

[54] **ADJUSTABLE SINGLE EDGE RAZOR WITH GUARD AND WASH POSITIONS**

2,061,721 11/1936 Testi 30/60 X
3,128,551 4/1964 Crown 30/63

[75] Inventor: **Leopold K. Kuhnl**, Stratford, Conn.

Primary Examiner—Othell M. Simpson

[73] Assignee: **Warner-Lambert Company**, Morris Plains, N.J.

Assistant Examiner—Gary L. Smith

Attorney—James F. Powers, Jr. et al.

[22] Filed: **Sept. 14, 1972**

[21] Appl. No.: **289,038**

[57] **ABSTRACT**

The specific embodiment provides an adjustable single edge razor having a helical cam for moving a guard bar relative to the cutting edge of the blade. The cam has a recess formed therein which permits significant movement of the guard bar away from the cutting edge to provide a blade wash position. The cam also has a position for moving the guard bar in front of the cutting edge to protect the blade when not in use.

[52] U.S. Cl. 30/41, 30/63

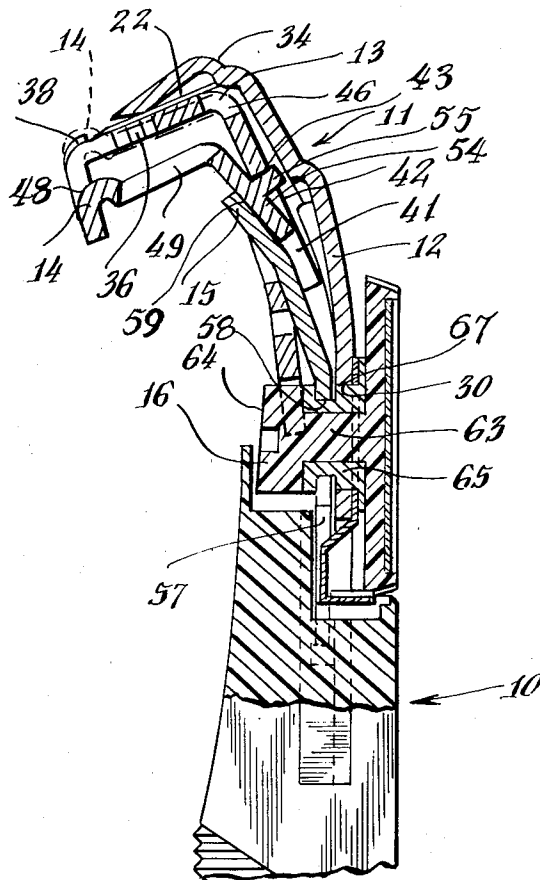
[51] Int. Cl. B26b 21/24, B26b 21/40

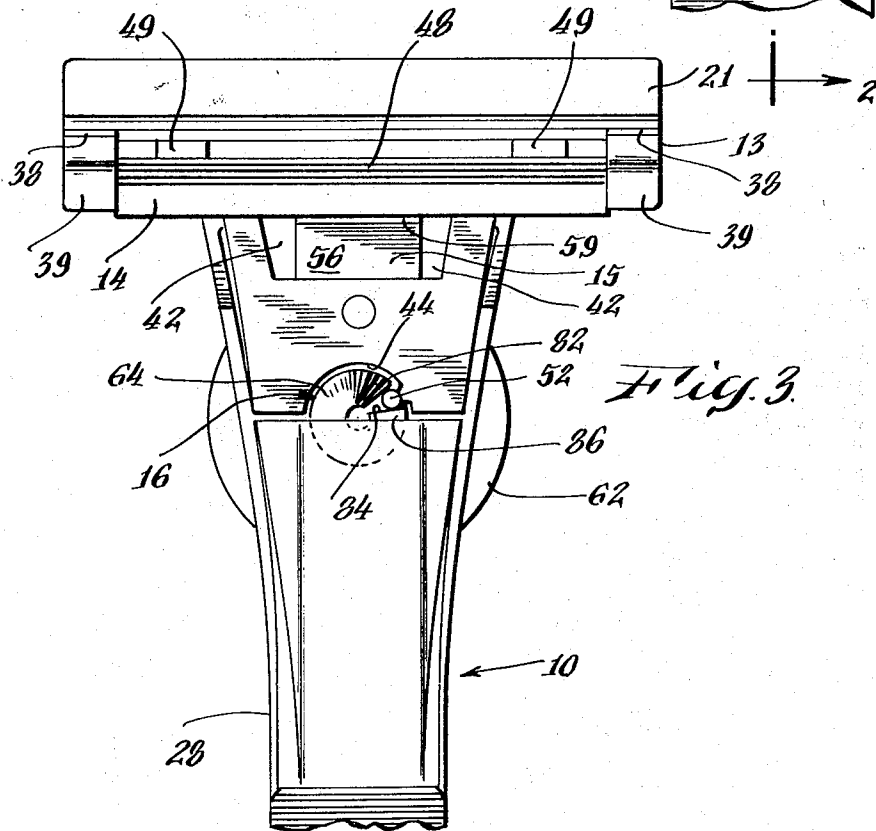
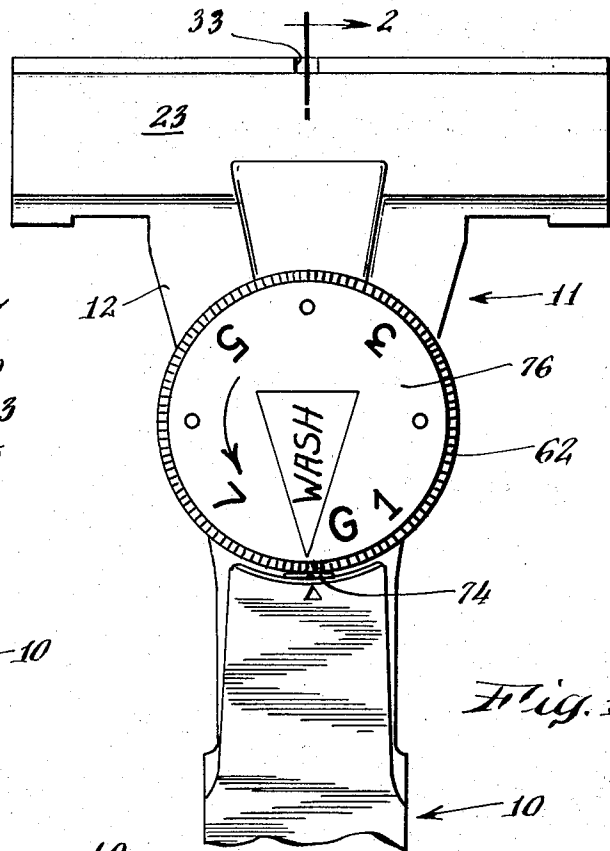
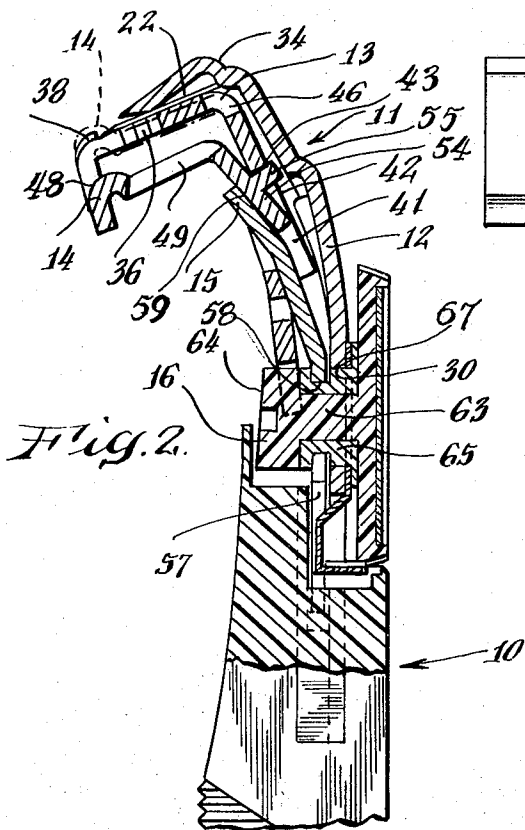
[58] Field of Search 30/35, 41, 58, 60, 30/61, 63, 68, 69, 71, 77

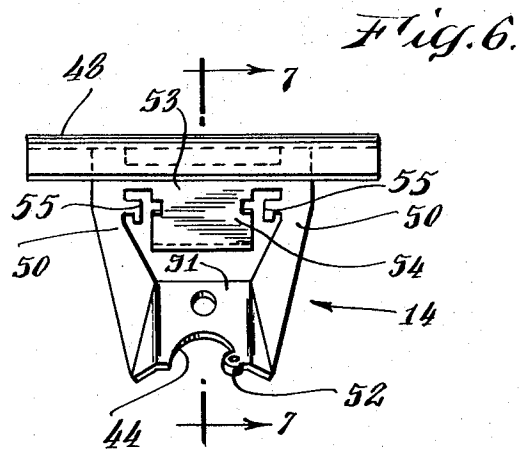
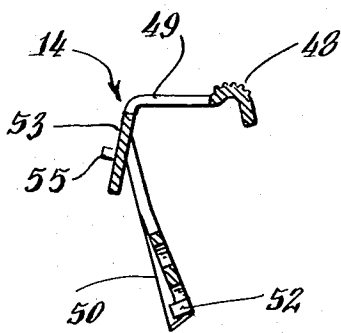
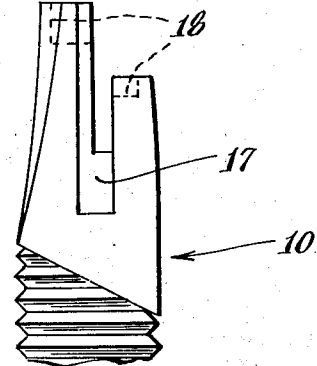
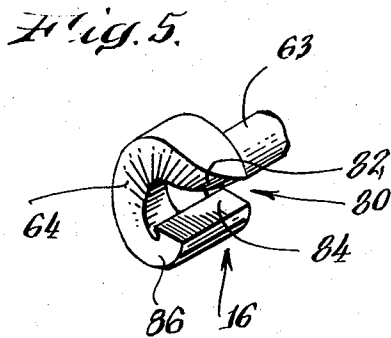
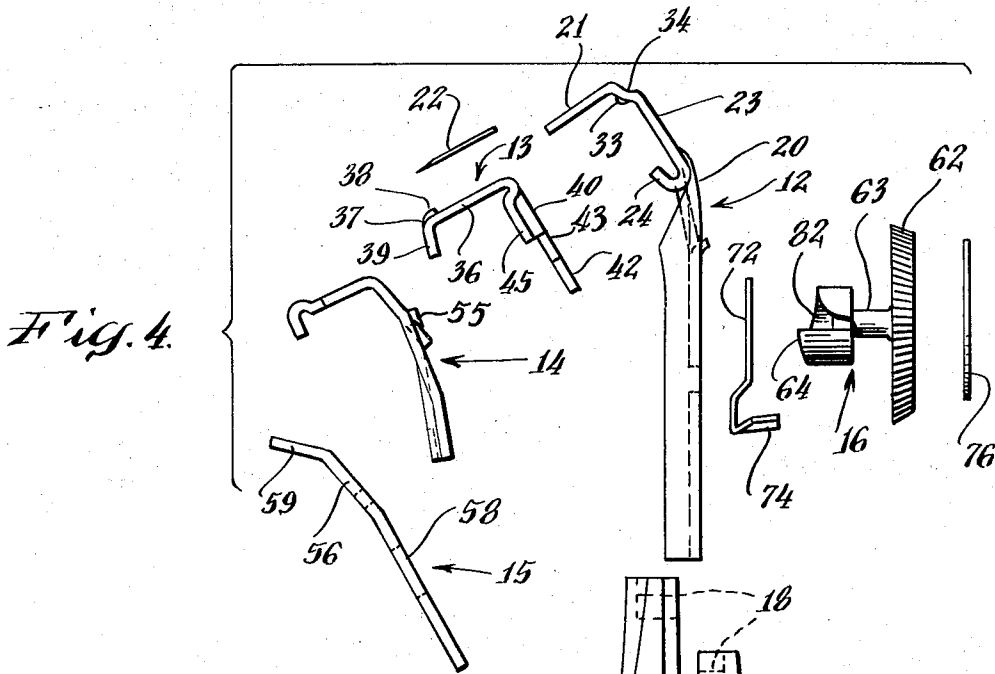
[56] **References Cited**
UNITED STATES PATENTS

1,989,011 1/1935 Jensen 30/60

8 Claims, 7 Drawing Figures







ADJUSTABLE SINGLE EDGE RAZOR WITH GUARD AND WASH POSITIONS

BACKGROUND OF THE INVENTION

The present invention is directed to safety razors of the type in which a guard bar is movable with respect to the cutting edge of a single edge blade. More particularly, the present invention is directed to modifications of the adjustable single edge razor disclosed in U.S. Pat. No. 3,203,093.

U.S. Pat. No. 3,203,093 provides a safety razor comprising a main frame having a forwardly projecting cap adapted to overlie a single cutting edge blade, and a movable blade seat member for supporting the blade against the underside of the cap. A guard member having a transverse guard surface at a forward upper end thereof is in pivotal contact with the blade seat member. The patent also provides a finger piece journaled on the main frame, and a cam connected to the finger piece for rotation therewith. A cam follower is provided on a lower end of the guard member for engagement with the cam. Further, the patent provides a spring member for biasing the guard member into the pivotal contact with the blade seat member, and for biasing the cam follower into engagement with the cam, whereby rotation of the cam moves the guard surface in an arcuate direction with respect to the cutting edge of the blade. The patent thus provides for adjusting the shave angle of the razor.

SUMMARY OF THE INVENTION

The present invention provides modifications of the adjustable safety razor disclosed in U.S. Pat. No. 3,203,093 wherein a recess is formed in the cam such that the cam follower is biased into the recess when the recess is in juxtaposition with the cam follower to thereby move the guard surface away from the cutting edge of the blade. When the cam follower is thus positioned in the recess, the guard surface is significantly spaced from the cutting edge to provide a blade wash position.

In accordance with another aspect of the invention, the cam has a position for pivoting the guard member such that the guard member is positioned in front of the cutting edge of the blade to thereby protect the blade when the razor is not in use.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a rear elevation view of a head of a safety razor constructed in accordance with the present invention;

FIG. 2 is a cross-sectional view of the head taken along Line 2 — 2 of FIG. 1;

FIG. 3 is a front elevation view of the head;

FIG. 4 is an exploded view showing in side elevation the component parts of the head;

FIG. 5 is a perspective view of a helical cam which is a component part of the head;

FIG. 6 is a front elevation view of a guard bar component of the head; and

FIG. 7 is a cross-sectional view of the guard bar component taken along Line 7 — 7 of FIG. 6.

DESCRIPTION OF SPECIFIC EMBODIMENTS

The specific embodiments shown in the drawings are modifications of the specific embodiment of U.S. Pat. No. 3,203,093. U.S. Pat. No. 3,203,093 is incorporated herein by reference.

With reference to the figures, the razor includes a handle 10 and a head 11 secured to the upper end of the handle 10. The head 11 is composed primarily of a main frame 12, a blade seat member 13, a guard bar member 14, a main spring 15, and an adjusting cam member 16. These component parts are shown in FIG. 4 in an exploded relationship before being assembled, and are shown in FIGS. 1 — 3 after being assembled.

The handle 10 is preferably molded from a suitable plastic material, but may be made of metal or of any other material. The handle is provided with vertically extending grooves 17 (FIG. 4) on each side thereof for receiving complementary side portions of the lower end of the main frame 12 to rigidly secure the main frame 12 to the handle 10. The upper end of the handle 10 is also irregularly recessed at 18 to accommodate portions of the main spring 15 and portions of the adjusting cam 16.

The main frame 12 is preferably a rigid sheet metal member of generally T-shaped form as viewed from the front or rear. The upper portion of the frame 12 is curved forwardly at 20 and terminates at its upper end in a narrow forwardly and downwardly inclined flange 21. A flat single edge blade 22 of conventional shape is adapted to be clamped in shaving position against the underside of the flange 21. Immediately beneath the flange 21, the frame is provided with a flat downwardly extending section 23. The section 23 forms the rear wall of an expansible channel in which a positioning and spreading key of a usual blade dispensing magazine (not shown) is adapted to be inserted. The bottom of the expansible channel is formed by two spaced forwardly and upwardly turned ears 24 at the bottom of the section 23.

The frame 12 is provided with a centrally arranged circular aperture 30 (FIG. 2) for the reception of a journaling portion of the adjusting cam 16. As is customary in safety razors of this type, a minute centrally arranged forwardly projecting boss 33 is provided just below the rear edge of the forwardly projecting flange 21 in a small forwardly offset ledge 34 at the upper edge of the section 23. The boss 33 provides single point engagement with the unsharpened rear edge of the blade 22.

The blade seat 13 is preferably constructed of sheet metal, and is of general angular cross section. The blade seat member is movably positioned in the head 11 below the forwardly projecting flange 21 of the frame 12, and in front of the flat rear section 23 of the frame 12. The blade seat 13 is provided with a narrow forwardly projecting top flange 36 on which the blade 22 is adapted to be seated. The ends 37 of the flange 36 are each provided adjacent their forward extremities with slightly raised positioning stops 38. The stops 38 are provided for abutting engagement with the extremities of the sharp front edge of the blade 22. The ends 37 are provided with downwardly turned ears 39 below the stops 38. The blade seat 13 is also provided with a downwardly extending flange 40. The flange 40 has a wide centrally arranged downwardly opening slot 41 which divides the lower portion of the flange 40 into

two laterally spaced downwardly extending fingers 42. When the blade seat 13 is assembled with the main frame 12, the lower ends of the fingers 42 are positioned against the main frame 12 below the section 23 and between curved side flanges 28 of the main frame 12. When thus positioned, the flange 40 of the blade seat 13 constitutes a front forwardly movable wall of the expansible channel. The flange 40 is also provided with a short forwardly offset downwardly projecting ear 45 which is arranged with its lower end in opposing vertically abutable relation to the upper edge of the upwardly projecting ear 24 of the main frame 12. The flange 40 is also provided with a small centrally arranged recess 46 to afford clearance for the forwardly projecting boss 33.

With reference to FIGS. 6 and 7, the guard bar 14 is preferably constructed of a rigid sheet metal, and is provided at its upper front edge with a narrow transversely elongated bar 48. The elongated bar 48 is preferably curved downwardly and forwardly, and is serrated longitudinally. The bar 48 is dimensioned to fit closely but movably between the inner confronting faces of the downwardly turned ears 39 of the blade seat 13, and is supported adjacent its outer ends by two laterally spaced rearwardly extending arms 49. The guard bar also includes two laterally spaced downwardly extending arms 50 which are connected together at their lower ends by a narrow cross web 51. The cross web 51 is forwardly offset intermediate its ends. The cross web 51 is provided with a generally arcuate cutout portion 44 which is dimensioned to permit passage of the cam 16 therethrough as shown in FIG. 3. A cam follower 52 extends into the arcuate cutout portion for coaction with the cam 16.

The downwardly extending arms 50 are also connected together at their upper ends by a narrow cross web 53 which supports a short centrally arranged downwardly depending foot 54. The foot is provided for coaction with the main spring 15. The main spring includes an upwardly projecting centrally arranged leaf portion 56, and two laterally spaced downwardly projecting leaf portions 57. The space between the upper ends of the leaf portions 57 is circularly enlarged 58 to define a shoulder portion. The upper end 59 of the leaf portion 56 is bent forwardly at an angle for horizontal line contact at about the point 60 with the lower edge of a foot 54 of the guard bar 14.

The adjusting cam 16 has a circular dial plate 62, a trunnion 63 extending forwardly from the plate 62, and a forwardly facing helical cam 64 in front of the trunnion 63. When the components of the head 11 are assembled as shown in FIG. 2, the trunnion 63 is journaled in a split bushing 65, and the bushing 65 together with the trunnion 63 is positioned in the circular aperture 30 of the main frame 12.

The enlargement 58 of the main spring 15 is interlocked with an upper edge of an annular groove 67, which interlock acts to press the upper end 59 of the spring 15 under substantial rearward pressure against the depending foot 54 of the guard bar 14. The guard bar 14 has a pair of positioning studs 55 which project rearwardly into sockets 43 in the blade seat 13 to thus fulcrum or pivot the upper ends of the downwardly extending arms 50 against the lower portion of the downwardly extending flange 40 of the blade seat 13. The biasing action of the main spring 15 also acts through

the guard bar 14 to maintain the blade seat 13 nested beneath the main frame 12.

The dial plate 62 can be readily turned in either direction and has a thin disc 76 on the rear side thereof for providing indicia of the relative setting of the crossbar portion 48 with respect to the cutting edge of the blade 22. When the razor is assembled as shown in FIG. 2, the cam follower 52 is biased to the cam portion 64 which is in the form of a helical surface having a recess or cutout portion 80. The cutout portion 80 is defined by an outwardly curved surface 82 which is contiguous with the helical surface 64, and by a horizontal flat surface 84. When the dial 62 is set to a shaving position indicated generally by the numerals 1 - 7 on the disc 76, the cam follower 52 acts to position the crossbar 48 to a predetermined shave angle with respect to the cutting edge of the blade 22. So long as the dial portion 62 is maintained at a setting between numerals 1 - 7, the crossbar 48 is positioned with respect to the blade 22 in a position suitable for shaving dependent upon the shave angle desired by the user. However, when the dial portion 62 is moved to a position indicated by "Wash" on the disc 76, the recess 80 is in juxtaposition with the cam follower 52, and the cam follower 52 is thereby biased into the recess 80 by the action of the spring 15. Movement of the cam follower 52 into the recess 80 causes the guard 14 to pivot in a counterclockwise direction as viewed in FIG. 2 to position the crossbar 48 in the position shown in FIG. 2. In the position shown in FIG. 2, the crossbar 48 is spaced a substantial distance from the cutting edge of the blade 22 to provide a wash mode in which the blade and internal mechanism of the razor can be readily cleaned of shaving debris by rinsing.

After rinsing, rotation of the dial portion 62 in the direction indicated by the arrow in FIG. 1 causes the cam follower 52 to ride up the curved surface 82 to the helical surface 64. The dial can then be set to a desired shave angle position as indicated by the disc 76.

In accordance with an embodiment of the present invention, the helical cam surface 64 has a high point 86 which acts through the cam follower 52 to pivot the guard bar in a clockwise direction such that the crossbar 48 is positioned in front of the cutting edge of the blade 22 as indicated by dashed lines in FIG. 2. When thus positioned, the crossbar 48 acts as a shield for the cutting edge of the blade 22 to thus preclude accidental injury from the cutting edge, and also damage to the cutting edge during storage. A suitable indication of this position can be provided on the disc 76 such as the "G" shown in FIG. 1.

I claim:

1. In a safety razor comprising means including a main frame for releasably engaging a single cutting edge blade in a rigid position, a guard member pivotally mounted with said engaging means, said guard member including a transverse guard surface at a forward upper end thereof and a cam follower portion, a cam for engagement with said cam follower, and a spring member for biasing said cam follower into abutting engagement with said cam whereby adjustment of said cam with respect to said cam follower moves said guard surface in an arcuate direction with respect to the cutting edge of said blade to adjust the shave angle of the razor, the improvement comprising a recess formed in said cam, said cam follower being biased into said recess when said recess is in juxtaposition with said cam follower to

5

6

move said guard surface a substantial distance from the cutting edge of said blade.

2. The razor of claim 1 wherein said cam has a surface portion for pivoting the guard member to position the guard surface in front of the cutting edge of said blade.

3. In a safety razor comprising a main frame having a forwardly projecting cap adapted to overlie a single cutting edge blade, a relatively movable seat member for supporting the blade against the underside of said cap, a guard member having a transverse guard surface at a forward upper end thereof, said guard member being in pivotal contact with said seat member, a finger piece journaled on said main frame, a cam connected to said finger piece for rotation therewith, a cam follower on a lower end of said guard member for engagement with said cam, a spring member for biasing said guard member into said pivotal contact with said seat member and for biasing said cam follower into engagement with said cam whereby rotation of said cam moves said guard surface in an arcuate direction with respect to the cutting edge of said blade to adjust the

shave angle of the razor, the combination comprising a recess formed in said cam, said cam follower being biased into said recess when said recess is in juxtaposition with said cam follower to move said guard surface a substantial distance from the cutting edge of said blade.

4. the razor of claim 3 wherein said cam has a helical cam surface for engagement with said cam follower.

5. The razor of claim 4 wherein said recess is formed between a low point and a high point of said helical cam surface.

6. The razor of claim 5 wherein said helical cam surface has a plurality of shave angle positions between said low point and said high point.

7. The razor of claim 5 wherein said high point acts upon said cam follower to position the guard surface in front of the cutting edge of said blade.

8. The razor of claim 3 wherein said cam has a surface portion for pivoting the guard member to position the guard surface in front of the cutting edge of said blade.

* * * * *

25

30

35

40

45

50

55

60

65