Feb. 11, 1930. H. J. GAISMAN 1,747,151

SAFETY RAZOR

Filed June 22, 1927

Fig. 1.

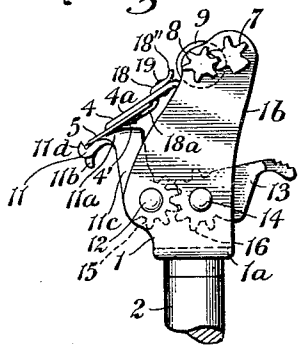


Fig. 2.

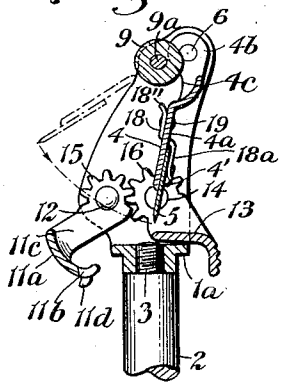


Fig. 3.

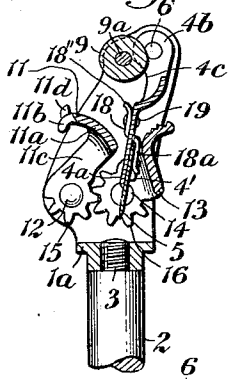


Fig. 5a.

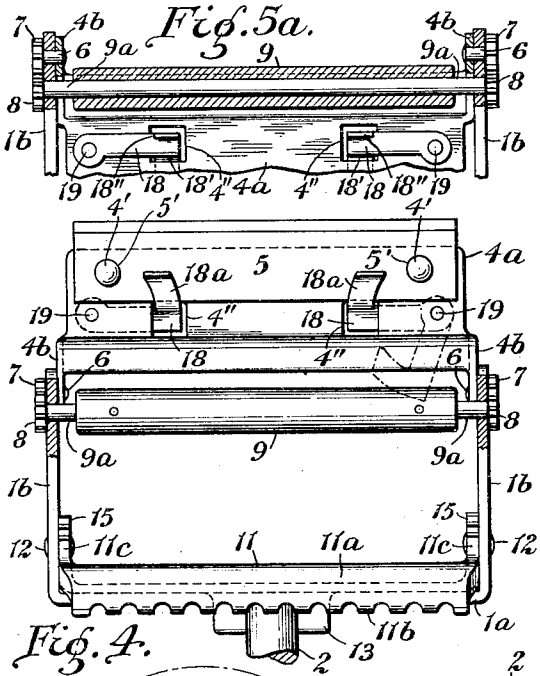


Fig. 5.

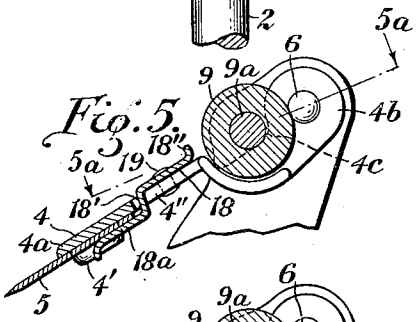


Fig. 7.

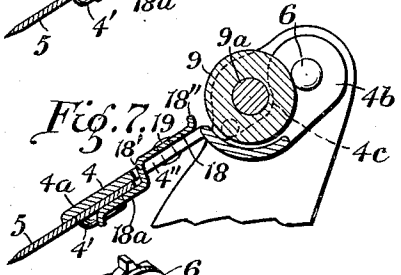


Fig. 4.

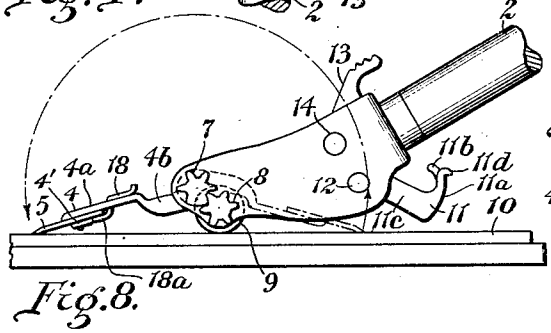


Fig. 6.

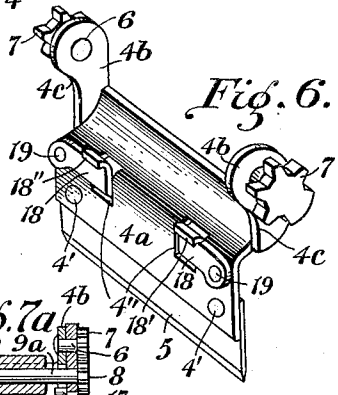


Fig. 7a.

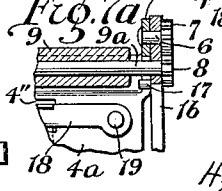


Fig. 8.

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UNITED STATES PATENT OFFICE

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SAFETY RAZOR

Application filed June 22, 1927. Serial No. 200,576.

My invention relates to improvements in the class of safety razors set forth in my application for Letters Patent filed April 14, 1927, Serial No. 183,686, in which a frame is provided with a pivotally supported blade holder and a roller is carried by the frame and operatively connected with the blade holder for rocking the latter, which roller is adapted to engage a surface for causing operation of the blade holder for stropping the blade carried thereby when the razor is reciprocated along said surface.

One of the objects of my invention is to provide a safety razor having a frame and a roller located between members of the frame in such a position as to engage a surface of any desired width for causing rotation of the roller for rotating the blade holder with the blade, to which blade holder the roller is operatively geared, and to so arrange the blade holder that it will swing freely within the frame without interference from the roller for stropping the blade and so that opposite sides of the blade may be presented to a stropping surface at a relatively small angle to the plane of the blade.

Another object is to provide a blade holder having means to detachably retain a blade and provided with extending arms to be pivotally supported in the razor frame and provided with gear means for rocking the blade holder from an operating roller.

My invention also 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 side view illustrating my improved safety razor with the parts in position for shaving;

Fig. 2 is a central section of the razor illustrating the parts in position for stropping;

Fig. 3 is a central section showing the blade holder and blade folded within the frame;

Fig. 4 is a partly broken side view of the razor with the blade holder in a different position than in Fig. 2;

Fig. 5 is an enlarged detail section;

Fig. 5^a is a cross section on line 5^a, 5^a, in Fig. 5;

Fig. 6 is a detail perspective of the blade holder;

Fig. 7 is a detail of a modification;

Fig. 7^a is a detail in section of a modification, and

Fig. 8 is a side view illustrating the razor in stropping position.

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

The main frame of the razor is indicated generally at 1 and is shown comprising a base 1^a having spaced uprights or sides 1^b. At 2 is a handle which may be attached to the base 1^a in any desired way, such as by screw threads at 3. At 4 is indicated a blade holder which is shown comprising a plate-like member 4^a against which a blade 5 is detachably retained, as by being laid against the member 4^a with its cutting edge projecting beyond the member. The blade holder is shown provided with spaced arms 4^b extending outwardly from said member at the side opposite the blade and shown located adjacent to the uprights 1^b and between the same, said arms being journaled to said uprights, whereby the blade holder may rock. The arms 4^b are shown provided with pivots 6 which are journaled in the uprights 1^b and carry gears 7 that mesh with gears 8 secured at the ends of roller 9 that is journaled in the uprights 1^b and extends across therebetween. The surface of the roller 9 extends sufficiently outwardly beyond the adjacent portion of uprights 1^b of the main frame to enable the roller to engage a surface 10, which may be a stropping surface for the blade edge, so that when the razor is reciprocated with the roller in engagement with said surface the blade holder and blade will be rocked for engagement of opposite sides of the blade along its edge with the surface 10 for stropping the blade edge. The arms 4^b of the blade holder are of suitable length behind the holder and the arms are shown recessed at 4^c so as not to engage the reduced end pivot portions 9^a of roller 9, so that the holder and the blade may be rocked back and forth within or through the frame with-

out engagement of the blade and blade holder or the arms with the roller 9 when the blade rocks back and forth in the direction indicated by the dotted lines in Fig. 7 for stropping the blade. The arrangement of the parts is such that the blade and blade holder may swing freely between the uprights 1^b and so that the blade edge will not engage the base 1^a of the frame.

A guard for the blade holder is indicated at 11 and is shown pivotally supported between the uprights by pivots 12, the guard being shown comprising a bar 11^a having comb-like teeth 11^b along its outer edge and having spaced inwardly disposed arms 11^c receiving the pivots 12, whereby the guard may swing relatively to the blade. Stops 11^d upon the guard are adapted to engage the blade edge near its corners to retain said edge in shaving relation to the guard teeth, as illustrated in Fig. 1, when the parts are assembled for shaving. When the blade is released from the guard the blade holder and the blade may swing away from the guard, as in Fig. 2, for stropping purposes, and the guard may be folded up along one side of the blade when not in use, as in Fig. 3. A retaining member 13 is shown pivotally supported at 14 upon the uprights 1^b of frame 1, on the side opposite the guard, in such a way that the retainer may be folded within the uprights of the frame on the side of the blade opposite the guard when the parts are assembled as shown in Fig. 3, to keep the blade safely disposed within the frame so that the blade will not swing outwardly therefrom. By preference the guard member 11^c and the retainer member 13 are geared together to operate in unison, for which purpose I have shown gear teeth 15 connected with the guard and gear teeth 16 connected with the retainer 13, said teeth being in mesh, whereby the member 13 may be manually operated for rotating it and thereby correspondingly operating the guard, whereby the member 13 and the guard may simultaneously be folded within the frame on opposite sides of the blade, by pushing up the member 13, as illustrated in Fig. 3. The arrangement of the guard and the retainer member 13 is similar to corresponding parts set forth in my aforesaid application. The blade holder arms may engage the parts 9^a of roller 9 when the blade edge is engaged by the blade stops 11^d to limit the upward swinging of the blade holder with the blade when the guard stops engage the latter for shaving position, (Figs. 1 and 5), or the uprights 1^b may be provided with stops 17 located in such position as to engage the arms 4^b of the blade holder for the same purpose, as illustrated in Figs. 7 and 7^a.

The blade holder 4 is shown provided with spaced projections 4′ adapted to enter corresponding openings or holes 5′ in the blade for locating the latter in proper position on the blade holder and for preventing edgewise displacement of the blade on the holder. Blade retainers 18 are pivotally supported at 19 on one side of the blade holder, (Figs. 4 and 6), and said retainers have projections or jaws 18^a extending laterally at 18′, (Fig. 5), through openings 4″ in the blade holder and thence over the rear portion of the blade to retain the latter clamped against the blade holder plate 4^a. When a blade is to be applied in the blade holder the members 18 are swung to one side to carry the jaws 18^a away from the blade position on the blade holder, (to release a blade), as indicated by the dotted lines in Fig. 4. The blade may then be laid against the member 4^a of the blade holder with the pins 4′ in the holes 5′ of the blade, and then the members 18 may be swung back with the jaws 18^a overlying the blade, as indicated in Fig. 4. The blade retainers 18 are shown provided with laterally disposed lugs 18″ for convenience in manipulating the retainers, (Fig. 6).

In accordance with my improvement when the blade edge is to be stropped the blade will be released from the guard, which guard with the retainer 13 may be swung to the positions shown in Figs. 2 and 8, and the roller 9 may be applied against the surface 10. When the razor is reciprocated along said surface the engagement of the roller 9 therewith, through the medium of the gearing 7 and 8, will cause rocking of the blade holder and the blade for engagement of opposite sides of the blade with the stropping surface. With the blade in the dotted line position shown in Fig. 8 and the razor moved toward the right in said figure the rotation of the roller by engagement with the surface 10 will cause the blade to be swung from the dotted position upwardly through the frame in the direction of the arrows to the full line position to drag behind the razor on the sharpening surface to sharpen the blade edge as the razor is pulled along the surface or hone 10 to the end of the stroke. When the direction of the movement of the razor is reversed along the stropping surface or hone the roller 9 will be caused to rotate in such a way as to cause the blade holder to be rotated to reverse the position of the blade, (from the full line to the dotted line position in Fig. 8), to cause the adjacent corresponding edge of the blade to bear upon the stropping or honing surface, and by pushing the razor along said surface the blade edge will be dragged thereon, as from right to left in Fig. 8, for sharpening it. Each time the direction of the razor is reversed along the stropping or honing surface the blade holder will be rocked. An advantage of the construction is that the angle of the frame 1 respecting the stropping surface may be varied, or the frame tilted more or less respecting the stropping surface, without interfering with the action of the

blade edge against such surface, and whereby the blade edge may be dragged against the stropping surface at a small acute angle respecting the plane of the blade for producing a fine edge on the blade. The arrangement set forth enables the shaving and stropping angles of the blades respectively to be determined at angles at variance to those which would be fixed by a level blade holder or a solid or rigid blade holder.

Having now described my invention what I claim is:—

1. Blade stropping means comprising a frame, a single roller journaled within the frame, a blade holder journaled in the frame adjacent to the axis of rotation of the roller retaining the blade holder at a distance from the roller to freely pass the same when the blade holder rotates, and means interposed between the roller and the blade holder for rotating the latter by the former with a blade operative against a sharpening surface outside of the frame, when the roller is reciprocated in engagement with said surface, the path of movement for the blade holder being unobstructed by the single roller.

2. Blade stropping means comprising a frame, a single roller journaled within the frame, a blade holder having extended arms journaled in the frame retaining the blade holder at a distance from the roller to freely pass the latter when the blade holder rotates, and means interposed between the roller and the blade holder for rotating the latter by the former with a blade operative against a sharpening surface outside of the frame, when the roller is reciprocated in engagement with said surface, the path of movement for the blade holder being unobstructed by the single roller.

3. Blade stropping means as set forth in claim 1, in which the means interposed between the roller and the blade holder includes intermeshing gears connected with the roller and with the blade holder for rotating the latter by the former.

4. Blade stropping means comprising a frame provided with a base and spaced uprights, a single roller journaled in the frame between the uprights and extending beyond the frame in position to engage a surface for rotating the roller when the frame is reciprocated along said surface, a blade holder pivotally supported between said uprights adjacent to the axis of rotation of the roller and out of engagement with the roller, the path of movement for the blade holder being unobstructed by the single roller, and means interposed between the roller and the blade holder for rotating the latter by the former with a blade operative against said sharpening surface outside of the frame, when the roller is reciprocated in engagement with said surface.

5. Blade stropping means comprising a frame provided with a base and spaced uprights, a single roller journaled in the frame between the uprights and extending beyond the frame in position to engage a surface for rotating the roller when the frame is reciprocated along said surface, a blade holder pivotally supported between said uprights adjacent to the axis of rotation of the roller and out of engagement with the roller to rotate in stropping position without engaging the roller, the path of movement for the blade holder being unobstructed by the single roller, and intermeshing gearing between the roller and the blade holder for rocking the latter when the roller is reciprocated along said surface with a blade operative against said surface outside of the frame.

6. A safety razor comprising a frame, a blade holder pivotally carried by the frame, to swing within and without the same, and a guard carried by the frame, the guard having means to engage the surface of the blade and the frame having a roller to engage the blade holder when the guard engages the surface of the blade to limit the position of the blade holder and guard for shaving.

7. A safety razor comprising a frame, a blade holder pivotally carried by the frame, a guard carried by the frame, the guard having stops to engage the blade and the frame having a roller to engage the blade holder when the guard stops engage the blade, said means limiting the position of the blade holder for shaving.

HENRY J. GAISMAN.