Cutting wire network]
- B21F33/00D . [N: Connecting wire network]
- B21F33/02 . Mounting of wire network on frames
- B21F33/02B . . [N: Mounting of mattress innersprings on borderframes]
- B21F33/04 . Connecting ends of helical springs for mattresses
- B21F35/00** **Making springs from wire** (by coiling wire [B21F3/00](#); making resilient rings [B21F37/02](#))
- B21F35/00B . [N: Multi-filament springs, e.g. made of stranded, braided, cable or multi-filament material] [N1204]
- B21F35/00D . [N: Double twist coil springs] [N1204]
- B21F35/02 . Bending or deforming ends of coil springs to special shape
- B21F35/04 . Making flat springs, e.g. sinus springs
- B21F37/00** **Manufacture of rings from wire** (in chain making [B21L](#); making of tyre beads [B29D30/48](#))
- B21F37/02 . of resilient rings, e.g. key-rings
- B21F37/04 . of washers ([B21F37/02](#) takes precedence)
- B21F39/00** **Making wheel spokes from wire**
- B21F41/00** **Making umbrella frames or members from wire**
- B21F43/00** **Making bands, e.g. bracelets, or wire** (making chains [B21L](#); using looms [D03D](#))
- B21F45/00** **Wire-working in the manufacture of other particular articles** (of pins, needles, nails, hairpins [B21G](#); of chains [B21L](#); [N: for semiconductor devices [H01L24/42](#)]) [C1204]
- B21F45/00B . [N: of frames for spectacles]
- B21F45/00C . [N: Mounting bails on containers]
- B21F45/00E . [N: of concrete reinforcement fibres] [N1204]
- B21F45/00M . [N: of medical instruments, e.g. stents, corneal rings (medical science A61)] [N1204]
- B21F45/02 . of clothes hangers
- B21F45/04 . of elements, e.g. levers or links, for bottle stoppers

- B21F45/06 . of flexible shafts or hollow conduits, e.g. for Bowden mechanisms
- B21F45/08 . of loom heddles
- B21F45/10 . of cards for fabric-napping machines
- B21F45/12 . of fishing hooks
- B21F45/14 . of end-pieces for laces or ropes
- B21F45/16 . of devices for fastening or securing purposes
- B21F45/18 . . of slide fastener elements
- B21F45/20 . . of springs hooks; of spring safety hooks
- B21F45/22 . . of paper fasteners or clips ([staples B21F45/24](#))
- B21F45/24 . . of staples; of belt-fastening elements
- B21F45/26 . . of buttons
- B21F45/28 . . . of "patent-fastener" or press-button type

- B21F99/00** **Subject matter not provided for in other groups of this subclass** [\[N0904\]](#)