

[54] **ADJUSTABLE SAFETY RAZOR**

[75] Inventors: **Jan Dawidowicz, Fairfield; Frank A. Ferraro, Trumbull, both of Conn.**

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

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

[21] Appl. No.: **289,031**

[52] U.S. Cl. **30/63, 30/77**

[51] Int. Cl. **B26b 21/24**

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

[56] **References Cited**

UNITED STATES PATENTS

3,177,581	4/1965	Stahl	30/63
3,128,551	4/1964	Crown	30/63

Primary Examiner—Al Lawrence Smith

Assistant Examiner—Gary L. Smith

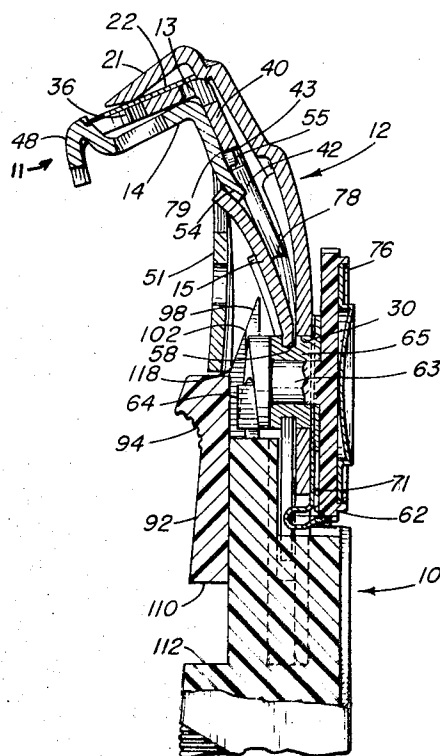
Attorney, Agent, or Firm—James F. Powers; Albert H. Graddis

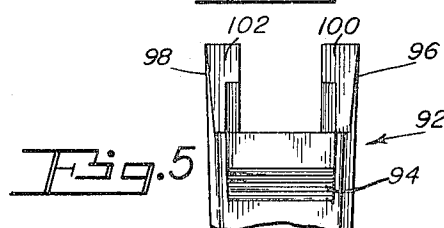
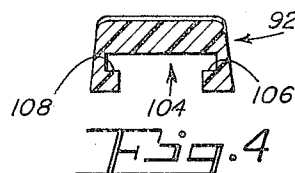
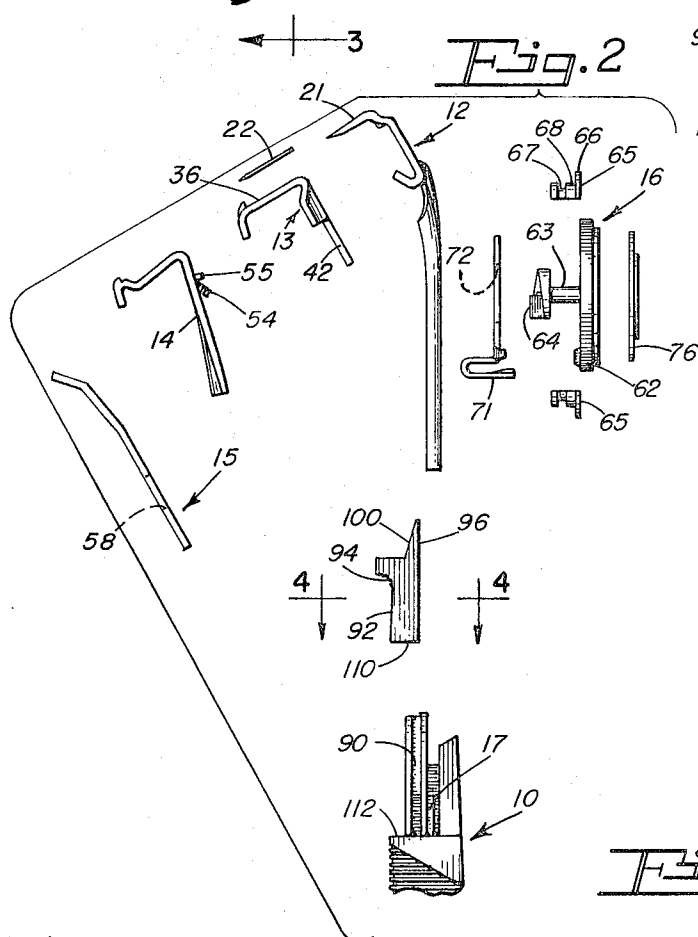
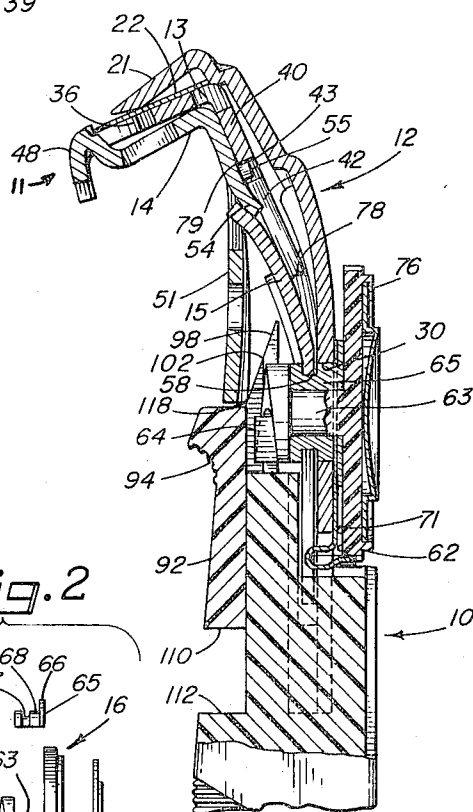
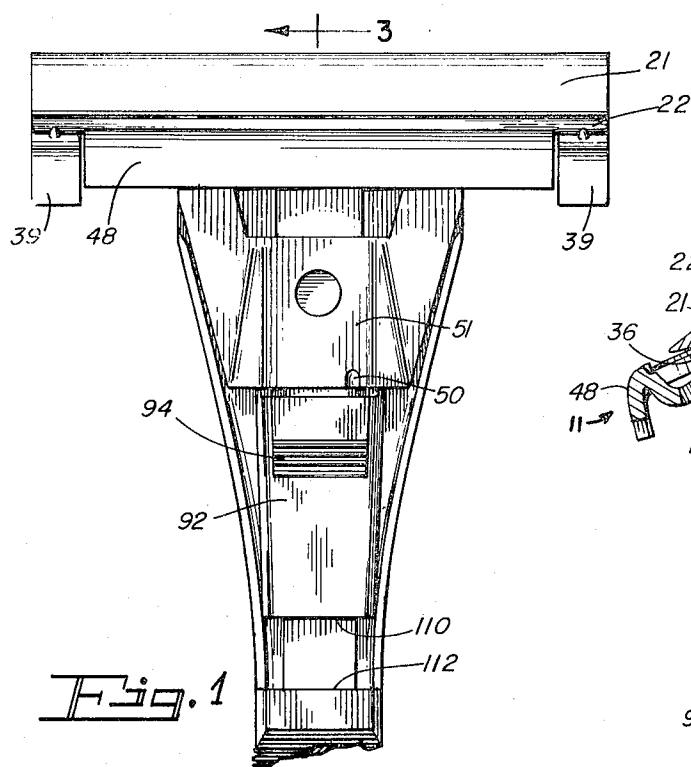
[57]

ABSTRACT

The specific embodiment provides a safety razor comprising a guard member pivotally mounted with respect to means for releasably engaging a single cutting edge blade. The guard member includes a transverse guard surface and a cam follower portion. A cam is provided for engagement with the cam follower, and a spring biases the cam follower into abutting engagement with the cam whereby movement of the cam pivots the guard surface with respect to the blade to adjust the shave angle. The embodiment also provides means movable with respect to the cam and cam follower for pivoting the cam follower out of engagement with the cam and for positioning the guard surface in front of the cutting edge of the blade.

6 Claims, 5 Drawing Figures





ADJUSTABLE SAFETY RAZOR

BACKGROUND OF THE INVENTION

The present invention relates to safety razors of the type shown in U.S. Pat. No. 3,203,093 in which single cutting edge blades are adapted to be inserted into the head of a razor from a blade-filled magazine. More particularly, the present invention relates to an adjustable single cutting edge blade razor having an adjustable blade guard surface for changing the shave angle of the razor.

Safety razors of the type described in U.S. Pat. No. 3,203,093 provide for adjusting the shave angle of the razor to give a user an option to obtain a relative degree of closeness. However, when such razors are placed in storage, the cutting edge of the blade typically remains exposed and thus presents an opportunity for personal injury or damage to the blade.

SUMMARY OF THE INVENTION

In accordance with the present invention, there is provided an improvement to a safety razor comprising means for releasably engaging a single cutting edge blade in a shaving position, and a guard member pivotally mounted with respect to the engaging means. The guard member includes a transverse guard surface at a forward upper end thereof and a cam follower portion. A cam is provided for engaging the cam follower portion, and biasing means bias the cam follower into abutting engagement with the cam, whereby adjustment of the cam moves the guard surface with respect to the cutting edge of the blade to adjust the shave angle of the razor. The improvement comprises means movable with respect to the cam and to the cam follower portion for pivoting the cam follower out of engagement with the cam and for positioning the guard surface in front of the cutting edge of the blade.

Thus, the present invention provides a razor having means for safeguarding the cutting edge of the blade during storage to thereby preclude personal injury or damage to the cutting edge.

BRIEF DESCRIPTION OF THE DRAWINGS

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

FIG. 2 is an exploded view in side elevation of the component parts of the head;

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

FIG. 4 is a cross-sectional view of a slide component of the head taken along line 4 — 4 of FIG. 2; and

FIG. 5 is a front elevation view of the slide.

DESCRIPTION OF A SPECIFIC EMBODIMENT

The specific embodiment shown in the drawings is a modification of a specific embodiment described in detail in U.S. Pat. No. 3,203,093. U.S. Pat. No. 3,203,093 is incorporated herein by reference.

The specific embodiment is assembled by fitting a split bushing 65 together about a trunnion portion 63 of an adjusting cam 16. An eyelet 72 of a ratchet spring 71 is then fitted over a shoulder 68 of the bushing 65 in position against a rim 66 of the bushing. The cam portion 64 of the adjusting cam 16 is then inserted forwardly through a circular aperture 30 in the back of a

main frame 12 to bring the eyelet portion 72 of the ratchet spring 71 snugly against the rear face of the main frame 12.

A blade seat 13 is then positioned beneath a cap 21 of the main frame 12 with a blade seating flange 36 against the underside of the cap 21. In this position, a downwardly extending flange portion 42 of the blade seat 13 has the lower ends thereof against the front face of the main frame 12 at points 78. A guard bar 14 is then nested within the blade seat 13, with a crossbar portion 48 positioned between downwardly extending ears 39 formed on the blade seat 13. In this position, positioning studs 55 project rearwardly from the guard bar 14 into sockets 43 formed in the blade seat 13. The guard bar 14 is thus fulcrumed at point 79 against a lower portion of a downwardly extending flange 40 of the blade seat 13. A cross web portion 51 of the guard bar 14 has a cam following detent 50 in abutting engagement with the cam portion 64 of the adjusting cam 16.

A main spring 15 is inserted upwardly between the cross web 51 of the guard bar 14 and the front face of the cam 64. The intermediate portion of the spring 15 is bowed rearwardly to pass the cam portion 64 through an aperture 56 in the spring 15 until the upper portion 64 through an aperture 58 in the spring 15 until the upper portion of the aperture 58 is moved into forwardly interlocked association with the upper edge of the front wall of the groove 67 in the bushing 65. The establishment of this interlocking association between the spring 15 and the bushing 65 serves to hold all of the parts of the head 11 securely in assembled and operative relation.

As thus assembled, the stress set up in the flexed main spring 15 acts directly on a depending foot 54 of the guard bar 14 to press the guard bar 14 upwardly and rearwardly, and at the same time to fulcrum it on the lower edge of the downwardly extending flange 40 of the blade seat at 79. The spring 15 also acts to cause the detent 50 on the cross web 51 of the guard bar 14 to press against and follow the front helically shaped face of the cam portion 64.

A slide 92 has inwardly directed members 106, 108 which form a T-shaped channel 104 (FIG. 4) in the underside thereof. The slide 92 is positioned on the handle 10 with the inwardly directed members 106, 108 positioned in vertical channels 90 formed on each side of the handle 10. Thereafter, the assembled head is positioned on the handle 10 with the lower end of the main frame 12 rigidly secured in irregular channels 17 formed on the handle 10.

When the slide 92 is in the position not shown in FIGS. 1 and 3 with a lower surface 110 in abutting engagement with a cutout surface 112 of the handle 10, the detent 50 abuts the helical surface of the cam portion 64. Rotation of a dial portion 62 having suitable setting indications 76 thereon in either direction causes the cross web 51 to move in either a forwardly or rearwardly direction while the detent follows the front helical face of the cam portion 64. Because of the fulcruming of the guard bar 14 against the blade seat 13 at 79, the crossbar portion 48 of the guard bar is caused at the same time to move in either an upwardly or downwardly direction from its guarding position just below and in front of a blade 22. Thus, the relative position of the crossbar 48 with respect to the cutting edge of

the blade 22 is readily adjustable by a user to obtain a desired closeness of a shave.

With reference to FIG. 5, the slide 92 has spaced upwardly projecting fingers 96, 98. The cam portion 64 is positioned in the spacing between the fingers 96, 98. The fingers 96, 98 have sloped forward surfaces 100, 102 which are out of engagement with the cross web 51 of the guard bar 14 when the slide 92 is in a down position with the slide and handle surfaces 110, 112 in abutting engagement. Application of pressure on a serrated finger portion 94 of the slide 92 acts to move the slide 92 upwardly by movement of the inwardly directed members 106, 108 in the handle channels 90. As the slide moves upwardly, the sloped upper surfaces 100, 102 of the fingers 96, 98 come into contact with the lower inner surfaces of the cross web 51 and act to pivot the guard bar 14 about the point 79 in a clockwise direction as viewed in FIG. 3. When the slide 92 is in the full up position as shown in FIGS. 1 and 3, the guard 14 is pivoted to an extent that the crossbar 48 is positioned in front of the cutting edge of the blade 22.

Thus, a user can readily adjust the relative position of the crossbar 48 with respect to the cutting edge of the blade 22 to a desired position by rotating the dial portion 62 to a particular setting. When the razor is ready for storage, upward movement of the slide 92 positions the crossbar 48 in front of the cutting edge of the blade to avoid accidental injury or damage from the cutting edge of the blade and also to protect the blade. Since the slide 92 does not contact the dial 62 or the cam portion 64, the relative position of the crossbar 48 with respect to the blade 22 will be set when the slide 92 is returned to its down position.

What is claimed is:

1. In a safety razor comprising means for releasably engaging a single cutting edge blade in a shaving position, a guard member pivotally mounted with respect to said engaging means, said guard member including a transverse guard surface at a forward upper end thereof and a cam follower, a cam for engagement with said cam follower, and means 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 manually operable slide having one position for abutting engagement with an underside of said guard member to pivot said cam follower out of engagement

with said cam and to position said guard surface in front of the cutting edge of said blade, and another position for disengagement with the underside of said guard member whereby said cam follower is biased into abutting engagement with said cam.

2. In a safety razor comprising a main frame having a forwardly projecting cap adapted to overlie a single cutting edge blade, a seat member for releasably supporting said 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 improvement comprising a manually operable slide having one position for abutting engagement with an underside of said guard member to pivot said cam follower out of engagement with said cam and to position said guard surface in front of the cutting edge of said blade, and another position for disengagement with the underside of said guard member whereby said cam follower is biased into abutting engagement with said cam.

3. The razor of claim 2 further comprising a handle, said slide being slidably mounted on said handle.

4. The razor of claim 3 wherein said slide includes means at an upper end thereof for wedging engagement with the underside of said guard member to pivot said cam follower out of engagement with said cam and position said guard surface in front of the cutting edge of said blade.

5. The razor of claim 4 wherein said wedging means comprises a pair of spaced upwardly extending fingers for wedging engagement with the underside of said guard member, said cam being in the space between said fingers.

6. The razor of claim 5 wherein said handle comprises vertically aligned recesses on opposite sides thereof, and wherein said slide comprises inwardly directed members for sliding engagement in said recesses.

* * * * *