No. 650,337. Patented May 22, 1900.

W. H. NICHOLLS.

SAFETY RAZOR.

(Application filed July 30, 1898.)

(No Model.)

Fig. 1.

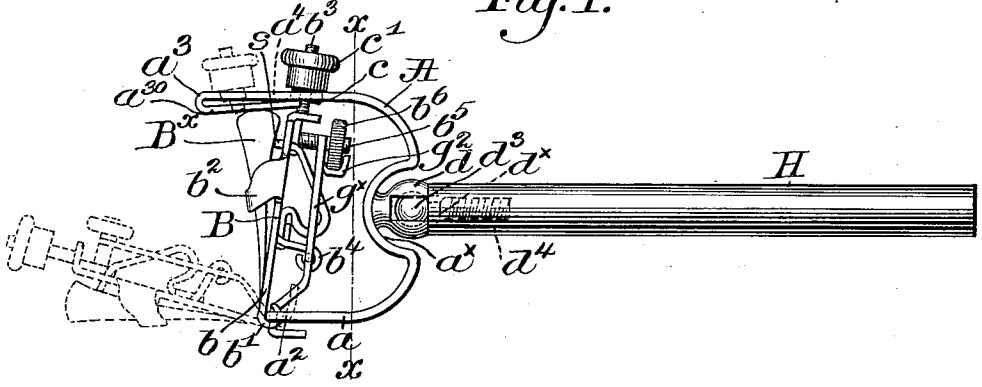


Fig. 2.

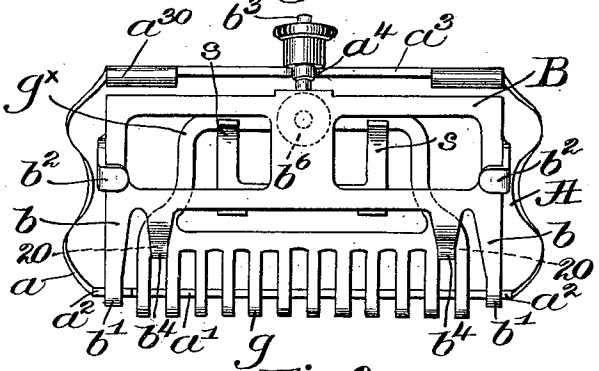


Fig. 3.

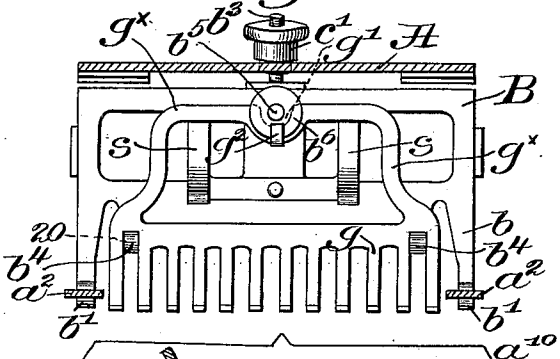
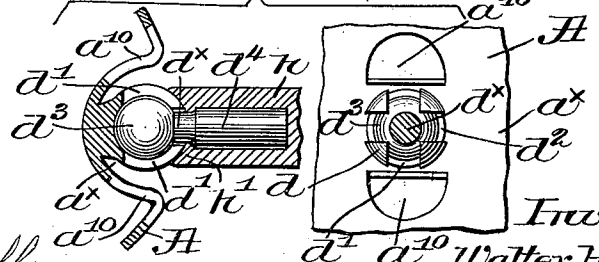


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

WALTER H. NICHOLLS, OF LYNN, MASSACHUSETTS, ASSIGNOR TO THE LIBBY, HARLOW & COMPANY, OF BOSTON, MASSACHUSETTS.

SAFETY-RAZOR.

SPECIFICATION forming part of Letters Patent No. 650,337, dated May 22, 1900.

Application filed July 30, 1898. Serial No. 687,335. (No model.)

To all whom it may concern:

Be it known that I, WALTER H. NICHOLLS, of Lynn, county of Essex, State of Massachusetts, have invented an Improvement in Safety-Razors, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention relates to that type of razors known as "safety-razors;" and it has for its object the production of various novel features of construction and arrangement whereby the operation of the device is improved and the various adjustments necessary for the effective use of the razor simplified.

The various novel features of the invention will be fully described hereinafter in the specification and particularly pointed out in the claims.

Figure 1 is an end elevation of a razor embodying my invention in substantially the position it is used. Fig. 2 is a left-hand side elevation thereof, viewing Fig. 1, with the blade omitted. Fig. 3 is a sectional view taken on the line $x\,x$, Fig. 1, through the body looking to the left; and Fig. 4 is an enlarged detail in section and plan of the joint connecting the handle and the frame.

The frame A, made, preferably, of suitable thin and elastic sheet metal, is substantially U-shaped in cross-section, and its under side is bent to form a longitudinal groove $a^{\times}$ therein, while one limb, as a, is cut away at a' to leave arms a^2.

A blade-holder, shown as an open plate B, has one edge cut away to leave lugs b, which are bent over at their ends at b' to hook into the arms of the limb a of the frame to thus pivotally connect the blade-holder to the latter. The blade-holder is provided at its sides with ears b^2, bent over its outer face to receive the sides of the blade $B^{\times}$, Fig. 1, and one or more springs s (two being herein shown) are secured to the holder and have their free ends extended beyond the outer face of the holder to engage the under face of the blade $B^{\times}$ and tending to push it backward out of the ears b^2 and against the opposite limb a^3 of the frame A when the blade-holder is secured in operative position. This limb is slotted from its upper edge down toward the bottom of the frame, as at a^4, Figs. 1 and 2, to receive the shouldered end c of a thumb-nut c', which is threaded onto a screw-stud b^3, attached to the free edge of the blade-holder B, and the ends of the limb are preferably turned over, as at a^{50}. Referring to Figs. 1 and 2, it will be seen that the part c of the nut enters the slot a^4, and by screwing the nut c' up on the stud b^3 the blade-holder may be firmly held in full-line position, (shown in Fig. 1,) or it may be moved to bring the blade nearer the edge of the limb a^3, the position of the nut at such time being shown by dotted lines in Fig. 1 to thereby adjust the angular position of the blade $B^{\times}$ on the frame. By screwing up the nut still farther the limbs of the frame are drawn toward each other, the resiliency of the material of the frame permitting this, thereby tending to push the blade toward the limb a and to consequently bring it nearer the guard to be described. By slacking up on the nut the limbs of the frame will separate, and then the springs s act on the blade to force it toward the limb a^3, drawing it away from the guard. It will thus be seen that the means for retaining the blade-holder in operative position also has the function of adjusting the edge of the blade relatively to the guard.

When it is desired to remove the blade for any purpose, as for sharpening, the blade-holder is swung on its pivot until the blade can be withdrawn from the ears b^2, and in cleaning the razor the entire blade-holder may be swung over into dotted-line position, (shown in Fig. 1,) or even farther, to expose its inner portion and also to leave the interior of the frame entirely clear and open.

The blade-holder is herein shown as provided with two inturned hooked lugs b^4, on which is pivotally mounted the guard, said guard being formed of a series of curved bent-over fingers g, mounted on an open framework $g^{\times}$, the said fingers projecting more or less through the cut-away part a' of the limb a of the frame and projecting beyond it, as clearly shown in Figs. 1 and 2, the convex portions of the guard-fingers being located below the edge of the blade when the latter is in position, as shown in Fig. 1. The free

end of the framework $g^{\times}$ has a recess g' therein, in which is extended a threaded stud b^5, fast on the inner side of the blade-holder and adapted to receive an adjusting-nut b^6, which is threaded onto the stud and held in place by a clip g^2 on the guard-frame, the framework $g^{\times}$ being located between the nut and the blade-holder. If the nut b^6 be rotated in one direction or the other, the guard-frame $g^{\times}$ will be rocked on its fulcra 20, Fig. 2, in one direction or the other to thereby adjust the guard g toward or away from the under side of the blade and thus adapt the razor to different cuts, according as it is desired to shave lightly or very closely. It is very convenient and desirable to provide the razor with a handle which may be adjusted at relative angles thereto in order to facilitate the convenient use of the razor, and for this purpose I have herein shown the handle H as attached to the frame by a series of ball-and-socket locked joints, details of which on a large scale are illustrated in Fig. 4. At a point midway between the ends of the groove $a^{\times}$ in the under side of the holder I have mounted a spherical socket d, slotted at right angles to the groove $a^{\times}$, as at d', and in parallelism therewith, as at d^2, the said socket receiving and holding therein a ball member d^3, having a threaded stem d^4 to screw into the threaded end h of the handle, the end of the handle being concaved, as at h', Fig. 4, to fit the exterior of the socket d. By screwing the handle up tightly on the threaded stem d^4 of the ball the handle can be firmly locked upon the socket, the position of the handle depending upon circumstances. It may be turned down into the groove $a^{\times}$ at one or the other side of the socket, the reduced portion $d^{\times}$ of the ball-shank then entering one or the other of the notches d^2, or the handle may be locked at right angles to the under side of the frame A, as in Fig. 1. The handle may also be locked at any intermediate point in the plane of the length of the groove, and it may be locked in a transverse position by bringing the shank into one or the other of the slots d' of the socket and locking the handle in place thereat. To facilitate this latter adjustment, the frame is cut away at a^{10} at opposite sides of the socket, as clearly shown in Fig. 4. By the construction herein shown and described a great range of adjustment for the handle is provided in a simple and effective manner, and by mounting the blade-holder in such manner that it may be turned entirely away from the frame ready access may be had to the interior of the latter and to the inner side of the blade-holder either to clean the parts or to effect the desired adjustment of the guard g, as hereinbefore described.

The overturned ends a^{30} of the limb a^3 act as abutments for the back of the blade near its ends to thereby prevent any rocking of the blade and cause it to be held firmly in its place in the blade-holder when the latter is in operative position.

My invention is not restricted to the precise construction and arrangement herein shown, as the same may be modified without departing from the spirit and scope of my invention.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a safety-razor, a transversely-bent elastic frame, a blade-holder pivotally mounted thereon, and means to retain said blade-holder in operative position and to adjust the blade, substantially as described.

2. In a safety-razor, a transversely-bent elastic frame, a blade-holder pivotally mounted thereon, and means to adjust the angle of the blade-holder and maintain it in operative adjusted position, substantially as described.

3. In a safety-razor, a frame, a blade-holder pivotally mounted thereon, and a guard carried by the said blade-holder, substantially as described.

4. In a safety-razor, a frame, a blade-holder mounted thereon, a guard carried by the blade-holder, and means to adjust the guard, substantially as described.

5. In a safety-razor, a transversely-bent elastic frame, having a longitudinal, external groove in its under side, and a handle connected with the frame and adapted to be turned down into the groove, substantially as described.

6. A safety-razor having a substantially U-shaped open-ended elastic frame, a blade-holder pivotally mounted on one limb thereof, and means to retain the blade-holder in operative position on the frame, substantially as described.

7. A safety-razor having a substantially U-shaped elastic frame, a blade-holder pivotally mounted on one limb thereof, a guard carried by the blade-holder, and means to retain the blade-holder in operative position and to also effect relative adjustment of the edge of the blade and the guard, substantially as described.

8. A safety-razor having a substantially U-shaped elastic frame, a blade-holder pivotally mounted on one limb thereof, and retaining-lugs on said holder, for the sides of the blade, a spring to act on the under face of the blade and normally retract it, and a retaining device on said holder to engage the adjacent limb of the frame and control the separation of the limbs thereof, the back of the blade in operative position being held by its spring against the adjacent limb of the frame, substantially as described.

9. A safety-razor having a substantially U-shaped elastic frame, a blade-holder having its front edge recessed to form ears pivotally connected with one limb of the frame, a guard formed of a series of downturned, curved fingers mounted on the under side of the blade-

holder and adapted to extend beyond the frame, means to adjust said guard, and a retaining device to maintain the blade-holder in operative position on the frame, substantially as described.

10. In a safety-razor, a frame and a blade-holder, a handle, and an adjustable connection between it and the frame whereby the handle can be adjusted and positively maintained at various angles with the frame, substantially as described.

11. In a safety-razor, the frame, a handle, a socket on one and a coöperating ball on the other, to connect the frame and handle, and means to lock the handle in adjusted position, substantially as described.

12. In a safety-razor, a substantially U-shaped elastic frame having one limb cut away and provided with a longitudinal groove in its under side, a blade-holder, a guard mounted thereon and projecting into the cut-away portion of the frame, and a handle jointed to the frame within the groove between its ends and adapted to be turned down thereinto, substantially as described.

13. A safety-razor having a substantially U-shaped elastic frame, a blade-holder mounted thereon and provided with lugs to engage the sides of the blade, a spring to act on the under face of and normally retract the blade, and means to vary the separation of the limbs of the frame, the back of the blade when in operative position being held against the adjacent limb of the blade by said spring, substantially as described.

14. In a safety-razor, a frame, a blade-holder mounted thereon, a guard pivotally mounted on said blade-holder, and means to rock the guard relatively to the blade-holder and thereby adjust the guard, substantially as described.

15. In a safety-razor, a substantially U-shaped elastic frame having end abutments on one of its limbs, a blade-holder pivotally mounted on the other limb of the frame, means to retain the blade on said holder with its back against the abutments, and a retaining device to hold the blade-holder in operative position on the frame, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WALTER H. NICHOLLS.

Witnesses:
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AUGUSTA E. DEAN.