Nov. 13, 1945. H. H. CLEIN 2,388,722

RAZOR

Filed Nov. 25, 1944 4 Sheets-Sheet 1

FIG. 1

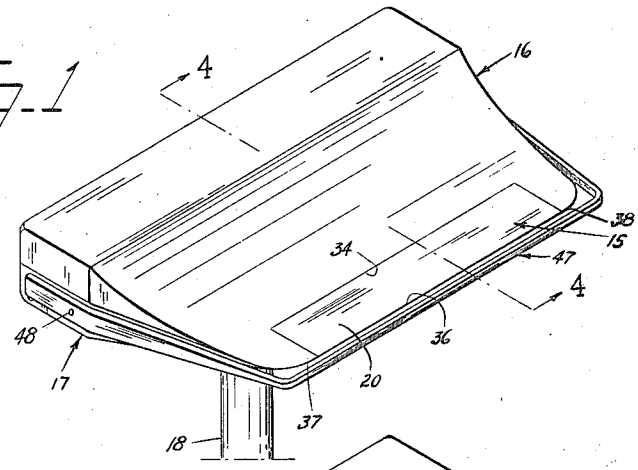
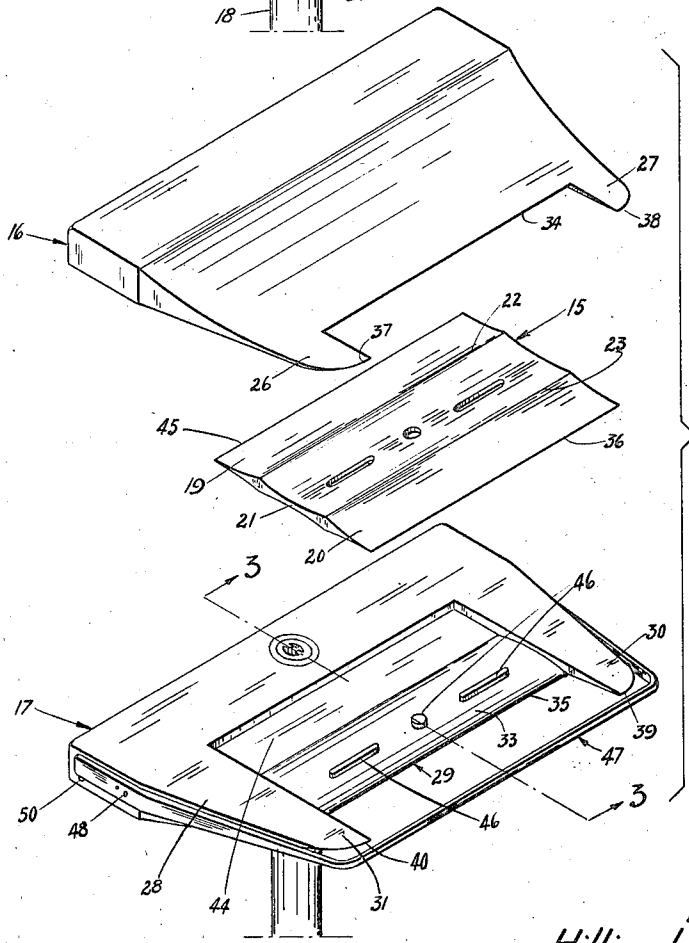


FIG. 2



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RAZOR

Filed Nov. 25, 1944 4 Sheets-Sheet 2

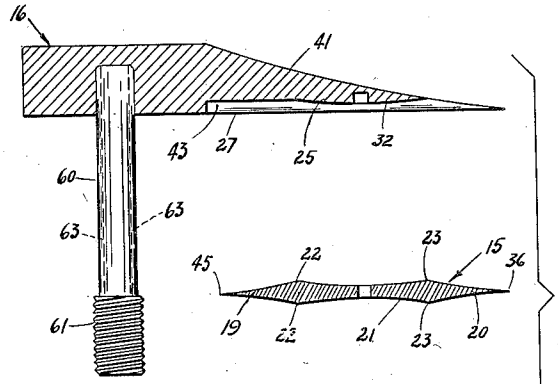


FIG. 3

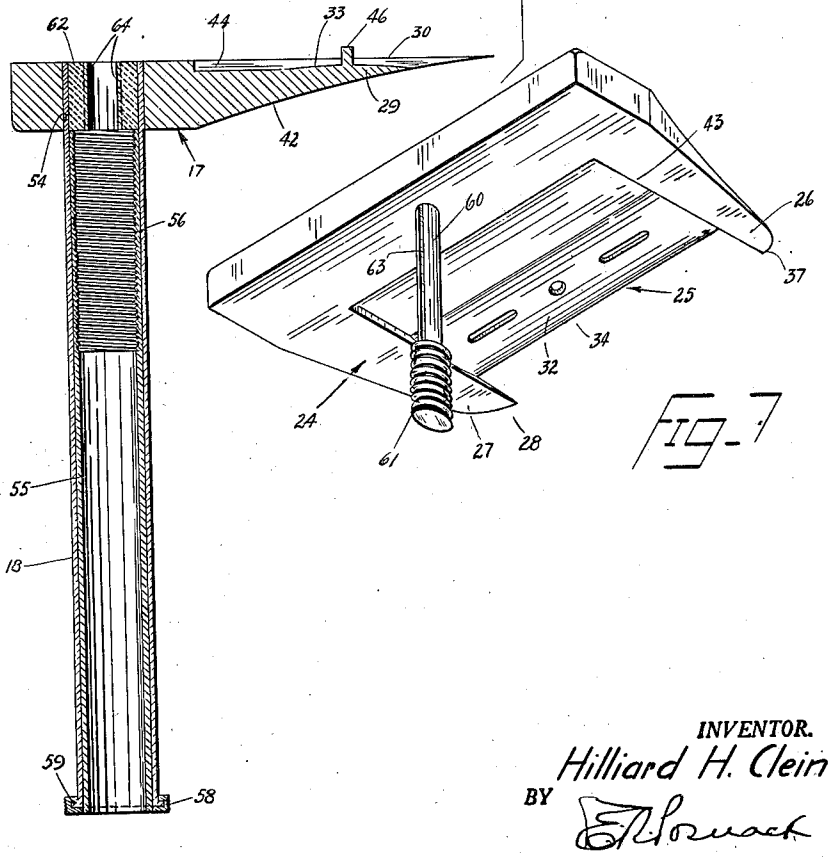


FIG. 7

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RAZOR

Filed Nov. 25, 1944 4 Sheets-Sheet 3

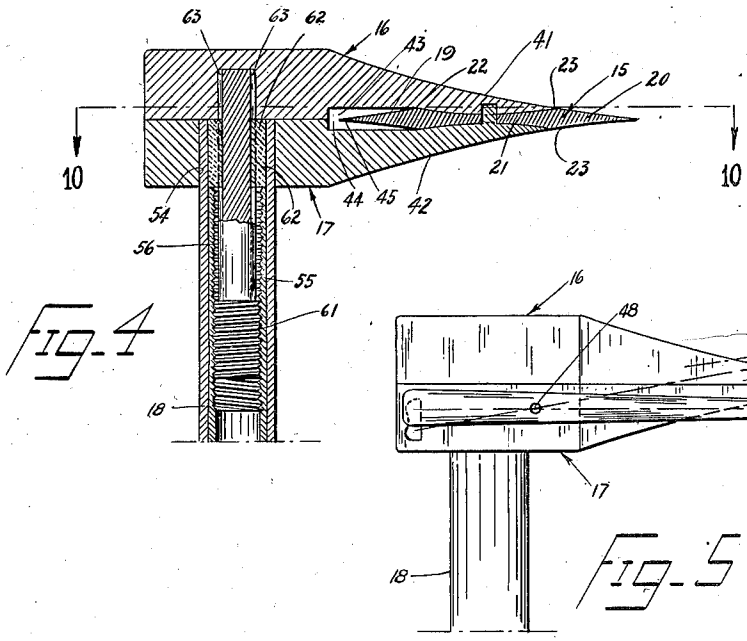


Fig. 4

Fig. 5

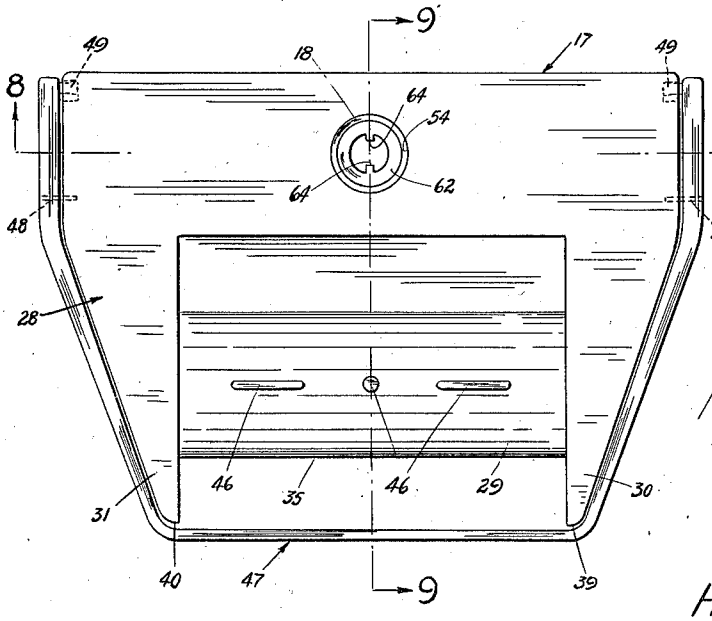


Fig. 6

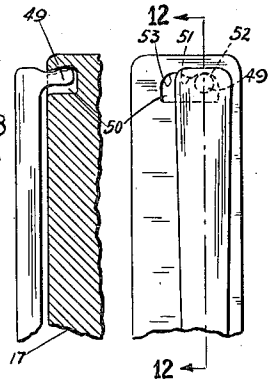


Fig. 12

Fig. 11

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Nov. 13, 1945. H. H. CLEIN 2,388,722

RAZOR

Filed Nov. 25, 1944 4 Sheets-Sheet 4

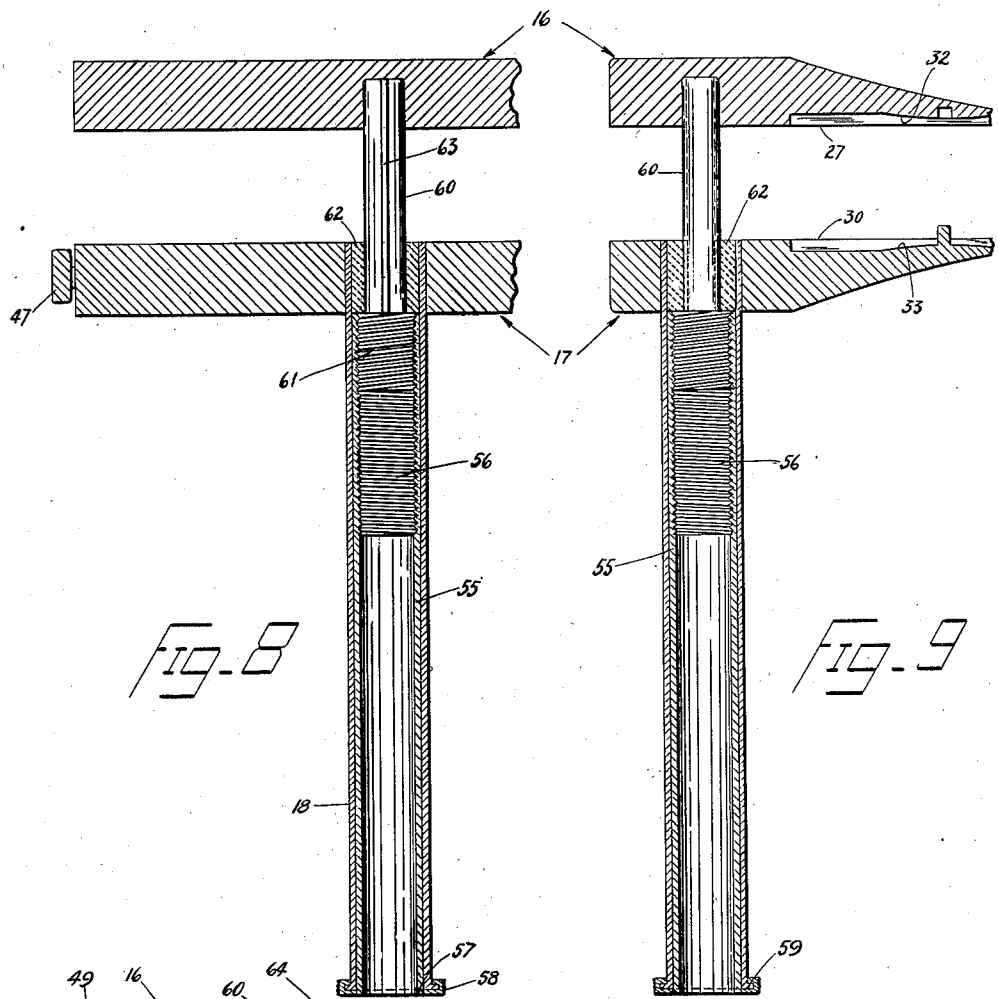


Fig. 8

Fig. 9

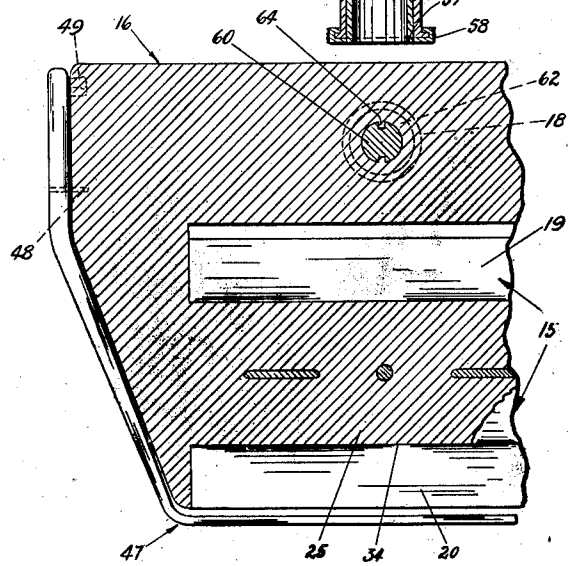


Fig. 10

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UNITED STATES PATENT OFFICE

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RAZOR

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Application November 25, 1944, Serial No. 565,069

10 Claims. (Cl. 30—69)

This invention relates to razors, and particularly although not exclusively to razors with heavy blades of hollow ground construction.

It is commonly acknowledged that the straight-edge non-safety type of razor is a most effective—and perhaps the most efficient—instrument for shaving. The practically exclusive use of this type of razor by professional barbers constitutes convincing evidence to support this general belief. However, due to the hazards of using this type of razor, the public welcomed the introduction of the safety razor, despite certain of its inherent shortcomings. Among these shortcomings is the serious defect of buckling and warping of the blade when operatively clamped into place by the holding members of the razor. This is particularly true of the thin or wafer type of blade. Such warping and buckling not only often causes a breaking of the blade, but also tends to produce a distortion of the cutting edge, with consequent poor shaving results and even injury to the skin.

To overcome these shortcomings in safety razors, heavy blades have been resorted to. Where such blades are of the heavy hollow-ground construction, proportioned like the original straight-edge type, the relatively high cost of such blades prevent their being employed as replaceable elements. Hence they are provided with honing and stropping means. Such razors are thus possessed of the advantages of straight-edge razors, together with the safety aspects of safety razors. They are, however, characterized by a high cost, due to the relatively expensive blade and the honing and stropping equipment and the case therefor. With such devices damage to the blade means a high replacement cost, a factor which constitutes a serious disadvantage in the light of the relatively inexpensive thin type of safety razor blades. Furthermore, the operations of honing and stropping are time-consuming and generally inconvenient and irksome. It was, indeed, to a considerable extent the elimination of these operations that influenced many self-shavers to favor the safety razor with the replaceable blade.

A commercially successful type of razor employing the heavy type of blade with a safety feature is the type known as the "Rolls" razor. This type of razor is provided with a case containing a specially designed honing and stropping apparatus which, together with the shaving unit, constitutes a very expensive combination, compared with the conventional types of safety razor with replaceable blades.

It is primarily within the contemplation of this invention to provide a razor having the advantages of conventional safety razors with thin replaceable blades, and of the heavy type of straight-edge razors, without any of the aforesaid shortcomings of either. And it is a further object of my invention to provide a razor which in addition is capable of use against the face so that the shaving angle of the blade is substantially like that of the straight-edge razor or Rolls razor, as distinguished from that of the conventional safety razor.

More specifically, it is an important object of this invention to provide a safety razor having a replaceable blade of hollow-ground construction, and in which the blade is not subject to the dangers of breaking or warping. And in this aspect of my invention, it is a further object to so combine the clamping members with a thin-bodied replaceable blade as to produce what is in effect a compound unitary heavy blade of the "Rolls" type, wherein the blade is supported throughout its entire body—except at the cutting edge—without any bending or distortion.

It is also within the contemplation of my invention to provide a safety razor construction that lends itself more easily to cleaning than the conventional type of safety razor. This is an objective which I attain by the above-referred-to compound arrangement of blade and clamping members—an arrangement which obviates the use of guard means with a plurality of recesses such as are employed with conventional safety razors, and within which soap suds and shaved hair particles must of necessity embed themselves.

Other objects, features and advantages will appear from the drawings and the descriptions hereinafter given.

Referring to the drawings,

Figure 1 is a fragmentary perspective view of the assembled razor constituting my invention, shown ready for use.

Figure 2 is an exploded view, in perspective, of the three main units comprising the structure of Figure 1.

Figure 3 is an exploded view of the parts of Figure 2, with the guard removed, taken substantially along line 3—3 thereof.

Figure 4 is a fragmentary section, with the guard removed, of Figure 1 taken along line 4—4, the post of the upper member being shown in elevation.

Figure 5 is a fragmentary side view of the construction of Figure 1, showing two positions of the guard member.

Figure 6 is a plan view of the lower member of the construction of Figure 2.

Figure 7 is bottom perspective view of the upper member of the construction of Figure 2.

Figure 8 is a vertical section, taken substantially along line 8—8 of Figure 6, showing the upper and lower members in their separated or inoperative positions.

Figure 9 is a vertical section showing the parts as in Figure 8, but taken along line 9—9 of Figure 6.

Figure 10 is a fragmentary sectional plan taken along line 10—10 of Figure 4.

Figure 11 is a fragmentary side view of the lower member of the razor, showing a rear portion of the guard member, and

Figure 12 is a fragmentary section of Figure 11 taken along line 12—12.

In the preferred embodiment of my invention illustrated in the drawings, the razor is shown to contain a blade 15 operatively held between the two separable coactive blade holding members 16 and 17, and a handle 18 which contains means, to be hereinafter described, for detachably holding the two said members 16 and 17 together.

The blade comprises the two cutting edge portions 19 and 20, and the intermediate body portion 21. Each of the said cutting edge portions have their opposite surfaces hollow ground; and the body portion, preferably of rigid material, has its opposite surfaces of oppositely disposed concave configuration, so that it is heaviest at its junctures 22 and 23 with the cutting edge portions 19 and 20, respectively.

The upper holding member 16 comprises a substantially U-shaped frame 24 and a holding bar 25 extending between the legs 26 and 27 of said frame. Similarly, the lower holding member 17 comprises a substantially U-shaped frame 28 and a holding bar 29 extending between the legs 30 and 31 of said latter frame. The said holding bars have convexly curved blade-engaging surfaces 32 and 33, these being in facing relation and shaped and proportioned so as to be in engagement with the upper and lower concave surfaces of the blade's body portion 21. The arrangement is such that the said bars are in engagement with the body portion throughout the extent of its concave surfaces, thereby rigidly and immovably holding the body portion therebetween, and thus preventing a flexing thereof and consequent warping of the cutting edges, in accordance with one of the objects of this invention above mentioned. The forward edges 34 and 35 of the bars are straight and parallel to the front operative edge 36 of the blade; and being spaced rearwardly from said edge 36—to-wit, at junctures 22—the cutting edge portion 20 of the blade is left entirely exposed.

In the preferred construction, the legs 26, 27, 30 and 31 of frames 24 and 28, which flank the lateral edges of the blade, have their foremost terminals 37, 38, 39 and 40 substantially in alignment with the said front edge of the blade 36. The upper surface 41 of member 16 and the lower surface 42 of member 17 are preferably concavely curved, or so shaped that they converge forwardly towards each other and terminate substantially at the juncture 23 of the operative cutting edge and body portion of the blade. The arrangement is such that said surfaces 41 and 42 appear to merge with and form a continuous concave surface with the upper and lower surfaces, respectively, of the cutting edge of the blade. The razor thus presents the appearance of a solid single heavy blade of the "Rolls" type above-referred-to. And although the blade is of the removable type, its combination with the holding members 16 and 17 gives it the rigidity and structural advantages of the heavy straight razor or "Rolls" razor type of blade. Even if the body portion 21 of the blade were of a different shape and were differently proportioned than the preferred form illustrated, the same advantages would still be present in view of the fact that my invention contemplates making the blade-engaging surfaces of the holding bar shaped and proportioned in accordance with the shape and proportion of the blade's body portion.

It will be further observed that the holding members 16 and 17 contain recesses 43 and 44, respectively, immediately adjacent the rear of holding bars 25 and 29, respectively, to accommodate the inoperative cutting edge portion 45 of the blade. In this manner the edge of the blade that is not being used is at all times protected.

The construction hereinabove described has the further advantage of enabling the razor together with the blade to be readily washed and cleaned. There is no slotted guard member, as is present in most conventional safety razors, within which soap and hair particles accumulate. In view of the smooth and exposed surface of the blade, and the general smooth and continuous configuration of the holding members, the washing and cleaning operations can be readily performed merely by holding the assembly under a faucet. Inasmuch as the entire blade except the operative cutting portion is concealed, the washing or cleansing of the entire unit is sufficient without the necessity of separately removing and washing the blade.

To enable the blade to be properly assembled in place, the pins and projections 46 of the lower holding bar 29 extend through corresponding recesses in the blade and the upper holding bar 25.

In the embodiment disclosed, the razor is provided with a guard member 47 the forward portion of which extends along and in adjacent relation to the cutting edge of the blade. The said guard member is pivotally mounted, in the form illustrated, at the pivots 48 on the lateral sides lower holding member 17, and is movable between two limiting positions, as indicated in Figure 5. This is accomplished through the use of the two inwardly extending slightly resilient fingers 49 which extend into recesses 50 in the frame and are adapted to yieldably ride over the bump 51 in a wall of each of said recesses, settling either in groove 52 or 53.

As hereinabove indicated, the blade holding members 16 and 17 are detachably secured together, the arrangement being such that the upper member 16 is movable away from the lower member 17 and maintained in parallel relation during such movement. To accomplish this result, the handle 18 is of tubular construction, and is fixedly attached to said member 17 by a force fit into aperture 54 at the rear of said member. Fixedly disposed within the upper part of the tube 18 is the bushing 62 with the inwardly protruding diametrically disposed guides 64. An inner tube 55, extending up to bushing 62, is slidably and rotatably disposed within said outer tube, the upper portion 56 of said inner tube being threaded, and the lower portion 57 being fixedly attached to the knurled hand-manipulable member 58 rotatably and slidably support-

ed upon the bottom flange 59 of the outer tube 18. Extending downwardly from the upper member 16, and fixedly secured thereto, is the post 60 the lower portion 61 of which is threaded. Said post is inserted within the bushing 62 and slidably movable vertically therein, the threaded portion 61 extending into and being in threaded engagement with the threaded portion of inner tube 55. To prevent rotation of the post 60 and the upper member 16, the said guides extend into and are in slidable engagement with the grooves 63 in post 60.

Upon a rotatable manipulation of member 58, the inner tube 55 is rotated, causing a raising or lowering of the threaded portion 61 of post 63 together with the attached upper holding member 16. It is thus apparent that member 16 can be moved away from member 17, to permit the insertion or removal of the blade, and be drawn into engagement with member 17, both members being at all times in parallel relation. The arrangement is such that there is no need to detach the two members, as is necessary in most safety razors, thereby obviating the danger of misplacement of parts, and the general inconvenience of assembling and disassembling the component elements.

It is understood that the embodiment above described and shown in the drawings is merely illustrative of my invention, and that numerous changes and modifications may be made therein within the scope of the appended claims without departing from the spirit of this invention.

I claim:

1. In a safety razor, a blade comprising at least one cutting edge portion and a body portion; two coacting blade holding members each comprising a substantially U-shaped frame having forwardly extending legs the inner lateral sides of which flank the lateral edges of the blade and the bight of which constitutes a holding bar in each member extending between the said legs, said bars being in engagement only with the upper and lower surfaces, respectively, of the said body portion of the blade throughout the extent thereof, whereby the cutting edge portion is left entirely exposed, the forward edge of each of the bars being straight and parallel to the front edge of the blade and spaced rearwardly from the forward edges of the said legs, said forward edges being substantially in alignment with the front edge of the blade; guard means mounted upon one of said frames and extending along and in adjacent relation to the cutting edge of the blade between the said legs; and means for detachably securing together the two said holding members and the blade therebetween.

2. In a safety razor, a blade comprising two oppositely disposed cutting edge portion and an intermediate body portion therebetween; two coacting blade holding members each comprising a substantially U-shaped frame having forwardly extending legs the inner lateral sides of which flank the lateral edges of the blade and the bight of which constitutes a holding bar in each member extending between the said legs, said bars being in engagement only with the upper and lower surfaces, respectively, of the said body portion of the blade throughout the extent thereof, whereby the front operative cutting edge portion is left entirely exposed, the portions of the said holding members immediately adjacent the rear of the said bars being recessed to accommodate therein the rear inoperative cutting edge portion, the forward edge of each of the bars being straight and parallel to the front edge of the blade and spaced rearwardly from the forward edges of the said legs; guard means mounted upon one of said frames and extending along and in adjacent relation to the operative cutting edge of the blade between the said legs; and means for detachably securing together the two said holding members and the blade therebetween.

3. In a safety razor, a blade comprising at least one cutting edge portion and a body portion; two coacting blade holding members each comprising a substantially U-shaped frame having forwardly extending legs the inner lateral sides of which flank the lateral edges of the blade and the bight of which constitutes a holding bar in each member extending between the said legs, said bars being in engagement only with the upper and lower surfaces, respectively, of the said body portion of the blade throughout the extent thereof, whereby the cutting edge portion is left entirely exposed, the forward edge of each of the bars being straight and parallel to the front edge of the blade and spaced rearwardly from the forward edges of the said legs, said forward edges being substantially in alignment with the front edge of the blade; the two said holding members having upper and lower surfaces, respectively, converging forwardly towards each other and terminating substantially at the juncture of the body and front cutting edge portions of the blade, whereby the said upper and lower surfaces of the holding members merge with and form substantially continuous surfaces with the upper and lower surfaces, respectively, of the said front cutting edge portion of the blade; guard means extending along and in adjacent relation to the front cutting edge of the blade; and means for detachably securing together the two said holding members and the blade therebetween.

4. In a safety razor, the combination according to claim 3, the cutting edge portion of the blade being hollow ground, and the said upper and lower surfaces of said holding members being concavely curved, whereby they will merge with and form substantially continuous concave surfaces with the adjacent hollow ground surfaces of the blade's cutting edge portion.

5. In a safety razor, a blade comprising at least one cutting edge portion and a body portion; the cutting edge portion being hollow ground on both surfaces, and the body portion being rigid, having its opposite surfaces of oppositely disposed concave configuration and being heaviest at its juncture with the cutting edge portion; two coacting blade holding members each comprising a substantially U-shaped frame having forwardly extending legs the inner lateral sides of which flank the lateral edges of the blade and the bight of which constitutes a holding bar in each member extending between the said legs, said bars having blade engaging surfaces in facing relation and shaped and proportioned to be in engagement only with the upper and lower concave surfaces, respectively, of the said body portion of the blade throughout the extent thereof, whereby the front cutting edge portion of the blade is left entirely exposed, the forward edge of each of the bars being straight and parallel to the front edge of the blade and spaced rearwardly from the forward edges of the said legs; guard means extending along and in adjacent relation to the front cutting edge of the blade; and means for detachably securing to-

gether the two said holding members and the blade therebetween.

6. In a safety razor, a blade comprising two oppositely disposed cutting edge portion and an intermediate body portion therebetween, the cutting edge portions being hollow ground on both surfaces, and the body portion being rigid, having its opposite surfaces of oppositely disposed concave configuration and being heaviest at its junctures with the cutting edge portions; two coacting blade holding members each comprising a substantially U-shaped frame having forwardly extending legs the inner lateral sides of which flank the lateral edges of the blade and the bight of which constitutes a holding bar in each member extending between the said legs, said bars having blade engaging surfaces in facing relation and shaped and proportioned to be in engagement only with the upper and lower concave surfaces, respectively, of the said body portion of the blade throughout the extent thereof, whereby the front cutting edge portion of the blade is left entirely exposed, the portions of the said holding members immediately adjacent the rear of the said bars being recessed to accommodate therein the rear inoperative cutting edge portion, the forward edge of each of the bars being straight and parallel to the front edge of the blade and spaced rearwardly from the forward edges of the said legs; guard means extending along and in adjacent relation to the front cutting edge of the blade; and means for detachably securing together the two said holding members and the blade therebetween.

7. In a safety razor, a blade comprising at least one cutting edge portion and a body portion; two separable blade holding members coactively holding therebetween the said blade, said members having upper and lower surfaces, respectively, with portions thereof converging forwardly towards each other and terminating substantially at the juncture of the body portion and the cuting edge portion of the blade, whereby said upper and lower surfaces of the holding members merge with and form substantially continuous surfaces with the upper and lower surfaces, respectively, of the said front cutting edge portion of the blade, the said cutting edge portion being left entirely exposed by said members; guard means extending along and in adjacent relation to the front cutting edge of the blade; and means for detachably securing together the two said holding members and the blade therebetween.

8. In a safety razor, a blade comprising at least one cutting edge portion and a body portion; two separable blade holding members coactively holding therebetween the said blade, said members having upper and lower surfaces, respectively, with portions thereof converging forwardly towards each other and terminating substantially at the juncture of the body portion and the cutting edge portion of the blade, whereby said upper and lower surfaces of the holding members merge with and form substantially continuous surfaces with the upper and lower surfaces, respectively, of the said front cutting edge portion of the blade; the said cutting edge portion being left entirely exposed by said members; guard means extending along and in adjacent relation to the cutting edge of the blade, said guard means being pivotally mounted upon the lateral sides of one of said holding members, and being operatively movable between two predetermined positions; and means for detachably securing together the two said holding members and the blade therebetween.

9. In a safety razor, a blade comprising at least one cutting edge portion and a body portion; two blade holding members coactively holding therebetween the said blade, said members having upper and lower surfaces, respectively, with portions thereof converging forwardly towards each other and terminating substantially at the juncture of the body portion and the cutting edge portion of the blade, whereby said upper and lower surfaces of the holding members merge with and form substantially continuous surfaces with the upper and lower surfaces, respectively, of the said front cutting edge portion of the blade; the said cutting edge portion being left entirely exposed by said members; guard means extending along and in adjacent relation to the front cutting edge of the blade; the said holding members being separable from each other; means to movably actuate one of said members with respect to the other, and means to maintain the members in parallel relation during such movement.

10. In a safety razor, a blade comprising at least one cutting edge portion and a body portion; two separable blade holding members coactively holding therebetween the said blade, said members having upper and lower surfaces, respectively, with portions thereof converging forwardly towards each other and terminating substantially at the juncture of the body portion and the cutting edge portion of the blade, whereby said upper and lower surfaces of the holding members merge with and form substantially continuous surfaces with the upper and lower surfaces, respectively, of the said front cutting edge portion of the blade, the said cutting edge portion being left entirely exposed by said members; a handle comprising a hollow outer tube fixedly attached to and extending downwardly through the rear portion of the lower of said holding members, an internally threaded inner tube rotatably supported within the outer tube, a post fixedly secured to the rear portion of the upper member and having a threaded portion at the lower portion thereof, said post extending through the upper portion of the said outer tube with the threaded lower portion thereof in threaded engagement with the said inner tube, guiding means associated with the handle and said post for keeping the post against rotation, and hand manipulable means attached to the said inner tube, whereby upon an operative rotation of the said latter means the post and upper member will be movably actuated and maintained in parallel relation with respect to the lower member.

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