Sept. 2, 1930. H. J. GAISMAN 1,774,828

SAFETY RAZOR

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Fig.2.

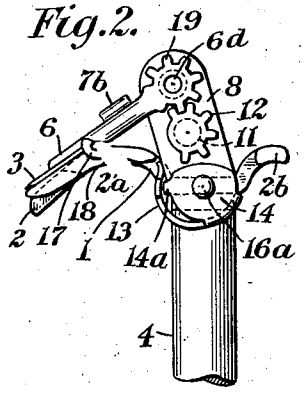


Fig.1.

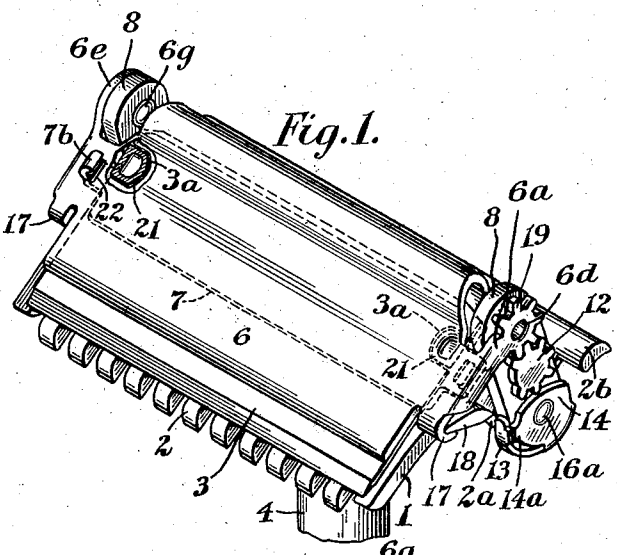


Fig.3.

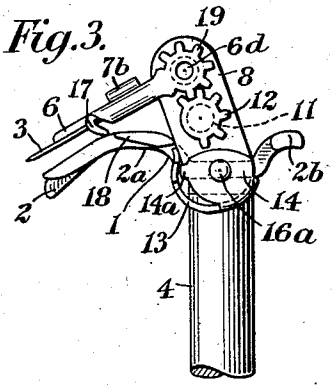


Fig.4.

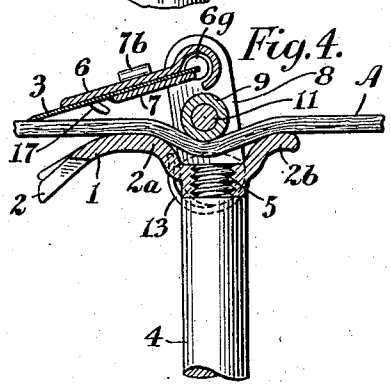


Fig.5.

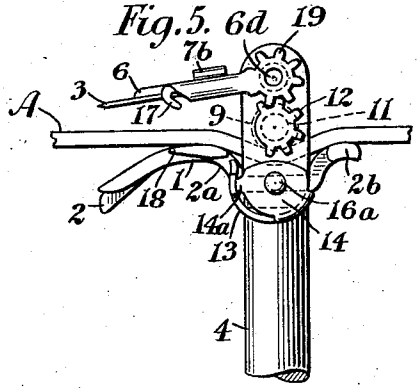
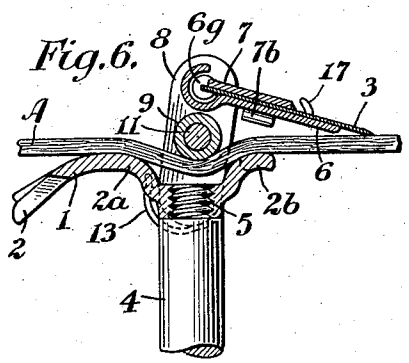


Fig.6.



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Fig.7.

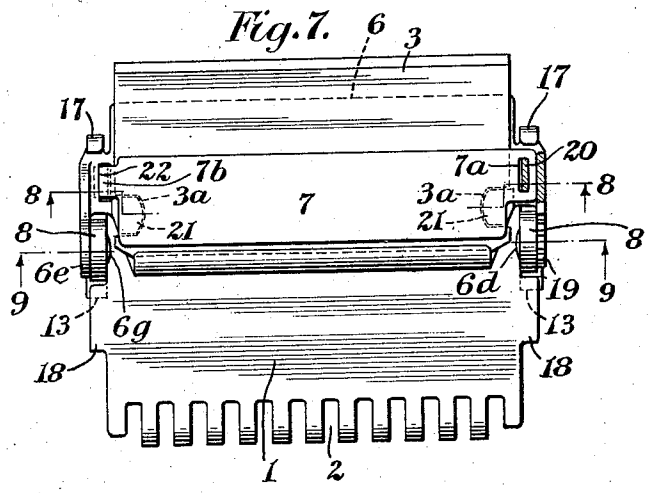


Fig.8.

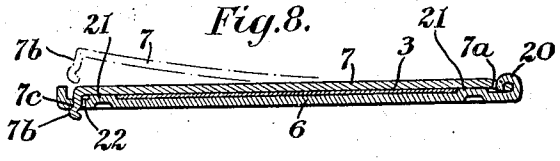


Fig.9.

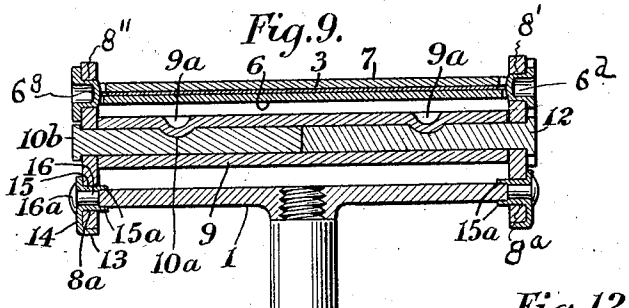


Fig.12.

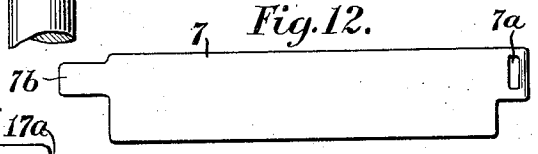


Fig.11.

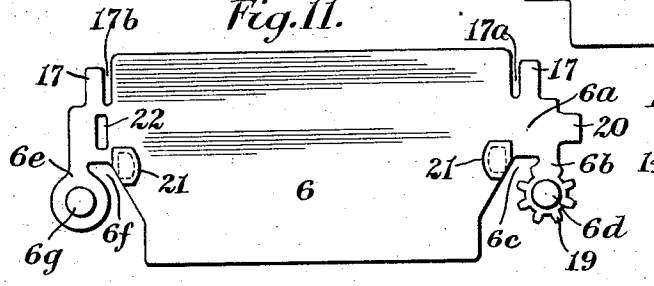
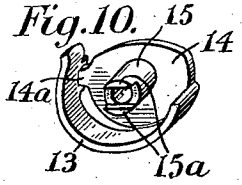


Fig.10.



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UNITED STATES PATENT OFFICE

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SAFETY RAZOR

Application filed December 20, 1926. Serial No. 155,827.

My invention relates to improvements in safety razors and is particularly applicable to the class of safety razors in which a blade is held in shaving relation to a guard and is adapted to be rotated or rocked back and forth for stropping the edge of the blade while in the razor.

One of the objects of the invention is to provide improved means for movably supporting a blade holder to cause the edge of the blade to rise from the strop at the time that the reciprocating motions of the razor along the strop are reversed to prevent cutting of the strop and also to retain the cutting edge of the blade in shaving relation to the guard.

Another object of the invention is to provide a blade holder of the rotating or rocking variety to reduce the cost and simplify the construction and operation of the same for inserting and removing blades.

The 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 perspective view of the improved razor showing the blade in shaving position;

Fig. 2 is a side view of Fig. 1;

Fig. 3 is a side view illustrating the blade released for stropping;

Fig. 4 is a sectional view illustrating the strop in position for stropping the blade;

Fig. 5 is a side view illustrating the blade in a different position from Fig. 4;

Fig. 6 is a sectional view illustrating the blade in a different position from Fig. 5;

Fig. 7 is a plan view with the parts substantially in the position shown in Fig. 6;

Fig. 8 is a detail section of the blade holder substantially on line 8, 8, in Fig. 7;

Fig. 9 is a cross section substantially on line 9, 9, in Fig. 7;

Fig. 10 is a detail perspective view of the spring 13;

Fig. 11 is a plan view of a blank for a member of the blade holder, and

Fig. 12 is a plan view of a blank for another member of the blade holder.

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

The numeral 1 indicates a frame or base for the razor, which is provided with a guard at 2, shown in ordinary comb-like form, the frame being shown provided with side portions 2^a and 2^b against which a strop A may bear for stropping the blade 3. The frame or base is provided with a handle 4 that may be connected thereto in any suitable way, as by screw threads at 5. The blade holder illustrated comprises two members 6 and 7 adapted to clamp the blade therebetween. A rocking support or frame is provided for the blade holder arranged as follows: Spaced arms 8 are pivoted at the ends of frame or base 1 and are connected by a shaft or roller that is adapted to engage a strop, to be rotated thereby, when the razor is reciprocated along the strop. Said shaft or roller is shown comprising a tube 9 receiving shafts 10, 11 which are secured to the tube, as by denting portions 9^a of the tube into recesses 10^a, 11^a in the shafts 10, 11, whereby said parts are rotatively united and are kept from endwise displacement relatively to each other. The tube 9 is located between the arms 8, the shaft 10 has a head at 10^b outside of one of the arms, (Fig. 9), and the shaft 11 has a gear 12 outside of the adjacent arm 8. The arrangement is such that the shaft or roller will rotate between the arms 8 and will aid in maintaining said arms in operative relation. One or more springs 13 are provided adapted to engage the adjacent arm 8 when the blade holder is to be retained with the blade in shaving relation to the guard for shaving. Spring 13 is shown extending from a plate 14 which is provided with a stop 14^a to engage the free end portion of the spring to control the normal position of the spring bearing against said stop. The plate 14 is secured to the frame or base 1 and said plate is shown provided with a tubular projection 15, which may be drawn out of the material of the plate, the inner end of said projection being provided with spaced jaws 15^a, (Fig. 10), adapted to embrace the surfaces of frame or base 1 to keep plate 14 from rotating. The spring 13 and plate 14 may be stamped and

bent, as indicated, from a single piece of spring metal. The frame or base 1 is provided with studs or gudgeons 16 that pass through the bores of the projections 15 and are headed or riveted over at 16ª outside of plate 14 to keep the plate secured on the frame 1. The arms 8 have holes 8ª receiving the projections 15, whereby the arms are journaled to rock on the frame or base 1. Although one spring 13 may be provided for one of the arms 8, two of such springs may be used to bear upon adjacent arms 8 for balancing the parts under spring tension.

The blade holder member 6 is provided with retainer 17 at its end, shown in the form of a hook adapted to engage a stop 18 on frame 1 when the blade holder is in shaving position. The stops 18 are shown on the guard member 2ª. There may be a retainer 17 and a corresponding stop 18 at opposite ends of the blade holder and frame 1, (Fig. 7). The relative arrangement of the parts 17 and 18 with respect to the spring 13 is such that when the blade is to be set in shaving relation to the guard the arms 8 will be pushed to the left, whereupon the arms 8 will bear against the springs 13 and push them, as indicated in Fig. 3. Thereupon the blade will be located against the adjacent portion 2ª of the frame 1 with respect to the guard with the parts in such position that the retainers 17 will engage the stops 18, and the arms 8 will be released, whereupon the springs 13 will cause the retainers 17 to remain in engagement with the stops 18 for retaining the blade and the blade holder in shaving position, as shown in Fig. 2, the springs 13 maintaining the parts in such position and being out of engagement with the stops 14ª.

A gear 19, connected with the blade holder, is in mesh with gear 12 for rotating the blade holder for stropping the blade edge. The gear 19 may be connected with the blade holder in any desired or well known way. For simplicity in manufacture the gear 19 is shown formed in the same piece of metal as the blade holder member 6. The member 6, as illustrated, is also provided with pivots journaled in the arms 8 and formed from the same piece of metal as said member, the retainer hooks 17 also being formed in the same piece of metal. In Fig. 11 a blank for member 6 of the blade holder is illustrated wherein all the parts may be stamped out of a metal plate in suitable dies and the like. The blank is shown provided with a foldable end member 6ª having a projecting portion 6ᵇ from which the gear 19 extends, the blank being cut away for the purpose at 6ᶜ. The center of the gear portion is drawn inwardly at 6ᵈ providing a pivot which is adapted to enter a bore 8′ as a bearing in the adjacent arm 8, the gear 19 being shown located outside of said arm, (Fig. 9). The retainer 17 is also cut from the blank by means of the slit at 17ª therein. The blank is also provided with a projection 20 for pivotally retaining blade holder member 7. The blank for member 6 is also provided with projections 21 pressed laterally therefrom near opposite ends to engage recesses or notches 3ᵈ at the ends of the blade that lies against said member to retain the blade in operative shaving position in the blade holder. At the opposite end of the blank for member 6 a projecting portion 6ᵉ is provided, by means of the slit at 6ᶠ, and a pivot or bearing 6ᵍ is pressed out to form a pivot or gudgeon to enter an opening 8″ in the adjacent arm 8 as a bearing for the said pivot, (Fig. 9). The adjacent retainer 17 is formed by slit 17ᵇ in the blank. The blank is also provided with an opening at 22. When the blank has been stamped out in the manner described it is appropriately folded to locate the gear 19 with its pivot 6ᵈ and the projection 6ᵉ with its pivot 6ᵍ in transverse relation to member 6, as shown in Figs. 1 and 9, for pivoting the blade holder member upon the arms 8 with the gear 19 in mesh with the gear 12. The blade holder member 7 extends along the member 6 so as to oppose and retain the blade 3 therebetween. The member 7 is shown provided with a slot 7ª near one end, in which the projection 20 of member 6 is coiled, whereby said members are pivotally connected together adjacent to one end of the plate, (Figs. 7 and 8) to be separated to receive a blade therebetween. At the opposite end the member 7 is provided with a projection 7ᵇ, preferably struck from the blank, as indicated in Fig. 12, said projection being bent laterally respecting the member 7 to pass through the opening 22 in member 6, (Figs. 1, 7 and 8), the projection 7ᵇ being shown provided with a recess or dented part at 7ᶜ to engage an adjacent edge of opening 22 for retaining the member 7 clamped or pressed upon the blade for detachably retaining the latter between the members 6 and 7, (Fig. 8). The member 7 is preferably normally curved outwardly respecting member 6, as indicated in dotted lines in Fig. 8, so that when the member 7 bears against the blade and is fastened to the member 6 the member 7 will bear against the blade with spring tension. To release the blade it is merely necessary to push the projection 7ᵇ out of engagement with the edge 7ᶜ to permit the parts to separate, whereby the member 7 may be swung away from the blade to permit its removal and the insertion of another blade.

To assemble the parts the pivots 6ᵈ and 6ᵍ are entered in the respective bearings 8′, 8″ in the arms 8, the shaft parts 9, 10 and 11 are assembled, whereby the arms are retained in relative positions, the projections 15 from the plates 14 are entered through the openings 8ª in the arms 8 with the jaws 15ª embracing

the frame or base 1, the pivots or gudgeons 16 entering the bores in the projection 15 and the pivots are headed over at 16a.

The improvements set forth are embodied in the class of razor known on the market as the Auto Strop safety razor, operative along the strop A in a well known way. When the parts are in shaving position, (Fig. 2), and it is desired to strop the edge of the blade, the arms 8 will be pushed to the left to release the retainers 17 from stops 18, (Fig. 3), and then the strop will be pushed through the razor under the shaft or roller 9 for stropping, (Fig. 4). When the razor is moved along the strop, as to the right in Fig. 4, the cutting edge of the blade will drag on the strop for stropping it. When the razor is first moved in a reverse direction along the strop, (as to the left in Fig. 5), the engagement of the strop with shaft or roller 11 will cause the arms 8 to be tilted and raise the blade edge from the strop to prevent cutting of the latter, (Fig. 5), and as the razor is continued along the strop the gears will reverse the position of the blade to cause its cutting edge to bear on the strop, (Fig. 6), corresponding action taking place each time the direction of sliding the razor along the strop is reversed. The pivotal position of the frame or arms 8 for stropping is such, with relation to the strop, that the spring or springs 13 will not interfere with said frame or arms when the blade edge engages the strop, since the parts will be substantially in the position shown in Fig. 4.

The improved razors in which the guard is without blade engaging hooks have certain advantages over the old types that employed ears or hooks engaged by the blade for holding the blade in shaving position with relation to the guard, and to provide means whereby the blade holder may be supplied with instrumentalities cooperating with other instrumentalities on the guard results in a more rugged structure.

In the manufacture of razors where comparatively light metal is employed, the hooks sometimes become impaired, either through being bent or broken, and the razors become practically useless.

This invention supplies or provides for an interlocking or interengaging means between the blade holder and the frame or guard and at the ends of the blade holder, rendering the invention efficient and satisfactory.

Having now described my invention what I claim is:—

1. A safety razor comprising a frame having a guard, a frame pivotally mounted thereon, a blade holder carried by the second named frame, cooperative means between the blade holder and the first named frame for retaining the blade in shaving relation to the guard, and a spring cooperative between the first and second named frames for maintaining said means in cooperative relation.

2. A safety razor comprising a frame having a guard, a frame pivotally mounted thereon, a blade holder carried by the second named frame, cooperative means between the blade holder and the first named frame for retaining the blade in shaving relation to the guard, a spring cooperative between the first and second named frames for maintaining said means in cooperative relation, a shaft carried by the second named frame, and gears connected with the blade holder and with the shaft for rocking the blade holder for stropping the blade edge.

3. A safety razor as set forth in claim 2, in which the spring is so located that the second named frame will be free from resistance by the spring during stropping of the blade.

4. A safety razor comprising a frame having a guard, a frame pivotally mounted thereon, a blade holder carried by the second named frame, cooperative means between the blade holder at its ends and the first named frame at its ends for retaining the blade in shaving relation to the guard, and a spring carried by the first named frame and cooperative with the second named frame to maintain said means in cooperative relation.

5. A safety razor comprising a frame having a guard, a frame pivotally mounted thereon, a blade holder carried by the second named frame, cooperative means between the blade holder at its ends and the first named frame at its ends for retaining the blade in shaving relation to the guard, a spring carried by the first named frame and cooperative with the second named frame to retain said means in cooperative relation, and a stop for said spring to limit its movement toward the second named frame.

6. A safety razor comprising a frame having a guard, a frame pivotally mounted thereon, a blade holder carried by the second named frame, cooperative means between the blade holder and the first named frame for retaining the blade in shaving relation to the guard, a spring carried by the first named frame and cooperative with the second named frame to retain said means in cooperative relation, a stop for said spring to limit its movement toward the second named frame, a shaft carried by the second named frame, and gears connected with the blade holder and with the shaft for rocking the blade holder for stropping the blade edge.

7. A safety razor comprising a frame having a guard, a frame pivotally mounted thereon, a blade holder carried by the second named frame, cooperative means between the blade holder and the first named frame for retaining the blade in shaving relation to the guard, and a plate carried by the first named frame and provided with a spring cooperative with the second named frame for main-

taining the said means in cooperative relation.

8. A safety razor comprising a frame having a guard, a frame pivotally mounted thereon, a blade holder carried by the second named frame, cooperative means between the blade holder and the first named frame for retaining the blade in shaving relation to the guard, and a plate carried by the first named frame and provided with a spring cooperative with the second named frame for maintaining the said means in cooperative relation, said plate being provided with a tubular projection to engage the first named frame, the latter frame being provided with a stud receiving said tubular projection for retaining the plate upon the first named frame.

9. A safety razor comprising a frame provided with a guard, a frame comprising a pair of spaced arms provided with a roller journaled thereon, a blade holder pivotally carried by said arms, and a pair of plates carried by the first named frame and provided with springs to engage said arms, the first named frame having stops and the blade holder having retainers to detachably engage the stops, the springs being cooperative with the arms to maintain the retainers in cooperation with the stops for keeping the blade in shaving relation to the guard.

10. A safety razor as set forth in claim 9, in which the plates are provided with tubular projections and the first named frame is provided with studs located in said projections for retaining the plates in operative position on said frame.

11. A safety razor comprising a frame provided with a guard, a second frame pivotally connected with the first named frame and comprising spaced arms, a roller journaled in said arms and comprising a tubular member between the arms and shafts extending through the arms into opposite ends of the tubular member, means securing the tubular member to said shafts, one of said shafts having a gear, and a blade holder journaled upon the arms and provided with a gear in mesh with the first named gear.

12. A safety razor comprising a frame provided with a guard, a second frame pivotally connected with the first named frame and comprising spaced arms, a roller journaled in said arms and comprising a tubular member between the arms and shafts extending through the arms into opposite ends of the tubular member, and means to secure the tubular member to said shafts comprising recesses in the shafts and dented portions in the tubular member located in said recesses.

13. A blade holder comprising a plate to receive a blade and provided with a gear at one end and a projection at the other end formed in a single piece of metal, said gear and projection being in transverse relation to the plate for pivotally supporting the latter, means to detachably secure a blade upon said plate, a roller having a gear in mesh with the first named gear, and a frame pivotally supporting said plate and shaft with said gears in mesh.

14. A blade holder comprising a plate to receive a blade and provided with a gear at one end and a projection at the other end formed in a single piece of metal, said gear and projection being in transverse relation to the plate for pivotally supporting the latter, and means to detachably secure a blade upon said plate.

15. A blade holder as set forth in claim 14, provided with pivots drawn out of the metal of said gear and said projection.

16. A blade holder as set forth in claim 14, provided with one or more retainers in hook-like form to engage one or more stops on a razor frame.

17. A safety razor comprising a frame, a guard member and a blade holder, the guard member and blade holder being mounted for movement relatively to each other in a direction transversely of a blade in the blade holder, and cooperative means at the ends of the blade holder and the guard member adapted to interengage and hold the blade in shaving relation to the guard upon relative movement of the blade holder and guard member solely in a direction transversely of the blade.

18. A safety razor comprising a frame, a guard member and a blade holder, the said blade holder and guard member being mounted for movement relatively to each other in a direction transversely of a blade carried in the holder, and interengaging means on the blade holder and guard member rearwardly of the cutting edge of the blade adapted to retain the blade in shaving position with relation to the guard upon relative movement of the blade holder and guard member solely in a direction transversely of the blade.

19. In a safety razor, a guard member, a blade holder movably mounted with relation to the guard member, means rearwardly of the guard, and means on the blade holder coacting therewith for holding the blade in shaving position, the said means for holding the blade in position being caused to operatively engage each other upon relative movement of the said means solely in a direction transversely of a blade in the holder.

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