United States Patent

[11] 3,583,409

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[45] Patented **June 8, 1971**

[54] **EXPANSIBLE AND CONTRACTABLE HAIR CURLER**
10 Claims, 10 Drawing Figs.

[52] **U.S. Cl.** **132/33**
[51] **Int. Cl.** **A45d 2/12**
[50] **Field of Search** 132/33, 39, 41, 72

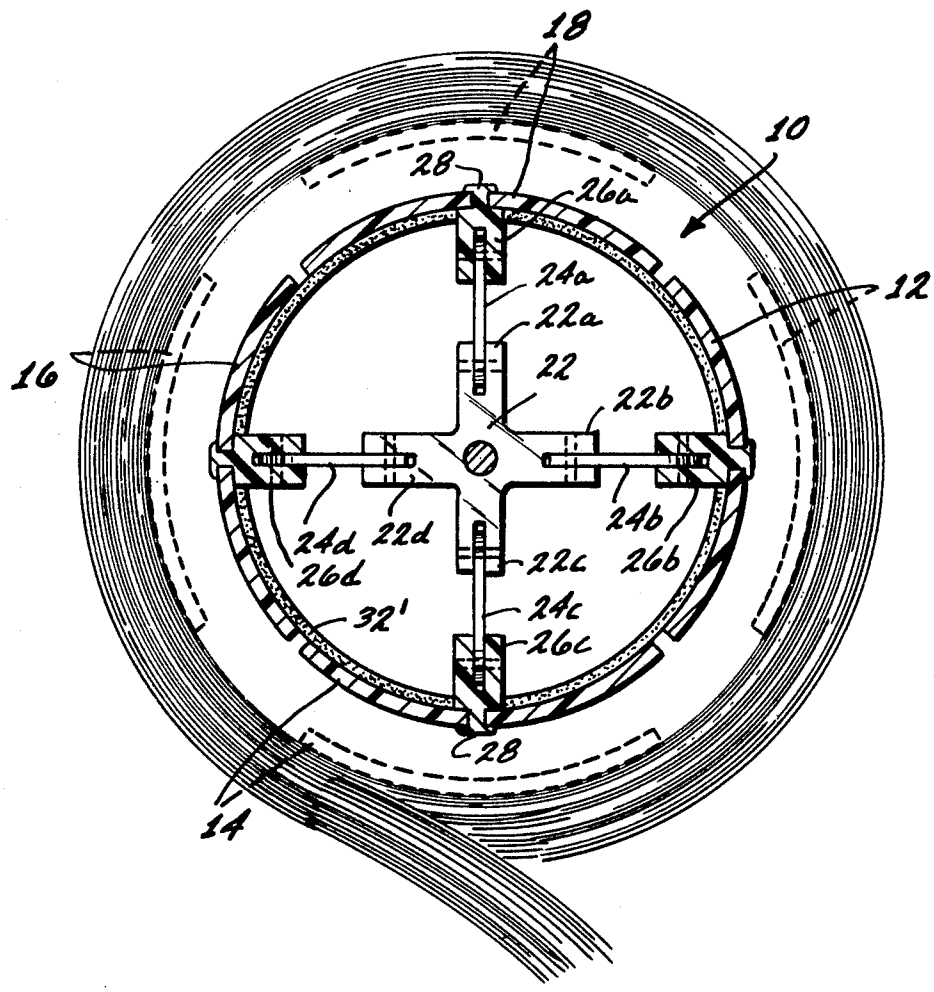
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Assistant Examiner—Gregory E. McNeill
Attorney—Herzig & Walsh

ABSTRACT: The device is an expansible and contractable hair curler. It is generally cylindrical having a plurality of arcuate segments disposed about a central axis. The segments are held together by means within the curler which are connected to the various segments and movable axially to cause the segments to move radially inwardly and outwardly for changing the size of the curler. The segments are held together at the ends by adjustable or flexible means to allow for the change in diameter.



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SHEET 1 OF 2

FIG. 1

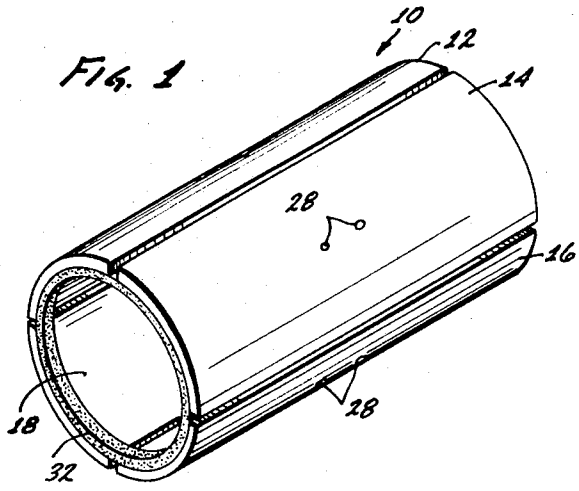
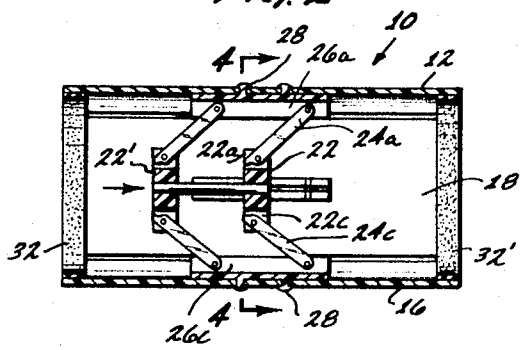


FIG. 2



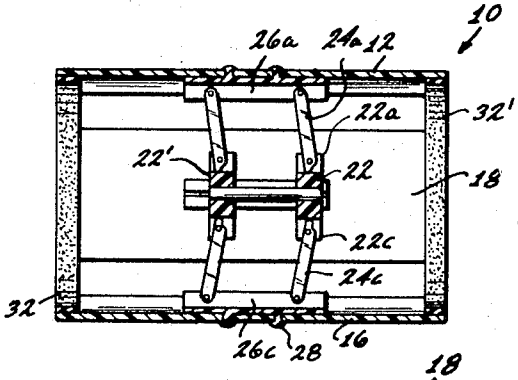


FIG. 3

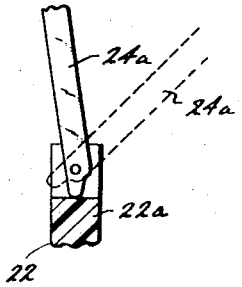


FIG. 5

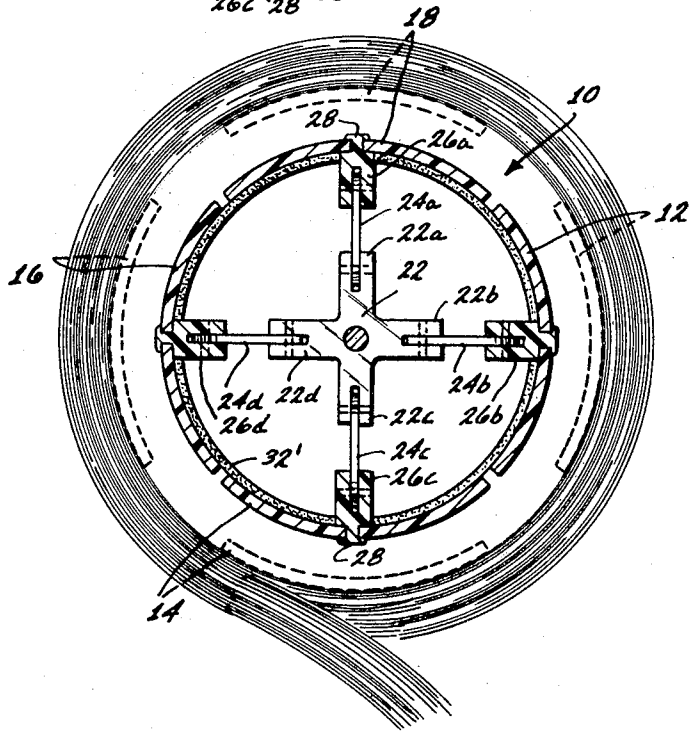


FIG. 4

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FIG. 6

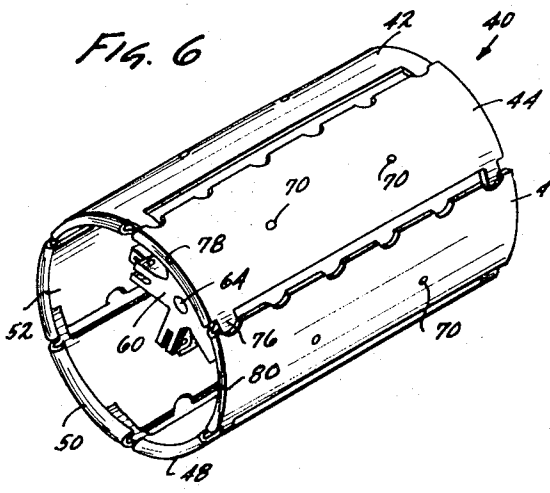
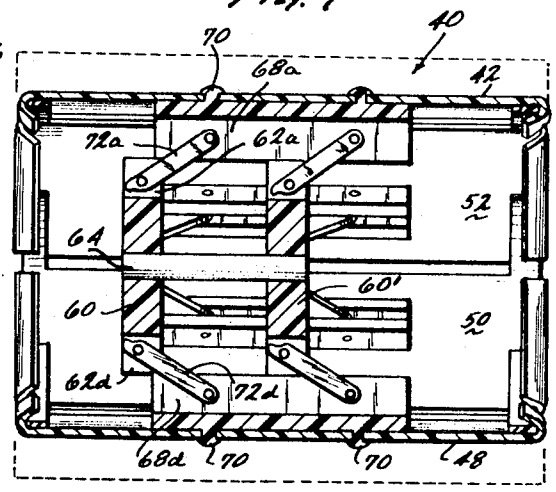


FIG. 7



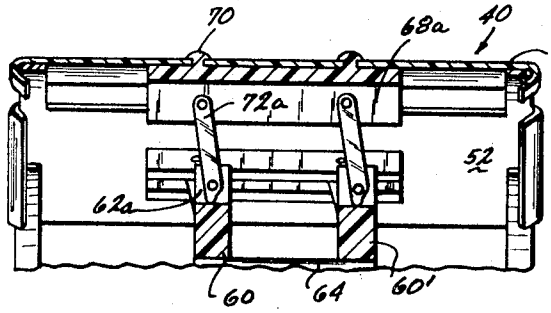


FIG. 8

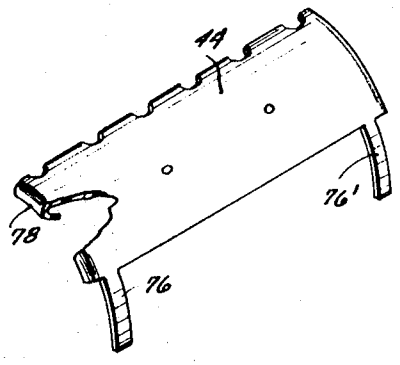


FIG. 10

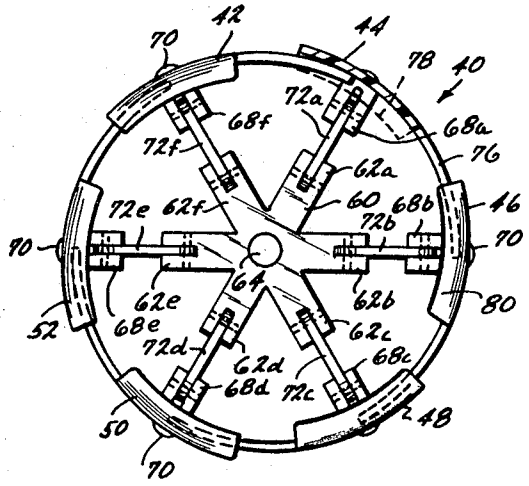


FIG. 9

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EXPANSIBLE AND CONTRACTABLE HAIR CURLER

SUMMARY OF THE INVENTION

The invention is a hair curler of the expansible and contractable type. The improvements in the invention reside in simplified, superior, and more effective means for expanding and contracting the curler radially. Expansible and contractable hair curlers have been known in the prior art such as that shown in U.S. Pat. No. 2,214,233 of McCormick. The objective in that patent appeared to be to make it possible to tighten the strands of hair while on the curler. Generally, the purposes of curlers or rollers of the type described herein is to speed up the drying of the hair and it is effective for this purpose when used either with long or short hair. The contractability of the curler makes it possible for the rollers to be contracted and removed from the hair without disarranging the roller pattern and the pinback and place back of the hair. After the hair has been set and under the dryer the rollers can be removed and this can be done perhaps 15 or 20 minutes in the matter of short hair and perhaps 30 to 35 minutes in the matter of long hair. The roller or curler is of standard size but collapses to a smaller size for removal.

The primary object of the invention is as stated to provide an improved means for expanding and contracting the roller which in a preferred form of the invention comprises means within the roller or curler embodying an axially movable member which is attached to a plurality of axial segments for moving them radially. Preferably there are a plurality of axial segments and the number may be four, six or more. The expanding and contracting means is attached to all of the segments. The same means holds all of the segments in position and it is operable to move them radially merely by way of an axial thrust, the operation simulating merely pushing a button. Simplified means may be provided at the ends of the curler for additionally holding the segments together and this means may be simply elastic tape or it may be in the form of adjustable arcuate members on the ends of segments that fit into arcuate receptacles on adjacent segments.

Further objects reside in realizing improved simplicity, economy and effectiveness of manipulation and operation in the manner set forth in the foregoing.

Further objects and additional advantages of the invention will become apparent from the following detailed description and annexed drawings, wherein:

FIG. 1 is a perspective view of a preferred form of the invention;

FIG. 2 is a sectional view of the form of the invention shown in FIG. 1 in contracted position;

FIG. 3 is a sectional view like FIG. 2 but showing the curler in expanded position;

FIG. 4 is a detailed cross-sectional view;

FIG. 5 is a sectional view taken along the line 4–4 of FIG. 2;

FIG. 6 is a perspective view of another form of the invention;

FIG. 7 is a sectional view of the form of the curler shown in FIG. 6 in contracted position;

FIG. 8 is a partial sectional view like that of FIG. 7 showing the curler in expanded position;

FIG. 9 is a sectional view taken along the line 9–9 of FIG. 7;

FIG. 10 is a detailed view of one of the segments of the curler of FIGS. 6 to 9.

Referring now more particularly to FIGS. 1 to 5 of the drawings, numeral 10 designates a preferred form of expansible and contractable curler which when expanded is of conventional or standard size. The curler comprises four axially arranged arcuate segments 12, 14, 16 and 18 as may be seen in FIG. 4, angularly spaced and arranged about the longitudinal axis of the curler. The curvature of the arcuate segments is circular all of them having the same diameter as may be seen. The segments may be made of any suitable material such as, for example, they may be made of any of the various types of plastics commercially available.

The curler can be expanded and contracted, that is, by moving the segments radially toward and away from the center. In the figures numeral 22 is an axially positioned member which may be made of plastic having four spokes as designated at 22*a*, 22*b*, 22*c*, and 22*d* which are 90° apart. Spaced from the member 22 is another member 22′ of similar construction. The spokes 22*a*, 22*b*, 22*c*, and 22*d* are positioned to extend toward the medial portion of the arcuate segments 12, 14, 16 and 18. The end part of each of the spokes 22*a*, 22*b*, 22*c*, and 22*d* is slotted and received in the slots of link members 24*a*, 24*b*, 24*c* and 24*d*. On the inside of the intermediate medial parts of the segments 12, 14, 16 and 18 these links are pivoted to the spokes 22*a*, 22*b*, 22*c* and 22*d* by transverse pivot ends and the links are also pivoted at their other ends to the lugs or blocks 26*a*, 26*b*, 26*c* and 26*d* by transverse pivot pins.

As previously explained member 22′ is like the member 22 and therefore, need not be described in detail. The lugs or blocks 26*a*, 26*b*, 26*c* and 26*d* are attached to their respective segments by way of rivets such as shown by way of example at 28 In FIG. 2. The member 22′ is attached or linked to the four segments 12, 14, 16 and 18 by links corresponding to those previously described so that these links need not be described in detail. FIG. 5 is a detailed view of the connection or joints 24*a* and the member 22.

The ends are held together by suitable means in the form of the invention shown. In this form of the invention at each end of the curler there is provided a strip of elastic tape 32 on the inside of the ends of the segments and attached thereto by any suitable means such as by being threaded to the segments through small holes therein. The strip of elastic tape at the other end is designated at 32′.

From the foregoing, the operation of the curler will be readily understood. FIG. 1 shows the curler in expanded condition. FIG. 2 shows it collapsed to a smaller diameter. FIG. 3 shows it almost in the fully expanded condition. The expansion and contraction of the curler is effected merely by way of axial movement of the central assembly comprising the members 22 and 22′ and the linkages. The action is similar to that resulting merely from pushing a button. If the members 22 and 22′ as shown in FIG. 2 are moved to the right the four sets of linkages act to force the four segments outwardly radially, each pair of linkages constituting a parallel mechanism as will be observed. The members 22 and 22′ move exactly axially while the four segments move radially. FIG. 3 shows the parts approaching the fully expanded position. When fully expanded as will be seen, all of the link members such as the links 24*a*, 24*b*, 24*c* and 24*d* will be in the radial position in which the curler is rigid normal size being held in this position rigidly inasmuch as the links are now normal to the axis of the curler. If an axial push is imparted to the members 22 and 22′ the links move oppositely with the segments moving inwardly radially to a smaller size wherein the axial edges of the segments 12, 14, 16 and 18 come together or to a position closely adjacent to each other. In this position the curler is of a smaller diameter such that can very readily be removed from the set hair without disturbing the set hair as fully explained in the foregoing.

FIGS. 6, 7, 8, 9 and 10 show a modified form of the invention which is different primarily in being provided with different means at the ends of the curler for holding the segments together. It should be realized, however, that the means for expanding the segments radially and contracting them serves to hold the segments together and in axially arrayed position as well relative to the axis of the curler. In FIGS. 6 to 10 the curler is designated at 40. It has six segments as designated at 42, 44, 46, 48, 50 and 52. The segments are arcuate having curvature which is circular and all having the same diameter and being uniformly angularly spaced and disposed about the central axis of the curler.

Within the curler is an axially movable member 60 which may be made of plastic or other similar material and which has six equiangularly spaced spokes 62*a*, 62*b*, 62*c*, 62*d*, 62*e* and 62*f*. Adjacent to the member 60 is a similar member 60′ which

is the same in construction and, therefore, need not be described in detail. The two members 60 and 60' are connected by an axial stem member 64 which may be made of plastic or metal.

On the inside of the arcuate segments at an intermediate position are the lugs or blocks 68*a*, 68*b*, 68*c*, 68*d*, 68*e* and 68*f* which are attached to their respective segments by rivets such as shown in FIG. 6.

The member 60 is connected to the lugs on the inside of all of the segments by way of links as designated at 72*a*, 72*b*, 72*c*, 72*d*, 72*e* and 72*f*. The inner portions of the lugs 68*a* through 68*f* are slotted to receive the ends of the links 72 which are pivotally attached thereto. The extremities of the spokes 62*a* through 62*f* are slotted to receive the inner ends of the links 72*a* through 72*f* which are pivotally attached thereto by pivot pins.

A similar group or array of links connects the axial member 60' to the segments 42 through 52 and since this structure is the same it need not be described in detail again.

FIG. 6 shows the curler in contracted position and FIG. 9 shows it in expanded position. Means are provided at the ends of the curler to adjustably hold the six arcuate segments together in a manner to allow for the expanding and contracting action of the segments of the curler. FIG. 10 shows the segment 44 which along one edge has spaced arcuate or semicircular cutouts as shown. These strips engage with the next adjacent arcuate segment as will be described. At the ends of the segment 44 there are also formed receptacles or holders as designated at 78 which in the form of the invention shown are provided merely by the end part of the segment being folded or bent inwardly to form a groove, slot or receptacle for an arcuate segment. FIG. 6 shows how the strip or tab 76 on the segment 44 is received in receptacle 80 of the next adjacent arcuate segment 46. The interrelationship is the same at both ends as between all adjacent arc segments. Thus it may be seen that this relationship of parts serves to hold the segments together in a circular relationship but yet allows them to expand radially inwardly and outwardly. As previously pointed out FIG. 6 shows the contracted position of the curler wherein the edges of the arcuate segments are close together and FIG. 9 shows the expanded position wherein these arcuate edges are further apart.

From the foregoing those skilled in the art will understand the nature and construction of the invention, its operation and usage and the manner in which it achieves and realizes all of the objects and advantages as set forth in the foregoing as well as the many additional advantages that are apparent from the detailed description.

The foregoing disclosure is representative of preferred forms of the invention and is to be interpreted in an illustrative rather than a limiting sense, the invention to be accorded the full scope of the claims appended hereto.

What I claim is:

1. An expansible and contractable hair curler comprising a group of at least three axial segments disposed about a central axis, the segments having an arcuate configuration, the segments normally forming a generally cylindrical hair curler, and means for holding the segments in position around the axis and for simultaneously moving them radially towards and away from the axis whereby to change the size of the curler.

2. A hair curler as in claim 1 including means at the ends of the curler holding the segments together in a manner whereby to allow them to move radially towards and away from the central axis.

3. A curler as in claim 1 wherein said means for moving the segments comprises a member disposed within the curler and movable axially and having connections to angularly spaced segments arranged whereby axial movement of the member causes radial movement of the said segments.

4. A curler as in claim 3 wherein said connections comprise pairs of parallel links connected between the said member and each of the segments.

5. A curler as in claim 3 wherein said means at the ends of the curler comprises a resilient member elastically connecting the segments to allow radial movement inwardly and outwardly.

6. A curler as in claim 3 wherein said means at the ends of segments comprises members extending generally circularly between segments and constructed whereby to allow segments to move inwardly and outwardly radially with the spacing between segments changing.

7. A curler as in claim 6 wherein said means at the ends of segments comprises arcuate members extending from segments, adjacent segments having arcuate receptacles for slidingly receiving said members.

8. An expansible and retractable hair curler comprising a group of axial segments disposed about a central axis, the segments having an arcuate configuration, the segments normally forming a generally cylindrical hair curler, and means for holding the segments in position about the axis and for simultaneously moving them radially towards and away from the axis whereby to change the size of the curler, said means comprising an axially movable member having oppositely disposed linkages connected to axial segments.

9. A curler as in claim 8 having linkages connecting axially disposed members with arcuate segments wherein said linkages hold segments firmly in their outermost position by occupying a position normal to said segments and the central axis.

10. A curler as in claim 8 having a plurality of axially disposed parallel members at intervals normal to the central axis for holding arcuate segments in their radial movement and having a plurality of parallel linkages connecting said members to said arcuate segments.