

**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	<ul style="list-style-type: none"> <li>. Mounting of wire network on frames</li> </ul>
B21F 33/025	<ul style="list-style-type: none"> <li>. . { Mounting of mattress innersprings on borderframes }</li> </ul>
B21F 33/04	<ul style="list-style-type: none"> <li>. Connecting ends of helical springs for mattresses</li> </ul>
<b>B21F 35/00</b>	<b>Making springs from wire</b> ( by coiling wire <a href="#">B21F 3/00</a> ; making resilient rings <a href="#">B21F 37/02</a> )
B21F 35/003	<ul style="list-style-type: none"> <li>. { Multi-filament springs, e.g. made of stranded, braided, cable or multi-filament material }</li> </ul>
B21F 35/006	<ul style="list-style-type: none"> <li>. { Double twist coil springs }</li> </ul>
B21F 35/02	<ul style="list-style-type: none"> <li>. Bending or deforming ends of coil springs to special shape</li> </ul>
B21F 35/04	<ul style="list-style-type: none"> <li>. Making flat springs, e.g. sinus springs</li> </ul>
<b>B21F 37/00</b>	<b>Manufacture of rings from wire</b> ( in chain making <a href="#">B21L</a> ; making of tyre beads <a href="#">B29D 30/48</a> )
B21F 37/02	<ul style="list-style-type: none"> <li>. of resilient rings, e.g. key-rings</li> </ul>
B21F 37/04	<ul style="list-style-type: none"> <li>. of washers ( <a href="#">B21F 37/02</a> takes precedence )</li> </ul>
<b>B21F 39/00</b>	<b>Making wheel spokes from wire</b>
<b>B21F 41/00</b>	<b>Making umbrella frames or members from wire</b>
<b>B21F 43/00</b>	<b>Making bands, e.g. bracelets, or wire</b> ( making chains <a href="#">B21L</a> ; using looms <a href="#">D03D</a> )
<b>B21F 45/00</b>	<b>Wire-working in the manufacture of other particular articles</b> ( of pins, needles, nails, hairpins <a href="#">B21G</a> ; of chains <a href="#">B21L</a> ; { for semiconductor devices <a href="#">H01L 24/42</a> } )
B21F 45/002	<ul style="list-style-type: none"> <li>. { of frames for spectacles }</li> </ul>
B21F 45/004	<ul style="list-style-type: none"> <li>. { Mounting bails on containers }</li> </ul>
B21F 45/006	<ul style="list-style-type: none"> <li>. { of concrete reinforcement fibres }</li> </ul>
B21F 45/008	<ul style="list-style-type: none"> <li>. { of medical instruments, e.g. stents, corneal rings ( medical science <a href="#">A61</a> ) }</li> </ul>
B21F 45/02	<ul style="list-style-type: none"> <li>. of clothes hangers</li> </ul>
B21F 45/04	<ul style="list-style-type: none"> <li>. of elements, e.g. levers or links, for bottle stoppers</li> </ul>
B21F 45/06	<ul style="list-style-type: none"> <li>. of flexible shafts or hollow conduits, e.g. for Bowden mechanisms</li> </ul>
B21F 45/08	<ul style="list-style-type: none"> <li>. of loom heddles</li> </ul>

- 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**