Sept. 3, 1935. D. LAKENBACH 2,013,311

PERMANENT WAVING APPARATUS

Original Filed Jan. 4, 1933 2 Sheets-Sheet 1

Fig. 1.

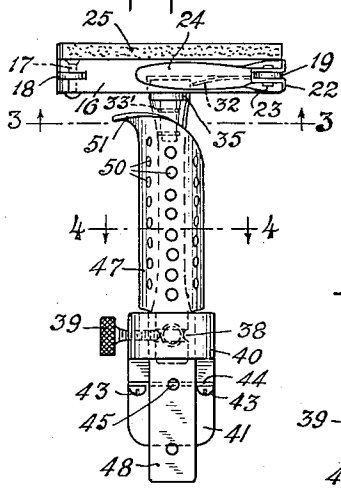



Fig. 2.

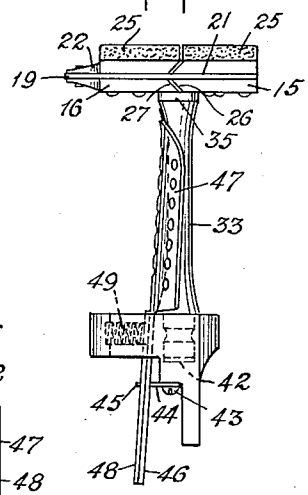



Fig. 4.

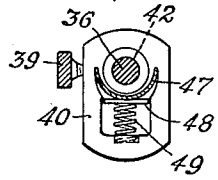



Fig. 3.

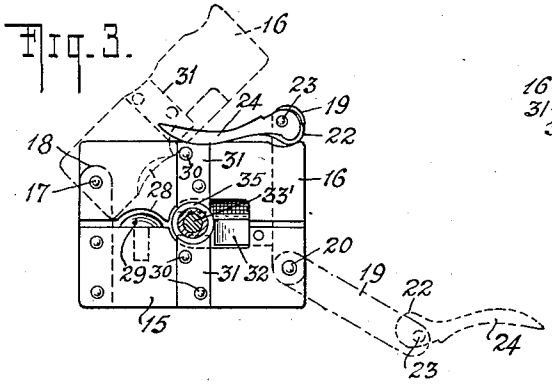



Fig. 5.

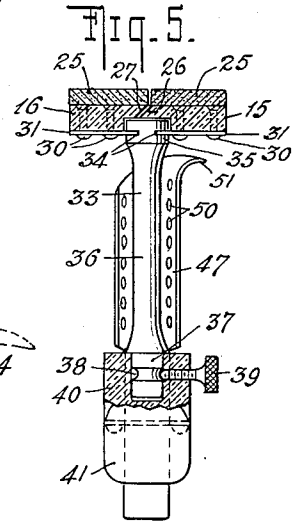
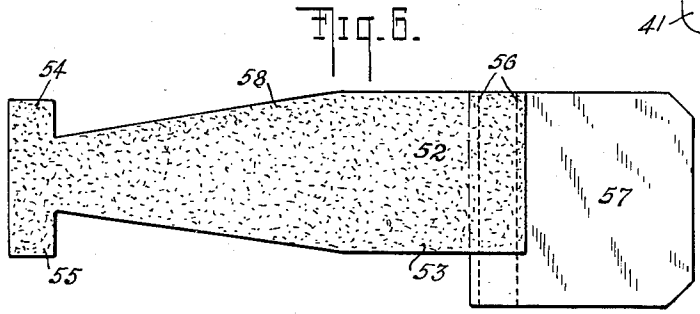



Fig. 6.




INVENTOR

DANIEL LAKENBACH

BY

Fitzmaurice & Lackenbach

ATTORNEY

Sept. 3, 1935. D. LAKENBACH 2,013,311

PERMANENT WAVING APPARATUS

Original Filed Jan. 4, 1933 2 Sheets-Sheet 2

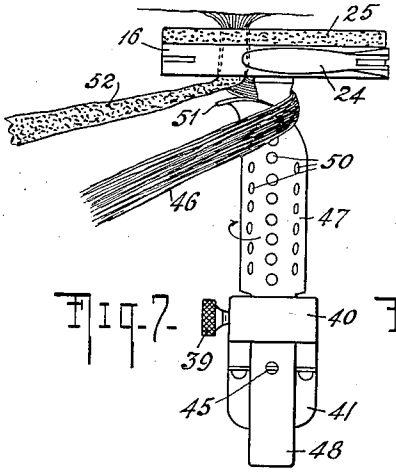



Fig. 7.

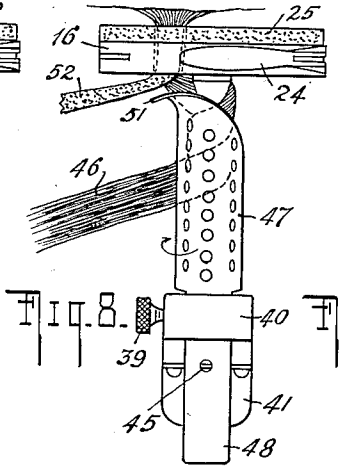



Fig. 8.

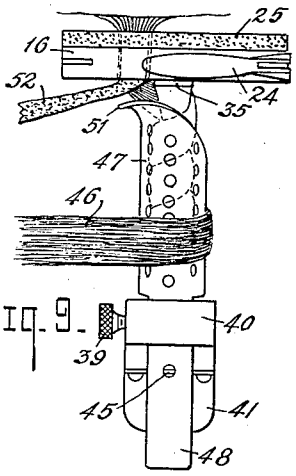



Fig. 9.

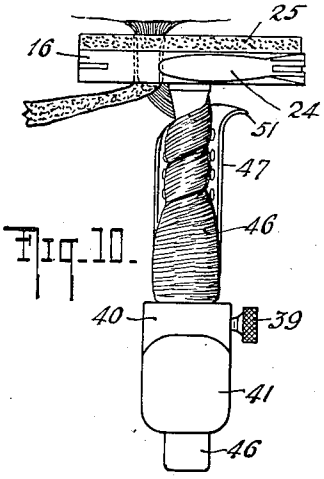



Fig. 10.

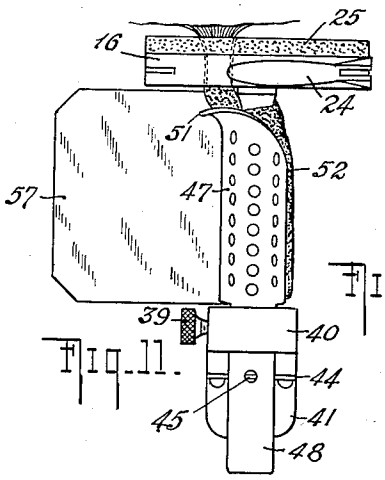



Fig. 11.

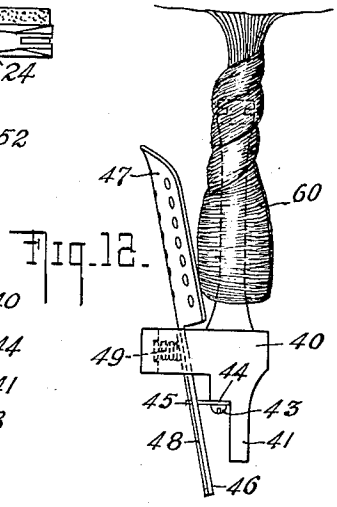



Fig. 12.

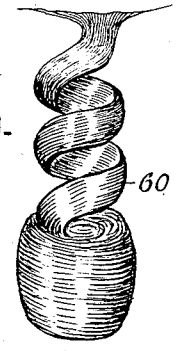



Fig. 13.

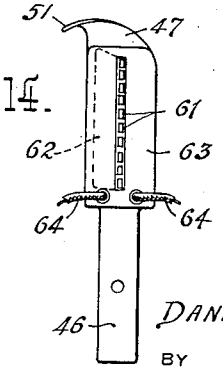



Fig. 14.

INVENTOR

DANIEL LAKENBACH

BY

Thomas E. Lackenbach

ATTORNEY

Patented Sept. 3, 1935

2,013,311

# UNITED STATES PATENT OFFICE

2,013,311

## PERMANENT WAVING APPARATUS

Daniel Lakenbach, Valley Cottage, N. Y.

Original application January 4, 1933, Serial No. 650,084. Divided and this application December 6, 1933, Serial No. 701,118

8 Claims. (Cl. 132—33)

The invention relates to an apparatus employed in imparting a so-called "permanent wave" to human hair. More particularly the invention relates to an apparatus for imparting curls and/or waves to hair in the course of the use of which the hair is divided into tresses of strands, each of such strands being secured adjacent to the scalp within a clamping device, said strand being then wound from its end adjacent to the scalp toward its free end, upon a rod, partly in the form of a helical wave and partly in the form of a curl as hereinafter more particularly defined. The invention further contemplates the provision of an apparatus whereby the winding of the strand of hair to be waved upon the curling rod, preparatory to its heat treatment, is facilitated and made substantially automatic.

The present application is a division of my application, Serial No. 650,084, filed January 4, 1933, in which application I have described and claimed the method of permanent waving for which the apparatus of the instant application is particularly suitable.

In order to make clear the distinction between the method for which the apparatus of the present invention is particularly suitable, and the methods of the prior art, it may be here stated that no method of the prior art has combined the curling of the hair and the waving thereof, as hereinafter more fully defined, in a succession of steps performed as part of a unitary operation, upon a single tress of hair. In other words, no method as yet devised has been capable of imparting curls and waves to a single strand of hair by winding the hair on one spindle so as to impart a curl to that portion of the tress which, by reason of the characteristics of the hair, requires the imparting of a curl thereto, and imparting a wave in the same continuous operation to that portion of the tress of hair which requires a so-called wave.

In the method of the prior art, more particularly designated as the Croquignole method of permanent waving, a so-called "curl" has been imparted to the tress of hair by winding the strand, from its free end toward the end adjacent to the scalp, upon a rod, whereupon such strand is treated with a solution, while enclosed in a substantially moisture tight envelope, the envelope being covered with a sectional heater by which heat is applied to the strand. In this conventional method, the hair is wound on the spindle or curling rod in a continuous series of concentric overlapping circles so that the hair, after it has been given its heat treatment, has imparted thereto a circular or substantially helical configuration which, for the lack of a more precise descriptive term, is defined as a curl.

In the second well-known method of permanent waving, the tress of hair to be waved is wound upon a tapered rod, the smaller diameter end of which is placed near the scalp, the tress of hair being wound from its end adjacent to the scalp toward its free end upon such tapered rod in the form of a helix so that the hair after heat treatment has imparted thereto a configuration described in the art as a "spiral" wave.

As the necessity of imparting a curl to that portion of the hair which requires a curl, and of imparting a wave to that portion of the hair which requires a wave, has been recognized, it is not uncommon to use both of the two methods hereinabove referred to in imparting permanent waves to a single head of hair. Such practice, however, requires both the equipment for carrying out the Croquignole method and that for carrying out the spiral method, with attendant duplication of expense, labor, materials and the necessity of subjecting the person to whose hair the permanent wave is to be imparted to the prolonged discomfort of submitting to two disassociated operations for carrying out the two methods performed independently with the two sets of apparatus.

The novel method of the invention of my application hereinabove referred to is designed to combine the advantages of each of the two known methods of permanent waving above referred to, and to eliminate the disadvantages of each of said methods. The novel method may be described as a combination of the Croquignole and spiral methods, producing a "permanent wave" comprising both a curl and a wave. Thus, by my novel method, such portion of the hair which requires a wave is given a wave, and that portion of the hair which requires a curl is given a curl, the characteristics of the hair being taken into consideration in determining which of the two types is to be imparted to the hair, or to any given portion thereof. My novel method results, therefore, in an extremely attractive appearance of the waved hair when treated according to the combined method, and yet is capable of imparting an all-wave "permanent" or an all-curl "permanent" if the characteristics of the hair should so require.

Coming now to the novel apparatus for carrying out my novel method, and to its advantages over those of the prior art, such apparatus is

extremely simple in construction and is so designed as to eliminate all possibility of improply winding the hair upon the rod. The mechanism for winding the hair is practically automatic in operation and the parts of each of the component devices are so designed as to yield the best possible results even in the hands of an inexperienced operator.

Each clamping device or protector of my novel apparatus is in general outline similar to the clamping device used in the Croquignole method of permanent waving, but is shorter, being approximately half the size of such conventional Croquignole clamping device. The protector and associated mechanism permit starting the winding of the hair on this short curling rod either in the form of a spiral or of a curl. A particular advantage of my novel apparatus is that the clamping position of the rod upon which the hair is to be wound is at right angles to the scalp, i. e., it extends outwardly therefrom as distinguished from the Croquignole arrangement in which the much longer rod is perforce disposed along the scalp. The particular advantage of my novel apparatus over that used in connection with the spiral method appliance is that it is unnecessary with my novel device to use either a clip to secure the steam-tightness necessary to protect the scalp, or a felt protector for the same purpose, and a bakelite or hard rubber shield.

My novel construction of clamping device provides a recess therein for accommodating a bunched tress of hair, and eliminates the distribution of the hair throughout the surface of the cooperating edges of the clamping members, thereby preventing any escape of steam through such cooperating edges, and makes it possible to start the winding of the hair on the rod by the spiral method and substantially adjacent to the scalp.

A further advantage of my novel appliance is the provision of mechanism for automatically winding the hair on the rod, which not only eliminates fatigue of the operator but also assures a proper positioning of the hair on the rod. It is a well recognized fact that if the operator is fatigued he or she either overlaps, twists, or slants the hair while winding the same on the rod, any one of which conditions results in an improper wave. The tightness with which the winding of the hair on the rod is accomplished is also an important factor in permanent waving, the proper tightening of the hair on the rod being accomplished automatically by my novel appliance, so that the operator is not required to exercise his or her own judgment as to the tightness with which the hair is being wound. While the operator is usually sufficiently expert to judge the quality of the hair and therefore to determine the degree of tightening necessary before commencing the winding of the hair, he or she is liable to misjudge the sufficiency of the tightening and thereby produce an improper wave. With my apparatus, the operator is required merely to determine the texture of the hair to be waved, i. e., whether it is coarse, medium or fine, before commencing the winding, and then to manipulate a set screw provided for that purpose, upon my device, the winding of the hair on the rod thereafter being automatically controlled by the device, with respect to the tightness required for that particular type of hair. The proper pressure is imparted to the hair, while it is being wound, by a spring controlling the winding mechanism, and when the winding operation is completed such spring is effective to hold the hair in position upon the rod.

A further advantage of my novel appliance is that the pad of felt or flannel supplying the moisture necessary to condition the hair properly for the permanent waving, and so to protect it against burning or scorching, is wound upon the hair by the same mechanism which effects the automatic winding of the hair on the rod, the excess moisture from such pad being squeezed out by such mechanism as the pad is being wound about the hair.

In the accompanying drawings, forming part of this specification, I have shown a particular embodiment of my invention by way of illustration rather than by way of limitation. In such drawings,

Fig. 1 is a view in front elevation of my novel appliance by means of which my novel method is preferably carried out;

Fig. 2 is a side view of such appliance;

Fig. 3 is a section on the line 3—3 of Fig. 1, showing one of the clamping members in its open position in dotted lines and the lever and cam mechanism for bringing the clamping members to their closed position, also in dotted lines;

Fig. 4 is a section on the line 4—4 of Fig. 1;

Fig. 5 is a view in rear elevation, partly in section, of the appliance;

Fig. 6 is a plan view of the pad constituting the moisture retaining envelope to be applied to the device;

Fig. 7 is a view in elevation of the appliance, showing the strand of hair to be waved, secured within the clamping device at the beginning of the operation of winding the hair on the rod;

Fig. 8 is a similar view and shows the device in the course of its use at the stage when the second spiral winding of the hair upon the rod has been completed;

Fig. 9 shows the device and strand of hair when the third spiral winding of the hair on the rod has been completed;

Fig. 10 shows the device with the winding of the hair on the rod completed;

Fig. 11 shows the manner in which the pad is wound over the hair after the latter has been wound upon the rod;

Fig. 12 shows the device in the condition in which the winding guide is tilted so as to make possible the removal of the hair from the rod after the heat treatment thereof has been completed;

Fig. 13 shows the general configuration of the strand of hair removed from the device after the permanent wave has been imparted thereto by means of my novel method and apparatus; and

Fig. 14 shows a modified form of guide-plate provided with a combing member, and also shows the electrical heating unit applied to the device.

Referring more particularly to the drawings, in which similar reference characters identify similar parts in the several views, 15 designates one of the clamping elements of my clamping device, and 16 the other of said clamping elements, the latter being pivotally connected to the member 15 at 17 by a link 18, the elements being held together in closed position by a lever or bail 19 pivoted to the member 15 at 20, this bail being of a length sufficient to straddle the end of the member 16 when the clamping device is closed. The end of each clamping member is slotted, as at 21, to receive the bail, and an eccentrically mounted cam 22 pivotally connected to the bail 19 at 23, said cam having a handle 24 so that,

after the members 15 and 16 have been brought together, the handle 24 may be swung around to substantially the position shown in full lines in Fig. 3 so as to cause the clamping device to firmly grip the strands of hair making up the tress which is secured between such clamping members.

Each of the clamping members 15 and 16 is preferably provided with a pad of felt 25 on the surfaces thereof facing the scalp. One of the clamping members (15 in the particular embodiment illustrated) is provided with a wedge-shaped clamping surface 26 adapted to cooperate, when the clamping members are brought together, with a grooved surface 27 of the other clamping member (16 in the embodiment illustrated). The body of the clamping device is made of a material which is highly heat resistant, for instance, of hard rubber or a condensation product such as a phenolic resin. One of the clamping members is provided with a recess 28 in the surface thereof adapted to cooperate with the meeting edge of the other clamping member, while said other clamping member is provided with a projecting body of a resilient material, for instance, rubber 29 of an outer configuration corresponding to that of the recess 28.

In applying the portion of the tress of hair to be waved to the clamping device, the portion thereof immediately adjacent to the scalp is inserted into the recess 28 in the side of the clamping member 16, the other clamping member being then brought into position so that the tress of hair is clamped between the members and held securely in position by the body 29 of the resilient material entering the recess 28. When the link 19 has been brought to the position where its cam 22 straddles the end of the clamping member 16 and the handle 24 is swung to the position where it effects a tight closure of the two members of the clamping device, the latter will firmly grip the strand of hair by means of the wedged surface 26 of one of the members engaging the cooperating groove 27 in the other clamping member.

Each of the clamping members 15 and 16 have secured thereto, as by means of rivets 30, a strip of metal 31 having its free end in proximity to the meeting edges of the clamping members 15 and 16. Secured within one of the clamping members (member 15 in the embodiment illustrated) a metallic spring 32 is provided, the free end of which is in close proximity to the free ends of plates 31 so that by depressing the free end of the spring 32 a curling rod or spindle 33 may be secured at right angles to the clamping device and held in such clamping device by the entrance of the free ends of the plates 31 into slots 34 provided in the head portion 35 of the spindle.

This curling rod or winding spindle of my novel apparatus comprises a rod, the central portion 36 of which is of reduced diameter, one end of said rod being provided with the head 35 so constructed as to be rotatable in only one direction as will be described more in detail hereinafter, and having the slots 34 therein by means of which such head and therefore the spindle may be secured upon the clamping device. The other end of said spindle is provided with a reduced diameter head 37 having a peripheral groove 38 into which the end of a set screw 39 is adapted to fit so as to secure upon said spindle the guide carrying block 40 from which extends a finger grip 41. The block 40 has running therethrough a bore 42 (see Fig. 4) into which fits the head 37 of the spindle. To the block 40 is secured by screws 43 a plate 44 having a projection 45 which projection acts as a pivoting point for the heel portion 46 of a winding guide element 47 to be hereinafter more fully described, a reinforcing plate 48 being applied to the heel portion 46 against which a spring 49, housed within a recess of the block 37, is adapted to press.

The winding guide element 47 comprises an arcuate strip of metal having a plurality of apertures 50 in its surface and being of the general configuration shown in Figs. 1 and 5, the end of such winding guide element being curved as at 51 and bent outwardly from the surface of the guide element. This curved and bent extremity of the winding guide element will be hereinafter referred to as the "nose" and has a very important function in guiding the hair being wound upon the spindle to its proper position thereon.

The moisture-supplying and retaining envelope illustrated in Fig. 6 comprises a strip of flannel 52 having a substantially rectangular portion 53, and a portion 58 tapering in width, integral with said rectangular portion, and tabs 54, 55 extending from such tapering portion. At the end of the flannel strip opposite the tab-end is attached, for instance by stitching 56, a strip 57 of water-proof and soft pliable metal material, for instance aluminum foil, having a width somewhat greater than the greatest width of the flannel strip 52.

The carrying out of my novel method involves the winding of the strand of hair to be waved upon the spindle 36, which winding is illustrated in Figs. 7 to 11 inclusive. For the purposes of clarity, the entire series of operations will now be described with particular reference to such figures.

Before the strand of hair 60 has been secured within the clamping device, as hereinabove described in detail, the flannel strip 52 is secured about the portion of the tress adjacent to the scalp by turning the tabs 54, 55 about the strand so that the ends of such tabs will overlap each other, and the strand, with the tabs lapped thereover, is placed within the recess 28 of the clamping member 16 and the clamping members are brought together so as to secure between them such strand of hair. The cam 22 is then swung around by its lever 19 and brought to its position to straddle the end of the clamping member 16 and the handle 24 is brought to its position alongside the upper edge of the clamping member 16 as illustrated in Fig. 3, the exposed portion of the flannel strip 52 being turned to one side of the clamping device. The spindle 36 is then grasped and its head 33 pressed against the free end of the spring 32 and the head 33 slipped into position within the clamping members by having the free ends of the plates 31 engage the slots 34 of such head. The spindle 37 will thus be mounted upon the clamping device, so as to extend at right angles thereto. The operator, grasping the clamping device in one hand may then manipulate the tress of hair with the other hand, giving it a winding motion in a counter-clockwise direction so as to bring such tress of hair under the spindle and then around and over the same and thus position such hair immediately next to the curved and bent nose 51 of the guiding plate 47 as clearly illustrated in Fig. 7. The block 40 is then grasped by means of the finger grip 41 and given a rotation so as to wind the hair upon the spindle in the desired spiral form by the action of

the guide element 47, pressing against the hair and automatically winding and stretching the hair properly upon the spindle. This stage of the winding operation is illustrated in Fig. 8. By giving the spindle and guiding plate an additional rotation, or as many as may be necessary, first, however, turning the hair about the spindle so as to overlie the guiding plate, the hair is wound about the spindle in spiral formation as illustrated in Fig. 9.

When as many spiral windings have thus been imparted to the hair as may be dictated by the nature and characteristics of the hair as previously determined, the hair may be distributed by spreading the same substantially throughout the length of the spindle and the spindle rotated so as to wind the hair upon the spindle in the manner of a Croquignole winding. When this operation has been completed, the winding of the hair is substantially in the condition illustrated in Fig. 10. The flannel strip 52 is then brought forwardly of the clamping device and caught between the surface of the clamping device and the nose of the winding guide element and the flannel strip wound about the spindle upon which the hair has been wound so as to completely surround the spindle and the hair wound thereon, the spindle being rotated so that the winding guide element will be effective to wind the flannel strip about the hair. When this operation has been completed, the device is in the condition shown in Fig. 11. In the course of this operation any excess moisture that may be present in the flannel strip 52 is automatically squeezed therefrom by the pressure of the guide plate upon such flannel strip. In this way the exact quantity of moisture necessary for the hair is retained in the flannel strip.

The aluminum foil 57 is then wound about the aggregate of spindle, hair and guiding plate, and securely fastened thereon by clamping the lower edge thereof against the outer extremity of the spindle. When this operation has been completed, the device is ready for the application thereto of any well-known heating device, for instance, a sectional heater such as is shown in the Mayer Reissue Patent No. 17,585, February 11, 1930. Instead of such sectional heater, I may, of course, use any type of heating unit including the type recently developed comprising an envelope containing a mixture of chemicals which, when moisture is brought into contact therewith, will produce heat of a sufficient degree of temperature and amount to effect the necessary heat treatment of the hair to be waved.

When the heat treatment has been completed, the aluminum foil 57 may be unwound and the clamping members 15 and 16 separated as shown in Fig. 3, the head 33 of the spindle being thus freed so that after the removal of the clamping device the hair may be unwound from the spindle by depressing the heel portion 46 of the guide plate 47 so as to bring the guide plate into the position shown in Fig. 12 in which position its pressure upon the wound hair is freed so that the hair may be easily unwound from the spindle.

In Fig. 13 I have illustrated the approximate condition of the hair after heat treatment in accordance with my method and by means of my apparatus, from which figure it will be seen that the portion of the tress near the scalp has had a spiral imparted thereto and the portion of the hair at the free end of the tress has had a curl imparted thereto.

In Fig. 14 I have illustrated a modified form of winding guide element which differs from the guide plate hereinabove described only in being provided with a series of serrations forming a combing member 61, the teeth of such combing member being pressed outwardly from the surface of the metal comprising the guide plate, leaving a slot 62 in such guide plate and eliminating the necessity of providing the plate with apertures such as 50 of the preferred embodiment. In such modified form, as illustrated in Fig. 14, I have also shown an electrical heating unit 63 mounted upon the guide plate and having terminal wires 64.

It is to be noted that the shank 37 of the spindle 36 turns with considerable freedom in the proper direction (counter-clockwise) to wind up the strand of hair, but is so mounted on its head 35 that sufficient frictional resistance is developed at the joint 33' to prevent uncurling of the strand by its inherent resiliency. This may be provided for by any suitable structure, and for the above purpose I have embodied a one-way friction clutch within the joint 33' which does not require special description.

I claim:

1. A hair-treating appliance comprising a clamping base for attachment to a tress of hair, a curling rod mounted to operate rotatably upon said base, and a combined winding member and guard mounted rotatably upon said curling rod, said appliance also including a flexible blanket having a portion adapted to embrace the portion of the tress embraced by the clamp, a flexible hygroscopic portion to be wound onto the rod concentrically with the convolutions of the tress thereon, and a non-hygroscopic portion adapted to constitute a mosture tight outer enevelope for the coiled tress.

2. A hair-waving appliance comprising a clamping base for attachment to a tress of hair, a curling rod mounted to operate rotatably upon said base, and a combined winding member and guard mounted rotatably upon said curling rod, said appliance also having the winding member formed with an opening extending throughout its length substantially parallel with the axis of rotation thereof, said member having serrations along one edge thereof to constitute a combing element.

3. A hair-waving appliance comprising a clamping base for attachment to a tress of hair, a curling rod mounted to operate rotatably upon said base, and a combined winding member and guard mounted rotatably upon said curling rod, said appliance also having the winding member formed with an opening extending throughout its length substantially parallel with the axis of rotation thereof, the material of said member being disposed in a flaring portion at the end thereof adjacent to said clamping base and terminating in a guide nose directed forwardly with respect to the direction of rotation of said winding member.

4. A hair-waving appliance comprising a curling rod or spindle having at each end a head adapted to receive removably a cooperating member, including a clamping member at one head, and a winder-supporting collar at the other head.

5. A hair-waving appliance according to claim 4, having the clamp-receiving head grooved, said clamping member being provided with a plurality of elements hinged together and respectively having retaining plates to enter said grooved head, and having a spring upon said clamping member adapted to permit connection of said clamp and rod together, but to prevent disconnection thereof from each other.

6. A hair-waving appliance comprising a split

clamping base or member having flat elements hinged to open and close in the same plane, with arcuate recesses registering when closed to receive and embrace a tress of hair and other elongated cooperating recesses arranged to serve as a socket to receive the head of a curling rod, a curling rod having a head adapted to enter said socket, means to hold said clamping elements in closed position, and means to hold said rod-head in its socket, permitting insertion thereof while said clamping elements are closed, but only permitting removal when said clamping elements are open.

7. A hair-waving appliance comprising a flat split clamp adapted to embrace a tress of hair at a region thereof near the scalp, said clamp being formed as a heat-shield for adjacent portions of the scalp, and having a cushioned surface next to the scalp; a curling rod connected removably at one end with said split clamp and adapted to extend therefrom in a direction normal to the scalp when in use; a winder and guard member mounted on the other end of said curling rod and rotatable around said rod to wind said tress thereon; a moisture retaining envelope for said wound-up tress; and a heater element surrounding said envelope; such instrumentalities combining when assembled upon said tress of hair to constitute a unitary structure supportable by the tress alone without discomfort or fatigue to the user, and adapted to produce a permanent wave of desired fashion in a unitary operation of relatively brief duration.

8. A hair-waving appliance according to claim 4 in which the head receiving the winder supporting collar is provided with a circumferential recess, and including a set screw frictionally engaging said recess whereby the rotation of said head, and therefore of the spindle, may be controlled.

DANIEL LAKENBACH.