Dec. 13, 1927.

1,652,568

H. J. GAISMAN ET AL

SAFETY RAZOR

Filed Aug. 14, 1925

3 Sheets-Sheet 1

Fig. 1.

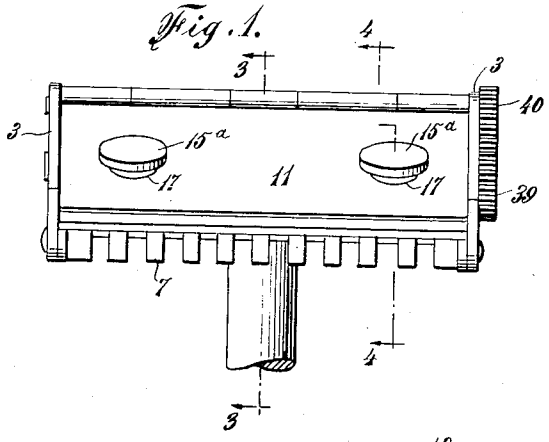


Fig. 2.

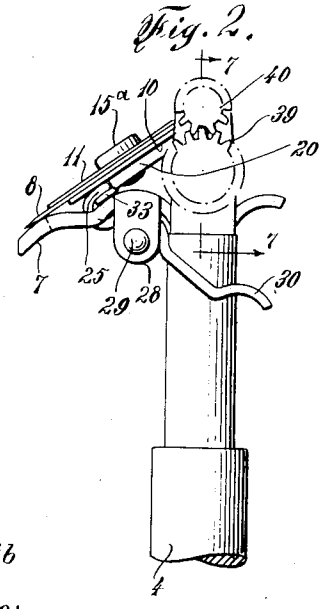


Fig. 3.

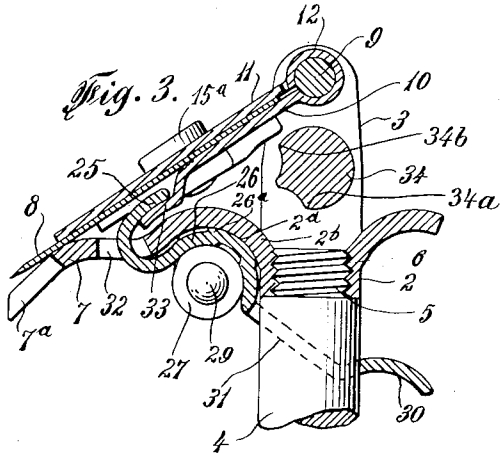


Fig. 4.

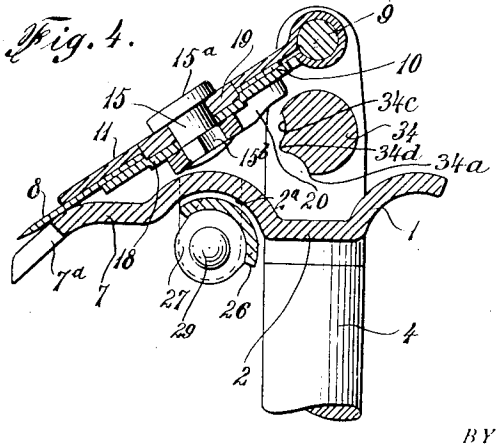
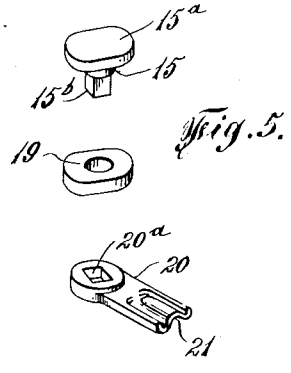


Fig. 5.



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Fig. 7.

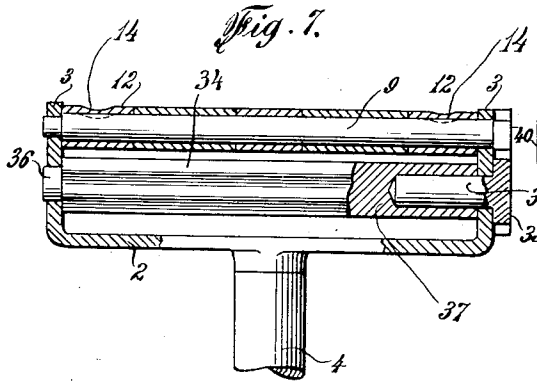
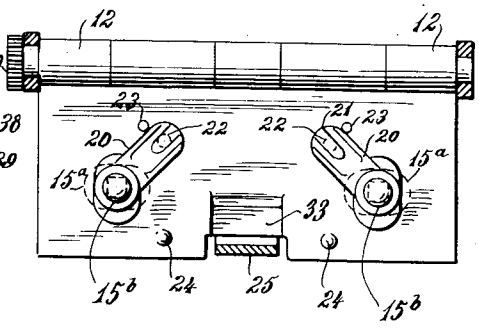


Fig. 6.



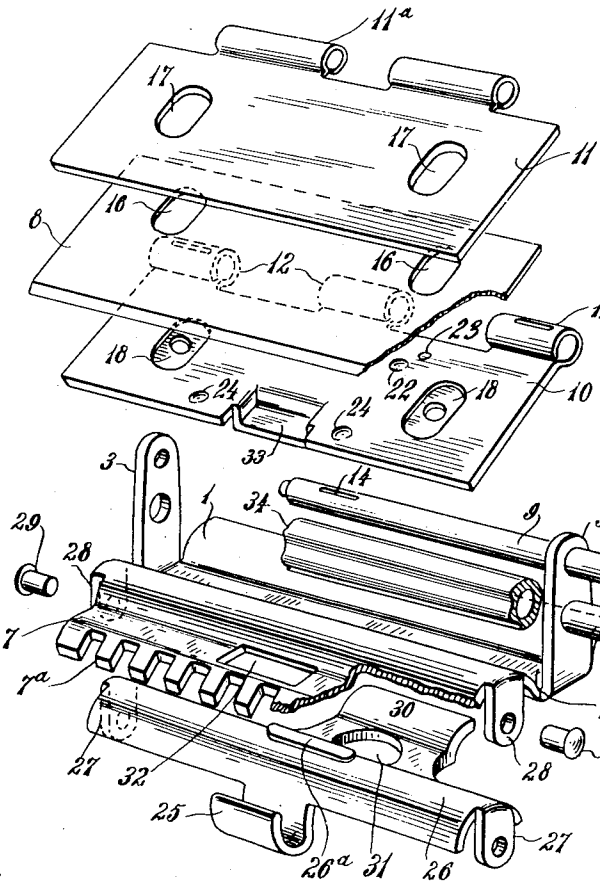


Fig. 8.

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SAFETY RAZOR

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Fig. 9.

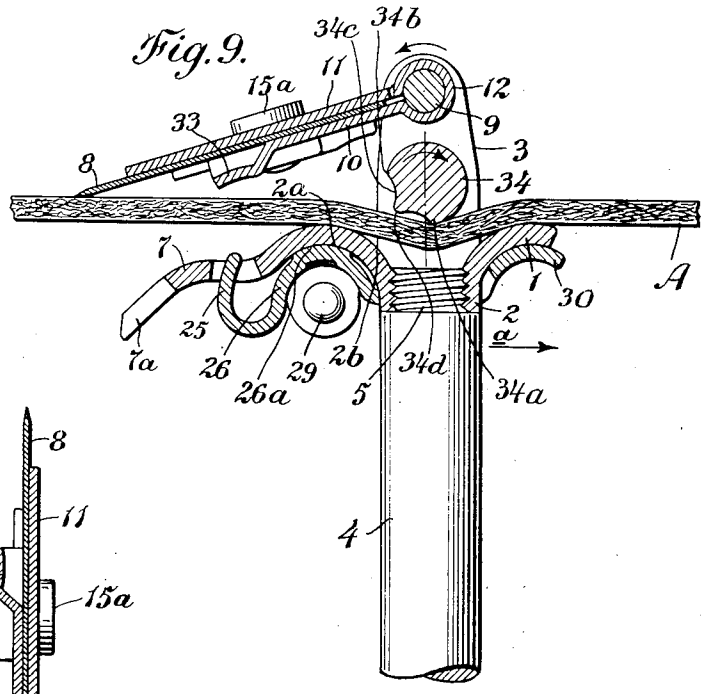


Fig. 10.

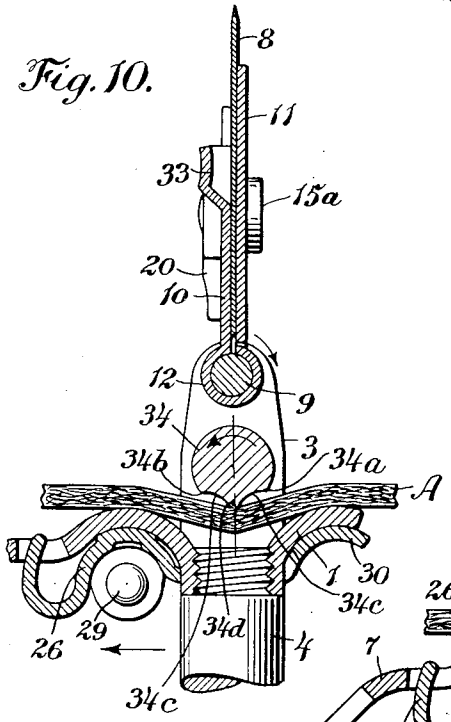
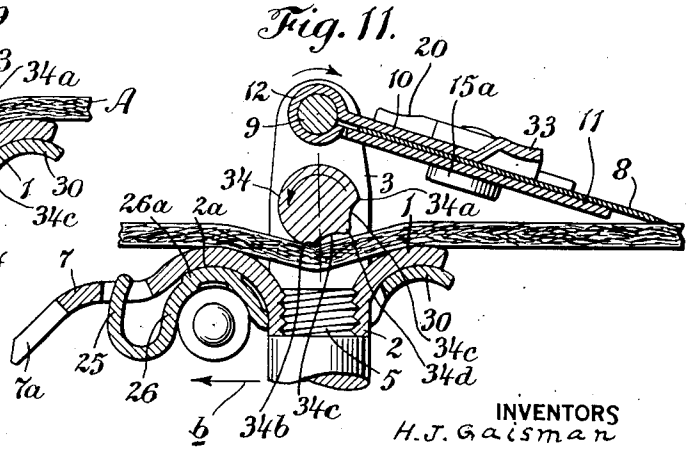


Fig. 11.



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UNITED STATES PATENT OFFICE.

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SAFETY RAZOR.

Application filed August 14, 1925. Serial No. 50,225.

This invention relates to improvements in safety razors and blade stropping means, and is particularly applicable to the class of safety razors in which the blade is carried in a pivoted holder which is adapted to rock respecting a blade guard, according to the well known auto strop safety razor.

An object of the invention is to provide improved means for detachably retaining a blade in its holder for positioning the cutting edge of the blade respecting a guard.

Another object of the invention is to provide simple and improved means for detachably retaining the blade holder with the blade in shaving relation to the guard without requiring cooperation of stops or hooks on the guard with the blade for such purpose.

A further object is to provide simple and effective means to cause the blade edge to rise quickly from a strop, at the moment of reversal of the sliding of the device along the strop, to avoid cutting or injuring the strop by the blade.

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 front view of a razor embodying the invention;

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

Fig 3 is a section on line 3, 3, in Fig. 1;

Fig 4 is a section on line 4, 4, in Fig. 1;

Fig. 5 illustrates detached cooperative details;

Fig. 6 is an inverted plan view, partly in section;

Fig. 7 is a partly sectional view looking from the front of the razor;

Fig. 8 illustrates disassembled parts of the razor; and

Figs. 9, 10 and 11 are sectional views illustrating different positions of the blade during stropping operations.

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

In the drawings the numeral 1 indicates the main frame of the razor which is shown comprising a base 2 having spaced uprights 3, and at 4 is a handle which may be attached to the base in any suitable way, as by means of a threaded end portion of the handle at 5 meshing in a threaded portion 6 of the base. The base 2 is provided at one side with a guard 7, shown having comb-teeth 7a, which may be arranged in any suitable way to cooperate with the cutting edge of a blade 8. At 9 is a shaft journaled in bearings in the uprights 3, which shaft carries the blade holder, that is shown comprising two complemental plate-like members 10 and 11, between which the blade is to be detachably secured. The member 10 is secured to shaft 9 and the member 11 is rotative on said shaft so that the blade will be received between said members. The member 10 is shown provided with spaced ears 12 which may be secured to shaft 9 in any desired way, such as by denting the material at 13 into complemental recesses 14 in said shaft. The member 11 is shown provided with spaced curled ears 11a journaled upon shaft 9 in a hinge-like way, whereby said member may rotate relatively to member 10 to receive the blade therebetween. Means for detachably clamping the member 11 upon the blade to retain the latter between the members 10 and 11 of the blade holder are arranged as follows:—Rotative studs 15 are journaled upon member 10 and are provided with elongated heads 15a adapted to pass through complemental similar openings 17 in member 11, whereby when the long dimensions of said heads are parallel to said openings said heads may pass therethrough when the blade is upon member 10, and the member 11 is upon the blade, and when said heads are turned crosswise of said openings the blade holder members 10, 11 will grip and secure the blade between them. For conveniently journaling the studs 15 upon the member 10 and for retaining the blade from shifting in the holder the member 10 is shown provided with depressed seats 18, shown elongated in form, and receiving correspondingly shaped washers 19 having bores in which the studs 15 are journaled Said washers are of sufficient depth or thickness to pass through the blade and the member 11 when the latter are assembled upon member 10, with the outer surfaces of the washers substantially flush with the outer surface of member 11, and the heads of the studs rotative upon the washers, the elongated shape of the depressions 18 and of the washers keeping the latter from rotating,

and such washers retain the blade from displacement lengthwise or edgewise between the blade holder members. The studs 15 may be rotated from blade holding to blade releasing positions and vice-versa by any suitable means. In the example illustrated finger pieces or arms 20 are attached to the inner ends of studs 15 adjacent to the inner surface of member 10, which studs are shown provided with squared ends 15^b that pass through corresponding holes 20^a in finger pieces 20, (Figs. 4 and 5), the inner ends of the studs being riveted over such finger pieces, as indicated in Fig. 4. To retain the studs 15 in the blade-clamping positions the finger pieces or arms 20 are shown provided with recessed end portions 21, (Fig. 5), adapted to snap on projections 22 on member 10 to retain the heads 15^a crosswise respecting the opening 17 of member 11, stop projections or pins 23 on member 10 being in position to engage an edge of the corresponding finger piece 20 to limit its rotation to blade clamping position when recess 21 engages stop 22, (Fig. 6). At 24 are stops protruding from member 10 adapted to engage the recesses 21 of finger pieces 20 when the heads 15^a of the studs are in blade releasing position. The projections 22, 23 and 24 may be made by stamping them outwardly from the metal of member 10, or they may be in the form of pins inserted in said member.

To retain the blade holder with the blade in operative relation to the guard a retainer 25 is pivotally carried by the main frame 1 and adapted to cooperate with blade-holder member 10. The retainer 25 is shown in hook-like form extending from a rotative bar 26 that is shown journaled upon the frame by means of ears 27 located adjacent to and between complemental ears 28 that project from base 2, said ears 27, 28 having holes in which pivots 29 are located for journaling the bar 26 respecting the appropriate portion of frame 1 so that the retainer 25 may rock relatively to the frame and the blade holder member 10. The pivots 29 may be in the form of rivets suitably riveted to retain the bar 26 rotatively. The bar 26 is provided with a laterally extending finger piece 30 projecting on the side opposite the retainer 25, beyond the handle, which finger piece is shown provided with a hole 31, (Fig. 8), receiving the handle 4 and of such dimension as to permit the finger piece to rock relatively to the handle. The guard portion of the frame is provided with an opening 32 through which the retainer 25 may pass to engage blade-holder member 10, which latter is provided with a suitable portion to be engaged by the retainer. In the form shown the member 10 is provided with a projecting or depressed portion 33, which may be stamped from the metal of said member and extended to one side of the plane thereof, to be engaged by the retainer and permit the latter to pass freely beneath the blade 8 for retaining the latter in shaving relation to the guard, (see Fig. 3). To maintain the retainer 25 in cooperative relation with the blade holder the outer surface 2^a of portion 26 of base 2 of frame 1 is shown curved to be frictionally engaged by a corresponding portion 26^a of bar 26, which part 26^a may be pressed out of the metal of bar 26.

When the blade is to be inserted in the holder the heads 15^a of the studs 15 are extended lengthwise respecting the washers 18, the member 11 will be swung away from member 10, the blade will be placed upon the last named member with its openings 16 receiving the washers, the member 11 will be swung against the blade, and the studs 15 will be rotated crosswise respecting the opening 17, whereby the holder members 10, 11 will be clamped firmly against the blade. The blade may then be swung against the guard and the retainer 25 may be adjusted to engage the parts 33 of member 10 for retaining the blade in shaving position respecting the guard. Since the retainer 25 holds the member 10 the headed studs, by engaging member 11, will hold the latter down upon the blade with the latter pressed against the guard. When the blade is to be swung away from the guard the finger piece 30 is pushed toward the frame to move the retainer 25 away from member 10 to release the latter. When the blade is to be removed from its holder the heads 15^a of the studs are turned to a position parallel with openings 18 of member 11 and the latter is swung away from the blade and the blade may be lifted off of member 10.

While two headed studs with complemental washers and openings in the blade and in member 11 are illustrated it will be understood that one or more of such complemental studs, washers and openings may be provided if preferred.

The razor illustrated is of the variety in which the blade may be stropped while in the holder and frame, after the retainer 25 has released the blade. For such purpose a roller 34 is journaled between the uprights 3 of the frame 1 in position for the passage of a strop 35, (Fig. 4), between said roller and the base of the frame. The roller 34 is shown provided at one end with a projecting gudgeon 36 journaled in one of the uprights 3, (Fig. 7), and at the opposite end said roller is shown provided with a bore 37 receiving a shaft 38 extending from a gear 39, which shaft may be forced friction-tight into said bore, said shaft being journaled in the adjacent upright 3 of frame 1, whereby the roller 34 is journaled between said uprights. The gear 39 is in mesh with a gear 40 secured on shaft 9, whereby when roller 34 is rocked by the strop the blade and blade

holder will be correspondingly rocked for stropping the blade as the razor is reciprocated along the strop.

In order to cause the roller 34 to quickly start to rotate, upon the initiation of each reverse stroke of the stropping means along the strop, to prevent the edge of the blade from sliding into and cutting or injuring the strop, said roller is provided with spaced longitudinal edges 34^a, 34^b, (Figs. 9, 10 and 11), adapted to engage the strop alternately as the direction of reciprocation of the stropping devices along the strop is reversed. Said edges 34^a, 34^b may be provided by means of spaced longitudinal grooves or flutings at 34^c, in the roller, located between said edges, an intermediate curved portion at 34^d, between said grooves being preferably provided to engage the strop, in a position of the blade, (Fig. 10), intermediate its stropping positions, (Figs. 9 and 11). When the blade is in shaving position upon the guard the edge 34^a will be slightly at one side of a line passing through the axes of shaft 9 and roller 34, (Fig. 3). When a strop A is inserted between base 2 and roller 34 the blade will rise from the guard, by contact with the strop, (as in Fig. 9), and the gears 39 and 40 will cause roller 34 to rotate slightly to present its edge 34^a against the strop. With the stropping means next moved along the strop in the direction of the arrow *a* in Fig. 9 the blade edge will be caused to drag along the strop to sharpen the edge, edge 34^a remaining in contact with the strop. At the termination of the last mentioned movement the stroke of the stropping means along the strop will be reversed, in the direction of the arrow *b* in Fig. 11. At the initiation of said reverse stroke the biting engagement of the edge 34^a of roller 34 with the strop will cause the roller instantly to begin to rotate (without sliding along the strop) whereby the blade edge will be raised from the strop so as to prevent the edge from cutting into or injuring the strop as the stropping means continues to slide along the strop. As the said means slides in the direction of arrow *b* the roller 34 will be rotated to reverse the position of the blade edge along the strop to drag thereon, as in Fig. 11, with the edge 34^b engaging the strop. At the initiation of the next reverse stroke in the direction of the arrow *a* the engagement of edge 34^b with the strop will cause instant rising of the blade edge from the strop, to prevent cutting, and the position of the blade will be reversed, to that shown in Fig. 9, and so on for each reciprocation of the stropping means along the strop. The engagement of the portion 34^d of roller 34 with the strop assures proper rotation of the roller to present either edge 34^a or 34^b against the strop.

The razor set forth is relatively cheap to manufacture, provides a simple and improved means for retaining the blade in shaving relation to the guard without hooks or stops cooperating between the guard and the blade for the purpose, and provides an efficient means for securely retaining a blade in a holder both for shaving and for stropping purposes, with the blade edge projecting beyond the adjacent edges of the holder members 10 and 11, and affords simple and accurate means to prevent the blade edge from injuring the strop.

Having now described the invention what is claimed is:—

1. In a safety razor a blade holder comprising complemental members pivotally retained relatively one to another, on a common axis to rotate independently and together on said axis, one of said members having an opening and the other member having a complemental stud to pass through an opening in the blade and through the first named opening to retain the blade clamped between said members, whereby the members and blade are rotative together on said axis.

2. A safety razor blade holder as set forth in claim 1, in which the openings are elongated and the stud has an elongated head to pass through said openings to retain the members clamped upon the blade when the stud extends angularly respecting the openings.

3. In a safety razor a blade holder comprising complemental members pivotally connected together on a common axis to rotate independently and together on said axis, one of said members having an opening, the other member having a complemental pivoted stud to pass through an opening in the blade and through the first named opening, said stud being provided with a finger piece on the side of the member opposite the blade for rotating the stud, said stud and openings being so shaped as to permit a portion of the stud to pass through the openings in one position of the stud to permit separation of the members and to extend at an angle to the openings to retain the blade clamped between the members, whereby the members and blade are rotative together on said axis.

4. A safety razor blade holder comprising complemental members movably connected together to retain a blade therebetween, one of said members having an opening and the other member having a depression and of sufficient thickness to pass through the blade and through the opening in said member for retaining the blade from displacement, a washer located in said depression, a stud journaled in the washer and the corresponding member and provided with an elongated head adapted to pass through an opening in the blade and through the first named opening in one position of the stud and to extend crosswise respecting the said openings in

another position of the stud to retain the members clamped upon the blade.

5. A safety razor blade holder as set forth in claim 4, in which the stud carrying member is provided with projections and the stud is provided with a finger piece to cooperate with said projections to retain the stud in set position.

6. In a safety razor a blade holder comprising blade retaining members pivotally connected together on a common axis to rotate independently and together on said axis, one of said members having an elongated opening, a blade having an opening corresponding to the first named opening, the other member having a stud journalled thereon and provided with a head corresponding in shape to said openings for passing therethrough and retaining the members clamped upon the blade when the head of the stud extends at an angle to said openings.

7. A safety razor comprising a frame having a guard, a blade holder movably carried by the frame, and a retainer pivotally carried by the frame independent of the guard and extending at one side of its axis to engage the blade holder to retain a blade in shaving relation to the guard.

8. A safety razor as set forth in claim 7, in which the retainer is provided with a finger piece extending on the side of the frame opposite the guard in position to be operated for engaging the retainer with and disengaging it from the blade holder.

9. A safety razor comprising a frame having a guard, a blade holder movably carried by the frame, and a retainer in hook-like form extending from a bar pivotally carried by the frame independent of the guard to engage the blade holder to retain a blade in shaving relation to the guard, the blade holder having a depressed portion to be engaged by the retainer.

10. A safety razor comprising a frame having a guard, a blade holder pivotally carried by the frame on one side of the guard, a retainer pivotally carried by the frame on the other side of the guard in position to engage and disengage the blade holder, for retaining the blade in shaving relation to the guard, said frame having an opening opposing the blade holder when the blade is upon the guard for the passage of the retainer to engage the blade holder.

11. A safety razor as set forth in claim 10, in which the frame and the retainer are provided with cooperating surfaces to frictionally maintain the retainer in set position.

12. A safety razor comprising a frame provided with a guard, a blade holder pivotally carried by the frame, and a retainer pivotally carried by the frame and adapted to cooperate with the blade holder to retain the blade in shaving relation to the guard, said retainer having a finger piece provided with an opening, the frame having a handle located in said opening, whereby the finger piece may rock respecting the handle, the finger piece projecting beyond the handle in position to be engaged to rotate the retainer.

13. A safety razor comprising a frame having spaced uprights, a roller having a gudgeon at one end journaled in one upright and provided with a bore at the opposite end, a gear having a shaft journaled in the other upright and entering said bore friction-tight for rotating the roller, a blade holder pivotally supported by said uprights, and a gear connected with the blade holder and in mesh with the first named gear.

14. A safety razor as set forth in claim 13, in which the second named gear is secured to a shaft journaled in the uprights and the blade holder is attached to said shaft.

15. A device of the character set forth comprising a frame, a blade holder pivotally carried thereby, a roller jaurnaled in the frame and having a longitudinal major portion substantially smooth and having a minor portion provided with longitudinal grooves and ridges forming spaced edges to alternately engage a strop for initially raising the blade edge from the strop when the frame is first advanced along the strop, and means operative between the blade holder and the roller for rocking the former by the latter.

16. A device of the character set forth comprising a frame, a blade holder pivotally carried thereby, a roller journaled in the frame and having a longitudinal major portion substantially smooth and having a minor portion provided with longitudinal grooves and ridges forming spaced edges to alternately engage a strop for initially raising the blade edge from the strop when the frame is first advanced along the strop, and means operative between the blade holder and the roller for rocking the former by the latter, the roller having an intermediate portion between said grooves to engage a strop when said edges are out of engagement with the strop for rotating the blade holder.

17. A device of the character set forth comprising a frame, a blade holder pivotally carried thereby, a roller journaled in the frame and having a longitudinal major portion substantially smooth and a minor portion having spaced longitudinal grooves providing spaced longitudinal edges to alternately engage a strop for initially raising the blade edge from the strop when the frame is first advanced along the strop, and gearing between the blade holder and the roller for rocking the former by the latter.

Signed at New York city, county and State of New York, this 11th day of August, 1925.

HENRY J. GAISMAN.
CONRAD SCHUMACHER.