Jan. 23, 1934. J. HOLTZMAN 1,944,604

SAFETY RAZOR

Original Filed March 10, 1930

Fig. 1.

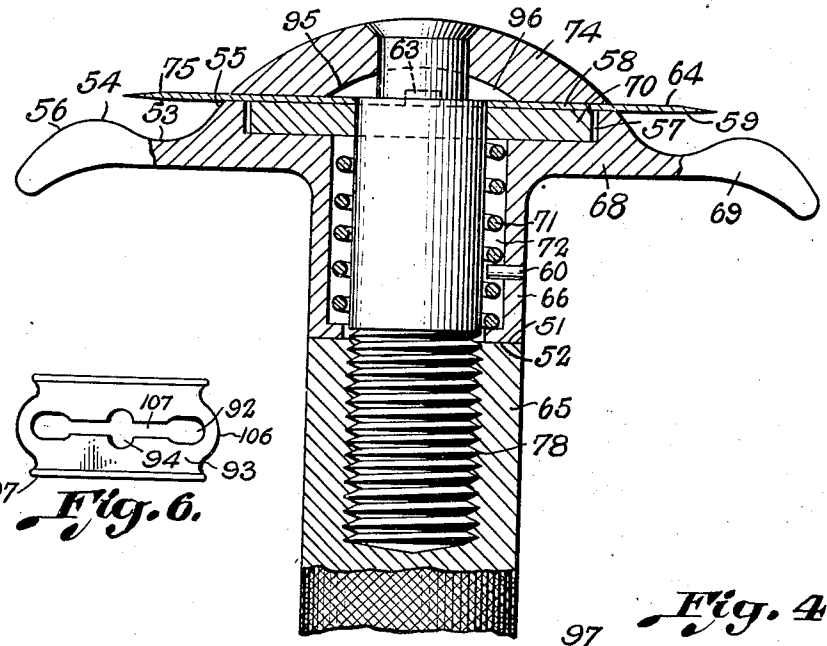
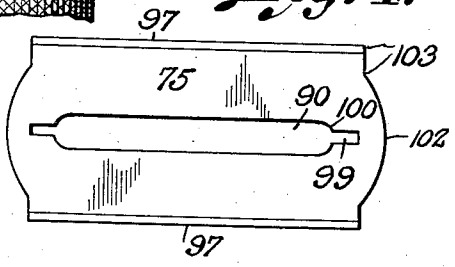


Fig. 6.

Fig. 4.



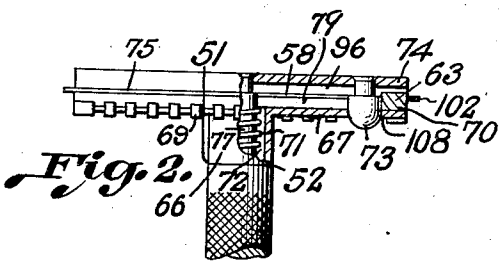


Fig. 2.

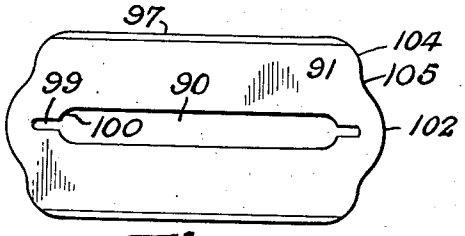


Fig. 5.

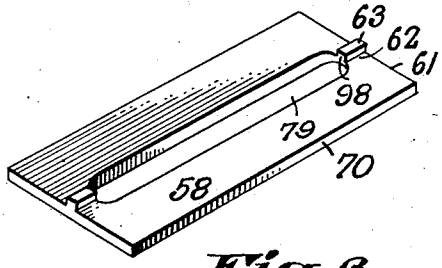


Fig. 3.

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1,944,604

UNITED STATES PATENT OFFICE

1,944,604

SAFETY RAZOR

John Holtzman, New York, N. Y., assignor, by mesne assignments, to Gillette Safety Razor Company, Boston, Mass., a corporation of Delaware

Original application March 10, 1930, Serial No. 434,790. Divided and this application May 31, 1930. Serial No. 458,149

2 Claims. (Cl. 30—12)

This application is a division of my copending application for patent for Safety razors, filed March 10th, 1930, Serial No. 434,790.

This invention relates to safety razors and blades therefor, and contemplates, among other things, the provision of means for so holding the blade in place that the various parts when loosened, may be rotated through an angle of at least 90° to allow easy cleaning of the razor parts and blade.

My invention further contemplates the provision of means for quickly and easily adjusting the blade relatively to the razor guard whereby the user is enabled to control the closeness of the shave as may be desired, within the limits of the adjustment. My invention further contemplates the provision of a razor which is simple in construction, easy to assemble and disassemble with rapidity by unskilled persons, which is capable of economical manufacture in large quantities and which may be used with various types of blades flexible or inflexible.

My invention further contemplates the provision of a wafer safety razor blade, which while designed to be quickly and easily inserted into shaving position in my new razor, and there need not be bent or flexed, may nevertheless be subjected to rough handling and flexed or bent without danger of breaking or cracking. My invention further contemplates the provision of a blade which presents an attractive appearance, and also is provided with suitably shaped projecting ends by means of which the blade may be readily manipulated by the user without bringing his fingers into contact with the cutting edges to cut his fingers or dull the edges, and which ends are further so designed as to provide sufficient material beyond the blade slots to properly reinforce the blade against splitting.

The various objects of my invention will be clear from the description which follows, and from the drawing, in which

Fig. 1 is a vertical transverse section of my improved razor showing one form thereof, the lower part of the handle being omitted.

Fig. 2 is a partial side elevation and partial vertical section of the same.

Fig. 3 is a perspective view of the slotted blade pressure plate.

Fig. 4 is a top plan view of one form of blade, preferably used in connection with my improved razor.

Fig. 5 is a similar view of another form of blade, and

Fig. 6 is a similar view of still another form of blade.

In that practical embodiment of my invention which I have illustrated by way of example, a handle of the usual type is provided at one end with an internally threaded opening 50. The handle engaging section of the guard member shown in the form of a reinforcing extension or housing 66 preferably forming part of the guard member and strengthening said member, is arranged to have its lowermost face 51 brought into clamped contact with the upper face 52 of the handle. Said extension or housing 66 is formed integral with the guard member 68, the latter having comb-like guard teeth 69 serving in the usual manner to prevent the blade from cutting the skin of the user.

A pair of suitable downwardly convex channels 53 are formed in the upper face of the guard and each extends longitudinally thereof with its axis arranged substantially parallel to a line joining the ends of the guard teeth. Said channels are preferably curved at the extremities 54 and 55 thereof where they join the teeth 69 and the remainder of the guard 68 respectively, for the purpose of permitting the edge of the blade 75 to contact with the face of the user without obstruction by the upper corners of the channels 53.

It will be seen that by thus rounding the corners of the channels as at 54, the hairs projecting from the face of the user may pass the upper edge of the guard tooth 69 and may pass under the blade 75, curving around the curved corner 54 and entering the channel 53, whereby no obstruction is offered by the corners of the channels to the entrance of the hairs thereinto and shaving of all of the hairs unobstructedly is assured.

A suitable channel 57 of considerable width is made centrally in the upper face of the guard 68 midway between the guard teeth, said channel extending preferably throughout the entire length of the guard and being adapted to receive the element 70 preferably in the form of a plate. Said plate element is of sufficient width to exert the desired pressure upon the blade 75 to maintain the blade in proper adjusted shaving position as will soon be described, the upper face 58 of said element pressing against the under face 59 of the blade. The thickness of the plate element is made substantially the same as the thickness of the guard member measured from the lowermost part of the channel 53 to the under face of the guard member.

For exerting pressure upwardly upon the pressure plate 70 to hold the blade in position, I pre-

fer to provide suitable spring means. As illustrated, the spring means may take the form of a coil spring 71 disposed in the bore 72 of the extension or housing 66 and abutting at one end thereof against the bottom wall of the extension or housing and at the upper end thereof, against the under face of the pressure plate 70. Said spring permits the use of a rigid or inflexible blade in my improved razor, if desired. The spring 70 may be prevented from leaving the opening 72 by any suitable well known means, as by inserting the end of the spring into a suitable perforation in the extension 66, or by arranging a pin as 60 so that the end of said pin enters the chamber between adjacent coils of the spring, as illustrated in Fig. 1.

The bore 72 in the housing of the guard member is preferably arranged axially of said guard and meets the channel 57 centrally thereof. For allowing passage of the positioning or clamping studs or pins 73 described hereinafter, the pressure plate 70 is provided with a centrally arranged longitudinal slot 79 terminating inwardly of the ends 61 of said plate, but quite close to said ends, leaving a comparatively narrow portion 62 between the ends of the slot and the ends of the plate. For reinforcing and strengthening the said narrow portion 62 and for aiding in positioning the blade lying upon the face 58 of said pressure plate, I prefer to provide upstanding projections as aligned ribs 63 between the ends of the slot 79 and the ends 61 of the plate.

Said plate is guided in its movement toward and from the handle by suitable comparatively short studs as 73 fixed in the clamp member 74 which is arranged above the blade 75 and serves to engage the upper face 64 of the blade to maintain the blade in pressed engagement with the plate 70. The studs 73 pass through the ends of the slot 79 of the plate 70 and through the ends of a similar slot 90 in the blades 75 or 91, or through the slots 92 of the blade 93. For operatively connecting the clamp member 74, the blade as 75, 91 or 93, and the plate 70 to the handle, I provide a centrally arranged stud 77 extending downwardly from and coaxially of the clamp member 74 and passing through the blade slot 90 or 94 and the plate slot 79 into the opening 72 and through the interior of the spring 71, being spaced inwardly of the wall of the opening.

Said stud 77 is of a diameter substantially equal to the width of the slot 79 and is threaded at its lower extremity as at 78 to engage the internal threads of the opening 50 in the upper end of the handle.

Since the projections 63 of the plate 70 may be made of the same height as the thickness of the blade 75 or since said projections may be made of greater height so as to extend completely through the blade and project thereabove, I prefer to cut the clamping member 74 away at its under surface as at 95 whereby the projection 63 may extend into the cut-away part 96 and through the blade when the parts are assembled. The cap or clamping member 74 is therefore provided with flat marginal under surfaces comprising longitudinal edge portions of the cap member 74. Said marginal under surfaces are separated throughout their whole length by the longitudinal concave recess 95. By having the marginal surfaces as well as the other surfaces and the recess of the cap member 74 straight, it not only facilitates the manufacture of the cap member, it is a contour which lends itself to cleansing and the maintenance of sanitary conditions.

The projections or studs 63 and 73 are located in widely spaced positions on their respective members and they serve as aligning means for the blade interposed between the cap and guard members. The wide spacing of the studs places them in positions of maximum efficiency for aligning the parts of the razor head. Furthermore the wide spacing and the shortness of the studs facilitates angular displacement for cleansing and drying purposes. It is also to be observed that blade alignment is produced by the depending studs 73 of the cap member 74 and also by the upstanding projections or studs 63 on the combined positioning and pressure plate 70. With this double set of aligning means the manufacturers may select as many as eight positions on the studs for critical aligning contact with the blade slot or he may select a lesser number than eight.

For providing a symmetrically shaped blade, I prefer to so arrange the projections 63 that they are disposed midway between and parallel to the edges 97 of the blades 75, 91 and 93 and equidistant from the axis of the central stud 77. The inner face 98 of the projection 63 may be suitably curved, if desired, so as to properly engage the corresponding stud 73.

To assemble the parts, it being assumed that the clamp member 74, the blade and the plate 70 have been removed, the plate 70 is first inserted in the channel 57. The blade is then inserted in place on said plate with the projection 63 passing into the narrowed portion 99 of the slot 90 or into the outer parts of the enlarged portion 92 of the slot in the blade 93, as the case may be, whereby the blade is properly positioned on the guard member. The studs 77 and 73 of the clamping member 74 are then passed through the slot 90 of the blades 75 and 91, or through the inner portion of the slots 92 and through the opening 94, the stud 77 thereby entering and passing through the opening 72, whereafter, the handle is screwed on to the threads 78 to hold the parts together.

It will be seen that when the handle is rotated in one direction relatively to the parts carried thereby, the stud 77, the clamping member 74 to which it is connected, and the blade may be drawn toward the handle against the upward action of the spring 71 on the plate 70.

The spring, by reason of said upward action, not only serves to clamp the parts 70, 75 and 74 together, but serves also to prevent relative rotation of the parts by enhancing the frictional engagement of the threads and consequently prevents undesired change in the adjustment. By turning the handle in the opposite direction, the stud 77 is raised under the influence of the spring 71, as is the plate 70 which carries the blade with it, thereby separating said blade from the guard extensions 68 and from the guard teeth 69 and allowing the user to obtain a coarser shave. It will be noted that the spring 71 maintains the face section 51 at the lower face of the guard member in contact with the upper end of the handle.

As illustrated in Figs. 4 and 5, and as has been hereinbefore indicated, the wide part of the slot 90 is of sufficient length to receive the studs 73 substantially in contact with the ends 100 thereof and a narrower slot 99 extends beyond the ends 100 of the slot to receive the projections 63

of the plate 70. The ends 102 of the blade are therefore extended to provide sufficient material at said ends to strengthen the blade, and to prevent it from splitting or cracking when flexed or under rough handling.

For the purpose of eliminating the sharp corners 103 of the blade illustrated in Fig. 4, said corners may be rounded as at 104 (Fig. 5) to meet the fillet 105 which joins said round corners 104 to the curved end 102 of the blade. The blade may be made thin enough to be flexible if desired, or may be made of the same thickness as the height of the projection 63 or of less thickness than said projections as may be found convenient or desirable.

As shown in Fig. 6, the blade 93 is reversely curved at its ends 106 to provide the greatest amount of material where it is most needed and to dispense with surplus material.

Narrow slots as 107 may join the openings 94 and 92. Said openings may be of the same or greater width than the diameters of the studs 73 and 77. In the blade of Fig. 6, the narrow slots 99 have been arranged at 107 between the openings 94 and 92 and said openings take the place of the long slot 90.

The studs 73 are made preferably of sufficient length to enter suitable openings as 108 in the guard member but not to extend substantially beyond said openings in that position of the parts which gives the coarsest shave desired. Said studs are further rounded at their lowermost extremities to allow easy and quick separation and assembly of the parts. It thereby becomes possible on rotation of the handle in the proper direction to so loosen the clamping member 74 that the spring 71 pushes the member 74 upwardly, removing the studs 73 out of the openings 108 of the guard member, and pushing the plate 70 out of the channel 57, without other separation of the parts whereby the clamping member, the plate and the blade may be rotated as a unit relatively to the guard member to a position transversely of the guard member for the purpose of cleaning the blade with ease and rapidity. The cut-away part 96 also aids in permitting running water to contact with and to clean the blade and other parts.

It will further be seen that the parts of my improved razor are adapted to be assembled and disassembled quickly and easily by unskilled persons, that it is of simple construction and adapted for quantity production and that it is suitable for use with various types of blades whether of the flexible or rigid type.

While I have shown and described certain specific embodiments of my invention, I do not wish to be understood as limiting myself thereto since I intend to claim my invention as broadly as may be permitted by the state of the prior art and the terms of the appended claims.

I claim:

1. A safety razor including cap and guard members and an apertured blade, said guard having on one of its sides a combined reinforcing portion and spring housing, a spring disposed within said housing, said guard having on its opposite side a longitudinal channel or recess providing at its sides longitudinal guides transverse to the plane of the guard, a combined positioning and pressure plate having an unobstructed lower surface, said plate being engaged by said spring and said guides, the cap member having surface portions for engaging the blade, said plate having a slotted portion and combined reinforcing and blade-positioning means extending from the end of the slot to the end of the plate, studs depending from the cap member and engaging the blade and plate to align the same, and means to secure the parts together in assembled relation for shaving.

2. A safety razor comprising co-operating blade clamping members, one of which is provided at its outer ends with narrow aligned spring-supported blade-locating ribs, and one with projecting cap-locating studs disposed inside said ribs, and an interposed blade having an internal aperture with narrow extended ends to fit said ribs and with an intermediate portion of greater width and having unbroken parallel edges spaced apart to fit said studs.

JOHN HOLTZMAN.