April 24, 1934. W. G. SHELTON 1,956,256

HAIR WAVING HEATER

Filed Jan. 9, 1932

Fig. 1.

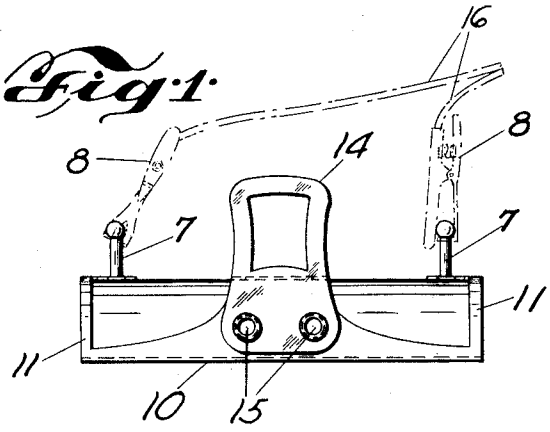



Fig. 3.

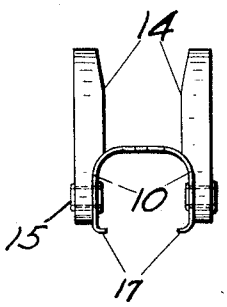



Fig. 2.

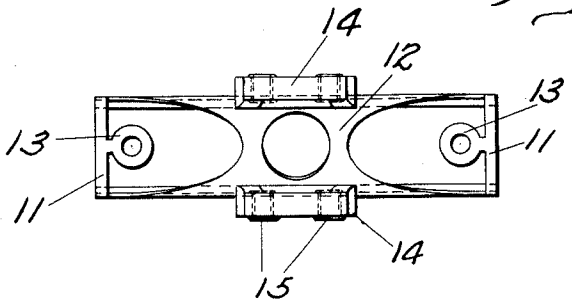



Fig. 4.

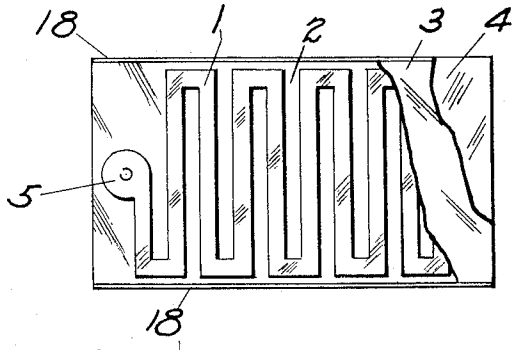
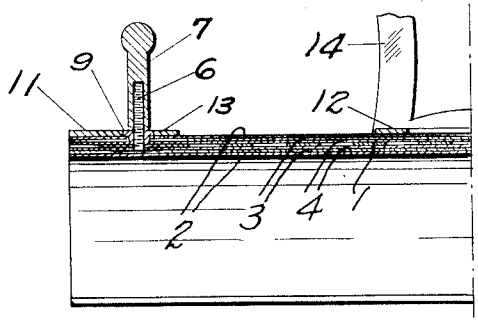



Fig. 5.




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# UNITED STATES PATENT OFFICE

1,956,256

## HAIR WAVING HEATER

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11 Claims. (Cl. 219—24)

This invention relates to the hair waving art and consists in a novel flexible heater device for use particularly in permanent waving.

In forming the so-called permanent waves, the hair is wound about a curling rod either in a helix from the scalp outwardly or in a flat coil wound spirally from the outer end of the strand inwardly. A moisture containing supply pad is applied and the wound strand then inserted in a heater of tubular or arcuate shape, according to whether the corkscrew or Croquignole type of curl is being formed. The heater is usually rigid and provided with a suitable resistor and with movable jaws for gripping the curl.

Due to irregularities in the contour of the curl, and variations in the size thereof, such heaters do not intimately envelop the curl in all cases, resulting frequently in lost heat and uneven heating of the curl. Flexible heaters have been suggested which are adapted to more intimately engage the curl than the above tubular and arcuate heaters. Such devices, however, usually contain as an inseparable part thereof laminations of paper, fabric or similar material which are injuriously affected by heat, moisture and chemical conditions incident to the hair waving operation and are not sufficiently substantial to withstand the handling and manipulation resulting from repeated use, or do not constitute a complete self-container heater unit including moisture retaining as well as insulating and heat distributing elements. Moreover, some of the flexible heater devices at present known cannot be applied to both the corkscrew and Croquignole types of curls.

One object of the present invention is to provide a hair waving heater device comprising a heater portion which is sufficiently flexible to intimately envelop a wound hair strand, and a substantial framework portion including spring clip elements for holding the heater applied to the curl.

Another object is to provide a novel flexible heater comprising a complete durable self-contained unit which may be repeatedly used with ordinary absorbent supply pads.

Another object is to provide a heater of the above type which will be comparatively light and inexpensive and which will be applicable to either of the corkscrew or Croquignole types of waves.

These objects and others are attained substantially by the structures illustrated in the accompanying drawing, in which—

Figure 1 is a side view of the assembled heater and clamp.

Figure 2 is a top view of the clamp.

Figure 3 is an end view of the same.

Figure 4 is a top view of the flexible heater with some of the laminations removed.

Figure 5 is a vertical longitudinal section through the flexible heater.

The flexible heater pad is comprised of a series of laminations or layers on each side of a thin metal grid resistor 1, the arrangement of the laminations at each side of the grid being similar. Layers of mica 2, or similar insulating material, directly engage the grid. The intermediate layers 3 are formed of asbestos paper, and layers 4 of pliable aluminum are applied to the outside. The mica and asbestos layers serve as insulation for the grid resistor, and the outer aluminum covering serves to distribute the heat evenly over the surface of the heater and also prevents the passage of moisture through the heater. The aluminum layers are sufficiently substantial to resist wrinkling, cracking and wearing effects of repeated usage. Suitable outer layers of resilient material may be substituted for the aluminum layers, if desired. The side edges of the layers are preferably pressed together and overlapping lips 18 of the outer covering bent over to hold the layers assembled and to form a groove for interengagement with the jaws of a clamp member to be described hereafter.

The grid 1 winds back and forth over a substantial portion of the heater and has perforated ends 5 which engage threaded studs 6 embedded in the pad preferably between two of the lower layers. A sleeve-like cap 7 is screwed onto the studs 6 and provides a connection terminal for spring clips 8 on an electric supply cord 16. A bushing 9 insulates the outer aluminum layers of the heater from the current carrying parts.

The heater pad is applied to a wound hair strand by means of a clamp member including rigid jaws 10 extending the length of the pad along the sides thereof and provided with arcuate resilient connecting strips 11 and 12. Arcuate strips 11, connecting the ends of the jaws, have perforated projections 13 disposed to fit over studs 6 to prevent relative movement between the flexible heater and clamp. Strip 12 is perforated to lighten the structure.

Manipulating handles 14 are secured to jaws 10 by means of rivets 15. The jaws 10 are provided with lips 17 at their lower ends for engaging the lower edges 18 of the flexible pad to assist in flexing the heater pad. It will be obvious that converging pressures applied to the handles 14 will cause jaws 10 to open, permitting the insertion of a prepared curl, and that upon release of

the handles the spring effect of arcuate strips 11 and 12 will cause the jaws to firmly grip the wound hair strand.

In operation the hair strand is wound in the usual manner about a curling rod either in a helical or a flat spiral coil. An ordinary moisture laden supply member of fabric, blotting paper or similar material is then wrapped about the coil and the assembled heater and clamp applied over the curl either from the side or the top, according to the manner of winding the hair.

Due to the lightness and flexibility of the heater construction, and the proximity of the resistor to the hair when the device is applied to a curl, the heater is preferably used with comparatively low voltage current which is imperceptible to the human touch and which can produce no harmful effects in case of short circuit or rupture of the insulating portions of the pad. The materials of which the flexible heater is formed are not injuriously affected by heat, moisture, and chemical conditions arising during hair waving and accordingly the pad may be used in repeated operations, it being necessary to renew the supply member only with each operation.

The clamp member is made of substantial and durable material and when assembled with the flexible heater pad reinforces the sides and ends thereof and provides an unusually light, effective and sturdy heater unit. The clamp and pad are preferably maintained assembled and ready for application over a moistened supply wrapped curl and attachment of supply wiring to the heater terminals. However, the relatively inexpensive flexible heater pad may be readily renewed or replaced in case of damage thereto, as by burning out of the grid, without the necessity of replacing the clamp member, as is the case with many heaters now in use.

Obviously, various details of the selected embodiment illustrated are not essential to the invention. The layers of mica, asbestos and aluminum of the heater pad may be replaced by layers of other materials possessing suitable flexibility, durability, and other qualities referred to above. Different means of attachment of the heater pad to supply wiring may be provided and any suitable flexible resistor might be inserted between the laminations and the pad, a thin sheet of mica having small gauge wire wound about it effectively serving the purpose. These and other variations might be made without departing from the spirit of the invention and exclusive use of all such modifications as come within the scope of the appended claims is contemplated.

What is claimed is:

1. A hair waving device comprising, a flexible sheet-like heater pad containing a resistor and adapted to be repeatedly used in hair waving operations without deterioration, there being terminal studs projecting from said pad for attachment of electric wiring, and a clamp member including recessed elements insulated from said studs and cooperating with the same to maintain said clamp and heater properly assembled as a compact heater unit.

2. In hair waving apparatus, a flexible sheet-like heater pad containing a resistor and layers of insulating and moisture excluding materials, said materials being capable of resisting deteriorating effects of repeated usage, and a clamp for maintaining said pad intimately enveloping a substantial portion of a wound hair strand and comprising jaw elements extending substantially the length of said pad and along the edges thereof, manipulating handles, and an arcuate sheet spring element resiliently connecting said jaws and shaped to surround a substantial portion of the curl.

3. In hair waving apparatus, a flexible sheet-like permanent heater pad containing a resistor and layers of insulating and moisture excluding materials, a renewable absorbent supply pad for engaging the hair, and a clamp for maintaining said supply and heater pads intimately enveloping a wound hair strand, said clamp including resiliently connected jaws, manipulating handles, and an arcuate body portion, said jaws and body portion overlying and reinforcing substantial portions of said pad.

4. In hair waving apparatus, a flexible sheet-like heater pad including a resistor and layers of insulating and moisture excluding materials, electric terminals projecting from the upper surface of said pad, and a clamp member for maintaining said pad intimately enveloping a wound hair strand, said member including jaw elements extending substantially the length of said pad, arcuate resilient elements connecting the middle and end portions of said jaws, and manipulating handles, said jaw elements and arcuate portions overlying and reinforcing substantial portions of said pad, and said arcuate end portions including recesses engaging said terminals to maintain said pad and clamp member in proper assembled relation as a compact heater unit.

5. In hair waving apparatus, a flexible sheet-like heater pad containing a resistor having rigid terminals projecting from said pad, and a separable skeleton frame surrounding the periphery of said pad and including elements cooperating with said terminals to maintain the assembly and handles for applying the assembled device to and removing the same from a curl.

6. In hair waving apparatus, a flexible sheet-like heater pad containing a resistor and terminal projections and adapted to be repeatedly used in hair waving operations without substantial deterioration, and a separable clamp member for maintaining the heater in engagement with a prepared curl and having elements arranged to interengage with said projections to properly maintain the assembly throughout repeated use of the apparatus.

7. Apparatus for Croquignole waving of hair comprising a flexible sheet-like pad for pliably enveloping a wound strand of hair, said pad including substantially coextensive layers of insulating and moisture excluding and heat conducting members, and a resistor extending back and forth substantially throughout the length and width of said pad, there being rigid terminals on said resistor projecting transversely from the face of said pad for attachment of electric wiring.

8. In hair waving apparatus, a flexible sheet-like heater and insulating pad containing a resistor and adapted to be used repeatedly in successive hair waving operations, and a skeleton frame for yieldingly clamping said pad in engagement with a wound strand of hair, said frame including relatively narrow opposing jaws for tucking opposite edges of said pad towards each other near the base of the hair strand.

9. In hair waving apparatus, a flexible sheet-like pad including moisture excluding material, heat distributing material and a heating element, and a member for holding said pad in position on a wound strand of hair, said member comprising a rectangular skeleton frame of thin spring material consisting of spaced sides and ends for

engaging the edges of said pad to press the same against the strand enclosed thereby, there being spaced handles projecting from the opposite sides of said frame to manipulate the same to distort the frame for application to and removal from the wound strand.

10. In hair waving apparatus, a flexible sheet-like pad including moisture excluding material, heat distributing material and a heating element, there being terminals projecting from said pad transversely of the face thereof, and a member for holding said pad in position on a wound strand of hair, said member comprising a rectangular skeleton frame of thin spring material consisting of spaced sides and ends for engaging the edges of said pad and pressing the same against the wound strand of hair enclosed thereby, said ends having inward projections perforated to receive said terminals and thereby position the pad and frame relative to each other, there being spaced handles projecting from the opposite sides of said frame to manipulate the same to distort the frame for application to and removal from the wound strand.

11. In hair waving apparatus, a pliable sheet-like heater pad containing a resistor and moisture excluding and heat distributing elements, and a yielding but form sustaining light-weight skeleton frame for applying said pad to a wound strand of hair and including means for manually flexing the apparatus during its application to and removal from the hair strand, said pad and frame comprising an assembly arranged for handling as a unit throughout repeated hair waving operations.

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