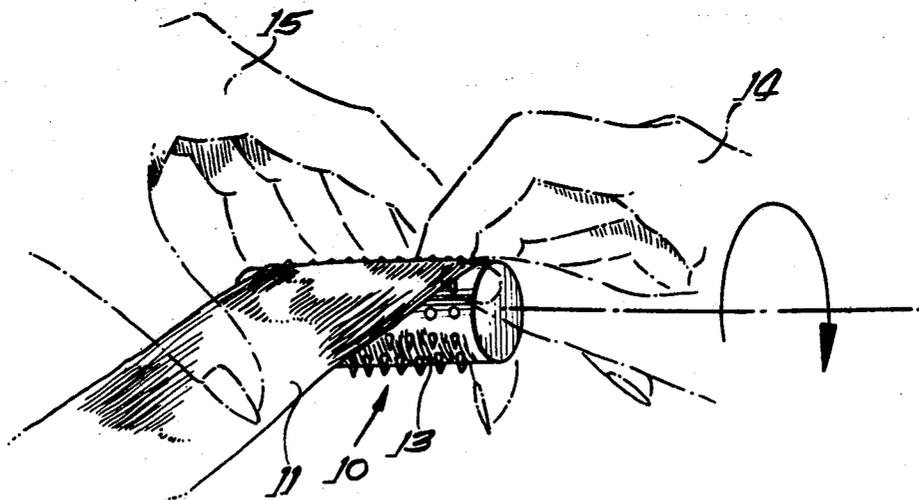


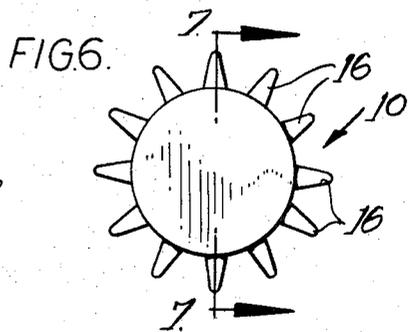
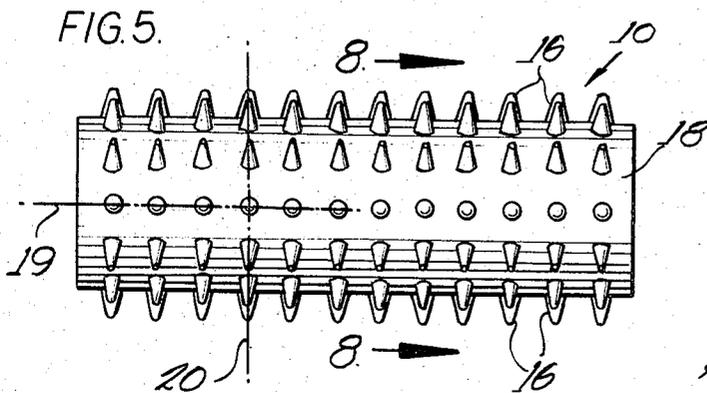
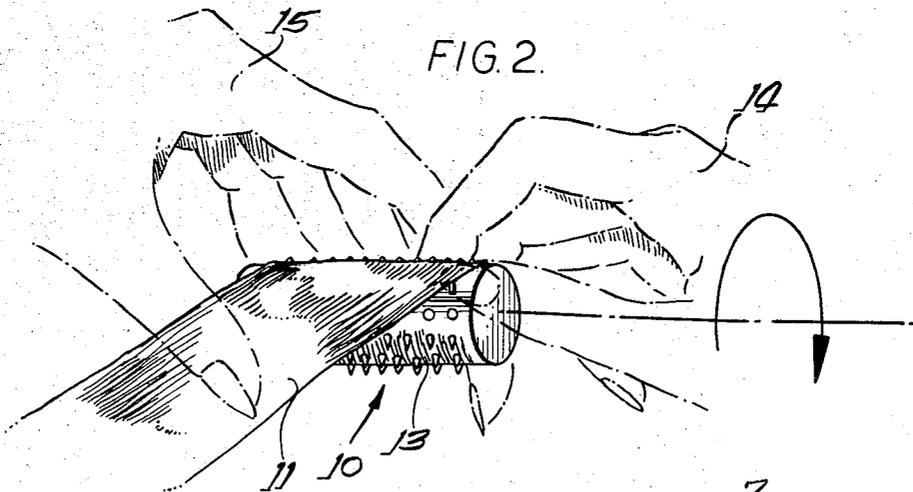
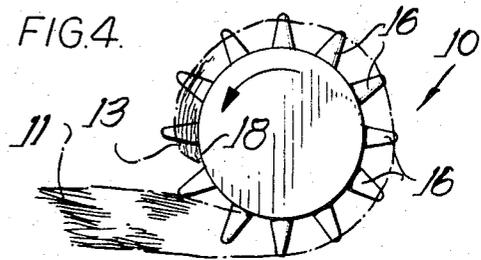
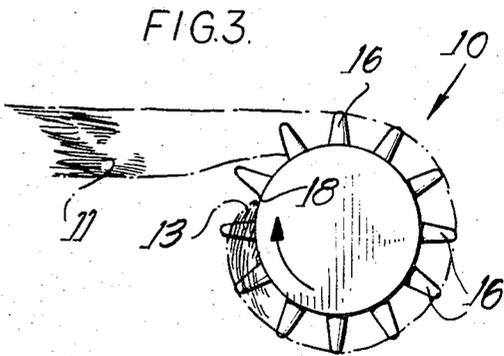
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 [21] Appl. No. **850,308**  
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 [45] Patented **Feb. 23, 1971**  
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 Chicago, Ill.  
 Continuation of application Ser. No.  
 551,320, May 19, 1966, now abandoned.  
 This application July 28, 1969, Ser. No.  
 850,308

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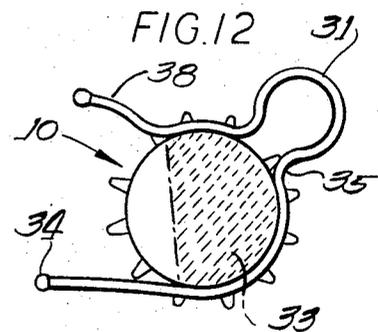
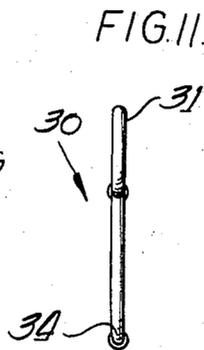
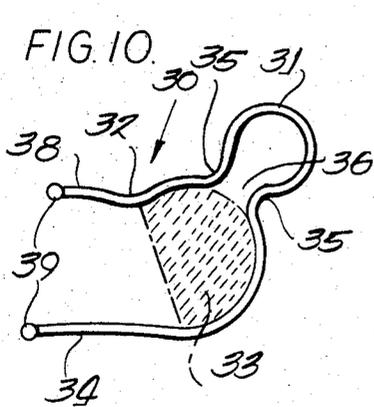
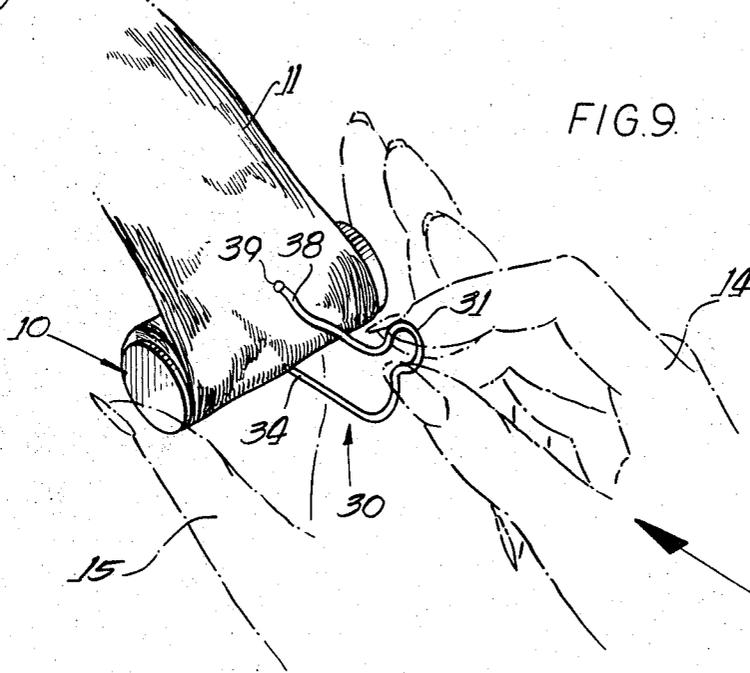
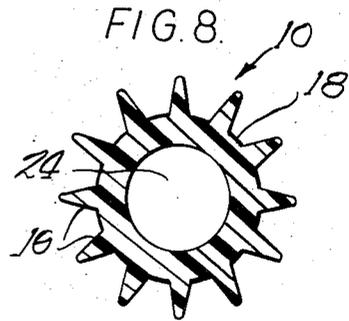
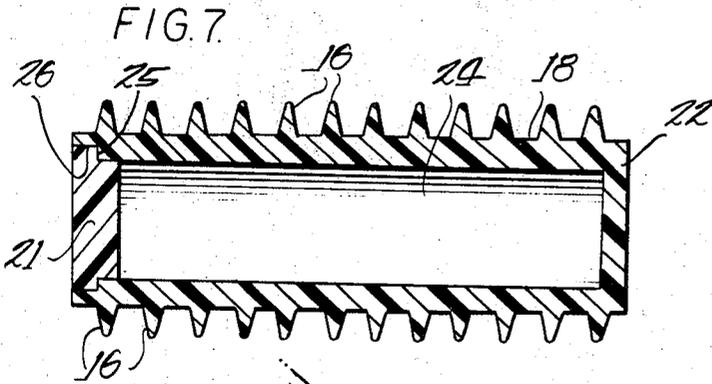
[54] **METHOD FOR SETTING HAIR**  
 1 Claim, 17 Drawing Figs.  
 [52] U.S. Cl. .... 132/7  
 [51] Int. Cl. .... A45d 7/00  
 [50] Field of Search ..... 132/7, 33.2,  
 33.5, 33.6, 40, 41, 41.2, 36.A, 36 (Aa), 43, 43.1,  
 36.2, 36, 33

**ABSTRACT:** A method of setting hair in which curlers are placed in a steam chest until they reach their maximum effective moisture content at an elevated temperature. Then the curlers are removed from the steam chest, and a strand of hair is wrapped around the moist exterior of the curler. The preferred temperature at the time of wrapping is in the range of 150° F. to 190° F. The preferred curling time is at least 2 minutes.

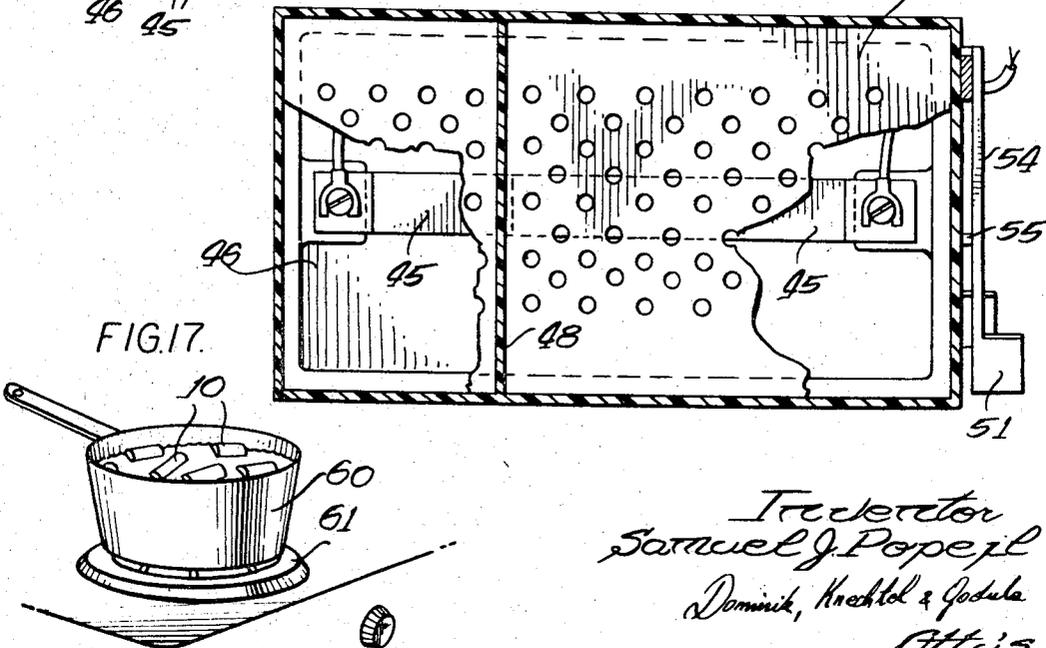
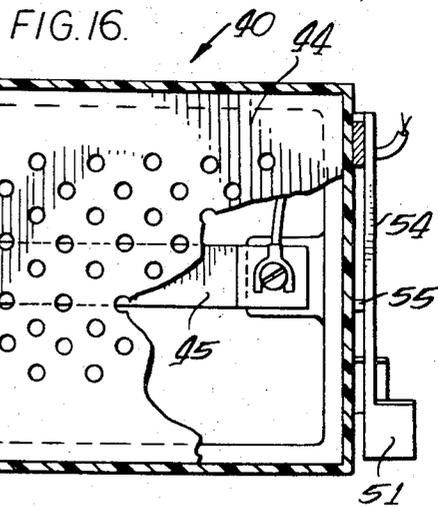
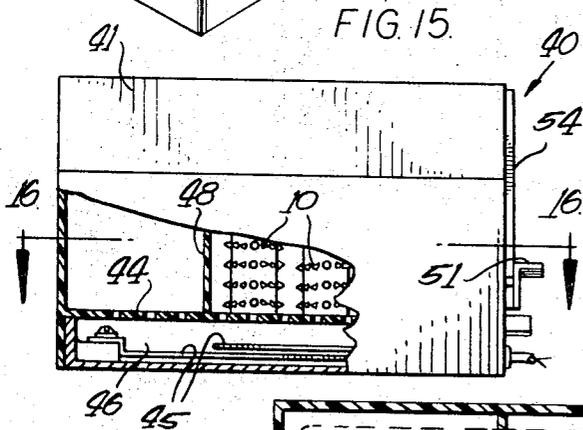
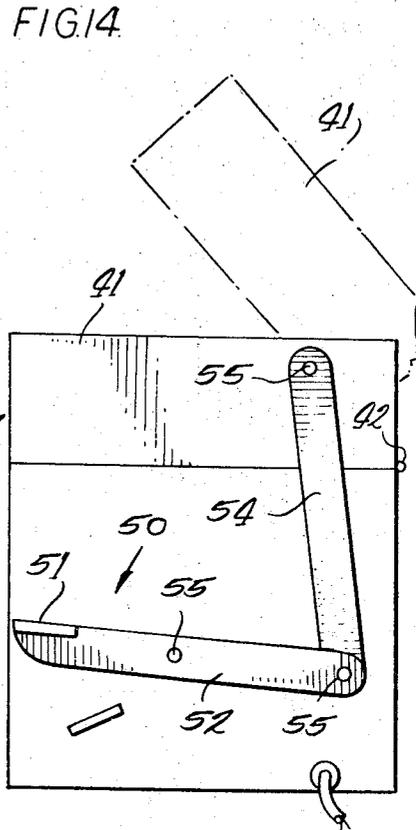
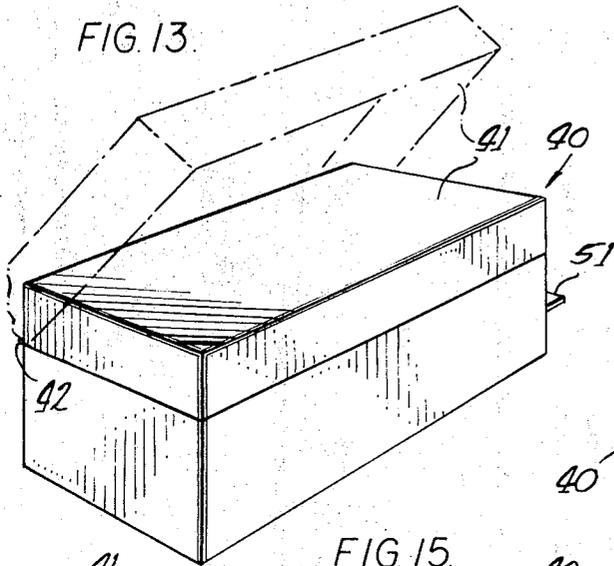




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**METHOD FOR SETTING HAIR**

This is a continuation of case Ser. No. 551,320, now abandoned.

The present invention relates to the method and apparatus for setting the hair. More specifically it relates to heating, by steaming or boiling, rollers having a plurality of spines extending radially from the roller body, rolling the hair over the rollers, and securing by clips the rolled strands of hair to the rollers until the rollers have given up their moisture and heat to the hair thereby setting the curl.

Heretofore the practice of setting the hair, waving the hair, and otherwise conditioning a lady's coiffure has been accomplished either by dry-curling irons, or the application of a whole host of chemical solutions in combination with dryers and the like. The dry-curling equipment, such as curling irons, necessarily imposes hazards in its use, not the least of which is the risk of burning the scalp. Furthermore, the tendency is to split or fray the hair ends. Those methods of curling and waving the hair employing wave setting lotions or chemical gels may be offensive and indeed injurious to persons having certain allergies.

Recently there have been marketed heated dry rollers which are inserted into the hair to set the same, one being imported from Europe manufactured and sold pursuant to the trademark CARMEN (see Harper's Bazaar, page 124, Apr. 1966 issue). Because the curlers are heated with electrical rods, they must be open at one end and give up their heat quickly. Furthermore, electric heating units require numerous safety steps to prevent overheating, thus increasing their cost. (French Pat. No. 1,362,367).

Also, steaming has long been known as a way of curling hair. For example, U.S. Pat. Nos. 1,982,684 and 2,880,299, have the distinct disadvantage of a risk of scalding the scalp. Furthermore, where steaming is done by the use of a steam iron or other complex devices, the advantage of using a variety of sizes of rollers to specially style the hair is lost.

Moisture has always brought out the best in natural hair. Under conditions of exceedingly low relative humidity, the hair loses its natural body or resiliency. Conversely, with normal or excessive relative humidity, the hair will wave and be more readily managed. The present invention stems from the discovery that by steaming or boiling curler rolls prior to the insertion of the same into the hair, the hair can be effectively set and styled in a safe and efficient manner, and very quickly.

Accordingly, it is a principal object of the present invention to provide a method and mechanism for setting the hair in a matter of minutes rather than hours. A related advantage results from the ability to remove the curlers within 2 to 3 minutes after they have been inserted and thus there need be no loss of sleep or discomfort from sleeping with curlers.

Because the present invention contemplates steaming or boiling in water to heat the curlers, each curler is sterilized before using so the entire family or others using the same unit at a beauty parlor are hygienically protected.

A further advantage of the present invention stems from the moist drying of the hair which reduces the tendency to split ends of the hair, rather than promoting the same as does hot dry curling. A further and related advantage is that where the hair does have split ends, the moisture on the surface of the curlers picks up the split ends of the hair more readily and permits the hair to be curled tighter and to retain its curl or set longer.

A further and more important advantage of the present invention is the elimination of expensive waving lotions, gels, and the like which can be injurious to the hair, destroy the natural look and high sheen of the natural hair, as well as prevent touching the hair without damage to the coiffure.

Another advantage of the invention stems from the economy of operation which the user enjoys. Expensive trips to the beauty parlor for hair setting are eliminated. On the other hand, by practicing the present invention, hair can be curled and set which has been treated with a permanent wave at the beauty parlor, or even bleached. The present invention is equally efficacious with thin hair or thick hair. Accordingly

when one uses the method and apparatus of the present invention excellent results can be anticipated irrespective of the previous condition of the hair. A related additional advantage to the use of the present invention is that when the hair is set in accordance with the invention, it can be immediately reset or modified to achieve the hairdo which is desired by the user.

Still a further object of the present invention is to eliminate the necessity for hair dryers which both dry the hair and the scalp under long periods of dry heat, oftentimes resulting in falling hair and itching scalp which requires further oil treatments, and may result in headaches and irritated nerves.

In the generally accepted commercial beauty shop methods for setting the hair it is first shampooed. Thereafter several lotions or gels are applied to the hair. Subsequently curlers are inserted while the hair is wet, and then the hair is treated with a fixing solution designed to physically fix the curl. A net is placed over the head, and then the customer sits under a hot dryer for approximately 30 minutes or more. After the hair is dry, it is brushed out, teased with a comb, and then sprayed again before styling, and after styling further sprayed. This entire treatment with solutions and fluids renders the hair stiff and unnatural to the touch. The softness of the hair and its natural feel are lost. Furthermore anywhere from 2 to 3 hours of the customer's time can be spent waiting for and in the course of a treatment.

According to the present invention, however, the curlers are placed in a steam chest preferably, or even in boiling water. Within approximately 8 to 10 minutes the curlers will have reached their maximum effective temperature and moisture content. Thereafter the ends of the hair are placed on the moist exterior of the curler and the balance of the strands of hair tightly wrapped around the curler. When the wrapping is completed the hair is clipped in place on the curler, and a second curler removed from the heating unit and similarly placed in other strands of the hair.

Within 2 minutes after the hair has been on the curler, the retained moisture from the curler will be transferred to the hair and the higher temperature transfer range traversed. At this time the hair is already set and the moisture dissipated by evaporation. Nevertheless, for best results, and a self-monitoring time schedule, the person treating the hair will wait until all of the curlers have been placed in position. This normally takes 5 to 15 minutes for an average of 10 to 20 curlers. Thereafter the curlers are removed from the hair on a first-on, first-off basis.

After the last curler has been removed, the hair may be brushed or combed or otherwise treated in accordance with conventional techniques. Should one particular area of the hair require further setting or modification, the first curlers removed may be reheated and wetted by the time the hair do has had its first inspection, and may be reinserted for reshaping in accordance with the user's preference.

Because the spines of the curlers are arranged symmetrically, not only can the curler of the invention be employed to comb and untangle the hair before rolling it on, but it similarly avoids a tangling action of the hair when the curlers are removed. Furthermore, the combination of moisture and heat imparts a body or springy resiliency to hair coupled with a permanence of the curl which renders teasing unnecessary, but only optional for styling. This very same body in the hair renders it easier to style, and to retain the style with a natural unchemically treated appearance. Nevertheless, the use of the method of the invention and its equipment for styling the hair does not preclude subsequently spraying where the lady desires it. Best results are achieved when the hair is normally dry before setting. Nevertheless, even with heavy hair after shampooing, if the hair is dried for a short period of time with a towel and followed by a dryer, it can still be very effectively set with the equipment and method of the present invention.

Further objects and advantages and details of the present invention will become apparent as the following description proceeds accompanied by the explanations of the details of the illustrative drawings in which:

FIG. 1 is a diagrammatic view of a lady in which the curlers have been partially inserted in the manner illustrative of the present invention.

FIG. 2 is a perspective partially diagrammatic view showing how the hair is wrapped upon a curler.

FIG. 3 is an end view of the curler illustrating how the hair is rolled underneath.

FIG. 4 is a view similar to FIG. 3 illustrating how the hair ends are rolled over the top of the curler.

FIG. 5 is a front elevation of a curler illustrative of the structure of the present invention.

FIG. 6 is an end view in the same scale as that of FIG. 5 of the curler shown in FIG. 5.

FIG. 7 is a longitudinal sectional view of the curler taken along section line 7-7 of FIG. 6.

FIG. 8 is a transverse sectional view of the curler taken along section line 8-8 of FIG. 5.

FIG. 9 is a diagrammatic perspective view illustrating how the clip is placed in position on a strand of hair to tightly retain the hair strand against the curler after the hair has been rolled on the curler.

FIG. 10 is a front elevation of a clip of the character shown diagrammatically in FIG. 9.

FIG. 11 is an end view of the clip shown in the same scale as FIG. 10.

FIG. 12 is a front elevation of the clip shown in FIGS. 9 through 11 inclusive illustrating its conformed relationship to the curler.

FIG. 13 is a perspective partially diagrammatic view of a steam chest of the character useful in preheating and steaming the curlers.

FIG. 14 is an end view of the steam chest shown in FIG. 13 illustrating diagrammatically how the linkage mechanism opens the lid portion for removing the curlers.

FIG. 15 is a front elevation in reduced scale of the steam chest shown in FIGS. 13 and 14, partially broken to illustrate the interior structure.

FIG. 16 is a longitudinal sectional view of the steam chest taken along section line 16-16 of FIG. 15 looking downwardly on the heating element and base of the curler.

FIG. 17 is a perspective view illustrating an alternative form for heating and moistening the curlers.

The apparatus preferably employed in the method of the invention comprises a curler 10 and means for heating the same to the boiling temperature of water. While the heating may be accomplished by boiling the curler 10 in water (see FIG. 17), it is preferred that a steam chest 40 (See FIGS. 13 to 16) be employed which will assure heating and surface retention of distilled water. Before turning to the specific configuration of the curler 10 and steam chest 40, they will be discussed generally in terms of the material and the properties which are desirably exhibited by the material and the particular configuration. While certain plastics are discussed extensively, metals such as aluminum and other materials may be used.

Test results have indicated that it is important that the curler body 18 retain a temperature in the range of 190° F. to 150° F. for 2 minutes. Employing a generally annular cylinder of 2" to 4" in length, and approximately 1" in diameter with a body wall in the range of 1/8" to 1/4" will produce a satisfactory usable and manageable curler. When the curler is hollow with closed ends superior thermal results are achieved. Whatever plastic material is employed for molding the curlers should be stable at sustained temperatures in excess of 212° F. Polypropylene will exhibit satisfactory temperature characteristics, although that material marketed under the trademark DELRIN which is generally acetal material produces excellent results. The hollow roller 10 with closed ends is most desirable thermally, and also because of its lighter weight and lower material cost as compared to a solid roller.

The following tables are indicative of the temperature curve at average room temperatures when DELRIN with a cored center but open ends, and a cored center with closed ends respectively have been employed after raising to the temperature of boiling water and removing:

Removal		Open End	Closed End
		DELRIN-Cored	DELRIN-Cored
		190°	190°
5	15 seconds	190	180
	30 "	185	178
	45 "	182	178
	1 minute	177	178
	1 " 15 seconds	173	176
10	1 " 30 "	169	176
	1 " 45 "	166	175
	2 minutes	163	173
	2 " 15 seconds	160	172
	2 " 30 "	157	170
	2 " 45 "	155	168
	3 "	153	166
	3 " 15 "	151	165
	3 " 30 "	148	164
	3 " 45 "	145	162
15	4 "	144	161

It will be noted that in all instances the temperature at the end of 2 minutes was in excess of 160° F, but that the DELRIN with an open end cored center achieved a slightly higher initial temperature. With the hollow curler having closed ends, a thinner wall section may be employed to arrive at the same temperature characteristics as above with the open ended curler. As indicated above, the net result is a lighter, more comfortable curler with a lower cost and superior curling characteristics.

Material such as polyethylene have very low water retention characteristics, and accordingly are less desirable. Furthermore such materials as styrene and polystyrene distort at relatively low temperatures, and are also less desirable, even though less expensive. In addition, their water retention characteristics are also relatively low. With any material having acceptable thermal characteristics, roughening the curler body exterior surface will improve its moisture retaining properties.

Nylon has good water retention characteristics and temperature characteristics, but is considerably more expensive. As newer and different plastics, metals, alloys and sintered materials are developed, there will undoubtedly be improved materials which can be employed. It will still remain essential to the invention to have good temperature retention characteristics, moisture retention characteristics, and not distort at sustained temperatures of boiling water. The best results are achieved when the curler will remain within the range of 175° F. to 185° F. for the first 2 minutes after being taken from a 212° F. aqueous environment, and still have a temperature of 160° F. 4 minutes after such removal.

More specifically, it will be noted that the embodiment of the curler 10 as disclosed in the drawings has an exterior cylindrical curler body 18. A plurality of spines 16 are integrally molded into the body 18 and extend therefrom radially a distance anywhere from 5 percent to 15 percent of the diameter of the cylinder and approximately the thickness of the body. The spines are desirably on centers of 30° or less, and repeated along the longitudinal length of the cylinder on a comparable spacing. Best results have been achieved when the spines 16 are oriented in longitudinal spine rows 19 and circumferential spine rows 20 symmetrically arranged with 12 spines in each direction. The symmetrical arrangement of the spines 16 offers the twofold advantage of permitting a combing of the strand of hair before it is curled on the curler, and also reducing the tendency for the curler to tangle in the hair before unrolling. Furthermore, it will be noted that the outer circumferential rows of spines are oriented closely to the ends of the curler body 18 so that the curlers can be gripped by the hands at their very ends without the fingers touching the curler body 18. While the spines will cool rapidly upon removal from the steam or boiling water, the body portion 18 must necessarily remain hot as long as possible. By arranging the spines in the manner disclosed, comfortable handling is achieved almost immediately after removable. As to size, the diameters of the curler body 18 can vary between 5/8" and 2". An ideal length approximately 3". For the average kit, 12 of the larger diameter rollers will be employed, six of the medium size and two of the small diameter. Naturally, this mix will vary in accordance with the user depending upon the texture of

hair as well as the hair style to be set.

From a manufacturing standpoint, the curler body 18 is molded with a hollow core 24, and a closed end 22. A recessed collar 26 is molded into the open end of the curler body 18, and an end cap 21 with a stepped end cap shoulder is provided to close the open end of the curler body 18. While the structure is shown here with a collar and stepped shoulder, it will be appreciated that various constructions can be employed, and particularly those with a snap-acting interfit.

Irrespective of the type of curler employed, when a lady is setting her own hair, there is always a problem of securing the tightly wrapped hair strand in place. This is particularly true when setting the hair at the rear of the head, where the sense of touch is the only guide available when self-setting techniques are employed. Thus it is highly desirable to have a hair clip which not only will secure the hair tightly in its wrapped configuration about the roller, but also be easy to insert, locate, and remove. Turning now to FIGS. 9 through 12 inclusive, it will be seen that a hair clip 30 has been provided which has a looped tab 31 which serves the twofold purpose of providing resiliency to the clip 30, and also rendering it easy to locate, insert, and remove. Referring to FIG. 1, it will be seen there that the looped tabs 31 remain at the outside of the curler, and are easy to observe as well as physically locate.

The looped tab 31 is generally circular terminating in neck bends 35 which define a looped tab neck 36. Extending from the looped tab neck 36 are outer leg 32 and inner leg 34. The base portion of the legs 32, 34 define a crescent-shaped roller body clamping portion 33 (shown in shaded lines in FIG. 10 and 12). A clamp opener portion 38 is reversely bent at the open end of the outer leg 32, and engages the roller body in the manner shown in FIG. 9, thereby springing the two legs 32, 34 outwardly to thereby receive the strand of hair and curler 10. The blunted ends 39 formed at the tips of the legs 32, 34, are provided to prevent scratching, and assist in rendering the insertion of the clip 30 an easier task.

More specifically it will be seen in FIG. 2 that the user is able to hold the curler 10 and manipulate same with the fingers of her right hand 14 twisting the same, and the left hand 15 guiding the hair strands to curl tightly in the curler 10. As illustrated diagrammatically in FIGS. 3 and 4, the fine ends 13 of the hair strand 11 adhere to the curler body 18 because the peripheral portion of the body is moist after having been removed from the steam chest 40 or boiling water. Because the frayed ends 13 adhere closely to the curler body 18, a much tighter wrap can be achieved, the balance of the hair strand 11 reinforcing the tightness of the curl until the curler 10 approximates a contact position with the scalp 26 as shown in FIG. 1. At this point the clip 30 is positioned with the legs circumferentially opposed over the curler 10 as shown in FIG. 12.

As set forth above, the preferred embodiment contemplates that the interior of the curler 10 have a hollow core 24, but satisfactory curling results may be achieved in the event one end is open or both ends are open, so long as the curler is first steamed or boiled, or otherwise subjected to an aqueous environment at approximately the boiling point of water.

Referring now to FIGS. 13 through 16, a steam chest 40 is shown which will effectively steam the curlers 10 in accordance with the method of the invention. As shown in FIG. 13, the steam chest 40 has a lid 41 which is secured at its rear portion by means of hinges 42 to the body 43.

The lid 41 is raised by means of the lid release linkage 50 which opens up the interior where the curlers (as shown in FIG. 15) set upon a perforated base 44. Beneath the perforated base 44 is a water tray 46 which is filled with water. A pair of heated rods 45 are within the water tray, and serve as a safety in that the circuit for heating is not closed unless the tray is full of water.

A divider wall 48 may be provided, or several, to divide various sizes of the curlers.

As noted in FIG. 14, the lid release linkage 50 is activated by a finger tab 51. The finger tab 51 is on the tab crank 52 which is pivoted at a central pivot 55, so that when it is depressed, the end pivot 55 activates the lid lever 54 which is in turn pivotally connected to the lid 41. Therefore, by pressing the finger tab 51, the lid 41 is opened to the position as shown in the phantom lines in FIG. 14.

An alternative form of heating the curlers, most simple, expeditious, and yet useful is shown in FIG. 17. There a pot 60 is selected by the user from many cooking pots, filled with water, and heated over a conventional stove burner 61. Since the curlers 10 are hollow, they will float on top of the water and can be picked out by kitchen tongs or any other conventional method after they have been boiled for approximately 8 to 10 minutes. Since the curlers are light in weight, and only boiling water is required for use, they are ideal for travel use. Indeed with only three curlers, the traveling lady can effectively set her hair in a few minutes.

Because the method of the invention requires steaming or boiling the curlers, the temperature of each curler is automatically controlled not to exceed 212° F. Furthermore, even where hard water is used to generate the steam, the natural action of evaporation and converting into steam insures that the curlers 10 will only be contacted with pure distilled water. Thus the hair is uniformly treated in terms of temperature as well as the type of moisture which contacts the hair. Furthermore, as set forth in the objects of the invention, each curler is necessarily sterilized before use, and cannot be effectively used until it has been sterilized.

While the invention has been described in connection with specific embodiments and applications, it is not applicant's intention to restrict himself thereto, but to include within the invention all of the subject matter defined by the spirit as well as the letter of the annexed claims.

I claim:

1. A method of setting hair in the absence of applying direct live steam to the hair in which the hair is wound around a hot moist curler and fixed thereto until the curl of hair is set, comprising the steps of:

placing the curler having moisture and temperature-retaining characteristics in a steam chamber out of contact with any boiling fluid therein but exposed to the steam generated in the chamber to cover the entire exterior surface of the curler with steam which condenses on said surface area and heats the exterior surface of the curler; completing the heating and condensate depositing step before the curler is placed in the hair;

removing the curler from the steam chamber only after it has attained an elevated temperature substantially that of boiling water and after the curler exterior has attained its maximum effective moisture content;

wrapping a strand of hair around the moist exterior surface of the curler while the curler is at a temperature within the range of 150° F. to 190° F.,

thereafter securing the wrapped hair in place to form a curl as the effective moisture content is transferred to the hair and the aforesaid temperature range traversed thus transferring said heat and moisture from the exterior surface of the curler to the inside of the curl and through the curl toward the outside atmosphere; and

keeping said curler in the hair with the outer portion of the curl exposed to the outside atmosphere for at least 2 minutes until the hair is set and the moisture dissipated by evaporation.