Oct. 5, 1943. A. F. WILLAT 2,331,065

PERMANENT WAVING OF HAIR

Filed Nov. 17, 1939

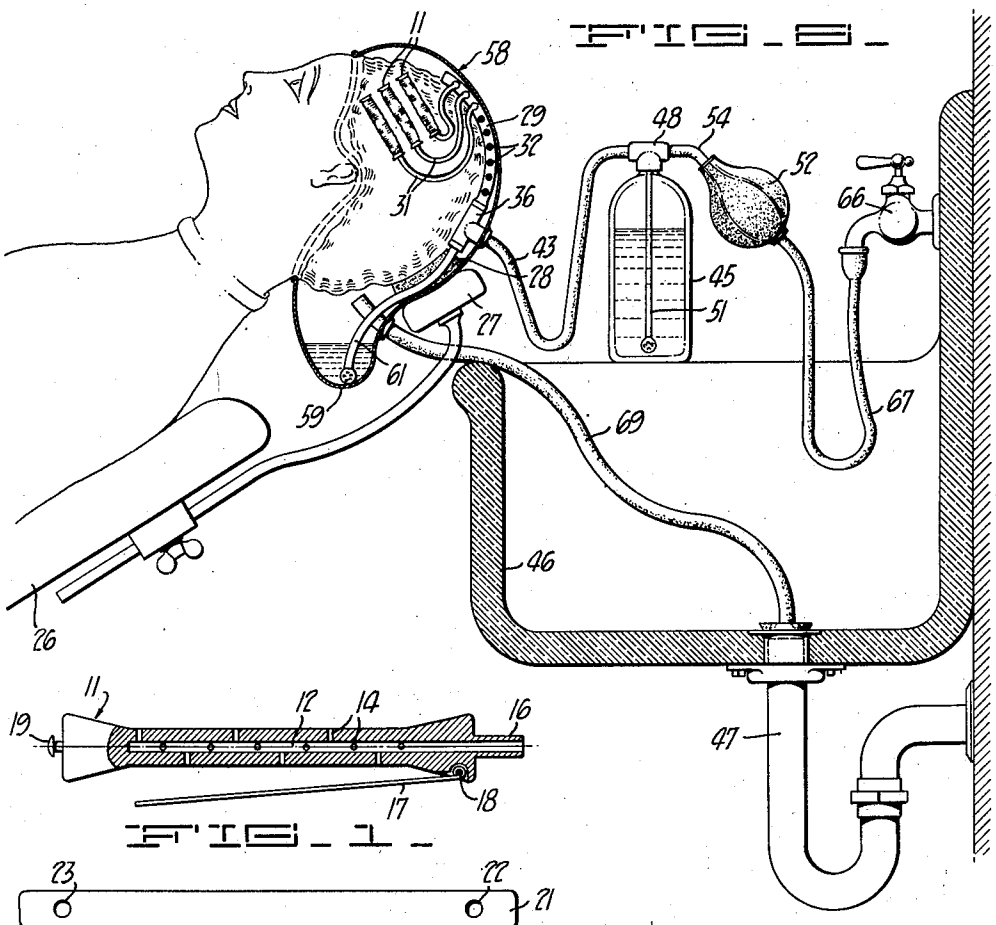


FIG. 6.

FIG. 1.

FIG. 3.

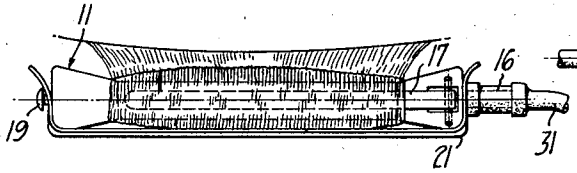


FIG. 2.

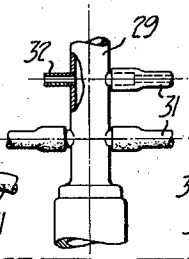


FIG. 7.

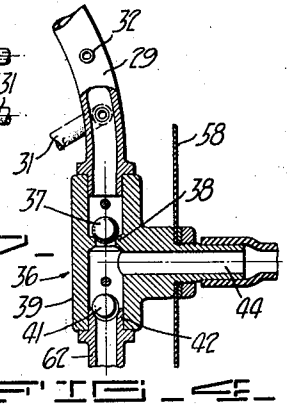


FIG. 4.

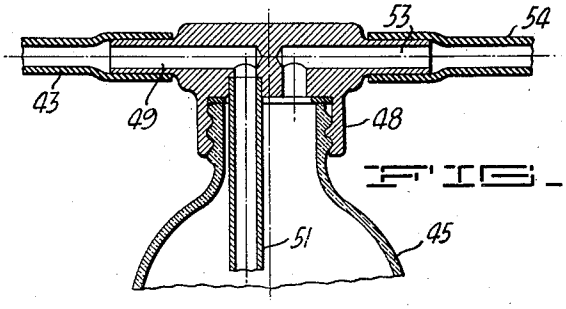


FIG. 5.

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PERMANENT WAVING OF HAIR

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Application November 17, 1939, Serial No. 305,020

21 Claims. (Cl. 132—36)

This invention relates to certain improvements in the art of cold permanent waving of hair.

In my previous copending application Serial Number 721,965 filed April 23, 1934, granted as Patent 2,195,803 on April 2, 1940, I have disclosed the art of permanent waving of hair upon the human head by the utilization of cold hair waving solutions at temperatures which, as compared to the prior art of hot permanent waving, are such that the temperature of any heat applied to the hair, if applied directly to the human body, are comfortable temperatures to the human body. The invention disclosed herein makes use of and employs certain of the features of the invention disclosed in my Patent No. 2,195,803, particularly the winding of strands of hair upon suitable members, securing the so wound strands against unwinding, and covering the wound and secured strands while a permanent wave curling solution is effective in the waving of the hair, all to eliminate the clamping pads and protectors between the wound strand and the scalp so necessary in high temperature permanent waving.

The process of this invention includes the forming of the hair on the head into a suitable shape, and the application of a cold waving solution to the formed hair. The temperature employed for the waving solution is a comfortable one if the solution is applied directly to the human body and below the temperature of producing steam, as is disclosed in my patent. Conveniently and usually the hair is formed into a coil form, a strand of hair being wound from its end into coil form to adjacent the scalp. In accordance with this invention I employ as the winding means a perforated curler. Thereafter the cold waving solution is forced through the perforated curler and the hair wound thereon, the hair becoming permanently waved while it is cold, wound, and thoroughly wet with the waving solution. The perforated curler enables the waving solution to wet the hair quickly and thoroughly.

In the employment of the apparatus and practice of the method of the present application, any suitable permanent wave solution may be employed. In my copending application Serial Number 721,965 which is now Patent Number 2,195,803, dated April 2, 1940, I named several examples of solutions suitable for the purpose, such as alkaline water solution of alkali metal sulphites or ammonium sulphites, which have pH on the alkaline side.

Among other permanent waving solutions which may be employed, there also may be specifically mentioned sodium and potassium sulphides, but these are generally considered as within the broad alkali metal group previously referred to as having an alkaline pH.

Some of the cold waving solutions include sulfur in combined form; as is typical of most sulfur compounds, these have an odor usually considered to be at least slightly objectionable. These hair waving solutions are also quite rapid in their action. To facilitate the use of these solutions it is desirable that the escape of odor into the atmosphere be prohibited. At the same time, to secure the best action on the hair, it is desirable that the solution be kept from access to the air so that it does not oxidize. Further, it is desirable that a minimum amount of solution be employed, and that the strength of the solution be known so that the degree of permanent waving can be controlled.

These and additional advantages and objects will appear hereinafter wherein the practice of the process of the invention is set forth. It is understood that various changes in the method of winding hair, the form, proportion, size, and nature of the apparatus may be made without departing from the spirit or sacrificing any of the advantages of the invention; for example, the hair may be wound Croquignole, spiral, or as pin curls, on different shapes and sizes of curling rods, and solutions may be applied to the hair before winding or forced through the hair rolls by various systems and circuits. The operation of the system of my invention may be varied in many ways, depending upon whether it is to be employed in a beauty shop or in a home, and whether the time required to impart a permanent wave to the hair is short or long.

Figure 1 is a side view of a curling rod partly in section with its hinged tongue partly open.

Figure 2 shows another side view of the same curling rod with the tongue closed and a rubber locking strap buttoned on to both ends of the curling rod with wound hair in place.

Figure 3 is a plan view of a locking strap.

Figure 4 is a side view, partly in section, through a valve unit.

Figure 5 shows a bottle cap in section.

Figure 6 shows an assembly of all apparatus used in making a permanent wave by using the cold waving solution.

Figure 7 shows a detailed view of part of the manifold.

Briefly and concisely, the present invention is concerned with the provision of a method and means for handling of the cold waving solution in a closed system so that the waving solution

does not come into contact with the atmosphere, while a minimum amount of solution is employed and the time of contact between the waving solution and the hair can be accurately controlled on each strand of hair upon the head subjected to the process.

When a quick cold permanent wave is to be imparted to the hair, the apparatus shown in the drawing can be employed, although other suitable equipment can be used. In practice, the head is first shampooed and rinsed. It is then blocked in a manner well known in the art, drying of the hair, a step usual in the known art, being unnecessary. Each strand or lock is wound wet and without stretching on a curling rod 11. Rods having the same external configuration are commonly employed in the art. However, the curling rod employed in accordance with this invention is hollow as at 12 so that fluid can be introduced and passed outwardly through hair wound thereon through passages 14. An extension 16 is provided at one end of each curling rod for attachment of a hose or other suitable flexible conduit whereby a waving solution can be introduced into the rod. Each rod, of course, carries the usual tongue 17 hinged as at 18 upon the rod so that the end of the strand of hair can be suitably retained during initial winding. At the other end of the rod is positioned a button-like extension 19.

When the hair is wound up and the rod is finally adjacent to the scalp, a grip 21 conveniently made of a strip of rubber apertured at 22 and 23 is positioned with aperture 22 hooked over extension 16 and aperture 23 over button 19 so that the rod and the wound strands are locked in position on the head. It is not necessary to stretch the hair on the rod, and it is further to be noted that the clamps or pads between the rod and the scalp are omitted so that the winding of the hair on the rod can be carried very close to the scalp. The curling rod employed is only typical—the hair can be wound or otherwise retained in any shape desired by any suitable means.

The hair shaping operation is repeated until all the hair is fixed in a desired form. A connection is then made from each rod to a source of supply for the waving fluid. As appears in the drawing, the person whose hair is being waved is usually placed in a reclining position in a suitable chair 26 having a head rest 27 so that the person is comfortable. A manifold 29 is placed adjacent to the head and tubes 31 are extended between each manifold outlet 32 and tube 16 on each curling rod. In the diagrammatic showing of the drawing I have shown only three rods wound on the head. This is purely for convenience and clarity in illustration, for the entire head is usually made up.

The manifold is connected to a valve structure generally indicated at 36 and shown more particularly in Figure 3. The valve structure 36 includes a ball 37 cooperating with a seat 38 in valve body 39 to permit fluid to pass into the manifold when forced into the valve body 39 under pressure. The valve also includes a ball 41 cooperating with a seat 42 in the valve body. Ball 41 is lifted off the seat 42 when a suction is placed upon the interior of the valve body and its inlet 62. In this case the fluid is drawn up into the valve body, as will presently appear, through tube 61 into inlet 62. A fluid supply tube 43 is connected to the inlet 44 of the valve body, the supply tube 43 extending to a source of fluid supply carried in bottle 45. Bottle 45 is conveniently mounted adjacent a sewer connection provided by basin 46 and drain 47 therein. The bottle carries a screw cap cover 48. The cap has an outlet 49 to which the tube 43 is attached, the outlet being in communication with the bottom of the bottle through vertically depending tube 51. The bottle is filled with the cold waving solution. It is placed under pressure by operating aspirator bulb 52 connected to inlet 53 by tube 54. The operator presses bulb 52, whereupon fluid at a temperature comfortable to the body is forced through tube 43 through the manifold, into each of the curling rods and out into and through the roll of hair thereon. The forcing of fluid through each roll is effective to wet the hair thoroughly and completely. The fluid runs down the head. To facilitate its collection, a rubber hat generally indicated at 58 is normally placed around the head with the edge of the hat suitably sealed against the skin entirely around the head. The rubber hat is so formed that it provides a sump indicated at 59 and to this sump extends a suction tube 61 connected to the inlet 62 of the valve structure 36. This rubber covering is substantially impervious to the solution due to the fact that it is made of rubber and therefore provides a sump to collect the excess solutions; it also serves (1) as an intermediate conduit back to the source of solution supply, (2) to keep the solution from contact with the atmosphere to prevent odors and evaporation of the solutions from the wound strands and (3) retains body heat to expedite and facilitate the hair waving operation. When the operator releases bulb 52, suction is placed on the valve body, because the normal suction end of bulb 52 is sealed by faucet 66 and hose 67. This raises ball 41 off its seat and fluid is sucked up through tube 61 past the ball 41 and is returned to the bottle.

The bulb is pressed and released a number of times throughout the curling period so that solution is forced positively through the roll of hair. When the predetermined curling period has expired a suitable rinse is passed through the roll of hair. Usually water from a water supply under the control of faucet 66 is passed through tube 67 into the aspirator bulb 52, into the bottle 45, and out through the manifold system, through the curling rods and the rolls of hair. The water, of course, replaced the solution in the bottle. When the water level in the sump 59 in the rubber hat 58 rises sufficiently it drains off through drain 69 into the sewer connection 47. After a few minutes the hair is thoroughly rinsed. Water is then turned off, the hose is disconnected, the rubber hat removed, the manifold tubes removed, the curling rods released, and the hair unwound. The hair will then be found to be curly. Thereafter it may be arranged to suit the owner.

It is understood that various changes in the method of arranging the hydraulic circuits may be resorted to and the application of the solutions to the hair can be varied without departing from the spirit or sacrificing any of the advantages of the invention; for example, the solution can, after leaving the hair, pass by gravity into a receptacle from which the solution is pumped into the hair again, and the solution can be sprayed over the configured or rolled hair instead of being forced through the rolls of hair. The container for the solution can be kept at

any desired temperature below a temperature which is uncomfortable to the human body.

As the rinse I can employ water successfully, a weak sodium bicarbonate solution, a weak acid solution as a vinegar, or any other chemical that will neutralize or remove the hair waving solution.

This case is a continuation in part of my application Serial Number 721,965 filed April 23, 1934, now Patent No. 2,195,803 issued April 2, 1940.

I claim:

1. A process of permanently waving hair on the human head comprising forming strands of hair on the head into coil form, enclosing the coiled hair in a covering therefor, said covering being substantially impervious to liquids, forcing a hair waving solution from a source of supply through the formed thickness of each coiled hair strand until said solution collects in the bottom portion of said head covering and returning collected solution to said supply, and maintaining the solution while within said covering at a temperature comfortable to the unprotected human scalp, the forcing action contributing to more accurate timing and control of the waving process.

2. In combination, means for holding a supply of hair waving solution, a perforate curler for winding of hair on the human head, means for maintaining the scalp and hair thereon out of contact with the atmosphere during the waving of said hair, a hand aspirator pump for forcing solution from said solution holding means through said curler and for returning any excess solution to said supply.

3. In combination, means for holding a supply of hair waving solution, a perforate curler for winding of hair on the human head, means for enclosing the scalp and hair thereon out of contact with the atmosphere during the waving of said hair, and means for forcing solution from said solution holding means through said curler and for returning any excess solution to said supply while maintaining said solution out of contact with the atmosphere.

4. In combination, means for holding a supply of hair waving solution, a perforate curler for winding of hair on the human head, and means for enclosing the scalp and hair thereon and maintaining said scalp and hair and hair waving solution out of contact with the atmosphere during the waving of said hair, including a fluid circulating system closed against the atmosphere and including means for forcing solution from said solution holding means through said curler, and means for returning any solution collecting in said enclosing means to said supply.

5. Apparatus for cold permanent waving of hair upon the human head comprising a curler for winding of hair on the human head, liquid displacement means for forcing a permanent wave hair curling liquid through hair wound on said curler, and flexible scalp covering means adapted for enclosing the wound strands while wetted with the solution.

6. Apparatus for cold permanent waving of hair upon the human head comprising a curler rod adapted as a central core for winding of hair on the human head, flexible means connectible to the ends of the curler and adapted to overlie the outer surface of the wound strand and maintain it against unwinding whereby the core may be wound close to the scalp free of intervening sustaining means, means for forcing a hair curling fluid into hair wound on said curler, and flexible scalp covering means adapted for enclosing the wound strands while wetted with the solution.

7. Apparatus for cold permanent waving of hair comprising a plurality of perforate curling rods for winding of hair on the human head, a container for a supply of waving solution, a manifold, means connecting each curler to said manifold for fluid passage therebetween, a pump, and means connecting said pump to said container of waving solution to pass fluid through said manifold and thence to said curling rods.

8. Apparatus for cold permanent waving of hair comprising a plurality of perforate curling rods for winding of hair on the human head, a container for a supply of waving solution, a manifold, means connecting each curler to said manifold for fluid passage therebetween, a pump, means connecting said pump to said supply of waving solution to pass fluid through said manifold and thence to said curling rods, means for collecting fluid passed through hair wound on said curlers, and for returning said collected fluid to said container.

9. Apparatus for operation in permanent waving of hair upon the human head including a perforated curler for winding of hair on the head, means to supply a curling fluid to the wound hair through said curler, a hat adapted to fit snugly against the head adjacent the hair line, and means for removing through said hat free fluid that has passed through the hair.

10. Apparatus for operation in permanent waving of hair upon the human head, including a tubular perforated curling rod on which a lock of hair may be wound, fluid force generating means for forcing curling fluid through hair wound on the rod, a manifold conduit having communication with the force means and having a plurality of openings each of which is adapted for communicative connection to a curling rod, and a container for curling fluid operatively intermediate the force means and the manifold conduit.

11. Apparatus of the character described, comprising a plurality of tubular perforated curling rods on which locks of hair may be wound, fluid force generating means for forcing curling fluid through hair wound on a rod, a manifold conduit having communication with the force means and having a plurality of openings each of which is adapted for communicative connection to a curling rod, a container for curling fluid operatively intermediate the force means and the manifold conduit, and a collecting means for excess liquid adapted to fit snugly against the head adjacent the hair line.

12. A process of permanently waving hair on the human head comprising forming strands of hair on the head into a plurality of rolled units, and forcing a permanent hair waving solution simultaneously through a plurality of said units while maintaining the solution at a temperature which is comfortable to the unprotected human scalp.

13. A process of permanently waving hair on the human head comprising forming strands of hair on the head into a plurality of rolled units, forcing a hair permanent waving solution simultaneously through a plurality of said units, and after a desired amount of curling has taken place rinsing out said solution by forcing another solution simultaneously through the said plurality of units while maintaining the solution

at a temperature which is comfortable to the unprotected human scalp.

14. A process of permanently waving hair on the human head comprising forming strands of hair on the head into a desired contour, enclosing the formed hair in a covering, subjecting the formed hair strands while within said covering to the action of a permanent hair waving chemical, and thereafter rinsing the hair waving chemical from the hair and maintaining the hair waving chemical while within said covering at a temperature comfortable to the unprotected human scalp.

15. A process of permanently waving hair on the human head comprising forming a plurality of strands of hair on the head into a desired contour, enclosing the formed hair in a liquid-impervious covering, simultaneously subjecting the formed strands of hair within said covering to a softening action by a permanent hair waving chemical and maintaining the hair waving chemical while within said covering at a temperature comfortable to the unprotected human scalp and rinsing the hair waving chemical from the hair.

16. In apparatus for use in a process for permament waving of hair on the human head by subjecting wound strands of hair to temperatures comfortable to the unprotected human scalp, the combination of a plurality of curlers adapted as central core rods for winding strands of hair on the human head to provide desired configuration in the hair upon application of a permanent waving solution to the hair, flexible means carried by the curler rods and positionable relative to a hair strand wound on one of said curlers to (1) overlie the outer surface of said wound strand, (2) hold said wound strand against unwinding and (3) retain said curlers upon the wound strand whereby the strand may be wound close to the scalp and sustained thereat by means carried solely by the curler rod, as compared with known curler devices for permanent waving which include a clamping block heat-shield between the scalp and the wound strands wherein the curler member is mechanically mounted upon said shield and the curler is thereby spaced a substantial distance from the scalp; and a flexible moisture retaining covering means to enclose the wound strands on the head.

17. In apparatus for use in a process for permanent waving of hair on the human head by subjecting wound strands of hair to temperatures comfortable to the unprotected human scalp, the combination of a plurality of curlers adapted as central core rods for winding strands of hair on the human head to provide desired configuration in the hair upon application of a permanent waving solution to the hair, each curler having a flexible gripping portion movable and positionable relative to a hair strand wound on the central portion of said curler rod to overlie the outer surface of the wound strand and hold the wound strand against unwinding whereby the said curlers are self sustained upon the wound strand and whereby the strand may be wound close to the scalp and sustained thereat by means carried solely by the curler rod, as compared with known curler devices for permanent waving which include a clamping block heat-shield between the scalp and the wound strands wherein the curler member is mechanically mounted upon said shield and the curler is thereby spaced a substantial distance from the scalp; and a flexible moisture retaining covering means to enclose the wound strands on the head.

18. In a hair waving process in which a hair waving solution is forced from a source of supply through coiled hair strands on a human head to impart a permanent wave to the hair and enable a more accurate timing and control of the waving process, the steps of surrounding the scalp portion of said head, adjacent the hairline with a drainage sump and collecting therein excess waving solution after contact of the solution with the coiled hair strands, and returning the collected solution to said source of supply, and maintaining the solution, while flowing through the coiled hair at a temperature comfortable to the unprotected human scalp.

19. In combination, means for holding a supply of hairwaving solution, a perforate curler for winding of hair on the human head, a collecting means for surrounding the scalp adjacent the hairline for receiving excess solution after the solution has passed through the curler, means for forcing solution from said solution holding means through said curler, and means for returning any solution collecting in said collecting means to said supply.

20. In combination, means for holding a supply of hairwaving solution, a perforate curler for winding of hair on the human head, means for maintaining the curler against unwinding during the waving of the hair and the flowing of the solution therethrough, and means for forcing solution from said solution holding means through said curler, and means for draining off any excess solution, said draining means being adapted for surrounding the scalp adjacent the hairline.

21. In a hairwaving process in which a hairwaving solution is forced from a source of supply through coiled hair strands on a human head to impart a permanent wave to the hair and to enable a more accurate timing and control of the waving process, the steps of inducing a flow of hairwaving solution from a source of supply to separate coiled strands, inducing said solution to flow through said coiled strands, collecting at the scalp portion of the head adjacent the hairline the excess waving solution which has been induced to flow through the coiled strands, returning the collected solution to said source of supply, and maintaining said solution, at all times that it is in contact with the scalp, at a temperature comfortable to the unprotected human scalp.

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