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2,561,610

RAZOR

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2 Sheets-Sheet 2

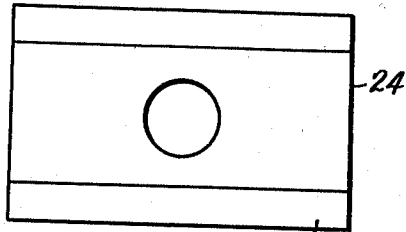


FIG. 4

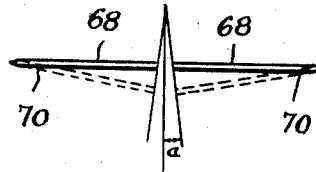


FIG. 8

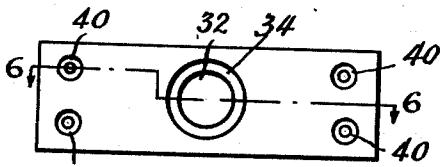


FIG. 5

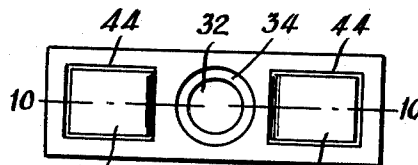


FIG. 9

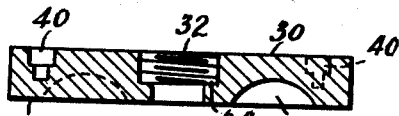


FIG. 6



FIG. 10

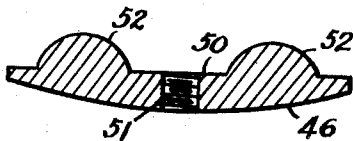


FIG. 7

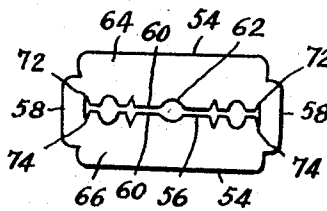


FIG. 11

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# UNITED STATES PATENT OFFICE

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RAZOR

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## Introduction

This invention relates to razors and more particularly to a razor of the "safety" type.

Safety razors of the variety in common use today, using double-edged razor blades, usually comprise a handle, a blade seat, and a blade cover. Either on the blade seat or on the blade cover, or sometimes on both, are guide strips or teeth which act as a guide, which the shaver places against the face in order to gauge the extent to which the open edge of the razor blade comes in contact with the skin and whiskers. This amount is gauged by the angle and the pressure applied by the user. At the present time, the majority of safety razors available on the market are manufactured with approximately the same clearance between the guide member and the cutting edge of the blade, and do not provide any means for adjusting this clearance to suit the individual needs of the shaver. Many people have resorted to leaving the blade loose between the blade cover and the blade seat in order to secure a closer shave, but as will be understood this is a dangerous means of securing a closer shave.

Further, it is quite often found that when shaving with a safety razor, one edge of the blade will give a much closer shave than the other edge. It has been found by experiment that this is caused by the blade not being properly centered on the blade seat or that the cutting edge of the blade is not parallel with the edge of the guide.

## Objects

It is, therefore, an object of this invention to provide an adjustable feature to a safety razor, that will allow adjustment of the guide, thus making it possible for the shaver to adjust the clearance between the cutting edge of the blade and the guide to suit his personal requirements.

It is a further object of this invention to provide a blade-positioning means by which the razor blade is properly centered on the blade seat with the cutting edges of the blade parallel with the guide edge of the razor.

It is a still further object of this invention to provide a razor of the safety type which is easy to clean, inexpensive to manufacture, combining the adjustable feature and the proper alignment of the blade.

## Preferred structure

A preferred structure embodying the objects of this invention comprises a handle having a shank, a body portion accommodating the adjustable feature, which provides for adjusting the clearance between the guide portion and the cutting edge of the blade to suit the shaver. Means are also provided so that the shaver may

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adjust his razor to a predetermined clearance, to suit the type of shave desired.

The cover or blade-seating member is provided with improved type of blade-holding means, which are engineered to accommodate the varying characteristics of a double-edged blade as it is curved when clinched against the blade seat. These improved blade-holding means ensure that the blade is properly centered on the blade-holding seat, and also that the cutting edges of the blade are parallel with the guiding edges.

Other features, such as ease of cleaning, have been taken into consideration in the design of this razor and the open structure of the razor provides easy cleaning, thus preventing clogging.

## Detailed description

Still other features will be apparent in the course of the following detailed description in which reference is made to the accompanying drawings, wherein:

Figure 1 is an assembled side elevation of a preferred form of razor embodying the invention.

Figure 2 is an end elevation of the razor illustrated in Figure 1.

Figure 3 is an exploded end view, showing the various pieces going to make up one preferred version of the razor.

Figure 4 is a plan view of the body member.

Figure 5 is a plan view of the adjustable member.

Figure 6 is a side sectional elevation of the adjustable portion taken on the line 6-6 of Figure 5.

Figure 7 is a side sectional elevation of the blade-seating member taken on the line 7-7, Figure 3.

Figure 8 is an enlarged end sectional elevation of a razor blade illustrating the deformity of the aligning means during bending.

Figure 9 is a plan view of an alternative structure for the blade-adjusting member.

Figure 10 is a side sectional elevation taken on the line 10-10 of the structure illustrated in Figure 9.

Figure 11 is a facsimile in plan view of a standard double-edged safety razor blade.

With reference to the drawings, which illustrate a preferred embodiment of the invention, the razor comprises a handle 10 having a shank 12 and a screw-threaded shank 14 of smaller diameter extending from said first-mentioned shank 12 forming a shoulder 16. Adapted for free rotation about the shank 12 is an adjustment member in the form of a flanged screw 18, having a beveled and knurled flange 20 and a screw-threaded shank 22 which is centrally bored to provide a clearance passage for the shanks 12 and 14 of the handle 10. A guard member 24, is adapted to be supported

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by the flanged portion 20 of the adjustment member 18, the guard member 24 including a centrally disposed opening constituting a clearance passage for the threaded shank 22. The guard member 24 in end-section also includes extended side portions or wings 26 extending outwardly and downwardly (with respect to the relative position of the embodiment illustrated in Figures 1 and 2 of the drawings) with the lower portions of the wings forming rounded bearing surfaces. The upper face of the guard member 24 is substantially flat and is adapted to rest on the end surface of the flange 20 of the adjustment member 18 so as to maintain the guard member 24 at right angles to the axis of the shank 12 of the handle. The guard member 24 also includes in its under surface a centrally disposed recess having parallel retaining walls 36-36.

A blade-engaging member 30, comprised of a block of substantially rectangular conformation, is adapted by means of a substantially centrally disposed counter-bored hole 32 having a shoulder 34, to fit over the threaded shank 14 of the handle 10, the meeting of the shoulders 16 and 34 limiting the extent of penetration of the shanks 12 and 14 through the block 30. The counter-bored portion of the hole 32 is tapped so as to be threadably engaged by the threaded shank 22 of the adjustment member 18. The block 30 is held parallel with the guide wings 26 by its entry into the squared-off retaining walls 36 of the guard member 24. Resilient means are employed between the block 30 and the underside of the guard member 24 urging said members apart. By way of example, two methods of accomplishing this are illustrated, the first being by inserting rubber-like resilient pieces 38 into counter-bored holes 40 which are bored into the upper face of the block member 30 substantially at each corner thereof. The resilient pieces 38 are adapted to extend above the face of the member 30 and contact the underside of the guard member 24, thus resiliently forcing the two members apart (illustrated in Figures 2, 3, 5, and 6).

A second method is illustrated in Figures 9 and 10 which comprises the use of a pair of bent spring members 42 which are imbedded in recesses 44 cut into the upper face of the block member 30. These bent spring members 42 may, for example, be fashioned from spring steel or plastic and may be in any form as long as they exert resilient force equally distributed against the underside of the guard member 24. The springs 42 must be matched in order to exert an equal force against the guard member 24 so that the guard member 24 and the cutting edge of the blade are not thrown off parallel planes by any slackness developing in the shank 12 or the seating surfaces 16 and 34.

Preferably, the adjustment member 18, the guard member 24, and the blade-engaging member 30 are first assembled as a sub-assembly with one or the other of the resilient means described placed between the guard member and the blade-engaging member so as to urge one from the other. This is accomplished by placing the resilient members 38 or 42 into position on the blade-engaging member 30, placing the guard member 34 over the resilient members, and inserting the adjustment member 18 through the guard member 24 so that the threaded shank 22 engages the tapped counter-boring of the hole 32 in the blade-engaging member 30. The adjustment member 18, guard 24, resilient members 38 or 42 and blade-engaging member 30 are then placed over

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the shanks 12 and 14 of the handle 10 where they are retained in position by engagement of a cover 46 with the threaded handle shank 14.

The blade-retaining and aligning member in the form of the cover 46 is adapted to seat a double-edged razor blade 48 on a curved seat 50. This cover 46 is adapted to be threadably engaged to the threaded shank 14 to clinch the razor blade between the seat 50 and the underface of the block 30 by the threaded hole 51.

A pair of wing members 52 extending upwardly from the curved face 50 of the cover member 46 are adapted to align the standard double-edged razor blade on the cover member 46. Each wing member 52 is semi-circular in side elevation and frustro-conical in end elevation, with the sides of the wings converging toward the center line of the wing as they extend upwardly, the apex of the wing being rounded. To understand the particular function of these wings, one must be familiar with the characteristics of a double-edged razor blade and its bending. The standard double-edged safety razor blade, a facsimile of which is illustrated in Figure 11 (Gillette Blue Blade), is manufactured from thin metal and is substantially rectangular in plan view, with a pair of parallel sharpened edges 54 extending the full length of the long sides.

Midway between the sharpened edges is a narrow slot 56 extending on the longitudinal axis almost the full length of the blade, leaving a small portion of metal 58 at each end.

Although many designs are used for this slot 56 to signify various makes of blades, the designs are worked so that parallel guiding portions 60 on each side of the slot are a standard distance apart and parallel with the cutting edges 54 of the blade. This has been standardized to permit interchangeability of various makes of razors and blades. An enlargement 62 of the slot 56 provides a centering portion, and the shank 14 is adapted to pass through this enlargement as the handle 10 is being attached to the cover member 46. The razor blade, in being clinched between the block 30 and the curved seat 50 of the cover member 46 is bent to substantially conform to the curve of the seat 50. Due to the small percentage of metal left on the axis of the blade, after the slot 56 has been taken out, the points of least resistance to bending are the thin strips 58 at each end of the blade connecting the two half portions 64 and 66. Therefore, when the handle 10 is screwed home into the cover member, force is applied through the two lower edges 68 on the block 30 and the two edges 70 of the cover piece 46 to the corresponding points on the blade as illustrated in Figure 8, causing the blade to bend. As the weakest points on the blade are the strips 58, there is a tendency for the two half portions 64 and 66 to remain straight with the bending taking place between the points 72 and 74 on the strip 58. Furthermore, the strip of metal bordered by a line between the two points 72, and likewise between the points 74 and the corresponding edges 60, having no support, will remain straight in cross section, as the portion 58 is bent.

It will be understood that with bending taking place in the portion 58, the distance between the edges 60 will increase proportionate to the bend, until the planes of the two half portions 64-66 are parallel.

In order that the cutting edges of the blade are positioned parallel and equidistant from the edges 68 or 70, compensation must be made to meet the widening taking place in the slot 56 as

the blade is bent by the clinching pressure. The inwardly converging walls of the applicator's wing members 52 are designed to compensate for this by having a slope corresponding to the angle  $\alpha$ , as diagrammatically illustrated in Figure 8.

Recesses 76 in the underside of the block 30 are adapted to snugly fit over the wings 52, as the cover and the block are drawn together, thus aligning the cover piece 46 and the cutting edges of the blade parallel with the edges 68 of the block 30.

#### Operation

When the razor is assembled and ready for use as illustrated in Figures 1 and 2, the handle 10, the block 30, and the cover plate 46 with the razor blade clinched between, are held in definitely static relative positions by the threaded connection 14 of the handle with the cover plate and the meeting of the two shoulders 16 and 34.

The guard member 24 is urged away from the block 30 by the resilient members 38 or 42, and is governed as to relative positions with the block 30 and the cutting edges of the razor blade by the screw-threaded adjustment bushing 18, which is threadably engaged with the block 30, the underside of the flange 20 being in contact with the upper face of the guard member 24. As the bushing 18 is screwed against the resilient means and closer to the block 30, the guiding wings 28 are brought closer to the cutting edges of the blade, and vice versa when the bushing is screwed in the opposite direction the guiding wings 28 are drawn away from the cutting edges, thus providing an adjustable exposure of the cutting edges of the razor blade.

A graduated marking may be made on the flanged face to enable the shaver to gauge the clearance desired.

#### Advantages

The advantages to be had by this invention are first, the ability to adjust the clearance between the cutting edges of the blade and the guides, the second advantage being that the cutting edges of the blade and the guide members are held parallel to each other. These first two advantages provide for the shaver a better shave as well as allowing the shaver to suit the shave to his whim. The third advantage is that the construction of the guide members, as illustrated, provides for easy cleaning, thus giving the shaver the added advantage of not having to take a long while to clean up.

It will be understood that without departing from the spirit of the invention, or the scope of the claims, various modifications may be made in the specific expedients described. The latter are illustrative only, and not offered in a restricting sense, it being desired that only such limitations shall be placed thereon as may be required by the state of the prior art.

The sub-titles used throughout the specification are merely to simplify reference thereto and should otherwise be disregarded.

#### I claim:

1. A safety razor comprising a handle having a shank, a cover plate mounted on said handle shank, an adjustable guard assembly mounted between said handle and cover plate, said adjustable guard assembly including an adjustment member having a flanged head and a threaded shank internally bored to provide a clearance passage for the shank of said handle, a guard member having a centrally disposed opening constituting a clearance passage for the threaded

shank of said adjustment member, a blade-engaging member including a centrally disposed opening constituting a clearance passage for the shank of said handle and co-axially with said opening a counter bored tapped opening adapted to receive the threaded shank of said adjustment member, and resilient means between said blade engaging member and guard member adapted to urge one from the other, said adjustable guard assembly fitting over the shank of said handle and being retained in position by the engagement of said handle and cover plate, whereby a razor blade is adapted to be retained between said cover plate and blade engaging member in fixed position relative to said handle and rotation of said adjustment member is adapted to move said guard member towards and away from said blade retaining members and blade.

2. A safety razor as claimed in claim 1, wherein the blade-engaging member is of substantially rectangular form having parallel outer walls, and said guard member includes a centrally disposed recess having parallel inside walls adapted to slidably fit over said blade-engaging member outer walls, whereby said guide member is maintained in parallel relationship with said blade-engaging member during upward or downward movement.

3. A safety razor, as set forth in claim 1, in which the resilient means, urging said blade-engaging member and said guard member apart, comprises a plurality of rubber-like cushion members mounted in countersunk holes in one member, the protruding portion of the cushion members acting against the juxtaposed face of the other member.

4. A safety razor, as set forth in claim 1, in which the resilient means urging said blade-engaging member and said guard member apart, comprises a pair of resilient spring members seated in a recess on one of the members, and adapted to act against the juxtaposed face of the other member to force said members apart.

5. A safety razor as claimed in claim 1 wherein said cover plate includes means for seating a razor blade with the cutting edges parallel to said blade-engaging member comprising a pair of spaced apart substantially semi-circular wing members extending at right angles to the inner surface of said cover member, the opposing flat faces on each side of said members sloping towards each other to form substantially frusto-conical wings in cross section, said blade-engaging members including a pair of corresponding recesses adapted to mate with said extended wing members whereby the blade-engaging member is adapted to clinch a razor blade over said wing members and against the inner surface of said cover member, the engagement of said wing members with said blade-engaging member recess being adapted to maintain said cover member and blade-engaging member in parallel relationship.

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