RAZOR WITH PLASTIC HANDLE AND GUARD


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ABSTRACT

The invention relates to a razor having a plastic handle and guard. The razor is provided with a rod disposed axially of the handle and movable lengthwise in response to rotation of a nut to open and close the cap means. Cam means are provided and are operative in response to rotation of the nut, to close the cap means, to exert an inwardly directed pressure on the rod to prevent further axial movement of the rod, whereby to prevent accidental deformation of the plastic guard after closing of the top means.

7 Claims, 7 Drawing Figures
RAZOR WITH PLASTIC HANDLE AND GUARD

BACKGROUND OF THE INVENTION

1. Field of the Invention
This invention relates to safety razors and is directed more particularly to a safety razor having plastic guard and handle portions.

2. Description of the Prior Art
The production of razors having plastic handles is well known, and from a manufacturing standpoint the production of razors having plastic guard portions, as well as plastic handles, would realize even greater economies. Molding of unitary guard and handle members has been recognized as a means for reducing the costs of manufacturing, but in the past has been plagued by difficulties which have substantially inhibited the use of such members.

Perhaps the most serious problem faced in the use of plastic guard means is that the plastic is subject to deformation when subjected to pressure. Generally, the cap means and cap closing mechanism of a razor comprise metal parts. After the cap means is closed, it frequently happens that the user continues to operate the cap closing mechanism to insure secure closure. However, continued closing pressure by the cap means upon the razor blade is exerted upon the guard means, and when the guard means is plastic the guard means frequently deforms undesirably, altering the guardblade cap geometry and dimensional relationships, often resulting in a less than desirable shave.

SUMMARY OF THE INVENTION

It is, therefore, an object of the invention to provide a safety razor having a molded plastic handle and guard means.

A further object of the invention is to provide such a razor having means for preventing the cap means from exerting deforming pressure upon the plastic guard means.

With the above and other objects in view, as will hereinafter appear, a feature of the present invention is the provision of a safety razor having a plastic handle and guard portion, rod means extending through the handle and guard portion, the rod means being connected at one end to a razor cap means and at the other end to actuator means on the handle, the rod being movable responsive to movement of the actuator means to open and close the cap means, and cam means associated with the handle and actuator means and operative, in response to operation of the actuator means, to close the cap means, to exert pressure inwardly on the rod means to prevent further axial movement of the rod means, thereby to prevent further razor cap means closure.

The above and other features of the invention, including various novel details of construction and combinations of parts, will be more particularly described with reference to the accompanying drawings and pointed out in the claims. It will be understood that the particular device embodying the invention is shown by way of illustration only and not as a limitation of the invention. The principles and features of this invention may be employed in various and numerous embodiments without departing from the scope of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

Reference is made to the accompanying drawings in which is shown an illustrative embodiment of the invention from which its novel features and advantages will be apparent.

FIG. 1 is an exploded perspective view showing the components of one form of razor illustrative of an embodiment of the invention;

FIG. 2 is a generally sectional side elevational view, showing the razor cap means in a fully open position;

FIG. 3 is similar to FIG. 2 but shows the cap means in a closed position;

FIG. 4 is a side, generally sectional view of a portion of the razor handle, showing the operation of a cam means to prevent further axial movement of the cap closing mechanism;

FIG. 5 is a front elevational view, partly broken away, of a head portion of the razor;

FIG. 6 is a top plan view, partly broken away; and

FIG. 7 is a side elevational view of the head portion of the razor.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings, it will be seen that the invention comprises a safety razor having a plastic handle portion 2 and a plastic guard portion 4. If desired, the handle and guard portions 2, 4 may be formed as a single molded plastic handle and guard portion 6, as illustrated in the drawings. The handle and guard portion 6 is provided with a central bore 8 in which is disposed a rod 10 which preferably is provided with a portion 11 having a rough exterior surface.

A first end 12 of the rod 10 is connected to a bridge member 14 to which there are rigidly attached end members 16, 18. On the end members 16, 18 there are pivotally mounted razor cap means 20, 22. The bridge member 14, and the end members 16, 18 are well known in the art, in structure and operation, and will be referred to hereafter as a cap closing mechanism. For the purposes of illustrating the present invention, it will suffice to say that as the rod 10 is caused to move toward the head end of the razor, i.e., the upper end as viewed in the drawings, the cap means 20, 22 are caused to open and when the rod 10 is caused to move downwardly, the cap means are caused to close.

A second end 24 of the rod 10 includes a threaded portion 26 which receives an internally threaded actuator or nut 28. The handle portion 2 includes a split-ring extension 30 having a collar portion 32. The actuator 28 is provided with a recess 34 for receiving the handle extension 30. The recess 34 includes a circular groove 36 for receiving the collar 32.

Referring particularly to FIGS. 2-4, it will be seen that the extension 30 is provided with a bevelled external surface 38 and that the actuator recess 34 is provided with a correspondingly bevelled interior surface 40. The groove 36 is wider than the collar 32, thereby providing room for limited movement of the collar 32 in the groove 36. The rod 10 may be provided with a washer 42 disposed in a second actuator recess 44 which may be covered by an end plate 46.

In operation, the nut 28 is rotated by an operator to cause the rod 10 to move axially upwardly, as viewed in FIG. 2, to cause the cap members 20, 22 to open, as
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illustrated. A razor blade B may then be placed upon the guard portion 4. To lock the blade B in the razor head, the nut 28 is rotated in the opposite direction, causing the rod 10 to move axially downwardly, as viewed in FIG. 3, until the cap members 20, 22 are seated on the blade B.

Referring to FIG. 4, it will be seen that continued clockwise rotation of the nut 28 tends to cause the rod 10 to move downwardly further. However, once the cap members 20, 22 are seated on the blade B, there is increasing resistance to further downward movement of the rod 10. The cap members continue to move, flexing the blade and urging it into its final position in the closed razor. Increasingly, the nut 28 tends to move axially upwardly on the threaded portion 26 of the rod 10. As it does so, the bevelled surface 40 of the nut 28 exercises pressure upon the bevelled surface 38 of the extension 30, in effect “pinching” the extension 30 inwardly against the rough outer surface portion 11 of the rod 10. The application of this increasing “pinching” force results initially in a “feel” by the operator of a nominal amount of clamping force exerted on the blade, and subsequently operates to inhibit and then prohibit further movement of the rod 10. Thus, movement of the rod 10 is relatively free during the initial closing movements of the cap members, encounters some resistance when the cap members are seated on the blade B, encounters increasing resistance while the cap members are clamped securely upon the blade, and encounters prohibitive resistance upon completion of the clamping phase. The more pressure applied by the operator upon the nut 28, the more pressure is directed inwardly to prevent axial movement of the rod 10. Very limited upward movement on the part of the nut 28 is required, and the movement shown in FIG. 4 is exaggerated in order to illustrate the operation. Thus, pressure beyond that required to securely close the cap members is increasingly translated into pressure preventing excessive closure of the cap members, thereby preventing deformation of the guard portion 4.

It is to be understood that the present invention is by no means limited to the particular construction herein disclosed and/or shown in the drawings, but also comprises any modifications or equivalents within the scope of the disclosure.

Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States is:

1. A razor comprising a plastic handle, a plastic guard portion joined to said handle, a cap for holding a blade in position on said guard, longitudinally extending means movably mounted on said handle for opening and closing said cap relative to said guard, and cam means for limiting the movement of said movable means after the cap has been closed, said cam means exerting a radial inward pressure on said movable means to prevent further movement thereof.

2. The invention according to claim 1 in which said movably mounted means includes an axially movable rod, and said cam is operative, upon closure of said rod, to prevent further axial movement of said rod, thereby to prevent further cap closing operation of said movably mounted means.

3. The invention according to claim 2 in which said rod is provided with a portion having a rough outer surface and said cam is engageable with said rough outer surface portion to inhibit further axial movement of said rod.

4. A razor comprising a plastic handle portion, a plastic guard portion joined to said handle portion, said handle and guard portion having a bore extending axially therethrough, a rod disposed in said bore, a first end of said rod being connected to razor cap means, a second end of said rod being connected to actuator means disposed on said handle portion, said rod being movably axially in said bore responsive to movement of said actuator means whereby to open and close said cap means, and cam means associated with said handle portion and said actuator means and operative in response to operation of said actuator means to close said cap means to exert pressure inwardly on said rod, whereby to prevent further axial movement of said rod.

5. The invention according to claim 4 in which said actuator comprises an internally threaded nut and said rod includes a threaded portion threadedly engaged with said nut.

6. The invention according to claim 4 in which said rod includes a portion having a rough outer surface and said cam means is engageable with said portion to inhibit axial movement of said rod.

7. A razor comprising a plastic handle portion connected to said handle portion, said handle and guard portion having a bore extending axially therethrough, a rod disposed in said bore, first end of said rod being connected to razor cap means, a second end of said rod being connected to actuator means disposed on said handle portion, said rod being movably axially in said bore responsive to movement of said actuator means to open and close said cap means, and cam means associated with said handle portion and said actuator means, said cam means being operative in response to closing operation of said actuator means increasingly to exert pressure inwardly on said rod, whereby after initial seating of said cap means, said cam means operates to increasingly resist application of further closing pressure in said closing operation, and after completion of the closing operation operates to prohibit further closing of said cap means, whereby to prevent deformation of said guard portion.