June 6, 1939. F. V. SCHLEIMER 2,161,202

HAIR WAVING APPARATUS

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FIG_1_

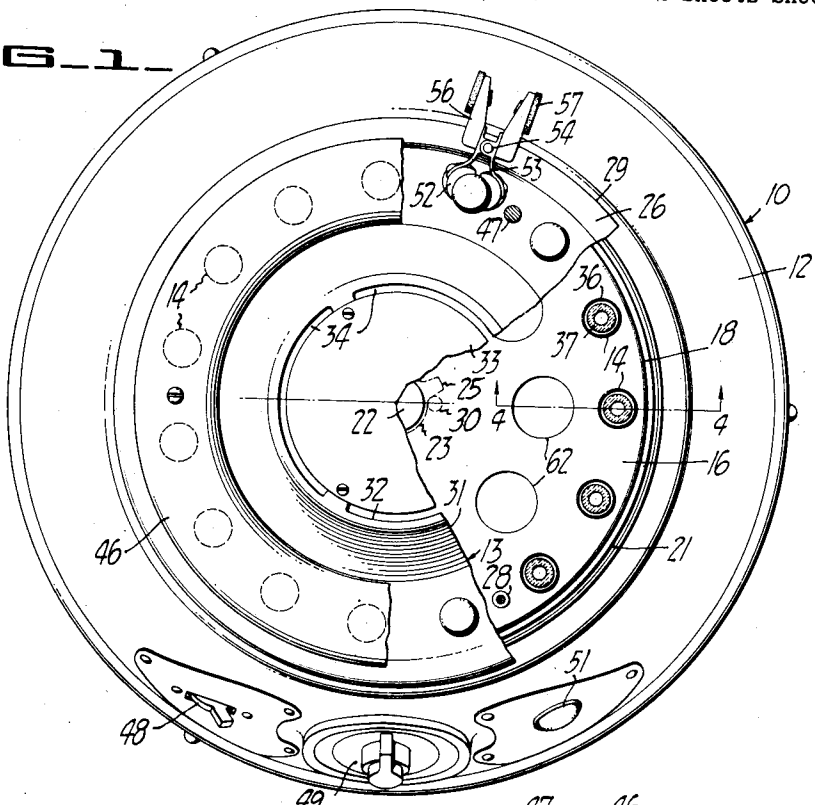

FIG_2_

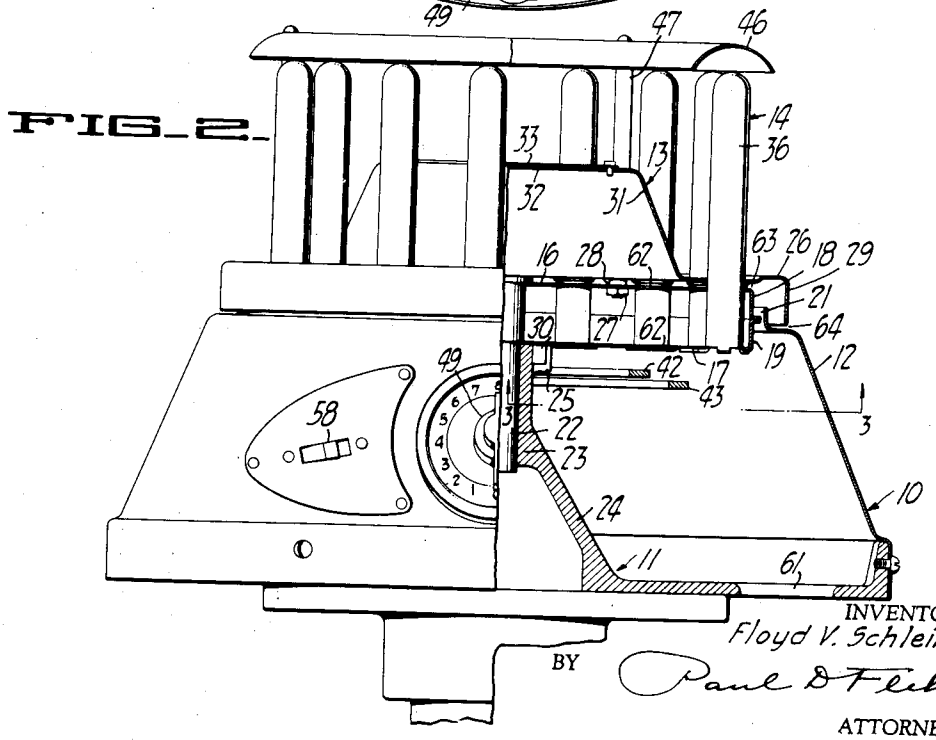

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FIG. 4.

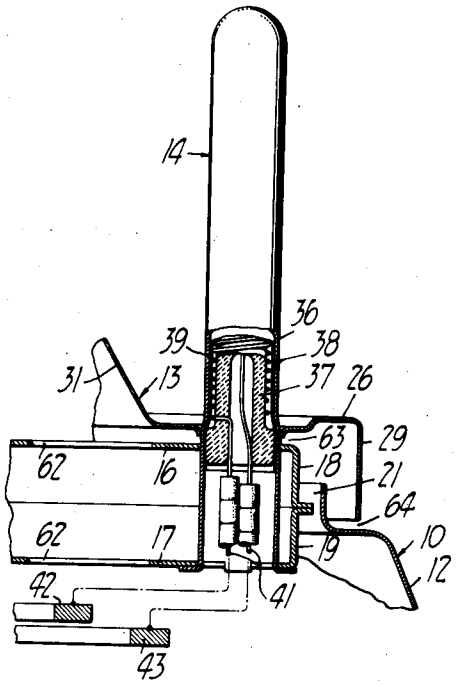


FIG. 3.

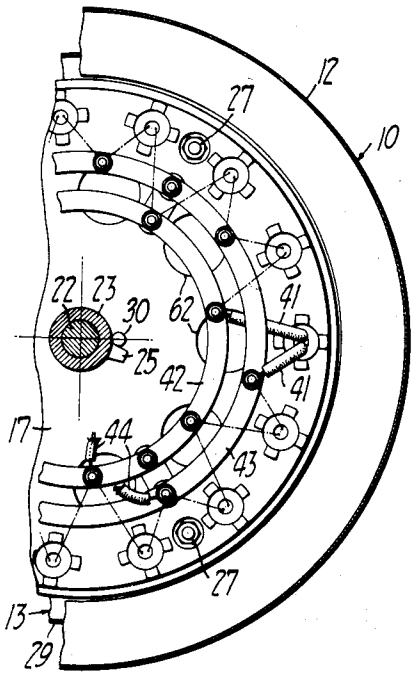


FIG. 5.

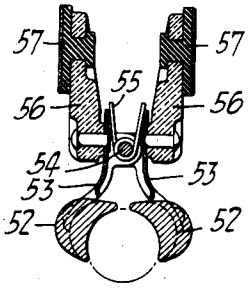
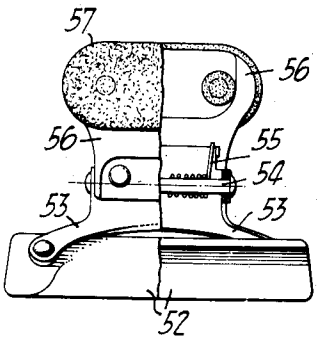


FIG. 6.



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UNITED STATES PATENT OFFICE

2,161,202

HAIR WAVING APPARATUS

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Application March 29, 1937, Serial No. 133,532

5 Claims. (Cl. 132—36)

This invention relates generally to apparatus for the waving of human hair, where heat is employed to render the wave permanent or durable. More particularly, it relates to apparatus of the pre-heater type, such as disclosed and claimed in Patent No. 1,972,186, granted September 4, 1934.

In apparatus of the pre-heater type, heat storage devices or applicators are employed, in which a sufficient amount of heat is stored to carry out a waving operation. A pre-heating apparatus is provided by means of which the devices or applicators can be heated to a predetermined temperature, after which they are applied to the wound hair.

It is an object of the present invention to improve particularly upon the construction of the pre-heating means employed, whereby this part of the equipment is greatly simplified, made more compact, and is more convenient to employ by a beauty parlor operator.

Further objects of the invention will appear from the following description in which the preferred embodiment of the invention has been set forth in detail in conjunction with the accompanying drawings.

Referring to the drawings:

Fig. 1 is a plan view of a pre-heater apparatus incorporating the present invention, parts being broken away for the sake of clarity.

Fig. 2 is a side elevational view of the machine illustrated in Fig. 1, with the right-hand portion of this view being shown in cross-section.

Fig. 3 is a fragmentary detail taken along the line 3—3 of Fig. 2.

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

Fig. 5 is a cross-sectional detail showing one of the heat storage devices or applicators.

Fig. 6 is a side elevational view of the device shown in Fig. 5, with the right-hand portion of this view being in cross-section.

The apparatus illustrated in the drawing consists generally of a supporting means 10, in the form of a metal housing. More specifically the housing as illustrated includes the base casting 11, to which is attached the metal shell 12, which forms the side walls of the housing. Carried by the housing 10 there is a structure 13, which in turn serves as a mounting for a plurality of electrical heating elements 14.

While it is apparent that the structure 13 can vary as to details, the arrangement illustrated makes use of a pair of circular metal plates 16 and 17, which are secured together by the edge flanges 18 and 19. This assembly is disposed within a circular opening 21, formed in the upper side of the housing 10. Both the plates 16 and 17 are secured to a vertical stud 22, which in turn is seated within the fixed bearing 23. Bearing 23 is shown formed as a part of the base casting 11, and is joined to the base by the conical shaped portion 24. By means of this arrangement the structure 13 is free to rotate or oscillate about a vertical axis. Rotation can be limited to approximately 360°, by means of a pin 30 depending from plate 17, which is adapted to engage a lug 25, formed on the bearing 23.

Above the metal plate 16 there is an annular dished metal cover 26, which is shown secured to plate 16 by bolts 27, or like attaching means. Spacing means 28 serve to retain these metal plates out of direct engagement, in order to facilitate ventilation. The periphery of the cover 26 is provided with a down-turned flange 29, in order to properly conceal the opening 21. Also the center portion of cover 26 is dished upwardly and is shown provided with a center opening 32, normally covered by disc 33. Openings or slots 34 facilitate escapement of convection currents of air.

A suitable construction for each of the heating elements is illustrated in Fig. 4. Thus each element consists of a tubular metal shell 36, having its upper end closed, and having its lower end extending through aligned openings provided in plates 16 and 17. Within the tubular shell 36 there is a refractory tube or core 37, upon which the resistance wire or conductor 38 is wrapped. Surrounding the wires 38 there is an application of relatively thin insulating material 39 like mica. In order to afford relatively tight engagement with good transfer of heat from the resistance conductor, the sheath is reduced in diameter by a suitable spinning operation, so that it presses tightly upon the mica insulation 39. The terminal wires 41 extend from the bottom of the sheath and are connected with the circular bus conductors 42 and 43. These bus conductors are suitably mounted upon the bottom of plate 17, and are in turn connected by the flexible cord 44, to a source of electrical current.

Current regulation, in order to secure a relatively even temperature of operation, can be had by the use of thermostatic means, or by the use of ballast wire in winding the heating element, in place of conventional resistance wire.

As will be evident from an inspection of Figs. 1 and 2 the disposition of the heating elements 14 is such that they are circumferentially spaced

about the structure 13, and are therefore readily accessible. In order to minimize possibility of accidental contact with the heating elements, an annular guard ring 46 is provided, which extends over the upper ends of the heating elements, and is held in proper position by suitable attaching means 47.

In conformance with conventional practice, the electrical circuit connection to the apparatus can include an on and off switch 48, a time switch 49, and a pilot light 51.

A suitable type of heat storage device for use with the apparatus described above, is shown in Figs. 5 and 6. Features of this device are being disclosed and claimed in a co-pending application. Briefly each device consists of a pair of members 52, formed of suitable metal, and having sufficient mass to enable a proper amount of heat to be stored in the same, when heated to a temperature of say 600° F. Members 52 are connected to arms 53, which in turn have a hinged connection 54. A spring 55 serves to normally urge the members 52 together. The handles 56 of non-metallic material, such as a molded phenolic condensate product, are attached to the arms 53. Rubber pads 57 are shown attached to the handles 56, in order to avoid burning in the event handles 56 become unduly heated. A device of this character has been shown clipped to one of the heating elements 14, in Fig. 1. Preferably each heating element 14 is only of sufficient height that one heat storage device can be clipped upon the same. It will be apparent that each heating element could be made longer so that say two or more heat storage devices could be clipped upon the same. However, I prefer not to extend the length of the heating elements, because when a number of heat storage devices are clipped to a vertical heating element, the devices do not tend to be heated evenly, and the uppermost device may be heated to a higher temperature than the lowermost device.

It will be evident to those familiar with apparatus of this character, that in carrying out a waving operation a sufficient number of heat storage devices for carrying out the waving of a complete head of hair, are attached to the elements 14, and the current applied. In this connection the operator can safely rely upon use of the time switch 49, which can be set for a pre-heating operation over a given amount of time. After the heat storage devices have been pre-heated to a predetermined temperature, say in the neighborhood of 600° F., they are detached by the operator and applied to the wound hair, which in the meantime has been prepared to receive the heat storage devices. In this instance the heat storage devices are made particularly for use in Croquignole hair waving. In Croquignole hair waving, so-called Croquignole protectors are clamped upon strands of hair, and the strand is then wound upon a curler, beginning with the tip of the strand, and winding down towards the protector. After the wound hair has been tensioned a pad moistened with wet hair waving solution is applied over the curler, and then the heat storage devices applied upon top of the pad. The heat stored in the devices is sufficient to vaporize the moisture contained in the pads, and in general to afford sufficient heating of the wound hair to impart permanency to the wave.

It will be noted that the apparatus has been constructed so that a minimum amount of heat is conducted to the sheet metal parts forming the housing 10 and structure 13, and that openings are provided for passage of convection currents of air, so that any heat transferred to such metal walls will not take place to a serious degree. In this connection the openings 61 in the bottom casting 11, permit inflow of cool air from the atmosphere, while openings 62 in the plates 16 and 17, permit convection currents of air to flow upwardly and out through the opening 32 by way of slots 34. Also some convection currents of air may flow about the flanges 18 and 19, and from thence through space 63, and out through the opening 32 and slots 34. Some cool air from the atmosphere may be drawn directly from the sides of the housing 10, through the annular space 64 below flange 29.

It has been previously stated that the roller mounting for the structure 13, facilitates use of the apparatus by an operator. This may be better understood when it is pointed out that a beauty parlor operator stands at one side of the apparatus, while transferring the heat storage devices from the apparatus to the prepared head of hair. With the structure 13 being rotatable, all of the heat storage devices can be readily removed from one side of the apparatus, without the slightest inconvenience. In this connection note that when a heat storage device is clipped upon an associated heating element, the handles of the device project as illustrated in Fig. 1, so that by relatively light force applied to the projecting handles, the operator may turn the structure 13 to any desired position.

I claim:

1. A hair waving pre-heater for use in conjunction with a plurality of heat storage devices, said devices each being adapted for application to wound hair, a base support, a structure rotatably carried by said support, and a plurality of electrical heating elements carried by said structure, said element being shaped to enable application of said devices to the same.

2. A hair waving pre-heater for use in conjunction with a plurality of heat storage devices, said devices each being adapted for application to wound hair, a base supporting means, a structure carried by said support and rotatable about a vertical axis, and a plurality of vertically disposed electrical heating elements carried by said structure, said elements being shaped to enable application of said devices to the same.

3. A hair waving pre-heater for use in conjunction with a plurality of heat storage devices, said devices each being formed with opposed heat storage elements adapted to engage a wound strand of hair, said pre-heater comprising a base support, a structure rotatably carried by said support, a plurality of spaced electrical heating elements carried by said structure, each of said elements being so dimensioned that said devices can be engaged with the same, with the elements of each device contacting opposite sides of the heating element.

4. A hair waving pre-heater for use in conjunction with a plurality of heat storage devices, said devices each being adapted for application to wound hair, a base support, a substantially circular structure carried by said support, means serving to rotatably mount the structure to said support whereby said structure can be oscillated about a vertical axis with respect to the support, and a plurality of electrical heating elements mounted upon said support, said elements being spaced circumferentially and disposed in vertical position, said elements being shaped to enable application of said devices to the same.

5. A hair waving pre-heater for use in conjunction with a plurality of heat storage devices, said devices each being adapted for application to wound hair, a base support, a substantially circular structure carried by said support, means serving to rotatably carry the structure with respect to said support whereby said structure can be oscillated about a vertical axis, a plurality of electrically heated rods carried by said structure, said rods being spaced circumferentially and in upright position, said rods also being proportioned to enable application of said devices to the same, and an annular guard carried by said structure and extending over the upper ends of said heating elements.

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