

May 5, 1942.

H. C. MILLER

2,281,853

PERMANENT WAVE METHOD AND APPARATUS

Filed June 2, 1941

2 Sheets-Sheet 1

Fig. 1.



Fig. 2.

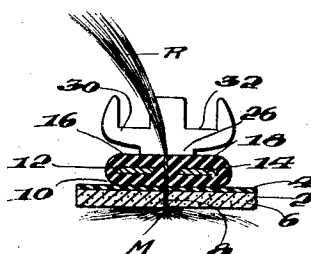


Fig. 3.

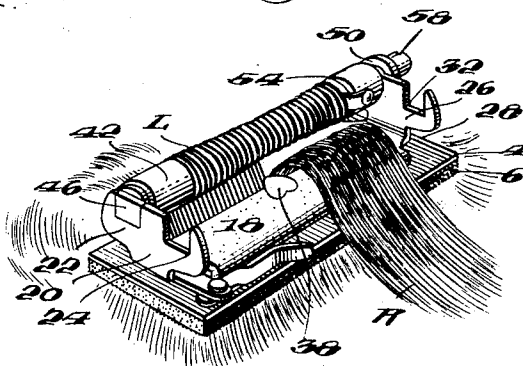


Fig. 4.

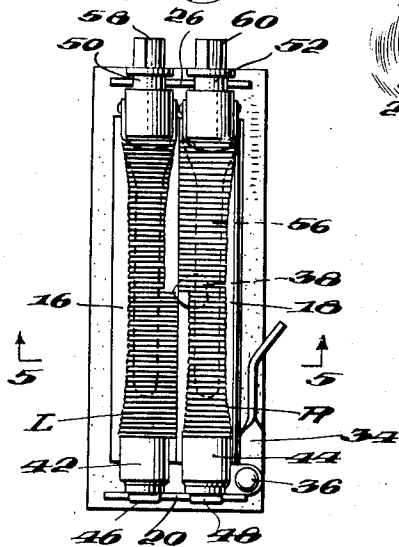
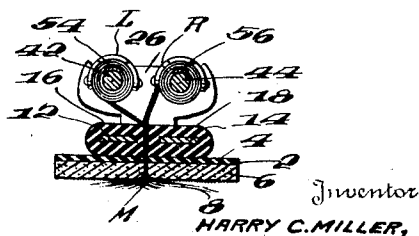


Fig. 5.



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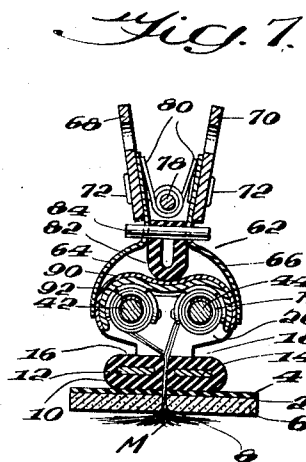
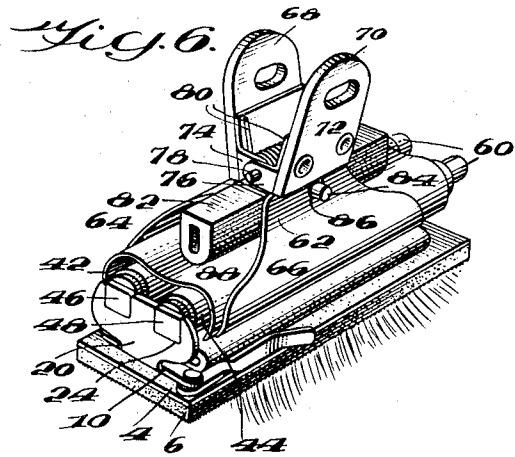


Fig. 8.

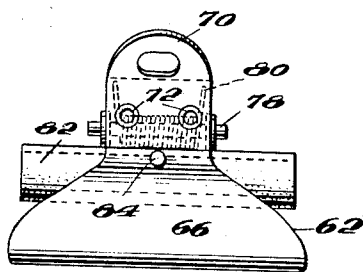


Fig. 9.

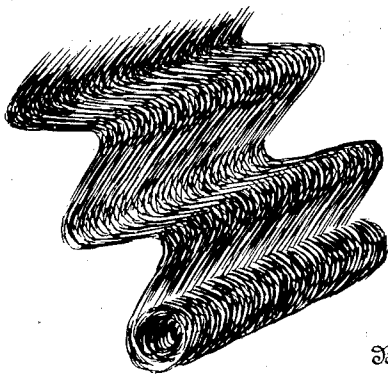
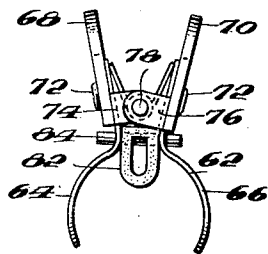


Fig. 10.

Inventor
HARRY C. MILLER,

By *James H. Littlepage*
Attorney

UNITED STATES PATENT OFFICE

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PERMANENT WAVE METHOD AND APPARATUS

Harry C. Miller, Meadville, Pa.

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7 Claims. (Cl. 132—36)

This invention relates to a method and apparatus for permanently waving hair.

Use of hair wavers of the Croquignole type has long been known in the art wherein, after the inner end of a single strand of hair is tightly clamped between a pair of elongated jaws, the free end of the strand is wound on a mandrel supported longitudinally on the jaws, and then subjected to heat. Aggregations of the basic structure, embodying two longitudinally mounted rollers on a pair of jaws have also been developed, but heretofore the methods involving the use of double mandrels have included splitting a strand of hair longitudinally so as to form two flat parallel strands, and then winding the strands on their respective mandrels. An object of the present invention is to teach the method of waving hair on a double mandrel type, wherein the strand of hair extending through a pair of jaws is split transversely, after which the two strands of hair are wound on the mandrels in a particular manner, heated, unwound and combed. The curled sub-strands of hair then blend together to form a single, continuous sinous wave pattern.

More particularly, in the teaching of this invention, it is intended to take into consideration not only the relationship of the wave forms in one plane created on spaced parallel mandrels, but also the three-dimensional aspects of the wave forms so created. In other words, after practicing the present method, a strand of curled hair not only has an "up-and-down" wave, but also a "zigzag." This is done by dividing a single lock or strand of hair into two sub-strands. After the curling operation, the sub-strands combine to form a single series of curls, but the hairs formerly forming one sub-strand have a lateral deviation in one direction, whereas the hairs formerly forming the other sub-strand have a lateral deviation in the opposite direction. In accordance with this method, the lateral deviations of the sub-strands are towards one another.

A further object of the invention is to provide, in a double mandrel waver, an element for automatically splitting a lock of hair transversely as the strand is clamped between the jaws thereof.

Still another object is to provide a double compressor for holding a pad of exothermic material tightly around both curls wound on a double mandrel waver, and for insuring adjacency of the pad with both curls.

These and other objectives will appear from

the following specification and drawings in which:

Fig. 1 is a perspective view showing the clamp applied to a strand of hair divided into two sub-strands ready for winding;

Fig. 2 is a cross-sectional view through the clamp assembly shown in Fig. 1;

Fig. 3 is a perspective view showing one sub-strand wound;

Fig. 4 is a plan view showing both strands wound;

Fig. 5 is a transverse section along line 5—5 of Fig. 4;

Fig. 6 is a perspective view showing the entire assembly, including the double compressor, in operating position;

Fig. 7 is a cross-sectional view through the assembly shown in Fig. 6;

Fig. 8 is a front elevation of the double compressor;

Fig. 9 is an end elevation of the double compressor shown in Fig. 8, and

Fig. 10 illustrates a wave formed in accordance with the method.

In describing the basic structure in accordance with the order of its use, the reference numeral 2 denotes a pad comprising an upper sheet of rubber 4 having secured to the lower surface thereof a flat bat 6 of compressed cotton fibres. Pad 2 is provided with a slot 8 for accommodating a main strand M of hair, over which the pad is passed for protecting the scalp from the curler and the heat.

Next, a clamp 10 is engaged over the strand of hair, the clamp including a pair of flat core strips of metal 12 and 14 covered with rubber tubes 16 and 18 hereinafter referred to as upper and lower jaws, respectively. A frame 20 having square slots 22 and 24 is flanged upwardly from the left hand end of core 14, as shown in Fig. 3, and a second frame 26 is pivoted, as at 28, to the right hand end of core 14. Frame 26 also has square slots 30 and 32 for receiving mandrels as will be later described. The left hand end of core-piece 12 is pivoted to frame 20, the right hand end being detachably held by cam clamp arm 34 pivoted to frame 26 as shown at 30.

As shown best in Figs. 1, 3 and 4, a divider element 38 is affixed to the top of lower jaw 18. This particular divider is heart-shaped, the pointed end of the divider extending beyond the edge of lower jaw 18 towards upper jaw 16. After pad 2 has been placed over a strand of hair M and slid down to the base of the lock adjacent the scalp, clamp 10, in open condition, is placed

against the pad, with the hair between the jaws. Then the jaws are swung shut and cam clamp arm 34 is swung to its Fig. 4 position, thus to cause jaws 16 and 18 tightly to grip the strand. As the jaws are closed, divider 38 automatically separates the main strand M into left and right sub-strands L and R.

The curler also includes two mandrels, 42 and 44 which, for clarity, are termed upper and lower mandrels, respectively. These mandrels are of the type having square end portions 46 and 48 mating with square slots 22 and 24 to prevent relative rotation. End portions 46 and 48 are fitted into the bodies of the mandrels and carry one-way clutches, as are well known in the art, to allow rotation of the mandrel in one direction only. In Fig. 5, for instance, the mandrels are free to rotate clockwise only. Mandrels 42 and 44 are further provided with annular grooves 50 and 52, respectively, rotatively resting in slots 30 and 32, and with pivoted fingers 54 and 56 which prevent sliding of the first few turns of hair. Final turning of the mandrels is accomplished by a key (not shown) engageable in key slots 58, 60.

The method is practiced as follows: After clamp 10 has been engaged on the main strand M (thereby automatically dividing it into two sub-strands L and R) the end of sub-strand L is secured to the right-hand end of upper mandrel 42, either by finger-piece 54 or by tying, the mandrels being disengaged from the frames. Then mandrel 42 is rotated in one direction, from right to left on the mandrel, thus to wind the sub-strand. When sub-strand L is substantially wound, the mandrel is engaged with the frames as shown in Fig. 3, and then given a few final tightening turns with the key. It should be noted that sub-strand L, when wound tightly, is not only held under tension circumferentially of the mandrel, but also axially of the mandrel. Next, the free end of sub-strand R is secured to the left-hand end of lower mandrel 44, the mandrel then being rotated in the same turning direction used on the upper mandrel, but the winding on of sub-strand R is from left to right. After the final tightening turns of mandrel 44, the assembly will appear as shown in Figs. 4 and 5. When, after heat has been applied to the sub-strands and the hair unwound from the mandrels, the sub-strands are combed together, it will appear that the hairs formerly comprising sub-strands L and R have waves of the same length and similar curvature upwardly and downwardly (assuming the curls under consideration are on the top of the scalp), but the hairs at the left-hand end have a twist to the right, and those at right-hand end twist to the left. Since the mandrels are spaced from one another, the waves formed thereon will be slightly out of phase with one another, which, coupled with the left and right twists of the strands, results in a "zigzag" effect.

The novel apparatus, in addition to automatic divider 38, also includes a double compressor 62 shown best in Figs. 8 and 9, and comprising upper and lower lobes 64 and 66, respectively, formed of sheet metal and having finger-pieces 68 and 70 secured to the upper portions thereof by rivets 72. Bracket flanges 74 and 76 are bent from the lobes and provided with holes through which pintle 78 passes hingedly to connect the lobes. The ends 80 of a coil spring tightly wound around pintle 78 press against the finger-pieces for resiliently forcing the lobes towards one an-

other. A rubber tongue 82 is secured intermediate the lobes by pin 84 passing through the tongue and engaged through elongated slots 86 in the lobes.

In use, after the sub-strands have been tightly wound on the mandrels, a pad 88 comprising a parchment backing sheet 90 and porous envelope 92 containing suitable treated exothermic material, is placed on the hair. Finger-pieces 68 and 70 are then squeezed together to spread lobes 64 and 66. Then the compressor is engaged over the pad, the tongue first forcing the pad between the curls. Upon release of the finger-pieces, the double compressor assumes the position shown in Figs. 6 and 7.

In this disclosure the terms upper, lower, left and right are used comparatively for purposes of clarity, and not as limitations to the exact method shown, the scope of the invention being gauged only by the inventive concept and the following claims.

I claim:

1. A method of permanently waving hair, comprising gripping a strand of hair between two elongated jaws, splitting the free end of the gripped strand transversely into left and right sub-strands, respectively, securing the free end of the left sub-strand to the right end of a first elongated mandrel, winding said left sub-strand on said first mandrel in one direction until said first mandrel lies adjacent said jaws, securing the free end of the right sub-strand to the left end of a second elongated mandrel, winding said right sub-strand on said second mandrel in the same direction until said second mandrel lies adjacent said jaws, holding said sub-strands in wound condition, and applying heat to the wound strands.

2. A method of permanently waving hair, comprising gripping a strand of hair between first and second elongated jaws, splitting the free end of the gripped strand transversely into left and right sub-strands, respectively, securing the free end of the left sub-strand to the right end of a first elongated mandrel, winding said left sub-strand on said first mandrel in one direction until said first mandrel lies adjacent said first jaw, securing the free end of the right sub-strand to the left end of a second elongated mandrel, winding said right sub-strand on said second mandrel in the same direction until the second mandrel lies adjacent said second jaw, holding said first and second mandrels adjacent said first and second jaws, and applying heat to the wound strands.

3. A method of permanently waving hair, comprising gripping a strand of hair between two elongated jaws, splitting the free end of the gripped strand transversely into left and right sub-strands, respectively, securing the free end of the left sub-strand to the right end of a first elongated mandrel, winding said left sub-strand on said first mandrel by rotation in one direction until said first mandrel lies parallel to and adjacent said jaws with the non-wound portion of the sub-strand extending substantially at right angles to the longitudinal axis of the first mandrel, securing the free end of the right sub-strand to the left end of a second mandrel, winding said right sub-strand on said second mandrel by rotation in said one direction until said second mandrel lies parallel to and adjacent said first mandrel and said jaws with the non-wound portion of said right sub-strand substantially parallel to the non-wound portion of the left sub-strand,

holding said sub-strands in wound condition, and applying heat to said wound strands.

4. A method of permanently waving hair, comprising gripping a strand of hair between two elongated jaws, splitting the free end of the gripped strand transversely into left and right sub-strands, respectively, securing the free end of the left sub-strand to the right end of a first mandrel, winding said left sub-strand on said first mandrel with the winding extending along the mandrel from right to left until said first mandrel lies parallel to and adjacent said jaws, securing the free end of the right sub-strand to the left end of a second mandrel, winding said right sub-strand on said second mandrel with the winding extending from left to right until said second mandrel lies parallel to and adjacent said jaws, holding said sub-strands in wound condition, applying heat to the wound sub-strands, unwinding said sub-strands and combing said sub-strands together.

5. A method of permanently waving hair, comprising gripping a strand of hair between first and second elongated jaws, splitting the free end of the gripped strand transversely into left and right sub-strands, respectively, securing the free end of the left sub-strand to the right end of a first mandrel, winding said left sub-strand on said first mandrel by rotating in one direction with the winding extending along the mandrel from right to left, holding the first mandrel adjacent the first jaw, securing the free end of the left sub-strand to the left end of a second elongated mandrel, winding said right sub-strand on said second mandrel by rotation in said one direction with the winding extending along said second mandrel from left to right, holding the second mandrel adjacent the second jaw, applying heat to the wound sub-strands, unwinding said sub-strands and combing the hair forming said sub-strands together.

6. In a hair curling apparatus including a pair of elongated jaws having an outer covering of resilient material, pivot means pivotally connect-

ing said jaws to one another for gripping a strand of hair between the adjacent inner edges thereof, the adjacent inner edges of said jaws being substantially straight and parallel to one another, the upper surfaces of said jaws being substantially flat, and support means for supporting a pair of mandrels thereabove, a divider element comprising a substantially flat piece of material having a base portion and a pointed portion, and means securing the base portion of said divider element on the upper surface of one of said jaws substantially half-way between the ends thereof with the pointed portion extending beyond the inner edge of the last-named jaw towards the other of said jaws, said pointed portion overlapping the top surface of the other of said jaws when said jaws are closed.

7. A compressor for a multiple mandrel permanent wave apparatus of the type described, comprising a pair of opposed, substantially identical elements formed of sheet metal, each of said elements comprising relatively wide, concavo-convex lower portion and a relatively narrow, upper portion having inturned ears at each side thereof, said ears having aligned openings there-through, a pintle extending through said openings and pivotally connecting said elements, a handle element extending upwardly from the relatively narrow upper portion of each of said elements whereby, when said handle elements are compressed towards one another, to pivot said concavo-convex lower portions away from each other, a coil spring coiled around said pintle and engaging said opposed elements for resiliently urging said lower portions towards one another, an elongated tongue between said opposed elements below and substantially parallel to said pintle, and a pin extending transversely through said tongue and having the ends thereof extending outwardly from each side of said tongue, said ends being loosely engaged in openings through said identical elements whereby said elements may be pivoted independently of said tongue.

HARRY C. MILLER.