Dec. 28, 1943. J. C. FRIEL 2,337,595

SAFETY RAZOR

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Fig. 1.

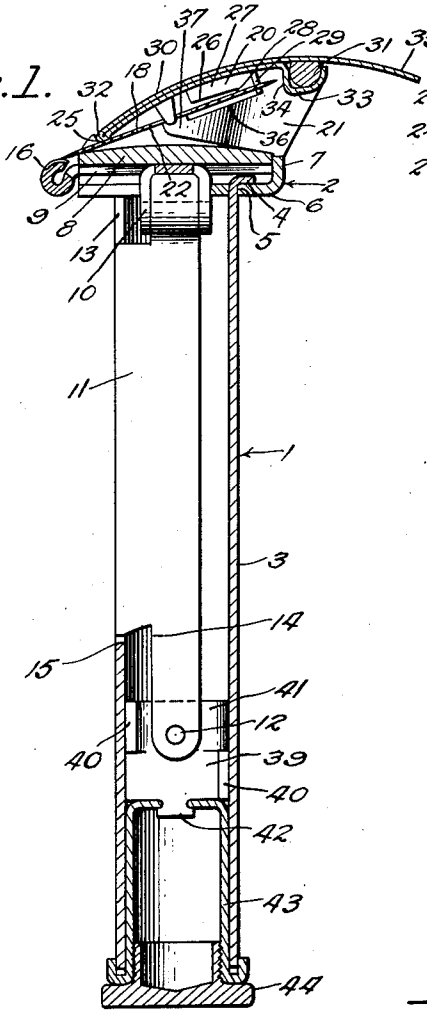


Fig. 2.

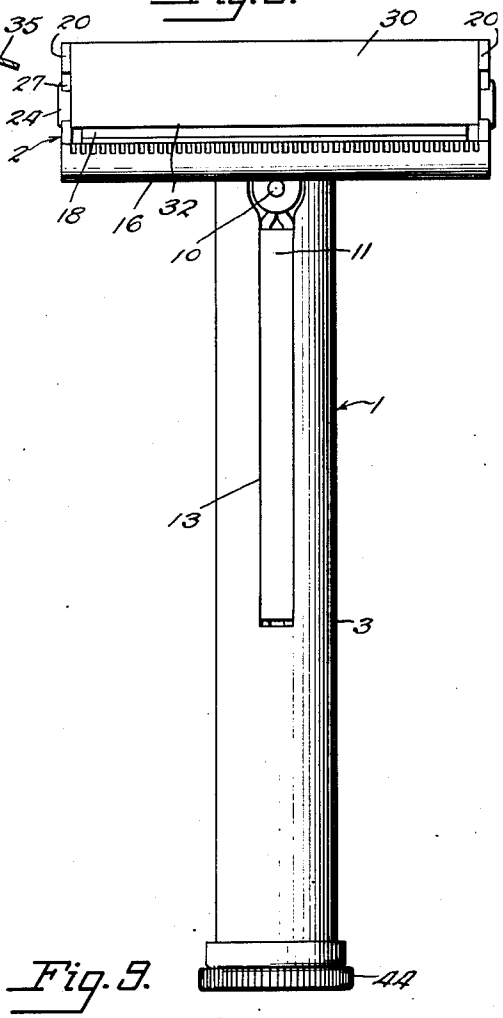


Fig. 8.

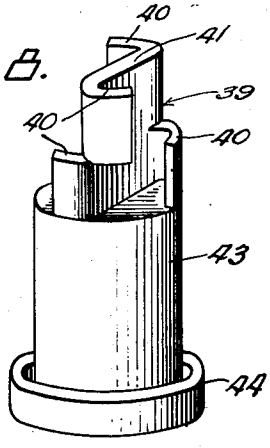


Fig. 9.

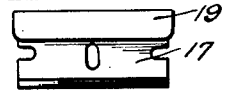
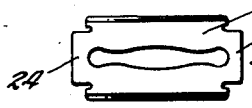


Fig. 10.



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Fig. 3.

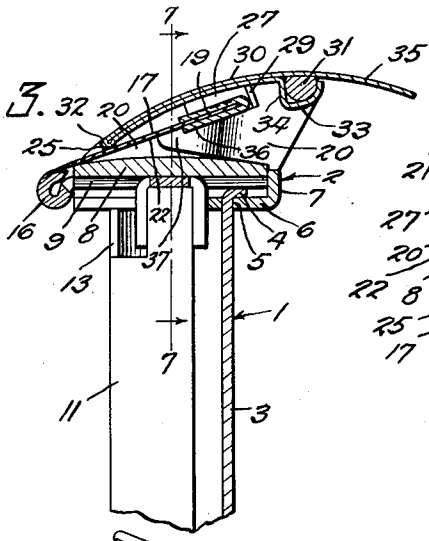


Fig. 4.

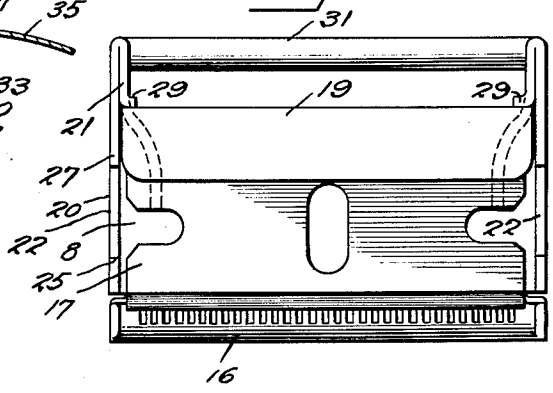


Fig. 5.

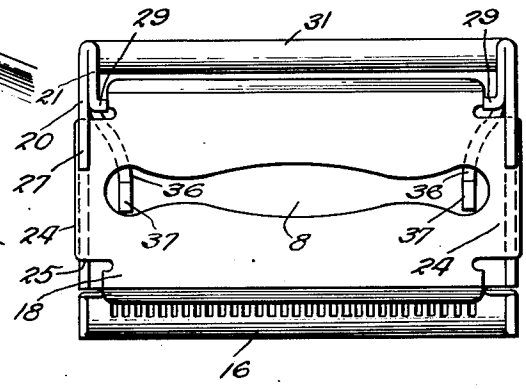


Fig. 6.

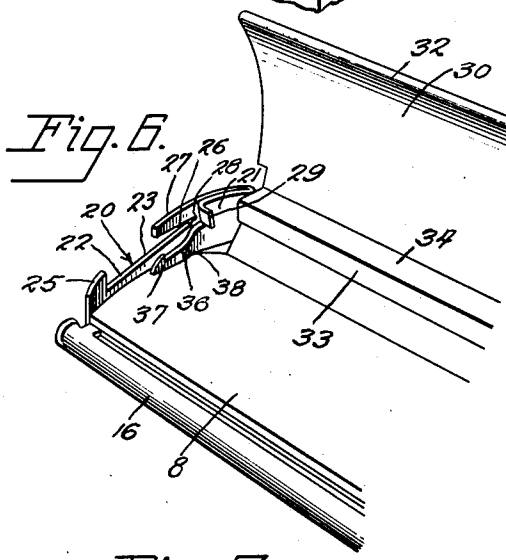
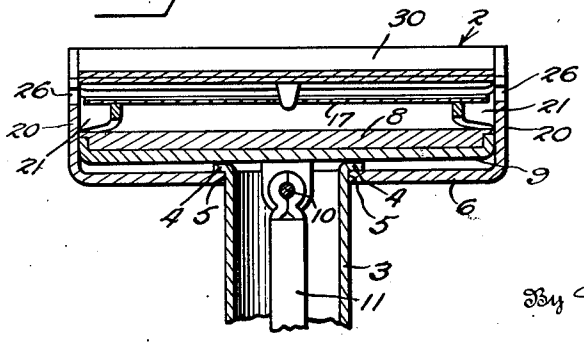


Fig. 7.



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SAFETY RAZOR

James C. Friel, Beverly, Mass.

Application January 7, 1943, Serial No. 471,591

9 Claims. (Cl. 30—36)

This invention relates to safety razors of the type which carries a hone in operative proximity to the blade, normally retracted from the shaving edge but arcuately reciprocable in surface contact with said edge when the razor is shaken, for sharpening the blade.

One of the objects of the invention is to provide a razor of the type described, equally adapted, both from the standpoint of shaving and honing, to take a blade either of the conventional single edge or double edge form.

Another object of the invention is to provide a razor in which the forward portion of the blade, of either type, positioned at proper honing angle, rests against the hone, just back of the bevel of the shaving edge when the parts are in shaving position, with means bearing resiliently against said blade close to the region at which the blade rests against the hone, for bringing the blade into continuous contact with the hone from end to end so that when the hone slides out beneath the edge of the blade, the latter will make continuous contact with the hone. This provision is necessitated through the fact that more often than not, razor blades are not truly planiform but have a "wind," so that only a portion of a longitudinal element of a blade will touch a straight edge.

A further object of the invention is to provide the razor with blade positioning means for either type of blade, coacting therewith to prevent forward, backward or lateral displacement of the blade, but permitting free upward movement of the rearward portion of the blade responsive to depression of any longitudinal portion of the forward part by the said resilient means, thereby avoiding distortion of the blade, which distortion would create uneven pressure between the edge of the blade and the hone.

A further object of the invention is the provision of means for adjusting the pivot about which the hone swings, so as to compensate for wear which would cause the hone to fail to make contact with the blade.

Other objects of the invention will appear as the following description of a preferred and practical embodiment thereof proceeds:

In the drawings which accompany and form a part of the following specification, and throughout the several figures of which the same characters of reference have been employed to designate identical parts:

Figure 1 is a side sectional view of a razor embodying the principles of the subject invention cooperating with a wafer blade of the double edge type;

Figure 2 is a front elevation of the same;

Figure 3 is a side sectional view of the head portion of the razor shown in cooperation with a single edged blade;

Figure 4 is a plan view of the razor shown in Figure 3, with the clamping cover omitted;

Figure 5 is a plan view of the razor shown in Figure 1, with the clamping cover omitted;

Figure 6 is a perspective view of a portion of the razor head, the clamping cover being in open position;

Figure 7 is a vertical section taken along the line 7—7 of Figure 3;

Figure 8 is a perspective view of the cross head and thimble;

Figures 9 and 10 show, respectively, a typical single edge and double edge blade for both of which the subject razor is adapted.

Referring now in detail to the several figures, the numeral 1 represents the razor as a whole, which as shown, consists of the head 2 and the hollow stem or handle 3 fixed thereto in any suitable manner, as by the lugs 4, formed on the end of the stem 3, which penetrate apertures 5 in the head member and are overturned, as shown, on the inside of said head member.

The head 2 comprises a base plate 6 having an upturned flange 7 at the rear, adapted to form a back stop for the arcuately reciprocable hone 8. Said hone comprises a plate with arcuate upper surface of such nature as to have a fine abrasive action upon the edge of the razor blade. Cast-iron has this property. A plate of any suitable material upon which an abrasive substance may be spread also fills the requirement, or the plate may be made of a suitable abrasive composition.

The hone 8 is mounted upon a carrier plate 9, which as shown at 10, is pivotally mounted at the upper end of a swinging lever 11, the lower end of which is pivotally mounted at 12 within the stem 3. When the hone is in the retracted position shown in Figure 1, which is the shaving position of the razor, the lever 11 is housed within the stem 3. When the hone is in extended position, the lever 11 issues through a slot 13 in the stem 3. Said lever has a reduced portion 14 near its lower end which abuts the wall of the stem 3 at the point 15, beneath the slot 13, the forward movement of the hone being thus limited.

The length of the lever 11 is such that the hone reciprocates over the base plate 6 out of contact

with the same. Said base plate at its forward end carries the shaving guard 16.

The subject razor is devised to take either a single edge blade, such as is shown at 17 in Figure 9, or the double edge wafer blade, such as is shown at 18 in Figure 10. The single edge blade is bound on one side within a folded metal strip 19.

The subject invention provides means for holding either of these blades at the proper shaving and honing angle and in such a manner that they will not become displaced in a forward, backward or sidewise direction. This is an important feature when it is considered that the razor is honed by shaking it back and forth so that in the absence of suitable restraints the blade would readily become displaced.

Now, referring to the head construction, as shown in Figure 6, it will be observed that the base plate 6 has the identical upstanding end flanges, one of which is shown at 20. These end flanges, as shown, are each formed of a piece of metal folded upon itself to provide an inner wing 21. The wings 21 are spaced from the base plate 6 so as to let the hone 8 slide beneath said wings into contact with the back stop 7.

The end flanges 20 are each provided with a recess 22, the bottom 23 of which slopes upwardly and rearwardly to support the wafer blade at the proper honing angle. The projecting ends 24 of the wafer blade rest upon the bottoms 23 of said recesses. The forward wall of each recess forms an upstanding shoulder 25 acting as a forestop for the wafer blade, and the rear wall of said recess is formed with a slot 26 defining an overhang 27 which retains the blade. It is important to note that the slot 26 throughout its extent is wider than the thickness of the wafer blade, so that the rear portion of said blade has some freedom of upward movement within said slot. The back wall 28 of said slot forms a back stop for the wafer blade. The wafer blade is restrained against lateral movements which would tend to displace it from the recesses 22, by means of the inwardly extending ledges 29 which closely confront the ends of the narrower longitudinal portion of the wafer blade, as shown in Figure 5. In placing the wafer blade in the razor, its projecting ends are preferably grasped between the thumb and forefinger, slipped beneath the overhangs 27 and permitted to rest upon the inclined bottoms 23 of the recesses 20 with the shoulders 25 confronting the forward sides of the projecting portions 24.

The inclination of the bottoms 23 of the recesses is such that when the wafer blade is positioned in the manner described, at least part of the forward longitudinal portion of said razor rests against the hone 8. The phrase "at least" is used advisedly, for experience has shown that most safety razor blades are not planiform throughout, but have a wind, due to exigencies in their manufacture, so that their longitudinal elements will not coincide throughout their length with a straight edge. In order to bring the longitudinal forward part of the blade against the hone continuously throughout its length, to the end that the edge of the blade also will contact the hone throughout its length, when the hone slides into honing position, a clamping cover 30 is provided. This cover hinges about a rod 31 fixed at its ends to the side flanges 20 adjacent their upper rear ends and bridging the head of the razor. The clamping cover 30, as shown, is made of a piece of sheet material folded upon itself to form the forward edge 32, and extending backward upon itself to a point adjacent the rod 31, where it is bent to form a channel 33 about said rod resiliently engaging said rod. The top of the rod is flattened so that when the clamping cover approaches closed position, it is biased against the blade by the resilient action of the channel 33 which forces the clamping cover 30 against the flat upper side of the rod 31. When the clamping cover is opened, the forward side 34 of the channel 33 engages the flat side of the rod 31, holding the clamping cover in open position. A thumb hold 35 at the rear of the clamping cover affords convenient means for opening the same.

It will be observed in Figure 3 that when the clamping cover is closed, the forward edge 32 thereof engages the forward portion of the wafer blade longitudinally throughout its length, pressing the blade into continuous contact with the hone 8, from end to end. The fact that the slot 26 is wider than the thickness of the blade, permits the rear portion of the blade to rise responsive to the depression of any forward portion thereof by the engagement of the edge 32 with the forward portion of said blade. This prevents distortion of the blade, which it is obvious would cause the forward portion of the blade to bear with unequal pressure throughout the length of its contact with the hone.

Referring once again to Figure 6, and to the inner wings 21, each of these is provided with a recess 36 of such width and depth as to receive the folded metal strip 19 constituting the back side of the single edge blade 17. The forward wall of said recess is formed as an upstanding hook 37 which engages the under edge of the folded metal strip 19, acting as a front stop for the blade. The rear wall of the recess 36 is constituted by the inwardly extending ledges 29 which have already been described as functioning as lateral stops for the wafer blade. These ledges also act as back stops for the single edge blade. The bottom wall 38 of the recess 36 has the same inclination as the bottom wall 23 of the recess 20, so that the single edge blade is positioned at the same honing angle as the wafer blade 18.

The fact that the carrier plate 9 is pivoted transversely with respect to the length of the razor blade, permits the hone 8 to rock to one side or the other in the attempt to coincide with the razor blade resting upon it. However, the rocking of the hone is definitely about a central axis and will not often correspond to the "wind" or twist affecting the blade. Consequently, the resilient pressure of the edge 32 of the clamping cover is essential to produce perfect coincidence of the blade with the hone throughout its longitudinal extent. It is not essential, however, that the hone be rockably mounted, for if the hone be rigidly mounted perpendicular to the lever 11 and the edge 32 of the clamping cover be parallel to the longitudinal elements of the hone, the resilient pressure of the edge 32 upon the forward part of the blade will effect the desired perfect coincidence of the forward portion of the blade with the hone.

In operation, when the razor is grasped for shaving, the thumb is placed over the slot 13 so that the lever 11 is retained within the stem 3 and the hone in the retracted position shown in Figure 1. When it is desired to hone the blade, the thumb is shifted away from the slot 13 and the razor shaken a few times to reciprocate the

hone arcuately against the edge of the blade. Shaving may then be resumed. After a long period of use, the pivotal connection 12 of the lever 11 might, in the absence of the structure herein provided, develop a degree of looseness which would cause the hone to fail to make contact with the edge of the blade with sufficient pressure to sharpen it. In order to compensate for such wear, and to regulate the pressure with which the hone operates upon the edge of the razor blade, I have mounted the pivot 12 upon a cross head, which makes a friction fit within the bore of the stem 3. This cross head may be of any desired construction, but as here shown it consists of a sheet metal member 39 slotted and bent so as to provide upper and lower arcuate portions 40 fitting against the inner wall of the stem 3. The lower end of the lever 11 is bifurcated, straddles the web 41 of the cross head 39, and is pivoted thereto. The lower end of the cross head 39 is loosely riveted as at 42 to a thimble 43, frictionally fitted within the lower end of the stem 3 and having a knurled knob 44 which may be screwed into said thimble, permitting the thimble to be pushed slidably inwardly or outwardly, by which means the desired adjustment of the hone with respect to the edge of the blade is secured. The thimble may serve as a container for a stick of abrasive compound to be used on the hone.

While I have in the above description defined what I believe to be a preferred and practical embodiment of the invention, it will be understood to those skilled in the art that the specific details of construction and arrangement of parts as shown, are illustrative of the specific form of the invention, and not to be regarded as limiting the scope of the invention which is defined in the appended claims.

What I claim is:

1. Safety razor adapted for alternative use with a conventional double edge or single edge blade comprising a head having side flanges, each side flange being formed with an inner and outer recess, the outer recesses of both flanges being adapted to receive the extended intermediate end portions of a two-edge blade, the inner recesses of both flanges being adapted to receive the thick back portion of a single edge blade, both the inner and outer recesses having bottom blade supporting walls inclined to support the blade at the proper shaving angle, and of such relative depth as to position the forward portion of the respective blades in substantially the same plane, said outer recesses having front and back walls forming stops limiting the forward and backward movement of the double edge blade, said inner recesses having front walls adapted to engage the adjacent front edge of the thick back of the single edge blade to limit forward movement of said blade, said inner recesses having rear walls extending inwardly and above the plane of the bottom walls of the outer recesses, functioning as back stops for the single edge blade and as lateral stops engageable with the ends of the rear relatively short portion of the double edge blade and means engageable with the forward portion of the blade for holding it at proper shaving angle

2. Safety razor as claimed in claim 1, including a hone reciprocable forwardly and backwardly between said flanges in a path embracing the edge of either blade when held in position in its respective recesses.

3. Safety razor as claimed in claim 1, including a hone reciprocable forwardly and backwardly between said flanges in a path embracing the edge of either blade when held in position in its respective recesses, said hone having a retracted position, in which position it is withdrawn inwardly from the common forward edge position of either blade.

4. Safety razor comprising a head including a base plate having upstanding side flanges, a stem secured to said base plate, a lever pivoted relative to said stem, a hone at the upper end of said lever reciprocable in a forward and backward direction between said flanges close to said base plate when said razor is shaken, said side flanges being formed with blade positioning seats inclined downwardly and forwardly and terminating rearwardly of the forward portion of said blade permitting the forward portion to rest against said hone, a resiliently actuated cover clamp engageable with the forward portion solely of the blade for bringing it into continuous longitudinal contact with said hone from end to end.

5. Safety razor as claimed in claim 4, said blade positioning seats being constructed to permit free rise of any longitudinal part of the rear of said razor responsive to the depression of any longitudinal part of the forward portion of said razor by said cover clamp.

6. Safety razor adapted for alternative use with a conventional double edge or single edge blade comprising a head having side flanges, each side flange being formed with an inner and outer recess, the outer recesses of both flanges being adapted to receive the extended intermediate end portions of a two-edge blade, the inner recesses of both flanges being adapted to receive the thick back portion of a single edge blade, a stem secured to said head, a lever pivoted relative to said stem, a hone at the upper end of said lever reciprocable in a forward and backward direction between said flanges below said recesses when said razor is shaken, both the inner and outer recesses having bottom blade supporting walls, and being of such relative depth as to position the forward portion of the respective blades in substantially the same plane, said outer recesses having front and back walls forming stops limiting the forward and backward movement of the double edge blade, said inner recesses having front walls adapted to engage the adjacent front edge of the thick back of the single edge blade to limit forward movement of said blade, said inner recesses having rear walls extending inwardly and above the plane of the bottom walls of the outer recesses, functioning as back stops for the single edge blade and as lateral stops engageable with the ends of the rear relatively short portion of the double edge blade, said recesses terminating rearwardly of the forward portion of either blade, permitting the forward portion to rest against said hone, a resiliently actuated cover clamp engageable with the forward portion solely of either blade for bringing it into continuous contact with said hone from end to end, said recesses being formed to permit free rise of any longitudinal part of the rear of said razor responsive to the depression of any longitudinal part of the forward portion of said razor by said cover clamp.

7. Safety razor adapted for alternative use with a conventional double edge or single edge blade, comprising a head including a base plate having upstanding side flanges, a stem secured to said base plate, a lever pivoted relative to

said stem, a hone at the free end of said lever reciprocable in a forward and backward direction between said flanges close to said base plate when said razor is shaken, said side flanges being formed with blade positioned seats, a pair shaped to receive and position a conventional double edge blade and a pair shaped to receive and position a conventional single edge blade, said recesses being inclined downwardly and forwardly and terminating rearwardly of the forward portion of the blade permitting the forward portion of the blade to rest against said hone, the respective pairs of seats being so relatively placed in a front to back direction as to bring the forward edge positions of both blades into coincidence, a resiliently actuated cover clamp engageable with the forward portion solely of either blade for bringing it into continuous longitudinal contact with said hone from end to end.

8. Safety razor comprising a head including a base plate having upstanding side flanges, a stem secured to said base plate, a lever pivoted relative to said stem, a hone member at the upper end of said lever including a hone and a shaving guard forwardly of said hone, said hone member being reciprocable in a forward and backward direction between said flanges close to said base plate when said razor is shaken, said side flanges being formed with blade positioning seats inclined downwardly and forwardly and terminating rearwardly of the forward portion of the blade permitting the forward portion to rest against said hone, a resiliently actuated cover clamp engageable with the forward portions solely of the blade for bringing it into continual longitudinal contact with the hone from end to end, said hone member having a retracted position in which the hone is rearward of the shaving edge of the blade and the guard is in operative position relative to said edge.

9. Safety razor including a head and a hollow stem secured to said head, means for supporting a blade in shaving and honing position in said head, a longitudinally adjustable cross head in said stem, a lever pivoted to said cross head swingable through a slot in said stem, a hone at the free end of said lever reciprocable, when said razor is shaken, into honing engagement with said blade, and means accessible at the free end of said stem for moving said cross head to adjust the contact of said hone with said blade.

JAMES C. FRIEL.