

July 2, 1963

G. STAHL

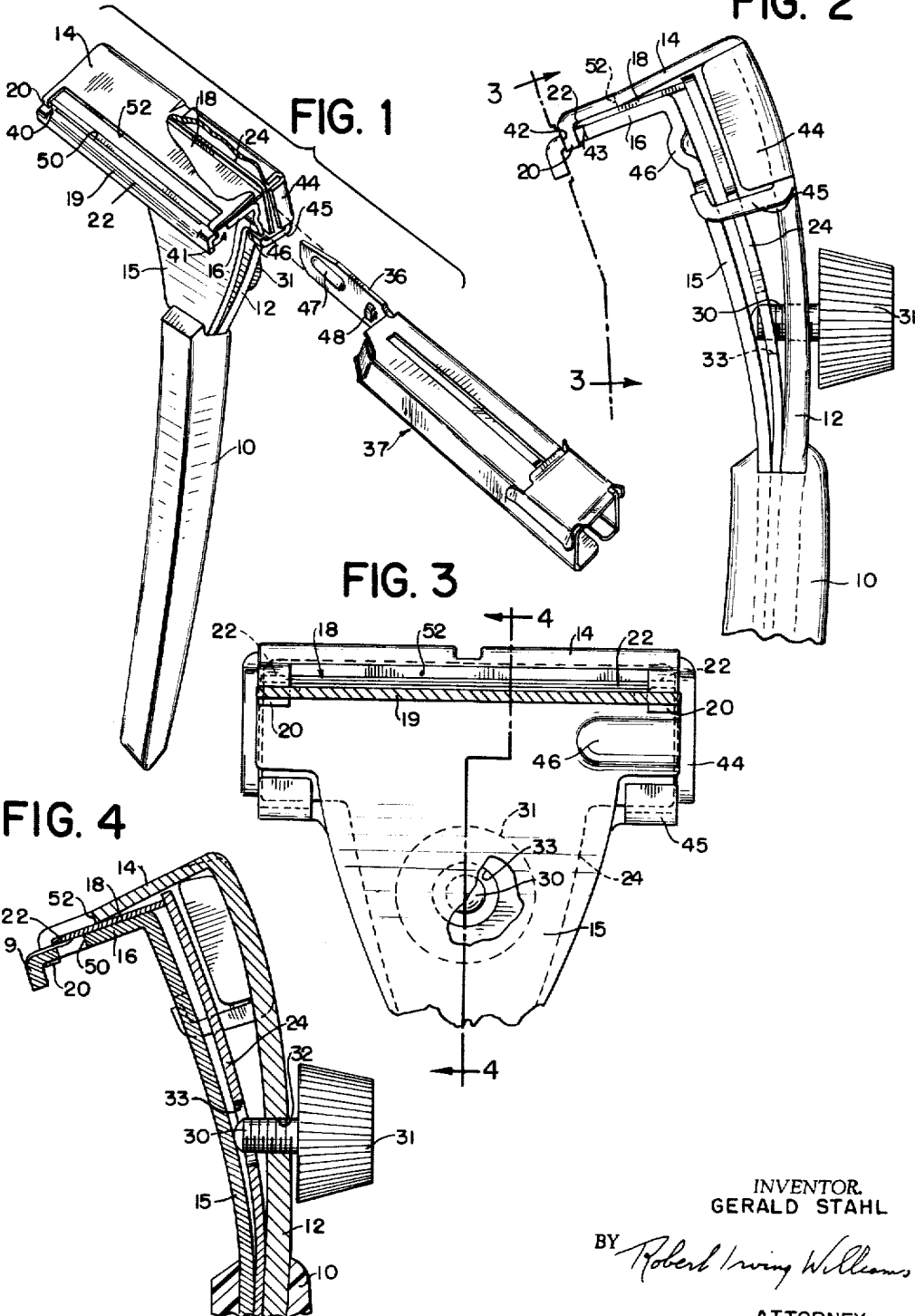
3,095,645

ADJUSTABLE INJECTOR RAZOR AND THE LIKE

Filed July 28, 1961

3 Sheets-Sheet 1

FIG. 2



INVENTOR.
GERALD STAHL

BY *Robert Irving Williams*

ATTORNEY

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FIG. 5

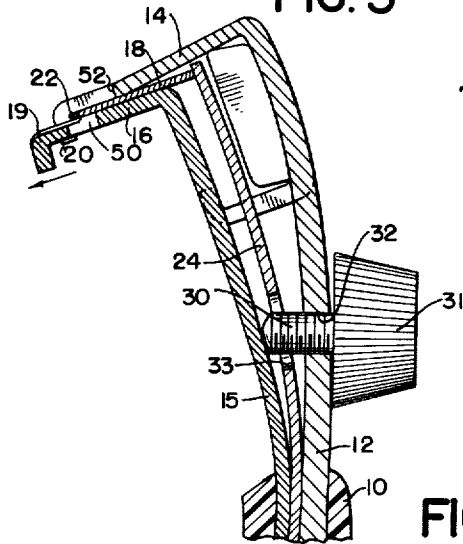


FIG. 6

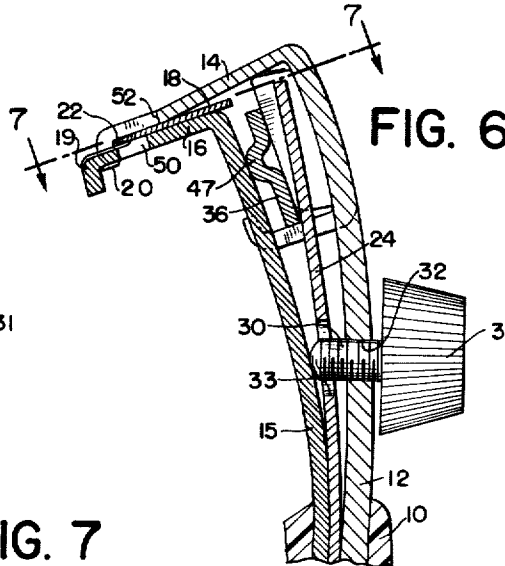


FIG. 7

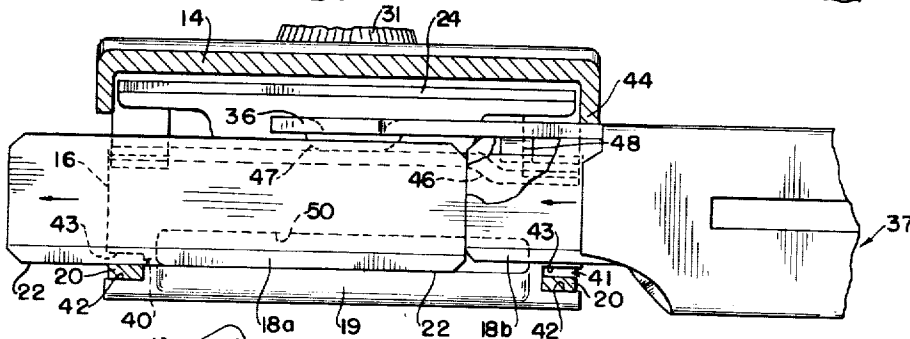


FIG. 8

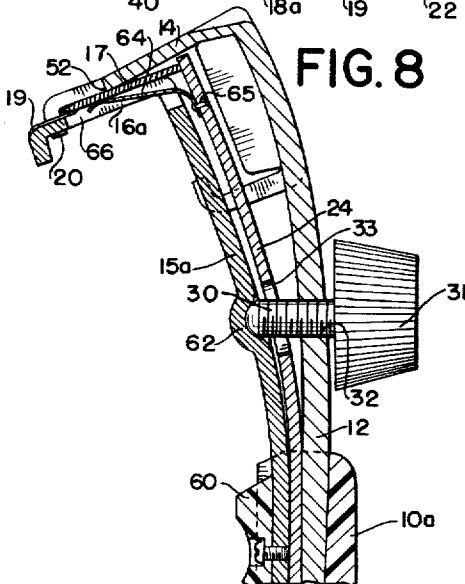
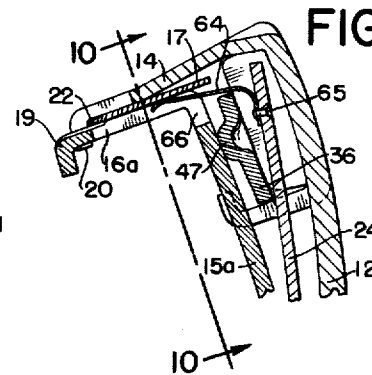


FIG. 9



INVENTOR.
GERALD STAHL

BY *Robert Irving Williams*
ATTORNEY

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G. STAHL

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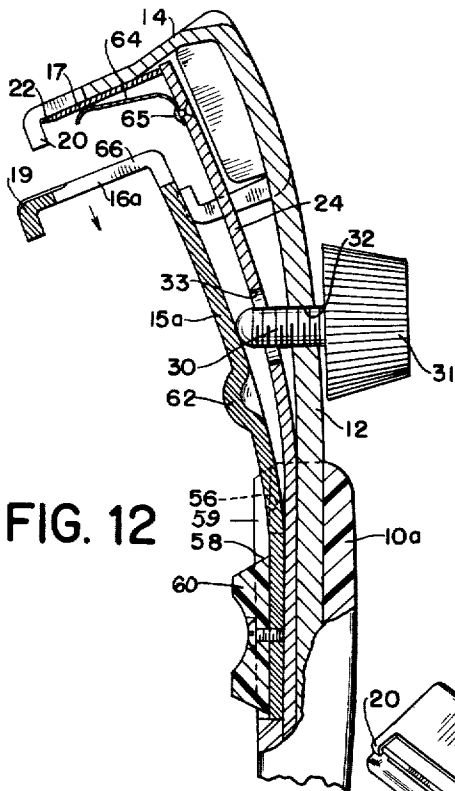


FIG. 12

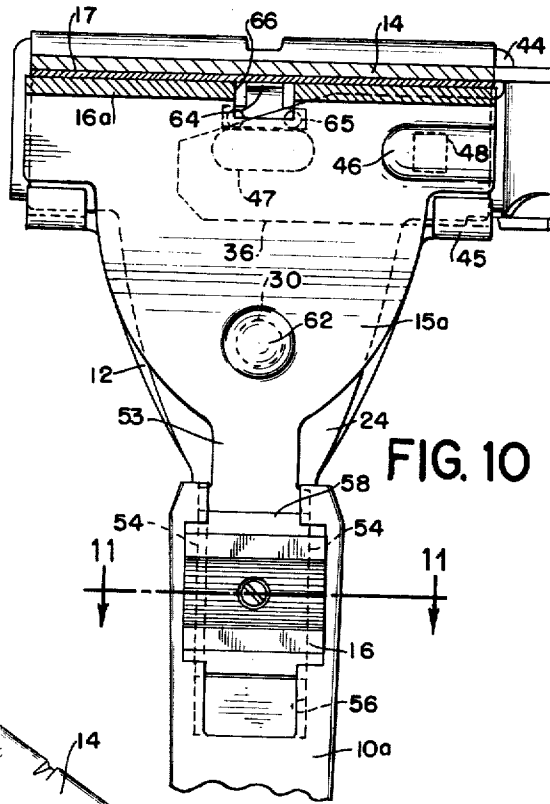


FIG. 10

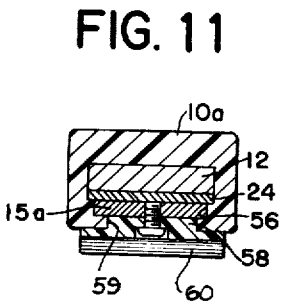


FIG. 11

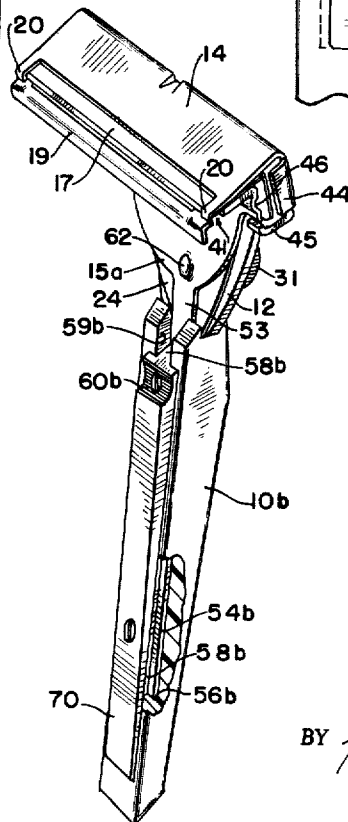


FIG. 13

INVENTOR.
GERALD STAHL
BY *Robert Irving Williams*
ATTORNEY

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ADJUSTABLE INJECTOR RAZOR AND THE LIKE
 Gerald Stahl, Rye, N.Y., assignor to Philip Morris Incorporated, New York, N.Y., a corporation of Virginia
 Filed July 28, 1961, Ser. No. 127,654
 5 Claims. (Cl. 30—63)

This invention relates to safety razors, and more especially to injector razors, and includes among its objects the provision of simple and convenient means for the adjustment of the cutting angle of the blade, and, in certain of its more specific aspects, the provision of simple and convenient means for facilitating the washing of a razor blade.

The invention accordingly comprises the features of construction, combinations of elements, and arrangement of parts, which will be exemplified in the constructions hereinafter set forth and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawings, in which:

FIGURE 1 is a perspective view showing one form of razor embodying the invention and an injector magazine usable therewith;

FIG. 2 is a side view of the razor;

FIG. 3 is a section on the line 3—3 of FIG. 2;

FIG. 4 is a section on the line 4—4 of FIG. 3;

FIG. 5 is a view similar to FIG. 2 showing the razor in a position of maximum adjustment;

FIG. 6 is a view similar to FIG. 2 showing the razor with an injector key inserted;

FIG. 7 is a section on the line 7—7 of FIG. 6 illustrating the blade-inserting operation;

FIG. 8 is a vertical sectional view of a modified form of construction;

FIG. 9 is a similar view showing the razor with an injector key inserted;

FIG. 10 is a section on the line 10—10 of FIG. 9;

FIG. 11 is a section on the line 11—11 of FIG. 10;

FIG. 12 is a view similar to FIG. 8 showing the razor in position for easy washing; and

FIG. 13 is a perspective view showing a further modification.

In the embodiment of the invention shown in FIGS. 1—7, there is provided an injector razor having a handle 10 which may be formed of suitable material as by being molded from plastic, and in which are set, in the present instance, the lower end of a relatively rigid cap-supporting arm 12 carrying a forwardly-extending cap 14, and the lower end of a seat-supporting arm 15 having a strong rearward urge and carrying a blade seat 16 between which and the cap a single-edge injector blade 18 is adapted to be mounted, and which, as exemplified, carries a "soap bar" or guard 19. Forward movement of the blade is limited by stops 20 extending from the ends of the cap and against which the end portions of the cutting edge 22 of the blade are normally pressed by a spring 24 having a forward resilient urge which is less than the rearward resilient urge of the arm 15, and which bears against the dull edge of the blade and the lower end of which, in the present instance, is set in the handle 10 between the members 12 and 15. By the provision of a spring which urges the blade against stops carried by the cap, the blade seat is left free for easy and simple adjusting action laterally of a blade which is nevertheless firmly held in place during the adjusting action. The shaving angle between the guard and the cutting edge of a blade held against the stops 20 can thus be readily and effectively adjusted by the movement of the blade seat laterally of the blade.

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While a wide variety of forms of adjusting means may be employed without departing from the invention in its broader aspects, there is particularly exemplified an adjusting means in the form of a screw 30 carrying a knob 31 and rotatably mounted in a threaded opening 32 in the arm 12, extending freely thru an opening 33 in the spring 24, and bearing against the rear surface of the arm 15 to urge it forwardly against its resilient urge.

In order to limit the rearward movement of the seat 16 to a position in which the arm 15 will, when a standard injector blade as exemplified at 18 is employed, be sufficiently forward of the spring 24 to permit the insertion between the spring 24 and the arm 15 of the key 36 of an injector magazine 37, and to provide limits for the adjusting action of the screw 30, the seat 16 is provided at its ends with recesses 40 and 41 adapted to receive the lower ends of the blade stops 20 and each provided with a forward shoulder 42 to limit the rearward movement of the seat and with a rearward shoulder 43 to limit the forward movement of the seat. The arm 12 carries a flap 44 to assure against the insertion of the key rearwardly of the spring 24, and a lug 45 serving as a guide for the bottom edge of the key.

The arm 15 is formed with the usual groove 46 for guiding the hump 47 of the key 36 as it moves into place, and the key is formed with the usual protuberance 48. As will be seen from FIGS. 6 and 7, respectively, the key moves the spring 24 rearwardly enough to free a used blade 18a for injection ahead of a new blade 18b which latter will be injected enough to the rear of its eventual position so that its cutting edge will not be marred by contact with the rear one of the stops 20.

The blade seat is provided with the usual opening 50 rearwardly of the guard 19, and the cap is cut back at 52 rearwardly of the cutting edge 22 of the blade.

In the form of construction shown in FIGS. 8—12, the parts are generally similar to those shown in FIGS. 1—7, and, where unchanged, are designated by similar reference numerals, and, where changed, by such numerals with the addition of the letter *a*. The seat 16a is carried on an arm 15a which, in the present instance, has a generally vertical sliding movement to permit the seat to be lowered away from the cap and from the blade to facilitate the washing of the razor. The lower portion of the arm 15a extends slidably part way downwardly into the handle 10a of the razor. The arm 15a comprises a narrowed portion 53 carrying a somewhat wider lower portion 54 which is slidable downwardly in a slot 56 in the handle 10a. The portion 54 carries a forwardly-extending member 58 riding in a slot 59 (which is wider than the portion 53) on which there is carried a widened thumb-piece 60, whereby the arm 15a and the seat 16a may be moved by the user's thumb between the positions shown in FIGS. 8 and 12, while the handle 10a is gripped by the user's fingers.

The arm 15a is formed with a depression 62 for receiving the forward end of the screw 30 when the seat is in its uppermost position to assure against the seat falling from that position.

While the action of a spring such as 24 might be relied on to hold the blade in position for washing, there is provided, in the present instance, a light spring 64 secured to the spring 24 at 65 and bearing against the lower surface of the blade 17 to assure that it remains in place during the washing operation, the seat being formed with a slot 66 to receive the spring 64 when the seat 16a is in place under the cap.

In the form of construction shown in FIG. 13, the parts are generally similar to those shown in FIGS. 8—12, and, where unchanged, are designated by similar reference numerals, and, where changed, by similar reference numerals with the addition or substitution of the

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letter *b*. In this instance, the parts 54*b*, 56*b*, 58*b*, and 59*b* extend further down the handle 10*b* than the corresponding parts in FIGS. 8-12, and the thumb piece 60*b* has a portion 70 extending downwardly substantially the full length of the handle, which not only has a pleasing appearance, but permits operation by means of the portion 70 when desired.

Since certain changes may be made in the above construction and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Certain subject matter disclosed but not claimed herein is claimed in my copending divisional application Serial No. 272,000, filed April 10, 1963.

The invention claimed is:

1. An injector razor comprising an upwardly-extending support arm, a cap extending forwardly from the top thereof, blade stops on a forward portion of said cap, a spring beneath said cap and forward of said arm for urging forwardly against the blade stops on the cap, a blade lying against the underside of said cap and arranged to be released by the key of an injector magazine, a forwardly-and-rearwardly movable blade seat beneath the cap and adapted to bear upwardly against said blade lying between it and said cap, guard means fixed to the forward end of said seat and adjustable with the seat, a rearwardly-urged forwardly-movable seat-supporting member extending downwardly from said seat, and adjustable means carried by said support arm and having a forward portion variably bearing against said supporting member to move said support member in opposition to said rearward urge to carry said seat and said guard means forwardly to adjust the shaving angle between said guard means and a blade held against said stops.

2. A razor as in claim 1 wherein said adjustable means is rotatably mounted on said support arm.

3. An injector razor comprising a support arm, a cap extending forwardly from the top thereof, a blade seat beneath said cap, an injector blade lying between said cap and said seat with its cutting edge directed forwardly, blade stops extending downwardly from said cap in front of the ends of said cutting edge, a rearwardly-

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urged forwardly-movable seat supporting member extending downwardly from a rear portion of said seat, a spring engaging the rear edge of said blade to urge it forwardly against said stops and arranged to be moved rearwardly by the key of an injector magazine to disengage it from the rear edge of said blade, guard means rigidly carried on a forward portion of said seat, and rotary adjusting means carried by said arm and bearing against said supporting member and rotatable to adjustably move it and said seat in opposition to said rearward urge and to provide an adjustable limit to the rearward movement of said supporting member and said seat to control the shaving angle between said guard means and said blade.

4. An injector razor comprising a handle, an arm fixed to and extending upwardly from the handle, a cap fixed on the upper end of the arm and extending forwardly therefrom, a blade seat beneath said cap, blade stops extending downwardly from a forward portion of said cap in front of the ends of the cutting edge of a blade lying against the underside of said cap, a rearwardly-urged forwardly-movable seat supporting member, a spring disposed generally rearwardly of said supporting member and having a forward urge less than said rearward urge and arranged to bear against the rear edge of a blade on said seat to press it forwardly against said stops and to be moved rearwardly by the key of an injector magazine, guard means rigidly carried by said seat, and rotary adjusting means carried by said arm and engaging said supporting member to provide an adjustable limit to the rearward movement of said seat and rotatably adjust said seat forwardly to control the shaving angle between said guard means and a blade urged against said stops by said spring.

5. A razor as in claim 4 wherein said supporting member is in the form of a rearwardly-resilient arm fixed to said seat and to said handle.

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