

United States Patent

Lemberg

[15] 3,707,155

[45] Dec. 26, 1972

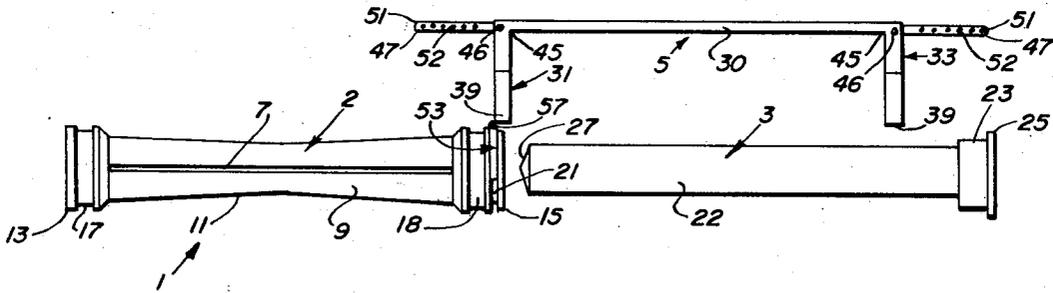
[54] **EXPANDABLE HAIR CURLER**
[72] Inventor: **Alfred A. Lemberg**, 9821 Lorelei Drive, Cincinnati, Ohio 45231
[22] Filed: **Jan. 24, 1972**
[21] Appl. No.: **219,969**
[52] U.S. Cl.132/40
[51] Int. Cl.A45d 2/00
[58] Field of Search132/40, 37, 38, 39, 42, 41 R, 132/33

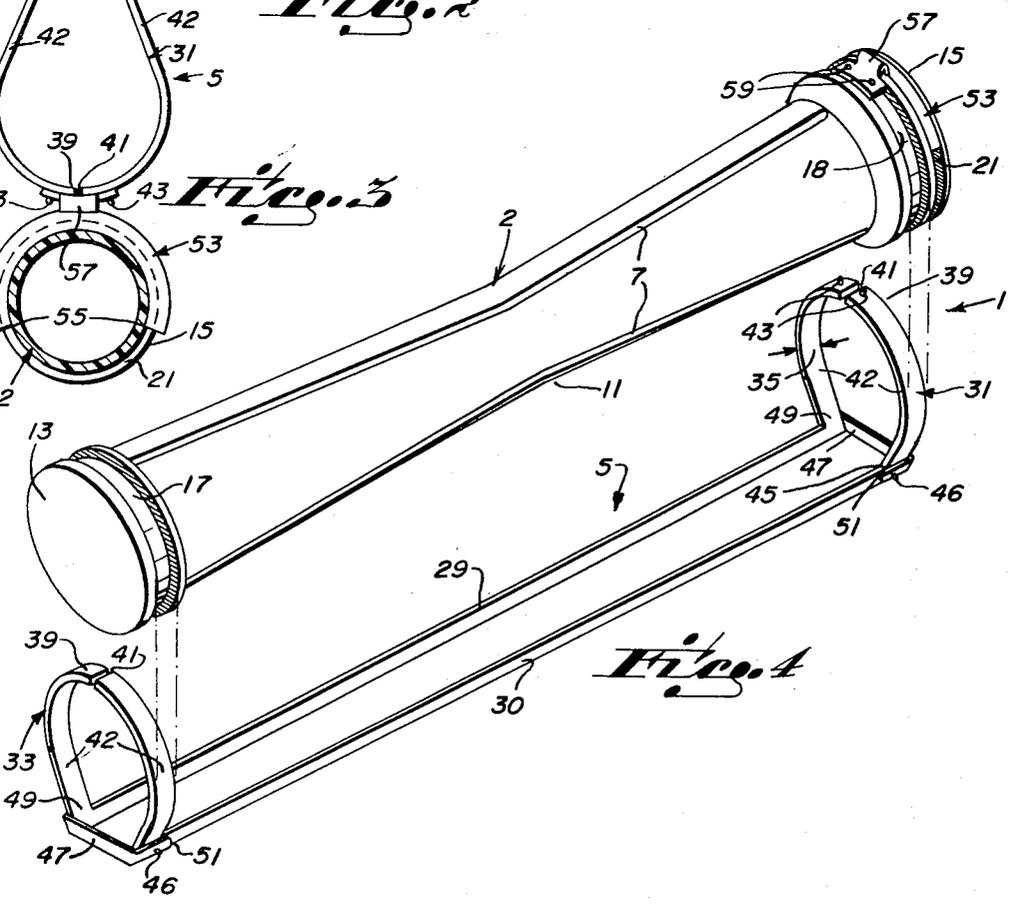
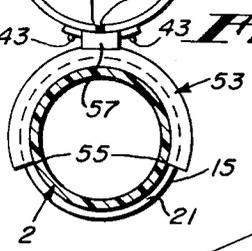
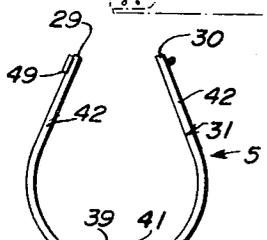
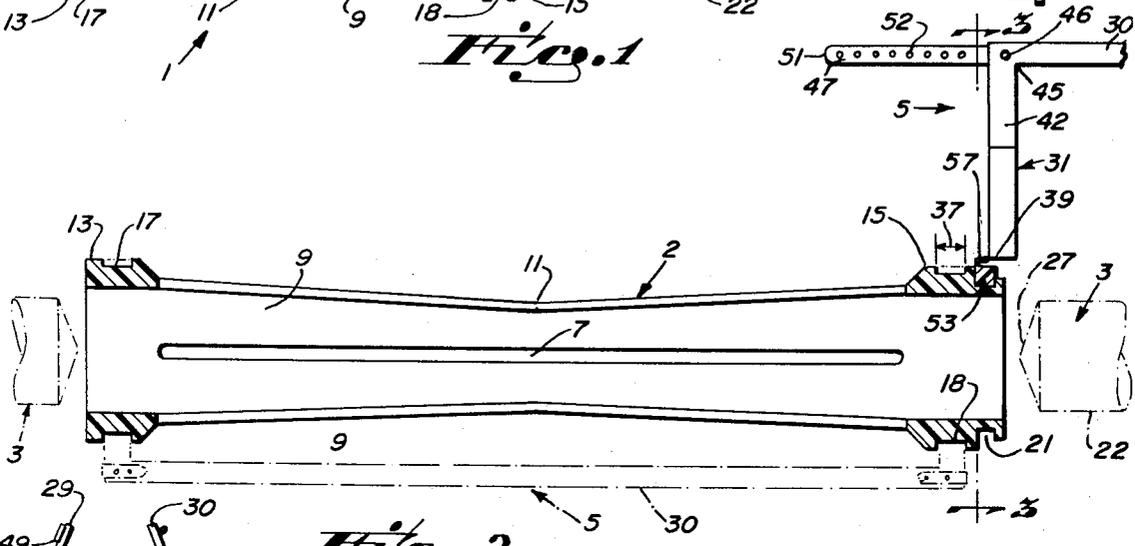
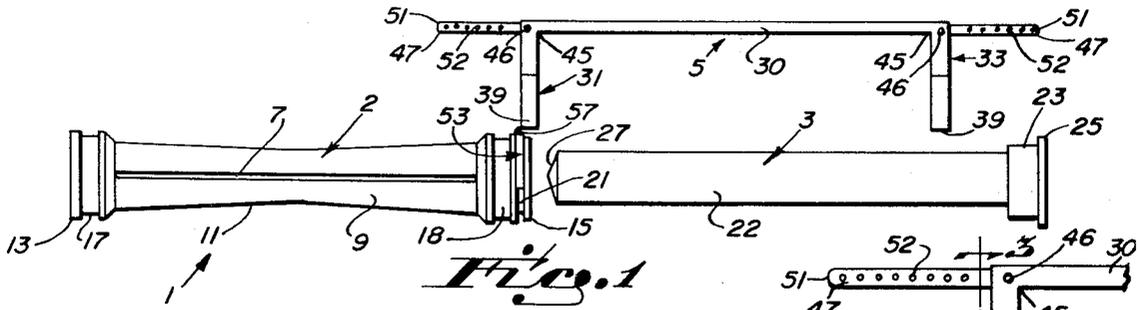
[56] **References Cited**
UNITED STATES PATENTS
1,839,668 1/1932 Gaire132/41 R
3,419,019 12/1968 Hoffmann et al.132/41 R
3,495,601 2/1970 Garrett132/33

Primary Examiner—Louis G. Mancene
Assistant Examiner—Gregory E. McNeill
Attorney—James S. Hight et al.

[57] **ABSTRACT**
Disclosed herein is an expandable and contractable hair curler.

6 Claims, 4 Drawing Figures





EXPANDABLE HAIR CURLER**BACKGROUND OF THE INVENTION**

In the cold waving of women's hair it is customary to first divide the hair to be treated into a large number of tresses (used herein to mean hair that is long enough to be wound about a curler) and then to wind each tress around a hair curler. The curler is then secured to the hair and a cold waving solution applied.

In normal practice the tress is wound relatively tightly about the curler prior to the application of the waving solution. It is recognized that this creates a number of problems. Firstly, it is difficult to completely saturate the hair with the waving solution. Secondly, there is a strong possibility the hair will thereafter be broken or damaged.

While the foregoing problems have been long recognized in the art, there is no hair curler on the market today which eliminates the aforesaid problems. While there have been disclosed in prior art patents a number of different devices directed specifically to this problem, none of them have effectively solved these problems or have been commercially successful. They have failed for a number of reasons. Some of them have been too costly to manufacture on a large scale commercial basis. This is an important consideration since the potential market is very large, due in part to the large number of women seeking cold waving treatment and also in part to the fact that for some applications 25 or more hair curlers are employed. Therefore, one important criteria is that the curler must be able to be cheaply manufactured and sold. In addition to expense, ease of application and use is another primary consideration. The person using the hair curler must be able to easily apply it to the hair and to release the tension thereafter. In addition, of course, any such device must be easily removed from the hair after it has been applied.

In addition to the foregoing criteria, several others are likewise important. For instance, it is desirable to provide a hair curler which permits the user to readily remove the curler from the tress for testing purposes and then to reapply the curler so that it assumes its operative position. It is also desirable to provide a curler so that the parts thereof are readily interchangeable with parts from another such hair curler. It is also desirable to manufacture such a curler from a plastic material which is chemically resistant, rust resistant, and easily adaptable to conventional manufacturing processes. In order to provide such a device made from plastic, it is necessary to eliminate complicated mechanisms. The curler must be susceptible of either molding or extrusion.

SUMMARY OF THE INVENTION

I have satisfied the foregoing objectives by providing a plastic hair curler having a barrel that is hollow and an exterior that is tapered toward the middle. Prior to the tress winding operation a curler expanding rod is inserted into the hollow curler barrel to force the walls of the barrel outwardly. After the winding operation has been effected the curler expanding rod is withdrawn, causing the middle of the curler barrel to contract, which in turn releases the tension on the hair. I have also provided a unique curler retaining clip which is secured in operation to both ends of the curler and

which surrounds and securely clamps the curler to the base of the tress of hair, adjacent to the scalp.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a disassembled side elevation view of a hair curler constructed in accordance with the principles of this invention;

FIG. 2 is an enlarged longitudinal cross section view thereof;

FIG. 3 is a cross sectional view taken along line 3—3 of FIG. 2; and

FIG. 4 is a perspective view illustrating the manner in which the curler may temporarily be removed from its retaining clip.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to FIG. 1, I shall describe the preferred embodiment of my expandable hair curler. My hair curler consists of three main elements, a hair curler 1, designated generally by the number 1, a curler expanding rod 3, and a curler retaining clip 5.

The hair curler 1 includes a hollow barrel 2. The barrel 2 contains several longitudinal holes or slots 7 in its longitudinal walls 9. These insure that the walls 9 may be readily expanded and contracted in a manner to be more particularly described. For the reasons previously stated, the curler is preferably molded or extruded from a suitable plastic material known in the art. The longitudinal walls 9 are preferably tapered from both ends toward the middle 11 of the barrel 2 as shown. The diameter of the middle 11 of the barrel 2 is slightly less than the diameter of the barrel 2 adjacent to the ends 13 and 15 of the curler.

The curler 1 has two ends 13 and 15. Each end 13 and 15 includes a similar annular curler retaining clip groove 17 and 18. End 15 also includes a second annular groove 21.

The curler expanding rod 3, preferably molded or extruded from a suitable plastic material, has a curler engagement portion 22 whose length is substantially similar to the length of the barrel 2. Rod 3 has a diameter which is substantially the same about its entire length except at one end where it has an expanded shoulder portion 23 and an annular flange 25. The latter two features are adopted to regulate the depth the rod 3 can penetrate the barrel 2. The diameter of the curler expanding rod 3 at the middle thereof is substantially similar to the interior diameter of the barrel 2 at the ends thereof. End 27 of the rod, which is the end of the rod opposite from the annular flange 25, is tapered to facilitate insertion into the hair curler. Insertion of the rod 3 into the barrel 2 to the maximum extend possible expands the longitudinal walls 9 outwardly so that they are relatively parallel as contrasted to their original position as shown in FIG. 1.

The curler retaining clip 5, best shown in FIG. 4, includes substantially parallel sides 29 and 30. It also includes split collars 31 and 33, integrally formed with the sides 29 and 30. The split collars 31 and 33 have a width 35 which is slightly smaller than the width 37 of the annular curler retaining clip grooves 17 and 18. At the top 39 of each split collar 31 and 33 there is a split or gap 41 which divides the collars 31 and 33 into two equal length legs 42. The top of split collar 31 includes

two locking pins 43. At the junctures 45 of the collar with the side 30 there are two locking pins 46. Retaining strips 47 are connected to a point 49, as by molding thereto, on the opposite side where the collar 31 or 33 joins side 29. At the opposite end 51 or free end of the retaining strips 47 are a plurality of holes 52 that are adapted to engage the locking pins 46 on side 30.

A semicircular locking ring 53 adapted to engage and ride in the annular groove 21 is also provided for use with the curler retaining clip 5. The width of the locking ring 53 is slightly smaller than the width of the annular groove 21. The distance between the ends 55 of the locking ring 53 is slightly smaller than the diameter of the annular groove 21. Locking ring 53 includes a hinge 57 that includes two holes 59 that are adapted to receive the locking pins 43. The hinge 57 is made from a durable but flexible plastic material and is molded integrally with the ring 53.

The split collars 31 and 33 are designed such that they can be inserted into the annular grooves 17 and 18 and so that when the retaining strips 47 are in operable engagement with locking pins 46 and hinge 57 with pins 43, sides 29 and 30 are spaced apart a distance approximately equal to or less than the thickness of the tress to be curled.

As shown in FIG. 3 the split collars 31 and 33 are horseshoe shaped with the maximum distance between the legs 42 being slightly larger than the diameter of annular grooves 18 and 17. This insures that the collars 31 and 33 may be inserted into the grooves 18 and 17 after which they can only be withdrawn by applying sufficient force to force apart the legs 42 a distance sufficient to enable them to be pulled over the curler 1.

To use the aforesaid expandable curler as it is shown in FIG. 1 one proceeds as follows. The curler expanding rod is inserted into the barrel 2 so that the flange 25 strikes the end of barrel 2. This expands the longitudinal walls 9 outwardly.

The tress is curled around barrel 2 of the hair curler 1 and after the desired amount of tress has been wound the curler retaining clip 5 is swung toward the left (referring to FIG. 1) so that split collar 33 can engage annular groove 17. As split collars 31 and 33 engage grooves 17 and 18 they are traveling toward the scalp. The legs 42 of the split curlers at the junctures 45 are cammed outwardly by the annular grooves 17 and 18. After the split collars 31 and 33 have traveled downwardly as far as possible the sides 29 and 30 of the curler retaining clip 5 clasp the tress. In order to insure that the tress is tightly clasped the retaining straps 47 are pulled tightly and the holes 52 therein are engaged by the locking posts 46. The curler expansion rod 3 is thereafter withdrawn. After the cold waving solution is applied to the tress about the barrel 2 or applied by squeezing solution through the hollow barrel 2 it may be desirable to test the tress to determine whether the solution has performed its function satisfactorily. In order to do so the hinge 57 is removed from the curler retaining clip 5 by withdrawing the hinge 57 from the post 43. The hair curler 1 may be thereafter unrolled

and the tress examined or tested. When this is done the curler retaining clip 5 is still in place, the sides 29 and 30 clamped to the tress. If desired the tress can thereafter be wound about the hair curler 1 and the curler locked into engagement with the curler retaining clip 5 by reinserting the post 43 into the holes in the hinge 57 and the split collars 31 and 33 into the annular grooves 18 and 17.

Those skilled in the art will recognize that many modifications may be made to the expandable hair curler just described without departing from the scope of the present invention. For example, if desired the semicircular ring 53, hinge 57, and the locking pins 43 on the split collar 31, can be eliminated if the legs 42 of the collars 31 and 33 are integral and contain no break 41. In this embodiment after the tress is wound about the hair curler 1, the hair curler retaining clip 5 is forced over the hair curler 1 so that the split collars 31 and 33 engage annular grooves 17 and 18. If desired, the retaining straps 47 may be eliminated by making legs 42 relatively inflexible so that they themselves exert enough force toward one another to force sides 29 and 30 together to clamp the tress.

If desired, the longitudinal walls 9 of the barrel 2 need not be tapered toward the middle 11 of the barrel. They can still be expanded outwardly as desired if the diameter of the curling rod is slightly greater than the diameter of the interior of the barrel 2 and if barrel 2 is made from a flexible material.

Having thus disclosed my invention I claim:

1. An expandable hair curler comprising, a hair curler, said curler having a hollow barrel, said barrel having longitudinal side walls, a curler expanding rod for insertion into said barrel for forcing at least a portion of said longitudinal walls outwardly, said barrel having at least one annular groove at each end, a curler retaining clip, said clip having a collar at each end thereof and at least two sides connecting said collars, one to the other, said collars engageable with said annular grooves in said barrel, and means for forcing said sides toward each other.
2. The curler of claim 1 wherein said side walls of said barrel taper from each end of said barrel toward the middle thereof.
3. The curler of claim 2 wherein said curler expanding rod adapted to be inserted into said barrel has a diameter substantially equal to the diameter of the interior of said barrel at the ends thereof and greater than the interior diameter of said barrel at the middle thereof.
4. The curler of claim 3 wherein said barrel has apertures in the side walls thereof.
5. The curler of claim 4 wherein said sides connecting said collars are substantially parallel to one another.
6. The curler of claim 5 wherein said means for forcing said sides toward each other includes at least one retaining strip.

* * * * *