July 12, 1938. G. W. PETERSON 2,123,378

METHOD OF AND APPARATUS FOR WAVING HAIR

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Fig. 1.

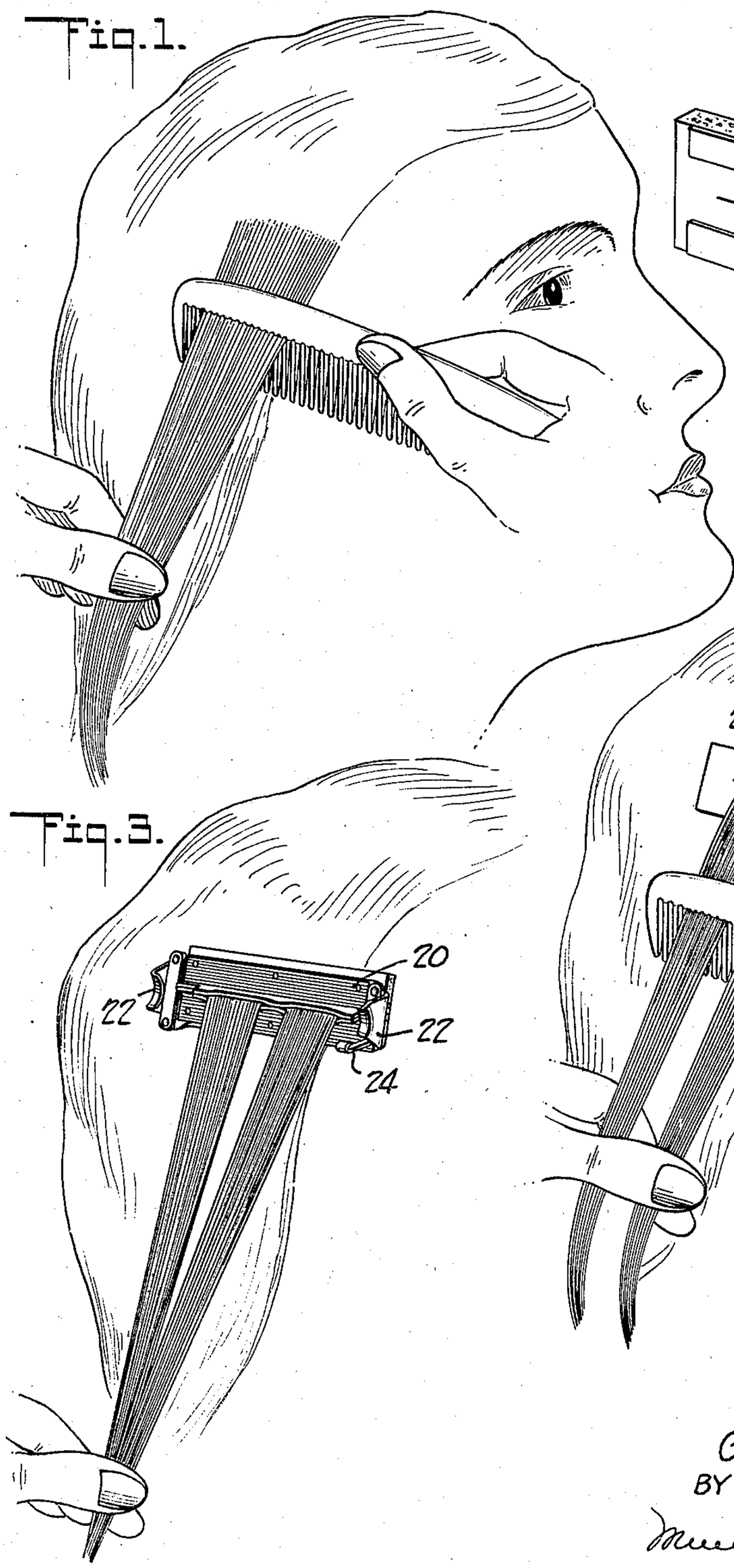

Fig. 10.

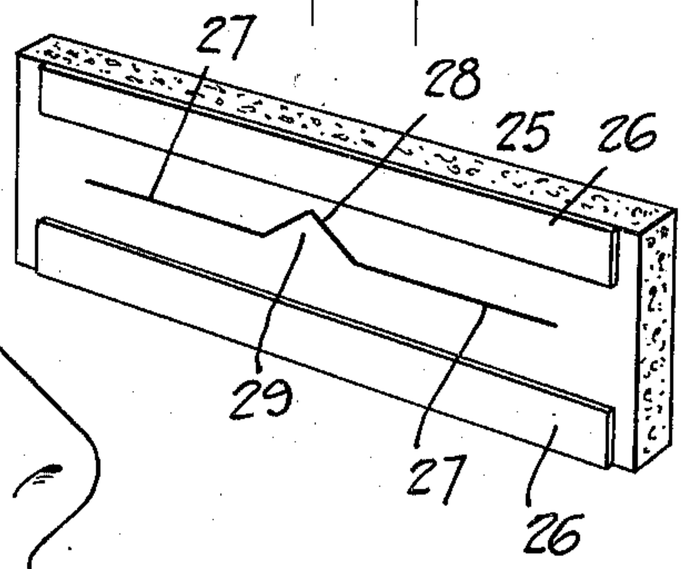

Fig. 2.

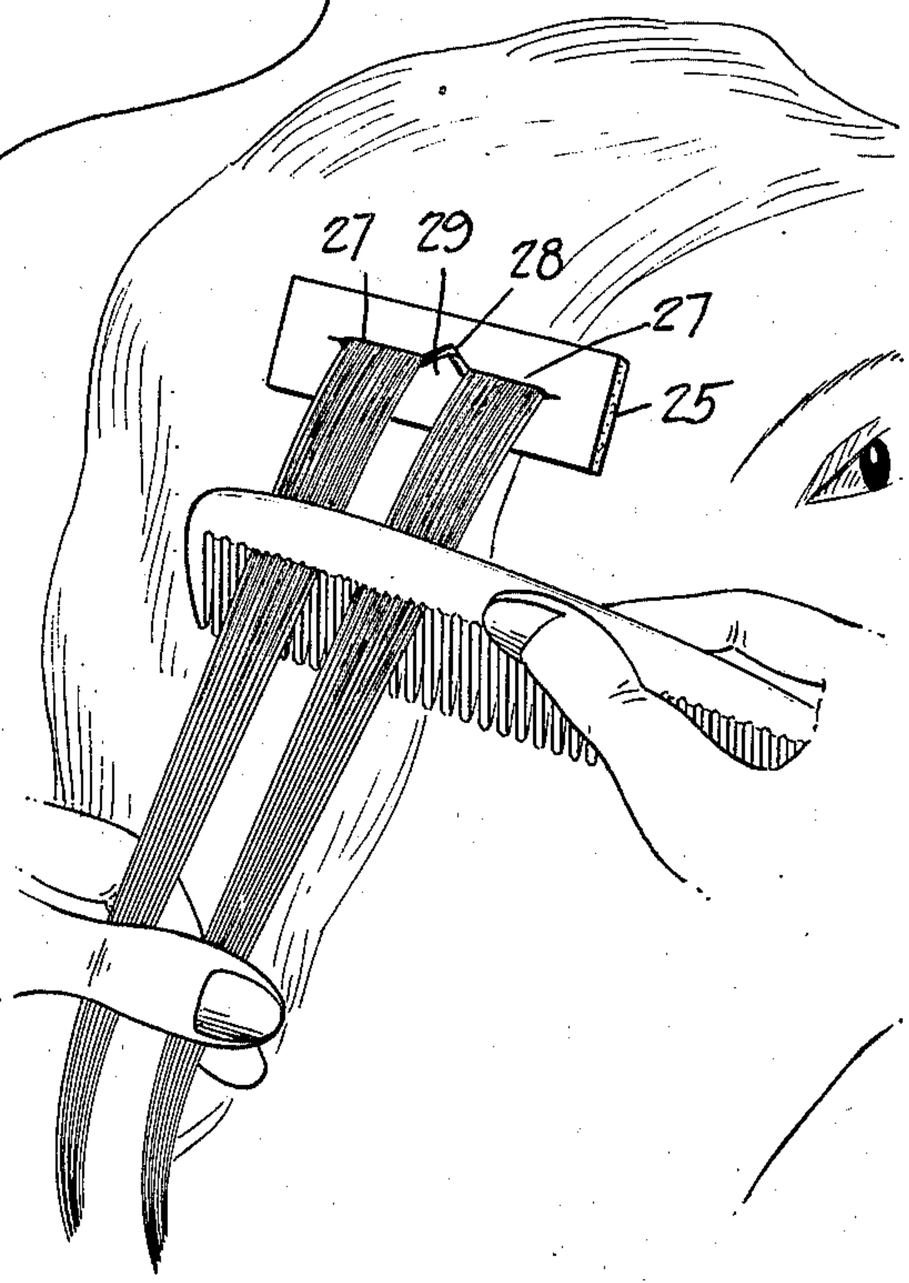

Fig. 3.

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Fig. 4.

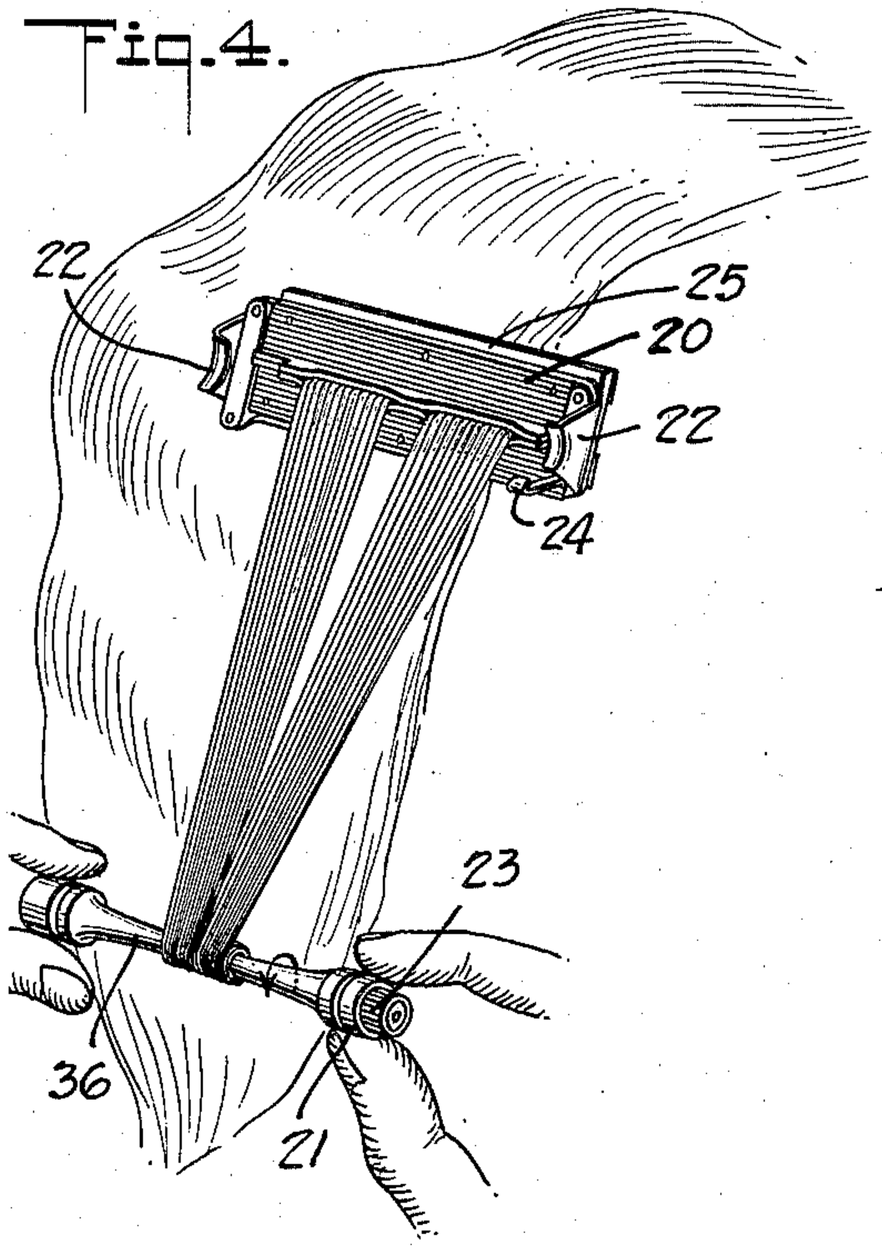


Fig. 5.

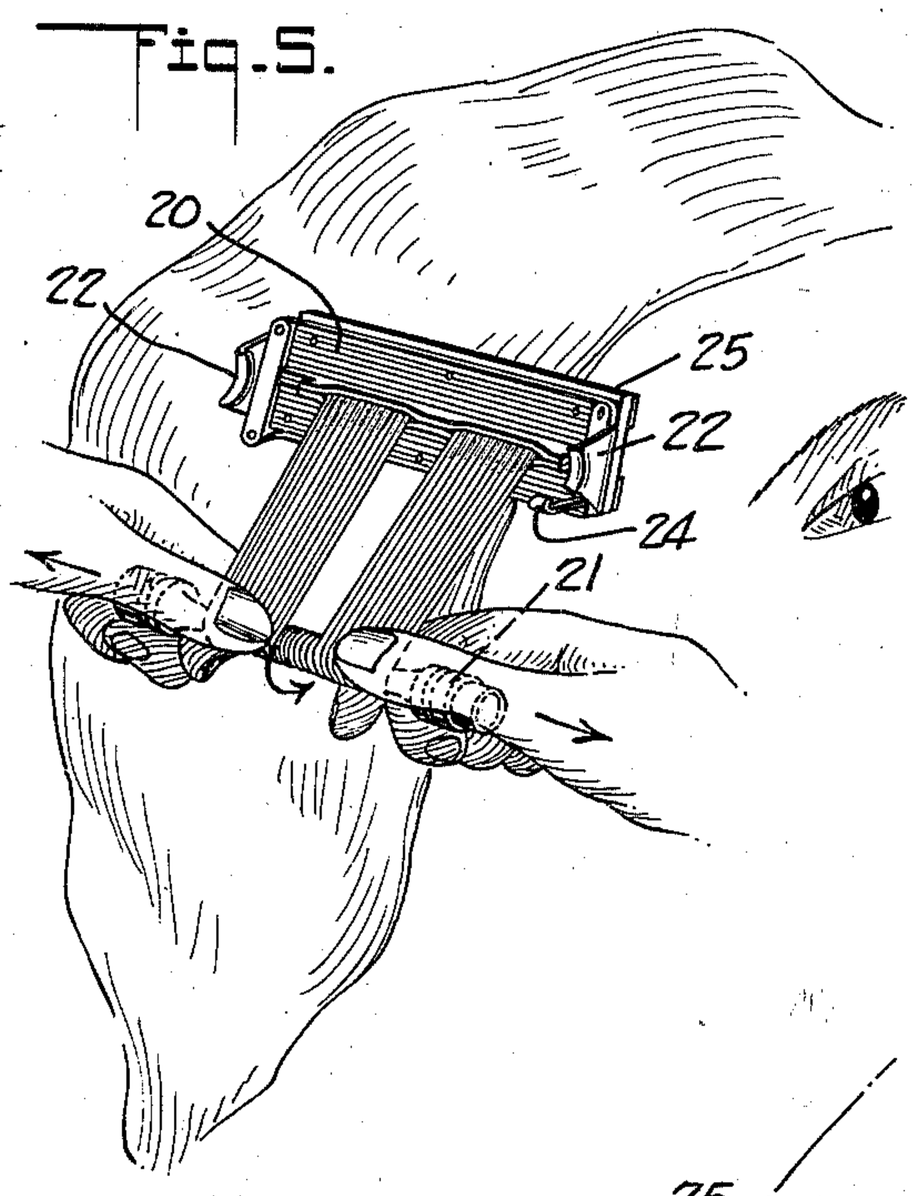


Fig. 6.

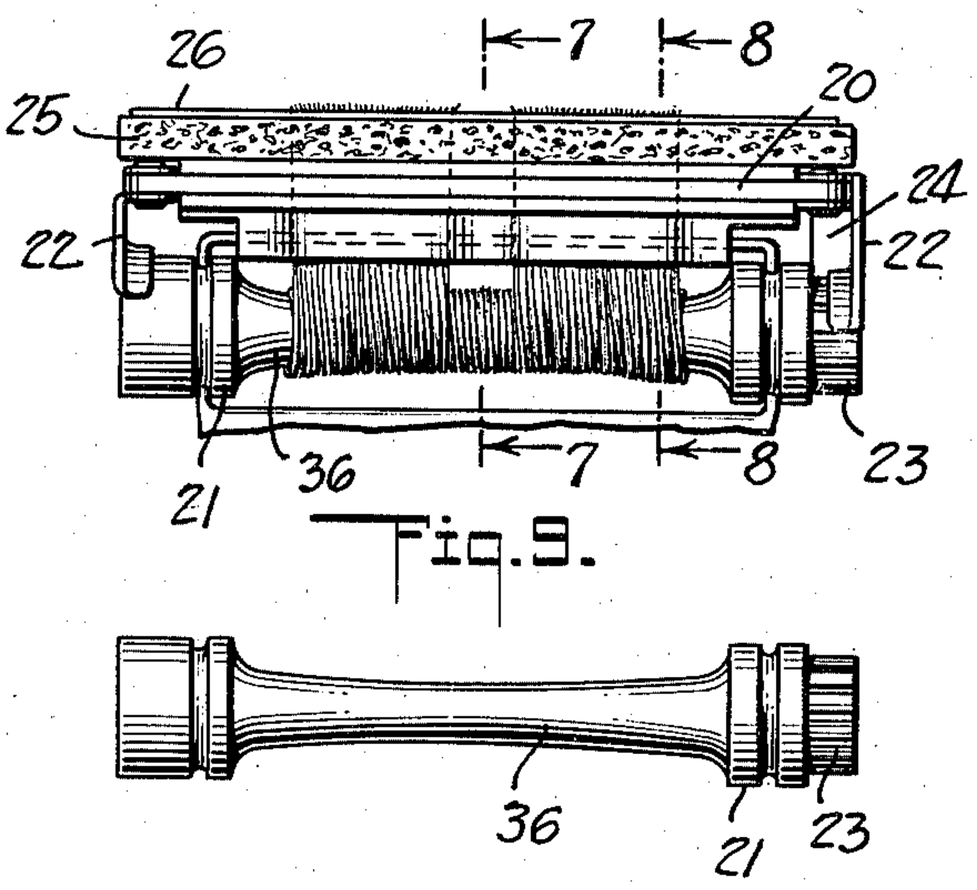


Fig. 9.

Fig. 7.

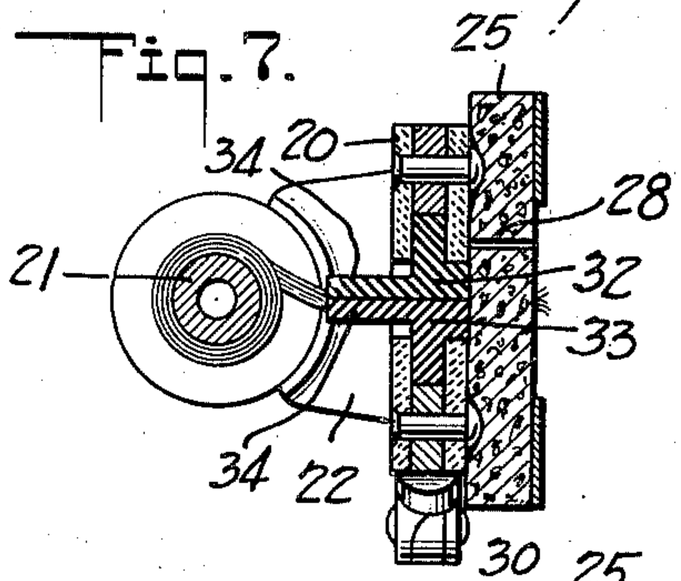
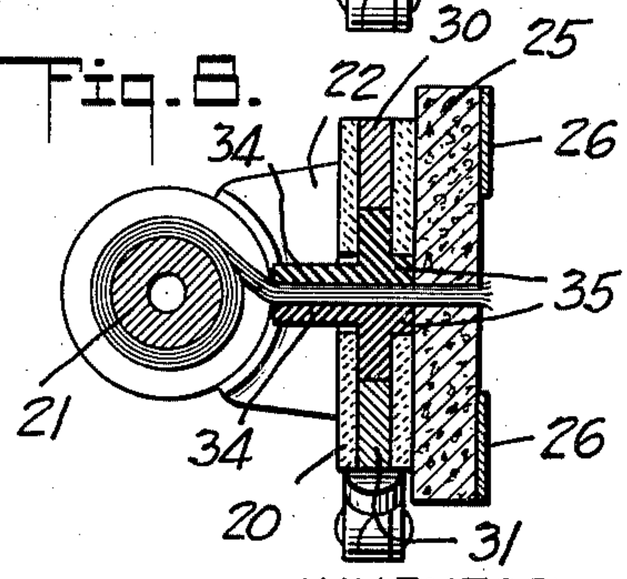


Fig. 8.



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Patented July 12, 1938 2,123,378

UNITED STATES PATENT OFFICE

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METHOD OF AND APPARATUS FOR WAVING HAIR

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Application September 23, 1935, Serial No. 41,787

8 Claims. (Cl. 132—33)

This invention relates to the method of and apparatus for waving hair and is more particularly directed to a method of and apparatus for producing permanent waves in human hair.

An object of the invention is to provide apparatus in the form of an improvement upon prior devices in which rotary spindles are employed upon which hair is wound as a preliminary step in the method of producing a curl by the action of vapor and heat, the construction of the improved apparatus being such that the hair when wound upon the spindle means employed will consist of respective wound portions of more nearly corresponding amounts than was heretofore possible, evenly distributed upon the spindle and firmly pressed against the hard external surface thereof, so that the wave will be structurally the same at all places from the tip of the strand to the scalp and of a higher degree of permanency.

The invention is particularly directed to the class of hair curling apparatus in which the waving of the hair is done by the Croquignole method. In such methods, a flat strand of hair is wound upon a curling spindle parallel to the scalp, the tip of the strand forming the innermost portion of the windings of the hair and being disposed at the center of the spindle. The hair is then tensioned circumferentially and retained in a tensioned condition until other steps of the method have been completed. Because of the external form of the spindle and considering the manner in which the hair is waved, it follows that the greatest number of wound portions of the hair will come at the very center of the spindle. In consequence thereof, a cushion is unavoidably formed beneath the outermost wound portions of the hair, making it impossible to place substantially equal circumferential tension upon the respective wound portions. As a result thereof, the degree of permanency of the wave is often of a very negligible extent.

It is, therefore, an important object of the invention to provide a spindle which, when used with my method, will prevent formation of the aforestated hair cushion and enable all wound portions of the hair to be placed substantially under the same amount of circumferential tension and disposed very close to the hard surface of the spindle. By thus equalizing the tension upon all wound portions of the hair and disposing said portion close to the hard surface of the spindle, it is found in practice that the wave produced will possess a much higher degree of permanency than heretofore possible.

It is a further important object of the invention to provide a method of producing a Croquignole wave in which a plurality of curls will be formed in a single winding operation either upon a single spindle or upon a plurality of companion spindles, the axes of which may be either coincident or parallel relative to each other.

A further important object of the invention is directed to use of means by which a flat strand of hair will be divided into substantially equal parts for use in the production of a corresponding number of curls.

A still further object of the invention is to provide means for dividing the strand of hair into substantially equal parts and disposing same for convenient combing and straightening thereof preparatory to winding same on the spindle means.

Another object is to provide means for apportioning or dividing the hair into substantially equal parts, then correlating same with a clamp having spindle means, the form of said hair apportioning or dividing means being such that it will have yielding engagement with the scalp and will not be uncomfortable to the person whose hair is being treated and will serve to protect the scalp from the severe effect of heat during the application of heat to the hair in the steaming process. Such steaming treatment is for the purpose of evaporating the moisture from the hair or from moisture pads, and thus effecting final setting of the curl, as is well known in the art.

Other objects and advantages will unfold themselves upon reference to the following description and the accompanying drawings, in which

Figure 1 is a view in perspective showing the first step in preparing the hair for passage of same through the strand dividing element;

Figure 2 is a view similar to Figure 1, showing the dividing element fully applied and the strand formed into parts of substantially equal proportion;

Figure 3 is a view showing the equally divided portions of the strand operatively correlated to and engaged between the co-acting jaws of a clamp and illustrating also the step of overlapping the tip ends of said portions preparatory to starting same on the spindle;

Figure 4 is a view similar to Figure 3, showing the hair initially wound upon the central portion of the spindle;

Figure 5 is a view similar to Figure 4, showing the manner of manually controlling the winding of the hair to insure equal distribution of same upon the spindle so that a section cut transversely through the spindle at any place in its length will show wound portions of hair which are of substantially like quantities, the whole presenting a cylinder of the same diameter throughout;

Figure 6 is a view in top edge elevation of the entire device employed in practicing the method, the hair being fully wound upon the spindle;

Figure 7 is a transverse section on line 7—7 of Figure 6;

Figure 8 is a view similar to Figure 7 cut on the line 8—8 of Figure 6;

Figure 9 is a view in elevation of the spindle;

Figure 10 is a perspective view of the strand dividing element.

In carrying the invention into practice, use is made of a hair waving clamp **20**, preferably, but not necessarily, like the one disclosed in my co-pending application Serial No. 16,493, filed April 15, 1935, the same having rotary spindle means **21**, mounted at its ends to turn in brackets **22—22** which form parts of the clamp. Except with respect to certain features, the spindle is substantially of well-known construction and is provided at one end with a ratchet wheel **23** adapted to co-act with a holding pawl **24** at one of the brackets **22**, whereby hair when wound upon the spindle can be held under desired circumferential tension.

While I show one form of spindle upon which the hair can be wound when practicing the method which I will describe hereinafter, the single spindle can be replaced by two spindles the axes of which are parallel to each other, or I may even use two similar short length spindles which are co-axially related to each other. Whenever resort is had to the use of separate spindles, it is to be understood that one thereof will receive one-half of the total amount of hair comprising a strand and the other the remaining one-half of said total amount of hair.

So far as the steps of the method are concerned, same can be practiced with the use of any well known form of clamp, except that the form proposed or suggested to be used will, I believe, produce better results. The invention will, therefore, be considered within that range of use of known clamps that will best serve the main purpose in view.

In combination with the aforementioned clamp, use is made of a strand dividing or apportioning element **25** by means of which equal division of the strand is effected and the separate parts or sub-strands co-ordinated with the clamp and disposed to enable same to be wound thereon and thus produce distinct or separate curls. Dividing the whole of a single flat strand into two equal parts would seem to be sufficient, but it is to be clearly understood that more than two can be provided for, if desired. The main thought being conveyed is that more than one curl is formed by my method in a single winding operation of the same strand of hair. This is the dominant feature of the invention, and has never before been done, to the best of my knowledge. Said element **25** consists of a substantially rectangular piece of soft, pliable and preferably stretchable material, such as a suitable grade of sponge rubber or the like, although felt or even a good grade of cork or the like may be used with fairly good results. To give it a desired measure of strength and reinforcement to the element, I provide flexible strips **26** of flat material such as celluloid or the like which can bend or flex readily and will be moisture repellant. The element **25** is formed with a slit of peculiar configuration which passes entirely through the material of the element from one side thereof to the other and same includes two alined long stretches **27—27** and a substantially intermediate portion **28** of substantially inverted V-form. From the very nature of the material of which said element is formed, it follows that the normally closed resilient slit can be expanded manually to enable a strand of hair to be threaded therethrough. The inherent resiliency of the material is such that the slit tends to take a flat purchase against the strand of hair. The construction of the slit is further such that the intermediate portion of the lower wall thereof (when viewed as in Figure 10) is provided with a hump, gate or barrier **29**, the purpose of which will be explained when the steps of my improved method are described in the following description.

So far as concerns certain structural features of the various mechanical parts employed, it will suffice to say that the clamp **20** has parallel jaws **30** and **31**, the effective hair gripping faces of which have longitudinal strips of elastic material **32** and **33**, provided with wide width sealing and gripping flanges **34** facing toward the spindle **21** and short width flanges **35** facing toward the front of the element **25**. The element **25** is about co-extensive with the length and breadth of said element and the slit in the element is disposed to co-incide directly with the effective clamping faces of the jaws of the clamp **20**. The spindle **21** has a stem **36**, the longitudinal curvature of which from one end of the spindle is slight as compared with more or less common forms of spindles.

As the hand plays an important part in carrying the method into effect, and as the method can be practiced in more than one known way, I shall claim the method as well as the device per se and its adjuncts. The method will be described as follows:

A suitable amount of hair to constitute a strand to be treated is first combed to render the strand even and flat as shown in Figure 1, at which time, or following the initial combing, (i. e., after the clamp is applied) the hair is treated with the customary treating solution or solutions, such as water, bi-carbonate of soda and carbonate of magnesia. The tip of the strand is then threaded through the slit in the element **25** to be equally divided among the long stretches **27—27** of the slit, and the soft side of the element moved to closely contact the scalp. The barrier **29** holds the equal portions of the strand at the respective sides of the hump, as clearly illustrated in Figure 2, at which time the gripping faces of the slit will be in perfectly flat engagement with the hair. The respective portions of the strands are now preferably re-arranged and carefully straightened by combing, while the tips of said portions are held between the fingers of the hand. The clamp **20** is then applied as shown in Figure 3, so that the wide width flanges **34** will be brought into firm gripping engagement with the hair and the respective portions of the original strand sealed between said flanges to prevent escape of moisture and objectionable hot vapor through the jaws in the direction of the element **25** and scalp of the head.

When the clamp **20** is fully applied, as last stated, the tip ends of the equal amount parts of the strand are made to overlap each other by manual manipulation and by pinching or holding same between the fingers of the hand. Said equal parts of the strand are now diagonally disposed relative to each other and the tips thereof are placed at the very center of the spindle and wound turn upon turn upon said spindle, as shown in Figure 4. I have previously stated that the spindle has but a very slight longitudinal curvature, and we can assume that when the hair has been wound upon the spindle to the extent

shown in said Figure 4, the intended extent of the winding has been completed for this much of the longitudinal area of the spindle. The hair now wound as just stated is in the form of a short cylinder and all of its wound portions or turns reside very close to the hard external structure of the spindle, to thus avoid formation of such bulk of hair as would result in the production of an objectionable hair cushion beneath the outermost wound portions. In this manner uniform tension can be placed on each turn of the hair. With these steps performed, the remainder of the respective flat portions of the strand is wound upon the spindle, the fingers of the operator manipulating the hair to maintain a more or less parallel condition of said portions while winding same upon the spindle and exerting lateral feeding stress thereon to lay same evenly on the spindle progressively toward the extreme ends thereof. When the whole of the winding operation has been completed, the hair can be circumferentially tensioned to the desired degree by turning the spindle and holding same against retrograde rotation by the escapement means of the clamp. The hair in its fully wound condition now has the form of a cylinder and the wound portions of hair are more or less uniformly the same as to total mass or quantity at each place in the spindle, and the respective wound portion will be under substantially the same tension. In consequence thereof, the wave resulting from final treatment will consist of not only two distinct curls but will have a much higher degree of permanency than has been possible heretofore.

After the hair has been wound upon the spindle means 21, it is encased within a heating chamber such as the one shown in my Patent No. 1,965,156, dated January 30, 1933. After the hair has been subjected to the action of heat over the required period of time, same is removed from the spindle means in the customary manner and the treatment of the hair continued also in the usual manner.

If desired, a spindle such as shown in my Patent No. 1,895,815, dated Jan. 31, 1933, may be used, except that its longitudinal curvature will conform to the conditions herein explained. In such form of spindle, means are provided for causing the vapor as it is generated at the hair to be discharged from the chamber. A spindle of this character is preferred to one in which means are not provided for rapid escape of the vapor. However, this is entirely discretionary and has no particular bearing upon either the method or certain structural features of the invention.

In my prior Patent No. 1,895,815, a moisture pad 38 is employed and adapted to be placed in the heater which encloses the spindle during the heating treatment. Such pad may of course be used to advantage in practicing the invention herein disclosed.

What is claimed is:

1. The method of curling hair to provide permanent waves, including manually dividing a pre-formed flat strand of hair into substantially equal flat parts equal to the number of curls desired; concurrently winding said parts to produce separate curls; then holding said parts in curl formation in the presence of heat at a vaporizing temperature and for a sufficient period of time to evaporate substantial portions of moisture from the hair and set the curls thus produced.

2. The method of curling hair to provide permanent waves, including dividing a pre-formed flat strand of hair to produce flat parts corresponding with the number of curls desired; simultaneously winding said parts in axial spaced relation to the other; then holding said wound parts under circumferential tension in the presence of a vaporizing heat and for a period of time as is required to evaporate substantial portions of the moisture from the hair and to set the curls.

3. The method of curling hair to produce permanent waves, including dividing a pre-formed flat strand of hair into flat parts equal to the number of curls desired; concurrently winding said flat parts while laterally spreading same over a predetermined longitudinal winding area to definitely space the wound portions of one of said parts from the wound portions of the other; then holding said parts in curl formation in the presence of a vaporizing heat for a period of time sufficient to evaporate substantial portions of moisture from the hair thus curled.

4. The method of curling human hair to produce permanent waves, comprising forming, then parting a flat strand of hair to provide flat parts of predetermined quantities of the whole of said strand; applying a clamp to the strand to laterally space said parts transversely from each other; concurrently winding said parts flatly about spindle means from the tip ends of said parts; holding said parts under circumferential tension when wound as aforestated; then subjecting the wound parts to the effect of heat over such period of time as is required to set the air and provide substantially similar curls.

5. The method of curling hair to produce permanent waves which includes dividing a preformed flat strand of hair into flat parts by the manual threading of a dividing protector element to dispose the latter at the scalp; applying a clamp to the divided flat parts of the strand at the dividing protector element, to clamp the parts flatly and spaced from each other; bringing and holding the clamped parts together at their tip ends; concurrently winding the parts from their tip ends as thus held together about spindle means, while manually spreading the parts laterally away from each other as the winding operation proceeds, so as to tend to maintain an approximately parallel condition between the parts, and a relatively even lay of the parts when fully wound; and then holding the parts in curl formation, in the presence of heat for such period of time as is required to set the hair.

6. A device of the class described comprising a pad having a hair strand receiving slit therethrough, the slit being provided intermediate its ends with means adapted to divide a hair strand into a plurality of separated parts.

7. A device of the class described comprising a pad having a hair strand receiving slit therethrough, the slit being provided intermediate its ends with a V-shaped portion adapted to divide a hair strand into a plurality of separated parts.

8. A device of the class described comprising a pad having a slit therethrough characterized by longitudinally alined stretches and intermediate laterally projecting branches adapted to maintain one part of a strand of hair separate from another part in the slit.

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