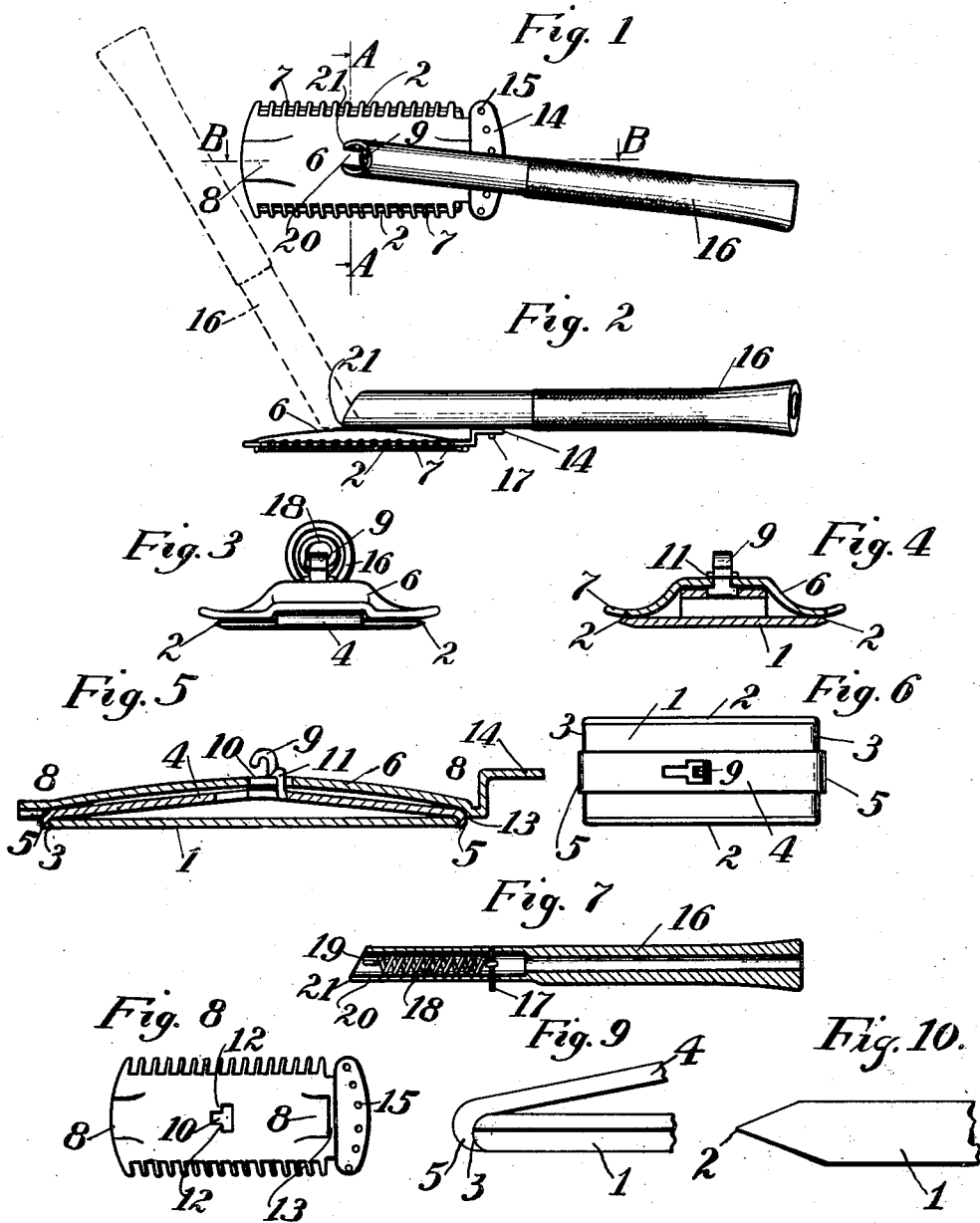


J. GELIN.
SAFETY RAZOR.
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Witnesses:

Edwin Phelps
Mary M. Hillman

Inventor:

John Gelin,
By *Rummler & Rummler*
Attorneys.

UNITED STATES PATENT OFFICE.

JOHN GELIN, OF CHICAGO, ILLINOIS.

SAFETY-RAZOR.

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To all whom it may concern:

Be it known that I, JOHN GELIN, a citizen of the United States of America, and a resident of Chicago, Cook county, State of Illinois, have invented certain new and useful Improvements in Safety-Razors, of which the following is a specification.

The main objects of this invention are to provide an improved form of safety razor in which the working face of the blade is free from any obstruction or projection whatsoever; to provide improved means for securing the blade in the holder of a safety razor; to provide means for accurately adjusting the cutting edge of the blade with respect to the edge of the guard; and to provide certain improvements in safety razors of the type described in my co-pending application, Serial No. 430,752, filed May 4th, 1908. These objects are accomplished by the device shown in the accompanying drawings, which illustrate a specific embodiment of this invention.

Figure 1 is a top plan of a safety razor constructed according to this invention. Fig. 2 is a side elevation of the same, the dotted lines indicating the position to which the handle is turned for the purpose of disconnecting it from the holder so as to permit the blade to be released. Fig. 3 is an enlarged end elevation viewed from the left of Fig. 1. Fig. 4 is an enlarged transverse section on the line A—A of Fig. 1. Fig. 5 is an enlarged section on the line B—B of Fig. 1. Fig. 6 is a top view of the blade and clamp when removed from the guard. Fig. 7 is a longitudinal section of the handle. Fig. 8 is a bottom plan of the guard plate. Fig. 9 is an enlarged detail showing the rounded end edges of the blade and the shape of the clamp jaw. Fig. 10 is a fragmentary detail, showing the position of the cutting edge of the blade with respect to its upper and lower faces.

In the form shown in the drawings, the blade is preferably made of sheet metal of uniform thickness throughout. The blade is imperforate and is provided with two substantially parallel cutting edges 2, at respectively opposite sides. The blade is preferably sharpened in such a manner that its cutting edges will lie closer to the plane of one face of the blade than to the other. This arrangement permits of a certain amount of adjustment of the cutting edges of the blade with respect to the guard, by merely invert-

ing the blade in the holder, as will hereinafter appear. The end edges 3 of the blade are straight and parallel, but are chamfered or rounded with respect to both faces, as shown in Fig. 9. The blade 1 is held by means of a clamp 4, which consists of a bowed strip of metal, having its opposite ends formed into jaws 5 which fit the edges of the blade in such manner as to lie flush behind the outer or lower face of the blade 1.

The holder comprises, in addition to the clamp 4, a guard plate 6 formed of sheet metal having toothed edges 7 at opposite sides and arranged to respectively cooperate with the cutting edges 2 of the blade, as shown in Figs. 2 and 4. The teeth on the same edge are substantially parallel with each other, but oblique to the longitudinal center line of the blade; and those on opposite edges are symmetrically arranged with respect to said center line. Seats 8 are formed in the guard plate 6 for confining the respective ends of the clamp 4 against lateral movement, and the middle part of the plate 6 is shaped so as to provide a space below it for the upwardly bowed middle part of the clamp 4. A hook-shaped projection 9 is struck up from the material of the clamp 4 at a point about midway between its ends, and serves as a connection between the clamp 4 and the operating handle. The plate 6 is provided with a T-shaped aperture 10 through which the projection 9 extends when the parts are in their assembled position. The projection 9 is provided with shoulders 11 which spring into engagement with the shoulders 12 at the sides of the aperture 10, when the parts are in the assembled position, as in Fig. 5. The shoulders 11 and 12 are held into engagement with each other through the resilient structure of the clamp 4 and the fact that the jaw of the clamp which is toward the handle abuts against a shoulder 13. The edge of the plate 6 which is toward the right of Figs. 1 and 5 is bent to form a flange 14 which is provided with a series of perforations 15 arranged in the arc of a circle with respect to the projection 9. The handle 16 is arranged so that when in the position of dotted lines in Fig. 2, it may be freely passed into engagement with the hook-shaped projection 9, and it is provided with a stud 17 adapted to be seated in different apertures 15 for adjusting the angle of the handle with respect to the cutting edge of

the blade, when the handle is in the position of the full lines of Fig. 2. The handle is tubular, and a coiled spring 18 is mounted inside of it. The inner end of the spring is connected with the pin 17, and the outer end is bent to form a loop 19 which engages the hook 9. The handle is open at its attached end and is slotted at 20 so as to permit it to be swung between the two positions indicated in Fig. 2 while the loop 19 is in engagement with the hook 9. When the handle is in the position shown by full lines in Fig. 2 the shoulders 21 at each side of the slot 20 bear upon the top of the plate 6 so as to cause the loop 19 of the spring 18 to exert an upward pull upon the hook 9.

It will be seen from Fig. 5 that the clamp 4 bears against the plate 6 only at its ends, and that this upward pull on the hook 9 causes the clamp 4 to bend to a greater extent and thereby urges the jaws 5 toward each other so as to more firmly grip the blade and thereby lock the parts against relative movement when the handle is in its operating position. The spring 18 is quite stiff and the loop 19 normally stands near the upper part of the handle so that the spring thus exerts the desired pull upon the hook 9. When the handle is in the position shown by dotted lines, the tension of the spring is relaxed and the loop 19 may be readily passed into and out of engagement with the hook 9, but when the handle is turned to the position shown by full lines in Fig. 2 the loop cannot be disengaged from the hook 9, and the spring then serves the double function of exerting an upward pull upon the hook 9 and of forcing the handle into contact with the flange 14 and thereby preventing the stud 17 from slipping out of the aperture 15 in which it is seated.

The operation of the device shown is as follows:—To insert the blade it is first sprung into position between the jaws of the clamp 4. This is done by merely placing the blade and clamp one upon the other and pressing them together. If the middle part of the clamp is depressed toward the blade, the jaws expand and release the blade. When the middle part of the clamp is thus depressed, the blade may be readily shifted transversely in the clamp for adjusting the cutting edges with respect to the edges of the guard. After the blade is inserted into the jaws of the clamp, the clamp is placed in position against the guard plate, and the shoulders 11 of the hook 9 are sprung into engagement with the shoulders 12 of the plate 6. Then the handle is passed into engagement with the hook 9 while being held in the position shown by the dotted lines in Fig. 2. Then by swinging the handle to the position shown by full lines the clamp and blade are locked to the guard.

The upward pull on the hook 9 draws the jaws 5 together and tightens their grip upon the blade so that it is securely fastened. The movement of the handle by causing bending of the clamp 4 controls the grip of the jaws. The handle may be set to either of the perforations 15 so as to obtain the desired angle between the handle and the particular cutting edge of the blade which is to be used. One edge of the blade is used for operation with the right hand, and the other edge is used for operation with the left hand, and the handle may be set to corresponding positions with respect to either edge. To obtain the best results the handle should always be set at some oblique angle to the edge of the blade, so as to insure that in cutting the edge of the blade will naturally be moved in a direction which will insure a slanting cut. For this reason the guard teeth are also disposed obliquely with respect to the cutting edges. When in operating position, the handle is substantially parallel with the plane of the blade, and it will cause the clamping of the blade when it is moved from its released position, as shown by dotted lines in Fig. 2, to either of the operating positions represented by the perforations 15. The seats 8 and the clamping action of the handle together serve to secure the clamp and blade in fixed relation to the guard when the handle is in either of such operating positions. In most cases it may be preferred to change the position of the cutting edges of the blade with respect to the guard for the purpose of shaving "closely" or "lightly" by inverting the blade in the holder, rather than by shifting it in its own plane, for the reason that if the adjustment is accomplished by shifting the blade, then the two cutting edges would have different relation to the edges of the guard and could not be used alternately with the same result as regards closeness or lightness of the shave, whereas, if the change in position of the cutting edges is accomplished by inverting the blade, then the blade may be kept in a central position with respect to the guard.

Although but one specific form of this invention is illustrated in the drawings, it will be understood that numerous details of the construction shown may be altered or some parts omitted without departing from the spirit of this invention.

I claim:—

1. In a razor, the combination of a blade, a holder comprising a pair of relatively movable jaws engaging opposite ends of the blade, a handle hinged on said holder and movable into and out of operating position, and means cooperating with said handle to secure said jaws in gripping engagement with the blade when said handle is in its operating position.

2. In a razor, the combination of a blade, a holder secured adjacent to and entirely behind one face of said blade, a projection on said holder, a handle fulcrumed on said projection, and clamping means comprised by said holder, and comprising relatively movable jaws engaging opposite edges of said blade and being secured in clamping engagement with said blade through the movement of said handle into operative position.

3. In a razor, the combination of a blade, a holder supporting said blade and comprising two relatively movable parts, a projection on one of said holder parts extending through the other, a handle having a part in interlocking engagement with said projection, a shoulder on said handle bearing on the other of said holder parts when said handle is in a certain position, means for retaining said handle in such certain position, and a spring interposed between said projection and handle.

4. In a razor, the combination of a supporting holder, a guard in said holder, a blade removably mounted in said holder adjacent to said guard, said blade having a cutting edge located closer to one face of the blade than to the other, whereby the position of said cutting edge with respect to the guard may be changed by inverting the blade in the holder.

5. In a safety razor, the combination of a blade sharpened at one edge and having chamfered edges disposed transversely to the sharpened edge, and a bowed clamp having jaws normally urged toward each other and adapted to be sprung into engagement with the chamfered edges of said blade, a projection on said clamp located between said jaws and extending away from said blade, a guard plate having an aperture for receiving said projection and having an edge arranged to cooperate with the cutting edge of said blade, and a handle interposed between said projection and guard plate and adapted, when in a certain position, to draw said clamp toward said guard plate and thereby urge said jaws into gripping engagement with the blade.

6. The combination of a blade and a supporting frame comprising two parts, one having thereon a projection extending through the other, a tubular handle, a spring located in said handle and adapted to engage said projection for securing said handle, said handle having thereon a shoulder arranged to bear upon said other frame part for urging said parts together when said handle is in a certain position.

7. In a razor, the combination of a blade, and a holder comprising a guard plate, means for securing said blade against one side of said guard plate, a handle on the opposite side of said guard plate, and a

connection between said handle and said securing means, said handle being fulcrumed on said connection and having thereon a shoulder bearing toward said guard plate and urging said blade and plate together when said handle is in a certain position with respect to the blade, said handle when in such certain position extending beyond the blade and serving as a handle for manipulating the razor, and means for securing the handle in fixed relation to the blade when the handle is in said certain position.

8. In a razor, the combination of a blade, and a holder comprising a guard plate, means located between said plate and blade for securing said blade against one side of said guard plate, a handle on the opposite side of said guard plate, and a connection between said handle and said securing means, said handle being fulcrumed on said connection and having thereon a shoulder bearing toward said guard plate and urging said blade and plate together when said handle is in a certain position with respect to the blade, said handle when in such certain position extending beyond the blade and serving as a handle for manipulating the razor, and means for securing the handle in fixed relation to the blade when the handle is in said certain position.

9. In a safety razor, the combination of a blade, a guard plate, a clamp adapted to adjustably hold said blade when removed from the guard plate, and means for removably securing said clamp and blade relatively of said guard plate.

10. In a razor, the combination of a blade, a holder therefor comprising two relatively movable parts, a projection on one of said parts extending through the other, and a handle having means for interlocking engagement with said projection and adapted to secure said blade in the holder through the movement of said handle to either of a plurality of different operating positions.

11. A blade for use in shaving the face and adapted for use with a cooperating guard device, said blade having its cutting edge at one side of the longitudinal center of the blade and adapted for reversal in connection with its cooperating guard device, as and for the purpose set forth.

12. In a safety razor, the combination with a guard, of a reversible razor blade having its cutting edge at one side of the center of thickness of the blade, whereby the cutting edge of the blade will be nearer the guard when in one position than when in the reverse position, as and for the purpose specified.

13. In a safety razor, a reversible blade having one side ground away more than the other, forming plain beveled surfaces and a cutting edge which is intermediate

of the sides, but nearer to one side than the other and a guard cooperating with said blade, whereby the cutting edge of the blade will be nearer the guard when in one position than when in the reverse position.

14. In a razor, the combination of a blade having a cutting edge and having parallel ends transverse to the cutting edge, a holder comprising relatively movable jaws engaging the respective ends of the blade for securing it between them, a handle mounted on said holder for manipulating the razor, and means controlled by the movement of said handle actuating said jaws for varying the grip thereof, said handle being movable to a certain position for minimizing the grip of said jaws and being movable to a plurality of different positions when the grip of said jaws is at a maximum.

15. In a razor, the combination of a blade

having a cutting edge and having parallel ends transverse to the cutting edge, a holder comprising relatively movable jaws engaging the respective ends of the blade for securing it between them, a handle mounted on said holder for manipulating the razor, and means controlled by the movement of said handle actuating said jaws for varying the grip thereof, said handle being arranged to lie in the plane substantially parallel to the plane of the blade when the jaws are in their clamping position and being adjustable to a plurality of different positions in such plane.

Signed at Chicago this 31st day of December, 1908.

JOHN GELIN.

Witnesses:

EUGENE A. RUMMLER,
MARY M. DILLMAN.