

[54] **A DRYSHAVER WITH AN ADJUSTABLE PROTECTIVE SLEEVE**

3,538,604 11/1970 Walter 30/34 R

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[58] Field of Search 30/34 R, 43, 43.1, 90, 41

[56] **References Cited**

UNITED STATES PATENTS

2,880,504 4/1959 Finn 30/90

[57] **ABSTRACT**

A dryshaver has a rod-shaped housing provided at one end with a shear head which is driven by an electro-motor. A protective sleeve surrounds a portion of the housing and can be axially displaced between two positions in one of which it is retracted rearwardly of the shear head and in the other of which it projects forwardly of the shear head to protect the same. An actuator button of a switch for the current supply to the motor is interconnected with the sleeve to prevent the same from being withdrawn off the housing and is displaced in response to shifting of the sleeve to circuit making or breaking.

10 Claims, 4 Drawing Figures

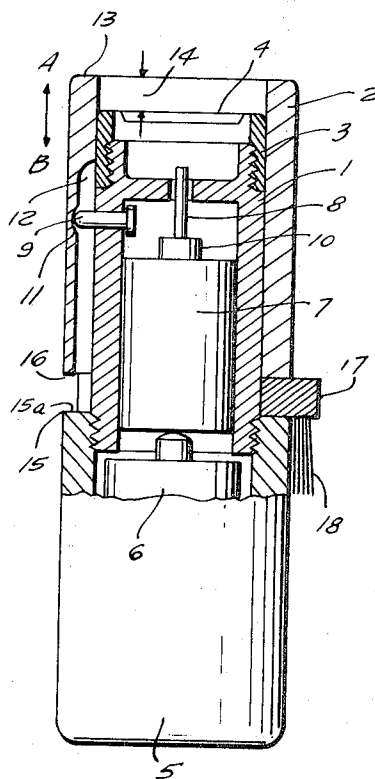


FIG. 1

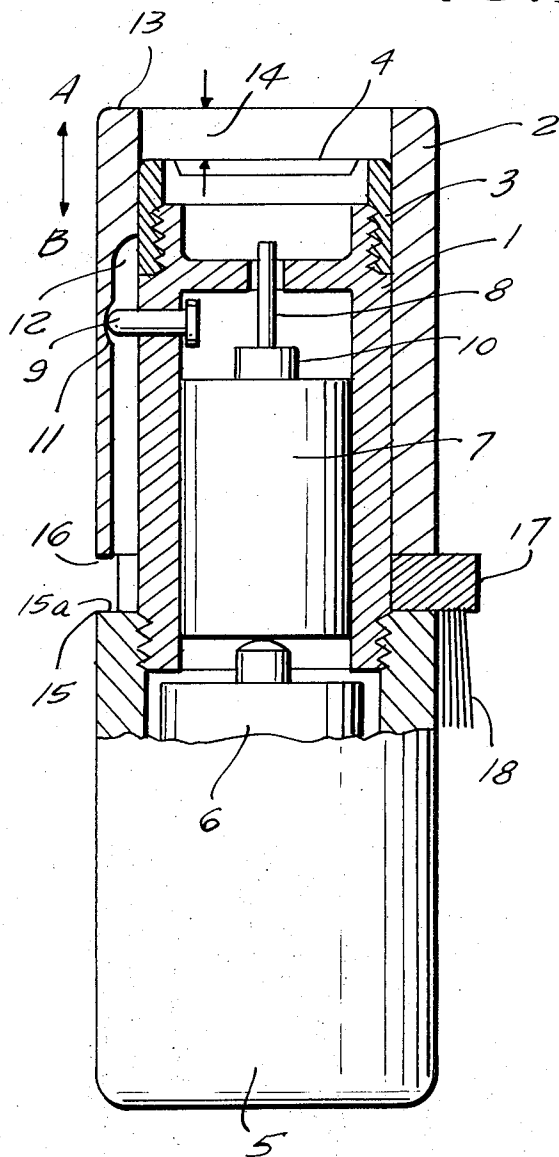


FIG. 3

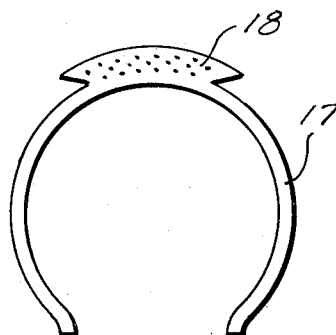


FIG. 2

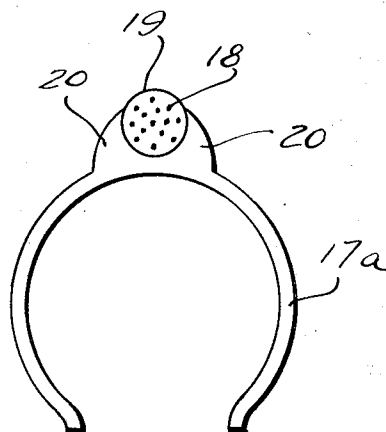
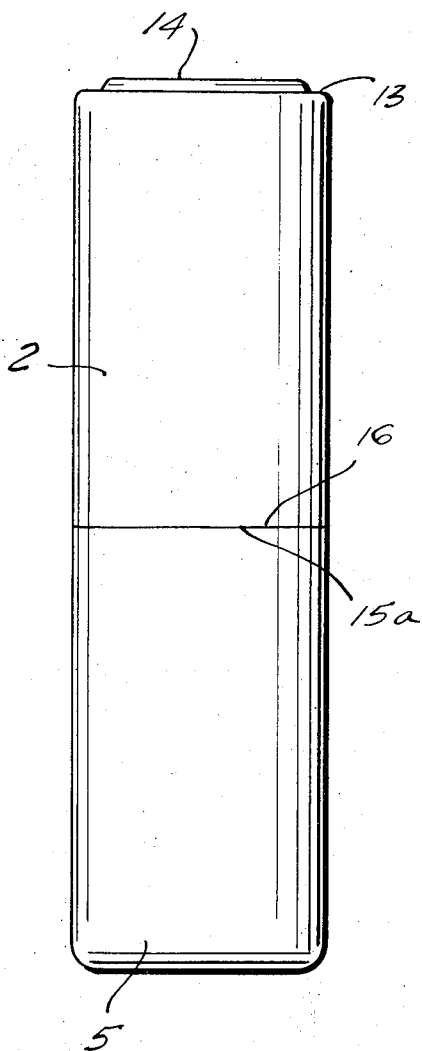


FIG. 4

A DRYSHAVER WITH AN ADJUSTABLE PROTECTIVE SLEEVE

BACKGROUND OF THE INVENTION

The present invention relates generally to a dryshaver, and more particularly to an electrically operated dryshaver having a shear head and protective means for the latter, such as shown in U.S. Pat. No. 3,043,996.

The shear heads of dryshavers are highly susceptible to damage, particularly if they are of the type in which a very thin flexible shear foil provided with a great number of holes overlies the cutting knives of the shear head. It is therefore well known to provide protective caps which are placed over the shear head when the shaver is not in use.

In certain types of dryshavers, particularly in those which are not of generally rod-shaped configuration, it is known to provide other types of protective devices, such as built-in movable covers which may or may not be hinged. This is possible because these dryshavers have sufficient space for the incorporation of such devices.

All of the prior-art protective means suffer from certain disadvantages. In particular it will be appreciated that if they are the type that can be removed from the dryshaver housing, such removal will frequently occur unintentionally and the protective device may then become lost. The built-in protective device, on the other hand, is relatively expensive and, being structurally complicated, susceptible to malfunction. Moreover, this type of protective device cannot be used (or can be used only with great difficulty) in dryshavers having a rod-shaped configuration, for various reasons which include a lack of available space.

SUMMARY OF THE INVENTION

It is, accordingly, a general object of the present invention to provide an improved dryshaver construction which is not possessed of the afore-mentioned disadvantages.

More particularly, it is an object of the present invention to provide an improved dryshaver having protective means which not only reliably protects the shear head but also cannot become lost.

An additional object of the invention is to provide such an improved dryshaver which is of simple construction.

Still another object of the invention is to provide such a dryshaver in which the protective means will move away from its position protecting the shear head and thus expose the same in automatic response to utilisation of the dryshaver for shaving purposes.

In keeping with these objects and with others which will become apparent hereinafter, the present invention resides in a dryshaver which, briefly stated, comprises a combination including a housing, a shear head on the housing and adapted for engagement with the skin of the user so as to shave hair from the skin and a drive provided in the housing and operatively associated with the shear head for driving the same.

The novel feature further comprises a protective sleeve provided on a housing and movable between at least an advanced position in which it projects beyond and protects the shear head and a retracted position in which it is retracted from and exposes the shear head

for engagement. Means is provided which is operative for arresting the sleeve in at least the advanced and retracted positions thereof.

The construction according to the present invention affords a dryshaver which is simple, compact and easy to use and in which the protective sleeve moves from its advanced position to its retracted position in automatic response to the dryshaver being placed against the skin of the user and a shaving pressure being exerted.

The displacement of the sleeve can be effected in any desired manner, for instance by turning in a helical path, but it is currently preferred for the sleeve to perform a purely linear movement because this permits the novel construction to be particularly simple.

The dryshaver may be of circular cross section that is both its housing and the sleeve may have such a configuration. This provides for a particularly compact construction which is especially desired for battery operated dryshavers intended for travel purposes. This can be further enhanced by providing the sleeve with an outer diameter corresponding to the maximum outer diameter of the dryshaver housing as will become evident subsequently.

The means for arresting the sleeve may be elastically yieldable and engage in appropriate recesses formed in the inner wall of the sleeve. It is particularly advantageous if such means is an actuating member or button of a switch which controls the supply of electrical energy to the drive motor, and which is moved to a position closing the energy supply circuit in response to displacement of the sleeve to retracted position and vice versa.

If the housing is of two parts one of which has a lesser outer diameter than the other and is surrounded by the sleeve with the latter having an outer diameter corresponding to that of the other part, then an elastically yieldable clamp in form of a circlip may be provided which is pushed onto the lesser-diameter housing portion between the sleeve and the other housing portion when the sleeve is in its advance position.

This assures reliable retention of the sleeve in its advanced position and makes possible a lesser spring bias of the pushbutton mentioned above, so that the sleeve can be particularly easily displaced from advanced to a retractive position once the circlip has been removed. Moreover, an unintentional energization of the drive is thus also reliably prevented.

The circlip itself may be provided with a brush, that is it may be unitary therewith, or a separate brush may be provided and the circlip may have holding portions for releasably holding the brush. The purpose of such a brush is to permit cleaning of the shear head to remove cut-off beard stubbles therefrom.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiment when read in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a simplified view, partly in longitudinal section, of a dryshaver according to one embodiment of the invention;

FIG. 2 is a side elevation of the dryshaver in FIG. 1 but illustrating a different operational position;

FIG. 3 is a top-plan view of a component of the embodiment in FIGS. 1 and 2; and

FIG. 4 is a view similar to FIG. 3 illustrating a somewhat different component.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Discussing firstly the embodiment in FIGS. 1-3 it will be seen that the novel dryshaver here is of the generally rod-shaped type. It should be understood, however, that the invention can also be incorporated in a dryshaver having a different configuration.

The illustrated dryshaver has a housing of substantially circular cross section and comprise of a housing portion 1 and an axially adjacent housing portion 5. The latter has a larger outer diameter than the portion 1 and there is thus formed at the juncture of the two portions a radial shoulder 15 having an end face 15a which faces towards the free end of the housing portion 1.

At this free end of the portion 1 there is mounted a shear head 3 having a shear foil 4; details of the components 3 and 4 need not be given because they are not novel per se.

To protect the shear head 3 and the shear foil 4 thereof there is provided a protective sleeve 2 which exteriorly surrounds the portion 1 of the housing and has an outer diameter corresponding to that of the portion 5. The opposite ends of the sleeve are open and it will be seen that the sleeve 2 is concentric with the shear head 3 and is axially displaceable in the direction of the double-headed arrow A-B between the advanced position shown in FIG. 1 in which it projects beyond and protects the shear foil 4 and the head 3, and the retracted position shown in FIG. 2 in which the shear foil 4 is exposed for contact with the skin of a user.

Accommodated in the interior of the portion 5 is a source of electrical energy, here shown as a battery 6. Reference numeral 7 designates a drive motor having a fragmentarily illustrated output shaft 8 which, although this is not illustrated, will in conventional manner cooperate with the shear head for driving the same.

A switch 10, diagrammatically illustrated, is also provided and in the usual manner interposed in the electrical circuit connecting the motor 7 with the battery 6. A push-button 9 serves, when depressed from the position shown in FIG. 1, to energize the switch and thereby the motor. It is appropriately biased outwardly to the position shown in FIG. 1. The inner surface of the sleeve 2 is provided with the recesses 11 and 12 of which the former is deeper than the latter, as seen in radial direction of the sleeve. The pushbutton 9 engages in the recess 11 when the sleeve is in the position of FIG. 1, and enters into the recess 12 (i.e. is inwardly depressed) when the sleeve is displaced axially in FIG. 1 to assume the position of FIG. 2. This takes place when the edge face 13 of the sleeve is placed against the skin of the user and slight axial pressure is exerted. In response to entry of button 9 into the recess 12 the switch 10 then becomes energized and starts the motor, and vice versa. In any case, the button 9 will prevent the sleeve 2 from unintentionally becoming separated from the housing.

If desired the construction can be such that when the sleeve 2 is in the protective position shown in FIG. 1,

there will be a minimum axial spacing 14 between its edge face 13 and the shear foil 4. Another suitable detent means can be employed for this purpose or the button 9 can be allowed to snap into a hole which penetrates the wall of the sleeve 2.

Interposed between the juxtaposed surface 15a and end face 16 of sleeve 2 is a clamp 17, here indicated as a circlip. This is of elastically yieldable material, e.g. metal or plastic, and has for instance the configuration shown in FIG. 3. When the circlip 17 is pushed onto the housing portion 1 (see FIG. 1) it prevents displacing of the sleeve 2 from the position in FIG. 1 to the position in FIG. 2. In such a case the biasing means biasing the button 9 outwardly can be made relatively weak. To use the shaver it is merely necessary to snap the circlip 17 off the housing portion 1. When the shaver is to be put away the circlip 17 is snapped back into place, causing displacement of the sleeve 2 to the position shown in FIG. 1 and effecting de-energization of the motor 10.

In FIGS. 1 and 3 it is shown that a brush may be unitary with the circlip 17, that is bristles 18 may be secured to or embedded in the same.

FIG. 4 shows that the brush can also be a separate component, here illustrated with reference numeral 19. In that case the circlip 17a is provided with holding projections 20 which releasably hold the brush 19 so that the latter can be detached for use.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of constructions differing from the types described above.

While the invention has been illustrated and described as embodied in a dryshaver, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge, readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended claims:

1. In a dryshaver, a combination comprising a housing having a circumferentially extending shoulder; a shear head on said housing and adapted for engagement with the skin of a user to shave hair from the skin; a drive in said housing and operatively associated with said shear head for driving the same; a protective sleeve on said housing and having an axial endface which faces towards said shoulder, said sleeve being movable between at least an advanced position in which it projects beyond and protects said shear head, and a retracted position in which it is retracted from and exposes said shear head for engagement; and means operative for arresting said sleeve in at least said advanced position thereof, including a resiliently yieldable clip removably surrounding said housing intermediate said shoulder and said endface.

2. A combination as defined in claim 1, said housing having a first and an axially adjacent second position of

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respectively lesser and greater outer diameter, said shoulder being provided at the juncture of said portion and said shear head being provided on said first portion; said clip being a circlip which surrounds said first portion intermediate said shoulder and said endface; and said sleeve surrounding said first portion and having an outer diameter corresponding to that of said second portion.

3. A combination as defined in claim 2, wherein said housing is elongated and bar-shaped, having a free end-portion; said shear head being provided on said free end-portion and said sleeve being concentric with said shear head.

4. A combination as defined in claim 2, wherein said sleeve is mounted on said housing for sliding movement relative to the same and to said shear head.

5. A combination as defined in claim 2, wherein said housing and said sleeve are of circular cross-sectional configuration.

6. A combination as defined in claim 1, said sleeve having an inner circumferential surface provided with at least two recesses; and wherein said means comprises resiliently yieldable means adapted to engage in

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one or the other of said recesses depending upon said sleeve being located in said advanced or in said retracted position.

7. A combination as defined in claim 1, said drive including an electrical motor and a switch displaceable between a make and a break condition for respectively energizing and de-energizing said motor; and wherein said means comprises an actuating portion associated with said switch for displacing the same to said make condition in response to movement of said sleeve to retracted position, and to said break condition in response to movement of said sleeve to advanced position.

8. A combination as defined in claim 2; further comprising brush means provided on said circlip for cleaning of said shear head.

9. A combination as defined in claim 8, wherein said brush means is unitary with said circlip.

10. A combination as defined in claim 8, wherein said brush means is a discrete component; and further comprising holding portions on said circlip for removably holding said discrete component to said circlip.

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