May 31, 1938. W. C. KUS 2,119,168

ELECTRICALLY HEATED CURLING IRON

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Fig. 1.

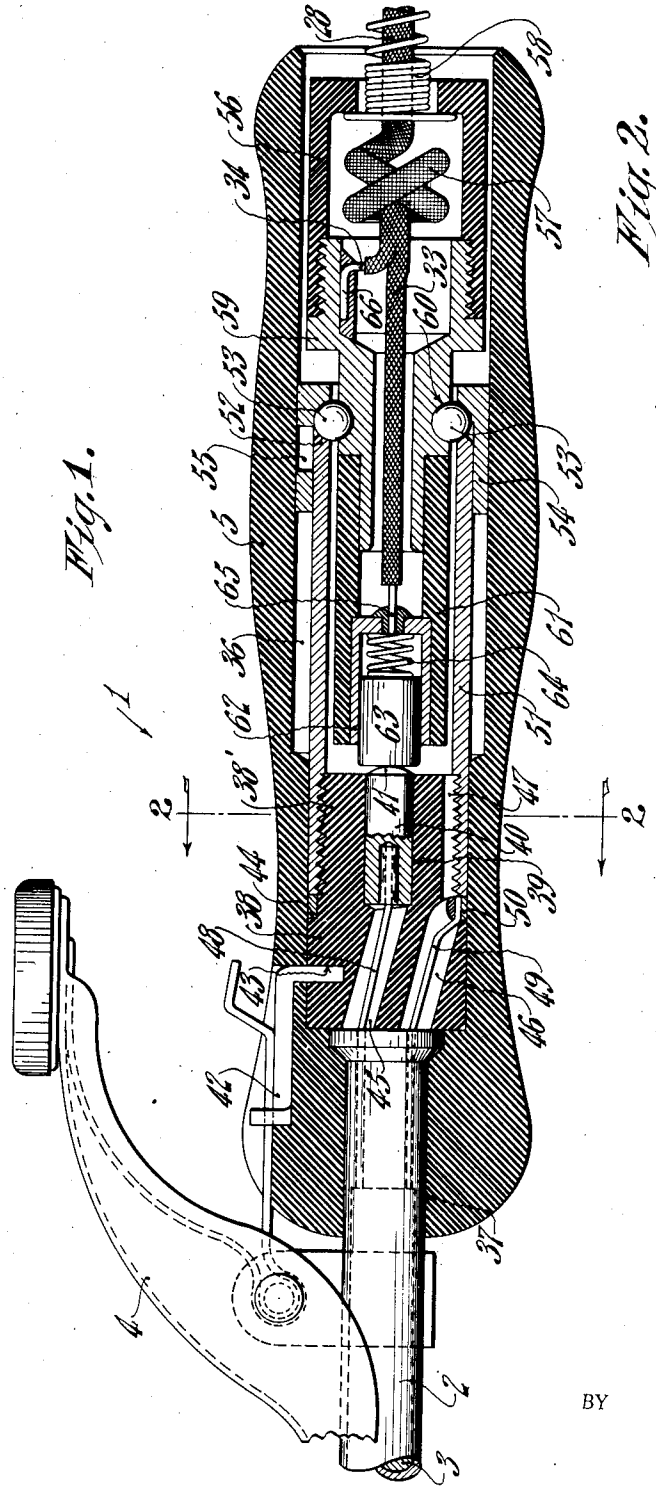
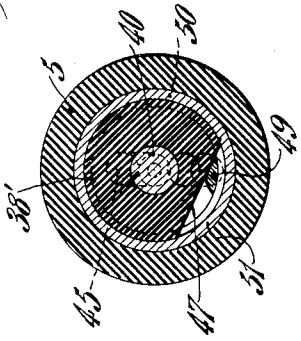


Fig. 2.



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ELECTRICALLY HEATED CURLING IRON

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3 Claims. (Cl. 173—324)

My invention relates to improvements in electrically heated curling irons.

An object of my invention is to provide, in an electrically heated curling iron, rotatable electrical connections between the electrical supply cord and the heating element in the curling iron, which will present a minimum of frictional resistance. Rotatable connections, so-called, have been used in the art, but the frictional resistance of their construction has been sufficiently greater than the slight torsional resistance of the supply cord, to defeat their purpose, and therefore render them impractical. My invention has overcome this difficulty.

A further object of my invention is to provide, within the handle of the curling iron, rotatable electrical connections, comprising co-operating parts of simple construction, capable of economical manufacture and quick assembly, adjustment and repairs.

These, and other objects and advantages of my invention, will be more completely described and disclosed in the following specification, the accompanying drawing, and the appended claims.

Broadly, my invention comprises, a curling iron, incorporating an electrical heating element, a handle fixedly secured to the iron, an electrical cord removably secured to a source of electrical energy and rotatably secured within the handle, rotatable electrical connections between the heating element and the cord, which present a minimum of torsional resistance.

A preferred embodiment of my invention is illustrated in the accompanying drawing, in which:—

Fig. 1 is a longitudinal sectional view of the handle of the curling iron, and

Fig. 2 is a cross sectional view on the line 2—2 of Fig. 1.

Referring now to the drawing in detail, in which like numerals refer to like parts throughout:—

A curling iron 1, includes a rod member 2, in which is secured a heating element 3, a clamping member 4, and a handle 5.

The handle 5 is formed with an axial bore 36 which extends partially through the handle 5 and connects with an axial bore 37 of relatively smaller diameter, which extends the remainder of the distance, through the handle 5. The rod 2, containing the heating element 3, is fixedly secured in the bore 37. A cylindrical member 38 of insulation, formed with an axial bore 39, in which is secured a metallic plug 40, having a rounded nose portion 41, is fixedly secured in the end of the bore 36, adjacent the member 2, by means of a key member 42, engaged in a slot 43. The member 38 is formed with a reduced, threaded, portion 38', which provides a shoulder 44. The member 38 is also provided with holes 45 and 46 extending from the space 47; the hole 45 connecting with the bore 39, and the hole 46 connecting with a space 47, provided by cutting away a portion of the threaded part 38', as indicated in Fig. 2. A wire 48, from the heating element 3, passes through the hole 45 and is secured to the metallic plug 40. The second wire 49, from the heating element 3, passes through the hole 46 and is secured to a ring 50, which is slipped over the threaded portion 38' and abuts the shoulder 44. A metallic sleeve 51 is engaged on the threaded portion 38', and impinges against the ring 50; the opposite end of the sleeve 51 being cupped at 52, to provide a part of a ball race for the balls 53. This end of the sleeve 51 is enclosed within a bushing member 54, which also provides a portion of the race for the balls 53. By sliding the bushing 54 onto the sleeve 51, the balls 53 may be dropped into position through an opening 55 provided in the bushing 54. All of the parts above described are fixedly secured within the handle 5. The cable 28, is secured within a member 56 which is rotatably supported within the handle 5. The cable 28 is held within the member 56 by means of a knot 57 in co-operation with the usual spring wire sleeve 58. The member 56 is made preferably of insulating material, and has secured thereon a metallic bushing, or sleeve member 59, which is rotatably supported on the balls 53 by means of the ball race 60 formed therein. A sleeve 61 of insulating material is secured on the member 59 and supports a metallic cup-shaped member 62, in which is slidably supported a metallic plug 63, which is held in engagement with the plug 40 by a spring 64. One wire 33, of the cable 28, is secured to the member 62 at 65, and the other wire 34 of the cable 28 is secured to the member 59 at 66. The assembly of the parts 56, 59, 61, 62, and 63; and cord 28, is freely rotatable within the handle 5 on the balls 53, and the crowned surface 41 of the plug 40 provides a single point contact between the plug 40 and the plug 63. Thus, a minimum of frictional resistance to torsional stress is presented by the balls 53 and the point contact between the plugs 40 and 63.

What I claim is:—

1. In combination, in an electric connector construction, a casing therefor for an electric

tool, a block of insulation secured in the casing, and having two passageways for receiving circuit wires, the said block having a threaded end, a metallic ring on the block and to which one terminal of the electric tool is connected, a metallic plug with a curved end in the threaded block to which the other terminal of the electric tool is connected, a metallic tubular member threaded on the block and engaging the metallic ring, a second metallic tubular member, antifriction means between the two metallic tubular members, a cup-shaped metallic member electrically insulated from the second tubular member, a spring-actuated plug in the said cup-shaped member for forcing the same against the curved end of the metallic plug, a recessed member of insulating material threaded onto the second tubular member in which the lead wires are located, one terminal of which wires is connected to the second tubular member and the other terminal to the spring-actuated plug for completing the circuit to the electric tool, the construction being such that the lead wires will be free from any twisting effect when the tool is in use, as described.

2. In an electric tool device, a recessed handle of insulating material, a metallic plug with a round end fixedly secured in said handle, a metallic tube fixedly secured in said handle and insulated from said plug, an electric tool having terminals connected to said plug and said tube, an elongated metallic rotatable member in said handle and carrying lead wires, a single ball bearing support for said rotatable member located substantially midway of its length for balance, a slidably supported and spring-actuated contact terminal secured in and insulated from said rotatable member and engaged on said plug, whereby contact is maintained between said round ended plug and said terminal under all conditions including misalignment of said rotatable member with the axis of said handle, one of said lead wires being connected to said contact terminal and the other of said lead wires being connected to said metallic rotatable member.

3. An electric connector for an electric tool comprising, a handle therefor having a recess therein, a threaded block of insulation secured in the inner end of the recess, a terminal with a round nose end in the block, a metallic terminal ring on the fixed block, an elongated metallic tubular member threaded onto the fixed block in electrical contact with said metallic ring and having a ball race at its opposite end, a second metallic tubular member having a ball race and located within the first tubular member, balls in said races, a tubular member of insulation secured to the second tubular member, a cup-shaped metallic member in the tubular insulation member, a slidable contact in the cup-shaped member, engaging the terminal with a round nose, a spring in the cup-shaped member for forcing the slidable member against the round nose terminal, a recessed member secured to the second metallic tubular member in which the entrance wires are located, the two terminals of which wires are connected to the slidable member and the second metallic tubular member.

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