July 8, 1930. H. J. GAISMAN 1,770,169

SAFETY RAZOR

Filed Oct. 22, 1927

Fig. 1

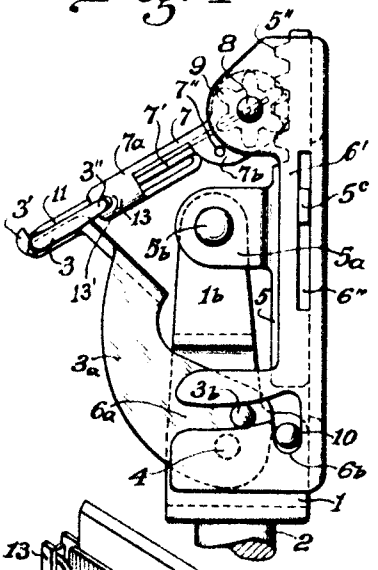


Fig. 2

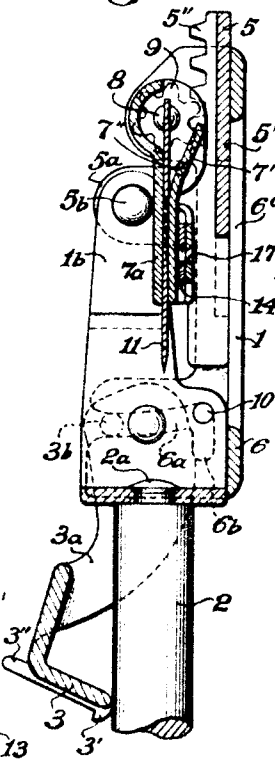


Fig. 4

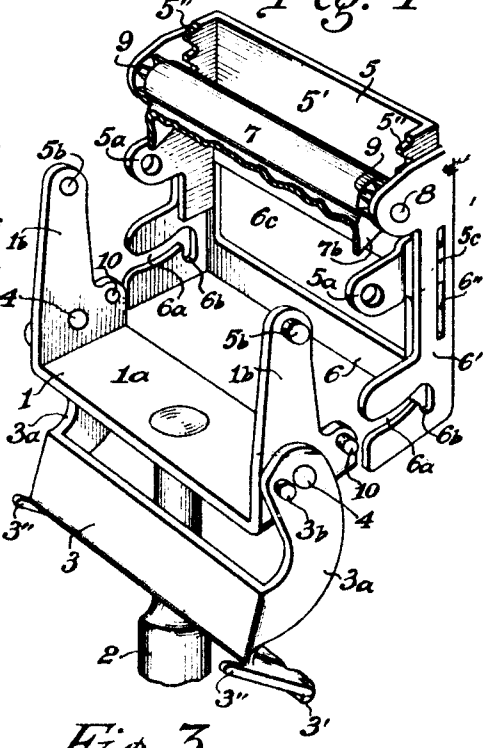


Fig 5

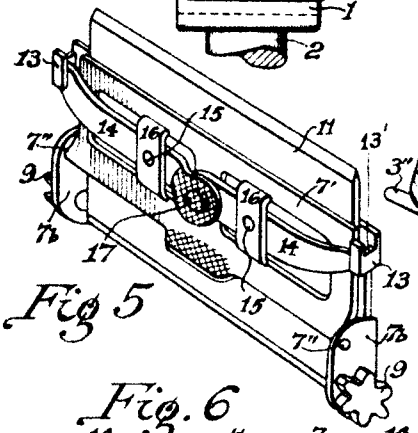


Fig. 6

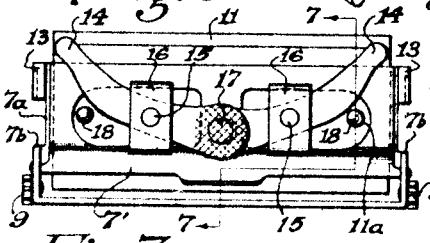


Fig. 3

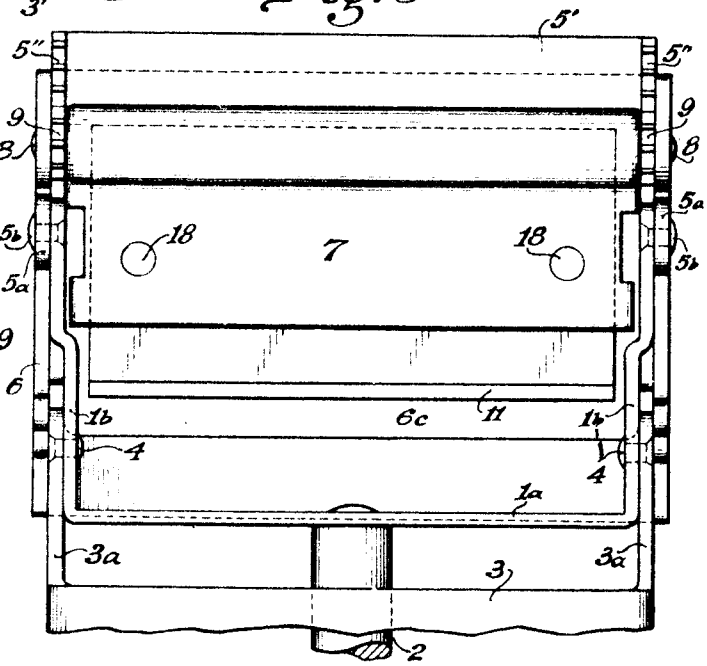


Fig. 7

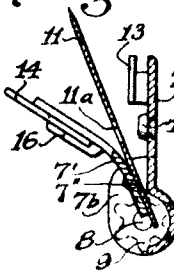
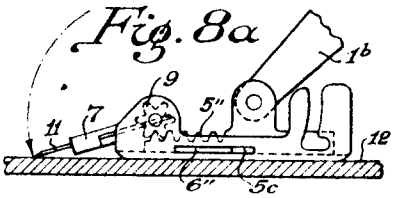


Fig. 8

Fig. 8a



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Patented July 8, 1930

1,770,169

UNITED STATES PATENT OFFICE

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SAFETY RAZOR

Application filed October 22, 1927. Serial No. 227,883.

One of the objects of this invention is to provide improved means cooperative between a guard and a blade holder for causing the blade holder to be folded within the main frame of the razor when the guard is removed from cooperative relation to a blade, whereby the parts will be retained in compact relation for storage and transportation to cause the blade holder to be moved outwardly with the blade into position for cooperation with the guard when the latter is moved to shaving position.

Another object is to cause the blade holder with a blade to be rotated or rocked when the razor is reciprocated along a stropping or sharpening surface for stropping or sharpening the blade edge, and whereby the main frame and handle of the razor may be held at any convenient angle with respect to the stropping operation.

The invention comprises a main frame provided with a pivotal guard, a member pivotally carried by the frame and slidably cooperative with a second member to which a blade holder is pivotally attached, the blade holder being provided with a gear and the first named member having a rack in mesh with said gear, and means for causing operation of the second named member when the guard is moved outwardly or inwardly respecting the blade holder, for causing the latter to be folded within the frame when the guard is moved away from the blade holder and to be moved outwardly toward shaving position when the guard is moved toward the blade holder, and whereby the members may be moved away from the frame and the second named member may be placed upon a stropping or sharpening surface and be reciprocated along the same for causing rocking of the blade holder and a blade for sharpening the latter.

The 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 of a razor embodying this invention, showing the parts in shaving position;

Fig. 2 is a vertical section showing the parts in folded position for storage;

Fig. 3 is a side view with the parts in the position of Fig. 2;

Fig. 4 is an exploded view;

Fig. 5 is a perspective view of the blade holder, showing the parts in locked position;

Fig. 6 is a face view of the blade holder showing the parts in released position;

Fig. 7 is a section on line 7, 7, in Fig. 6, and

Figs. 8 and 8ª illustrate the parts in stropping position.

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

The numeral 1 indicates a main frame shown comprising a base 1ª and spaced uprights 1ᵇ, and at 2 is a handle secured to base 1ª in any desired way, such as by riveting at 2ª. At 3 is a guard shown provided at its ends with spaced arms 3ª, which arms are pivotally suported at 4 upon the uprights 1ᵇ, whereby the guard may be rotated respecting the frame. At 5 is a member shown provided with spaced laterally disposed ears 5ª that are pivotally supported at 5ª upon the uprights 1ᵇ so that said member and frame may be turned to different relative positions. The member 5 is shown provided with a plate-like portion 5′ from which the ears 5ª project, and with toothed racks 5″ on opposite sides adjacent to the ears. At 6 is a second member that is slidable relatively to member 5, the member 6 being shown in plate-like form and provided with spaced laterally disposed side webs 6′ cooperative with the side edges of member 5, whereby said members are slidably guided respecting one another. The member 6 is shown provided with longitudinal slots 6″ in the webs 6′ which receive projections 5ᶜ extending laterally from member 5, (Figs.1 and 4), whereby the members 5 and 6 are slidably retained in cooperation. At 7 is indicated a blade holder which is pivotally supported at 8 upon the side webs 6′ of member 6, which blade holder is provided with gears 9 in mesh with the adjacent toothed racks 5″, whereby

when the members 5 and 6 are moved relatively along one another the racks will cause rotation of the gears to rock or rotate the blade holder. The member 6 is provided with laterally disposed cam-like slots 6^a that are open at their outer ends, and at their inner ends said slots have depressed offset portions at 6^b. The arms 3^a of the guard have lateral projections or pins 3^b operative in the slots 6^a, and the uprights 1^b are provided with projections or pins 10 that are operative in the slots 6^a.

When the parts are in shaving position with the guard in operative relation to the blade 11 in the blade holder, the projections 3^b will be in the slots 6^a and the projections 10 will be in the slot portions 6^b, the members 5 and 6 being in such relative positions that the racks 5'' and the gears 9 will be retained and hold the blade holder and the blade in operative shaving relation to the guard with the blade edge abutting the stops 3' on the guard, (Fig. 1). The cooperation of the pins or projections 10 with the slot portions 6^b prevents lateral displacement of member 6 respecting frame 1 so that the parts remain in shaving position. When the blade is to be released from the guard the latter will be swung away from the blade, as to the position shown in Fig. 2. As the guard is swung in a downward direction in Fig. 2 the projections 3^b will travel in the slots 6^a in an arcuate course, thereby causing the member 6 to be drawn down and by carrying the gears 9 with it while in mesh with the racks 5'' the blade holder will be swung down, by reason of the rotation of the gears, and folded within the frame with the guard folded below the frame and adjacent to the handle, as illustrated in Fig. 2. When the guard is swung back to shaving position the projections 3^b, operating in the slots 6^a, will cause the member 6 to move upwardly, (Fig. 2), and carry the gears and blade holder, the gears being rotated by engagement with the racks to cause the blade holder and blade to swing outwardly from the frame towards shaving position, in such a way that the guard may pass under the blade to cause the guard stops 3' to engage the blade for shaving position, with the parts as shown in Fig. 1. The inner portion of the guard is shown provided with projections 3'' adapted to enter recesses or slots 13' of keepers 13 of the blade holder to lock the blade holder and the guard in shaving relation, (Fig. 1).

When it is desired to strop or sharpen the blade edge the guard will be swung down toward the handle, as illustrated in Fig. 2, whereby the projections 10 will be released from the slot portions 6^b and then the member 6 will be swung outwardly from the frame 1, carrying the member 5 with it, the latter turning on the pivots 5^b, the projections 10 passing through the slots 6^a, so that the member 6 may be rested upon a sharpening or stropping surface 12, as illustrated in Fig. 8, with the frame and handle at an angle to such surface and the guard resting against the handle, with the blade edge extending through opening 6^c of member 6 in engagement with surface 12. When the razor is pushed along surface 12 toward the left hand side in Fig. 8 one side of the blade edge will be dragged upon the strop with the parts in the position illustrated. When the razor is moved in a reverse direction the member 6 will remain temporarily in contact with the stropping surface and the member 5 will first slide to the right relatively to member 6, whereby the racks 5'' will be correspondingly moved and by engagement with the gears 9 will cause rotation of the latter, whereby the blade holder and the blade will be swung from the position shown in Fig. 8 to the position shown in Fig. 8^a, the blade passing between the uprights 1^b so that the opposite side of the blade edge will be presented against the sharpening surface, as indicated in Fig. 8^a. Continued movement of the razor to the right in Fig. 8^a will cause the blade edge to drag on the sharpening surface. Upon reverse movement of the razor, to the left in Fig. 8^a, the member 6 will remain temporarily in contact with the surface 12 and the member 5 with the racks 5'' will slide to the left, causing the gears 9 to rotate to reverse the position of the blade holder and the blade to present the blade edge against the sharpening surface, as illustrated in Fig. 8. Each time that the razor is reciprocated along the sharpening surface the blade holder and the blade will be rotated or rocked to present opposite edges of the blade to the sharpening surface by reason of the engagement of the member 6 with the sharpening surface and the relative sliding movement of member 5 with respect to member 6, and the cooperation of the projections 5^c with the metal at the ends of slots 6''.

The blade holder illustrated comprises a member 7^a shown in plate like form and provided at its ends with laterally disposed webs or ears 7^b between which a second member 7' is pivotally supported at its inner corners by means of projections 7'' in the nature of pivots, (which may be stamped from the member 7'), whereby the blade 11 may be retained between said members. The member 7^a is provided near its outer corners with keepers or clips 13, which may be bent from the material of the member, in hook-like form, in the direction of the member 7' in position to receive the outer ends of latch-like arms 14 which are pivotally supported between their ends by pivots 15 on straps or loops 16 that are carried by blade holder member 7'. The straps or loops 16 may be formed by pressing outwardly the metal of member 7'. The inner overlapping ends of

the arms 14 are pivotally connected by a pivot at 17. The member 7^a is shown provided with projections 18 that are adapted to enter corresponding openings 11^a in blade 11 to retain the latter in shaving position in the blade holder, (Figs. 6 and 7). When a blade is to be secured in the blade holder the latch arms 14 will be turned to release the keepers 13, (Fig. 6), and the blade holder members 7^a and 7' will be spread to receive a blade therebetween, as indicated in Fig. 7. The blade will be retained against member 7^a with the projections 18 entering the blade openings 11^a and the member 7' will be swung against the blade, the latch arms 14 then being moved to cause their free ends to engage the keepers 13, whereby the blade will be securely clamped between said members. To remove a blade from the holder the arms 14 will be released from the keepers 13, the members 7^a and 7' will be spread and the blade may be lifted from between said members.

Having now described my invention what I claim is:

1. A safety razor comprising a frame, a guard pivotally carried thereby, a pair of members movable relatively to one another, one of said members being pivotally carried by the frame, a blade holder pivotally carried by the other member, means cooperative with the blade holder and the first named member for rotating the blade holder, and means cooperative between the guard and the second named member for moving the latter by the former relatively to the first named member to cause movement of the blade holder with the guard.

2. A safety razor as set forth in claim 1, including means to retain the members from displacement relatively to the frame when the guard and blade holder are in shaving relation.

3. A safety razor as set forth in claim 1, including means to retain the members from displacement relatively to the frame when the guard and blade holder are in shaving relation, said means being arranged to release the members from the frame to permit said members to move relatively to the frame when the guard and blade holder are out of shaving relation.

4. A safety razor comprising a frame, a guard pivotally carried by the frame, a member pivotally carried by the frame, a second member slidably supported relatively to the first named frame, a blade holder pivotally carried by the second named frame, and means operatively connecting the first named frame with the blade holder for rotating the latter when said members move relatively one to another, the guard having a projection and the second named member having a slot operatively receiving said projection for operating the second named member to cause movement of the blade holder from shaving position when the guard is moved from such position and to cause movement of the blade holder toward shaving position when the guard is moved toward such position.

5. A safety razor as set forth in claim 4, in which the frame and the second named member are provided with cooperative means to retain the members from movement relatively to the frame when the guard and the blade holder are in shaving position, said means releasing the members from the frame when the guard is out of shaving position.

6. A safety razor as set forth in claim 4, in which the frame is provided with a projection and the slot of the second named member has a portion cooperative with said projection to retain said member from movement relatively to the frame when the guard and the blade holder are in shaving position.

7. A safety razor comprising a frame, a member pivotally carried thereby, a second member slidably carried by the first named member, a rack upon the first named member, a blade holder pivotally carried by the second named member and provided with a gear in mesh with said rack, a guard pivotally carried by the frame, and means cooperative between the guard and the second named member for operating the latter by the guard to fold the blade holder within the frame when the guard is moved away from shaving position and to move the blade holder outwardly when the guard is moved toward shaving position.

8. A safety razor as set forth in claim 7, including means cooperative between the frame and the second named member to retain the latter from movement relatively to the frame when the guard and the blade holder are in shaving relation and to permit said member to be moved away from the frame when the guard is out of shaving position.

9. A safety razor comprising a frame, a member pivotally carried by the frame, a second member slidably guided by the first named member, a blade holder pivotally carried by the second named member, means cooperative between the blade holder and the first named member for rotating the blade holder upon movement of the first named member relatively thereto, the second named member being provided with an opening to permit the passage therethrough of a blade edge to a sharpening surface, and means cooperative between the guard and the second named member to operate the latter for moving the blade holder to and from shaving position when the guard is correspondingly moved.

10. A safety razor as set forth in claim 9, in which the guard is provided with means cooperative with the second named member to retain the latter from movement respect-

ing the frame when the guard and the blade holder are in shaving relation.

11. A safety razor comprising a frame, a member pivotally carried thereby and provided with projections, a second member having means slidably guiding it respecting the first named member and having slots receiving said projections to retain said members in operative relation, a blade holder pivotally carried by the second named member and provided with a gear, the first named member having a rack operative with the guard to rotate the blade holder when one member moves relatively to the other, and means cooperative between the guard and the second named member to operate the latter for moving the blade holder to and from shaving position when the guard is correspondingly moved.

12. A safety razor as set forth in claim 11, in which the guard is provided with means cooperative with the second named member to retain the latter from movement respecting the frame when the guard and the blade holder are in shaving relation.

13. A safety razor comprising a frame, a blade holder pivotally carried by the frame, and a guard pivotally carried by the frame and having projections, the blade holder having recesses to receive said projections to lock the blade holder and the guard in shaving relation.

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