

**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}

<b>B21F 13/00</b>	<b>Splitting wire</b>
<b>B21F 15/00</b>	<b>Connecting wire to wire or other metallic material or objects; Connecting parts by means of wire</b> (tools for both straining and connecting <a href="#">B21F 9/00</a> ; jacketing or reinforcing <a href="#">B21F 17/00</a> ; manufacture of wire network <a href="#">B21F 27/00</a> ; in making bands <a href="#">B21F 43/00</a> ) { <b>bundling machines or tools</b> <a href="#">B65B 13/00</a> ; <b>for semiconductors</b> <a href="#">H01L 24/85</a> }
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 {( <a href="#">B21F 27/08</a> takes precedence)}
B21F 15/08	. . . making use of soldering or welding {( <a href="#">B21F 27/10</a> takes precedence)}
B21F 15/10	. wire with sheet metal
<b>B21F 17/00</b>	<b>Jacketing or reinforcing articles with wire</b> (by winding <a href="#">B65H 54/00</a> , <a href="#">B65H 81/00</a> ; by braiding <a href="#">D04C</a> )
<b>B21F 19/00</b>	<b>Metallic coating of wire</b> (by extruding <a href="#">B21C 23/24</a> ; by soldering or welding, e.g. cladding or plating <a href="#">B23K</a> ; by other non-mechanical means <a href="#">C23</a> ; electroplating <a href="#">C25D</a> )
<b>B21F 23/00</b>	<b>Feeding wire in wire-working machines or apparatus</b> (applicable also to feeding rods or strips <a href="#">B21D 43/00</a> )
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}
<b>Guidance heading:</b>	<b><u>Wire working characterised by the particular articles produced</u></b>
<b>B21F 25/00</b>	<b>Making barbed wire</b>
<b>B21F 27/00</b>	<b>Making wire network, i.e. wire nets</b> (meshed-ring network <a href="#">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 {(resistance spot welding machines for manufacturing of metallic grids or mats <a href="#">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
<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	. { 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
<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	. of resilient rings, e.g. key-rings
B21F 37/04	. of washers ( <a href="#">B21F 37/02</a> takes precedence)
<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	. {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 <a href="#">A61</a> )}
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 ( <a href="#">staples B21F 45/24</a> )
B21F 45/24	. . of staples; of belt-fastening elements
B21F 45/26	. . of buttons
B21F 45/28	. . . of "patent-fastener" or press-button type
<b>B21F 99/00</b>	<b>Subject matter not provided for in other groups of this subclass</b>