June 5, 1934. M. B. BEHRMAN 1,961,132

SAFETY RAZOR

Filed April 3, 1930

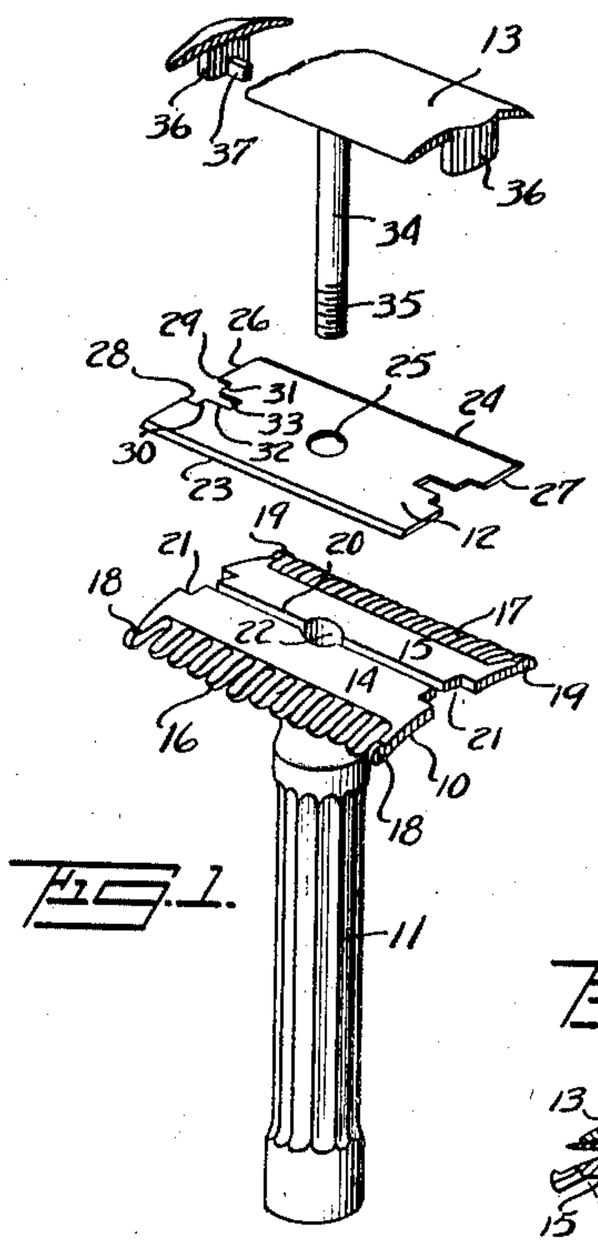


FIG. 1.

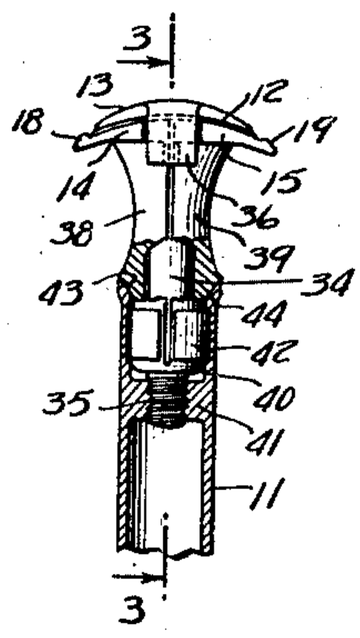


FIG. 2.

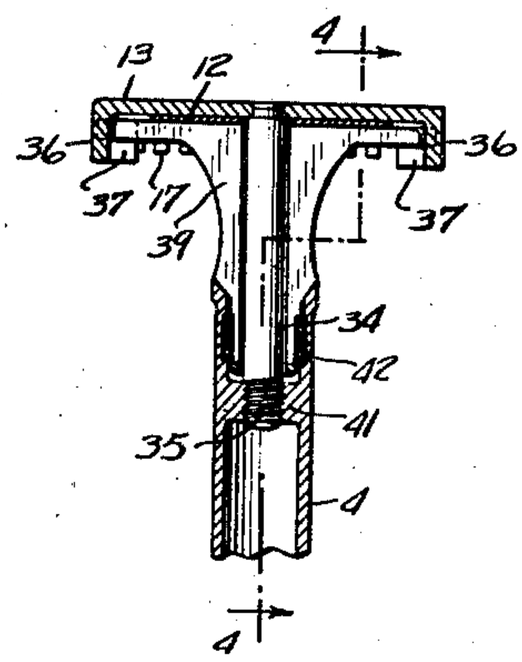


FIG. 3.

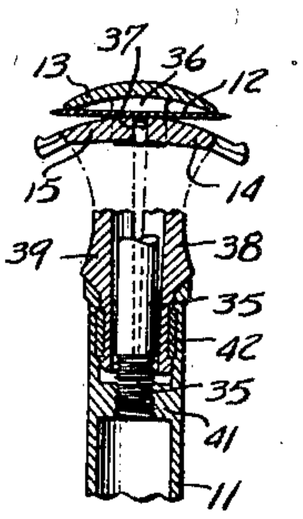


FIG. 4.

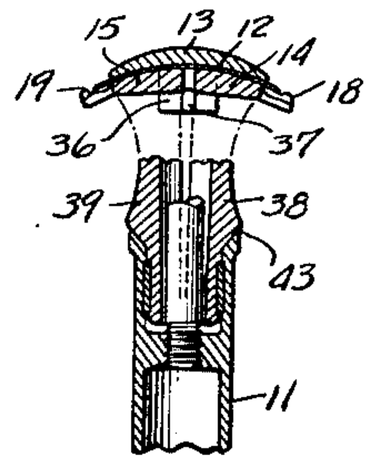


FIG. 5.

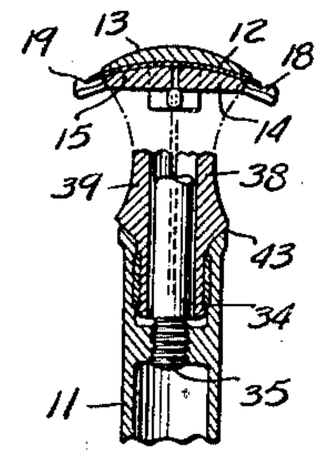
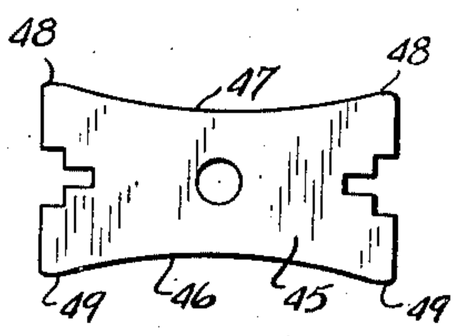
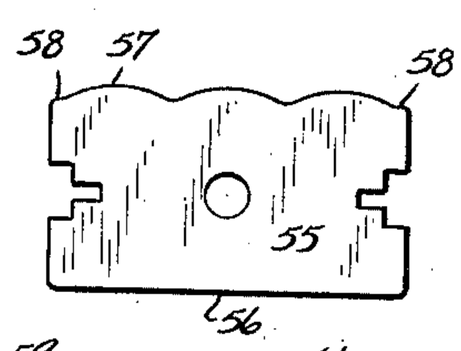


FIG. 6.





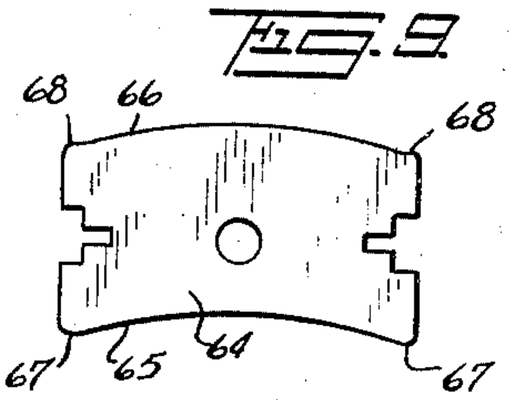


FIG. 9.

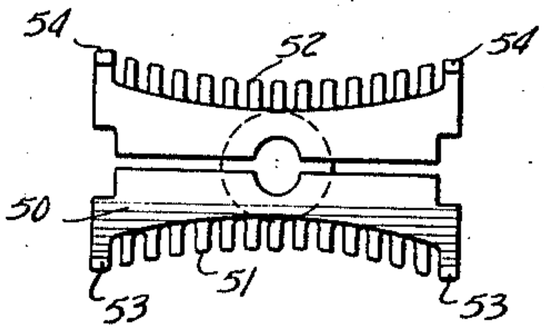


FIG. 7.

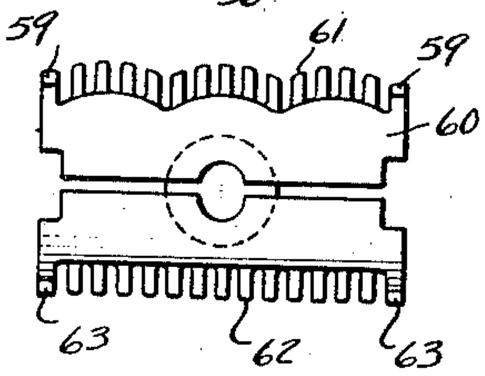
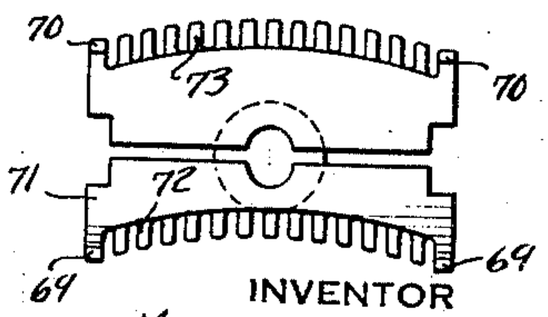


FIG. 8.



INVENTOR

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Patented June 5, 1934 1,961,132

UNITED STATES PATENT OFFICE

1,961,132

SAFETY RAZOR

Marcus B. Behrman, Brooklyn, N. Y., assignor to American Safety Razor Corporation, Brooklyn, N. Y., a corporation of Virginia

Application April 3, 1930, Serial No. 441,211

10 Claims. (Cl. 30—12)

My present invention relates generally to razors, and has particular reference to a safety razor, and, coordinately, to a safety razor blade.

A general object of my invention is to provide a safety razor device wherein the advantageous features of a blade-stop engagement with the cutting edge of a blade are achieved. In other words, it is well known that a razor will shave with maximum efficiency only when the cutting edge of the blade is properly positioned in a predetermined manner in association with a guard edge; and such positioning is efficiently effected by associating blade stops with the guard edge to permit the cutting edge of the blade to abut against them.

From one aspect, therefore, my present invention relates to a razor assembly in which the shaving or cutting edge of a blade is movable with relationship to a blade seat or saddle. One object of my invention is to provide for the employment of a blade having a plurality of shaving edges, and, more particularly, a so-called double-edged blade in which two oppositely arranged cutting edges may be selectively employed.

More particularly, my invention relates to a type of razor construction wherein a blade seat is cooperable with a cover member or clamp between which the blade may be positioned with its shaving edge or edges in proper operative association with guard edges. One of the features of my invention lies in providing for a coactive operation, whereby two cutting edges of a blade may be simultaneously moved relatively to a pair of guard edges.

From another aspect, my invention relates to a wafer-type blade provided with certain abutment walls or edges which permit the same to be engaged, centered, and adjusted in a contemplated manner, and provided further with apertures and openings which permit proper cooperation between the several portions of the razor.

More particularly, it is a feature of my invention to provide a blade having at least one cutting edge and one lateral or side edge, the blade being provided with a recess which defines a pair of abutment walls substantially parallel to, and a pair of abutment walls substantially perpendicular to, said cutting edge, said blade being also provided with an opening adjacent to said edge and communicating with the latter to permit cooperation, through said opening, of portions of the razor, and, more particularly, a locking plug.

In the embodiment herein illustrated by way of example, a double-edged blade is provided with a pair of recesses on its opposite side edges, each recess defining the abutment walls above mentioned, and communicating with an opening through which a locking plug is adapted to pass.

The razor which I have shown to exemplify my invention is provided with two opposed guard edges so constructed as to be movable toward one another, each guard edge having blade stops adapted to abut against a cutting edge of a blade. It is therefore a feature of my present invention to provide a blade seat with two separate and opposed sections relatively movable with respect to each other. In the form herein illustrated, these sections are normally spaced and are adapted to approach each other by proper manipulation of a handle or the like.

Another general object of my invention is to provide a razor construction of the foregoing character wherein means are provided for successively clamping a blade in position and thereupon moving blade stops into abutment with the cutting edges of the blade. Thus, where the blade seat has a generally upward-convex configuration, my present invention provides for assured flexure of the blade onto the seat and also for abutment of the cutting edges and blade stops.

A more particular feature of my invention lies in providing means, preferably in the form of a locking plug or the like, for positively preventing movement of the blade seat sections toward one another until after the blade has been clamped or flexed; said means serving also to lock the clamping means when the razor is ready for use.

Another general object of my invention is to provide a razor construction wherein the cutting edge is provided with an improved contour, and more particularly, with a curved contour, the razor with which such a blade is associated being provided with a guard edge embodying a similar and conformable contour.

The present application is in part a continuation of my co-pending application No. 309,923, filed October 3, 1928.

For the attainment of the foregoing objects and such other objects as may hereinafter appear or be pointed out, I have constructed a device embodying the features of my invention and illustrated in the accompanying drawing, wherein—

Figure 1 is an exploded view of one form of safety razor embodying the features of my present invention;

Figure 2 is an end view, a portion being shown in cross-section and a portion being broken away;

Figure 3 is a cross-sectional view taken substantially along the line 3—3 of Figure 2;

Figures 4, 5, and 6 are cross-sectional views taken substantially along the line 4—4 of Figure 3 and showing different relative positions of the parts;

Figure 7 is a plan view of a modified form of blade and the corresponding guard edge; and

Figures 8 and 9 are views similar to Figure 7, showing further modifications.

In the embodiment herein chosen for illustra-

tion, I have shown a generally upward-convex blade seat 10 mounted upon a handle 11, this seat being adapted to receive a double-edged blade 12 and a cover 13. The blade seat 10 is provided with the two opposed seat sections 14 and 15, a guard edge 16 being provided on the section 14, and a similar guard edge 17 being provided on the section 15. Blade stops 18 are provided on the guard edge 16, and blade stops 19 on the guard edge 17.

The sections 14 and 15 are normally in slightly spaced relationship, and, as a result, a passageway which may be termed a slot 20 extends substantially parallel to the two guard edges 16 and 17 and midway between them.

The blade seat is provided with the recesses 21 for a purpose presently to be described; and at the midportion of the seat the slot 20 merges with the medial opening 22 which is in alignment with the axis of the handle 11.

The blade 12 is provided with a cutting edge 23 adapted to overlie the guard edge 16, and with an opposite cutting edge 24 adapted to overlie the guard edge 17. I have also shown the blade provided with a medial aperture 25 adapted to overlie the opening 22.

The blade is also provided with opposite lateral edges 26 and 27, and in each of these edges I have provided recesses and openings which define abutment walls of a particular character and arrangement. For example, it will be observed that I have shown a recess in the edge 26 which defines a pair of abutment walls 28 and 29 substantially parallel to the cutting edges 23 and 24. The recess also defines a pair of substantially aligned abutment walls 30 and 31 which are spaced from each other and are substantially perpendicular to the cutting edges of the blade.

Between the aligned abutment walls 30 and 31 I provide an opening which is adapted to permit passage therethrough of a locking plug presently to be described. This last-mentioned opening has been shown in a form which is defined by a pair of spaced walls 32 and 33 which are substantially parallel to the cutting edges 23 and 24. It is to be noted that the opening defined by the walls 30 and 33 is in communication with the side edge 26 of the blade, and may be termed a recess which extends inwardly from the juxtaposed ends of the aligned abutment walls 30 and 31.

In the embodiment illustrated, I have shown a similar arrangement of abutment walls and openings in the midportion of the lateral edge 27. Each set of abutment walls is adapted to overlie the recesses 21 previously mentioned. When so positioned, the opening between the walls 32 and 33 lies substantially over one extreme end of the slot 20; and the same is true of the opening at the opposite side of the blade.

The cover 13 is provided with the medially depending shank 34 having a threaded portion 35 at its lower end. This shank is adapted to extend downwardly through the aperture 25 of the blade and through the opening 22 of the blade seat into the handle 11.

At the opposite ends of the cover 13 I provide dependencies 36 adapted to pass downwardly through the recesses in the opposite lateral edges of the blade and through the recesses 21 of the blade seat.

Each of the projections or dependencies 36 is provided with a stem or locking plug 37 which, it will be noted, is spaced from the body of the cover 13, and this gap is substantially equal to the thickness of the blade seat at its central portion. The locking plugs 37 are adapted to pass downwardly through the blade 12, and, more particularly, through the openings provided in the blade for this specific purpose.

Referring to Figures 2 and 3, I will point out that the seat sections 14 and 15 are respectively provided with depending portions 38 and 39, the latter merging at their lower ends in the portion 40. The portions 38 and 39 are constructed to constitute a sleeve through which the shank 34 may extend, and they are, furthermore, so constructed that the seat sections 14 and 15 will be resiliently movable toward each other although normally spaced from each other.

The handle 11 is formed hollow and is provided with the interiorly-threaded portion 41 adapted to engage the threaded lower end 35 of the shank 34.

The handle 11 is constructed to be inseparably associated with the portions 38 and 39 after the device has been initially assembled during manufacture; but at the same time, the handle 11 is freely rotatable with respect to the portions 38 and 39. This I may accomplish by the manner illustratively shown, a resilient split collar or the like 42 being mounted in a shallow, annular channel provided on the portions 38 and 39, the collar engaging within a similar shallow, annular channel provided on the interior wall of the handle 11 slightly above the portion 41.

The portions 38 and 39 are also provided with a downwardly-converging shoulder 43, this shoulder being adapted to coact with the upwardly divergent, beveled, upper edge 44 of the handle 11.

I will now describe how the employment of my present device permits the blade 12 to be sandwiched between the seat 10 and the cover 13 so that a manipulation of a unitary control means will thereafter operate to successively clamp the blade to the seat, flex it into conformity with the latter, and then move the seat sections 14 and 15 toward each other to bring the respective blade stops into abutment with respective cutting edges.

This is most clearly illustrated in Figure 4–6. In Figure 4, the blade 12 has been initially sandwiched between the cover 13 and the blade seat. It is to be noted that the projections 36 have passed through the recesses in the opposite lateral edges of the blade and also through the recesses 21 of the blade seat. In Figure 4, the locking plugs 37 are shown interposed within the slot 20 of the blade seat, these locking plugs having passed completely through the openings provided for this purpose in the blade 12.

The handle 11 is now manipulated by rotation thereof to engage the lower threaded end 35 of the shank 34, and this operates to draw the cover 13 downwardly onto the seat, thereby clamping the blade 12 between the cover and the seat. During this clamping operation, the seat sections 14 and 15 are prevented from moving toward each other by virtue of the interposition between them of the locking plugs 37. These locking plugs function in this manner until the clamping has been entirely completed, and the blade thoroughly flexed into conformity with the blade seat.

In Figure 5, I have shown the relative positions of the parts after the blade has been completely flexed into conformity with the seat, the plugs 37 having just moved out of interposition between the seat sections 14 and 15. Further rotation of the handle 11 now causes coaction between the shoulders 43 and 44, which coaction squeezes the seat sections together and brings the blade stops 18 and 19 into abutment respectively with the

cutting edges 23 and 24 of the blade. It is to be noted that there is no possibility of the blade stops failing to encounter the blade edges, since the movement of the blade stops cannot be initiated until after the blade has been properly clamped onto the seat.

It is also to be noted, particularly upon reference to Figure 6, that the seat sections 14 and 15 are drawn together above the locking plugs 37. These plugs are thus locked in positions beneath the seat and accidental withdrawal of the cover is thus prevented. As a matter of fact, the cover 13 is locked to the seat, clamping the blade beneath it, and will remain locked until the handle 11 is again manipulated. Such manipulation of the handle 11 will serve initially to spread the seat sections and ultimately to release the shank 34.

It is to be particularly noted that the abutment walls 28 and 29 cooperate with the opposite edges of the projections 36 to prevent movement of the blade in a direction perpendicular to its cutting edges. Similarly, the aligned abutment walls 30 and 31 cooperate with the inner faces of the projections 36 to prevent endwise shifting of the blade. Thus, the engagement of the projections 36 with the blade serve to center the blade and prevent rotation and shifting thereof during the clamping operation.

It is further to be noted that the openings which have been defined in the illustrated embodiment by the opposite abutment walls 32 and 33 serve the function of permitting passage therethrough of the locking plugs 37 during the clamping operation.

In each of the blades illustrated in Figures 7, 8, and 9, I have shown the abutment walls and openings hereinbefore referred to with respect to the blade 12 of Figure 1. Accordingly, it will be obvious that the features of my invention as hereinbefore set forth are of equal importance in blades of the improved character illustrated in Figures 7–9. However, it will be understood that certain of the features of the constructions illustrated in Figures 7–9 are independent of the features hereinbefore described in connection with Figure 1.

In Figure 7, I have shown a blade 45 having the opposite cutting edges 46 and 47, these cutting edges being curved toward each other and serving to render the opposite longitudinal edges of the blade slightly concave. At the opposite ends of each concave cutting edge are stop-engaging corners 48 and 49. This blade is adapted to be employed with a blade seat 50 of the character illustrated, this seat being provided with the oppositely curved guard edges 51 and 52 conforming substantially to the curvatures of the edges 46 and 47 respectively. The guard edge 51 is provided with the blade stops 53 adapted to engage with the corners 49 of the blade; and the guard edge 52 is provided with the blade stops 54 adapted to engage with the corners 48 of the blade.

In Figure 8, I have shown a blade 55 having a straight cutting edge 56 and a scolloped cutting edge 57 opposite thereto. The edge 57 is provided with the stop-engaging corners 58 adapted to abut with the blade stops 59 provided upon the blade seat 60. The latter has a guard edge 61 conforming substantially to the configuration of the cutting edge 57, and is also provided with the opposite straight guard edge 62 which cooperates with the cutting edge 56. The guard edge 62 is provided with the blade stops 63.

In Figure 9, I have shown a blade 64 which has a concaved cutting edge 65 and a convex cutting edge 66. The stop-engaging corners 67 and 68 cooperate respectively with the blade stops 69 and 70 provided on the blade seat 71. The blade seat 71 has a guard edge 72 which conforms to the concave cutting edge 65, and a guard edge 73 which conforms to the cutting edge 66.

The configurations illustrated in Figures 7-9 are illustrative of a wide variety of such configurations, and the curvatures may therefore be varied to suit differing requirements without departing from the spirit of my invention. I have found that a concave cutting edge is particularly efficient in shaving convex contours, while a convex cutting edge is similarly of improved efficiency when shaving concave portions of the body, as, for example, under the armpits.

I have illustratively shown each of the blade seats 50, 60, and 71 of the slit character described in greater detail in Figure 1, the blades being in each case constructed to embody the features hereinbefore described, and cooperating with the blade seats with the same efficiency as that described in connection with Figure 1. However, from certain aspects, these several features of my invention are independent of one another.

It will be obvious that changes in the details herein described and illustrated for the purpose of explaining the nature of my invention may be made by those skilled in the art without departing from the spirit and scope of my invention as expressed in the appended claims. It is therefore intended that these details be interpreted as illustrative, and not in a limiting sense.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent is—

1. In a safety razor, a blade seat comprising a pair of opposed and spaced relatively movable sections, a guard edge on each section, and blade stops on each guard edge; means for clamping a double-edged blade to said seat, means for moving said sections together to bring the blade stops into abutment with respective cutting edges, and means for preventing such movement until the blade is clamped, said last-named means comprising a plug interposed between said sections and movable out of such interposition as the blade is clamped.

2. In a safety razor, a blade seat comprising a pair of opposed and spaced relatively movable sections, a guard edge on each section, and blade stops on each guard edge; means for clamping a double-edged blade to said seat, means for moving said sections together to bring the blade stops into abutment with respective cutting edges, and means for preventing such movement until the blade is clamped, said last-named means comprising a plug carried by the clamping means and arranged to plug the space between said sections while the clamping means is functioning.

3. In a safety razor, a blade seat comprising a pair of opposed and spaced relatively movable sections, a guard edge on each section, and blade stops on each guard edge; means for clamping a double-edged blade to said seat, means for moving said sections together to bring the blade stops into abutment with respective cutting edges, and means for preventing such movement until the blade is clamped, said last-named means

comprising a plug carried by the clamping means and arranged to plug the space between said sections while the clamping means is functioning, and said plug including a portion which positions itself beneath the seat after the sections have been moved together, whereby the clamping means is locked in association with the seat.

4. In a safety razor, a blade seat comprising a pair of opposed and spaced relatively movable sections, a guard edge on each section, and blade stops on each guard edge; a seat cover for clamping a double-edged blade to said seat, means for moving said sections together to bring the blade stops into abutment with respective cutting edges, and means for preventing such movement until the blade is clamped, said last-named means comprising a plug carried by the cover and arranged to enter the space between said sections and to remain in such interposition until the blade is thoroughly clamped.

5. In a safety razor, a blade seat comprising a pair of opposed and spaced relatively movable sections, a guard edge on each section, and blade stops on each guard edge; a seat cover for clamping a double-edged blade to said seat, means for moving said sections together to bring the blade stops into abutment with respective cutting edges, and means for preventing such movement until the blade is clamped, said last-named means comprising a plug carried by the cover and arranged to enter the space between said sections and to remain in such interposition until the blade is thoroughly clamped, and said plug comprising a portion which positions itself beneath the seat after the sections have been moved together, whereby the cover is locked to the seat.

6. In a safety razor, a blade seat comprising a pair of opposed and spaced relatively movable sections, a guard edge on each section, and blade stops on each guard edge; a seat cover for clamping a double-edged blade to said seat, means for moving said sections together to bring the blade stops into abutment with respective cutting edges, and means for preventing such movement until the blade is clamped, said last-named means comprising a plug carried by the cover and arranged to enter the space between said sections and to remain in such interposition until the blade is thoroughly clamped; said seat having recesses and said plug having guiding portions which engage within said recesses.

7. In a safety razor, a blade seat comprising a pair of opposed and spaced relatively movable sections, a guard edge on each section, and blade stops on each guard edge; a unitary control means for successively clamping a double-edged blade to said seat and moving said sections together to bring the blade stops into abutment with respective cutting edges, and means for automatically locking said sections against such movement until the blade is clamped.

8. In a safety razor, a blade seat comprising a pair of opposed and spaced relatively movable sections, a guard edge on each section, and blade stops on each guard edge; a unitary control means for successively clamping a double-edged blade to said seat and moving said sections together to bring the blade stops into abutment with respective cutting edges, said means including a seat cover, a shank depending therefrom and extending through the seat, and a control member adapted to engage said shank to draw the cover onto the seat; and means for preventing said movement of said sections until the cover is drawn firmly onto the seat.

9. In a safety razor, a blade seat comprising a pair of opposed and spaced relatively movable sections, a guard edge on each section, and blade stops on each guard edge; a unitary control means for successively clamping a double-edged blade to said seat and moving said sections together to bring the blade stops into abutment with respective cutting edges, said means including a seat cover, a shank depending therefrom and extending through the seat, and a control member adapted to engage said shank to draw the cover onto the seat; and a plug carried by the cover and adapted to remain in a position between said sections until the cover is drawn firmly onto the seat to clamp the blade thereto.

10. In a safety razor, a blade seat comprising a pair of opposed and spaced relatively movable sections, a guard edge on each section, and blade stops on each guard edge; a unitary control means for successively clamping a double-edged blade to said seat and moving said sections together to bring the blade stops into abutment with respective cutting edges, said means including a seat cover, a shank depending therefrom and extending through the seat, and a control member adapted to engage said shank to draw the cover onto the seat; and a pair of plugs carried at spaced points by the underside of the cover and adapted to enter into and remain in positions between said sections until the cover has been drawn firmly onto the seat to clamp the blade thereto.

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