

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](#))

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

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| 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

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| 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 |

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| 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 |

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| 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 |