Dec. 2, 1952 A. CALDORA 2,619,970

HAIR CURLER

Filed April 24, 1947

Fig. 1

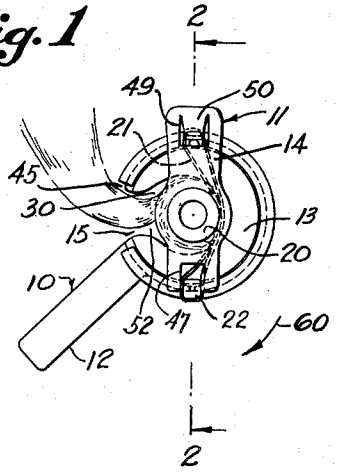


Fig. 2

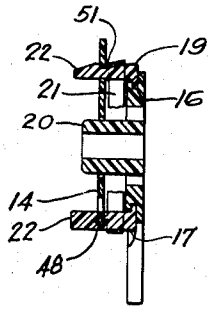


Fig. 3

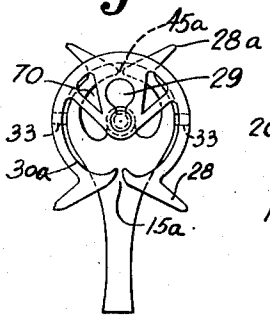


Fig. 4

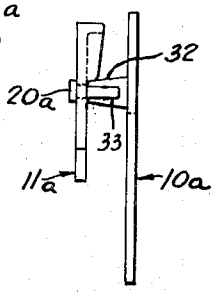


Fig. 5

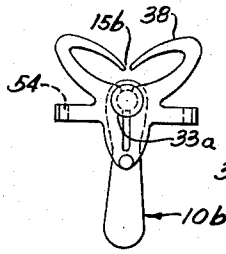


Fig. 6

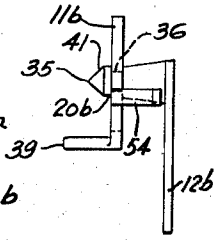


Fig. 7

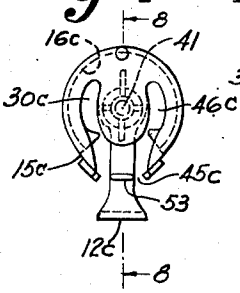
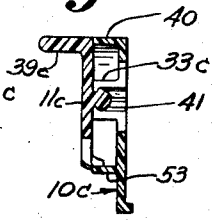


Fig. 8



INVENTOR
ARMAND CALDORA
BY Richards & Geier
ATTORNEYS

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HAIR CURLER

Armand Caldora, New York, N. Y.

Application April 24, 1947, Serial No. 743,565

4 Claims. (Cl. 132—33)

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This invention relates to improvements in hair curlers and particularly to the type of hair curler used for the setting and formation of small curls or large flat ringlets such as are ordinarily worn by women around the forehead and temple.

One object of this invention is to provide a hair curler which can be conveniently used to provide right hand or left hand turns, as desired; the curler can be used either at home by the operator upon herself or in professional beauty parlors by professional operators.

A further object is to provide a hair curler which is so contructed that the operator can wind most difficult and irregular strands of hair with ease and rapidity.

Another object of this invention is to provide a hair curler of inexpensive construction which has very few parts which may be operated rapidly, and which is adapted for producing a cold permanent wave wherein each strand of hair is saturated with any suitable cold waving solution.

Another object is to provide a hair curler wherein a strand retaining rotor cooperates with a mandrel to hold the curl in place, said mandrel and rotor having cooperative locking means which contain the hair properly during the curling operation resulting in a desirable flat ringlet or curl which will remain for several days when used for the purpose of setting the hair to be styled.

Another object is to achieve a hair curler lock device which is easily operated both in the locking and unlocking operation.

A further object is to provide a simple hair curler which will apply just the proper pressure to the hair to effectively achieve the curling operation without any hurt or annoyance to the person.

Other advantages will appear as the nature of the improvements is better understood, the invention consisting substantially in the novel arrangement and co-relation of the parts herein fully described and illustrated in the accompanying drawings wherein similar reference characters are used to describe corresponding parts throughout the several views and then finally pointed out and specifically defined and indicated in the appended claims.

The disclosure made the basis for exemplifying the present inventive idea involved, is capable of receiving a variety of mechanical expressions, four of which are shown in the accompanying drawings.

It should be understood of course that the details of the invention may be changed again

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from exact conformation with any of the above four versions and that these represent only certain practical embodiments at this time, and that these versions are to be understood from an illustrative rather than a restrictive point of view.

The device in general consists of a mandrel which is held stationary by the operator and in which there is a gate for admission of the lock of hair. There is also a rotor which has one or more handles for turning same and in each case there are guides to direct the hair properly either right or left depending which way the woman chooses to coiffure her hair.

There is also a lock and certain apertures.

The invention will appear more clearly from the following detailed description when taken in connection with the accompanying drawings in which:

Figure 1 is a plan view of the first embodiment, showing a strand of hair engaged and about to be wound on the mandrel thereof, the dotted lines indicating the manner in which the strand guide band routes the hair.

Figure 2 is a sectional view of this device taken on the line 2—2 looking in the direction of the arrows.

Figure 3 is a plan view of the second embodiment of the curler.

Figure 4 is a side view of the second embodiment.

Figure 5 is a plan view of the third version of this invention and

Figure 6 is a sectional view taken on the line 6—6 looking in the direction of the arrows for the third version.

Figure 7 is a plan view of another and a fourth version of the invention.

While Figure 8 is a sectional view taken on the line 8—8 of Figure 7 looking in the direction of the arrows.

It will be seen that the system of winding the hair is the same in each case and that the various versions differ only in the details of the guide and the lock with small variations in the shape of the mandrel and rotor.

The principal elements of the present curler are preferably moulded from a transparent synthetic resinous or plastic material having some degree of resiliency but it will of course be understood that other products may be employed in the manufacture of the curler without departing from the spirit or scope of the invention.

Referring now to the drawings in detail, the mandrel of the device shown as the first version in Figure 1 is designated as part 10 in this drawing

and is one of two cooperative mainsections or units, the other unit being in this case the rotor 11, the mandrel 10 having a flat elongated portion at 12 intended for a handle with which it may be held stationary. This mandrel also has a central slightly tapered spindle 20; the purpose of the tapered spindle is to facilitate the removal of each finished curl, in addition the mandrel has a circular area at 13, with proper space and clearance between this area and the flat top 14 of the rotor, so that a strand of hair may be conveniently wound concentrically around the center spindle 20 of this mandrel.

Between the rounded portion 13 and the handle 12 there is a gate 15 on the mandrel. There is a similar gate 45 on the rotor 11 in a corresponding position.

Gate 15 on the mandrel leads to a semicircular aperture 52 in the mandrel while gate 45 on the rotor leads to a similar aperture 30 in the said rotor 11. Through these gates and apertures the strand of hair may be entered or engaged by the operator when the parts are in the position shown, this being obtained by turning the rotor 11 in the direction of the arrow 60 to the position shown on Figure 1 or in reverse.

An important feature of the device is a circular female groove 16 machined in the periphery of the circular portion 13 of the mandrel 10 and shown in section on Figure 2.

This circular groove 16 is accurately machined in such a way that a suitable male flange 17 also accurately machined on the rotor may be fitted into the groove 16, and this is effected by forcibly expanding the circular rim 19 of said rotor 11 and admitting it over the extreme outer diameter of circular portion 13 of said mandrel 10, the natural resiliency of the material permitting this to be readily done. The two parts, namely, the mandrel 10 and the rotor 11 are thus concentric in relation to each other when assembled.

The groove 16 has sufficient clearance over the flange 17 so that easy but precise circular movement is achieved when the rotor is turned, thus moving the flange 17 in the groove 16.

A means for yieldably holding the strand of hair around the spindle 20 during every turn of the rotor 11, is provided by installation of a rubber guide band 21. It also holds short strands and short hair firmly in place.

The rotor 11 also has integral with it two vertical arms or stanchions 22 which extend upwardly a certain short distance, sufficient to provide support for the rubber guide band 21 at each end, the guide band 21 being an endless loop which is slipped over these stanchions 22. The stanchions 22 also serve to provide a locking base at 51 for the ends of the flat upper cover 14 of the rotor unit. The upper cover 14 actually has a dual function since it is both part of the locking device and the outer limiting wall of the housing formed by the rotor.

Three or four turns of the rotor 11 will usually be sufficient for forming a desirable curl. The cover 14 has a slot 47 on one end which is slidable in a double groove 48 on one of the vertical arms 22 and has at the opposite end a hole 49 through which the other vertical arm 22 may enter and in addition has a flexible male tongue 50 which is just long enough to enter the locking base 51 on the latter vertical arm 22.

One or both of the stanchions 22 may be used as handles in turning the rotor 11.

Thus it is apparent that the mandrel 10 is essentially sickle-shaped and includes the handle 12 and a circular portion 13, with the spindle 20 located in the center of the portion 13; the opening 52 extends in the form of an arc around the spindle 20 and has the gate 15 located upon one side of the handle 12. The rotor 11 has an arc-shaped rim 19 provided with a flange 17 fitting into a groove 16 formed upon the periphery of the portion 13 of the mandrel 10. Due to this arrangement the rotor 11 can turn freely upon the mandrel 10. The rotor 11 carries two stanchions 22 located opposite each other and carrying the endless rubber band 21 which extends to one side of the spindle 20. The stanchions 22 carry the cover 14.

In order to form a lasting permanent curl it is first necessary to bathe the hair in question in a suitable cold wave lotion. Next in operating the device it is necessary to introduce a suitable strand of hair into the curling space or clearance area between members 13 and 14 through the gate 15. The curler at this time must of course have the gate 15 open in the position shown in Figure 1, which will also locate the guide band 21 at the proper point since a center line extending through two vertical stanchions 22 will be at ninety degrees to a line extending through the center of the tapered spindle 20 and the center of the gate 15.

The strand of hair must be of sufficient length to provide slack enough of the free end to permit coiling several times. The free end of the strand may be permitted to lie under the upper cover 14 of the rotor and against the spindle 20.

The operator then turns the rotor 11 in the direction of the arrow 60 in Figure 1 (or in reverse), meanwhile holding the mandrel steady by means of the handle 10.

The guide band 21 will then carry the slack part of the hair around the spindle 20 under the yielding rubber and form a smooth coil about the tapered spindle 20.

Thus the winding of the strand of hair takes place as a result of relative rotary movement between the rotor 11 and the mandrel 10, while the band 21 merely presses the hair against the spindle 20 as it is being wound upon the spindle 20.

By applying a slight pressure to the under side of cover 14 and causing same to foreshorten in projected length by bending outwardly, tongue 50 will be disengaged from the base 51, thus unlocking the cover 14 and permitting it to be raised, whereupon the newly formed curl may be slipped off the tapered spindle 20 and the cover replaced and locked by simply pressing on it. The process may then be repeated.

The second version of the invention is shown in Figures 3 and 4, the device includes a mandrel 10*a* having a handle portion and a round portion provided with an inner recess 70 communicating with a gate 45*a* which is flanked by outwardly extending arms 28*a*.

The mandrel 10*a* carries a bearing 32. The rotor 11*a* has the form of an annular body provided with diverting arms 28 flanking a gate 15*a* leading to an inner space 30*a*. The rotor 11*a* is rotatably mounted upon a tapered spindle 20*a* which is carried in a bearing 32 forming part of the mandrel 10*a*.

The rotor 11*a* may be conveniently disengaged from the mandrel 10*a* in the position shown in Figure 3 by slight pressure upon the rotor which will cause it to move downwardly, so that the tapered spindle 20*a* will be located in the slot 29 of the rotor, thus permitting its removal. The

rotor 11a may be replaced by reversing said operation.

The rotor 11a also carries two vertical pins 33 on its periphery so located that they will act as guides for the hair.

In operating this device the free end of the prepared hair strand is inserted with a certain amount of slack through the gate 15a and led through the aperture 30a and the gate 45a into the recess 70. At that time the gate 15a is located directly above the gate 45a. The free end of the strand of hair lies against the bearing 32. The operator holds the handle of the mandrel 10a and turns the rotor 11a. The pins 33 will then wind the strand of hair in the form of a curl upon the bearing 32. After coiling the strand the rotor 11a is removed as hereinbefore described, thus releasing the formed curl. There is no rotor handle in this device, but a finger may be applied between the guide arms 28 while turning the rotor. In this case also the rotation of the rotor 11a about the spindle 20a will cause the winding of a strand of hair upon the spindle 20a.

The third embodiment of the invention is shown in Figures 5 and 6. The rotor 11b in this case is somewhat similar to the rotor 11a excepting that the dumbbell slot 29 of Figure 3 is replaced by a slitted bearing 33a of such design that this bearing may be slipped inward on the axis of the spindle 20b. The spindle 20b terminates at the end in a conical tip 35 to facilitate this operation. Inwardly of the conical tip is a machined groove 36 wherein the above slitted bearing 33a may locate. Rotor 11b in this case is provided again with two curved guides 38 between which is located the gate 15b, and also carries arms 54.

The mandrel 10b in this case consists merely of a handle 12b and the spindle 20b. Rotor 11b also incorporates a handle 39 by means of which it may be turned.

In operation of this article the prepared strand of hair is led over the spindle 20b, between the curved guides 38, and through the gate 15b with suitable slack at the free end. The turning operation is repeated as before, the operator holding the handle 12b and turning the rotor 11b by means of its handle 39. The arms 54 will then wind the hair upon the spindle 20b. The rotor 11b may be removed from the mandrel 10b upon completion of the winding operation by applying steady gentle pressure under same, which will cause slitted bearing 33a to expand because of natural resilience of material, thus permitting the rotor to be removed outwardly, whereupon the curl of hair may be removed and another made. Reassembly of the curler may be done easily by reversing the last operation.

In Figures 7 and 8 there is shown a fourth embodiment of the invention. The mandrel 10c includes a handle 12c, central bearing 33c and an arcuate body 16c enclosing two recesses 30c and 46c. The body carries a guide 40 consisting of a circular flange incorporated into the periphery of the body portion 16c. The bearing 33c may have the form of a tube provided with slots extending parallel to the axis thereof. The flange 40 is continued upon the handle 12c in the form of a projection or guide 53.

The rotor 11c has a central portion carrying a button-shaped pivot 41 which fits into the bearing 33c. The rotor 11c is further provided with curved arms 15c located on opposite sides of a gate 45c. An arm or handle 39c is mounted upon the rotor opposite the gate 45c.

In operating this article the operator leads the prepared hair strand through the both gates of the mandrel and rotor into the space 46c while the gates are in alignment, in the position shown in Figure 7. Now upon turning the rotor by means of the handle 39c while holding the handle 12c of the mandrel 10c the hair is rapidly led and guided by the circular flange 40 so that it coils firmly about the spindle 33c of the mandrel. Thus in this construction, as well as in those previously described, it is the continuous rotation of the rotor 11c about the spindle 33c which causes the winding of the strand of hair about the spindle to form a curl.

Having completed the curl the rotor may be removed by applying slight steady pressure under same in an outwardly direction which action will cause segments of slitted tapered spindle 33c to expand and allow rotor 11c to slip out of said spindle 33c, thus disassembling the device. Reversal of the above operation will reassemble the article for further use.

It is apparent that the specific illustrations shown above have been given by way of illustration and not by way of limitation and that the examples above described are capable of wide variations and modification without departing from the scope or intent of the present invention. All of such variations and modifications are to be included within the scope of the present invention.

What is claimed is:

1. A hair curler, comprising a mandrel having an aperture formed therethrough and a gate opening into said aperture, a spindle centrally located on said mandrel, an arcuate rotor rotatably mounted on said mandrel, said rotor having a gate formed therein, said gates being adapted to receive a strand of hair when in registration one with the other, and a cover hingedly connected to said rotor for retaining said strand of hair.

2. A hair curler, comprising a mandrel having an aperture formed therethrough and a gate opening into said aperture, a spindle centrally located on said mandrel, an arcuate rotor rotatably mounted on said mandrel, said rotor having a gate formed therein, said gates being adapted to receive a strand of hair when in registration one with the other, a pair of upstanding arms on said rotor, and a cover hingedly connected to one of said arms and releasably engaging the other of said arms.

3. A hair curler, comprising a mandrel having an aperture formed therethrough and a gate opening into said aperture, a spindle centrally located on said mandrel, said mandrel having an outwardly disposed circular groove formed in its periphery, an arcuate rotor having a circular flange seated in said groove and rotatable about said mandrel, said rotor having a gate formed therein, said gates being adapted to receive a strand of hair when in registration one with the other, a pair of upstanding arms on said rotor, a cover hingedly connected to one of said arms and releasably engaging the other of said arms, and extensible means on said arms for guiding and retaining said strand.

4. A hair curler, comprising a mandrel having an aperture formed therethrough and a gate opening into said aperture, a spindle centrally located on said mandrel, said mandrel having an outwardly disposed circular groove formed in its periphery, an arcuate rotor having a circular flange seated in said groove and rotatable about

said mandrel, said rotor having a gate formed therein, said gates being adapted to receive a strand of hair when in registration one with the other, a pair of upstanding arms on said rotor, a cover hingedly connected to one of said arms and releasably engaging the other of said arms, and an endless extensible band frictionally engaging said arms and passing to one side of said spindle for guiding and retaining said strand.

ARMAND CALDORA.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,091,785	Leland	Aug. 31, 1937
2,144,714	Bowyer	Jan. 24, 1939
2,388,628	Wormington	Nov. 6, 1945
2,432,585	Pohl et al.	Dec. 16, 1947