

**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

|                   |   |
|-------------------|---|
| <b>B21F 25/00</b> | <b>Making barbed wire</b>   |
| <b>B21F 27/00</b> | <b>Making wire network, i.e. wire nets</b> ( <a href="#">meshed-ring network B21F 31/00</a> ; in making bands <a href="#">B21F 43/00</a> ; using looms <a href="#">D03D</a> ) |
| 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 { ( <a href="#">resistance spot welding machines for manufacturing of metallic grids or mats B23K 11/008</a> ) }                         |
| 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   |
| <b>B21F 29/00</b> | <b>Making fencing or like material made partly of wire</b> ( <a href="#">B21F 25/00</a> , <a href="#">B21F 27/00</a> 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
- 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**