June 2, 1959 W. K. WELDON 2,888,937

HAIR CURLING DEVICE

Filed Oct. 15, 1958

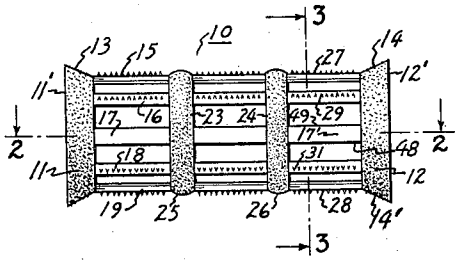


Fig. 1.

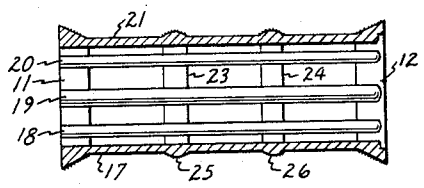


Fig. 2.

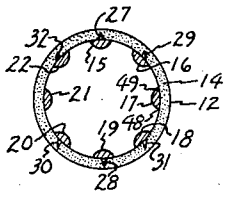


Fig. 3.

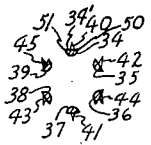


Fig. 5.

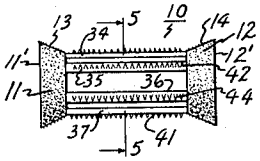


Fig. 4.

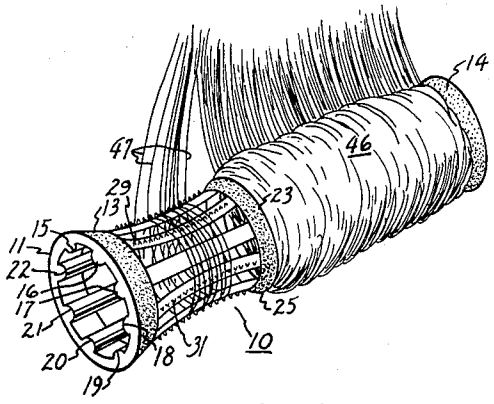


Fig. 6.

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HAIR CURLING DEVICE

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5 Claims. (Cl. 132—33)

This invention relates to a device for curling hair and more particularly to a hair curling device adapted to maintain the hair under tension when a tress of hair is wound thereon. The device is particularly useful when employed in conjunction with waving preparations and with methods which fix the curl of the tress by means of a curling device.

A general object of the invention is to provide an improved hair curler.

The art of waving, as conventionally practiced in the home and beauty shops, involves the division of the hair into various tress sections. Each of the tresses is then wound on a hair curler, and by dampening with water or by chemical or heat means, or the like, the tresses caused to take the form imparted to the hair by the curler.

During hair waving treatments, the hair filaments elongate when dampened with water or waving lotions and contract when drying, and one of the advantages associated with hair curlers currently in vogue is that they fail to embody adequate means for compensating for the elongations and contractions of the hair filaments. Consequently, the hair tresses frequently become loosened on the curlers, become displaced thereon, and take the curl form existing under the loosened or displaced condition. Frequently the hair filaments crack or break or become brittle from the subsequent shrinkage. The curler described herein is equipped among other elements with rows of directional teeth for restraining the hair from circumferential slippage and with resilient rib sections for maintaining the hair under tension. The curler is also provided with relatively sharp edges along the sides of the ribs to aid in restraining the hair from circumferential slippage.

The average user of curlers is well aware of the fact that the lotions employed therewith are usually highly lubricating in nature, thus making it difficult to whirl the hair curlers with the fingers without encountering slippage between the fingers and the curler. This slippage is overcome in the instant invention by the provision of knurled end members. The bead-like projections on the surface of the end members effectively overcome finger slippage by providing a roughened surface for finger contact. The bead-like knurl projections not only perform this function, but they also aid materially in preventing circumferential as well as lateral hair slippage along the end portions because the filaments of hair tend to intertwine with the bead-like projections.

In certain embodiments of the invention is has been found desirable to provide resilient reinforcing rings integrally attached to the ribs to prevent their inward flexing to an undesirable degree. By providing these reinforcing rings with a knurled surface it has also been found that the circumferential slippage of the hair along such rings is greatly reduced.

Accordingly, it is an object of the invention to provide a simple and effective hair curler which restrains the hair

filaments from circumferential movement about the periphery of the curler once a tress of hair filaments is wound thereon and which simultaneously holds the hair filaments under tension.

Another object is to provide a hair curler that effectively restrains the hair filaments of a tress from circumferential slippage while simultaneously holding the hair under a tensive strain, the curler being so designed as to minimize finger slippage at the ends thereof, and being relatively inexpensive to manufacture and easy and convenient to use.

The novel features which are believed to be characteristic of this invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and method of operation, together with further objects and advantages thereof, may best be understood by reference to the following description taken in connection with the accompanying drawing, in which:

Figure 1 is a side elevation of a curler in accord with the invention;

Figure 2 is a longitudinal sectional view of the curler taken along line 2—2 of Fig. 1;

Figure 3 is a transverse sectional view taken along line 3—3 of Fig. 1;

Figure 4 is a side elevation of a curler comprising a modified embodiment of the invention;

Figure 5 is a sectional view taken along the line 5—5 of Figure 4, illustrating the directional features of the teeth arranged along the rib members thereof, certain portions of the structure being omitted for clarity; and

Figure 6 is a perspective view of the embodiment of the invention shown in Figs. 1, 2 and 3 showing inwardly flexed rib sections with a tress partially wound on the curler.

With particular reference to Figs. 1, 2 and 3, the curler **10** includes annular end members **11** and **12** which are beveled outwardly to present enlarged outer end edges **11'** and **12'** at the end extremities of the curler **10**. Beveled surfaces **13** and **14** of end members **11** and **12** respectively are knurled to form roughened surfaces much the same as the presented by sandpaper. Thus, minute, sharp, bead-like anti-slip projections or knurls **14'** are randomly arranged on the beveled surfaces.

The end members **11** and **12** are interconnected by a plurality of peripherally spaced and longitudinally extending straight resilient ribs **15, 16, 17, 18, 19, 20, 21** and **22**. The ribs have outer peripheral faces, as for example outer face **17'** of rib **17**. The ribs are so designed as to have curved inner surfaces that juncture with the outer faces along opposite relatively sharp side edges thereof on opposite sides of the respective faces, as for example side edge **48** and opposite side edge **49** of outer face **17'**. The outer faces of the respective ribs define a generally cylindrical body or winding drum, of which the surface is interrupted between the respective adjacent ribs. Annular reinforcing rings **23** and **24** reinforce the ribs against excessive inward flexing. The rings are integrally attached to the outer peripheral faces of the ribs and so shaped as to have respective knurled outer curved surfaces **25** and **26** which taper downwardly to the outer faces of the ribs.

Along the outer faces of ribs **15** and **19** are rows **27** and **28** respectively of radially projecting minute hair-gripping teeth, whereas along the outer faces of ribs **16** and **20** are respective rows **29** and **30** of minute directional hairgripping teeth. Ribs **18** and **22** also have directional teeth rows **31** and **32** along their respective outer faces. The teeth in rows **29** and **30** project counterclockwise around the periphery of the curler whereas the teeth in rows **31** and **32** project clockwise around the periphery of the curler as viewed in Figure 3. It will be apparent

that the directional teeth project from the rib at an acute angle to the respective face thereof whereas the radially projecting teeth project at a perpendicular angle to their respective rib faces. In the curler shown in Figure 3 the teeth in the top half of the curler that are along the ribs **15**, **16** and **22** project in parallel and in the same direction away from the bottom half of the curler whereas the teeth in the bottom half of the curler along the ribs **18**, **19** and **20** project in parallel and in the opposite direction to the teeth in the top half.

With particular reference to the embodiment shown in Figures 4 and 5, the curler **10** includes annular end members **11** and **12** which are beveled outwardly to present enlarged outer edges **11'** and **12'** respectively at the end extremities of the curler **10**. Beveled surfaces **13** and **14** of the end members **11** and **12** respectively are also roughened to present knurled surfaces.

The end members **11** and **12** in this embodiment are interconnected by a plurality of peripherally spaced and longitudinally extending resilient straight ribs **34**, **35**, **36**, **37**, **38** and **39**. The resilient ribs, in this embodiment also have outer faces and curved inner surfaces that juncture with the outer faces along relatively sharp side edges, as exemplified in Figure 5 by outer face **34'** and side edges **52** and **51** of rib **34**.

Ribs **34** and **37** have respective rows **40** and **41** of radially projecting minute hairgripping teeth along their outer faces. On the other hand, ribs **35** and **38** and ribs **36** and **39** have rows **42** and **43** and rows **44** and **45**, respectively, of minute directional hairgripping teeth along their respective outer peripheral faces. The teeth in rows **42** and **43** are oppositely directed around the cylindrical body surface of the curler with respect to the teeth in rows **44** and **45**, the latter teeth projecting clockwise around the periphery of the curler whereas the former teeth project counterclockwise around the periphery of the curler. It will also be noted that ribs **34**, **35** and **39** and the end member portions adjacent to the ends thereof, constituting a half of the curler, have teeth all projecting in parallel and in the same direction away from the other half of the curler whereas the other half of the curler, constituted by ribs **36**, **37** and **38** and end member portions adjacent to the end thereof has the teeth projecting parallelly in the opposite direction.

By showing only a few hair filaments wound on the portion of the curler **10** between ring **25** and end member **11**, Figure 6 generally illustrates the inward flexing of the ribs that takes place when a tress **46** of hair is wound on the curler illustrated in Figures 1, 2 and 3. The directional teeth in rows **29** and **30** engage the filaments **47** of hair and prevent them from slipping circumferentially about the periphery of the curler due to the tensive forces imparted to them by the inwardly flexed resilient ribs. The side edges of the rib faces also tend to restrain the filaments from circumferential movement by engagement with the filaments of hair adjacent to and overlapping the edges. The inwardly flexed ribs maintain the filament of hair under a tensive stress at all times because of the expansive forces tending to return them to their normal peripheral position. As the hair filaments **47** elongate and contract because of being treated with the water, the lotions and through drying, the resiliency of the ribs tends to compensate for the elongations and contractions by causing the ribs to flex outwardly from their inwardly flexed position or permitting them to be further flexed inwardly, as the case may be. The teeth in rows **31** and **32** are directed around the periphery of the curler in a direction opposite to the teeth in rows **29** and **30**, and although having a greater capacity for restraining the hair when it is wound on the curler in the opposite direction, they of course also grip the hair filaments to a certain extent. However, the directional teeth in rows **31** and **32** function most effectively when the tress is wound on the curler **10** in the opposite direction. The radially extending teeth also exert some gripping action. It may be mentioned at this point that the directional teeth appear to be especially effective because of their minute character, it being contemplated that the minute teeth should project generally not more than about ten to twenty hair diameters above the outer face of the rib or not more than about .05 inch.

The reinforcing ring **23** is spaced from end member **11** and spaced from the other ring **26** so as to have flexible rib portions between the respective members and rings. The rings **25** and **26** overlie the ribs and the curved surfaces thereof are knurled to provide added resistance to the circumferential slippage of the hair, the hair filaments engaging between the bead-like knurls as is the case with the knurls of the end member. The randomly arranged knurls on the surfaces of the end members deter lateral movement of the hair filaments at the ends of the curler and also provide a finger-engaging surface which minimizes slippage between the fingers and the curler as previously mentioned.

It's evident that the resilient ribs in their inwardly flexed condition cooperate with the means provided on the curler for restraining the hair filaments from slipping around the periphery of the ribs to maintain the hair filaments under tensively strained condition. The curler of the invention should have rows of teeth located in opposite halves of the curler and pointing in the same general direction around the body surface of the curler and should also have other rows of teeth located in opposite halves of the curler and pointing in a direction around the body surface which is opposite to the direction of the first mentioned rows of teeth.

After the tress has been wound upon the curler of the invention the tress is secured by any conventional hairgripping means such as a hair pin, one portion of which may overlie the tress whereas the other portion may project within the curler to engage the tress between the flexed ribs.

The curlers may be made of a resilient plastic or like material such as polyethylene.

While only certain preferred embodiments of this invention have been shown and described by way of illustration, many modifications will occur to those skilled in the art and it is, therefore, desired that it be understood that it is intended in the appended claims to cover all such modifications as fall within the true spirit and scope of this invention.

What is claimed as new and what it is desired to secure by Letters Patent of the United States is:

1. An elongated hair curler comprising two annular end members and a plurality of longitudinally extending straight resilient ribs interconnecting with said end members, each of said end members having an enlarged end edge and a beveled surface extending outwardly from said connections with said ribs to said end edge, said beveled surface having knurls randomly arranged and projecting therefrom, said ribs having outer faces defining an interrupted cylindrical body surface of the curler and being spaced one from the next around the periphery of said curler, said ribs being adapted to yield resiliently inwardly as hair is wrapped on said body surface and thereafter to impose generally constant tension on said hair, said plurality of ribs including at least two ribs in one half of the curler and another two ribs in the other half of the curler, each of said two ribs of said one half having a respective row of teeth extending from the respective faces thereof and all of said teeth extending in parallel in a direction away from said other half and each extending at an acute angle to its respective rib face, and each of said two ribs of said other half having a respective row of teeth extending from the respective faces thereof and all of such teeth extending in parallel in a direction away from said one half and each extending at an acute angle to its respective rib face.

2. A hair curler according to claim 1 wherein each of said plurality of ribs have a curved inner surface that

junctures with the outer face on both sides thereof along relatively sharp side edges of said outer face.

3. An elongated hair curler comprising two annular end members and a plurality of longitudinally extending straight resilient ribs interconnecting with said end members, each of said end members having an enlarged end edge and a beveled surface extending outwardly from said connections with said ribs to said end edge, said beveled surface having knurls randomly arranged and projecting therefrom, said ribs having outer faces defining an interrupted cylindrical body surface of the curler and being spaced one from the next around the periphery of said curler, each of said plurality of ribs having a curved inner surface that junctures with its outer face on both sides thereof along sharp side edges of said outer face, two annular reinforcing rings spaced from each other and the respective adjacent end members, said rings being integrally attached to said spaced ribs around the periphery of said curler and projecting outwardly of the outer faces of said ribs and having respective outwardly curved surfaces tapering downwardly to the respective faces of said ribs, said outwardly curved surface having knurls randomly arranged and projecting therefrom, said ribs being further adapted to yield resiliently inwardly as hair is wrapped on said body surface and thereafter to impose generally constant tension on said hair, said plurality of ribs including at least two ribs in one half of the curler and another two ribs in the other half of the curler, each of said two ribs of said one half having a respective row of teeth extending from its respective face at an acute angle thereto and all of said teeth of said two ribs extending in parallel in a direction away from said other half, and each of said two ribs of said other half having a

respective row of teeth extending from its respective face at an acute angle thereto and all of such teeth of said other half extending in parallel in a direction away from said one half.

4. A hair curler comprising two annular end members, a plurality of straight resiliently deformable ribs extending between said end members forming a generally cylindrical winding drum for receiving hair therearound, the outer surfaces of said end members meeting the outer surfaces of said ribs at the rib ends, and said end member surfaces extending outwardly towards the ends of the curler to form inclined increased diameter hair retaining end flanges, said end member surfaces carrying minute sharp anti-slip projections therefrom affording a gripping surface for hair and a grip surface for manipulation by the user, minute teeth projecting from at least one rib in a direction inclined from a radial direction toward one direction of rotation of said drum and projecting from at least one other rib in a direction inclined from a radial direction toward the opposite direction of rotation of said drum, said ribs being adapted resiliently to yield inwardly when hair is wound on said drum whereby a tensioning force is applied by said ribs to the wound hair.

5. The combination according to claim 4 wherein rib reinforcing means comprising at least one resilient ring are integrally attached to said ribs spacedly between the end members of the curler, said ring having an outer surface exposed at the surface of the drum and said ring surface carrying minute sharp anti-slip projections.

No references cited.