

United States Patent

Debue

[15] 3,683,940

[45] Aug. 15, 1972

[54] ADJUSTABLE HAIR CURLER

[72] Inventor: **Marlene Debue**, 2402 Shenandoah St., No. 10, Los Angeles, Calif. 90034

[22] Filed: **Feb. 16, 1971**

[21] Appl. No.: **115,633**

[52] U.S. Cl. **132/39**

[51] Int. Cl. **A45d 2/02**

[58] Field of Search 132/39, 40, 41, 46 R, 33, 38, 132/20

[56] References Cited

UNITED STATES PATENTS

3,232,300 2/1966 Fisher 132/39
3,099,990 8/1963 Calfin et al. 132/39

3,084,699 4/1963 Gedid 132/46 R

Primary Examiner—Louis G. Mancene

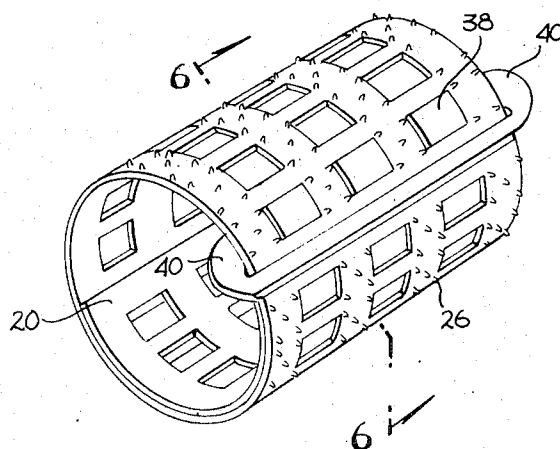
Assistant Examiner—Gregory E. McNeill

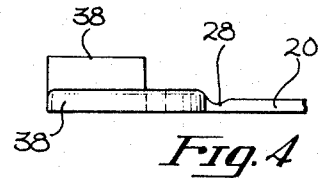
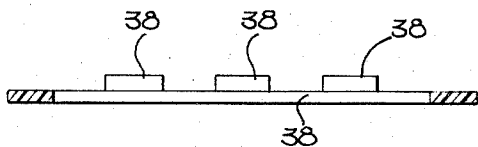
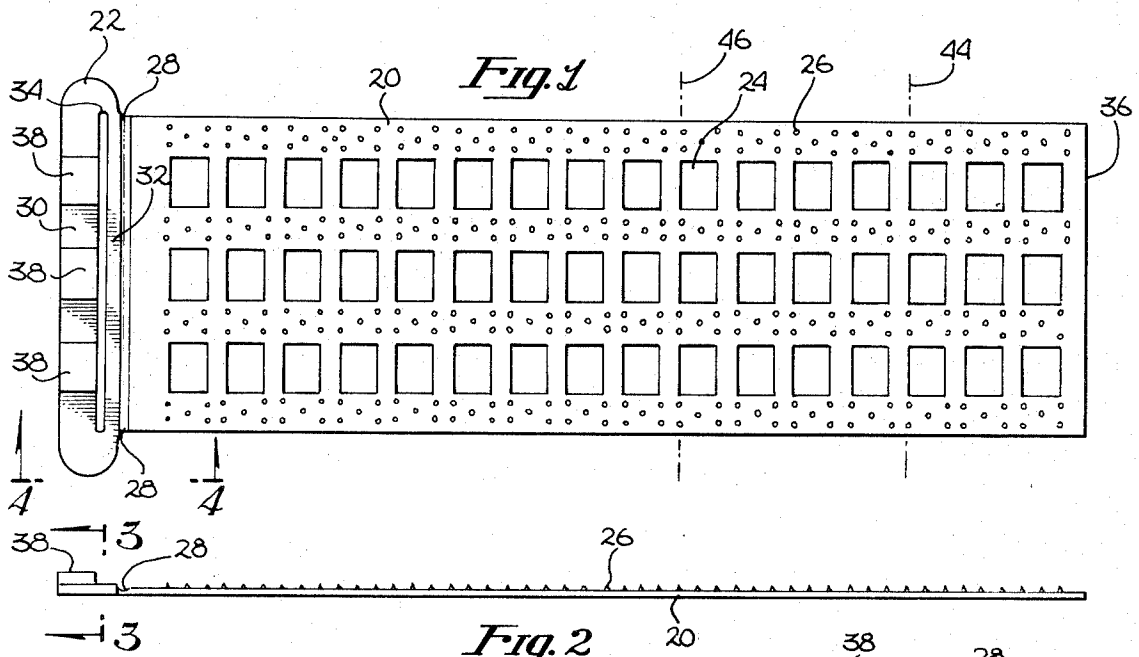
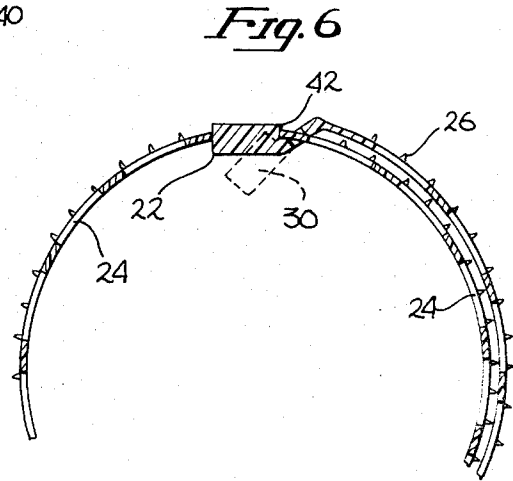
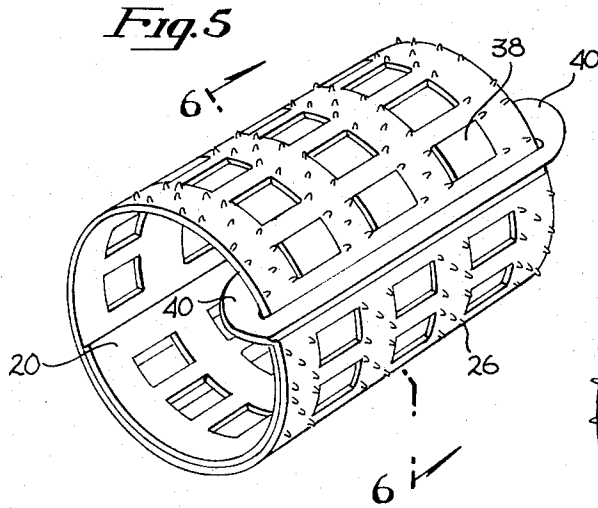
Attorney—Spensley, Horn & Lubitz

[57] ABSTRACT

An adjustable hair curler which will lie flat when not in use and which may be rolled up to automatically lock at any of a plurality of hair curler sizes. The hair curler is comprises of a first elongated rectangular section having a plurality of holes therein aligned in a plurality of rows, and having a locking member adjacent one end of the elongated portion in the form of a buckle having protrusions adapted for locking in any of the plurality of holes in the elongated portion.

10 Claims, 6 Drawing Figures





MARLENE DEBUE
INVENTOR

BY *Spensley, Horn & Lubitz*
ATTORNEYS

ADJUSTABLE HAIR CURLER

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to the field of cosmetic devices, and particularly to hair curlers.

2. Prior Art

Various forms of hair curlers adapted to be formed from a flat or substantially flat sheet of plastic material are known in the prior art. Such hair curlers are attractive for use both because they may be stored in a minimum of space and because, in general, they are adjustable as to size so that various size curls may be formed by proper adjustment of the curlers.

Such hair curlers have heretofore been of two different types. The first type of hair curler is disclosed in U.S. Pat. No. 3,232,300, entitled "Adjustable Hair Roller" and in U.S. Pat. No. 3,326,222, entitled "Adjustable Curler". These two hair curlers are characterized by a rectangular sheet of flexible material having rows of holes or openings therein and having a row of protruding knobs or snap elements adjacent one end of the rectangular section. To form a hair curler out of the sheet of material, the sheet is rolled so that the ends of the sheet overlap, with the end having the protruding knobs or snap elements lying over the other end and with the protruding members or snap elements directed generally inward toward the axis of the roll. When the sheet has been rolled to the desired size, the protruding knobs are forced to engage one of the rows of holes in the sheet to lock the roller at that size. In general, the heads of the protruding members or snap elements are larger than the holes in which they are to be inserted, so that once inserted through the holes they resist the natural tendency of the sheet to force them out of the holes and unroll.

The second type of hair curler is disclosed in U.S. Pat. No. 3,122,146, entitled "Hair Curler". This type of hair curler, though not formed from a substantially flat sheet of material, is designed to unroll to conserve space in shipment and storage. The curler has V-shaped sections forming resilient hinges running across the width of the material so that the material may be rolled into a coil with the ends overlapping. The outer overlapping end has a roll of holes therein and the inner overlapping end has protruding pins for engagement in the holes so that when the material is rolled to form the curler the pins may be made to engage the holes and retain the material in the curler shape. Only one row of holes for engagement of the pins is provided so that this curler, though collapsible for shipment and storage, is not adjustable as to size.

The first type of roller, that is the roller with the protruding knobs or snap element, has a number of limitations which make it difficult to use. The protruding members are characteristically rather small, and, therefore, are subject to deterioration and breakage. Also, they are designed to be inserted through a hole which is slightly smaller than the protruding member. This causes distortion of the material and wear on both the protruding members and the holes, thereby resulting in deterioration of the snap action with repeated use. Furthermore, each protruding member is substantially independent so that locking and unlocking the protruding members from the holes is more or less an

individual operation for each protruding member. Furthermore, this type of hair curler is difficult to roll up and lock at the desired size because of the nature of the locking mechanism. This is because there is nothing to hold the sheet of material in coil form, other than the efforts of the person rolling the coil, before the coil has reached the desired size and the locking members are actually engaged in the appropriate holes. The tendency of the coil to unwind, and of the edge having the protruding members thereunder to project outward tangentially from the cylindrical shape of the roll make it difficult to control the rolling process and to lock the roll at the desired shape.

The hair curlers of this first type are also somewhat difficult to manufacture since the protruding members with enlarged heads require special molds to allow removal of the part after molding, and, therefore, they may not be molded at the same production rates as would be possible with an article not having protruding members with enlarged heads. In articles such as hair curlers, such considerations are highly important since cost of manufacture will be determinative of commercial success and profitability of the product.

The second type of hair curler may be manufactured using relatively simple molds. However, the curler does not lie very flat when unrolled and consequently, will take up more space than curlers of the first type. Also, the curlers of this type are not adjustable as to size and, therefore, one of the principal advantages of roll-up curlers, that is, the advantage of being able to roll the curler to any desired size, is not present with this type of roller.

BRIEF SUMMARY OF THE INVENTION

An adjustable hair curler which will lie flat when not in use and which may be rolled up to automatically lock at any of a plurality of hair curler sizes. The hair curler is comprised of a first elongated rectangular section having a plurality of holes therein aligned in a plurality of rows, and having a locking member adjacent one end of the elongated portion in the form of a buckle having protrusions adapted for locking in any of the plurality of holes in the elongated portion. A plurality of small protruding members are provided on the rectangular section to engage the hair and prevent its slipping off the curler.

The curler is rolled up and locked at a particular size by rolling the rectangular section so that the small protruding members project outward from the center of the roll, and by bending the locking member inward toward the center of the roll and inserting the end of the rectangular section through the opening in the locking member, the elasticity of the material encourages the protrusions on the locking member toward the holes in the rectangular section so that the hair curler is self-locking at any of various sizes.

The hair curler is molded in one piece using polypropylene. Relatively simple molds are used, since the hair curler has no projections with enlarged heads which would require more complicated tooling or prevent the easy removal of the molded part from the mold.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top view of the hair curler of the present invention in the unrolled state.

FIG. 2 is a side view of the hair curler of FIG. 1.

FIG. 3 is a cross-section of the hair curler of FIG. 2 taken along lines 3—3 of that figure.

FIG. 4 is a side view of the locking member of the hair curler of the present invention on an expanded scale.

FIG. 5 is a prospective view of the hair curler of the present invention.

FIG. 6 is a cross-section of the hair curler of FIG. 5 taken along lines 6—6 of that figure.

DETAILED DESCRIPTION OF THE INVENTION

First referring to FIG. 1, a top view of the hair curler of the present invention in the unrolled condition may be seen. The hair curler is characterized by a rectangular section 20, and a locking section 22 adjacent one end of the rectangular section 20 and integral therewith. The rectangular section 20 is a relatively thin section, as may be seen in FIG. 2, and has a plurality of holes 24 therethrough. The holes 24 are arranged in rows running both longitudinally and laterally about the rectangular section 20. In the preferred embodiment, three longitudinal rows of rectangular holes are used, these holes comprising the only holes in the rectangular section 20. The rectangular section also has a plurality of small projections 26 extending from the surface of the rectangular section 20 which, as shall be subsequently seen, protrude outward from the curler to engage the hair and prevent its sliding off the end of the curler.

The locking member 22 is generally in the form of a buckle having a thickness substantially greater than rectangular section 20. The locking member 22 is separated from the rectangular section 20 by a transverse region of reduced thickness 28, so that the locking member is effectively hinged with respect to the rectangular section.

The forward member 30 and region 32 of locking member 22 together define a slot 34 having a width which exceeds the thickness of the rectangular section 20, as measured over the protrusions 26, and has a length which exceeds the width of rectangular section 20. Thus, end 36 of rectangular section 20 is insertable through slot 34 and may be inserted therethrough to any desired engagement.

The forward member 30 has a plurality of protrusions 38 projecting above the surface of the forward member, each being in line with one of the longitudinal rows of holes 24 in rectangular section 20. Protrusions 38 are slightly smaller than the holes 24, and in the preferred embodiment are rectangular protrusions to cooperatively mate with the rectangular holes. These protrusions may also be seen in FIGS. 3 and 4, and project above the surface of forward member 30 by an amount approximately equal to three times the thickness of the forward member.

Now referring to FIGS. 5 and 6, the hair curler of the present invention in the rolled up condition may be seen. To roll up the hair curler, the rectangular section 20 is rolled in a direction so as to result in the outward projection of protrusions 26, and end 36 is guided over protrusions 38 and inward through slot 34 to form the coil as shown. Once end 36 has been inserted through slot 34 by an amount sufficient to bring at least the first lateral row of holes 24 in alignment with protrusions 38, the curler is self-restraining in the roll shape by the

elasticity of the hinge area 28, which tends to urge protrusions 38 into holes 24, thereby locking the roller at that diameter. To change the roller diameter or to unroll the roller, finger pressure is to be first applied on the laterally projecting areas 40 to elastically deflect forward member 30 to the position shown in phantom in FIG. 6. When doing this, the curler is held in the other hand so that the curler may be encouraged into a smaller diameter or allowed to expand to a larger diameter or, in the extreme, back into the flat condition.

It is to be noted in FIG. 6 that when locking member 22 is in the locking position, protrusions 38 tend to be at a slight angle with respect to the surface of rectangular section 20 in the region of engagement. This condition could be substantially eliminated by supporting the locking member 22 generally below rectangular section 24 by an intermediate Z-shaped section therebetween. Also, the locking action between the protruding members 38 and the rectangular holes 24 could be enhanced by curving the edge 42 of protruding members 38 so as to form a hooked shaped area. However, these modifications would substantially increase the cost of molds because of the increased complication thereof, and would also increase the cost of molding each individual hair curler because of the resultant difficulty in removing the finished curler from the mold. It has been found that these variations in the design of the hair curler are unnecessary to the proper operation of the curler, and that good and sufficient locking and unlocking action is achieved with the preferred embodiment of the hair curler disclosed herein.

The preferred method of making the hair curler of the present invention is to injection mold the hair curler out of polypropylene. This material is available in attractive colors and in different densities and stiffness and, in general, provides the desired flexibility and elasticity for the hair curler. The material is durable, inexpensive and will withstand typical temperatures encountered in hair dryers without softening.

In the preferred embodiment, the rectangular section 20 is approximately 0.035 of an inch thick and protrusions 26 extend above the surface of the rectangular section by approximately 0.020 of an inch. The regions of the locking member of 22 are generally approximately 0.070 thick, with the line of reduced stiffness 28 being defined by a region having a thickness of approximately 0.020 of an inch. As hereinbefore mentioned, the protruding members 38 are approximately three times as thick as rectangular section 20. That is, approximately 0.105 of an inch thick.

The rectangular section 20 is approximately 8 inches long by 2 ½ inches wide and may be easily rolled into a curler having diameters ranging from slightly over 2 ½ inches down to approximately 1 ½ inches. Smaller rollers are not readily formed because end 36 of rectangular section 20 curves around the inside of the roller so as to hit the locking member 22. However, rollers adjustable to smaller diameters may readily be obtained from the preferred embodiment by merely cutting off a portion of rectangular section 20. By way of example, the rectangular section as shown in FIG. 3 may be cut along a lateral line at the forward edge of the rectangular holes 24, such as lines 44 and 46, to effectively shorten rectangular section 20 and create a roller adjusta-

ble to smaller diameters. Polypropylene is ideal for this purpose since it may be readily cut with ordinary household scissors, thereby allowing a purchaser to modify the preferred embodiment as desired.

Having now described the details of the hair curler of the present invention, some of the new and novel features of the hair curler may be noted. The hair curler has not protruding members with enlarged heads so as to make molds expensive and molding difficult. Similarly, there are no small protruding members essential to the operation of the hair curler, thereby avoiding the damage or breakage of a portion of the hair curler which would render it inoperative. The locking member tends to be self-locking so that when rolled to the desired size and released, the roller will lock at that size. In comparison, the adjustable rollers known to the prior art are just the opposite, and the locking members thereon must be forced both into the locking position and subsequently forced out of the locking position. The locking member of the present invention hair curler may be readily deflected to the unlocked position by finger pressure on the laterally extending region 40 thereby simultaneously releasing all of protruding members 38. In comparison, the adjustable hair curlers known to the prior art have no convenient provision for unlocking the protruding members from the holes, and particularly for simultaneously disengaging all protruding members from the holes, but instead require lifting of the forward edge of the roller so as to force the locking members out of the holes. Presumably, fingernails or some utensil would have to be used for this purpose. In this regard, it is to be noted that when one of the prior art hair curlers is rolled into the smallest curler size the elasticity of the material tends to strongly urge the locking members out of engagement with the holes. Consequently, there must be a strong locking action, thereby requiring considerable force to lock and unlock the roller at various sizes.

It is to be noted that while the invention has been particularly shown and described with reference to a preferred embodiment thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention.

I claim:

1. A generally flat plastic member adapted to be formed into a hair curler comprising:

an elongated rectangular portion having a plurality of openings therein arranged in a plurality of rows substantially parallel to the sides of said rectangular portion;

a locking member adjacent to one end of said rectangular portion and integral therewith, said locking member being substantially wider than said rectangular portion and having a region extending substantially perpendicular to said sides of said rectangular portion and a forward member substantially parallel to and spaced apart from said region so as to define a slot for receiving said rectangular section therethrough in an inward curving direction when said generally flat plastic member is rolled into a hair curler, said forward member having a plurality of engaging members, each disposed in alignment with one of said plurality of

rows of openings in said rectangular portion and projecting generally perpendicular to said flat sheet so as to be outwardly engageable with a plurality of said openings to retain said flat sheet in a coil forming said hair curler.

2. The plastic member of claim 1 wherein said locking member is substantially thicker than said rectangular portion and is separated therefrom by a flexible region having a thickness substantially less than the thickness of said rectangular portion.

3. The plastic member of claim 2 wherein said engaging members are rectangular members of substantially uniform cross-section and said plurality of openings in said rectangular portion is a plurality of rectangular openings, each at least as large as said rectangular members.

4. The plastic member of claim 3 wherein said rectangular portion has a plurality of small hair engaging protrusions therein, said protrusions projecting substantially perpendicular to said flat sheet and in the same direction as said plurality of engaging members.

5. The plastic member of claim 1 wherein said plastic member is a molded polypropylene member.

6. A plastic hair curler comprising:

a first section rolled into a roll with at least the ends of said first section overlapping each other, said first section having a plurality of openings therein arranged in a plurality of rows about the circumference of the said roll;

a locking member adjacent the outwardly disposed overlapping end of said first section and integral therewith, said locking member being substantially wider than said first section and having a region extending substantially parallel to the axis of said roll and adjacent the outer surface thereof, and a forward member substantially parallel to and spaced apart from said region and located within said roll adjacent the inner surface of said first section, thereby defining a slot receiving said rectangular section therethrough; and

outward projecting engaging members on said forward member, said engaging members each disposed in axial alignment with one of said plurality of rows of openings in said first section, said engaging members being encouraged into engagement with an axial row of said plurality of rows of openings in said first section by the elasticity of the material to lock said roll at a particular diameter.

7. The hair curler of claim 6 wherein said locking member is substantially thicker than said first section and is separated therefrom by a flexible region having a thickness substantially less than the thickness of said rectangular portion.

8. The hair curler of claim 6 wherein said engaging members are rectangular members of substantially uniform cross-section and said plurality of openings on said first section is a plurality of rectangular openings, each at least as large as said rectangular members.

9. The hair curler of claim 8 wherein said first section has a plurality of small hair engaging protrusions therein, said protrusions projecting outward substantially perpendicular to the surface of said roll.

10. The hair curler of claim 6 wherein said plastic member is a molded polypropylene member.

* * * * *