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C. D. GRESHAM ET AL

3,340,880

HAIR CURLER WITH NOVEL BAIL MEMBER

Filed Dec. 21, 1964

2 Sheets-Sheet 1

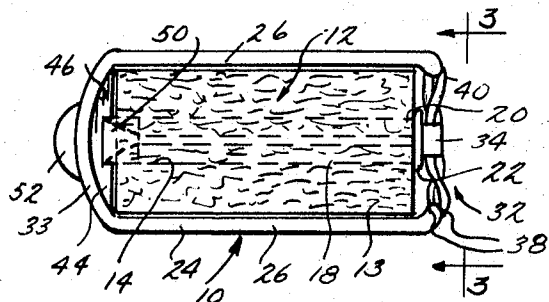


Fig. 1.

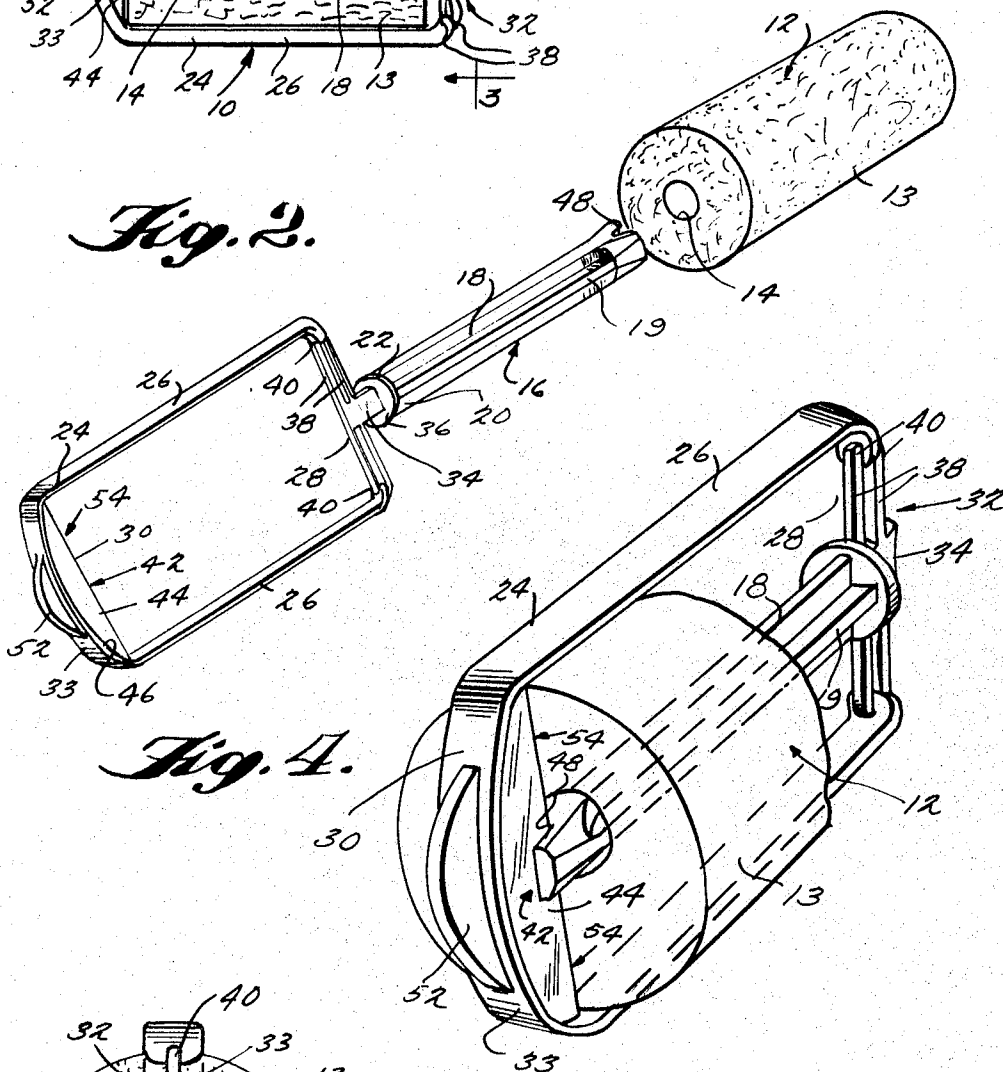


Fig. 2.

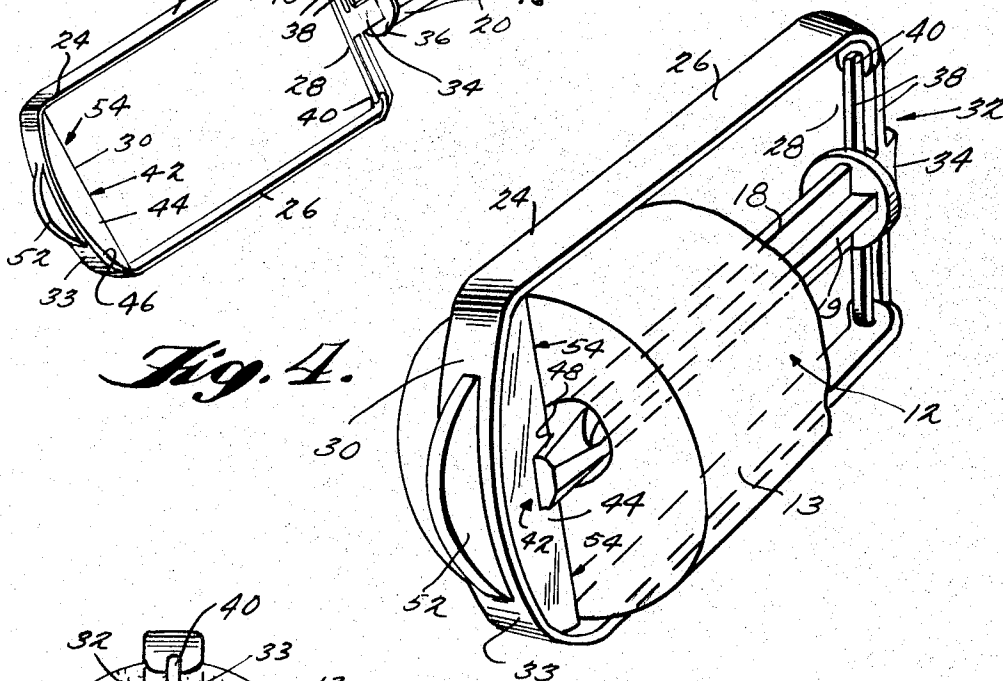


Fig. 4.

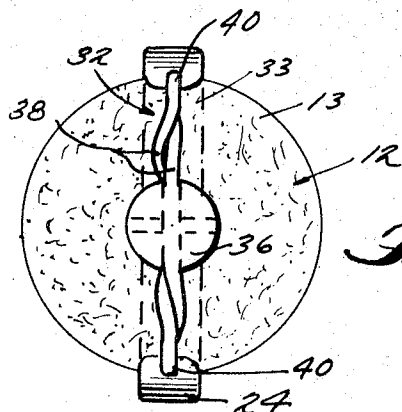


Fig. 3.

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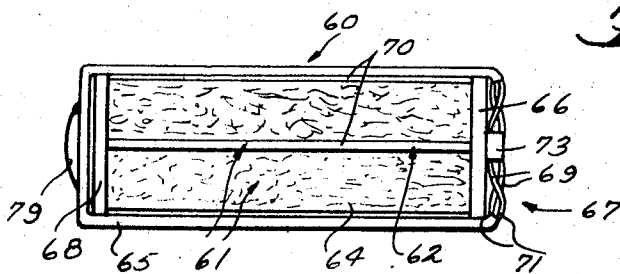


Fig. 5.

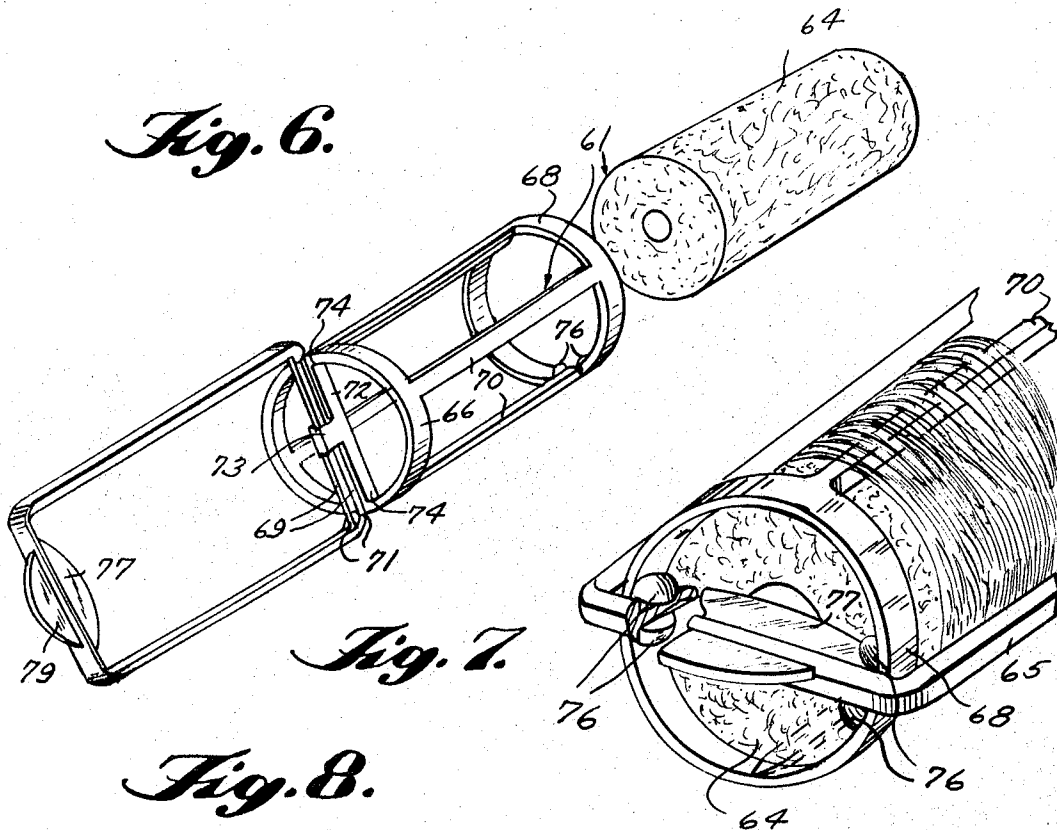
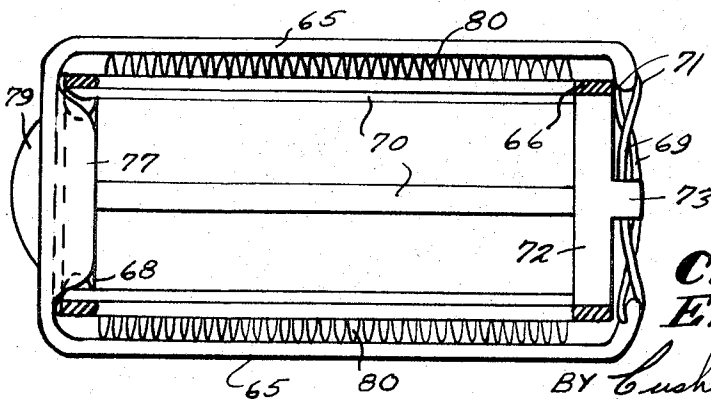


Fig. 6.

Fig. 7.

Fig. 8.



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HAIR CURLER WITH NOVEL BAIL MEMBER

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This invention relates to a new and improved hair curler or roller.

The hair accessory industry is an extremely competitive industry, and, accordingly, is very cost conscious. Hair accessory items are relatively inexpensive; therefore, a cost savings amounting to a fraction of a cent can be very important.

Heretofore, hair curlers have been made of the type comprising a support member, a foam roller inserted thereon, and a bail pivotally attached to the support member and being operatively associated with the foam member so as to retain the hair wound around the foam member, all as fully disclosed in Patent 2,937,649, of May 24, 1960. That patent also discloses that the bail must have a locking means associated therewith for operatively and releasably locking the bail to the support member once the hair is wound thereon so that the bail can hold the lock of hair on the foam member.

Moreover, it has been necessary to have a curler comprised of at least two pieces (excluding the foam roller itself) which had to be assembled by hand. Specifically, prior foam curlers comprised a separate bail and support member which had to be assembled by hand. Thereafter, the foam roller was inserted on the support member. Basically, it was considered necessary that the bail and the support member or hair supporting means be separate so that they could be hinged together in a manner which allowed swinging movement with respect to each other. This movement was necessitated by the fact that the bail had to be disposed from the supporting member so that the hair could be wound thereon, and thereafter the bail had to move into engagement with the supporting member so that it could retain the hair thereon.

A logical improvement in this area would be to make the supporting member and the bail integral so that one assembly operation could be eliminated in the manufacture of these types of curlers. Any attempt to make these two members integral, however, would result in a requirement of having a hinge means of sufficient strength to withstand constant twisting from the opening and closing of the bail. It was found that a bail having a reduced portion at one transverse end to which the frame member or support member was attached was unsatisfactory in that structural failure would inevitably occur.

Therefore, it is an object of this invention to provide an improved hair curler having an integral hinge of sufficient strength and simplicity to avoid the problems heretofore mentioned.

Likewise, it is an object of this invention to provide a hair curler comprising a bail means for supporting a lock of hair, and a hinge means consisting of at least two strands disposed from each other and connected at their free ends to the bail, the two strands being operatively connected to the hair supporting means at one or more points. It can be seen that rather than subjecting a single strand to torque, the two-strand concept enables the elements to twist with respect to each other without causing the individual strands to be over-subjected to stresses due to twisting.

The hinge may naturally bias the bail into an opened position with respect to the hair supporting means or into a closed position. If the bail is biased into an opened position, it is easily maintained out of the way when

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hair is wound on the hair supporting member. On the other hand, for storage and packaging ease, it may be desirable to bias the bail into a closed position.

More specifically, it is an object of this invention to provide a hinge means in which the strands are parallel to each other and are integrally connected at their free ends to the bail with their mid-points being operatively connected to the hair supporting means. Generally, the strands have a total transverse cross-sectional area less than the cross-sectional area of an element forming the bail, such as the end of the bail to which the hinge is connected.

It will further be seen that this hinge can be used not only with a curler having a resilient liquid-absorbent member positioned on a support member, but also with a cylindrical frame member which may or may not have a resilient member positioned therein.

It is also an object of this invention to provide the frame member with at least one row of teeth connected thereto and preferably extending radially outwardly from the confines of the frame member for aiding in holding the hair in place when it is wrapped around the hair supporting member.

Likewise, it is an object of this invention to provide a seat means on the support member, having the resilient liquid-absorbent member positioned thereon, for limiting the longitudinal movement of the resilient liquid-absorbent member in the direction of the hinge means. Furthermore, a retaining fin, which could even be the locking means, preferably extends inwardly of the second end of the bail for limiting the longitudinal movement of the resilient liquid-absorbent member in the direction away from the hinge means for longitudinally centering the resilient member with respect to the bail.

These and other objects of this invention are more clearly depicted in the following detailed description having specific reference to the attached drawings in which the embodiments of the invention are shown, not to limit the scope of the invention in any respect but so that the principles thereof might be more clearly demonstrated.

In the drawings:

FIGURE 1 is a side elevational view of one type of improved hair curler shown in a closed position having a hinge construction which naturally biases the bail into an opened position;

FIGURE 2 is an exploded perspective view of the curler disclosed in FIGURE 1 and is shown in an opened position;

FIGURE 3 is an elevational view taken substantially along the lines 3-3 of FIGURE 1;

FIGURE 4 is a perspective view of a curler in a closed position similar to the curler disclosed in FIGURE 1 but having a hinge construction which naturally biases the bail into a closed position;

FIGURE 5 is a side elevational view of a different type of hair curler in a closed position embodying the novel hinge arrangement;

FIGURE 6 is a reversed exploded perspective view of the hair curler shown in FIGURE 5;

FIGURE 7 is an enlarged fragmentary perspective view of one end portion of the curler disclosed in FIGURE 5 with parts broken away to show the retaining knobs; and

FIGURE 8 shows another type of hair curler in a closed position embodying the novel hinge arrangement with parts broken away to show the interior of the cylindrical frame member.

Considering the drawings specifically, FIGURES 1 through 4 show one type of a non-metallic hair curler 10, made from a suitable light, durable plastic material, such as polyethylene, embodying the principles of the in-

vention. The hair curler 10 comprises a hair supporting means 12, which in this form of the invention is a resilient, liquid-absorbent member 13, such as foam or sponge rubber. The liquid-absorbent member is cylindrical in configuration so that the hair can be wound around the circumference of the cylindrically-shaped member 12 and formed into an attractive curl. The liquid-absorbent member 12 has an opening or bore 14 extending longitudinally and coaxially therethrough for receiving a support member 16. The support member comprises a central shaft portion 18 having an annular seat 22 at a first end 20 with a surface area greater than the area of the opening 14 extending through the resilient member 12. The central shaft portion 18 obviously has a cross-sectional area smaller than the opening 14 so that the resilient member 12 can be inserted thereon and has a length slightly longer than the resilient member 12. The central shaft portion is comprised in part of a plurality of ribs 19 which give the shaft portion strength and substantially prevent the resilient member from unintentionally rotating independently of the support member.

A bail 24 is operatively associated with the hair supporting means, which in this embodiment is the resilient member, for holding a lock of hair supported thereon. The bail is substantially rectangular having at least a first end 28 and second end 30. The bail comprises a pair of substantially parallel side elements 26 joined by a hinge means 32 at the first end 28 of the bail and by a transverse end element 33 at the second end 30 of the bail. The side elements 26 are relatively flexible compared to the support member 16 and extend longitudinally of the hair supporting means 12.

The hinge means 32 operatively connects the first end 28 of the bail to the hair supporting member 12. In this embodiment the resilient liquid-absorbent member 12 is operatively connected to the hinge through the support member 16 which has a tab 34 connected to the outer surface 36 of the annular seat 22 at one end and to the hinge means 32 at the other end.

Basically, the hinge comprises at least two strands 38 disposed from each other, connected at their free ends 40 to the bail, and operatively connected at at least one point to the hair supporting means through the tab 34 and support member 16. It will be seen that this unique arrangement allows the bail and hair supporting means to be pivotally moved with respect to each other. In the preferred form of the invention the strands have a total cross-sectional area less than the cross-sectional area of the bail as measured through one of the elements forming the bail, such as the first end 28 of the bail. Moreover, in the preferred embodiment of the invention the strands are parallel to each other and connected to each other and to the supporting member at their mid-points by means of the tab 34. As illustrated, the strands are longitudinally disposed from each other.

FIGURES 1 through 3 show the hinge means constructed in such a manner that the bail is biased into an opened position substantially disposed from the hair supporting means. It can easily be seen, however, as illustrated in FIGURE 4, that the curler could be constructed so that the support member would extend in the opposite direction in its untwisted position, and, accordingly, the bail would be biased into a closed position in which the hair supporting means extends naturally within the bail between its side elements 26. In FIGURE 4 the strands must always cross over each other at least once when the bail is opened, while in FIGURES 1 through 3 the strands always cross over each other at least once when the bail is in a closed position.

In order to retain the bail in a closed position in which the hair supporting member lies between the side elements 26 of the bail, it is necessary to have a locking means 42 for retaining the bail in a closed position. As illustrated, the locking means comprises a fin 44 extending from the inner surface 46 of the transverse end 33 of the bail 24.

The fin 44 cooperates with a transverse slot or groove 48 cut in the second end 50 of the support member 16. The transverse end 33 has a handle 52 extending outwardly therefrom so that when a twisting motion is imparted to the handle 52, it will cause the fin 44 to rotate so that it can easily be twisted into the groove 48. It will be appreciated that other locking means, such as a ball and socket arrangement, may be used within the scope of the invention for retaining the bail and hair supporting means in a closed position.

It will be seen that the seat 22, having a surface area greater than the opening 16 in the resilient liquid-absorbent member, will limit the longitudinal movement of the resilient member toward the hinge means. Furthermore, it is within the scope of the invention to include a positioning means 54 connected to the bail, preferably at the transverse end 33, and extending inwardly thereof for engaging and limiting the longitudinal movement of the resilient liquid-absorbent member toward the transverse end 33. Thus, the positioning means could comprise the locking means of the bail, and more specifically it could comprise the fin 44, which, as illustrated, extends beyond the support member. Accordingly, the fin 44 and seat 22 will cooperate to center the resilient liquid-absorbent member longitudinally within the bail.

FIGURES 5 through 7 illustrate another type of hair curler 60 utilizing the novel principles of this invention. In this embodiment, the hair supporting means 61 comprises a frame member 62 having a resilient liquid-absorbent member 64 inserted therein. A bail 65 is operatively connected to the hair supporting means 61 by a hinge means 67 for retaining the hair in place once it is wound around the hair supporting means. As illustrated, the frame 62 comprises a first annular end 66 and a second annular end 68 connected by at least three longitudinally extending brace members 70 to form a cylindrical frame member. The cylindrical frame member may be desirable to give the resilient liquid-absorbent member added strength by which it can retain its cylindrical shape when the user goes to sleep, for instance, and rests her head against a pillow.

The bail 65 and hinge means 67 are similar to the bail 24 and hinge means 32 disclosed in the previous embodiment. In the embodiment shown in FIGURES 5 through 7, hinge means 67 comprises at least two strands 69 connected at their free ends 71 to the bail 65 and being operatively connected at one or more points by a tab 73 to the hair supporting means. As disclosed, the tab 73 is secured to a cross brace 72 integrally connected at its opposite ends 74 to the first annular end portion 66 and extending diametrically thereacross. The hinge is operated in a manner heretofore described. In its untwisted position the hinge naturally biases the bail into an opened position although it will be appreciated that if the bail is moved through 360° into an open position again it will be twisted. In its closed position the hinge is twisted. As described heretofore the hinge and bail could be constructed so that the bail is biased naturally into a closed position.

The end of the bail opposite to that end of the bail having the hinge means formed therewith has a locking means comprising a retaining fin 77 extending inwardly thereof. The retaining fin 77 is releasably retained between a pair of nob 76 integrally formed on opposite sides of the inner portion 78 of the second annular end portion 68 of the frame member 62 whereby the bail 65 can be axially centered with respect to the hair supporting means 61. Accordingly, the retaining fin and the nobs will cooperate to lock the bail in a closed position so that the bail will be maintained substantially coaxially with respect to the hair supporting means and will be prevented from relative rotation with respect to the hair supporting means. A handle 79 extends outwardly from the bail adjacent to the retaining fin 77 so that it can aid in twisting the fin 77 between the nobs 76.

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It will be appreciated that although FIGURES 5 through 7 disclose a frame member having a resilient member positioned therein, the resilient member could be eliminated and the cylindrical frame member could provide the forming means around which the hair is wound, such as illustrated in FIGURE 8. FIGURE 8 also discloses at least one row of teeth 80 secured to the brace members 70 for aiding in retaining the hair in place. The teeth 80 could within the scope of the invention be incorporated into the disclosure shown in FIGURES 5 through 7.

In the preferred embodiment of the invention, the entire curler with the exception of the resilient member is formed integrally in one molding operation resulting in a reduced manufacturing cost compared with previous hinge arrangements, such as disclosed in Patent 2,937,649, in which the bail had to be attached to the frame in a separate operation.

In order to assure that the curler will not roll down the head once a lock of hair has been wound thereon, it may be preferable to provide a means by which the bail can be twisted into a position in which its side elements become wedged against the side of the head. In the preferred embodiment, disclosed in FIGURES 1 through 4, the bail can be twisted with respect to the hair supporting means (although the ribs 19 tend to prevent such twisting) so that the user can place it in the more desirable position once the hair has been wound on the hair supporting means. In order to allow the bail to be conveniently positioned when used with the modification disclosed in FIGURES 5 through 8, it may be desirable to make a non-integral connection between the frame member and the bail so that the bail can be rotated with respect to the frame member. Such a connection, using the hinge means disclosed above, would involve the cross brace 72 having a hole positioned therein for receiving the tab 34 which has been so configured that it can be snapped through the hole and retained therein.

While a preferred form of the invention has been illustrated in the drawings and discussed above, it should be adequately clear that considerable modification may be made thereto without departing from the principles of the invention. Therefore, the foregoing should be considered in an illustrative sense rather than a limiting sense, and accordingly the extent of this invention should be limited only by the spirit and scope of the claims appended hereto.

We claim:

1. A non-metallic hair curler comprising:
means for supporting a lock of hair;
a bail operatively associated with the hair supporting means for holding the lock of hair on the hair supporting means, the bail having a first and second end;
hinge means operatively connecting opposite sides of the first end of the bail to the hair supporting means and allowing the hair supporting means to be moved between an opened position disposed from the bail and a closed position within the bail, the hinge means comprising at least two substantially parallel strands disposed from each other with their ends connected to the opposite sides of the bail so that as the bail is moved between an opened and closed position the strands can be twisted with respect to each other; and
locking means associated with the second end of the bail and cooperating with the hair supporting means for locking the second end of the bail to the hair supporting means after the hair is wound thereon.
2. The hair curler as defined in claim 1 wherein the bail is integrally connected to the hair supporting means by the hinge means.
3. The hair curler as defined in claim 1 wherein the strands are operatively connected to the hair supporting means at their mid-points.
4. The hair curler as defined in claim 3 wherein the strands have a total transverse cross-sectional area less

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than the transverse cross-sectional area of the first bail end.

5. The hair curler as defined in claim 1 wherein the hair supporting means comprises a support bar and a resilient liquid-absorbent member supported thereon, the support bar being connected at one end to the strands at approximately their mid-point and having means at the other end for cooperating with the locking means of the second bail end.

6. The hair curler as defined in claim 5 wherein the bail is integrally connected to the support bar by the strands.

7. The hair curler as defined in claim 5 additionally comprising a seat on the support bar adjacent the hinge means and extending radially outwardly therefrom for limiting the longitudinal movement of the resilient liquid-absorbent member in the direction of the hinge means and a fin extending inwardly of the second end of the bail for limiting the longitudinal movement of the resilient liquid-absorbent member in the direction away from the hinge means.

8. The hair curler as defined in claim 1 wherein the hair supporting means comprises a first annular end portion adjacent the hinge means and a second annular end portion adjacent the locking means and at least three parallel braces extending between the first and second annular end portions to form a cylindrical frame member.

9. The hair curler as defined in claim 8 additionally comprising a resilient liquid-absorbent member supported within the cylindrical frame member.

10. The hair curler as defined in claim 9 additionally comprising a cross brace attached to and extending diametrically across the first annular end portion for limiting the longitudinal movement of the resilient liquid-absorbent member in the direction of the hinge means and for operatively connecting the hinge means to the cylindrical frame member.

11. The hair curler as defined in claim 8 wherein the longitudinal braces have at least one longitudinal row of teeth thereon for holding the hair in place.

12. The hair curler as defined in claim 8 wherein the second annular end portion has a plurality of nobs thereon cooperating with the locking means to lock the bail in a closed position so that the bail will be maintained substantially coaxially with respect to the hair supporting means and will be prevented from relative rotation with respect to the hair supporting means.

13. A non-metallic hair curler comprising:
a support bar having a first and second end;
a resilient liquid-absorbent member slideably supported on the support bar for supporting a lock of hair;
a bail operatively associated with the resilient member for holding the lock of hair supported on the resilient member, the bail having a first and second end;
hinge means integrally connecting the bail to the support bar, the hinge means comprising at least two substantially parallel strands disposed from each other with their opposite ends connected to opposite sides of the bail so that as the support bar and resilient member are moved between an opened position disposed from the bail and a closed position within the bail, the strands can be twisted with respect to each other; and
locking means integrally attached to the second end of the bail and cooperating with the second end of the support bar for releasably locking the second end of the bail to the second end of the support bar.

14. A non-metallic hair curler comprising:
a cylindrical frame member for supporting a lock of hair comprising a first annular end portion, a second annular end portion disposed therefrom, and at least three parallel braces extending between and connecting the first and second annular end portions, the first annular end portion having a cross brace attached thereto and extending diametrically there-

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across, the second annular end portion having a plurality of nobs thereon;
 a bail operatively associated with the cylindrical frame member for holding the lock of hair supported on the cylindrical frame member, the bail having at least a first and second end;
 hinge means integrally connecting the bail to the cylindrical frame member, the hinge means comprising at least two substantially parallel strands disposed from each other with their opposite ends connected to opposite sides of the bail so that as the cylindrical frame member is moved between an opened position disposed from the bail and a closed position within the bail, the strands can be twisted with respect to each other; and
 means attached to the second end of the bail and extending inwardly thereof for cooperating with the nobs of the second annular end portion to releasably

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lock the second end of the bail to the second annular end portion of the cylindrical frame member in a closed position.

15. The hair curler as defined in claim 14 additionally comprising a cylindrical resilient liquid-absorbent member supported within the cylindrical frame member for providing additional support for the lock of hair.

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