May 29, 1956 L. H. ALLEN, JR 2,747,585

CURLING ROD FOR USE IN THE COLD PERMANENT WAVING OF HAIR

Filed Oct. 6, 1950 2 Sheets-Sheet 1

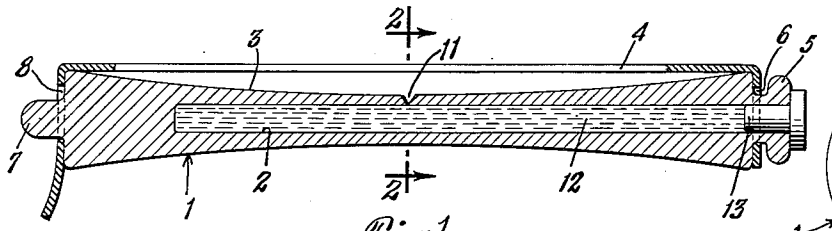


Fig:1.

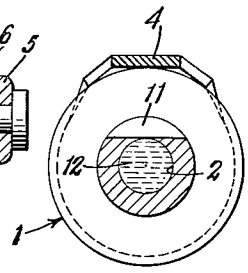


Fig:2.

Fig:3.

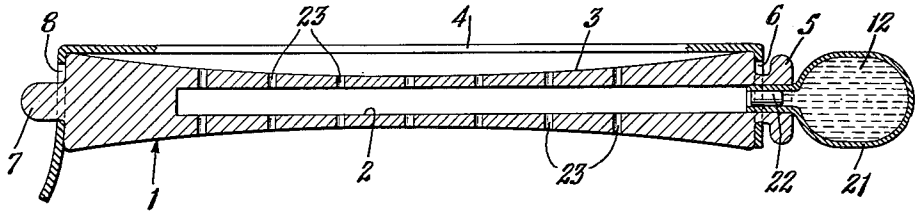


Fig:4.

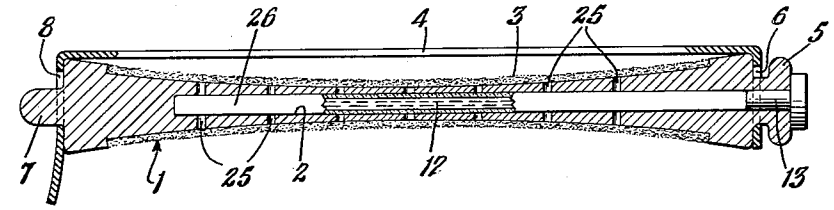
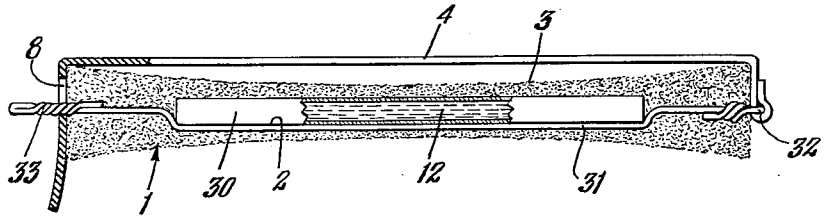


Fig:5.



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Filed Oct. 6, 1950 2 Sheets-Sheet 2

Fig: 6.

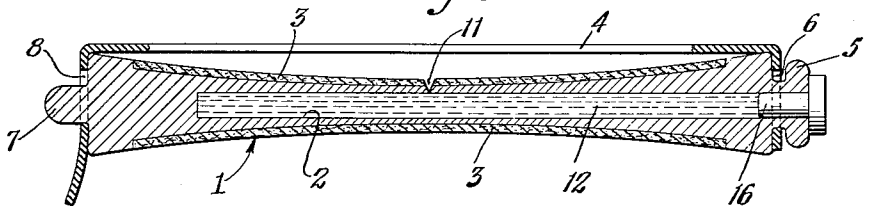


Fig: 7.

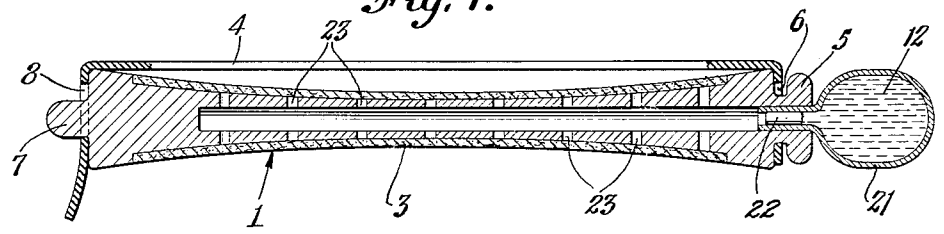
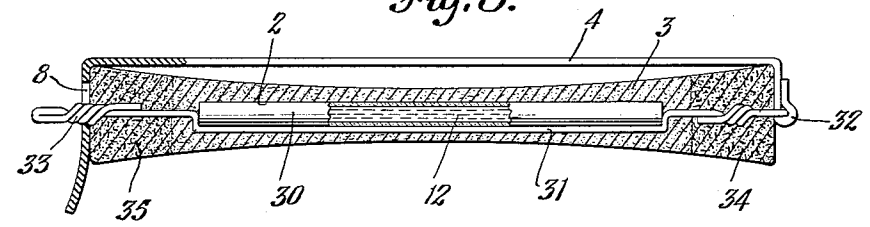


Fig: 8.



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CURLING ROD FOR USE IN THE COLD PERMANENT WAVING OF HAIR

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Application October 6, 1950, Serial No. 188,854

16 Claims. (Cl. 132—42)

This invention relates to a curling rod for use in the cold permanent waving of hair.

Straight hair is permanently waved by creating a strain on the round hair shaft by winding it on a rod and then permanently flattening the hair shaft by a chemical rearrangement of the molecular structure of the hair shaft. Although the complex chemical structure of hair is not fully known, it is generally agreed that it contains a high proportion of keratin, a protein consisting of elongated molecules of amino acids which are cross-linked into endless chains by cystine. Cystine consists of two amino groups linked together through two atoms of sulfur as represented by the formula R—S—S—R' in which R and R' represent amino groups and accounts for approximately fifteen per cent of the protein content of the hair. In permanent waving, the bonds between the two sulfur atoms of the cystine content of the hair are believed to be broken and then reformed in changed positions.

In the older methods of permanent waving the cystine sulfur linkages are broken by the hydrolytic action of steam, with or without the assistance of an alkaline material such as ammonia. In the more recently developed cold waving processes, the cystine sulfur bonds are broken at room temperature by chemical action. A variety of chemicals have been proposed for this purpose. The majority of these materials are reducing agents which reduce the —S—S— group to two —SH groups. The salts of thioglycollic acid, particularly sodium thioglycollate and ammonium thioglycollate, are frequently used for this purpose. After being broken by the use of a reducing agent, the cystine linkages are reformed while the hair is still coiled by the application of an oxidizing agent, such as, for example, an acidified solution of hydrogen peroxide.

To produce a cold permanent wave strands of the hair are wound tightly around curling rods and secured in place by a length of rubber band or twine. They are then wet with a suitable cold waving solution by applying it to the outer exposed surface of the roll or coil of hair. In this process the outer layers of the roll, which is the portion of the hair strand nearest the scalp, receives a more thorough impregnation than the inner layers near the curling rod and thereby receives a tighter curl. This is exactly the reverse of the desired effect, since a more pleasing wave is produced when the outer portions of the hair strand receive the tighter curl.

In this operation it is almost impossible to thoroughly saturate the rolls or coils of hair without wetting the scalp with the waving solutions and even having the solution dripping into the face of the subject. This is undesirable since the solutions are usually irritating to the skin and unpleasant or even dangerous in the eyes, nose or mouth.

An improved method has recently been proposed to avoid these difficulties in the cold waving of hair. In this method a curling rod comprising a fibrous body impregnated with a suitable cold wave solution is used, instead

of the usual curling rod of metal, wood or plastic. In this method the hair strand is impregnated as it is wound onto the fibrous rod, with the result that the portions of the hair nearest the surface of the rod, i. e. the outer end of the hair strand, is more thoroughly impregnated and, therefore, receives the tighter curl. Furthermore, the difficulty of wetting the scalp with the cold wave solution is largely, if not entirely avoided.

Although this method is a definite advance in the cold permanent waving of hair, the hands of the operator must come into contact with the waving solution while winding the hair on the saturated fibrous curler. Furthermore, the curlers presents a difficult packaging problem, due to the relatively large surface of the cold waving solution exposed to air. The oxidation of the reducing agent in a cold waving solution by the oxygen of the air progressively diminishes and ultimately destroys the effectiveness of the solution in the production of a permanent curl.

Now, it is the object of this invention to avoid the disadvantages of this method for the cold permanent waving of hair, while retaining its advantageous features, by an improved curling rod which carries its own supply of cold waving solution entirely sealed from contact with the air. In the use of these curlers, the cold waving solution does not come into contact with the operator's fingers while the hair is being wound around the curler and is released to saturate the coil or roll of hair outwardly from its innermost layers only after the hair is wound on the curling rod.

The curling rod in accordance with this invention comprises a rod adapted to receive a coil of hair having a chamber communicating with the hair receiving surface. This chamber is substantially or completely filled with a cold waving solution which is protected from contact with air by a seal or seals which can be disrupted by a light mechanical force after a strand of hair has been wound around the rod. The capacity of the chamber is selected to provide the volume of the cold waving solution necessary to wet all parts of a coil of hair wound on the rod, without any excess which can flow out of the hair coil onto the scalp.

The method by which the curlers in accordance with this invention are used comprises winding a strand of hair on the curler, securing it in place by means of a cord or a band and then applying a light mechanical pressure to the curling rod to disrupt the seal or seals of the chamber containing the cold waving solution and allow the cold waving solution to wet the coil of hair carried on the surface of the rod.

Having now indicated the general nature of this invention, I now proceed to a more detailed description thereof with reference to the accompanying drawings in which the same reference characters are used to designate like parts. In the drawings:

Figure 1 is a longitudinal cross-sectional view of one embodiment of the curling rod in accordance with this invention,

Figure 2 is a cross-sectional view along the line 2—2 of Figure 1,

Figure 3 is a longitudinal cross-section of a second embodiment of my improved curling rod,

Figure 4 is a longitudinal cross-section of another embodiment,

Figure 5 is a longitudinal cross-section of still another embodiment thereof.

Figure 6 is a longitudinal cross-section of another embodiment similar to that of Figure 1 but with a fibrous surface,

Figure 7 is a longitudinal cross-section of an embodi-

ment similar to that of Figure 2, but with a fibrous surface, and

Figure 8 is a longitudinal cross-section of an embodiment similar to that of Figure 5 but with hardened end sections.

The various embodiments of the curling rod in accordance with this invention shown by the accompanying drawing are substantially identical as to certain features. Each of them comprises a substantially cylindrical body 1. As will be explained in greater detail hereinafter, the exact physical characteristics of the material utilized to form the body 1 differs among the various embodiments shown. I prefer to have the ends of the cylindrical body 1 of somewhat larger diameter than the middle section thereof to form a slightly concave hair receiving surface 3, as illustrated by the drawing, since this form assists in retaining a coil of hair on the rod. The body 1 is provided with a central chamber 2 which extends from one end of the rod through a substantial portion of its length.

Preferably, each of the various embodiments of my curling rod is provided with a cord or band for holding a coil of hair in position after it is wound on the rod. Figures 1, 3, 4, 6, and 7 of the drawings illustrate a rubber band 4 held at one end of the curling rod by a head 5. The rubber band is attached at this end of the rod by merely inserting the head through a perforation 6 near one end of the rubber band. The opposite end of the rod is provided with a nob 7 adapted to retain the other end of the band by insertion through a perforation 8 in the band. Figures 5 and 8 illustrate a slightly different arrangement for attaching the rubber band to the curling rod which will be described hereinafter.

While the illustrated means for employing a rubber band are entirely satisfactory for retaining a coil of hair in place on the rod, a variety of others may be used. Thus, one end of a length of cord or of a slender cylinder of rubber may be semipermanently attached at one end of the rod by inserting it through a perforation in that end of the rod and retained at the other by pulling it into a kerf cut into that end of the rod. Other alternative structures for accomplishing the same result will be readily apparent to those familiar with the art.

Referring specifically to Figures 1 and 2, the body 1 of this particular embodiment of my invention is made of a waterproof material, for example, a plastic, which is relatively hard and capable of fracture under relatively light mechanical force. The body 1 has a notch 11 near the center of the hair-receiving surface which penetrates near but not into the central chamber 2. The chamber 2 is substantially filled with a hair waving fluid 12 which is sealed in the chamber by a permanent closure 13. The capacity of the chamber 2 and, hence, the volume of hair waving fluid 12 is selected to provide an amount of the hair waving fluid just sufficient to thoroughly wet a strand of hair wound around the body 1, with no excess to drain out of the hair and onto the scalp.

In utilizing this hair curler in the cold permanent waving of hair, the rubber band 4 is detached from the nob 6 and a strand of hair wound on the curler in a tight coil of relatively uniform thickness and the rubber band 4 attached to nob 6 to retain the coil in position. The body 1 of the curler is then fractured at the notch 11 by a light pressure on the ends of the curler in a downwardly direction while pressing upwardly on the midpoint of the rod opposite the notch 11. This allows the hair waving fluid 12 to flow out of chamber 2 into the coil of hair surrounding the two parts of the body 1. The hair waving fluid is left in the hair for the desired period of time and then its action terminated as described hereinafter.

Referring specifically to Figure 3, it will be noted in this alternative embodiment of my invention that the body 1 may be made of any water-proof material which is rigid or semi-rigid, such as, for example, a plastic material. The end of chamber 2 is connected to a flexible bulb 21 and the interior of the bulb is substantially completely filled with a hair waving fluid 12 which is held therein by a closure 22. The closure 22 is positioned in the neck of the bulb 21 with sufficient firmness to provide an air-tight seal and to remain in position during the normal handling of the curler but is capable of being forced out of that position and into chamber 2 by hydrostatic pressure from the waving fluid 12 created by squeezing the bulb 21. The body 1 is provided with a series of perforations 23, 23 spaced at periodic intervals both across and around the curler to connect the internal chamber 2 to the hair receiving surface 3. The capacity of the bulb 21 and, therefore, the volume of the cold waving solution contained therein is selected to furnish to a coil of hair wound on the curler an amount of the cold wave solution sufficient to wet the hair without an excess to drain therefrom.

In utilizing this curler in the method in accordance with this invention a coil of hair is wound on the hair-receiving surface 3 of the curler and held in place by the band 4. The bulb 21 is then squeezed to displace the closure from its neck and into the chamber 2 and to force the hair waving fluid 12 through the passageways formed by the chamber 2 and the perforations 23, 23 and into the coil of hair positioned on the hair-receiving surface 3 of the curler. The hair waving fluid wets the coil of hair and is left therein for the desired period of time before its action is terminated.

Figure 4 illustrates another embodiment of the curler in accordance with this invention in which a flexible waterproof material, such as, vulcanized rubber or polyethylene resin is used as material for the body 1. In this embodiment, the hair receiving surface 3 is formed of a fibrous material, such as, for example, cotton fiber or other fibrous material wound around the body 1 of the curler. Alternatively, this fibrous surface may be a textile material, such as, for example, a knitted sleeve pulled in place over the end of the curler. This fibrous surface assists in the uniform distribution of the cold wave solution through the coil of hair and provides a resilient surface which allows the hair to be wound as tightly as desired obviating the necessity to exercise care as to the tension under which the hair is placed.

This feature of the fibrous hair-receiving surface is included in the alternative embodiments of this invention illustrated in Figures 6 and 7, which are otherwise substantially identical with the embodiments shown by Figures 1 and 2 and by Figure 3, respectively. Also, it may be omitted from the embodiment shown by Figure 4 and the hair receiving surface be made of the same material as the body 1 of the curling rod.

In this embodiment of my invention (Figure 4), the body 1 is provided with a series of perforations 25, 25 spaced around and along the length thereof to connect the inner chamber 2 to the inner side of the fibrous hair receiving surface 3. In following the alternative in which a fibrous hair receiving surface is not utilized, these perforations extend through the hair receiving surface, as in the case of the perforations 21, 21 of Figure 3.

In this embodiment, a thin-walled, sealed container 26 substantially filled with hair waving fluid 12 is positioned within chamber 2 and retained therein by a closure 13. The capacity of container 26 is selected to provide the requisite quantity of heair waving fluid to saturate a coil of hair wound on the hair-receiving surface 3 without an excess to flow out of the hair. The container 26 is made of a water-proof brittle material, such as, for example, glass or a brittle plastic material.

In the use of this embodiment of my improved curler, the hair waving fluid in the container 26 is released to wet a coil of hair positioned on surface 3 of the curler in cold permanent waving hair by flexing the curler and thereby shattering the container 26. After the container 26 is shattered, the cold wave fluid flows through the perforations 25, 25 into the adjacent fibrous hair receiving surface and finally into the coil of hair positioned upon that surface.

Still another embodiment of this invention is illustrated in Figure 5. In this embodiment the body **1** curling rod is composed of a fibrous material such as, for example, cotton fiber, or other soft absorbent material such as, for example, loosely fabricated felt, synthetic cellulosic sponge or even certain types of sponge rubber. The body **1** has an internal chamber **2** entirely filled by a container **30** which, like the container **26**, of Figure 4, is made of a water-proof, brittle material such as, for example, glass or brittle plastic, which can be shattered by flexing the body **1** of the curling rod. The container **30** is substantially completely filled with a body of hair waving solution and has a capacity selected to provide the requisite quanity of hair waving fluid to saturate both the absorbent body **1** of the curler and a coil of hair wound on the hair-receiving surface **3** of the curler, without an excess to flow out of the hair.

This embodiment is provided with a wire or small rod **31** of a metal which is relatively inert to the hair waving fluid which extends longitudinally through the length of the body **1** of the curler and beyond each end thereof. One end of this rod or wire is formed into a loop **32** which provides a point of permanent attachment for one end of the rubber band or cord **4**.

The opposite end **33** of the wire or small rod **31** extending beyond the opposite end of the curler provides a point of temporary attachment for the other end of the band by insertion through a perforation **8** in the band. This end **33** of the wire or small rod may, if desired, be looped and coiled back on itself as shown by Figure 5 to increase its stiffness.

The method by which this curling rod is fabricated will, of course, be determined by the particular absorbent material selected to form the body **1**. In the fabrication of a curling rod in which a fibrous material, such as, cotton fiber is used to form the body **1**, the container **30** can be affixed to the wire or rod **31** and the fiber wound on them to produce the desired elongated body shape. If desired, the ends of the fibrous body **1** may be hardened by dipping them in a suitable stiffening material, such as, for example, a solution of a resin, cellulose nitrate, cellulose acetate or the like to produce the curling rod illustrated by Figure 8. In that figure the hardened end zones of the rod are designated by the numerals **34** and **35**.

These embodiments (Figures 5 and 8) of my invention have the advantages arising from the fibrous surface **3** to an even greater degree than that illustrated by Figure 4 due to the increased depth of the layer of fibrous or other resilient material.

The method of using this curler is identical with that followed in using the curler illustrated by Figure 4 inasmuch as the cold waving fluid is in both cases released by flexing the rod and shattering the internal container to allow it to saturate the fibrous covering and a coil of hair superimposed thereon.

A body of cold waving fluid, for example, that at **12** on the figures of the drawing, forms an essential part of this invention, and it is to be understood that any of the cold waving liquids proposed by the prior art may be used to form that body. However, this invention has its greatest value in connection with aqueous cold waving solutions which contain reducing agents.

The body of cold wave fluid included as an integral part of my improved curler may be, for example, an aqueous solution of sodium thioglycollate or ammonium glycollate. The following solution is suitable for my purpose:

	Gms.
Thioglycollic acid	10
Sodium hydroxide	7
Hydroxyl amine sulfate	10
Water	100

In carrying out the method in accordance with this invention, this solution should be allowed to remain in a coil of hair for approximately fifteen minutes after it is released from its sealed chamber of the curler and allowed to wet the hair. Its action is then terminated by wetting the hair with a solution of an oxidizing agent, such as one of the following composition:

Hydrogen peroxide (20% by volume)	cc	500
Tartaric acid	grams	30
Water	cc	500

The application of this solution to the hair causes its temperature to rise above normal body temperature in about five minutes. After the hair has cooled it is removed from the curler and washed free of chemicals.

Instead of using a thioglycollate as the reducing agent in my cold waving solution, I may use, for example, sodium, potassium or ammonium sulphides, sodium, potassium or ammonium hydrosulphides, cysteine hydrochloride, tetraethyl ammonium sulfite, amino sulfites, ethyl amine sulfites, sodium hyposulphite or sodium dithionate. A suitable solution is, for example, one containing six per cent sodium hydrosulphide, adjusted to pH 10 by the addition of sodium carbonate or sodium meta silicate. This solution should remain in contact with the hair for about fifteen minutes after its release from the sealed compartment of my curler before its action is stopped by treating the hair with an oxidizing agent, such as, for example, an aqueous solution of hydrogen peroxide and tartaric acid having the composition given above.

Although an acidic, aqueous solution of hydrogen peroxide is entirely suitable for terminating the action of a cold waving solution containing a reducing agent, dilute solutions of sodium, potassium or ammonium persulfate, sodium, potassium or ammonium perborate or of potassium permanate may also be used for this purpose.

The body of cold waving fluid forming a part of my improved curler may be entirely free of a reducing agent. Thus, it may be merely an aqueous solution of a strong alkali, such as, for example, sodium or potassium hydroxide. It may be an alkaline solution containing a proteolytic enzyme, such as, for example, the following composition containing trypsin:

	Percent
Trypsin	0.1– 0.25
Sodium benzoate	0.5– 1
Sodium carbonate	1– 3
Sodium hydroxide	1– 3
Sodium chloride	5–30
Gum tragacanth	5–10
Water to make 100%.	

After this solution is released from my new curler and uniformly wets the coil of hair thereon, the hair is allowed to dry by exposure to air while still coiled on the curler. After it is dry it is removed from the curler and combed out, whereupon the chemicals are largely removed in flakes of dry gum tragacanth combed out of the hair. However, it is ordinarily desirable to neutralize any residual alkalinity by rinsing the hair in a dilute solution of acid, such as, for example, a vinegar or lemon rinse.

What I claim and desire to protect by Letters Patent is:

1. A hair curling rod comprising a rod of water-proof material adapted to receive a coil of hair and capable of fracture under light mechanical force which has a permanently sealed internal chamber substantially filled with a cold waving solution and a position of weakness on its hair-receiving surface adjacent its internal chamber which will permit the rod to be broken at the point of weakness by the application of light mechanical force after a strand of hair has been wound on the rod, the said cold waving solution being present in the said chamber

in a predetermined volume such that it will wet substantially all parts of a strand of hair wound upon the rod without any substantial excess to flow out of the hair, upon the application of the said mechanical force.

2. A hair curling rod comprising a rod of a brittle plastic material adapted to receive a coil of hair and capable of fracture under light mechanical force, which has a permanently sealed internal chamber positioned within a portion of its length substantially filled with a cold waving solution and has a notch on its hair-receiving surface adjacent to but not penetrating the internal chamber, which will permit the rod to be broken at the notch by the application of a light mechanical bending force at the ends of the rod after a strand of hair has been wound on the rod, the said cold waving solution being present in the said chamber in a predetermined volume such that it will wet substantially all parts of a strand of hair wound upon the rod without any substantial excess to flow out of the hair, upon the application of the said mechanical force.

3. A hair curling rod comprising a rod of a brittle plastic having a larger diameter at the ends than at the middle section of the rod, a flexible cord attached at one end of the rod and means at the other end of the rod for gripping the cord, the said rod having a permanently sealed internal chamber positioned within a portion of its length substantially filled with a cold waving solution and has a notch on its hair-receiving surface adjacent to but not penetrating the internal chamber, which will permit the rod to be broken at the notch by the application of a light mechanical bending force at the ends of the rod after a strand of hair has been wound on the rod, the said cold waving solution being present in the said chamber in a predetermined volume such that it will wet substantially all parts of a strand of hair wound upon the rod without any substantial excess to flow out of the hair, upon the application of the said mechanical force.

4. A hair curling rod comprising a rod of a brittle plastic material capable of fracture under light mechanical force which has a layer of an absorbent material forming its hair-receiving surface and a permanently sealed internal chamber positioned within a portion of its length substantially filled with a cold waving solution, and has a notch in its plastic body under the absorbent hair-receiving surface adjacent to but not penetrating the internal chamber, which will permit the rod to be broken at the notch by the application of a light mechanical binding force at the ends of the rod after a strand of hair has been wound on the rod, the said cold waving solution being present in the said chamber in a predetermined volume such that it will wet substantially all parts of a strand of hair wound upon the rod without any substantial excess to flow out of the hair, upon the application of the said mechanical force.

5. A hair curling rod comprising a rod of a water-proof material adapted to receive a coil of hair having a plurality of apertures on its hair-receiving surface connected to an internal chamber and to the interior of a flexible bulb permanently attached to one end of the said rod and forming an integral part of the said curling rod, a volume of cold waving solution substantially filling said bulb, and a sealing closure for said bulb between said chamber and said interior which is displaceable by fluid pressure transmitted by the cold waving solution upon the application of a light mechanical force to the said bulb, the said cold waving solution being present in the said bulb in a predetermined volume such that it will wet substantially all parts of a strand of hair wound upon the rod without any substantial excess to flow out of the hair, upon the application of the said mechanical force.

6. A hair curling rod comprising a core of a water-proof material which has a layer of an absorbent material forming its hair-receiving surface, a plurality of apertures extending through the water-proof material and connecting the absorbent hair-receiving surface to an internal chamber positioned within the waterproof material, and to the interior of a flexible bulb permanently attached at one end of the said rod and forming an integral part of the said curling rod, a volume of cold waving solution substantially filling said bulb, and a sealing closure for said bulb between said chamber and said interior which is displaceable by fluid pressure transmitted by the cold waving solution upon the application of a light mechanical force to the said bulb, the said cold waving solution being present in the said bulb in a predetermined volume such that it will wet substantially all parts of a strand of hair wound upon the rod without any substantial excess to flow out of the hair, upon the application of the said mechanical force.

7. A hair curling rod comprising a rod of a plastic material having a larger diameter at the ends than at the middle section of the rod, a flexible cord attached at the end of the rod and means at the other end of the rod for gripping the cord, the said rod having a plurality of apertures on its hair receiving surface connected to an internal chamber and to the interior of a flexible bulb permanently attached at one end of the rod and forming an integral part of the said curling rod, a volume of cold waving solution substantially filling said bulb, and a sealing closure for said bulb between said chamber and said interior which is displaceable by fluid pressure transmitted by the cold waving solution upon the application of a light mechanical force to the said bulb, the said cold waving solution being present in the said bulb in a predetermined volume such that it will wet substantially all parts of a strand of hair wound upon the rod without any substantial excess to flow out of the hair, upon the application of the said mechanical force.

8. A hair curling rod comprising a rod of a waterproof, flexible material adapted to receive a coil of hair having a plurality of apertures on its hair-receiving surface connected to an internal chamber within a substantial portion of its length having positioned therein a sealed container of a brittle waterproof material substantially filled with a cold waving solution which is capable of breaking when the curling rod is flexed by the application of a light mechanical pressure at its ends, the said cold waving solution being present in the said sealed container in a predetermined volume such that it will wet substantially all parts of a strand of hair wound upon the rod without any substantial excess to flow out of the hair, upon the application of the said mechanical pressure.

9. A hair curling rod comprising a rod of a waterproof, flexible material having a larger diameter at the ends than at the middle section of the rod, a flexible cord attached at the end of the rod and means at the other end of the rod for gripping the cord, the said rod having a plurality of apertures on its hair-receiving surface connected to an internal chamber within a substantial portion of its length having positioned therein a sealed container of a brittle water-proof material substantially filled with a cold waving solution which is capable of breaking when the curling rod is flexed by the application of a light mechanical pressure at its ends, the said cold waving solution being present in the said sealed container in a predetermined volume such that it will wet substantially all parts of a strand of hair wound upon the rod without any substantial excess to flow out of the hair, upon the application of the said mechanical pressure.

10. A hair curling rod comprising a core of a waterproof, flexible material surrounded by a body of soft, absorbent material, the said core having a plurality of apertures through its surface carrying the absorbent material connected to an internal chamber within a substantial portion of its length having positioned therein a cylindrical, sealed chamber of a brittle waterproof material substantially filled with a cold waving solution which is capable of breaking when the curling rod is flexed by the application of a light mechanical pressure at its ends, the said cold waving solution being present in the said

sealed chamber in a predetermined volume such that it will wet substantially all parts of a strand of hair wound upon the rod without any substantial excess to flow out of the hair, upon the application of the said mechanical pressure.

11. A hair curling rod comprising a body of an absorbent material surrounding a substantially rigid core and an elongated container of a brittle water-proof material having sealed therein a body of hair waving fluid, both of which extend length-wise of said body, and a flexible cord secured to the said core at one end of the body of absorbent material, and means at the other end of said body for attaching the other end of the said cord the said hair waving fluid being present in the said container in a predetermined volume such that it will saturate the said absorbent material and wet substantially all parts of a strand of hair wound upon the said rod without any substantial excess to flow out of the hair, when the said container is broken.

12. A hair curling rod comprising a body of an absorbent material surrounding a substantially rigid core and an elongated container of a brittle water-proof material having sealed therein a body of hair waving fluid, both of which extend length-wise of said body, the ends of the said absorbent body being impregnated with a hardening material, and a flexible cord secured to the said core at one end of the body of absorbent material and means at the other end of said body for attaching the other end of the said cord the said hair waving fluid being present in the said container in a predetermined volume such that it will saturate the said absorbent material and wet substantially all parts of a strand of hair wound upon the said rod without any substantial excess to flow out of the hair, when the said container is broken.

13. A hair curling rod comprising a rod which has a surface adapted to receive a coil of hair, a container forming an integral and permanent part of the said curling rod, means providing fluid communication between said container and said surface, a volume of cold waving solution contained in and substantially filling the said container and sealing means between said container and said surface which protects said volume from contact with air and which can be permanently disrupted by the application of a light mechanical force after a strand of hair has been wound on the rod, the said volume of cold waving solution being predetermined to be sufficient to wet substantially all parts of a strand of hair wound upon the rod without any substantial excess to flow out of the hair upon the application of the light mechanical force.

14. A hair curling rod comprising a rod which has an absorbent surface adapted to receive a coil of hair, a container forming an integral and permanent part of the

said curling rod, means providing fluid communication between said container and said surface, a volume of cold waving solution contained in and substantially filling the said container and sealing means between said container and said surface which protects said volume from contact with air and which can be permanently disrupted by the application of a light mechanical force after a strand of hair has been wound on the rod, the said volume of cold waving solution being predetermined to be sufficient to wet substantially all parts of a strand of hair wound upon the rod without any substantial excess to flow out of the hair upon the application of the light mechanical force.

15. A hair curling rod comprising an elongated body of absorbent material having a surface adapted to receive a coil of hair, surrounding an elongated container of a brittle water-proof material capable of being broken by the application of a light mechanical force to the surrounding body of absorbent material, having sealed therein a body of cold hair waving fluid and extending longitudinally of the said body of absorbent material, the said cold waving solution being present in the said elongated container in a predetermined volume such as that when the said container is broken by the application of a light mechanical force, it will wet substantially all parts of a strand of hair wound upon the absorbent surface without any substantial excess.

16. A hair curling rod comprising of an elongated body of cotton fiber having a surface adapted to receive a coil of hair, surrounding an elongated container of a brittle, waterproof material capable of being broken by the application of a light mechanical force to the surrounding body of cotton fiber, having sealed therein a body of cold hair waving fluid and extending longitudinally of the said body of cotton fiber, the said cold waving solution being present in the elongated container in a predetermined volume such as that when the said container is broken by the application of a light mechanical force, it will wet substantially all parts of a strand of hair wound upon the absorbent surface without any substantial excess.

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