

[54] **COLLAPSIBLE COSMETIC HAIR ROLLER**

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Related U.S. Application Data

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

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

[58] Field of Search 132/34, 33, 40, 42, 1

[56]

References Cited

UNITED STATES PATENTS

2,229,841	1/1941	Eyraud et al.....	132/33 R
3,399,684	9/1968	Meli.....	132/40
3,566,888	3/1971	Bonarigo.....	132/40

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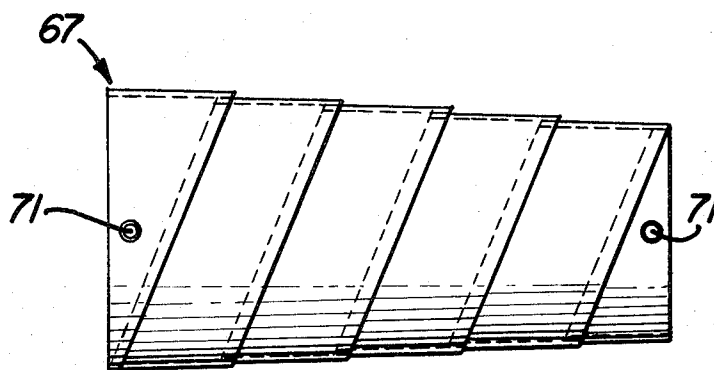
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[57]

ABSTRACT

A collapsible cosmetic hair roller consisting of a multiplicity of telescoping sections of generally cylindrical shape which interlock edge to edge upon extension to a preselected desired length and nest section within section upon collapse.

2 Claims, 6 Drawing Figures



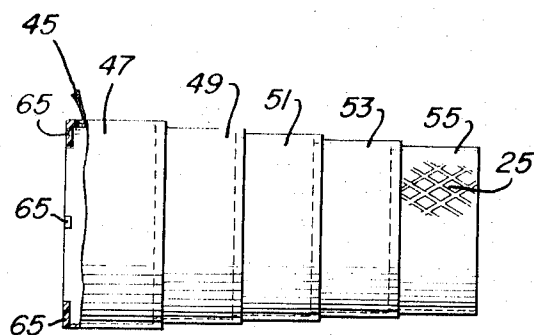


FIG. 2.

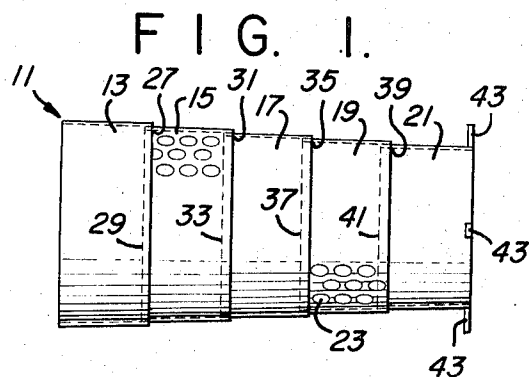


FIG. 1.

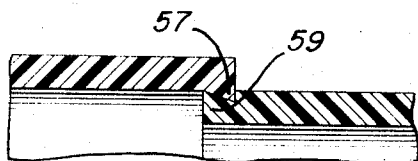


FIG. 3.

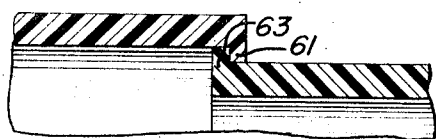


FIG. 3a.

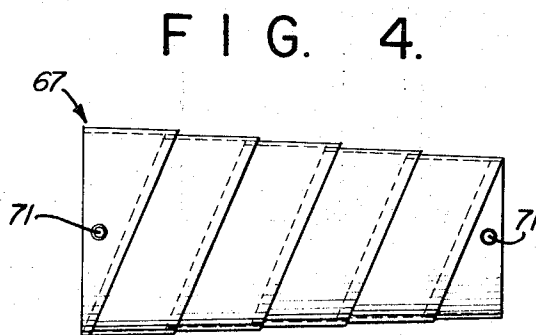


FIG. 4.

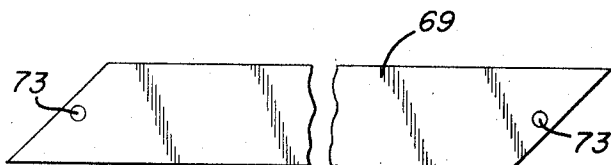


FIG. 5.

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COLLAPSIBLE COSMETIC HAIR ROLLER

This application is a division of Ser. No. 161,069 filed 09/07/71, now abandoned.

The present invention relates to a hair roller and more particularly to an improved hair roller which can be readily collapsed or contracted longitudinally for handbag and the like storage and carrying and equally readily extended to form a usable roller of preselected desired length.

Numerous known hair roller structures and apparatus items are available which provide to one degree or another means to roll up strands of hair and secure them in a held rolled condition during treatment and setting periods. Some of these feature unique hair strand separating or combing means which come into operation during the curling or rolling step, others provide unique securing means for the curled or rolled hair wound onto the device. Hair rollers presently available span a wide range of complexity from the popular simple openwork cylinder of plastic or the like material such as is illustrated generally in U.S. Pat. No. 3,348,554 to Solomon to the relatively intricate hair roller device shown in U.S. Pat. No. 3,390,690 to Trabis.

Despite the myriad features and differences found amongst known hair rollers, however, an important problem persisted and prevailed and, until the time of the present invention, received no discernable inventive thought, to wit, the problem of compactability and easy portability. With the vast amount of travelling done in present times, compactability and portability of personal items carried by the traveller have become of greater importance than heretofore. It is also of importance, travelling or not, to utilize the space available for cosmetic and beauty aid storage to the optimum. Almost every personal item in the cosmetics field, except for hair curlers, has been modified and adapted for compactability and portability.

With this then being the state of the art, I conceived and developed the present invention with the object of providing a collapsible or contractable unitary hair roller which, when extended for use, provides all of the features required for effective and simple cosmetic hair curling.

It is a further object of my invention to provide a hair roller which is simple and economical to manufacture from any of a variety of materials.

A still further object is to provide a hair roller which when contracted or collapsed and packaged or stored with other similar rollers requires minimal space and thus is ideally suitable for travelling usage.

These and other objects of the invention will become apparent more readily from the ensuing description and the drawings wherein:

FIG. 1 is a side elevational view of an embodiment of a hair roller according to the present invention,

FIG. 2 is a side elevational view of another embodiment of a hair roller according to the present invention,

FIG. 3 is a sectional view through the section lines 3—3 of the FIG. 2 embodiment showing an enlarged detail of the binding contact between two contiguous segments of the embodiment shown in FIG. 2,

FIG. 3a is a sectional view through the section lines 3—3 of the FIG. 2 embodiment showing an enlarged detail of an alternative form of binding contact be-

tween two contiguous segments of the FIG. 2 embodiment,

FIG. 4 is a side elevational view of a further embodiment of a hair roller according to the present invention and

FIG. 5 is a foreshortened development plan view of an elemental piece or structure from which the FIG. 4 embodiment is formed.

In general my invention comprehends a collapsible and extendable cosmetic hair roller comprising, in combination, a multiplicity of hollow open ended generally cylindrical nestable segments each having an outer circumferential dimension approximately equal to but less than the inner circumferential dimension of a contiguous segment into which it nests, first stop means disposed to limit the movement of said segments in the extendable direction and second stop means disposed to limit the movement of said segments in the collapsible direction.

In one embodiment the multiplicity of hollow open ended generally cylindrical segments consists of a number of individual truncated conical elements substantially equal in length and of sequentially decreasing average circumferential dimensions and the second stop means comprises at least one radially extending protrusion on the smaller outer circumference of the smallest conical element.

In an alternative embodiment the multiplicity of hollow open ended cylindrical nestable segments consists of a number of individual cylindrical elements substantially equal in length and of sequentially decreasing circumferential dimensions, the first stop means comprises radially intruding lip means on each element arranged and disposed to restrain each respective contiguous element from separation from said each element and the second stop means comprises at least one radially intruding protrusion on the inner circumference of the largest cylindrical element remote from the circumferential edge of the cylindrical element contiguous to and subtending said largest cylindrical element with the roller in its extended position.

In another alternative embodiment which is basically similar to the embodiment described immediately hereinabove, the first stop means includes radially protruding lip means at the outer circumferential edge of each element which concentrically subtends a contiguous element, said radially protruding lip means being arranged and disposed to abut the radially intruding lip means in lockable with the roller in its extended position.

In a further alternative embodiment the multiplicity of segments consists of a single piece helically wound, with each wind overlapping a contiguous subtending wind and secured against unwinding at each longitudinal end of the formed helix. One form of securing I have found workable and easy to use is pivotal securing means such as simple peened pins or rivets.

With reference to the drawings, FIG. 1 shows a hair roller according to my invention indicated generally as 11 comprising five segments 13, 15, 17, 19 and 21, each being a hollow open ended truncated conical element of decreasing average circumferential dimension and substantially identical in length such that on longitudinal contraction or collapse from the extended condition shown in the drawing, segment 21 will nest interiorly and concentrically inside segment 19, segments 21 and 19 will nest interiorly and concentrically inside

segment 17, segments 21, 19 and 17 will nest interiorly and concentrically inside segment 15 and segments 21, 19, 17 and 15 will nest interiorly and concentrically inside segment 13. Perforations 23 may be provided in the segments comprised in hair roller 11 or for that matter, in any of the embodiments described herein and these perforations may take any form or shape such as for example lattice work openings 25 illustrated in FIG. 2 consistent with the maintenance of the structural integrity of the hair roller, their purpose being mainly to facilitate the more thorough wetting, drying or whatever other treatment of the rolled hair may be desired and incidentally to lighten the overall structure of the roller. The embodiment of roller shown in FIG. 1 of the drawings is thus not unlike the wellknown collapsible drinking cup, only without a bottom. To extend the roller of FIG. 1 from the collapsed condition in which it will be normally stored or carried, it is merely necessary to pull the end segments 13, 21 outwardly of each other until the segments friction bind one against the other, forming the extended roller ready for use shown in the drawing. To effect this binding or interlocking which prevents the segments from being pulled apart and at the same time permit the above-described nesting in the collapsed condition, it is necessary in this particular embodiment of my invention that the smaller interior circumference 27 of segment 13 be slightly smaller than the larger exterior circumference 29 of segment 15, the smaller interior circumference 31 of segment 15 be slightly smaller than the larger exterior circumference 33 of segment 17, the smaller interior circumference 35 of segment 17 be slightly smaller than the larger exterior circumference 37 of the segment 19, and that the smaller interior circumference 39 of segment of 19 be slightly smaller than the larger exterior circumference 41 of the segment 21. The requirement is inherently met when the conjunctive segments are formed as true hollow open ended truncated conical elements with properly selected decreasing average circumferential dimensions. In the contracted or collapsed condition, to prevent the segments from falling out of nesting relationship and apart in the direction opposite to the extended position direction shown in the drawings, I provide one or more, preferably more, stops 43 affixed to or formed integrally with the smallest segment 21 at the smaller outer circumference or periphery thereof. Thus in the collapsed or retracted condition the embodiment of my invention shown in FIG. 1 of the drawings is prevented from coming apart in a direction to the left of the drawing by the stops 43 bearing on the smaller circumferential edge of the largest segment 13. It is therefore necessary that the stops have a radial dimension at least greater than the radial dimension corresponding to the smaller interior circumference of the largest segment 13 in order that they may catch or bear on the smaller circumferential edge of segment 13. The purpose of the stops 43 could be served as readily by providing a continuous annular member at the smaller outer circumference or periphery of segment 21 and thus constitute a single stop as mentioned hereinabove but such a continuous annular member, I have found, can cause interference with ordinary hair pins or bobby pins, the use of which in conjunction with my invention will be described hereinafter. In any case, in this first described embodiment illustrated by FIG. 1 a stop or stops 43 is all that is needed to keep the hair roller from falling apart and to

insure extension to the full length in only one direction since in the collapsed condition any wrong (to the left in the drawing) movement tendency of the segments 15, 17, 19, will be restrained by the same binding action as between these parts described hereinabove and leftward movement of segment 21 out of segment 13 is precluded by the stops.

FIG. 2 illustrates an alternative embodiment of a hair roller according to my invention indicated generally as 45 comprising five segments 47, 49, 51, 53 and 55, each being a hollow open ended cylindrical element of decreasing respective circumferential dimensions and substantially identical lengths such that on longitudinal contraction or collapse from the extended condition shown in the drawing, segment 55 will nest interiorly and concentrically inside segment 53, segments 55 and 53 will nest interiorly and concentrically inside segment 51, segments 55, 53 and 51 will nest interiorly and concentrically inside segment 49 and segments 55, 53, 51 and 49 will nest interiorly and concentrically inside segment 47. Perforations 23 (shown in FIG. 1) or lattice work openings 25 may be provided as hereinbefore described. To extend the roller of FIG. 2 from the collapsed condition in which it is normally stored or carried, it is merely necessary, as with the FIG. 1 embodiment, to pull the end segments 47, 55 outwardly of each other to form the extended roller ready for use shown in FIG. 2. In this embodiment, however, unlike the FIG. 1 embodiment, there is no inherent binding action between the contiguous segments. Since straight nested concentric cylindrical elements such as segments 47, 49, 51, 53, 55 would tend to come apart on extension to the condition shown in FIG. 2, I provide an inwardly intruding lip 57 as shown in FIG. 3 at the inner circumferential edge of each segment which is concentrically subtended by a contiguous segment. Thus an inwardly intruding lip 57 is provided on each of segments 47, 49, 51 and 53 at their respective circumferential edges which contact the respective segments 49, 51, 53 and 55 and these inwardly intruding lips will restrain against separation of the segments comprised in the extended roller. I have also found it advantageous in this regard to further provide an outwardly protruding lip 59, shown in FIG. 3, at the outer circumferential edge of each segment which concentrically subtends a contiguous segment. Thus an outwardly protruding lip 59 is provided on each of segments 49, 51, 53 and 55 at their respective circumferential edges which contact the inwardly intruding lips 57 of segments 47, 49, 51 and 53 and the lips 57, 59 abut on extension of the roller segments and restrain against separation of the segments from each other. In FIG. 3 the lips 57, 59 are shown as bevelled thickened portions of the segment edge portions. In FIG. 3a the lips 61, 63 are shown in the form of annular ridges and serve the same purpose and are arranged and disposed in the same manner as lips 57, 59. Numerous other forms of extension stop means are workable in my invention in addition to the lips described hereinabove. For instance an outer segment may be molded or otherwise formed with an inner circumferential recess which receives an outer circumferential ridge on a conjunctive inner segment and thus restrains against separation on extension of the segments. Another form of restraint componentry may be individual detents and cooperating protrusions, it being only necessary in respect of this invention to provide against undesired separation

of the hair roller segments by any suitable stop or restraint means which will not be overcome by normally applied extension force and at the same time not interfere with the contracting or collapsing action of the roller by causing binding. As with the hereinabove described FIG. 1 embodiment, it is necessary to prevent the segments from falling out of nesting relationship and apart in the direction opposite the extended position direction shown in the drawing and towards this end I provide one or more, preferably more, stops 65 affixed to or formed integrally with the largest segment 47 at the inner circumference thereof away from segment 49 in the extended position. The stops 65 must extend radially inward of the inner circumference of segment 47 sufficiently to catch and restrain against leftward (with reference to FIG. 2 arrangement) movement of the smallest circumference segment 55 out of nesting relationship from collapsed condition and the other or mesne segments will then be similarly caught and restrained against such undesired movement. As with the FIG. 1 embodiment, I can provide a continuous annular internal ring in place of the stops 65, but I find the stops as described preferable for the same reasons heretofore set forth.

In FIG. 4 of the drawings a further alternative embodiment of a hair roller according to the present invention, indicated generally as 67 is formed of a helically wound strip 69 of suitable material shown unwound or in a developmental view in FIG. 5. The taper of the helix formed as shown is somewhat exaggerated in the drawing for the purpose of illustration and actually the FIG. 4 embodiment of roller is more nearly cylindrical in overall appearance than truncated conical. To make this embodiment of my invention I cut or otherwise form a strip 69 of suitable material, such as for example any of the commercially available plastics. The dimensions of this blank or strip 69 are selected according to the desired size of the finished product and are well within the conventional skills of the pattern makers art. The strip 69 is helically wound on a generally cylindrical mandrel and secured at each end by pivotal pin means 71 such as simple rivets through holes 73 in the blank. The wind should be such that the finished roller 67 will extend to the desired use length when the ends are pulled outwardly of each other and collapse or contract to an overall dimension approximately equal to the pitch or longitudinal dimension of one helical wrap or spiral of 360° or a full circle. In this embodiment I rely on a combination of friction and resiliency to maintain the roller in either the extended condition shown or in a collapsed or contracted condition. The extended position shown in FIG. 4 is maintained because the helical overlaps of sequential winding turns shown as skewed parallel dotted and solid

lines bind frictionally due to the tendency of the whole coil to unwind. When a contracting force is applied, the spiral or helix collapses and in a fully collapsed condition binds frictionally in the same manner because of the tendency of the coil to unwind and thus maintains the collapsed position or condition.

The hair rollers according to my invention may be made of a great many different materials. At least all of the materials used to make presently available hair rollers are useable in my invention for example metals, heavier grades of fibrous material, paper and most plastics. With respect to the FIG. 4 embodiment, it is advantageous to use plastic materials which can be wound into the helical embodiment on a forming mandrel or jig and set to the wound condition with the application of heat by techniques known in the plastics manufacturing arts.

In use, any of the embodiments is extended from the collapsed condition to the useable length, the hair strands are wound onto the roller and secured by ordinary hair pins or bobby pins. Alternatively, any of the embodiments of my invention may be provided with one or more hair securing components such as longitudinally extending bars attached at one end to the roller and attachable to a loop, hook or other suitable securing means at the other end. Hair pins and bobby pins however are the simplest means for securing the hair and involve the least complications in respect of storage, compactibility and portability as well as use.

Many other alternatives within the scope and spirit of my invention will undoubtedly occur to users in the light of the foregoing disclosure and it is intended that this disclosure be considered as illustrative only and to not be construed in any limiting sense.

What is claimed is:

1. A collapsible and extendible cosmetic hair roller comprising, in combination, a multiplicity of hollow open ended generally cylindrical nestable segments each having an outer circumferential dimension approximately equal to but less than the inner circumferential dimension of a contiguous segment into which it nests, said multiplicity formed and consisting of a single piece helically wound with each segmental wind overlapping a contiguous subtending wind and secured against unwinding at each longitudinal end of the formed helix, first stop means disposed to limit the movement of said segments in the extendible direction, and second stop means disposed to limit the movement of said segments in the collapsible direction.

2. Apparatus according to claim 1 wherein the helically wound roller is secured against unwinding at each longitudinal end of the formed helix by pivotal securing means.

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