March 29, 1932. H. L. J. MARSHALL 1,851,858

APPARATUS FOR STRAIGHTENING CURLY HAIR

Original Filed July 24, 1929 2 Sheets-Sheet 1

Fig. 1.

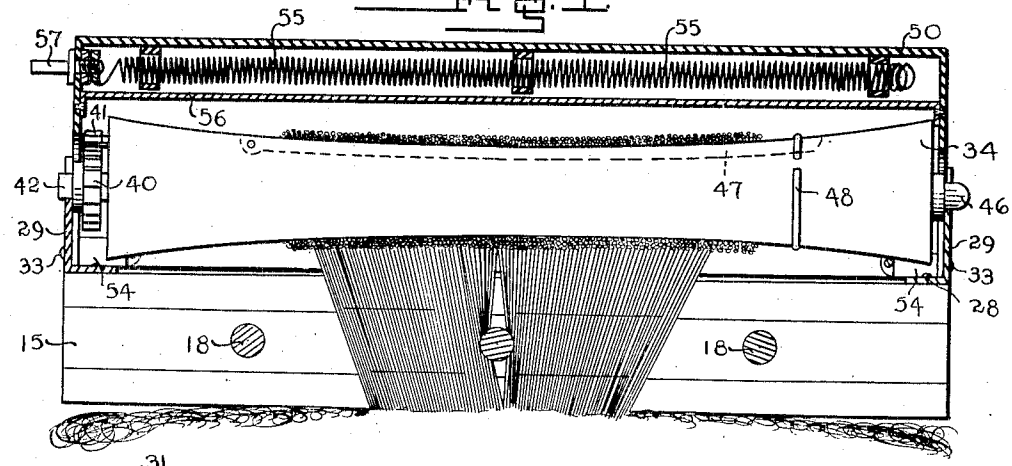

Fig. 2.

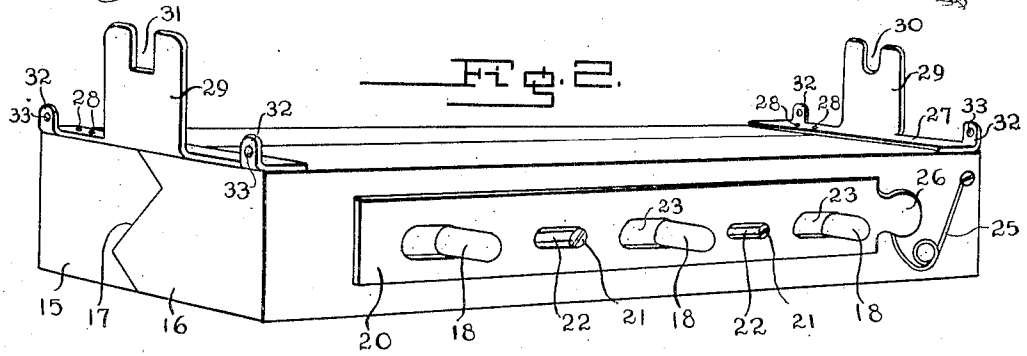

Fig. 3.

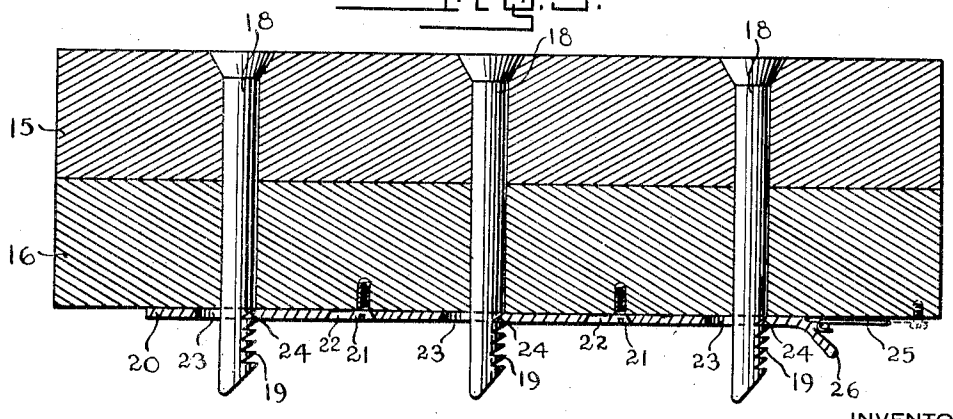

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Fig. 4.

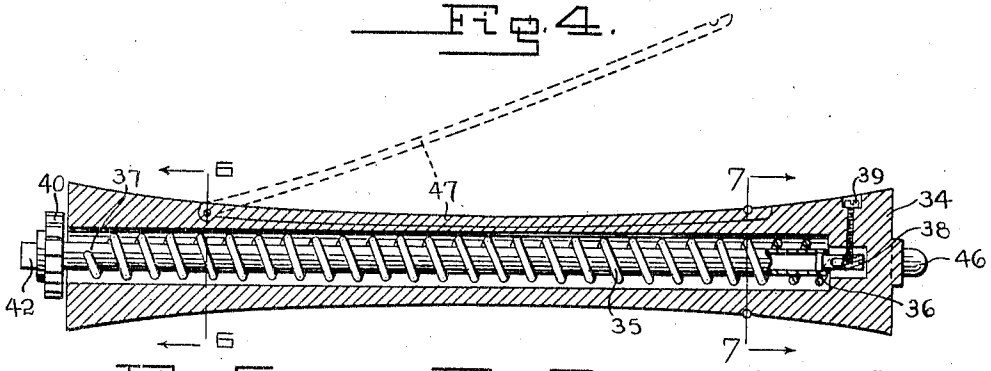


Fig. 5.

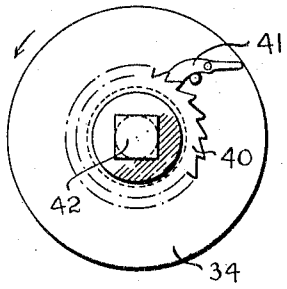


Fig. 6.

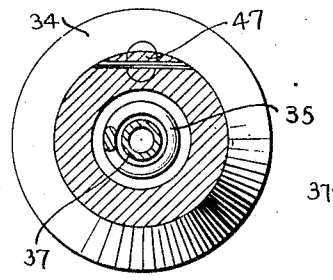


Fig. 7.

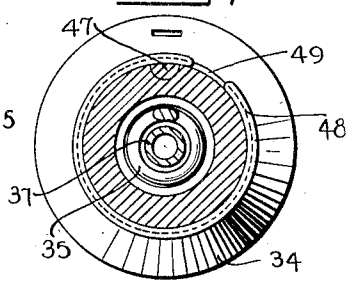


Fig. 8.

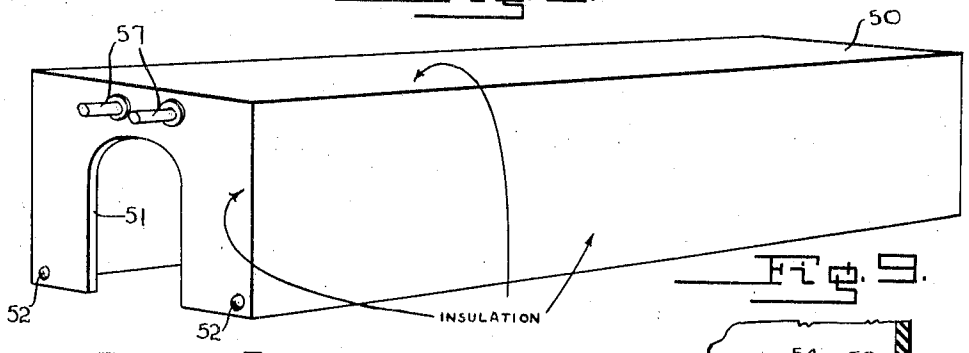


Fig. 9.

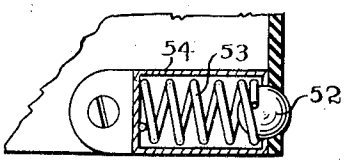
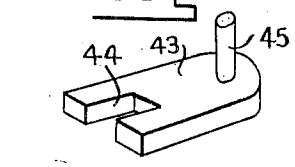


Fig. 10.



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Patented Mar. 29, 1932 1,851,858

UNITED STATES PATENT OFFICE

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APPARATUS FOR STRAIGHTENING CURLY HAIR

Application filed July 24, 1929, Serial No. 380,666. Renewed August 17, 1931.

The present invention relates to a device for straightening hair, is adapted for application to wavy, curly or kinky hair, and is adapted to be used in the method or operation of permanently straightening the hair, or of straightening the hair so that it will remain in such condition for a relatively long period of time.

Another object of the invention is to provide a relatively simple contrivance which may be applied to the head for clamping the hair near the head and drawing the ends of the hair taut and holding the same in such position while applying heat to the hair so that the hair will remain for an indefinite period in the stretched or drawn condition and with all of the waves or kinks removed.

The invention also aims at the provision of a relatively simple device which may be easily and quickly applied to the head and which may be adjusted without the exercise of any undue skill, and the provision of a device which is so constructed that it may be applied to the head in sections to clamp the hair, to draw the same taut, and to heat the hair, the sections interfitting and being relatively movable and separable, and which, combined, produce a relatively light and compact device.

A further object of the present invention is to provide a hair straightening device of this general character which is provided with a clamp for holding the hair near the head, and which is also provided with a tensioning device for engaging the outer free portions of the hair and drawing and holding the same yieldingly in taut position during the heating or further treatment of the hair.

A still further object of the invention is to provide a tension device embodying the above enumerated characteristics, and which is adapted to receive the hair coiled there about and may be rolled on the device by hand and subsequently positioned in the frame of the device, and which is provided with means for tensioning the portion about which the hair is coiled so that the hair will be maintained taut and yieldingly in stretched condition.

The above, and various other objects and advantages of this invention will in part be described in, and in part be understood from, the following detailed description of the present preferred embodiment, the same being illustrated in the accompanying drawings, wherein:—

Figure 1 is a longitudinal section taken through the device as applied to the hair, the section being taken vertically with respect to the position of the device in Figure 1.

Figure 2 is a detail perspective view of the clamp or inner portion of the device.

Figure 3 is a horizontal longitudinal section taken through the clamp or Figure 2, and showing the means for guiding and securing together the opposed members of the clamp.

Figure 4 is a longitudinal section taken through the stretching and tensioning device for the hair.

Figure 5 is a left hand end elevation of the same.

Figure 6 is a transverse section taken through the same substantially on the line 6—6 of Figure 4 and looking in the direction of the arrows.

Figure 7 is a similar view taken on the line 7—7 of Figure 4 and looking in the direction of the arrows.

Figure 8 is a detail perspective view of the heating section of the device.

Figure 9 is a detail enlarged sectional view taken horizontally through one corner of the heating device, showing the yieldable securing means for holding the device in position, and

Figure 10 is a detail perspective view of a handle which may be employed for placing the spring of the tension device of Figure 4 under tension.

The implement or device of this invention comprises three main parts: a clamp, a tension device and a heater.

Referring now to the drawings, and first to Figures 1, 2 and 3, the clamp part of the device comprises a pair of jaws 15 and 16, in the form of plates or blocks which are of suitable size and thickness and which are adapted to engage in edgewise relation for clamping a quantity of hair between them. As shown particularly in Figure 2, the abutting edge

portions of the jaws 15 and 16 are provided with interfitting irregular faces 17 to insure the proper alignment of the jaws 15 and 16 and to also provide an irregular path for securely clamping the hair between the jaws and holding the hair from slipping or pulling through the clamp. The jaw 15 is provided with a suitable number of dowels or guide pins 18 which are suitably mounted or formed upon the jaw 15 and which extend from the irregular face of the jaw and are adapted to enter openings formed through the opposite jaw 16, the pins 18 projecting beyond the jaw 16 and provided at one side with under cut teeth 19 which face inwardly toward the jaw 15 and provide upon each pin 18 a rack. The outer portion of the jaw 16 is provided with a ratchet plate 20 which is mounted for longitudinal sliding movement upon the jaw 16 by means of screws 21 or the like which engage in slots 22 formed in the plate for limiting the sliding movement of the plate 20 and to also hold the same against the jaw 16.

The plate 20 is provided with a longitudinally extending pin slot 23 adapted to register with a corresponding dowel pin 18 and through which the latter are adapted to project when the jaws 15 and 16 are brought together. The inner ends of the guide slots 22 are each under cut to provide a tooth 24 at the inner end of each slot 22 disposed in alignment with the adjacent teeth 19 so that when the plate 20 is shifted in one direction all of the teeth 24 may interlock with the adjacent teeth 19 and thus hold the jaws 15 and 16 in clamping position. The plate 20 is preferably normally urged into clamping position by a spring 25 mounted in any suitable manner upon one end portion of the jaw 16 and having a free end engaging the adjacent end of the plate 20 so as to urge the latter into interlocking engagement with the pins 18. The plate 20 may also be provided with a thumb piece 26 on one end and which projects outwardly from the plate for engagement by the thumb or finger for retracting the plate 20 when it is desired to open the clamp.

The clamp is provided upon each end with a bracket 27 for supporting the tension device and the heater upon the clamp when the three main parts of the device are assembled. Each bracket 27 comprises a strip or plate of metal which extends across the jaws 15 and 16 at the upper sides of the latter, and the brackets 27 are secured at 28 by screws or the like to one of the jaws, such as the jaw 15 so that the jaw 16 may freely slide beneath the free end of the bracket 27.

Each bracket 27 is provided intermediately with an upstanding arm 29, and one arm 29 is provided in its upper edge with a rounded recess or socket 30, while the other arm 29 is provided with a non-circular socket or recess 31. Each bracket plate 27 is also provided near its opposite ends and at its outer edge portion with upstanding lugs or projections 32 having relatively flat and smooth inner faces and cylindrical depressions or sockets 33 therein.

The clamp with its bracket 27, above described, carries the tension device and the latter is shown in detail in Figures 1, 4, 5, 6 and 7.

The tension device comprises a roller 34 which preferably tapers from the ends toward the intermediate portion of the roller to provide a concave periphery, and the roller 34 is adapted to receive there about the free end portions of the hair after the latter has been secured in the clamp. The roller 34 is preferably hollow and a coil spring 35 may be mounted in the roller 34, one end 36 secured to the roller 34 while the other end of the spring 35 is secured to a shaft 37 which extends axially in the roller 34. The shaft 37 is anchored at one end upon a stud or pin 38 swiveled to the shaft 37 and which is secured in the roller 34 by a screw 39 or the like. The shaft 37 is thus held in the roller 34 by the screw 39, and is free to turn upon the stud 38 so that the shaft 37 may be turned to place the spring 35 under the desired tension.

The outer end of the shaft 37 is provided with a ratchet wheel 40 which co-operates with a pawl 41 secured upon the outer end of the roller 34 as shown in Figure 5 so as to interlock the ratchet 40 and the shaft 37 to the roller 34. The outer extremity of the shaft 37 is provided with a non-circular shank or extension 42, and the latter may be engaged by any suitable tool or means for turning the shaft 37 and placing the spring 35 under tension. In Figure 10 there is shown one type of hand wrench which may be used, the latter comprising a plate or body portion 43 having in one end a non-circular recess 44 adapted to fit the shank 42 of the shaft, and also provided near its other end with a handle 45 by means of which the wrench 43 may be rotated when applied to the shaft. The shank or extension 42 is also constructed to seat in the non-circular socket 31 of the bracket 27 for holding the shaft 37 in fixed position when the roller 34 is freed by the pawl 41. Roller 34 is provided with a trunnion or pin 46 adapted to seat in the socket 30 of the other bracket 27. The end portions 42 and 46 of the roller may also be employed for holding the roller and turning it bodily when wrapping the free ends of the hair there about and also for positioning the roller in the sockets of the bracket 27.

The roller 34 is provided in one side with a hinged clamping arm 47 which is counter sunk in the side of the roller 34 and extends lengthwise thereof and which is adapted to engage the free end portions of the hair and

force the same into the roller 34 for clamping the ends of the hair thereto.

The free end of the clamping arm 47 is detachably held in closed position, as shown in Figure 4, by a locking ring 48 which is seated in a groove 49 formed in one end portion of the roller 34 and which is formed with its ends spaced apart to provide a gap of sufficient width to admit of the swinging of the free end of the clamping arm 47 into and out of closed position. In Figure 7 the locking ring 48 is shown in locked position and with one end portion overlying the arm 47 to hold it closed in the roller. To release the arm 47 it is only necessary to slide the ring 48 circumferentially in its groove 49 until the gap in the ring registers with the arm 47 when the latter may be easily raised.

The third portion of the device comprises the heater, and this structure is shown to advantage in Figures 1, 8 and 9. The heater comprises a hood or casing 50 which may be of any suitable configuration for enclosing the roller 34 and its parts and for seating upon the upper side of the clamp. This casing 50 is preferably constructed of suitable material of a heat insulating and electric non-conducting material. The casing 50 is open at its bottom and adapted to be fitted downwardly over the roller 34 and its parts and is provided in its opposite ends with recesses or openings 51 of a size which is equal at least to the dimensions of the upstanding arm 29 and which is adapted to seat at its ends upon the bracket 27. The casing 50 is also provided at opposite ends and at its corners with spring pressed studs or balls 52 which are seated in the end walls of the casing 50 and project there beyond for engagement in the depressions or sockets 33 of the upturned lugs 32.

The balls 52 are urged outwardly by springs 53 mounted in cylindrical boxes 54 or the like which are secured within the corner portions of the casing 50. The casing 50 of the heater is provided in its top with a heating unit 55 comprising heating electric coils or the like for raising the temperature of the air within the casing 50. A metallic partition 56 is secured within the casing 50 and beneath the heating unit 55 to not only house the same, but to conduct the heat to the space beneath the partition 56. The openings 51 in the opposite ends of the casing 50 provide for the gradual and controlled flow of air upwardly through the casing from the clamp so that the air will not be entrapped within the casing, and to thus prevent the overheating or burning of the hair or part of the device. When the heating unit 55 is of the electrical type, the unit may be connected to a pair of contacts 57 which project from one end of the casing for the reception of an electric cord or the like, not shown in the drawings, to supply current to the unit 55.

It is thought that the use of the device will be apparent from the above description of the various parts thereof, but it may be briefly pointed out that the operation or mode of use is as follows:—

It is found advantageous with the use of these devices to first treat the hair with a liquid to soften it so that the hair may be changed as to its shape during the drying process. In the present instance it is found more practical and advantageous to use an alkaline lotion because it is found that this lotion penetrates to a greater extent than the ordinary permanent waving fluid now on the market.

After the hair has been dampened with the alkaline lotion the clamp is then applied to the hair close to the scalp and the hair is preferably spread out in as thin a layer as possible, as shown in Figure 1 and then held securely by the clamp. The roller 34, which comprises the tension device, is then secured to the free ends of the hair by means of the clamping arm 47. The roller 34 is then turned by hand to evenly and flatly wind the layer of hair about the roller, as shown in Figure 1. The spring 35 of the roller is placed under the desired tension by turning the shaft 37 and locking the same thru the pawl 41. As the hair is rolled with the desired amount of tension upon the roller 34, the roller is brought gradually into position over the clamp and is finally seated on the brackets of the clamp. The pawl 41 is now released and the spring 35 turns the roller to urge it in a direction to place the ends of the hair under tension so that the hair is drawn tightly between the clamp and the roller. The hair is thus wound in a relatively thin layer and spread over the surface of the roller and is also held evenly taut as the spring 35 exerts a yielding tension on the hair. When the hair is thus placed in the device, the casing 50 is then applied by inserting the same downwardly over the roller 34 and within the bracket arms 29 so that the spring projections 52 of the casing 50 interlock with the lugs 32 of the brackets 27 and yieldingly hold the casing 50 in position. The heating unit 55 is now operated to heat the space within the casing 50 so that the hair is subjected to heat and the latter is distributed evenly throughout the length of the roller and the hair dried in its taut condition.

The clamping jaws 15 and 16 may be forced together to a more or less extent dependent upon the thickness of the layer of the hair and the rack teeth 19 admit of the locking of the jaws 15 and 16 together in various adjusted positions.

It is of course understood that various changes and modifications may be made in the details of construction and design of the above specifically described parts of this device without departing from the spirit of the in-

vention and being restricted only by the scope of the following claims.

What is claimed is:

1. A hair straightening device, comprising a clamp for engaging the hair near the scalp, a tension device for engaging the hair beyond the clamp including a spring to yieldingly hold the hair taut, and means for heating the hair while under the tensioning action of said spring.

2. A hair straightening device, comprising a clamp for engaging the hair, a spring operated rolling device for receiving thereabout the hair and stretching the hair beyond the clamp, means for connecting the spring operated rolling device to the clamp for yieldably maintaining the hair taut, and means detachably mounted on the clamp and enclosing the spring operated rolling device to heat the hair held while being stretched by the spring operated rolling device.

3. A hair straightening device, comprising a clamp for engaging the hair, a roller detachably mounted on the clamp and adapted to receive the free ends of the hair wound thereabout, spring means for urging the roller to turn in one direction to stretch the hair, and heating means adjacent the roller to heat the hair while stretched by said roller and spring means.

4. A hair straightening device, comprising a clamp for engaging the hair, a roller detachably mounted on the clamp and adapted to receive the free ends of the hair wound thereabout, spring means for urging the roller to turn in one direction to stretch the hair, adjusting means for the spring means to vary the initial tension of the spring means, and heating means adjacent the roller to heat the hair while stretched by said roller and spring means.

5. A hair straightening device, comprising a pair of clamping jaws, pins carried by one clamping jaw for slidable engagement through the opposite clamping jaw, a spring pressed locking plate carried by the second clamping jaw, said pins having rack teeth thereon adapted for engagement with said locking plate upon the movement of said jaws toward each other to lock the clamp upon hair interposed between the blocks, a pair of brackets carried by one of the blocks, a tension device detachably mounted in the brackets and adapted to receive the free end portions of hair thereabout and to draw the latter tight between the tension device and the blocks, and a heating section mounted upon the brackets and enclosing the tension device to heat the hair while being held taut.

6. A hair straightening device, comprising a clamp adapted to engage against the opposite sides of a layer of hair, a roller detachably mounted on the clamp, spring means connected to the roller for urging the same to turn in one direction, means for interlocking said spring means with the roller for adjusting the tension of the spring means, and means for interlocking the spring means with the clamp when the first interlocking means is released for yieldingly urging the roller to turn in one direction while carried by the clamp.

7. In a hair straightening device, a clamp for engagement with the hair near the scalp, a pair of brackets mounted on the clamp, a roller having a pin on one end for rotatable engagement in one of the brackets, a shaft mounted in the roller, a spring on the shaft secured at one end thereto, the other end of said spring being secured to said roller, means for turning said shaft to place the spring under tension, a ratchet wheel on said shaft, a pawl carried by the roller for engagement with the ratchet wheel to lock the same when the spring is under tension, said shaft having a non-circular portion for engagement in interlocking relation with the other brackets to hold the shaft from turning relatively to the bracket, said pawl adapted to be released for turning the roller under tension of said spring, a clamping arm mounted on the roller for engaging the free end portions of hair extending from the clamp, said roller adapted to be manually wound to spread the free end portions of the hair thereabout and to be subsequently seated in said brackets, said shaft being turned to exert the desired tension on the spring whereby to draw said hair taut from the brackets under the desired tension, and heating means enclosing said roller and seated on said clamp.

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