

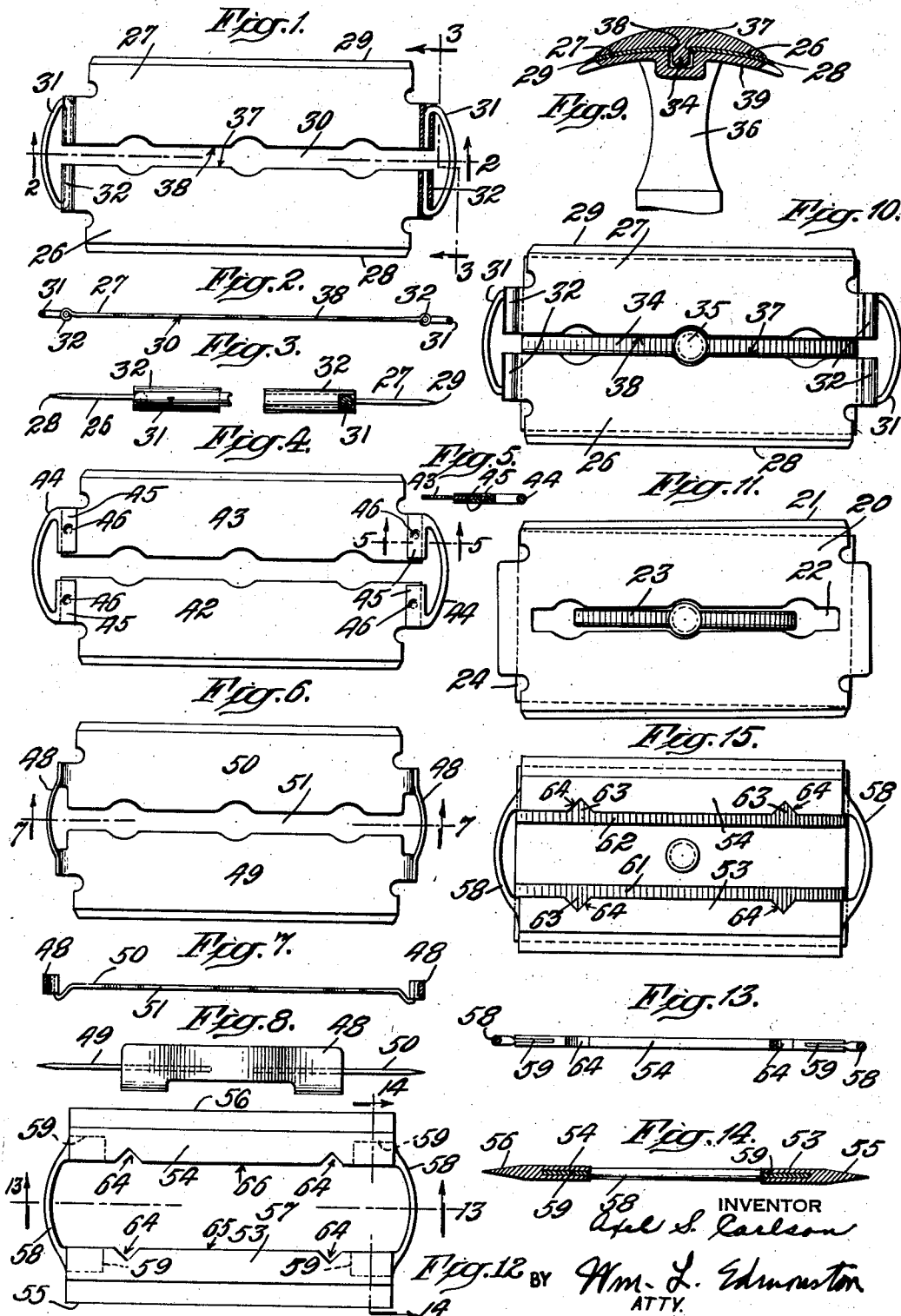
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RAZOR BLADE

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RAZOR BLADE

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This invention relates to safety razors and razor blades.

In safety razors of the type utilizing so-called wafer blades, the blade ordinarily has a slot which takes over a positioning bar or other element on the inner face of the razor cap. Such slot varies in shape and form in different makes of blades but they all have certain portions which theoretically engage the positioning bar to position the blade in parallelism with the axis of the razor head.

Such parallelism, however, is seldom attained to perfection in practice. The slot of the blade is necessarily wide enough to enable the blade to be readily assembled and removed. While the width of slot may vary with different razors and different blades, in most if not all the blades now on the market, the slot is several thousandths of an inch wider than the positioning bar. As a result, the bar and slot can not function as precise positioning elements and the blade often cants out of true position.

Furthermore, when the razor is tightened up, the wafer blade is arced somewhat and this arcing tends to spread the edges of the slot, thus accentuating the condition described.

The result of such canting of the blade is that its edges are out of parallel with the edge of the razor. While this divergence from parallelism is slight in absolute dimensions, even extremely slight canting of a blade interferes with comfortable and proper shaving.

It is one of the objects of the present invention to provide a razor and a blade therefor such that canting of the blade is avoided. More particularly, it is an object of the invention to provide a razor and a blade therefor such that the blade may be precisely held in a position of parallelism and such that, at the same time, the blade may be easily assembled in and removed from the razor.

With these and other objects in view, the invention consists in the features, combinations, details of construction and arrangement of parts which will first be described in connection with the accompanying drawing and then more particularly pointed out.

In the drawing:

Figure 1 is a plan view, with parts in section, of a razor blade constructed in accordance with the invention;

Figures 2 and 3 are sectional views of the same taken, respectively, on the lines 2—2 and 3—3 of Figure 1, Figure 3 being enlarged;

Figure 4 is a plan view of a modified blade;

Figure 5 is a sectional view taken on the line 5—5 of Figure 4;

Figure 6 is a plan view of another modified blade;

Figure 7 is a sectional view taken on the line 7—7 of Figure 6;

Figure 8 is an end view, enlarged, of the blade of Figure 6;

Figure 9 is a view partly in elevation and partly in transverse section of a razor having assembled therein a blade;

Figure 10 is a plan view showing the blade of Figure 1 assembled with the cap of a razor constructed in accordance with the invention;

Figure 11 is a similar view showing, more or less conventionally, a blade and razor of present commercial type and illustrating, in a somewhat exaggerated manner, canting of the blade;

Figure 12 is a plan view of a blade of the non-wafer or rigid type, constructed in accordance with the invention;

Figures 13 and 14 are sectional views taken, respectively, on the lines 13—13 and 14—14 of Figure 12, Figure 14 being enlarged; and

Figure 15 is a plan view showing the blade of Figure 12 assembled with a razor constructed in accordance with the invention.

Referring to the drawing, the invention in its entirety includes a razor having a position abutment; a blade; and resilient means tending to hold the blade in positioning engagement with the abutment. In the case of razors using double-edged blades, the blade may conveniently comprise two separate portions, each having a cutting edge, and movable towards and away from each other, such separate portions being connected by resilient means tending to prevent separation.

Referring further to known commercial constructions, Figure 11 illustrates more or less conventionally and in a somewhat exaggerated manner, a blade of present commercial type assembled with a razor cap. The blade 20, of the wafer type, has double cutting edges 21. Extending lengthwise of the blade is a closed slot 22 which takes over a positioning bar 23 formed as part of the razor cap 24. As appears in the drawing, the relative dimensions being somewhat exaggerated, the slot 22 is considerably wider than the bar 23. This is necessary in order to permit the blade to be assembled and removed. As a result of this excess width of slot, there is, in fact, no true positioning of the blade. As indicated in this Figure 11, the blade may cant to such an extent that the cutting edges are sub-

stantially out of parallelism with the edge or axis of the razor. Such canting, as above stated, is most apt to prevent proper, comfortable shaving.

Figure 1 illustrates an embodiment of the present invention involving a double-edged wafer blade. This blade has two separate parts 26, 27 having, respectively, cutting edges 28, 29. These blade sections are separated by what may be termed an open ended slot 30. That is, the separating space 30 extends from end to end of the blade sections, permitting the sections to move toward and away from each other, as distinguished from the closed slot of the unitary blade of present commercial type.

To resiliently connect the two blade sections, at each end of the blade is a bowed spring element 31 the ends of which are bent back and anchored in knuckles 32 formed by rolling over the metal of the end portions of the blade sections.

Figure 10 illustrates this blade assembled with the cap of a razor constructed in accordance with the invention. Such cap 33 has a positioning abutment in the form of a bar 34 running from end to end of the cap, as distinguished from the relatively short bar 23 of Figure 11. At the central point of bar 34 is the usual threaded post 35 for receiving a razor handle 36 (Figure 9).

The two sections of blade 27—28 are so assembled in manufacture and the springs 31 are so constituted as to give space 30 the desired width, which is preferably very slightly less than the width of positioning bar 34. To assemble the blade with the razor, the blade is grasped at the ends with the thumb and fingers engaging the two spring elements 31. A sufficient pressure is exerted to flatten the springs somewhat, thus spreading the blade sections. The blade is then assembled with the razor cap, the widening of space or slot 30 permitting the blade to pass easily over positioning bar 34. The blade is then released, whereupon the springs 31 tend to return the blade sections to former position. Thus the inner edges 37, 38 of the blade sections are spring-held in contact with positioning bar 34. The razor guard plate 39 (Figure 9) is then placed over the blade and handle 36 screwed into place to render the razor ready for shaving.

To disassemble, the razor handle and guard plate are removed. The blade is again grasped as before described and pressure is again applied to the springs 31. The blade sections being again spread, the blade can readily be lifted away from the razor cap.

With the construction described, the blade is positioned in the razor with precision. The inner edges 37, 38 of the blade sections are pressed against the positioning bar 34, making any canting of the blade as a whole or of either section thereof practically impossible. As a result, the cutting edges are at all times in true parallelism with the razor axis and edges, making possible a proper, comfortable shave.

These ends cannot be attained by any double-edged blade now known in the art because the slots in the latter must be so wide that precision positioning is impossible and canting of the blade is always likely to occur. Whether or not it would be possible to machine a bar and slot of the type exemplified in Figure 11 to give a precise fit is immaterial. If the slot were so dimensioned it would be exceedingly difficult to assemble the blade and next to impossible to remove it.

In the razor cap shown in Figure 11, the positioning bar 34 extends from end to end of the cap. A shorter bar may be used if desired but a full length bar gives a greater length of positioning contact and has other advantages.

Figure 4 illustrates a modified blade. The blade sections 42, 43 are like sections 27, 28 of the blade of Figure 1 except that the rolled over knuckles of the latter are omitted. The wire spring elements 44 have spaced end flat portions 45 which grip the ends of the blade sections and are secured thereto in any suitable manner, as by indenting the metal as indicated at 46.

Figure 6 illustrates a further modification in which the resilient elements 48 are integral with the blade sections 49, 50. This construction may be attained by stamping out a flat blank having a slot 51 and curved ends. These ends are then bent upwardly and bowed to give the spring elements 48 of the form shown in Figures 6-8.

Figure 12 illustrates a construction in which the invention is embodied in a double-edged blade of the non-wafer or rigid type. The blade there shown as an example comprises the blade sections 53, 54, having, respectively, cutting edges 55, 56. These blade sections are separated by a wide space 57, whereby the blade sections are movable towards and away from each other. The blade sections are connected by wire spring elements 58, the flattened end portions 59 of which are anchored in undercut slots formed in the edges of the blade sections, as appears more clearly in Figures 13 and 14.

Figure 15 illustrates the blade of Figure 12 assembled with a razor cap 60. This cap has two positioning bars 61, 62 extending from end to end of the cap. Each bar has the wedge shaped lugs 63 over which fit V-shaped notches 64 formed in the inner edges 65, 66 of the blade sections. The blade is assembled in the same manner as above described. That is, the blade is grasped by the spring elements 58, pressure is applied and the blade slipped onto the cap. Upon release, springs 58 cause blade section 53 to be held in close contact with positioning bar 61 and blade section 54 with bar 62. Thus, the blade is positioned with precision and canting is prevented. To remove the blade, the spring elements are again grasped and pressed, thus spreading the blade sections sufficiently to permit ready removal.

It is to be understood that various modifications may be made in the blades and razors above described without departing from the invention. For example, the resilient connecting elements may be of various constructions and may be secured to the blade sections in various ways; the positioning abutment may have other forms than that of a bar; the inner edges of the blade sections may have various configurations; and the positioning abutment may be located on portions of the razor other than the cap. While the invention is more particularly applicable to double-edged blades, the principles of the invention, in its broader aspects, are also applicable to single-edged blades.

What is claimed is:

1. A razor blade unit comprising two separate blade sections movable toward and away from each other with a substantially right-line movement, the sections having inner opposed edges and one of said sections having an outer cutting edge, and spring elements connecting said blade sections.

2. A razor blade unit comprising two separate

blade sections movable toward and away from each other with a substantially right-line movement, the sections having inner opposed edges and one of said sections, having an outer cutting edge, and two bowed spring elements, each spring element having two extensions which are anchored to the respective blade sections.

3. A razor blade unit comprising two separate blade sections movable toward and away from each other with a substantially right-line movement, the sections having inner opposed edges and one of said sections having an outer cutting edge, the ends of the blade sections having the

metal thereof rolled up to form a knuckle, and spring elements having extensions anchored in said knuckles.

4. A razor blade unit comprising two separate blade sections movable toward and away from each other with a substantially right-line movement, the sections having inner opposed edges and one of said sections having an outer cutting edge, and spring elements formed integral with said blade sections and resiliently connected to the same.

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