Sept. 6, 1932. T. I. MOSELEY 1,875,882

ELECTRICAL HAIR WAVER

Filed March 5, 1929

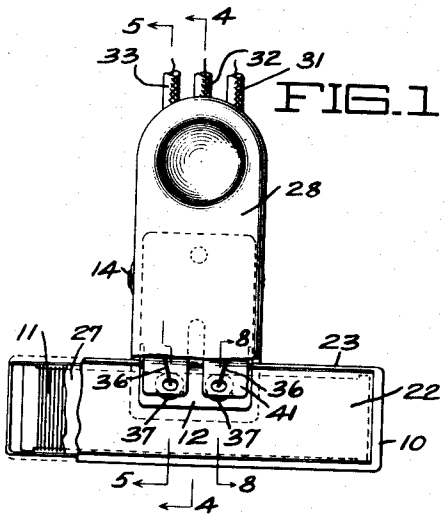


FIG. 1.

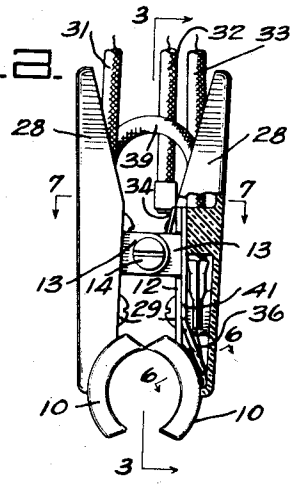


FIG. 2.

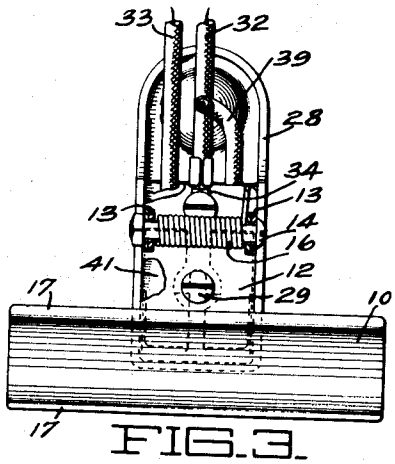


FIG. 3.

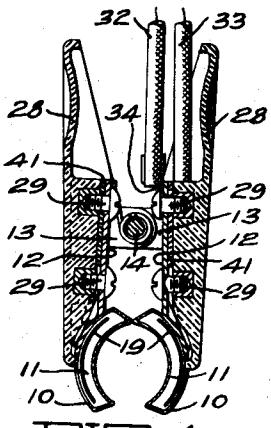


FIG. 4.

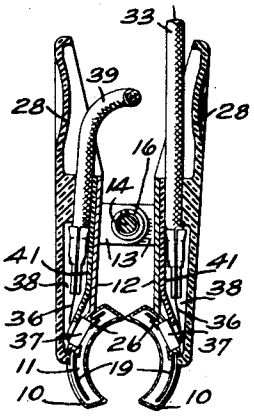


FIG. 5.

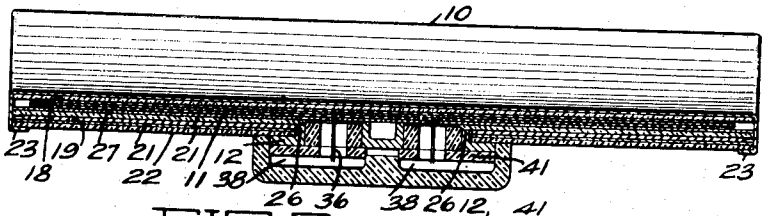


FIG. 6.

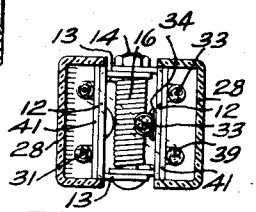


FIG. 7.

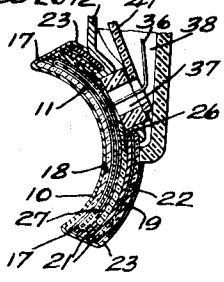


FIG. 8.

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Patented Sept. 6, 1932

1,875,882

UNITED STATES PATENT OFFICE

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ELECTRICAL HAIR WAVER

Application filed March 5, 1929. Serial No. 344,345.

This invention relates generally to electrical devices utilized for heating hair wound about a core or mandrel. A plurality of such devices are generally employed to form an electrical hair waving machine.

It is a general object of this invention to devise a hair waving device of the above character which will preclude the possibility of an operator being burned by contact with hot exposed metallic surfaces.

It is a further object of this invention to devise a hair waving device including a pair of electrically heated members adapted to be clamped upon opposite sides of a mandrel upon which hair is wound, and which members are secured to a handle portion which houses electrical conductors leading to the electrical heating elements.

It is a further object of this invention to devise an electrical heating element for a hair waver heater of the above type, having its external exposed surfaces substantially covered by insulating material and maintained at a relatively low temperature.

It is a further object of this invention to devise a novel connection between a handle portion and an electrical heated member of a hair waiver, whereby transfer of heat from the member to the handle portion is minimized.

Further objects of the invention will appear from the following description in which I have set forth the preferred embodiment of my invention. It is to be understood that the appended claims are to be accorded a range of equivalents consistent with the state of the prior art.

Referring to the drawing:

Figure 1 is a side elevational view of a hair waving device incorporating my invention.

Fig. 2 is an end view of the device shown in Fig. 1.

Fig. 3 is a cross sectional view taken along the line 3—3 of Fig. 2.

Fig. 4 is a cross sectional view taken along the line 4—4 of Fig. 1.

Fig. 5 is a cross sectional view taken along the line 5—5 of Fig. 1.

Fig. 6 is a cross sectional view taken along the line 6—6 of Fig. 2.

Fig. 7 is a cross sectional view taken along the line 7—7 of Fig. 2.

Fig. 8 is a cross sectional detail taken along the line 8—8 of Fig. 1.

The particular device which I have illustrated in the drawing as representative of the preferred embodiment of my invention, consists of a pair of members 10, which are made of suitable metal or some material having comparatively good heat conductivity. Members 10 are preferably oppositely curved, so as to fit upon opposite sides of a suitable mandrel upon which hair has been wound. Electrically heated members of this character have previously been employed, as is disclosed in prior patent issued to Popin No. 1,416,750. In good heat transferring relationship with at least one of the members 10, and preferably with each, are the electrical heating elements 11, which will be presently described in detail. Secured to the members 10 are the extensions 12, to which insulating material is secured for forming handle portions for the device, as will be presently explained. For interconnecting the members 10, I have shown extensions 12 provided with spaced lugs 13, thru which pivot pin 14 extends. A suitable coil spring 16 serves to normally force members 10 together.

In Figs. 6 and 8 I have shown in detail the manner in which the heating elements 11 are associated with members 10, and the manner in which extensions 12 are connected to these members. Thus members 10 are each shown made of sheet metal having flange portions 17 along their edges. Heating element 11 is preferably wound substantially flat, as by looping a suitable resistance wire a plurality of times about a flat mica sheet. This element is positioned in close proximity with the convex face of member 10, and is insulated from direct contact with the same by means of a mica sheet 18. Positioned upon top of heating element 11, and serving to press or securely clamp this element to the convex face of member 10, there is a curved sheet metal member 19. This member 19 is fitted between

the flange portion 17, and insulated from direct electrical contact with element 11 by one or more mica sheets 21. Covering the convex face of member 19, there is a sheet 22 of insulating material, the edges of which are engaged by the crimped edges 23 of flange portions 17. Sheet 22 is preferably made of some material which is a relatively poor conductor of heat, and which is dissimilar from metal in that it will not readily burn an operator touching the same. I have found that a suitable material is a fabric such as asbestos, impregnated with an insulating material such as a phenolic condensate product.

For making mechanical connection between extension 12 and members 10, I prefer that these extensions be secured to the metallic members 19. Thus as shown in Fig. 8 each extension 12 is provided with an integral struck-out eyelet portion 26 which extends thru an aperture in the corresponding member 19 and is crimped to securely clamp the adjacent portion of extension 12 upon the outer insulating sheet 22.

If members 19 were in good heat transferring relationship to elements 11, it is obvious that relatively large amount of heat would flow back thru the extensions 12 and heat these members to a relatively high temperature. To obviate this effect, I preferably impose suitable means between the extensions and the heating elements, to minimize or reduce such transfer of heat. Thus as shown in Figs. 6 and 8, I can provide a layer of heat insulating material 27, made of some suitable material such as asbestos, which covers the inner concave face of member 19 and is imposed between this member and the adjacent heating element 11.

For conveniently handling and manipulating my device, I have shown an extended handle portion 28 secured to each extension 12 and covering the outer faces of these extensions. These handle portions are preferably made of some suitable insulating material, such as a molded phenolic condensate product. For attaching them to extension 12, I have shown suitable means such as screws 29.

For making electrical connections to the heating elements, I have shown a plurality of flexible conductors 31, 32 and 33, which preferably enter the device between the handle portions 28. One conductor 32 is grounded to the metallic portions of the device, as indicated at 34. Terminal wires 36 from each electrical heating element, are extended thru eyelets 37 of insulating material, to inner recesses 38, provided in handle portions 28. Conductors 31 and 33 are likewise extended into recesses 38 where they are suitably electrically connected with terminal wires 36, an interconnecting conductor 39 being employed whereby the heating elements are connected together in series. To prevent grounding of conductors to the extensions 12, insulating strips 41 are inserted between handle portions 28 and these extensions.

It is apparent that my device is of greater utility than former devices of this character having exposed metallic surfaces apt to attain a dangerous temperature. After the device has been in use for a considerable time, an operator may touch any external surface without being burned. The handle portions are not heated to any undesirable degree, due partially to the fact that they are formed of insulating material, and because means is employed in conjunction with the connections of these portions to the members 10, tending to prevent conduction of heat. Substantially all of the heat developed by the heating element is concentrated upon member 10, so that the device is relatively economical in the consumption of electrical current.

The device is normally employed as with former devices of this character, that is, the operator forces together the outer ends of handle portions 28, and thereby spreads the members 10. These members are then positioned upon opposite sides of the mandrel upon which hair has been wound, and upon release of handle portions 28, spring 16 effectively forces members 10 together.

I claim:

1. In a hair waver heater, a metallic member adapted to be placed in thermal contact with a mandrel upon which hair is wound, an electrical heating element in heat transferring relationship with said member, a metallic extension secured to said member, a hollow handle portion secured to said extension, heat insulating material interposed between said extension and said one member, and electrical conductors extended through said handle portion and connected to said element.

2. In a hair waving device, an elongated curved sheet metal member adapted to be placed in thermal contact with hair wound upon a curler, a sheet of insulating material secured to said metallic member and covering the outer convex side of the same, a relatively flat electrical heating element interposed between said member and said sheet of insulating material, another sheet metal member interposed between said element and said sheet of insulating material, a member arranged to extend laterally from said curved sheet metal member, and means for anchoring said laterally extending member to both said sheet of insulating material and the sheet metal member which is interposed between the insulating sheet and the heating element.

3. In a hair waving device, an elongated curved sheet metal member adapted to be placed in thermal contact with hair wound upon a curler, a sheet of insulating material secured to said metallic member and cover-

ing the outer convex side of the same, a relatively flat electrical heating element interposed between said member and said sheet of insulating material, another sheet metal member interposed between said element and said sheet of insulating material, a metallic member arranged to extend laterally from said curved sheet metal member, and means for anchoring said laterally extending member to both said sheet of insulating material and to the sheet metal member which is interposed between the insulating sheet and the heating element, and a handle portion of insulating material secured to said metallic extending member.

4. In a hair waving device, an elongated curved sheet metal member adapted to be placed in thermal contact with hair wound upon a curler, a sheet of insulating material secured to said metallic member and covering the outer convex side of the same, a relatively flat electrical heating element interposed between said metallic member and said sheet of insulating material, lead wires for said element extending through an aperture formed in said sheet of insulating material, a handle portion formed of insulating material, means for securing said handle portion in position upon the outer face of said sheet of insulating material, with one end of said handle portion covering said aperture, said handle portion being hollow to accommodate said lead wires.

5. In a hair waver heater, a pair of metallic members adapted to be placed in thermal contact with a mandrel upon which hair is wound, an electrical heating element in heat transferring relationship with said member, a pair of metallic extensions secured to both said members, a pair of hollow handle portions of insulating material mounted upon said extensions, means for pivotally connecting said extensions together, heat insulating material interposed between said extensions and said members, and electrical conductors extended through said handle portions and connected to said elements.

6. In a hair waver heater, a pair of metallic members adapted to be placed in thermal contact with a mandrel upon which hair is wound, a pair of electrical heating elements in heat transferring relationship with said members, insulating material adapted to cover the outer faces of said members, a pair of metallic extensions secured to said members, a pair of hollow handle portions mounted upon said extensions, means for pivotally connecting said extensions, heat insulating material interposed between said extensions and said members, and electrical conductors extended through said handle portions and connected to said elements.

In testimony whereof, I have hereunto set my hand.

TOMLINSON I. MOSELEY.