United States Patent

Amici et al.

[15] **3,698,134**

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[54] **DOLL HAVING ADJUSTABLE LOCK OF HAIR**

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[52] **U.S. Cl.** .....**46/135 R**

[51] **Int. Cl.** **A63h 11/00**

[58] **Field of Search** ...46/172, 135, 22, 136; 242/117

[56] **References Cited**

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3,162,976	12/1964	Beebe	46/135 R
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[57] **ABSTRACT**

The specification discloses an improved arrangement for controlling the degree of exposure of a long lock of hair from the head of a doll. Through the provision of a rotatable spindle to which the lock of hair is attached, the lock of hair is manually adjusted by turning the spindle against a complementary locking ratchet arrangement. A reel whose diameter is much larger than that of the spindle is mounted for free rotation with respect to the spindle. As the spindle is rotated, the lock of hair eventually contacts the reel causing it to rotate to a point limited by stops formed in the interior of the doll.

10 Claims, 6 Drawing Figures

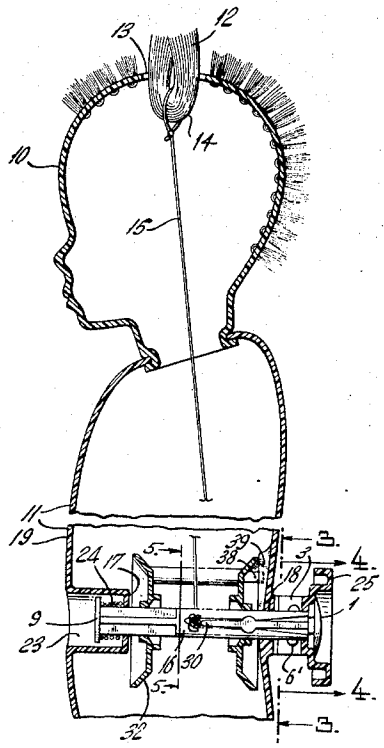

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Fig. 1.

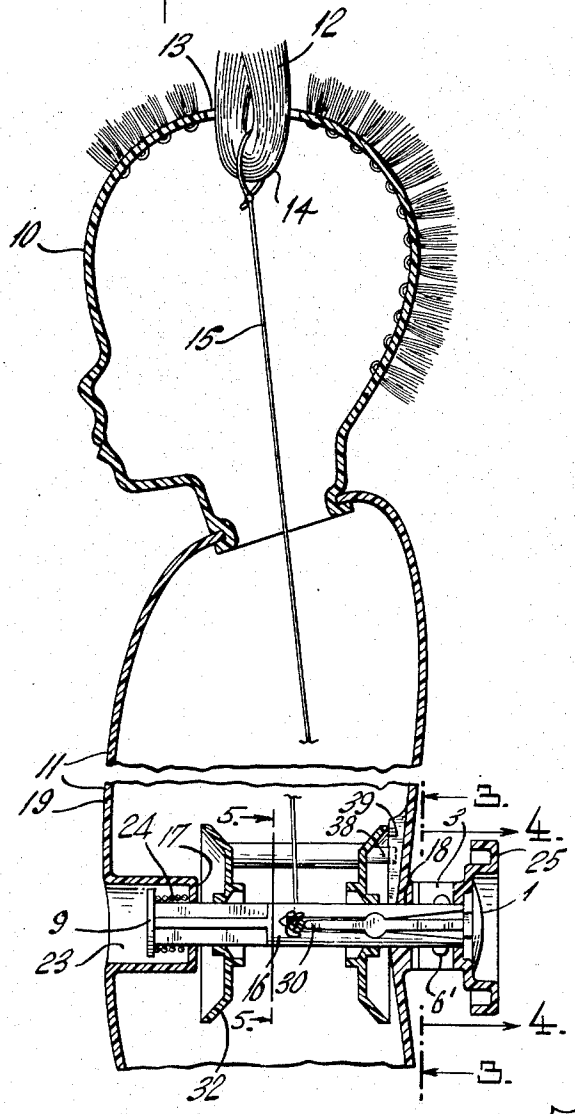


Fig. 3.

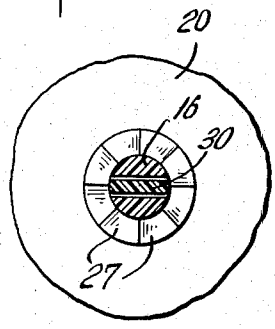


Fig. 4.

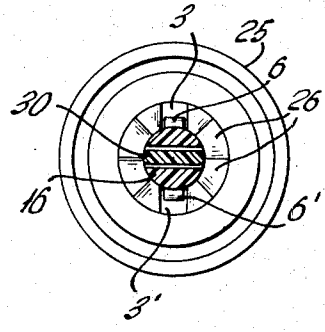
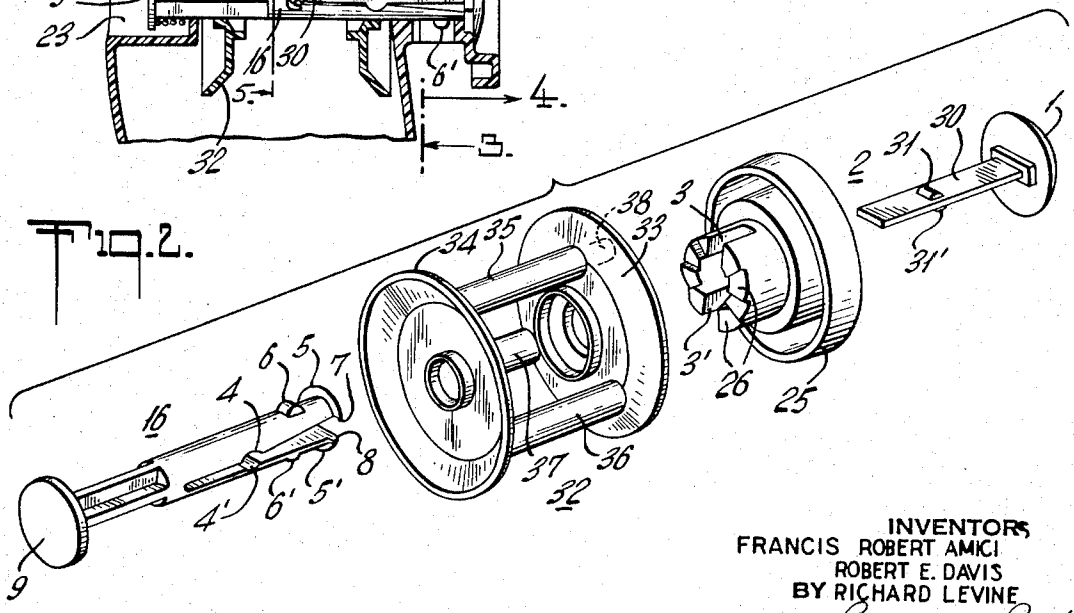


Fig. 2.



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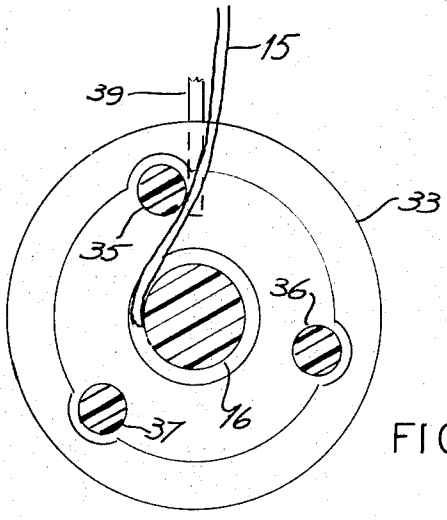

FIG. 5

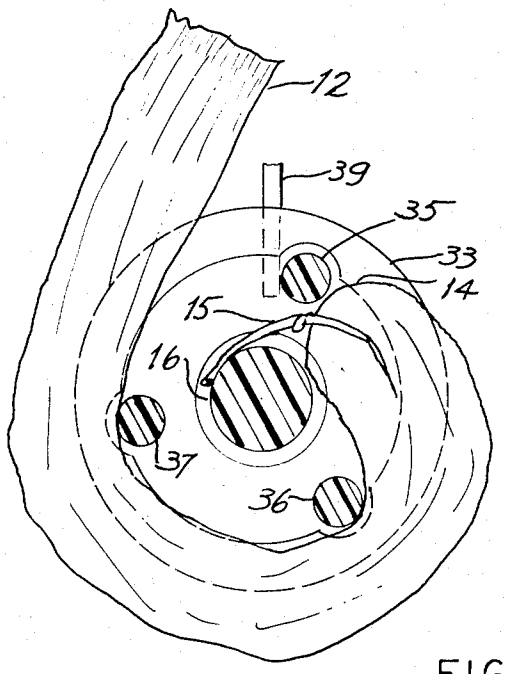

FIG. 6

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DOLL HAVING ADJUSTABLE LOCK OF HAIR

This invention relates to dolls or toys and more particularly to a doll which has a lock of hair which is adjustable in length from the head of the doll.

In U.S. Pat. No. 3,162,976 in the name of Beebe et al., which is assigned to the assignee of the present invention, there is disclosed a mechanism for adjusting the length of hair exposed from the head of a doll, toy figure, etc. In Beebe et al., a tubular member captive in the interior of the doll's body is provided to limit the ability of the lock of hair to retract into the doll. Limitation of movement of the hair is required to prevent the hair from reaching a non-retrievable position in the body of the doll and more importantly to prevent the hair from becoming wrapped in upon itself and thus entangled.

While the tubular member of Beebe et al. solved both of the above problems, the amount of or length of hair that could be drawn into the body was limited by the distance between the winding mechanism and the top of the doll's head. Therefore the length of the adjustable lock of hair was determined by the torso length of the doll and it was not possible to provide a spectacularly long adjustable lock of hair.

SUMMARY OF THE INVENTION

The present invention provides an improved mechanism for increasing the length of an adjustable lock of hair that can be moved into a doll body including a reel having spaced open-ings therein rotatably mounted on a shaft to which the lock of hair is attached by a string or cord. During the initial period of motion, the cord winds on the shaft drawing the lock of hair into the doll. When a portion of the lock of hair reaches the reel, it too commences rotation winding the hair onto the reel itself. Motion of the reel is limited by a stop which cooperates with an abutment formed in the interior of the doll thereby preventing further movement of the lock of hair into the doll's body.

An object of the present invention is the provision of a mechanism in a doll having an adjustable lock of hair which mechanism provides for the movement of a long lock of hair into the doll without entangling the hair in the interior of the doll.

Another object of the present invention is the provision of a mechanism for adjusting the length of the portion of an adjustable lock of hair exposed to view which is characterized by simplicity of assembly and reliability of operation.

Yet another object of the invention is the provision of an improved mechanism for providing a long adjustable lock of hair in a relative short torso doll body.

Still another object of the invention is the provision of an improved "hair-growing" doll having enhanced play value.

These as well as further objects and advantages of the present invention will become apparent to those skilled in the art from a reading of the following detailed specification of the invention, reference being made to the accompanying drawings in which:

FIG. 1 is a vertical sectional view showing the structure for varying the exposed portion of the lock of hair;

FIG. 2 is an exploded view of the mechanism employed in the present invention;

FIG. 3 is a sectional view taken along the line 3—3 of FIG. 1;

FIG. 4 is a sectional view taken along the line 4—4 of FIG. 1;

FIG. 5 is a sectional view taken along the line 5—5 of FIG. 1 showing the "hair-growing" mechanism when the doll's hair is substantially extended; and

FIG. 6 is a view similar to FIG. 5 showing said mechanism with the doll's hair retracted or shortened.

The doll may be of any desired character having head **10** mounted in any desired manner on a doll body **11**. The head **10** is hollow and is provided with a lock of hair **12** which is arranged in protruding relation in an enlarged opening **13** in the top of the head. The lock of hair **12** is looped within the doll's head. A cord **15** is affixed to the bight **14** of the hair **12**. The cord **15** is connected by a knot to a shaft or spindle **16** rotatably mounted in the doll body for varying the exposed length of the portion of the lock of hair protruding through the opening **13**.

As disclosed in the aforementioned patent to Beebe et al., spindle **16** is rotatably mounted in bearing openings **17** and **18** in the front and rear walls **19** and **20** of the doll body **11**.

Spindle **16** is provided at one end with a flattened end portion **9** arranged in a socket **23** formed in the wall **19** of the doll body. Compression spring **24** is mounted between portion **9** and a wall of socket **23** for biasing the spindle **16** towards the front of the doll. Affixed to the protruding rear end of shaft **16** is a manual control knob **25** having a series of ratchet teeth **26** formed on the inner face thereof. The bias exerted by the spring normally causes ratchet teeth **26** to engage complementary ratchet teeth **27** formed on the rear wall **20** surrounding the bearing opening **18** in the doll body.

As shown in detail in FIG. 2, spindle **16** includes the aforementioned flattened portion **9** as well as two arms **7** and **8** formed integrally with the spindle. Each of arms **7** and **8** include protrusions **6,6'** and chamfered end portions **5,5'** as well as notches **4,4'**. As shown in FIG. 1, knob **25** is supported in the space provided between protrusions **6,6'** and end portions **5,5'**. Protrusions **6,6'** interfit within diametrically opposed notches **3,3'** formed in knob **25** so as to prevent the knob from slipping on the spindle.

Knob **25** is secured to spindle **16** by an elongated button **2** having head portion **1**, and an elongated shaft portion **30**. Shaft **30** has formed integrally therewith, further protrusions **31,31'** which are located such that they interfit within the aforemention-ed notches **4,4'** in spindle **16**. Knob **25** is positioned between protrusions **6** and end portion **5** by physically squeezing the arms **7** and **8** together and mounting the knob over the portions **5,5'**. When the force is released, the expansive force of arms **7** and **8** on knob **25** serve to hold the knob with protrusions **6,6'** interfit with the knob notches **3,3'**. Button **2** is then inserted in the space provided between arms **7** and **8** until the button protrusion **31,31'** interfit within notches **4,4'**. The resultant assembly provides a secure lock whereby the knob cannot be removed from the spindle.

Reel **32** is freely mounted on the spindle **16**. The reel is formed of two end pieces **33** and **34** and three connecting portions or rods **35,36,and 37**. Portion **35** is elongated with respect to portions **36** and **37** extending beyond the end pieces **33**, **34** to form a stop **38**. This

stop is designed to cooperate with a raised protrusion 39 which may be formed integrally with either of bearing supports 17 or 18 in the front and back of the doll body. When the child playing with the doll desires to shorten the lock of hair she can manually rotate this knob to wind the string 15 on the spindle 16 and thus draw the lock of hair into the body. As the string 15 winds on to the spindle 16, reel 32 is stationary. When the bight 14 of the lock of hair reaches the spindle, it commences rotation of the reel 32 until stop 38 engages the protrusion 39 thereby preventing further movement of the hair into the doll. As can be seen, (FIG. 6) reel 32 prevents tangling of the hair on adjacent portions of the lock in the interior of the doll since the hair lays against the rods 36, 37. The lock of hair may be "lengthened" by releasing the ratchet by axial movement of the spindle.

More particularly, the ratchet teeth 26 and 27 (FIGS. 3-4) are disengaged by pressing button 9 inwardly against the bias of spring 24 whereby the shaft may then be freely rotated in the opposite direction (counterclockwise as viewed from the rear). The lock of hair may then be pulled outwardly so as to lengthen the protruding portion and, in so doing, the cord 15 is unwound from the spindle 16. It will be understood that the total exposed length of the hair is now limited by the length of the cord 15 since the reel 32 is no longer stopped and is freely rotatable with respect to the spindle.

The length of hair which can be controlled by the present invention can now be seen to be no longer a function of the length of the doll since the hair now winds upon the rods 36, 37 of the reel, which are spaced apart along a circle having an operative diameter much greater than the circumference of shaft 16. The diameter of the circle of rods 35, 36, 37 of the reel 32 thus controls the range of the length of exposable hair irrespective of the length of the doll. By way of example, but not of limitation, in a doll measuring approximately 5 inches from the top of the head 10 to the spindle 16, the aforenoted Beebe mechanism provided about 5 inches of hair adjustment. In the construction herein described, a doll having the same size but employing a reel having an operative diameter of one inch could accomodate an adjustable lock of hair over 7 inches long. Thus the improved construction described herein provides almost a 40% increase in the length of the hair that can be so accomodated. This provides greatly enhanced play value with a minimal increase in complexity and cost.

Although only one embodiment of the invention has been shown and described, it will be readily appreciated by those skilled in the art that various changes and modifications may be made herein without departing from the spirit of the invention.

What is claimed is:

1. In a doll having a hollow head and body, the head having an opening therein, a lock of hair having a given diameter and having a portion which extends through said opening and which is adjustable in length by adjusting means mounted within said body the improvement in said adjustment means comprising:

a cord having a smaller diameter than said given diameter connected at one end to said lock of hair;

spindle means connected to the other end of said cord for drawing said hair into said body;

rotatable means mounted on said spindle and freely rotatable with respect thereto by engagement with said lock of hair at a position wherein a predetermined length of hair still extends from said doll head for guiding said lock of hair and thereby preventing said lock of hair from becoming entangled; and

stop means on said rotatable means for engaging said doll body to thereby limit the movement of said lock of hair into said doll body.

2. The combination of claim 1 wherein said rotatable means includes a reel having open portions through which said cord passes and having further portions spaced from said spindle for preventing the hair from reaching said spindle.

3. The combination of claim 1 further including manually rotatable knob means mounted on said spindle for controlling the rotation thereof.

4. A doll having a hollow head and body, the head having an opening in the top thereof, a lock of hair of a given diameter extending through said opening and into said head and body;

a cord having a diameter less than said given diameter connected at one end to said lock of hair; spindle means mounted for rotation in said body said spindle means being attached to said cord for winding said cord thereon;

rotatable means freely mounted on said spindle for rotation independently of said spindle, said rotatable means being caused to rotate when engaged by said lock of hair at a position wherein a predetermined length of hair still extends from said doll head; and

stop means formed on said rotatable means for cooperation with said doll body to limit the rotation of said rotatable means and thereby limit the further movement of said lock of hair into said body.

5. The doll of claim 4 wherein said rotatable means includes means having apertured portions through which said cord passes to said spindle and further portions spaced from said spindle for winding thereon a portion of said lock of hair.

6. The doll of claim 5 further including

knob means mounted on said spindle means for controlling the rotation of said spindle means, and

fastening means mounted to said spindle means for preventing said knob means from being removed from said spindle.

7. The doll of claim 6 wherein said fastening means includes shaft means having a protrusion thereon for engaging said spindle and wherein said spindle includes apertures found therein for cooperating with said protrusions for fastening said knob to said spindle.

8. The combination for adjusting the length of an exposed portion of a doll's hair comprising:

a doll having a hollow head and body, the head having an opening in the top therein and a lock of hair of a given diameter extending through said opening into said body;

a cord having a diameter less than said given diameter connected at one end to said lock of hair;

small diameter spindle means mounted for rotation in said body said spindle means being attached to said cord for drawing said lock of hair into said body;

large diameter rotatable means freely mounted on said spindle for causing a predetermined length of said lock of hair to wind thereupon when engaged by said lock of hair at a position wherein a predetermined length of hair still extends from said doll head; and

stop means for limiting the amount of hair wound on said rotatable means.

9. The adjusting mechanism of claim 8 wherein said stop means is formed on the interior of said doll for cooperating with said large diameter means.

10. The combination of claim 2 wherein said reel remains stationary until engaged by said lock of hair and wherein continued operation of said spindle means once said lock of hair engages said reel causes a portion of said lock of hair to be wound upon said reel.

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