ELECTRIC HAIR ROLLER
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ELECTRIC HAIR ROLLER
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ABSTRACT OF THE DISCLOSURE
Apparatus for curling hair including a power driven roller which makes and breaks connection with an actuating means by hand pressure of an operator.

BACKGROUND OF THE INVENTION
This invention relates to personal grooming and more particularly to the dressing of hair to enhance the appearance and to characterize and individualize the coifure of the user.

Field of the invention
This invention is particularly directed to a device for curling or waving hair by imparting powered movement to a curler or the like to wind a tress or span of hair thereon and to eliminate the need for rotating curlers by hand or the rolling of the hair around the fingers.

Description of the prior art
It has been customary in grooming hair to roll a tress or a plurality of strands of hair on a curler and to apply a moisturizing agent to the hair. The hair is left in its rolled state until it has dried and set. After the hair has set, the curlers are removed leaving the hair in a curled or waved condition. In the dressing of hair an unskilled, or a partially disabled person has difficulty in performing the rolling operation which affects the final appearance of the hair. Furthermore, a skilled operator experiences fatigue in winding the hair on the curlers particularly if hair dressing is practiced as a profession.

Although attempts have been made to electrically operate hair rollers many of the devices have used friction drives between the electric motor of the roller and the spindle to eliminate the danger of pulling of the hair and causing injury. These have not been satisfactory since they have been difficult to operate and the friction coupling erratic in operation. However, since it is necessary to put tension on the hair to roll a tight curl, some other means of safe roller operation is necessary other than a friction drive coupler.

SUMMARY OF THE INVENTION
In accordance with the invention claimed, a new and improved self-contained power driven hair roller of lightweight construction is provided which may be easily manipulated in the hand of the user in a manner permitting free use of the fingers of both hands for attaching strands of hair to a curler. The device disclosed provides a novel power transmission means for making and breaking connection with an electric motor to selectively rotate conventional type curlers in either direction at the user's option.

It is, therefore, one object of this invention to provide an improved lightweight, self-contained, power driven hair roller.

Another object of this invention is to provide an improved device for selectively rotating a hair roller in either direction.

A further object of this invention is to provide an improved hair roller which employs a novel drive between an electric motor and a curler which is controlled by one finger of a hand leaving the other fingers of both hands free to arrange the hair.

A still further object of this invention is to provide an improved power driven hair roller in which a curler is rotated only when the roller is continuously actuated by hand pressure of the operator.

A still further object of this invention is to provide an improved power driven hair curler which provides a means for controlling hair tension for a tight curl.

Further objects and advantages of the invention will become apparent as the following description proceeds and the features of novelty which characterize this invention will be pointed out with particularity in the claims annexed to and forming part of this specification.

BRIEF DESCRIPTION OF THE DRAWING
The present invention may be more readily described by reference to the accompanying drawing in which:

FIG. 1 is a perspective view of an operator using the device in a curling operation and embodying the invention;

FIG. 2 is a front view partly in section of the power driven roller shown in FIG. 1;

FIG. 3 is a cross-sectional view of FIG. 2 taken along the line 2—2; and

FIG. 4 is a modification of the structure shown in FIGS. 1—3.

DESCRIPTION OF PREFERRED EMBODIMENT
Referring more particularly to the drawing by characters of reference, FIGS. 1, 2 and 3 illustrate a motor housing 8 in which a reversible electric motor 9 (symbolically shown) is mounted. The direction of rotation of the motor may be obtained through the actuation of a switch 10 mounted on housing 8. Although the motor has been illustrated as being connected to a source of electrical energy by conductor 11, it is contemplated that such motor could receive electrical energy from a self-contained rechargeable battery, or the like, carried within the housing 8.

Suitable gear reduction means 12 (symbolically shown) may be provided for reducing the speed of shaft 13 of the motor to that desired which may be a few revolutions per minute. Further speed control may be obtained through rheostat control by a switch 10.

Shaft 13, as shown in FIG. 3, comprises an elongated hollow cylindrical member or chucking device which cooperatively engages with a curler 14 for rotation therewith. Shaft 13 has spacedly positioned around a part of its outer periphery and longitudinally thereof a plurality of ribs 15 which cooperatively engage with ribs 16 arranged around the inside surface of curler 14 and extending longitudinally thereof. The engagement of ribs 16 of curler 14 with ribs 15 of shaft 13 occurs when finger or hand pressure is applied to the free end of curler 14 in a direction toward shaft 13, as shown in FIG. 1, causing the ends of ribs 16 to cooperatively engage with ribs 15 of shaft 13 to rotate therewith.

As illustrated in FIG. 2, part of shaft 13 is shown as being of a hollow configuration having an apertured collar 16 at its free end and member 17 inserted therein at its fixed end which may or may not be rotatable with shaft 13. Member 17 is provided with a pin 18 extending outward of member 17 but within the outline of shaft 13. Cooperating with shaft 13 and extending out of the aperture in collar 16 of shaft 13 is a shaft 19 having a collar 20 which is positioned within shaft 13 and is biased into engagement with collar 16 by a spring 21 arranged between collar 20 and member 17. As noted in FIG. 2, shaft 19 extends outward of the aperture in collar 16 to
be engaged by a finger pressure disk 22 which is free rotating relative to curler 14. FIG. 2 illustrates that prong 18 of member 17 is separated a predetermined distance from the inner end of shaft 19. Since prong 18 and shaft 19 are axially aligned and kept separated by the bias of spring 21 finger pressure on disk 22 will cause engagement of shaft 19 with prong 18 and further pressure will interlock the ribs 16 on the inside of collar 14 with ribs 15 on the outside of shaft 13. Such interlocking of curler 14 with shaft 13 will cause the rotation of curler 14 upon rotation of shaft 13.

Release of finger pressure on disk 22 causes spring 21 to disengage shaft 19 from prong 18 and this action together with the effects of the centrifugal force of curler 14 causes disengagement of curler 14 from shaft 13.

It should be noted that the end of prong 18 may contain a switch which is closed by the finger pressure of disk 22 and shaft 19 on prong 18. Closure of this switch could energize motor 9 of device 8.

FIG. 4 illustrates a modification of the structure shown in FIGS. 1–3 wherein a shaft 25 rotated by a suitable motor (not shown) is provided with a flared slotted end or chucking device 26 for receiving the prong 27 of a curler 28. End 26 of the rotatable shaft 25 is provided with hollow or shallow opening 29, the surfaces of which are provided with gear teeth 30. Teeth 30 are provided for meshing with mating cooperating or mating teeth 31 formed on an axially arranged protrusion 32 of curler 28.

As shown in FIG. 4 the outer circumference of the inner end of curler 28 defines a cup the rim 33 of which fits into a groove 34 defined by the flared end 26 of shaft 25. When teeth 30 and 31 engage, curler 28 rotates with shaft 25.

Shaft 25 is provided with a hollow housing configuration 25' which encloses a plunger 35 which is spring biased outwardly through an aperture 36 in the end of shaft 25 into the configuration forming the gear teeth 30. The inner end of plunger 35 is provided with a collar 37 which serves as a movable electric contact which makes and breaks contact with a pair of stationary electrical contacts 40, 41. Plunger 35 is biased into normal switch open position by a spring 42 arranged between the end of housing configuration 25' and a collar 37' on plunger 35.

As curler 28 is pressed into engagement with shaft 25 to cause mating engagement of teeth 30 and 31 the protrusion 32 engages the end of plunger 35 causing it to be actuated axially against the bias of spring 42 to close the electrical switch contacts 40, 41 by collar 37 to energize a motor which rotates shaft 25 in the manner described for the structure shown in FIGS. 1–3.

As shown in FIG. 4 finger pressure disk 45 which is free rotating relative to curler 28 may have attached to it a hair pin 46 which may be easily removed from curler 28 and the disk 45 when the hair has been satisfactorily rolled on the curler. Release of the curler by the finger or hand of the operator causes disengagement of the mating gear teeth 30 and 31, de-energization of the motor with the resulting nonrotation of shaft 25. This permits the withdrawal of disk 45 permitting the attached hair pin 46 to be used for firmly attaching the hair to the curler 28. The hair pin 46 is provided with a protrusion 47 which makes it possible for the end of the hair pin to engage in a groove 48 in the forward end of the inside of curler 28 so that it may be rotated into usable position on the outside of the curler while retaining one leg of the hair pin inside of the curler in groove 48. It should be recognized that the embodiment shown in FIG. 4 may be constructed of a larger or smaller configuration utilizing or omitting the rim and groove configuration 33 and 34, respectively.

As shown in FIGS. 1 and 2 and as applicable to any modification thereof the housing of the roller may be boom mounted as shown by structure 50. This is particularly useful in heavy-duty commercial embodiments of the invention.

Although but two embodiments of the present invention have been illustrated and described, it will be apparent to those skilled in the art that various changes and modifications may be made therein without departing from the spirit of the invention or from the scope of the appended claims.

What is claimed is:

1. A device for rolling hair on a curler comprising:
a motor housing,
an electric motor carried in said housing,
a chucking device rotatably connected to said motor and projecting axially forward of said housing,
a hollow curler adapted to be telescopically mounted over said chucking device for rotation therewith,
a spring means arranged between said chucking device and said curler for biasing said curler out of engagement with said chucking device, and

2. A device for rolling hair on a curler comprising:
a motor housing,
an electric motor carried in said housing,
a chucking device rotatably connected to said motor and projecting axially forward of said housing,
a hollow curler adapted to be telescopically mounted over said chucking device for rotation therewith,
a spring means arranged between said chucking device and said curler for biasing said curler out of engagement with said chucking device, and

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