

Nov. 25, 1941.

H. COWAN

2,263,718

HAIR WAVING APPARATUS.

Filed March 1, 1939

2 Sheets-Sheet 1

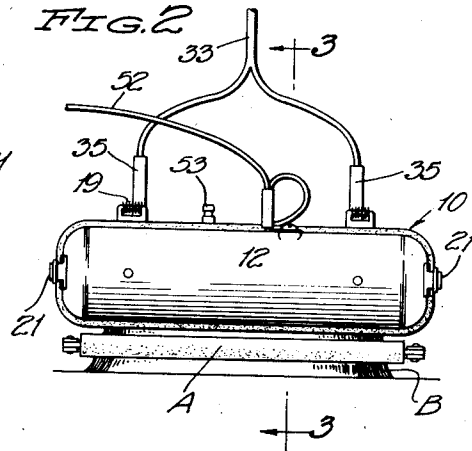
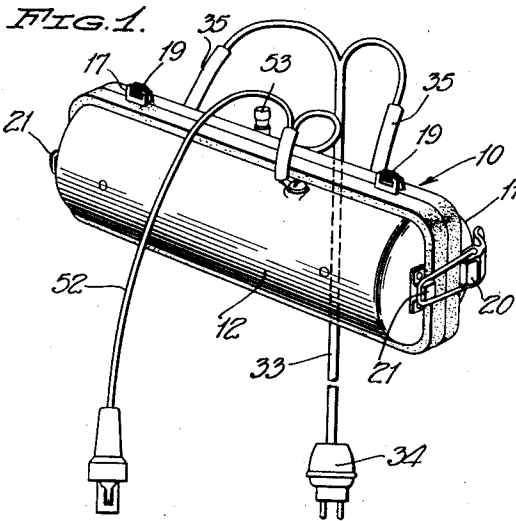


FIG. 4.

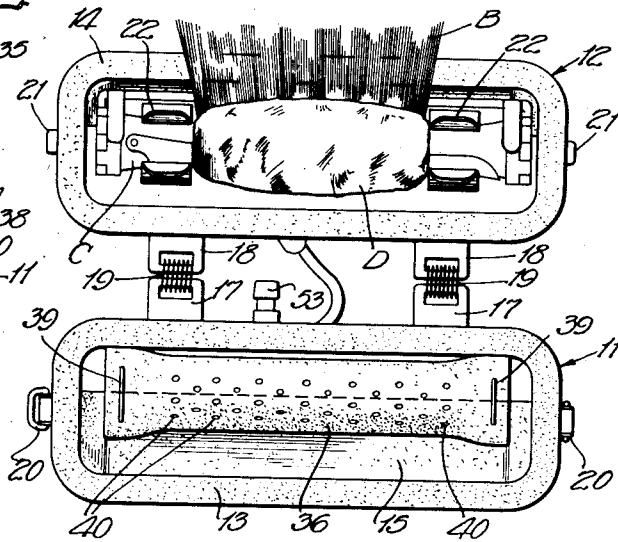
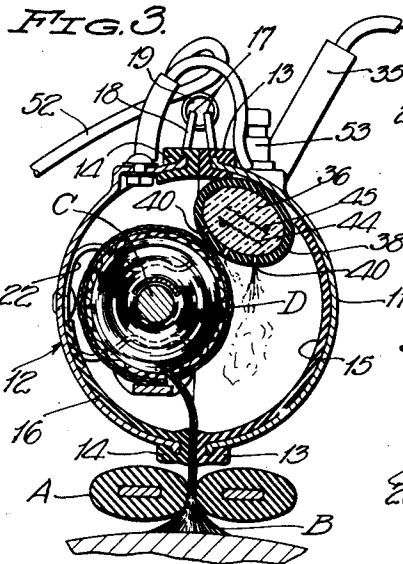
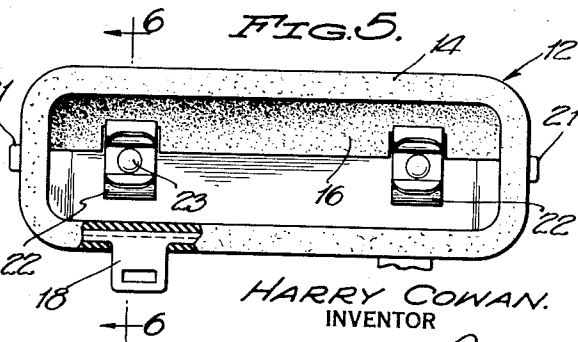
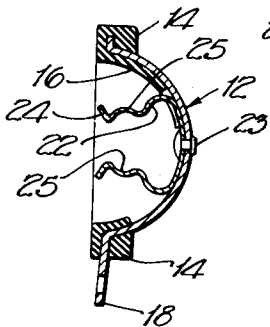


FIG. 6.



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HAIR WAVING APPARATUS

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2 Sheets-Sheet 2

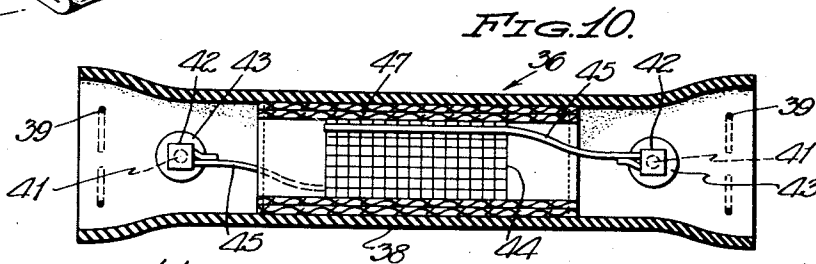
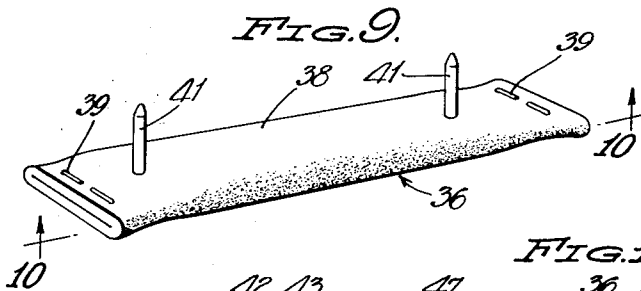
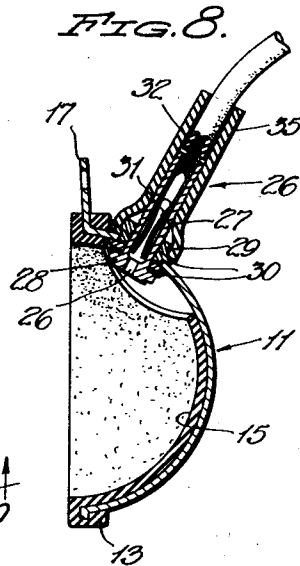
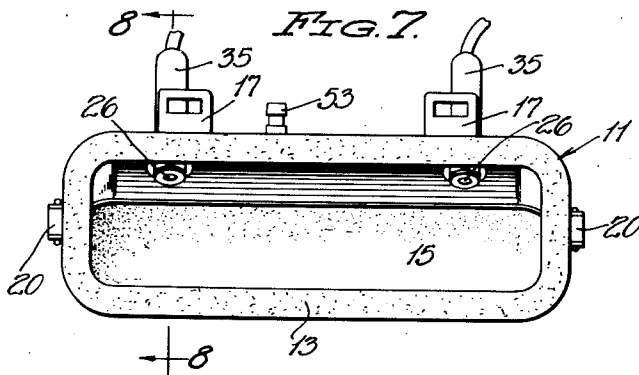


FIG. 11.

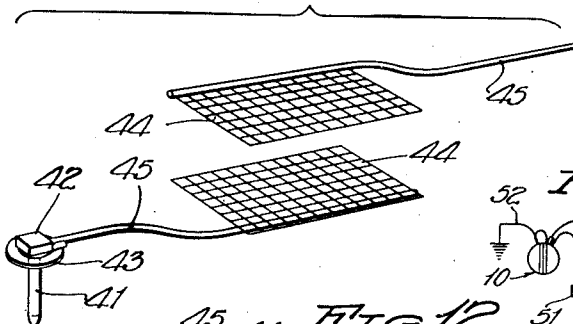


FIG. 13.

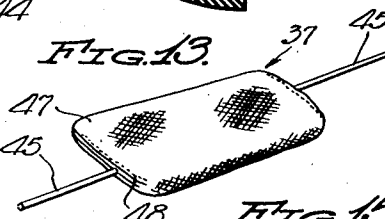


FIG. 15.

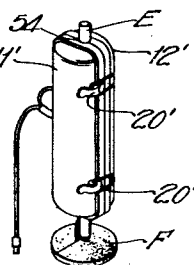


FIG. 14.

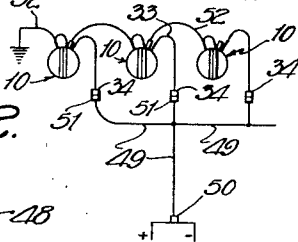
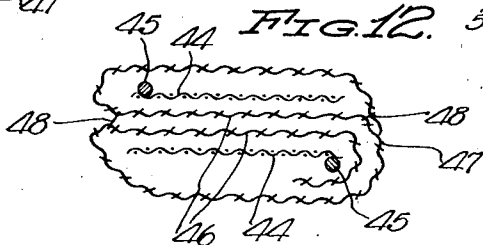


FIG. 12.



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UNITED STATES PATENT OFFICE

2,263,718

HAIR WAVING APPARATUS

Harry Cowan, Boston, Mass.

Application March 1, 1939, Serial No. 259,118

6 Claims. (Cl. 219—24)

This invention relates to improvements in hair waving apparatus of the kind used in permanent hair waving processes for producing waves of the Croquignole and spiral type.

One of the more important features of the invention resides in a hair waving device in which the necessary heat for producing a wave in human hair is obtained by steam generated within the confined chamber in which the wound hair is enclosed. The heat from steam is of a higher intensity than that produced by electric resistance heaters now generally used in hair waving processes, therefore, by the use of my invention, it is possible to produce a Croquignole or spiral wave in a shorter period of time than by the other methods known to me.

Another feature of the invention is to provide a steam generator for use in the art of permanent hair waving by which steam may be instantly generated after the strand of hair to be waved is prepared and enclosed in the steam chamber, thus avoiding waste of time usually experienced with the electric heating element which requires a lapse of time to sufficiently heat up to the proper degree of temperature.

A further feature of the invention is to provide an electrically operated steam heated hair waving device which may be safely and expeditiously handled by hair waving operators and which assures the customer of protection against injury from scalp burns and electric shock.

A still further feature of the invention is the provision of an electrically operated steam generator element which functions to generate only a predetermined volume of steam upon each operation thereof and which automatically stops functioning when the desired amount of steam has been generated.

A still further feature of the invention is to provide an electrically operated steam generator element which may be used over and over again and which is interchangeable for use from one steam chamber to another.

A still further feature of the invention is the provision of a steam heat method of permanent hair waving which is rapid, inexpensive and safe.

Other features of the invention will appear as the following specification is read in conjunction with the accompanying drawings, in which:

Figure 1 is a perspective view of one of the steam hair waving devices per se used for producing a Croquignole wave, with the steam chamber in closed position.

Figure 2 is a front side elevational view showing

the hair waving device in position upon a wound strand of hair.

Figure 3 is an enlarged vertical transverse sectional view on the line 3—3 of Figure 2.

Figure 4 is a top plan view of the hair waving device in open position with a strand of hair wound upon a winding rod and the winding rod secured in position.

Figure 5 is a plan view looking at the inner side of one of the casing sections with the winding rod and wound strand of hair removed.

Figure 6 is a vertical transverse sectional view on the line 6—6 of Figure 5.

Figure 7 is a plan view looking at the inside of the casing section which receives the steam generator element, the latter being removed.

Figure 8 is an enlarged vertical transverse sectional view on the line 8—8 of Figure 7.

Figure 9 is a perspective view of the steam generator element per se.

Figure 10 is a horizontal sectional view on the line 10—10 of Figure 9.

Figure 11 is a collective perspective view of the two spaced electrodes forming part of the steam generator element.

Figure 12 is an enlarged vertical transverse sectional view through the spaced electrodes enclosed in an absorbent pad.

Figure 13 is a perspective view of the steam generator pad.

Figure 14 is a diagrammatic view showing the manner in which a plurality of steam generator devices may be electrically connected in series and the manner in which static electricity from the devices may be safely grounded.

Figure 15 is a perspective view showing a modified form of steam chamber for use in producing a spiral wave.

Referring to the drawings by reference characters, the numeral 10 designates my improved hair waving device in its entirety which includes a pair of shell like casing sections 11 and 12, each of which is semi-circular in cross section so as to provide a cylindrical casing when the sections are in closed position with their open sides in confronting relation. The casing sections 11 and 12 may be constructed of metal which is heat insulated from either the inside or outside, or they may be of a less heat conducting material such as Bakelite or other like low heat absorbing material. The meeting edges of the casing sections 11 and 12 are enclosed in rubber or other resilient sealing beads 13 and 14 respectively, the bead 13 having an inwardly extending skirt portion 15 of rubber which partially lines the inner

side of the casing section 11, whereas the bead 14 is formed with a rubber skirt lining portion 16 which partially lines the inner side of the casing section 12. Pairs of ears 17 and 18 extend from the top longitudinal edges of the casing sections 11 and 12 respectively through which wire coils 19 pass to provide a loose pivotal connection between the casing sections 11 and 12. Carried by the ends of the casing section 11 are bail clamping devices 20 which engage keeper members 21 on the ends of the casing section 12, whereby the casing sections may be securely held in closed clamped relation when a strand of hair to be wound is enclosed within the sections.

Carried by the casing section 12 and disposed inwardly thereof is a pair of longitudinally aligned U-shaped spring clips 22, the bight portion of each clip being riveted or otherwise secured as at 23 to the wall of the casing section 12. The open end of the clip faces in the direction of the open side of the casing section 12 as best illustrated in Figure 6, and the terminal ends of the legs of the clips are bent outwardly to provide guide portions 24 whereas the intermediate portions of the legs of the clips are provided with opposed curved seat portions 25 for a purpose to be presently explained.

The casing section 11 is provided with the two terminal electric sockets 26, the same extending outwardly from the casing section adjacent the top thereof. Each socket 26 includes an externally screw threaded sleeve 27 extending through an opening in the casing section and which has an inner head 28. A nut 29 is threaded onto the sleeve 27 and coacts with the head 28 for holding the sleeve 27 in fixed clamped position, there being fibre washers 30 interposed between the head and the inner side of the casing and between the nut 29 and the outer side of the casing. Enclosed within the sleeve 27 is a spring contact 31, the same having double prongs between which the plug pin of a heating element presently to be described is adapted to be gripped. Soldered to the outer end of the spring clips 31 is one end of a single conductor wire 32 of a double wire electric cord 33. The two wires of the cord 33 are respectively connected to the spring contact members 31 of the plug sockets 26, thus by bridging the two contact members 31, a circuit may be completed through the wires of the cord 33. The other ends of the wires of the cord 33 are respectively connected to the terminals of an electric attachment plug 34. A tubular rubber shield 35 fits around each of the terminal sockets 26 and prevents contact of an operator's hand with the socket during handling of the device.

Electrically connected with the sockets 26 of the casing section 11 is an electrically operated steam generator element 36. The steam generating element 36 includes an absorbent steam generating pad unit 37 enclosed in a rubber tubular envelope or jacket 38, the ends of the tubular envelope being closed by metal staples or stitches 39, although they may be vulcanized if desired. The outer side of the envelope 38 is provided with spaced steam jet openings 40 as best seen in Figures 3 and 4 of the drawings. Pointed contact terminal plug pins 41 extend outwardly through the rear side of the tubular envelope 38 and the inner ends of the pins are provided with heads 42 and interposed between the heads and the adjacent wall of the envelope are flat metal washers 43. The absorbent steam generating pad unit 37 comprises a pair of grid electrodes 44-44 which are preferably made of

stainless steel, copper, bronze or other non-rusting screening material. Extending from the grid electrodes 44-44 are terminal conductor wires 45-45, the same extending in opposite directions and being respectively bent around the plug pins 41 intermediate the heads 42 and washers 43. The grid electrodes 44-44 are disposed in spaced relation and interposed therebetween are two plies or layers 46 of a strip of absorbent non-conducting material such as glass cloth, asbestos, or other absorbent and non-combustible substances. The layers 46 constitute only part of the absorbent non-combustible material which may be in the form of a strip folded about the grid electrodes 44-44 to form two spaced pockets in the manner shown in Figure 12 so that the grid electrodes are respectively disposed within the pockets and normally insulated from each other and fully enclosed in an absorbent non-combustible pad body 47. After the material has been folded about the grids, the folds may be stitched as at 48 so as to prevent accidental unwinding of the pad body. It will thus be seen that if the spaced electrodes 44-44 are arranged in an electric circuit, the circuit normally remains open, but if the pad body 47 is saturated with water, the moisture present on the layers 46 will effect closing of the circuit, whereupon the low resistance grid electrodes 44 will heat up instantly, and the heat therefrom will cause the moisture in the pad body 47 to become steam vapor. The absorbent non-combustible pad body 47 is capable of absorbing a predetermined volume of water, and after the moisture has been vaporized, the pad body becomes dry and the circuit through the grid electrodes 44 is automatically opened. Thus it is possible by the absorptive characteristics of the pad body to regulate the volume of steam to be produced.

In use of the hair waving device 10, an operator prepares a strand of hair as shown in Figures 2, 3, and 4 of the drawings in the usual manner, and applies a clamp protector A at the base of the strand of hair B so as to shield the scalp from contact with the device 10. The strand of hair B is clamped upon and wound on the usual winding rod C, after which the chemical pad D is applied to the wound portion of the strand of hair, the pad D being of the type to receive the usual chemical solution necessary to form the wave upon application of heat. With the strand of hair B wound upon the rod C, the device 10 is open as shown in Figure 4 and the ends of the winding rod C are inserted into the spring clips 22, the rod being gripped by the seat portions 25 of the clips. The operator now proceeds to moisten the pad body 47 of the steam generator element 36 by immersing the same in water, the water reaching the pad body 47 through the steam jet openings 40. When thoroughly saturated, the steam generator element 36 is inserted into the casing section 11 by inserting the terminal plug pins 41 into the respective terminal sockets 26, after which the casing sections 11 and 12 are swung closed and secured by engagement of the bale clamps 20 with the keeper members 21. The parts are now in the position shown in Figure 3 of the drawings, whereupon the steam generator element 36 is disposed in juxtaposition to the wound strand of hair, with the steam jet openings 40 facing in the direction of the wound strand of hair. The electric cord 33 is connected up with an electric current supply cord 49 which leads from an electric outlet 50 by inserting the attachment plug

34 into a companion socket receiving outlet 51 as shown in Figure 14 of the drawings. As soon as the electrical current passes through the cord 33, the circuit is completed through the spaced low resistance grid electrodes 44 by reason of the moisture contained in the absorbent non-combustible pad body 47. The electrodes 44 will immediately heat up and cause the moisture present in the pad body 47 to be transformed into steam vapor and which steam vapor is confined within the closed casing sections 11 and 12, which casing sections coact to provide a steam confining chamber for the steam generated by the element 36. The heat produced by the steam directly generated within the steam chamber acts upon the chemical pad D and wound hair B to provide the treatment necessary for producing what is known as a permanent wave, and the device shown in Figures 1 to 8 inclusive is employed for producing a permanent wave of the Croquignole style. After the absorbent pad body 47 becomes dry, the circuit through the electrodes 44 is automatically broken, but by that time sufficient heat is present in the steam chamber to produce the wave desired. After the application of the desired amount of heat, the attachment plug 34 is pulled from its socket, the clamps 20 are released and the casing sections 11 and 12 are swung to open position, whereupon the operator removes the winding rod C from the casing section 12, removes the chemical pad D and unwinds the strand of hair from the winding rod. Before using the device 10 for producing another wave, the steam generating element 36 is removed from the casing section 11 and may again be saturated with water and replaced within the casing section 11 for further steam generating purposes.

In Figure 14 of the drawings, I have illustrated the manner in which a plurality of hair waving devices 10 may be arranged in series, for it will be appreciated that a sufficient number of the devices 10 will be used in the waving of a single head of hair, depending upon the number of curls to be formed. In order to prevent possibility of electrical shock to the head of the user of the device 10, the two casing sections 11 and 12 are connected by a ground conductor 52 and in instances where a number of the devices 10 are used in a series, the ground conductor 52 of one of the devices 10 may be connected to a terminal post 53 of another of the devices 10.

In Figure 15 of the drawings, I have illustrated a different form of casing or steam chamber wherein the casing sections 11' and 12' are formed with semi-circular shaped notches 54 at opposite ends to fit around a winding rod E of the type used to produce what is known as a spiral wave. In this form of the invention, the clamping bales 20' are carried by one of the longitudinal sides of the casing section 11' instead of at the ends as shown in the preceding form of the invention. To prepare a strand of hair for a spiral wave, the same is wound upon a straight rod E, and a protector F is applied at the base of the rod and adjacent the scalp of the user. Thus the spiral coil of the strand of hair contained on the rod E is enclosed within the casing sections 11' and 12', and the necessity of the spring clips 22 is eliminated. The steam generating element 36 is positioned within the casing section 11' in the same manner as that heretofore explained.

While I have shown and described what I consider to be the most practical embodiments of

my invention, I wish it to be understood that such changes and alterations as come within the scope of the appended claims may be resorted to if desired.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent of the United States, is:

1. A hair waving device comprising a cylindrical casing composed of two hingedly connected complementary casing sections cooperating when closed to provide a steam chamber, means fixedly mounted in one of said casing sections for removably supporting the winding rod on which is adapted to be wound a strand of hair to be waved, an electrical steam generator element, and means within the other of said casing sections for removably supporting said steam generator element therein in juxtaposition with respect to the wound hair supporting means provided on the other of said casing sections.

2. A hair waving device comprising a heat insulated casing composed of two hingedly connected complementary casing sections adapted to enclose a wound strand of hair to be waved, clip means carried on the inner side of one of said casing sections for receiving and supporting a hair winding rod, a pair of spaced electric terminal plug sockets carried by the other of said casing sections, and an electric steam generator element having a pair of terminal plug pins extending into the respective plug sockets.

3. A hair waving device comprising a pair of complementary shell like casing sections hingedly connected so as to facilitate closing of the same one against the other to form a steam chamber or to facilitate opening of the same with their open sides up, clip means in one of said casing sections for receiving and supporting a winding rod with a strand of hair wound thereon, an electric steam generator element, a pair of electric supply terminals carried by the other of said casing sections, and means for electrically and removably connecting said electric steam generator element with said electric supply terminals.

4. A hair waving device comprising a casing composed of a pair of hingedly connected complementary casing sections cooperating when closed to provide a steam chamber for the reception of a wound strand of hair to be waved, releasable means for securing the casing sections in closed position, means provided within one of said casing sections for removably supporting a wound strand of hair to be waved, a pair of electric terminals mounted within the other of said casing sections on a wall thereof, and an electric steam generator element having electric contact terminals connected to the respective contact terminals aforementioned.

5. A hair waving device comprising a casing, means for permitting access to the interior of said casing, means on the inside of said casing for removably supporting a wound strand of hair to be waved, a pair of spaced electric terminal members mounted in and extending through a wall of said casing, the inner end of each of the electric terminal members having a plug receiving socket, an electric steam generator element having a pair of terminal plug pins extending into the respective plug sockets, an electric cord having two wires which have one of their ends respectively connected to the terminal members, and an electric connecting plug to which the other ends of the wires are connected.

6. A hair waving device comprising a pair of hingedly connected metal casing sections which

when closed provide a steam chamber adapted to receive and enclose a wound strand of hair to be waved, an insulating lining on the inner side of said casing sections, a pair of spaced electric terminal sockets mounted in a wall of one of said casing sections, an electric steam generator element having a pair of terminal plug pins extend-

5 ing into the respective plug sockets, an electric cord connected to said terminal sockets to facilitate the connection of the same with a source of electrical current, and a ground connection connected to said metal casing sections.

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