Dec. 7, 1965 E. A. ZIELINSKI 3,221,753

HAIR STYLING ROLLER WITH ROTATING HAIR CLAMPS

Filed June 14, 1962 2 Sheets-Sheet 1

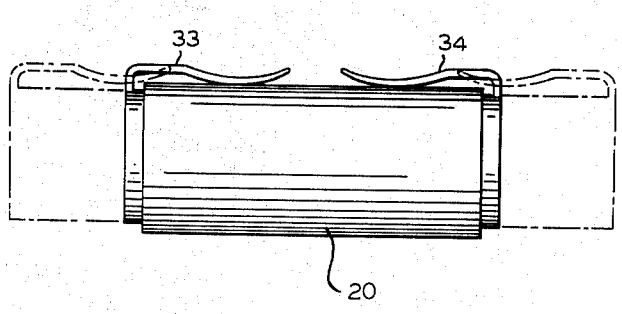


FIG.1

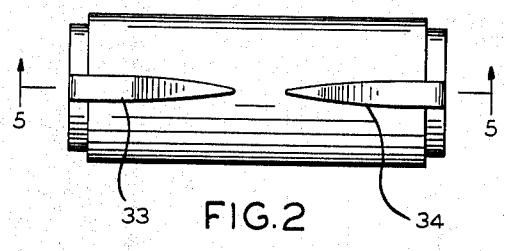


FIG.2

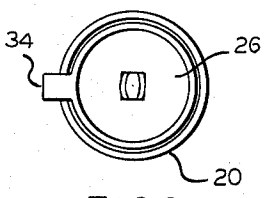


FIG.3

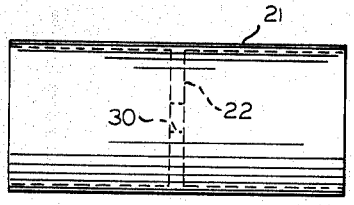


FIG.4

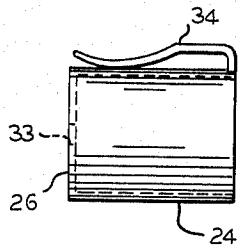


FIG.6

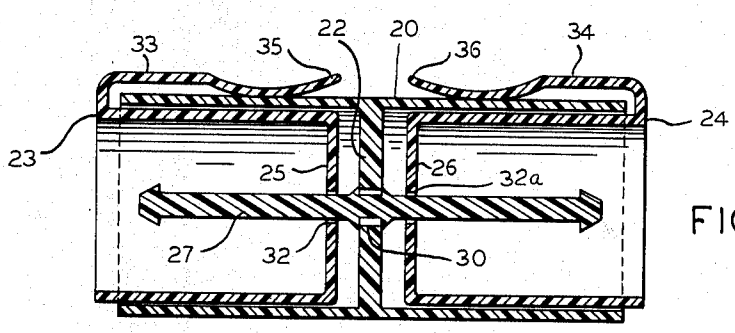


FIG.5

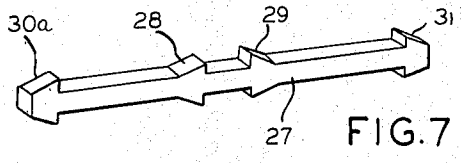


FIG.7

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HAIR STYLING ROLLER WITH ROTATING HAIR CLAMPS

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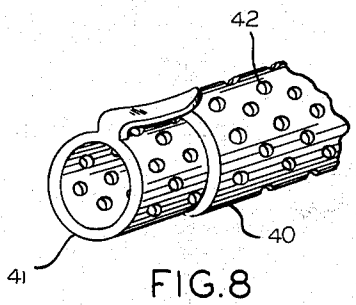


FIG.8

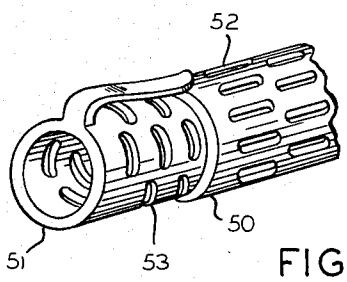


FIG.9

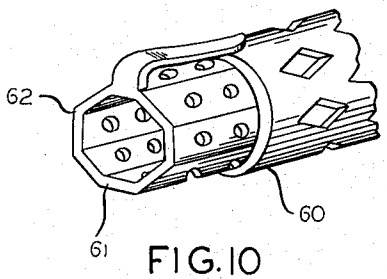


FIG.10

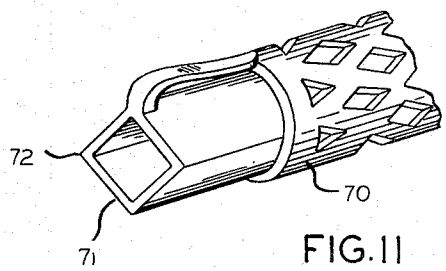


FIG.11

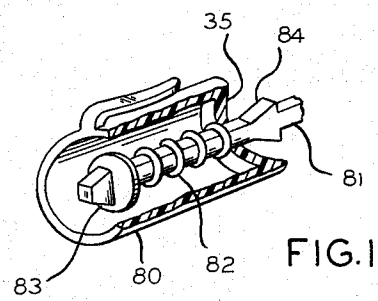


FIG.12

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United States Patent Office 3,221,753 Patented Dec. 7, 1965

3,221,753

HAIR STYLING ROLLER WITH ROTATING HAIR CLAMPS

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Filed June 14, 1962, Ser. No. 202,489
6 Claims. (Cl. 132—40)

This invention is directed to the art of hair curling devices and is particularly concerned with improvements in such devices as are formed to permit winding of hair on some supporting form such as a roller, while holding the curl or hair so wound in place.

In recent years hair styling techniques have adopted the use of various forms of rollers and other devices which provide support for and maintenance of the human hair in curled form. These have been used in lieu of or as a supplement to the use of "bobby" pins. While varied styles of such devices have been used, they are usually subject to one or more deficiencies such as not holding hair in the properly curled form, being uncomfortable to the person whose hair is being styled, holding the curled hair too tightly, or not holding the curled hair tightly enough. These prior devices usually require considerable manipulative effort on the part of the person styling the hair in properly winding the hair upon the supporting form and then properly fastening the hair on the form.

The major purposes of the present invention are to provide simplified roller means which allow facile winding of hair upon a supporting roller together with a simple means for fastening the hair in place on the roller, and at the same time allowing convenient adjustment of the fastening facility of the device with relation to the roots of the hair to thereby also enable an increase or decrease in tension on the hair being curled; the foregoing instrumentalities being so formed to allow economical manufacture of the device, these and other purposes of the invention being more apparent in the course of the ensuing specification and claims when taken with the accompanying drawings, in which:

FIGURE 1 is a side view of the roller assembly constituting the present invention;

FIGURE 2 is a top view of the assembly illustrated in FIGURE 1;

FIGURE 3 is an end view of the assembly illustrated in FIGURE 2;

FIGURE 4 is a side view of one element illustrated in FIGURES 1, 2, and 3;

FIGURE 5 is a sectional illustration of the assembly illustrated in FIGURES 1, 2, and 3 and taken on the section lines 5—5 of FIGURE 2;

FIGURE 6 is a side view of another element illustrated in the assembly of FIGURES 1, 2, 3, and 5;

FIGURE 7 is a perspective view of a supporting element illustrated in FIGURES 1 through 6 inclusive;

FIGURE 8 is a perspective view of a variant form of roller assembly;

FIGURE 9 is a perspective view of still another variant form of roller assembly;

FIGURE 10 is a perspective view of still another variant form of roller assembly;

FIGURE 11 is a persepctive view of still another variant form of supporting roller assembly; and

FIGURE 12 is a perspective view, with certain portions of the assembly being cut away for purposes of clarity, of a retracting instrumentality for the roller assembly illustrated in FIGURES 1 through 6 inclusive.

Like elements are designated by like characters throughout the specification and drawings.

With particular reference now to the drawings and in the first instance to FIGURE 1, **20** designates an outer,

hair supporting roller, which, as is seen in FIGURE 1, may have a substantially smooth external surface to facilitate the winding of hair thereon. Roller **20**, as is seen more particularly in FIGURES 4 and 5, is in the form of a cylinder. The cylindrical wall **21** thereof is relatively narrow as compared to the diameter of the roller, and is substantially less than the radial dimension of the cylinder. Roller **20** may have an external diameter of on the order of one-half to one inch although it will be obvious that various diameters approximateing these figures may be used with the invention.

Roller **20** is preferably formed from molded plastic and as formed, has an internal, generally centrally positioned partition or rib **22** for purposes which will appear hereafter. Roller **20** with its partition **22** may be molded as a unitary particle.

A pair of inner rollers **23** and **24** are received within the opposite ends of the cylindrical roller **20** and in effect provide supports upon which roller **20** is journalled. These rollers **23** and **24** are also cylindrically formed as is particularly seen in FIGURES 5 and 6. Each of these rollers has a length which is slightly less than one-half the length of the outer roller **20**. Rollers **23** and **24** are open at the exterior thereof but have end walls **25** and **26** closing the inner ends thereof.

A spindle **27** is mounted in the partition or rib **22** and extends generally coaxially with the longitudinal axis of roller **20**. The spindle, as is seen in FIGURES 5 and 7, has spaced bosses **28** and **29** near the central portion thereof so that the spindle may be press fitted through an aperture **30** in the partition **22**. Bosses **28** and **29** may have outwardly facing inclined surfaces to facilitate insertion of the spindle through the aperture **30** in the partition **22**. The opposite ends of spindle **27** also have bosses **30***a* and **31**. Bosses **30***a* and **31** have inclined surfaces similar to those of the bosses **28** and **29** so that these bosses may be press fitted through apertures **32** and **32***a* in the end walls **25** and **26**, respectively, of the internal rollers. Spindle **27** may be formed from a relatively rigid plastic material whereas the rollers **23** and **24** and roller **20** may be formed from a plastic material which is more yieldable to facilitate insertion of the spindle through the aperture **30** and the apertures **32** and **32***a*.

The spacing of the bosses **28** and **29** is such that they snugly embrace the opposte side faces of partition **22**, as is seen in FIGURE 5, so that the spindle is held in the position indicated. The length of the spindle and the positioning of the bosses **30** and **31** is such that they are disposed close to the ends of cylinder **20**.

When the assembly is thus formed, rollers **23** and **24** are axially slidable along spindle **27** until they abut up against the respective bosses **30** and **31** which act as stops and limit outward movement thereof. Such outward movement is illustrated in FIGURE 1. Inward movement of the rollers **23** and **24** is restricted by contact with the bosses **28** and **29**. With the assembly thus formed, outer roller **20** is freely rotatable relative to the inner rollers **23** and **24** while the inner rollers **23** and **24** are movable between the retracted position illustrated in FIGURE 5 and expanded position illustrated in dotted outline in FIGURE 1.

It is preferable that there be a slight clearance between the walls of the rollers **23** and **24** and the internal wall of roller **20** so as to allow the circulation of air therebetween.

Each of the inner rollers **23** and **24** have clips **33** and **34**, respectively, which overlie the external wall of roller **20** when the rollers **23** and **24** are in the retracted position. These clips may be formed integrally with the rollers **23** and **24** and proportioned so that they are

spaced a slight distance from the walls of the cylinders **23** and **24**, the distance being such that the clips **33** and **34** are adapted to engage the external wall of roller **20**. These clips may have upturned inner ends **35** and **36** so as to facilitate movement of strands of hair between the clips and the surface of roller **20**. As is seen in the drawings, these clips overlie a minor portion of the circumference of the surface of roller **20**, thereby allowing selective positioning of the clip with respect to the curl of hair.

FIGURES 8 through 11 inclusive illustrate variant forms of inner and outer roller assemblies with the formation thereof being especially adapted to increase the circulation of air to and through the rollers. In FIGURE 8, for example, outer roller **40** and inner roller **41** are provided with a plurality of spaced apertures **42** in the walls thereof so as to facilitate circulation of air through the interior of the inner roller and through the outer roller.

FIGURE 9 also illustrates inner and outer rollers **50** and **51**, respectively, but with slots **52** formed in the walls of the inner and outer rollers so as to facilitate circulation of air therethrough.

FIGURE 10 illustrates an outer roller **60** and inner roller **61** which are provided with apertures for air circulation as is the case with the rollers illustrated in FIGURES 8 and 9. In FIGURE 10, however, inner roller **61** has an octagonal shape so as to provide a multi-cornered construction. The circle described by the several corners of the roller wall is such as to approximate the inner diameter of outer roller **60**. Thus, the corners **62** maintain the assembled relation of inner and outer rollers while allowing air spaces between the corners of the inner roller to facilitate circulation of air from the exterior of the roller assembly to and through the space between the two rollers.

FIGURE 11 illustrates another roller assembly wherein the outer roller **70** is provided with apertures as is the case with those in FIGURES 8, 9, and 10. The inner roller **71** is provided with a square cross section. Again, this provides a multi-cornered construction with the corners **72** providing engagement with the interior wall of roller **70**. This construction again facilitates the circulation of air from the end of the roller assembly immediately to the space between the inner roller and outer roller.

In FIGURE 12 the inner roller **80** may take the form of any of the rollers illustrated in the preceding figures. In FIGURE 12, however, a small spring **82** surrounds spindle **81** and is positioned between a stop surface **83** at the end of spindle **81** and the inner boss **84** which is adapted to abut against the partition wall in the outer roller. Thus, when inner roller **80** is moved to the withdrawn or expanded position illustrated in dotted outline in FIGURE 1, the wall **85** thereof compresses spring **82**. When **80** is released the spring withdraws it to the inner position illustrated in FIGURE 5.

In use, the hair stylist may expand the inner rollers to the outer position in FIGURE 1. A strand of hair to be curled is then simply rolled over the surface of roller **20**. When the curl is wound about roller **20**, clip **34** of roller **24** or the other clip, depending upon convenience, may be rotated to a point close to the roots or nap of the hair and then moved inwardly to the withdrawn position so as to snugly engage the strand of hair or curl between the clip and supporting roller **20**.

It should be noted that hair may be curled on the roller **20** either with the clips in the withdrawn or expanded position. In this connection some space exists between the inner ends of clips **33** and **34** in the retracted position so that the strand of hair may be wound in this area and then the roller moved within the curl to a point where one or the other of the clips will overlie the curl and hold it in place.

Since the inner rollers **23** and **24** are freely rotatable within the outer roller **20**, the tension on the strand of hair wound about roller **20** may be adjusted through rotational movement of the clip with respect to the supporting roller **20**.

When removing the roller from the strand of hair which is curled thereby, the inner rollers are simply moved to the expanded position and the strand of hair unwound from the roller **20**.

Whereas I have shown and described an operative form of the invention, it should be understood that this showing and description thereof should be taken in an illustrative or diagrammatic sense only. There are many modifications in and to the invention which will fall within the scope and spirit thereof and which will be apparent to those skilled in the art. The scope of the invention should be limited only by the scope of the hereinafter appended claims.

I claim:

1. In a hair styling form, an inner supporting roller and an outer roller journalled for rotation on said inner supporting roller, said inner supporting roller being mounted for axial movement between positions withdrawn within said outer roller and extended outwardly from the end of said roller, said outer roller having a hair receiving surface extending substantially from end to end thereof, said outer roller having means for limiting movement of said inner supporting roller between said positions, said inner roller being hollow with an open exterior end and having portions close to the inner wall of said outer roller in the withdrawn position, said inner supporting roller having clip means extending generally longitudinally of said rollers and positioned to overlie said surface of said outer roller in close proximity thereto when said inner supporting roller is in the withdrawn position, said clip means having a size such as to overlie a minor portion of the circumference of said surface to allow selective positioning thereof circumferentially of said outer roller and selective adjustment of the tension on hair wound about said outer roller.

2. The structure of claim **1** wherein said inner roller is cylindrically formed and has a closed inner end face positioned within said outer roller, said outer roller having a rod supported therein and extending longitudinally thereof, said rod passing through an aperture in said inner end face and having abutment means providing said stop means.

3. The structure of claim **1** wherein each of said rollers has apertures therein so as to allow the circulation of air through the walls of said rollers.

4. In a hair styling form, a pair of inner supporting rollers and an outer roller journalled for rotation on said inner supporting rollers, said inner supporting rollers being mounted for axial movement between positions withdrawn within said outer roller and extended outwardly from the opposite ends of said outer roller, said outer roller having a hair receiving surface extending substantially from end to end thereof, said outer roller having means for limiting movement of said inner supporting rollers between said positions, said inner rollers being hollow with open exterior ends and having portions close to the inner wall of said outer roller in the withdrawn positions, said inner supporting rollers having clips extending generally longitudinally of said rollers and positioned to overlie said surface of said outer roller in close proximity thereto when said inner supporting rollers are in the withdrawn position, said clips having a size such as to overlie a minor portion of the circumference of said surface to allow selective positioning thereof circumferentially of said outer roller and selective adjustment of the tension on hair wound about said outer roller.

5. In a hair styling form, a pair of inner supporting rollers and an outer roller journalled for rotation on said inner supporting roller, said inner supporting rollers being mounted for axial movement between positions with-

drawn within said outer roller and extended outwardly from the opposite ends of said outer roller, said outer roller having a hair receiving surface extending substantially from end to end thereof and having a uniform circular cross section, said outer roller having means for limiting movement of said inner supporting rollers between said positions, said inner rollers being hollow with open exterior ends and having portions close to the inner wall of said outer roller in the withdrawn positions, said inner supporting roller having clip means extending generally longitudinally of said rollers and positioned to overlie said surface of said outer roller in close proximity thereto when said inner supporting roller is in the withdrawn position, said clip means having a size such as to overlie a minor portion of the circumference of said surface to allow selective positioning thereof circumferentially of said outer roller and selective adjustment of the tension on hair wound about said outer roller.

6. In a hair styling form, a pair of inner rollers and an outer roller journalled thereon, said inner rollers being positioned generally coaxially with said outer roller, said inner rollers having external diameters conforming closely to the internal diameter of said outer roller, said outer roller being formed and adapted for the styling of human hair thereon, said outer roller having an external surface with a substantially uniform diameter from one end to the other, said inner rollers being movable axially of said outer roller between positions extended outwardly and away from the ends of said outer roller and positions withdrawn within said outer rollers, a shaft positioned internally of said outer roller and extending along

the axis thereof, said outer roller having internal support means for supporting said shaft in said position, said inner rollers being slidably mounted on said shaft, said shaft and said inner rollers having interengageable abutment means for limiting movement of said inner rollers to said outwardly extended position, means limiting inward movement of said inner rollers, each of said inner rollers having a clip extending generally longitudinally thereof and positioned to overlie the surface of said outer roller while being closely adjacent thereto when said inner rollers are in the withdrawn position so as to embrace a strand or curl of hair at a selected position between the surface of said outer roller and said clips, said inner rollers and clips being rotatable with respect to said outer roller in both of said positions, said clips overlying a minor portion of the circumference of the outer surface of said outer roller.

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