May 10, 1938. P. SANTURELLO 2,116,644

HAIR WAVING APPARATUS

Filed May 26, 1937 2 Sheets-Sheet 1

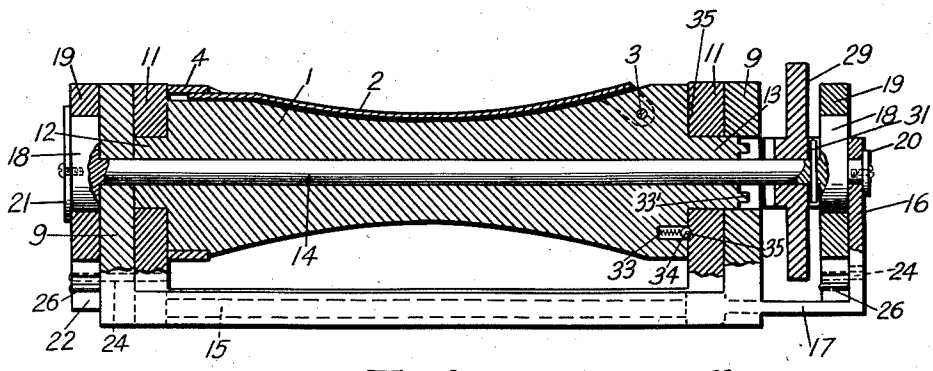


Fig. 1

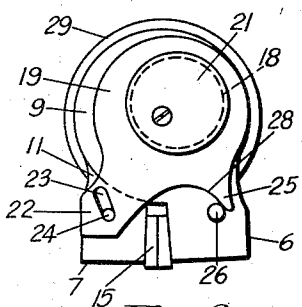


Fig. 2

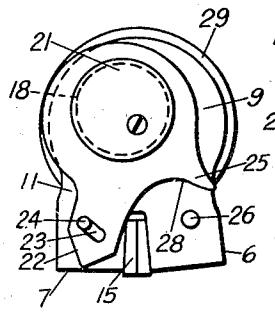


Fig. 3

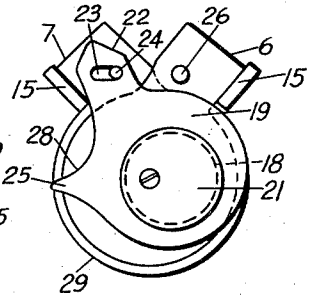


Fig. 4

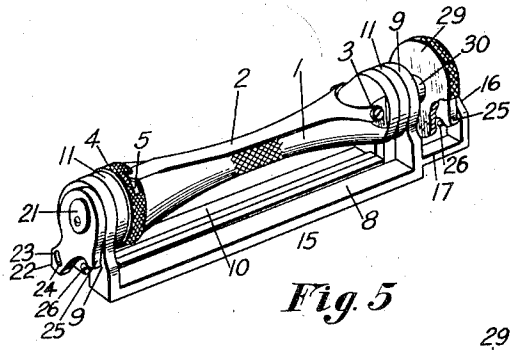


Fig. 5

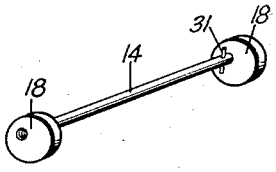


Fig. 7

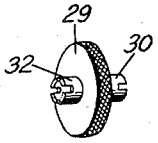


Fig. 8

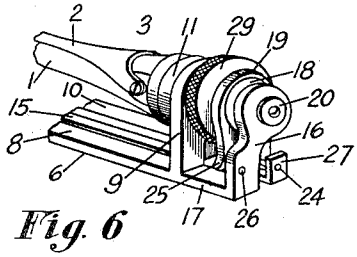


Fig. 6

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HAIR WAVING APPARATUS

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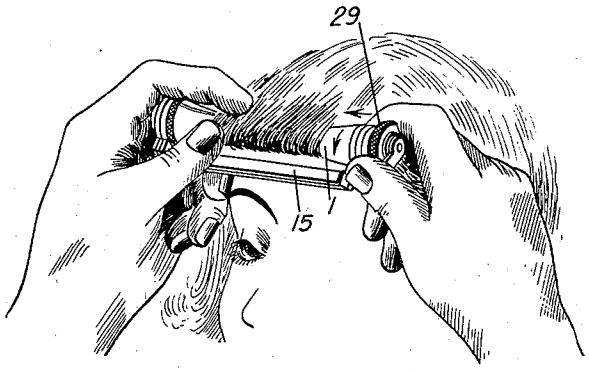


Fig. 9

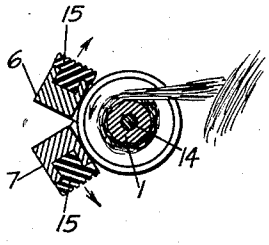


Fig. 10

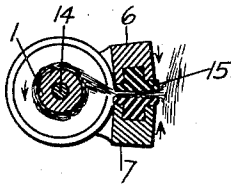


Fig. 11

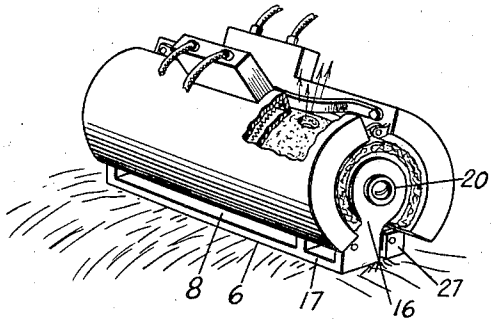


Fig. 12

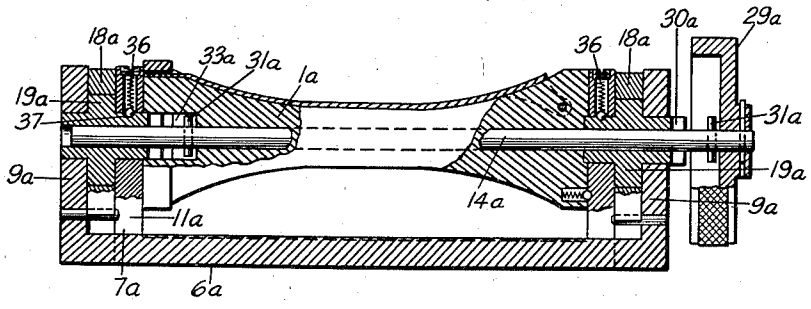


Fig. 13

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2,116,644

HAIR WAVING APPARATUS

Peter Santurello, Columbus, Ohio

Application May 26, 1937, Serial No. 144,768

9 Claims. (Cl. 132—36)

My invention relates to hair-waving apparatus. It has to do, more particularly, with a device for producing that type of wave in the hair which is commonly known in the art as a "Croquignole" wave which is formed by winding the hair spirally around a mandrel.

There have been many different types of Croquignole hair-waving devices manufactured and used in the past. These prior art devices usually embody a clamp which is adapted to be applied to the hair adjacent the scalp and a separate mandrel which is adapted to be mounted on the clamp after the hair is wound on the mandrel. Thus, there are two separate units which must be handled in applying the hair-waving device to the hair. This complicates the method of waving the hair. Furthermore, the prior art devices usually provided are complicated in structure. Also, it is usually difficult to apply the mandrel to the clamp after the hair is wound on the mandrel.

One of the objects of my invention is to provide a hair-waving device of the type indicated which is so constructed that the hair-clamping device and the mandrel on which the hair is wound form a single unit.

Another object of my invention is to provide a hair-waving device which is of simple structure but which is very efficient for the purposes for which it is intended.

Another object of my invention is to provide a hair-waving device of the type indicated which can be easily and quickly applied to and removed from the hair.

Another object of my invention is to provide a hair-clamping and scalp-protecting member which will grip the hair uniformly at all points along the length of the member and which will effectively protect the scalp.

In its preferred form my invention contemplates the provision of a mandrel upon which the hair is adapted to be wound. This mandrel carries a pair of gripping members which are pivoted thereto and which are adapted to grip the hair at a point adjacent the scalp. Means is provided for operating the gripping members so that they can be forced together tightly to grip the hair or can be spread apart to release the hair. The gripping device for engaging the hair close to the scalp and the mandrel on which the hair is adapted to be wound, consequently, are in the form of a single unit. This facilitates application of the device to the hair and removal of the device from the hair. Means is associated with the mandrel for tightly gripping the free end of the hair so that the hair can be tightly wound on the mandrel without danger of the free end of the hair slipping from the means which grips it to the mandrel. The mandrel is rotatably mounted so that the hair may be tensioned thereon after it is applied thereto.

The preferred embodiment of my invention is illustrated in the accompanying drawings wherein similar characters of reference designate corresponding parts and wherein:

Figure 1 is a view mainly in section illustrating a hair-waving device made according to my invention.

Figure 2 is an end view of the device shown in Figure 1 and illustrating the hair-clamping members in clamping relationship.

Figure 3 is a similar view illustrating certain parts of the device at the time the hair-clamping members start to release the hair.

Figure 4 is a similar view showing the hair-clamping members swung upwardly about the mandrel to their uppermost position.

Figure 5 is a perspective view of the device illustrated in Figure 1.

Figure 6 is a perspective view showing one end of the device.

Figure 7 is a perspective view illustrating a certain part of the device.

Figure 8 is a perspective view of another part of the device.

Figure 9 is a perspective view illustrating how the hair is wound on the mandrel.

Figure 10 is a similar view illustrating the device in transverse section during the time the hair is being wound thereon.

Figure 11 is a view showing the device after the hair-clamping members have been forced together.

Figure 12 is a perspective view illustrating a heater applied over the device.

Figure 13 is a longitudinal section illustrating a modified form of hair-waving device.

With reference to the drawings, and particularly to Figures 1, 5, and 6, I have illustrated my device as comprising a mandrel 1 which is preferably of the shape illustrated, being large at each end and smaller intermediate the ends thereof. The hair is adapted to be wound on this mandrel.

The free end of the hair may be tightly gripped to the mandrel by means of an arm 2 shaped to closely embrace the mandrel. This arm is pivoted to the mandrel adjacent one end thereof as at 3. It may be swung from a position where it embraces the mandrel upwardly away from

the mandrel. When in embracing relation to the mandrel, it may be held in position by means of a knurled ring 4 which is rotatably mounted on the mandrel. This ring 4 has a notch 5 formed therein through which the extreme end of the arm 2 is adapted to pass. When the end of the arm is passed through this notch, the member 4 may be rotated until the main portion thereof lies over the end of the arm and will hold it in position on the mandrel. If the free end of the hair is placed beneath the arm before it is locked in position, the hair will be tightly secured to the mandrel. The hair may be released quickly merely by rotating member 4 until the end of the arm 2 can be swung upwardly through the notch 5.

Means is provided for gripping a strand of hair at a point closely adjacent the scalp. This means comprises a pair of gripping members 6 and 7 which are pivotally carried by the mandrel. The gripping member 6 embodies a horizontal portion 8 extending substantially the full length of the mandrel and vertically extending portions 9 disposed at each end of the portion 8. The gripping member 7 embodies a horizontally extending portion 10 and vertically extending portions 11 at each end thereof. As shown in Figure 1, the portions 9 and all of the gripping members are disposed closely adjacent each other, portions 11 being disposed within the portions 9. One of the portions 11 is rotatably mounted on a boss 12 formed on the mandrel at one end thereof. The other portion 11 is rotatably mounted on a longer boss 13 formed on the opposite end of the mandrel. One of the portions 9 of the gripping member 6 is rotatably carried by the boss 13 while the portion 9 at the opposite end is rotatably carried by a shaft 14. This shaft 14 extends completely through the mandrel and is rotatable therein. It will be apparent that the gripping members are pivotally carried by the mandrel and may be swung towards each other to grip hair therebetween or may be swung apart to release the hair. The portions 8 and 10 of the gripping members are provided with longitudinal sockets in their adjacent edges for receiving removable friction members 15 which may be made of rubber or similar material and which preferably have their gripping surfaces roughened.

In order to force the gripping members 6 and 7 tightly together to grip the hair therebetween I provide the following structure. The shaft extends from the mandrel a considerable distance at one end and is rotatably mounted in a bearing formed in the upper end of a vertical support 16. This support 16 is carried by an arm 17 projecting from the end of the gripping member 6, as illustrated best in Figure 6. The opposite end of the shaft is rotatably carried in the portion 9 of member 6, as previously explained. The shaft 14 carries at each end an eccentric 18. On each eccentric 18 a collar 19 of the shape illustrated in Figures 2 to 4 is mounted. The eccentrics are free to rotate within the collar. It will be noted from Figure 1 that the eccentric and cooperating collar at the right-hand end of the mandrel (Figure 1) is disposed inside of the support 16 but directly adjacent thereto. The eccentric and cooperating collar at the opposite end of the device is disposed outside of but directly adjacent the portion 9 of gripping member 6. The eccentrics and the shaft rotate together. As shown in Figure 1, a small disk 20 secured to one end of the shaft 14 cooperates with the support 16 and a larger disk 21 secured to the eccentric at the opposite end of the shaft cooperates with the adjacent collar 19, to prevent longitudinal movement of shaft 14.

Each of the collars is of the shape illustrated in Figures 2 to 4 inclusive. The collar at the left-hand end of the device has a radially projecting portion 22 in which a slot 23 is formed. This slot receives a pin 24 which projects outwardly from the portion 11 of the gripping member 7. The collar also has a radially projecting finger 25 formed at the point indicated. When the collar is in a certain position this finger 25 will engage a pin 26 which projects outwardly from the portion 9 of the gripping member 6. The collar at the opposite end of the device is exactly the same. However, the pin 24 which projects into the slot 23 of this collar will project inwardly from a support 27 formed on an extension of the gripping member 7, as illustrated in Figure 6. The pin 26 engaged by the finger 25 of this collar projects inwardly from the support 16 which is formed on the extension 17 of member 6.

Rotation of the eccentrics 18 within the collars 19 will cause these collars to force the gripping members 6 and 7 tightly together or will permit them to be swung apart. In Figure 2 I show the collar 19 in the position it will occupy when the cooperating eccentric 18 forces it downwardly to its lowermost position. When this happens, the curved surface 28 of the finger 25 will engage the pin 26 and will force the member 6 towards the member 7. This will also tend to rotate the collar 19 about the cooperating eccentric. Slight rotation will be permitted until the bottom of the slot 23 is engaged by the pin 24 carried by member 6. The pin-and-slot connection between the collar 19 and member 7 will prevent rotation of the member 7 about the mandrel and the finger 25 will force the member 6 towards the member 7 and, consequently, the members 6 and 7 will be forced together tightly and will grip the hair firmly if it is passed therebetween. To release the hair, it will merely be necessary to rotate the eccentric 18 in the opposite direction. This will cause upward movement of the finger 25, as illustrated in Figure 3, permitting the pin 26 to pass the finger 25 and, consequently, permitting the member 6 to be swung away from the member 7. If desired, the members 6 and 7 may be swung up to the position indicated in Figure 4.

It will be noted that the collars 19 are always connected to the member 7 by the pin-and-slot connections 23, 24. The member 6 is free of the collar 19 and, consequently, of the member 7, when the eccentrics 18 are in a certain position. However, when the eccentrics are properly rotated the fingers 25 of the collars 19 engage the pin 26 carried by member 6 and force the member 6 towards the member 7.

The shaft 14 may be rotated by means of the knurled knob 29 illustrated in the drawings. This knob 29 is freely mounted on the shaft at a point between the portion 9 of member 6 and the eccentric 18 and cooperating collar 19 disposed adjacent the support 16. This knob 29, as illustrated best in Figures 1 and 8, is provided with a hub 30 on one side having a slot which is adapted to engage a pin 31 carried by the shaft 14 when the knob is moved to the right (Figure 1). When the pin 31 is engaged by the slot in the hub 30, the knob 29 will rotate the shaft 14 and the eccentric 18. Thus, by rotating this knob, the members 6 and 7 may be brought into firm engagement with each other. On the op-

posite side the knob has a hub 32 which is provided with a plurality of notches that will engage projections 33' on the end of the boss 13 formed on the mandrel whenever the knob is moved a sufficient distance to the left. When the knob is in this position, it can be used for rotating the mandrel. Thus, the knob may be moved to selectively rotate the mandrel or to operate the hair-gripping means. The end of the mandrel is provided with a socket 33 having a spring-pressed ball 34 disposed therein. This ball is adapted to project into any of a plurality of sockets 35 formed at circumferentially spaced points in the adjacent member 11. This means serves to prevent rotation of the mandrel unless it is positively rotated by means of the knob 29.

In using this device, the hair is separated into a strand and the free end thereof is gripped beneath the arm 2. Then, the hair is wound on the mandrel by rotating the mandrel in the direction indicated by the arrow in Figure 9, by means of knob 29, and by moving the entire device towards the scalp. At this time, as illustrated in Figure 10, the hair-gripping members 6 and 7 will be in inoperative position. As soon as the scalp is reached, the gripping members 6 and 7 are swung around towards each other, as illustrated by the arrows in Figure 10, until they are disposed in gripping relationship as illustrated in Figure 11. Then if the knob 29 is pulled to the right and rotated, the gripping members will be caused to tightly grip the hair therebetween. Then it will be possible to move the knob 29 to the left and to rotate the mandrel in the direction indicated by the arrow in Figure 11 to cause the hair to be tensioned on the mandrel. The person on which the device is used will not feel any pulling sensation on the hair inasmuch as the members 6 and 7 will tightly grip the hair at a point between the mandrel and the scalp. The spring-pressed ball 34 will cooperate with the sockets 35 to prevent rotation of the mandrel after the hair is tensioned thereon unless positively rotated by means of the knob 29. When the hair is wound and tensioned on the device as indicated, an electric heater may be positioned over the device as illustrated in Figure 12.

To remove the device from the hair it is merely necessary to release the clamping members 6 and 7 from each other by properly operating knob 29. Then the hair may be unwound from the mandrel 1 by rotating the mandrel in the proper direction through the medium of the knob 29. When the hair is completely unwound from the mandrel, the free end of the strand may be released from the mandrel by upward swinging of the arm 2.

In Figure 13 I illustrate a device made in accordance with my invention but of slightly different form. In this device gripping members 6a and 7a are provided as before and are pivotally carried by the mandrel 1a. However, the eccentrics 18a in this instance are freely rotatable on the shaft 14a. Furthermore, each eccentric 18a and cooperating collar 19a is located between portions 9a and 11a of the members 6a and 7a, respectively. The shaft 14a is slidable longitudinally through the mandrel and the eccentric. It is provided with pins 31a which may be brought into engagement with slots formed in hubs 30a forming a part of the eccentrics 13a. Pins 31a will be brought into engagement with the slots in the hubs 30a when the shaft 14a is moved to the left by means of the knob 29a which is keyed to the shaft. At this time if the knob 29a is rotated, the eccentrics 18a will be rotated and the collars 19a will force the members 6a and 7a together or will be operated to permit the members 6a and 7a to be moved apart.

In order to rotate the mandrel, the shaft 14a may be moved to the right causing one of the pins 31a which is disposed in a socket within the mandrel to engage a slot formed in one end of the mandrel as at 33a. Thus, the knob 29a may be employed for selectively operating the hair-gripping members or for rotating the mandrel in order to wind the hair thereon or to tension it thereon. In order to keep the two eccentrics 18a in the same relative position at all times, it is necessary to provide some means inasmuch as in this form of the device the eccentrics are not positively connected together. Therefore, I provide a spring-pressed ball lock 36 which will engage any of a plurality of sockets 37 formed at spaced points around a hub of each eccentric. When the shaft 14a is moved to the right so as to disengage pins 31a from the slots in the hubs 30a of the eccentrics, the locks 36 will automatically lock the eccentrics in position and will keep them in the proper positions relative to each other.

It will be apparent that this form of my device will be used in exactly the same manner as the other form.

From the above description it will be apparent that I have provided a hair-waving device wherein the mandrel on which the hair is wound and the means for clamping the hair adjacent the scalp constitute a single unit. This will facilitate application of the device to the hair and removal of it from the hair. The hair-clamping and protecting member is of such a nature that the gripping members thereof will be forced together with uniform pressure throughout their length. This will cause the hair to be gripped uniformly so that uniform tension can be applied to the hair without danger of pulling the hair. Also, because the gripping members are forced tightly together there will be little or no danger of steam or hot waving fluid flowing downwardly onto the scalp through the crack between the gripping members.

Various other objects will be apparent from the preceding description, the drawings and the following claims.

Having thus described my invention, what I claim is:

1. A hair-waving device comprising a mandrel upon which the hair is adapted to be wound, a pair of hair-clamping members pivotally carried by the mandrel and adapted to be brought into engagement with each other, each of said hair-clamping members comprising an elongated gripping portion having portions at each end projecting therefrom which are pivotally connected to the mandrel, and means for forcing the hair-clamping members tightly together.

2. A hair-waving device comprising a mandrel upon which the hair is adapted to be wound, a pair of hair-clamping members pivotally carried by the mandrel and adapted to be brought into engagement with each other, means for forcing the hair-clamping members tightly together, said mandrel being rotatable relative to said hair-clamping members, and means for selectively operating said means for forcing the clamping members together or for rotating said mandrel.

3. A hair-waving device comprising a mandrel upon which the hair is adapted to be wound, means for securing the free end of a strand of

hair to said mandrel, a pair of hair-clamping members pivotally carried by the mandrel and adapted to be brought into engagement with each other to grip the strand of hair therebetween at a point adjacent the scalp, each of said hair-clamping members comprising an elongated gripping portion having portions at each end projecting therefrom which are pivotally connected to the mandrel, means for forcing the hair-clamping members tightly together, said mandrel being rotatable relative to said hair-clamping members, and means for selectively operating said means for forcing the clamping members together or for rotating said mandrel.

4. A hair-waving device comprising a mandrel upon which the hair is adapted to be wound, means for securing the free end of a strand of hair to said mandrel, a pair of hair-clamping members pivotally carried by the mandrel and adapted to be brought into engagement with each other to grip the strand of hair therebetween at a point adjacent the scalp, each of said hair-clamping members comprising an elongated gripping portion having portions at each end projecting therefrom which are pivotally connected to the mandrel, means for forcing the hair-clamping members tightly together, said mandrel being rotatable relative to said hair-clamping members, means for selectively operating said means for forcing the clamping members together or for rotating said mandrel, and means for preventing rotation of said mandrel unless positively rotated by said last-named means.

5. A hair-waving device comprising a mandrel upon which the hair is adapted to be wound, a pair of hair-clamping members pivotally carried by the mandrel and adapted to be brought into engagement with each other, each of said hair-clamping members comprising an elongated gripping portion provided with portions at each end for pivotally connecting it to the mandrel, means for forcing the hair-clamping members tightly together, said means comprising a rotatable eccentric carried by the mandrel and a cooperating collar associated with the eccentric, said collar being connected to one of said clamping members at all times and being provided with means for connecting it to the other clamping member when said eccentric is in a predetermined position.

6. A hair-waving device comprising a mandrel upon which the hair is adapted to be wound, a pair of hair-clamping members pivotally carried by the mandrel and adapted to brought into engagement with each other, each of said hair-clamping members comprising an elongated gripping portion provided with portions on each end for pivotally connecting them to the mandrel, and means for forcing the hair-clamping members tightly together, said means comprising a rotatable eccentric disposed adjacent each end of the hair-clamping members and a cooperating collar associated with each eccentric, said collar being connected to one of said clamping members by a pin-and-slot connection and being provided with a finger adapted to be brought into engagement with a projection on the other clamping member when its cooperating eccentric is in a predetermined position.

7. A hair-waving device comprising a mandrel upon which the hair is adapted to be mounted, a pair of hair-clamping members pivotally carried by the mandrel and adapted to be brought into engagement with each other, each of said hair-clamping members comprising an elongated gripping portion provided with portions at each end for pivotally connecting it to the mandrel, means for forcing the hair-clamping members tightly together, said means comprising a rotatable eccentric carried by the mandrel and a cooperating collar associated with the eccentric, said collar being connected to one of said clamping members at all times and being provided with means for connecting it to the other clamping member when said eccentric is in a predetermined position, said mandrel being rotatable relative to said clamping members, and means for selectively rotating said eccentric or rotating said mandrel.

8. A hair-waving device comprising a mandrel upon which the hair is adapted to be wound, hair-clamping members pivotally carried by the mandrel and adapted to be brought into cooperative relationship with each other, each of said hair-clamping members comprising an elongated gripping portion extending longitudinally of the mandrel, each of said gripping portions being pivotally connected at both ends to said mandrel, and means for maintaining the hair-clamping members in cooperative relationship with each other when the hair is disposed therebetween.

9. A hair-waving device comprising a mandrel upon which the hair is adapted to be wound, a pair of hair-clamping members pivotally carried by the mandrel and adapted to be brought into engagement with each other, each of said hair-clamping members comprising an elongated gripping portion extending longitudinally of the mandrel and being disposed substantially parallel to the axis of the mandrel, each of said gripping portions being pivotally connected at both ends to said mandrel so that it may be swung around the axis of the mandrel but will always be substantially parallel to the axis of the mandrel, and means for forcing said hair-clamping members tightly together.

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