Sept. 3, 1929. H. J. GAISMAN 1,727,167

SAFETY RAZOR

Filed July 9, 1927

Fig. 1

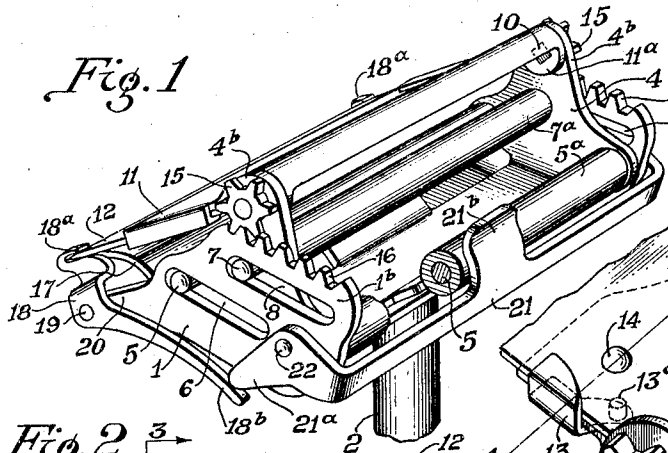


Fig. 5

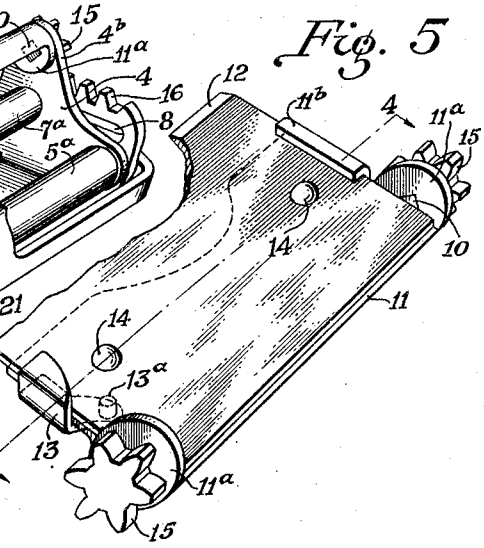


Fig. 2

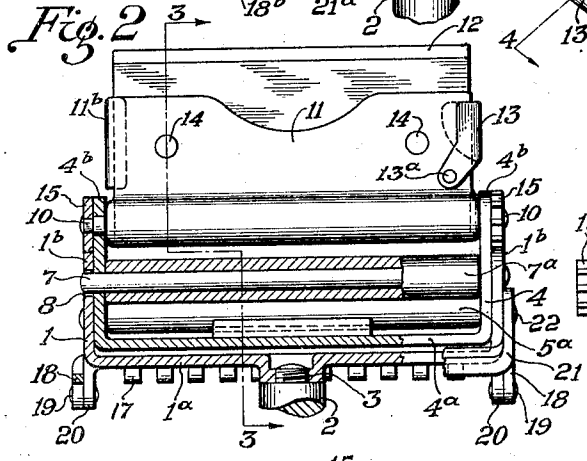


Fig. 4

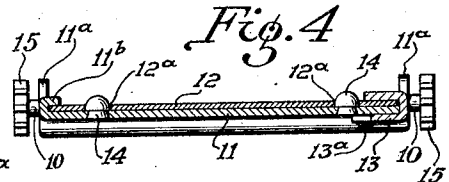


Fig. 6

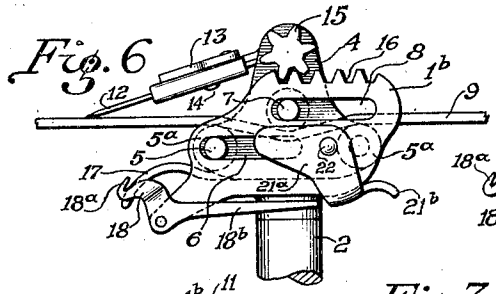


Fig. 7

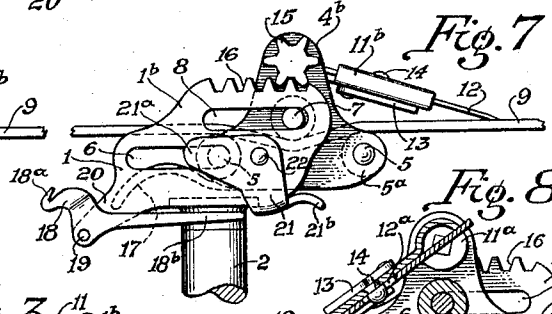


Fig. 9

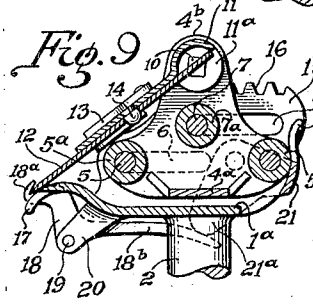


Fig. 3

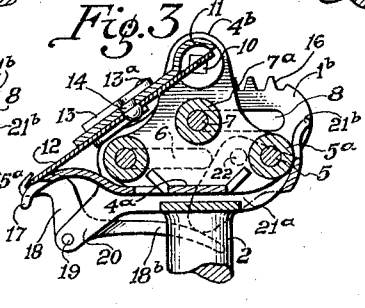
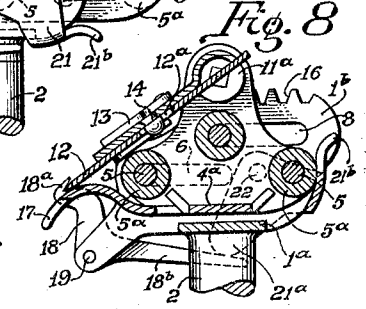


Fig. 8



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UNITED STATES PATENT OFFICE.

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SAFETY RAZOR.

Application filed July 9, 1927. Serial No. 204,439.

My invention relates to improvements in the class of razors in which a blade holder and blade are rocked for stropping the blade edge.

An object of my invention is to provide a safety razor including two frames slidable relatively one to another in the direction of reciprocation of the razor along a strop, a blade holder pivotally carried by one frame, means cooperative between the blade holder and a frame for rocking the blade holder and blade by reason of movement of one frame relatively to the other for sharpening the blade edge on a strop and for raising the blade edge from the strop at the initiation of reverse reciprocating motions of the razor along the strop, a guard for the blade edge, and means to retain the two frames in a set position and the guard in shaving relation to the blade for shaving purposes.

My invention comprises novel details of improvement that will be more fully hereinafter set forth and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part hereof, wherein

Fig. 1 is a partly broken perspective view of a safety razor embodying my invention;

Fig. 2 is a partly sectional front view of the razor showing parts in a different position from Fig. 1;

Fig. 3 is a section on line 3, 3, in Fig. 2;

Fig. 4 is a detail section substantially on line 4, 4, in Fig. 5;

Fig. 5 is a perspective detail of the blade holder and blade;

Figs. 6 and 7 are side views illustrating different stropping positions of the razor;

Fig. 8 is a sectional view, and

Fig. 9 is a sectional view illustrating a modification.

Similar numerals of reference indicate corresponding parts in the several views.

The main frame 1 may be of any suitable construction being shown comprising a base 1^a and spaced uprights 1^b, a suitable handle or support 2 being secured to a base 1^a in any desired or well known way, such as by screw threads at 3. Within frame 1 is a second frame 4 mounted to slide relatively to frame 1, the frame 4 illustrated comprising a base 4^a having spaced uprights 4^b. The frame 4 is shown located within the frame 1 with the uprights 4^b between the uprights 1^b and slidably cooperative therewith, whereby the frames are retained in relatively operative positions. The frame 4 is provided with spaced strop-tensioning means illustrated in the form of shafts 5 supported by the uprights 4^b and provided with hollow sleeves 5^a through which the shafts 5 pass and interposed between the uprights 4^b. One of the shafts 5 at its ends extends outwardly beyond the uprights 4^b into slots 6 longitudinally disposed in the uprights 1^b of frame 1, whereby when frame 4 slides relatively to frame 1 the shaft 5 and slots 6 will guide frame 4. The frame 4 is also provided with additional strop engaging means shown comprising a shaft 7 journaled between the uprights 4^b of frame 4 and passing through a tubular shaft or sleeve 7^a which is located between the uprights 4^b. The ends of shaft 7 are slidable in corresponding longitudinal slots 8 in the uprights 4^b for guiding frame 4 relatively to frame 1. When a strop 9 is passed through the frames it will engage the strop tensioning means, (Figs. 6 and 7), so that when the razor is reciprocated along the strop the frame 4 will be temporarily retained in position on the strop and frame 1 will move along the strop relative to frame 4 until stopped by the engagement of shafts 5 and 7, with the metal at the corresponding end of the respective slots 6 or 8, so that during further movement of the razor along the strop the two frames will slide together. Each time that the reciprocating motion of the razor is reversed along the strop the relative movement of one frame with respect to the other will occur.

A blade holder is movably carried by the frame 4, being shown pivotally supported upon the uprights 4^b by means of pivots 10 secured to ears 11^a extending laterally from blade holder 11. The blade holder is shown in plate-like form provided at one end with a stationary jaw 11^b to receive one edge of blade 12 that is laid against the member and with a pivotal jaw 13 at the opposite edge to receive the adjacent edge of the blade. Jaw 11^b may be made by folding the metal at the adjacent end of the blade holder plate, (Fig. 4), and jaw 13 may be made by folding a strip of metal adapted to clamp the adjacent edge of the blade holder plate and the blade, a pivot at 13^a pivotally con-

necting said jaw with the plate. The blade holder plate is shown provided with spaced pins or projections 14 adapted to pass through corresponding openings 12^a in the blade to keep the blade from shifting on the blade holder. Pivots 10 carry gears 15 shown located on the outer sides of the uprights 4^b and in mesh with racks 16 on the upper edges of the uprights 1^b of frame 1. The relative arrangement of the gears and racks is such that when the two frames 1 and 4 move relatively to one another the engagement of the gears with the racks will cause the blade holder with the blade to be rocked or rotated back and forth to present the opposite sides of the blade edge to the strop for sharpening such edges.

When the strop is passed through the razor, (as indicated in Figs. 6 and 7), and the razor is moved to the right in Fig. 6, (the strop being held taut), the racks 16 will cause operation of gears 15 to press the blade edge against the strop, and the blade edge will be dragged along the strop for sharpening the edges, (Fig. 6). At the termination of the stroke the frame 1 will be moved in the reverse direction and frame 4 will be temporarily retained by the strop, and such movement of frame 1 will cause the racks 16 to operate the gears 15 and rock or rotate the blade holder and the blade from the position shown in Fig. 6 to reverse the position of the blade edge upon the strop, as in Fig. 7, and continued movement of the razor to the left will cause the blade edge to drag along the strop for sharpening it. It will be understood that each time the frame 1 has moved independently of frame 4, and the blade holder with the blade has been rocked appropriately, the metal at the ends of the slots 6 and 8, by engagement with the shafts 5, 7, will cause the frame 4 to be pulled along the strop in a corresponding direction. At the initiation of each reverse stroke or reciprocation of frame 1 the movement of the racks 16 independently of movement of the temporarily retained frame 4 will cause the blade edge to be raised from the strop before frame 4 slides to prevent the blade from cutting the strop.

A guard for the blade edge is indicated at 17, which may be of any usual or desired construction. Said guard in Figs. 1 to 8 is shown carried by frame 4. Arms 18 are pivotally supported by frame 1 at 19 upon projections 20 from said frame. The arms 18 are provided with blade stops, shown in the form of hooks at 18^a, adapted to engage the edge portion of the blade to retain the latter in shaving relation to the guard. At opposite ends 18^b the arms 18 are relatively attenuated so as to have spring action and are adapted to be engaged by projections 21^a that extend, in a cam-like manner, from the opposite end portions of a movable member 21 that is pivotally supported at 22 upon frame 1 at the side opposite the guard. The member 21 is shown in yoke-like form (Fig. 1), and provided with a finger piece 21^b adapted to be operated for rocking said member and its projections 21^a. When the blade is to be retained respecting the guard for shaving, the blade is laid against the guard and the member 21 is rocked to cause its projections to engage the portions 18^b of arms 18 to cause engagement of the blade stops 18^a with the blade and the finger piece 21^b will engage the adjacent strop-tensioning member 5^a, whereby the member 21 will retain the blade stops against the blade, as indicated in Figs. 1 and 3. The flexibility of the portions 18^b of the arms 18 will enable the stops 18^a to resiliently engage the blade edge and retain the same with the blade pushed against the pins 14. When the blade edge is to be stropped the member 21 will be swung, as indicated in Figs. 6 and 7, to release the projections 21^a from the arms 18, whereupon the blade stops may be swung away from the blade edge and the blade will be released for stropping.

In case a blade should be substituted for an authorized blade and be provided with openings 12^a that are considerably larger than the pins 14 the movement of the arms 18, by reason of the projections 21^a, will cause the blade stops 18^a to engage the blade and push it rearwardly so that the blade edge will be pushed too far back from the guard for shaving, as indicated in Fig. 8.

In the form shown in Fig. 9 the guard 17 is carried by the frame 1 and projections 20 extend from frame 1, to which projections the arms 18 are pivoted at 19. Projections 21^a of member 21, as previously described, will engage the portions 18^b of arms 18 to cause the blade stops 18^a to engage the blade edge.

While I have set forth two racks 16 on frame 1 and two gears 15 operative with said racks, it will be understood that one rack and a corresponding gear may be used if preferred. Also, that my invention is not limited to the details of construction set forth, as the same may be varied, within the scope of the appended claims, without departing from the spirit of my invention.

Having now described my invention what I claim is:—

1. A safety razor comprising a frame provided with a stationary rack, a second frame slidable relatively to the first named frame and rack, the second frame having strop-tensioning means, a blade holder pivotally carried by the second frame and provided with a gear cooperative with said rack for rocking the blade holder during movement of one frame relative to the other and relative to the rack, a guard for a blade edge carried by one of said frames, and means to

retain the blade in shaving relation to the guard.

2. A safety razor as set forth in claim 1, including means to retain the frames in set position when the blade is in shaving relation to the guard.

3. A safety razor as set forth in claim 1, in which the means to retain the blade in shaving relation to the guard includes pivotally supported arms provided with blade engaging means, and a movable member cooperative with said arms to retain the blade engaging means in cooperation with the blade.

4. A safety razor as set forth in claim 1, including pivotally supported arms provided with blade engaging means, and a member movably carried by one of the frames and having means cooperative with said arms for retaining the blade engaging means in cooperation with the blade and retaining the frames in set position to retain the blade in shaving relation to the guard.

5. A safety razor as set forth in claim 1, in which the means to retain the blade in shaving relation to the guard includes pivotally supported arms provided with blade engaging means, and a member pivotally carried by one of the frames and provided with projections respectively cooperative with said arms to retain the blade engaging means in cooperation with the blade and retain the frames in set position to retain the blade in shaving relation to the guard.

6. A safety razor as set forth in claim 1, in which the means to retain the blade in shaving relation to the guard includes pivotally supported arms having blade engaging means, portions of which arms are resilient, and a member pivotally carried by the second frame and provided with projections respectively cooperative with said arms to retain the blade engaging means in cooperation with the blade and retain the frames in set position to retain the blade in shaving relation to the guard.

7. A safety razor comprising a frame provided with a rack, a second frame slidable relatively to the first named frame, the second frame having strop-tensioning means, a blade holder pivotally carried by the second frame and provided with a gear cooperative with said rack for rocking the blade holder during movement of one frame relative to the other, a guard for a blade edge carried by one of said frames, arms pivotally carried by the other frame and provided with means to engage a blade to retain it in shaving relation to the guard, and a member movably carried by the second frame and cooperative with said arms for retaining the blade engaging means in cooperation with the blade to retain the latter in shaving relation to the guard.

8. A safety razor comprising a frame provided with a stationary rack and having longitudinally disposed slots, a second frame slidable relatively to the first named frame and the rack, the second frame having strop-tensioning means, part of which means is operative in said slots, a blade holder pivotally carried by the second frame and provided with a gear cooperative with said rack for rocking the blade holder during movement of one frame relatively to the other and relative to the rack, a guard for a blade edge carried by one of said frames, and means to retain the blade in shaving relation to the guard.

9. A safety razor comprising a frame having a base and spaced uprights, said uprights having spaced longitudinal slots, a second frame operative within the first named frame and provided with strop-tensioning means, part of which means is operative in said slots for slidably guiding one frame with relation to the other, the first named frame having a rack, a blade holder pivotally carried by the second frame and provided with a gear in mesh with said rack, a guard carried by one of the frames, and means to retain a blade in shaving relation to the guard.

10. A safety razor as set forth in claim 9, in which the means to retain the blade in shaving relation to the guard includes arms pivotally supported on one of the frames and provided with means to engage a blade to retain it in shaving relation to the guard, and a member pivotally supported on the other frame and provided with projections to engage the arms to cause the blade retaining means to retain the blade with respect to the guard for retaining the frames in corresponding position

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