May 24, 1932. R. M. KEELE 1,859,366

HAIR WAVING DEVICE

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FIG. 1.

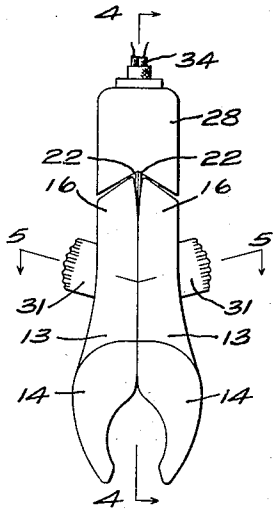


FIG. 2.

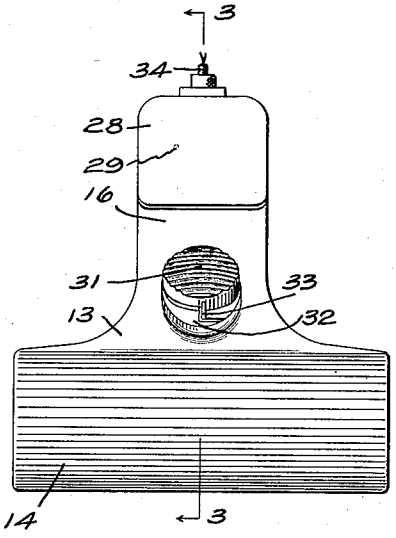


FIG. 3.

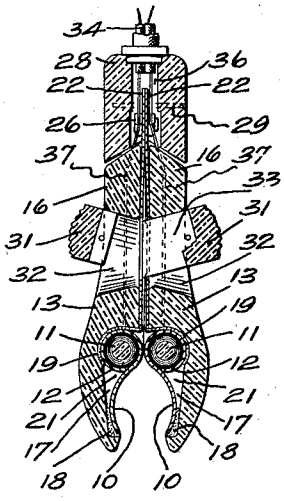


FIG. 4.

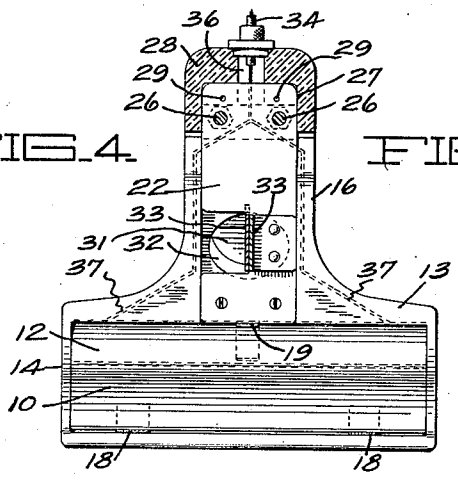


FIG. 6.

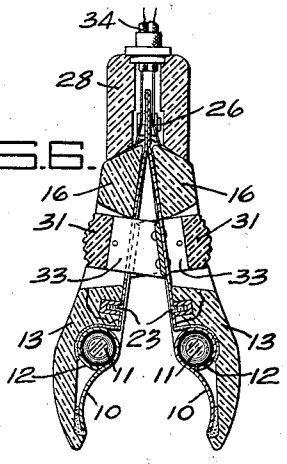


FIG. 7.

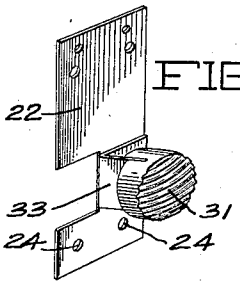
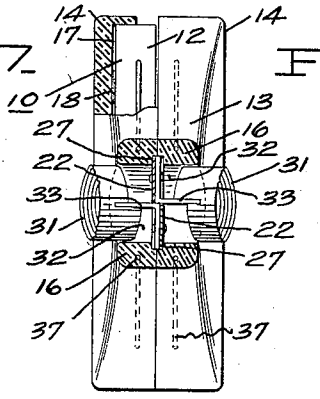


FIG. 5.



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FIG. 9.

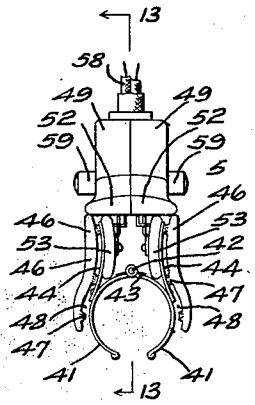


FIG. 8.

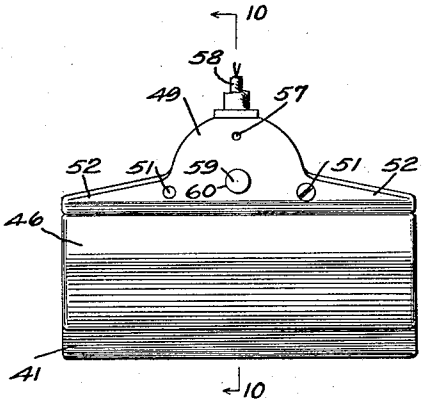


FIG. 10.

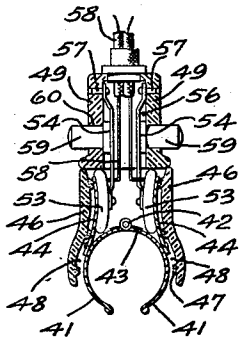


FIG. 11.

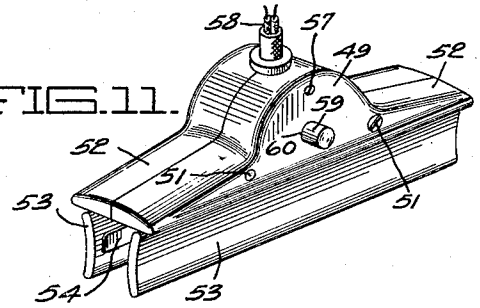


FIG. 13.

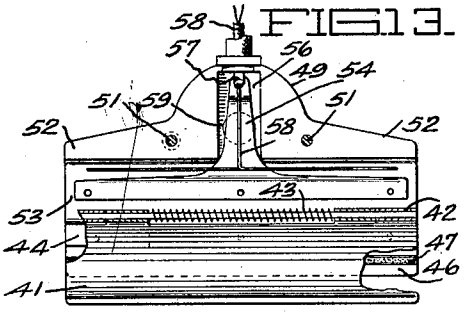
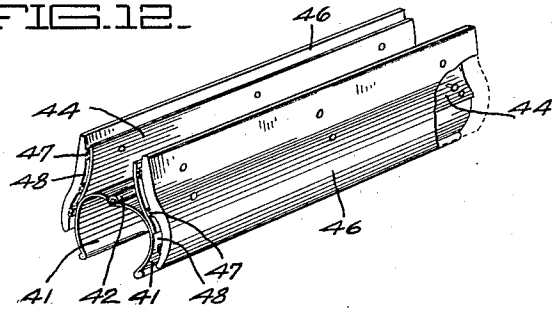


FIG. 12.



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HAIR WAVING DEVICE

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FIG. 15.

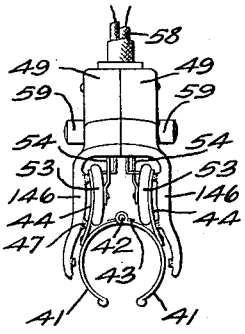


FIG. 14.

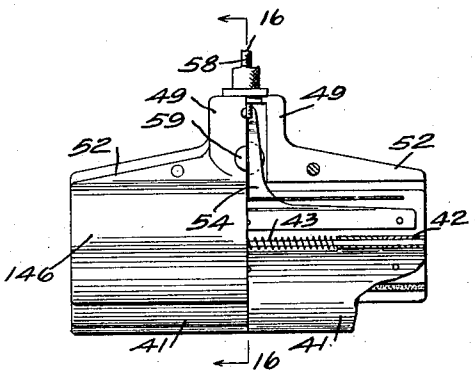


FIG. 16.

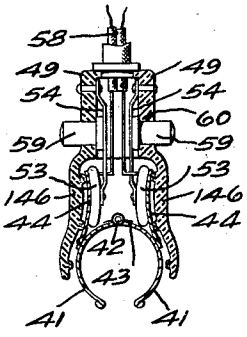


FIG. 17.

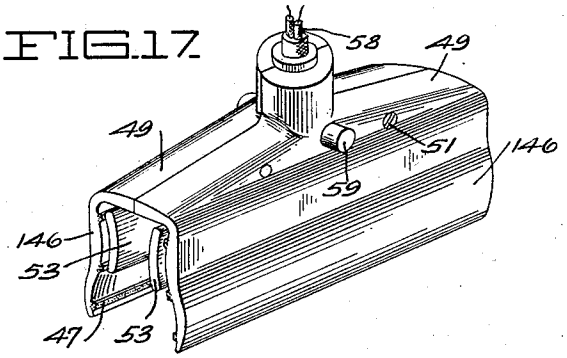
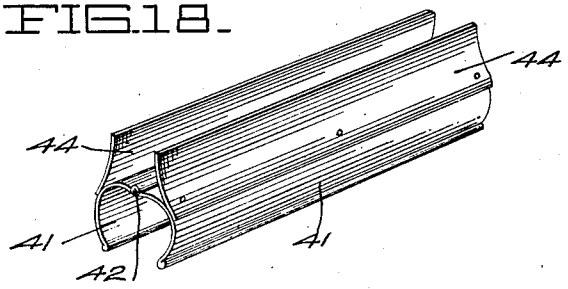


FIG. 18.



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UNITED STATES PATENT OFFICE

RALPH M. KEELE, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO DUART MANUFACTURING CO. LTD., OF SAN FRANCISCO, CALIFORNIA

HAIR WAVING DEVICE

Application filed March 25, 1929. Serial No. 349,602.

This invention relates generally to devices which are operated electrically for waving hair. A plurality of such devices are generally utilized together to form a hair waving machine.

In the construction of electrical hair wavers of the above character, it has been common practice to utilize a pair of metallic members relatively movable and adapted to engage opposite sides of a mass of coiled hair. One or more of these members are associated with suitable electrical heating means. Because of the relatively large amount of exposed metallic surfaces in these prior devices, an operator is apt to be burned when removing them from the hair, and a large number of such devices attached to the hair tends to heat the scalp to an uncomfortable degree.

It is a general object of this invention to device a hair waving device which will concentrate the heat at the point where it is desired and which will preclude the possibility of an operator being burned by contact with exposed surfaces.

It is a further object of this invention to devise a novel construction of electrical hair waving device utilizing insulating material for covering the metallic members of the device.

It is a further object of this invention to devise a hair waving device of the above character having novel means for effecting spreading of the electrical heated members.

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 drawings:

Figure 1 is a side elevational view of the preferred form of my invention.

Fig. 2 is a front view of the device as 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 view similar to Fig. 3 but shows the electrical heating members in spread condition.

Fig. 7 is a detail illustrating one of the spring strip extension members for securing together the electrical heating members.

Fig. 8 is a side elevational view illustrating a modified form of my invention.

Fig. 9 is an end view of the device shown in Fig. 8.

Fig. 10 is a cross sectional view taken along the line 10—10 of Fig. 8.

Fig. 11 is a perspective view illustrating a portion of the device shown in Figs. 8 to 10 inclusive.

Fig. 12 is a perspective view illustrating the other portion of the device when the two portions are separate.

Fig. 13 is a cross elevational view taken along the line 13—13 of Fig. 9.

Fig. 14 is a side elevational view of a further modified form of my invention, a portion of the device being shown in cross section.

Fig. 15 is an end view of the device as shown in Fig. 14.

Fig. 16 is a cross sectional view taken along the line 16—16 of Fig. 14.

Figs. 17 and 18 are perspective views illustrating two parts of the device of Figs. 14 to 16 inclusive, when these parts are separated.

The device shown in Figs. 1 to 7 inclusive, consists of a structure formed by a pair of relatively movable members 10, which are preferably oppositely curved so as to fit upon opposite sides of a mass of coiled hair. Generally in operating such devices hair is

wound about a suitable mandrel and then covered by a suitable pad, after which opposite sides of the coiled mass are engaged by members 10. These members are preferably made of some material having good heat conductivity, such as aluminum or other metal. In heat transferring relationship with at least one and preferably with both members 10, are the electrical heating elements 11. For convenience I have shown these elements inserted in suitable metal casings 12, these casings being in turn secured to the inner edges of members 10.

For retaining members 10 and their associated heating elements in normal operating position, I have shown a structure formed in part by a pair of members 13, which are preferably made of insulating material having poor heat conductivity, such as a molded phenolic condensate product. Each member 13 has one portion 14 of slightly greater width than the length of members 10, and a laterally projecting portion 16 of reduced width which serves as a part of a handle for the device. Portion 14 of each member 13 is provided with a concavity 17, which serves to receive its associated member 10 and heating element 11. I prefer to separate the members 10 from direct contact with the insulating material of members 13, by suitable heat insulating material 18, and to likewise separate casings 12 from the adjacent surfaces of member 13 by heat insulating material 19. This material may be asbestos, or asbestos fibre impregnated with a suitable material such as a phenolic condensate product. In practice each member 10 and the casing 12 can be wedged into its corresponding concavity 17, to avoid the necessity of additional securing means. Transmission of heat between members 10 and members 13 is also minimized by providing a substantial heat insulating air pocket such as indicated at 21.

For movably connecting the members 10, I prefer to connect together the members 13 by suitable means such as a pair of spring metal strips 22. These strips normally extend laterally to the length of members 10, and have their ends nearest members 10 suitably secured to members 13 as by means of screws 23 inserted thru apertures 24 in members 22. The other corresponding ends of spring strips 22 are suitably secured together as by means of rivets or bolts 26. The inner exposed faces of members 13 are provided with suitable recesses 27 which serve to receive spring strips 22 and thus preclude accidental contact with the edges of the strips. In order to complete a handle for the device, I preferably provide an additional member 28 of insulating material, extending coextensively with portions 16, and secured to the corresponding ends of spring strips 22, by suitable means such as pins or screws 29.

In order to permit separation of members 10, thus facilitating engagement or disengagement of these members with a mass of coiled hair, I provide a pair of fingerhold members 31, which preferably project thru apertures 32 in portions 16. Fingerhold portions 31 are likewise preferably made of insulating material, and are connected to strips 22 by suitable means such as interconnecting members 33. As is clear from Figs. 3 and 6, the fingerhold portion upon the right hand side of the device is carried by and connects with the left hand spring strip 22, and correspondingly the fingerhold portion upon the opposite or left hand side of the device, connects with the right hand spring strip 22. Thus when fingerhold portions 31 are pressed together, spring strips 22 form a pair of levers acting about fasteners 26 as a common fulcrum for forcing members 10 apart. However when portions 31 are released, the resilient nature of strips 22 causes members 10 to be forced together.

For making electrical connections to the electrical heating element, I prefer to conduct flexible conductors 34 into a concavity or recess 36 in insulating member 28. Terminal wires 37 from the electrical heating element lead thru suitable passages in insulating material of members 13, to recess 36, where they are suitably connected to the ends of conductors 34.

It is characteristic of the above device that the heat of the electrical heating elements is conducted directly to members 10 and therefore concentrated upon the mass of coiled hair, and a comparatively small amount of heat is transmitted to the spring strips 22 and to the insulating members 28 and 13. The outer surfaces of the device are therefore always at a relatively low temperature, and can be safely engaged by the operator without danger of burning. Furthermore a relatively small amount of heat is radiated from the device as a whole, so that when a number of these devices are engaged with the hair, no disagreeable amount of heat will be transmitted to the scalp.

In Figs. 8 to 13 inclusive I have shown a modification of my invention in which the device is constructed of two separable structures. One structure consists principally of the metallic members which are clamped upon opposite sides of a mass of coiled hair, while the other part consists of insulating material carrying electrical heating elements. Thus I have shown curved metallic members 41 corresponding to the members 10 of Figs. 2 and 3. These members are secured together by a suitable hinge connection 42, provided with a suitable coil spring 43, whereby members 41 are normally urged together. Secured to each member 41, there is a heat transmitting strip 44 made of some material having good heat conductivity, such as

metal. Secured to the metallic faces of this structure, are the members 46 of insulating material such as a molded phenolic condensate product. Preferably small pads or bosses 47 are interposed between insulating members 46 and the outer faces of members 41 and 44, to provide heat insulating air pockets or spaces 48.

In order to cooperate with the structure described above, I provide another structure consisting for example of a pair of duplicate members 49 made of insulating material such as a molded phenolic condensate product, secured together as by means of screws 51. Members 49 have extensions 52, which are substantially coextensive with the insulating members 46. As electrical heating means, I provide a pair of electrical heating elements 53 and I prefer that these elements be carried on the ends of spring metal levers 54. These levers extend into a concavity 56 provided between members 49 and are fulcrumed at their upper ends on members 49 as by means of screws or pins 57. The electrical conductors 58 extend into concavity 56, and are suitably connected with the terminal wires of electrical heating elements 53. Elements 53 preferably have concave outer faces to fit within the inner convex faces of strips 44.

I prefer to provide means whereby the heating elements 53 may be manually forced together, when it is desired to engage or disengage these elements from the heating conducting strips 44. As shown in the drawings I have provided a pair of finger engaging sections 59 extended thru apertures 60 in member 49. The inner ends of these buttons engage the spring levers 54 at points intermediate heating elements 53 and screws 57, whereby when the buttons are forced inwardly, heating elements 53 are forced together.

In using the device described above, the metallic members 41 are first engaged upon opposite sides of a mass of coiled hair, and then the heating elements 53 are engaged with the heat conducting strips 44 while the buttons 59 are pressed inwardly. Release of buttons 59 permits elements 53 to press outwardly upon the inner faces of heat conducting strips 44, thus forming a good heat transferring contact and serving to frictionally retain the two structures together.

One advantage of the above device described with respect to Figs. 8 to 12 inclusive, is that the heating elements may be moved to an out-of-the way position before the members 41 are removed from the mass of coiled hair, and likewise members 41 can be engaged with the hair before the heating elements are brought into operative position.

In that form of my invention shown in Figs. 15 to 18 inclusive, I also provide separable structures, but the structure carrying the electrical heating elements also carries all of the insulating material. Thus in this case I provide depending portions 146, formed integral with the insulating members 49. Thus when the electrical heating elements 53 are removed from heat transmitting members 44, accidental contact with the heating elements 53 is precluded, as they are always positioned between insulating portions 146. The part which is engaged with the mass of coiled hair is a simple structure as shown in Fig. 18, consisting merely of metallic members 41 and heat transmitting members 44.

In all of the modifications described above it will be noted that I utilize one structure for engaging and transmitting heat to the hair, and another structure serving to cover and insulate the first structure. I also utilize heat insulating air pockets between the heated metallic parts and the insulating material, and in all of the forms shown, members are pressed inwardly for spreading the members 10 or 41.

I claim:

1. In a hair waving device, a pair of oppositely disposed elements adapted to impart heat to a coiled mass of hair, a pair of lever members extending from said elements, and a pair of finger hold members connected to said lever members at points located between the fulcrums of said lever members and said elements, whereby forces are adapted to be applied to said lever members to effect disengagement of said elements from heat transferring relationship with the hair.

2. In a hair waving device, a pair of oppositely disposed elements adapted to impart heat to a coiled mass of hair, a pair of lever members extending from said elements, and a pair of finger hold members connected to said lever members at points located between the fulcrums of said lever members and said elements, whereby forces are adapted to be applied to said lever members for moving said elements apart when said finger hold members are forced together.

3. In a hair waving device a pair of oppositely disposed elements adapted to impart heat to a coiled mass of hair, a pair of resilient lever members extending from said elements to a common fulcrum and a pair of finger hold members connected to said lever members at points located between said fulcrum and said elements, each of said finger hold members extending from one of said lever members through an aperture in the other lever member whereby forces are adapted to be applied to said lever members for moving said elements apart.

4. In a hair waving device a pair of oppositely disposed elements adapted to impart heat to a coiled mass of hair, a pair of resilient lever members extending from said elements to a common fulcrum and a pair of finger hold members connected to said lever

members at points located between said fulcrum and said elements, each of said finger hold members extending from one of said lever members through an aperture in the other lever member whereby forces are adapted to be applied to said lever members for moving said elements apart when said finger hold members are forced together.

5. In a hair waving device, a pair of oppositely disposed elements adapted to impart heat to a coiled mass of hair, a pair of resilient members extending from said elements for movably supporting said elements, a pair of finger hold members, each of said finger hold members extending from one of said resilient members and passing through an aperture in the other of said resilient members, whereby depression of said finger hold members toward each other causes said elements to be moved further apart.

6. In a hair waving device, a pair of oppositely disposed elements adapted to impart heat to a coiled mass of hair, a pair of resilient members extending from said elements for movably supporting said elements, a pair of finger hold members, each of said finger hold members extending from one of said resilient members and passing through an aperture in the other of said resilient members, each of said finger hold members adapted to apply a force against the inner surface of one of said resilient members, whereby said elements are spread apart when said finger hold members are forced together.

7. In a hair waving device, a pair of oppositely disposed elements adapted to impart heat to a coiled mass of hair, a lever member extending from each of said heating elements to a fulcrum, means for applying a force to each of said lever members between its associated heating element and fulcrum to effect disengagement of said heating elements from heat transferring relationship with the hair.

8. In a hair waving device, a pair of members adapted to engage oposite sides of a coiled mass of hair, members extending laterally from said first members and movably connecting said members together, a pair of finger hold members, electrical means for heating said first named members, means connecting said finger hold members and said laterally extending members whereby when said finger hold members are forced together, said first named members are moved apart, and insulating material covering the sides of said first named members and said extending members, said material being apertured to receive said finger hold members.

9. In a hair waving device, a pair of metallic members adapted to engage opposite sides of a coiled mass of hair, lateral metallic extensions secured to said members, said extensions being secured together thereby permitting movement between said members, members of insulating material covering the outer face of each of said members and a portion of the outer face of each extension, finger hold members projecting thru said insulating members for effecting separating movement of said metallic members, electrical heating means associated with said metallic members, means for minimizing transmission of heat to said insulating members, and insulating material covering the remaining portions of the outer faces of said extensions.

In testimony whereof, I have hereunto set my hand.

RALPH M. KEELE.