Oct. 13, 1931. H. B. HARTMAN 1,827,148

SAFETY RAZOR

Filed June 17, 1929

Fig. 1.

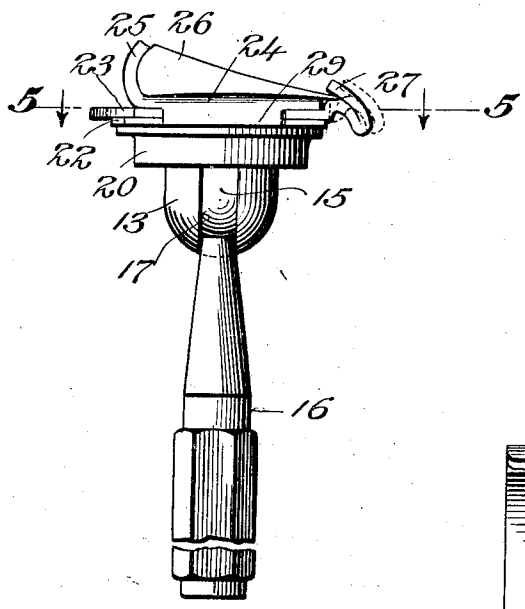


Fig. 3.

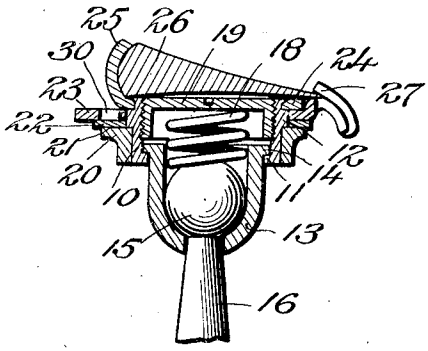


Fig. 4.

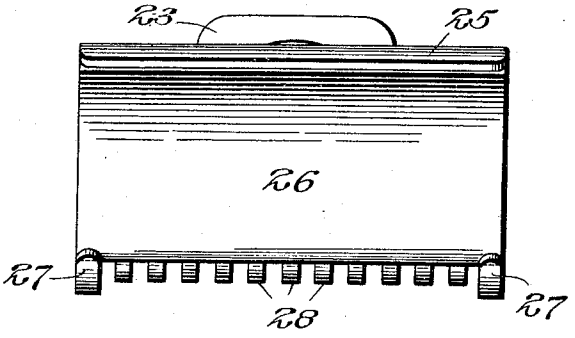


Fig. 2.

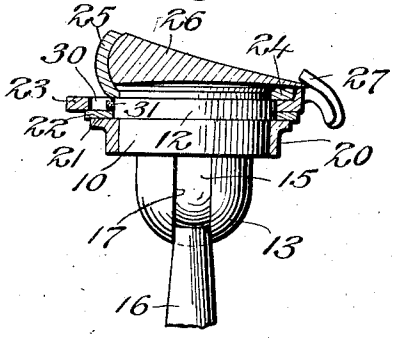


Fig. 5.

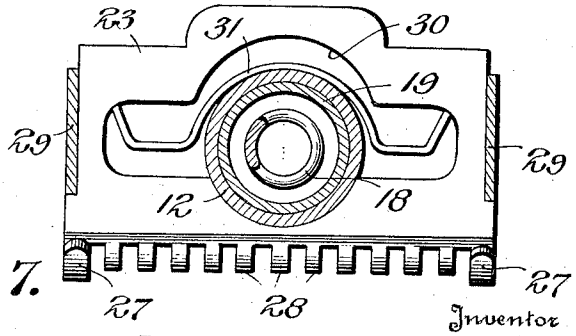


Fig. 6.

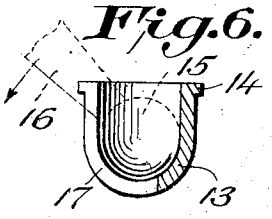
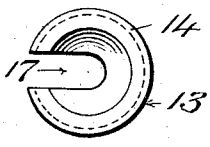


Fig. 7.



Inventor

H. B. Hartman,

By D. P. Wochampter

Attorney

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UNITED STATES PATENT OFFICE

HARRY BUXTON HARTMAN, OF BUFFALO, NEW YORK

SAFETY RAZOR

Application filed June 17, 1929. Serial No. 371,462.

This invention relates to improvements in safety razors, and has for its general object to provide a safety razor including a handle mounted for universal adjustment, and a blade guard adjustable to accommodate blades of different widths, embodied in a thoroughly practical structure of exceptionally simple, sturdy, compact design capable of being produced at relatively low cost.

More particularly, it is an object of the invention to provide an improved construction embodying the features of simplicity and cheapness for permitting universal adjustment of the handle and for holding the handle firmly in any adjusted position in which it may be placed.

Also, it is a more specific object of the invention to provide a construction embodying the features of simplicity and cheapness and adjustable by the mere act of inserting a blade in the razor to accommodate blades of varying widths.

Further, it is a more specific object of the invention to provide blade holding means adjustable to accommodate blades of varying widths, which means exerts a constant spring force tending to hold the blade in operative position.

With the foregoing and other objects in view, the invention consists in the novel features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings and defined in the appended claims.

In the drawings, wherein like characters of reference denote corresponding parts in the different views.

Fig. 1 is a side elevation of a safety razor embodying the features of the present invention.

Fig. 2 is a view showing the adjustable blade holding means in cross section and the handle mounting means in elevation.

Fig. 3 is a view similar to Fig. 2 showing both the blade holding means and the handle mounting means in cross section.

Fig. 4 is an end elevation of the razor.

Fig. 5 is a section taken approximately on the line 5—5 of Fig. 1.

Fig. 6 is a sectional view through the cup element of the universal joint connection for the handle; and

Fig. 7 is an end view of the cup element shown in Fig. 6.

Referring to the drawings in detail 10 designates a hollow, cylindrical sleeve of short length, internally threaded from its outer end, provided with an inwardly directed preferably annular flange 11 at its inner end, and formed with an external preferably annular flange 12.

A cup element 13 provided at its open end with an external preferably annular flange 14 and of spherical form at its other end, is adapted to receive a spherical extremity 15 of the handle 16 and to be assembled with the sleeve 10 whereby the handle 16 is connected with said sleeve for universal adjustment with respect thereto. To this end the cup element 13 is slotted as indicated at 17 to accommodate the portion of the handle adjacent to its spherical extremity or ball end 15, this slot extending from the open end of said cup element inwardly a suitable distance so that the handle may be swung to any angle between a position in axial alinement with the cup and a position in which its axis is disposed substantially at right angles to the axis of the cup. Said cup is of an external diameter to fit neatly within the annular flange 11 of the sleeve 10 and is adapted to be passed through said sleeve from the outer end of the latter whereby its spherical end portion is disposed inwardly of the sleeve 10 and its flange 14 is shouldered against the flange 11. Thus, said cup element is assembled with the sleeve 10 for rotation with respect thereto, and due to the slot 17 in said cup element which permits the handle 16 to be swung as aforesaid, it is apparent that the handle is capable of being adjusted to practically any desired angle with respect to the sleeve 10.

To provide for frictionally retaining the handle 16 in any adjusted position in which it may be placed, a short, relatively stiff coil spring 18 is interposed between the spherical extremity 15 of the handle and a plug or cap element 19 which is threaded into the outer end of the sleeve 10. This spring, reacting

from the plug or cap element 19, forces the spherical handle extremity 15 against the inner face of the cup element 13 and the flange 14 of said cup element against the flange 11 of the sleeve 10, with a pressure which may be varied by threaded adjustment of the plug or cap element 19 within the sleeve 10. Thus, greater or less freedom of adjustable movement of the handle 16 may be provided for so long as the spring 18 is maintained sufficiently compressed to produce the necessary friction between the spherical extremity 15 of the handle and the cup 13, and between the flanges 11 and 14 to hold the handle in adjusted positions.

By means of a collar 20 engaged by a press fit over the inner end portion of the sleeve 10 or otherwise rigidly connected with said sleeve, or, if desired, by means of an integral formation on the sleeve 10, a shoulder 21 is provided at the inner end of the flange 12 to limit inward movement of a backing plate 22 and a blade guard 23 which are engaged over said flange.

The backing plate 22 is provided with an opening which neatly receives the flange 12, its function being primarly to serve as a support for the guard 23 and as a cover for the rear face of said guard. Said backing plate is seated against the shoulder 21 and the blade guard 23 is seated for sliding movement against the outer face of said backing plate, outward movement of said blade guard being prevented by a blade holding plate 24 rigidly connected with the sleeve 10 outwardly of the flange 12. In the present instance said holding plate 24 has a central opening which receives the outer end portion of the sleeve 10, the inner face of said plate adjacent to the opening therein seating against the outer end of the flange 12, and the outer end portion of the sleeve 10 being spun or peened over against the outer face of said plate whereby the latter is secured rigidly in assembly with the sleeve 10.

One side of the plate 24 is provided with an outwardly directed flange 25 against which the blunt edge of the blade 26 is engaged, the sharp edge of said blade being engaged at the ends thereof under lips 27 formed by turning upon themselves the two outermost teeth of of the series of teeth 28 formed along the edge of the blade guard which is opposite to the flange 25 of the plate 24.

The blade holding plate 24 is provided at its ends with inwardly directed ears 29 which engage the ends of the guard 23 thereby preventing rotation of said guard with respect to the plates 22 and 24 and the sleeve 10. The guard 23 is slotted as indicated at 30 to receive the flange 12 whereby the guard is slidably movable between the ears 29, a bent wire or leaf spring 31 being interposed between the flange 12 and the wall of said slot opposite to the teeth 28 whereby the guard is urged constantly in a direction to bring the toothed edge thereof towards the flange 25 of the plate 24. Thus, by pressing on the edge of the guard opposite to the edge thereof having the teeth 28, the said toothed edge may be moved away from the flange 25 to permit a blade 26 to be placed as shown in the drawings between the lips 27 and the flange 25, after which release of the guard will permit the spring 31 to act to urge the guard in an opposite direction to clamp the blade between said flange and said lips. It thus is apparent that blades 26 of materially different widths may readily be accommodated. Figure 1 illustrates by dotted lines how the guard 23 is adapted to be slidably adjusted with respect to the plate 24 to permit engagement of the blade 26 in the manner stated.

By reference particularly to Figs. 2 and 3 of the drawings it will be noted that the two outermost teeth 28, i. e. the two teeth having the lips 27, extend outwardly beyond the intermediate teeth by an amount equal approximately to the thickness of the material of the guard. This assists in avoiding damage to the cutting edge of the blade by engagement with the intermediate teeth during insertion and removal of the blade, assists in securing proper engagement of the blade against the skin, and eliminates any possibility of the corners of the blade gouging or scratching the skin.

Without further description it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will of course be understood that changes in the form, proportion and minor details of construction may be resorted to, without departing from the spirit of the invention and scope of the appended claims.

I claim:

1. In a safety razor, a member with which the handle of the razor is connected, a shoulder on said member, a guard supporting plate seated against said shoulder, a slotted guard disposed over said member and slidably seated against said plate, a blade holding plate rigid with said member, said guard being disposed between said guard supporting plate and said blade holding plate, a flange at one side of said blade holding plate, lips at the opposite side of said guard, said flange and said lips being adapted to receive a blade therebetween, and a spring disposed between said member and said guard constantly urging the latter in a direction to clamp a blade between said flange and said lips.

2. In a safety razor, a member with which the handle of the razor is connected, a blade holding plate secured rigidly to the outer end of said member, a slotted blade guard disposed slidably against the inner face of said plate, guide flanges extending inwardly from the ends of said plate into overlying relation

to the ends of said guard, and a leaf spring disposed within the slot of said guard and inclusive of an intermediate bowed portion embracing said member and free end portions bearing against said guard.

3. In a safety razor, a member with which the handle of the razor is connected, a blade holding plate rigidly secured to the outer end of said member, a slotted blade guard having abutments at its front edge and slidably arranged beneath the inner face of said plate, means for guiding the blade guard with reference to the blade holding plate, and a spring disposed within the slot of the guard and having a portion engaging said member, and the ends thereof bearing against said guard.

4. In a safety razor, a member with which the handle of the razor is connected, a blade holding plate rigidly secured to the outer end of said member, a slotted blade guard disposed slidably against the inner face of said plate, means for guiding the blade guard with reference to the blade holding plate, and a leaf spring disposed within the slot of said guard and having the free end portions thereof bearing against said guard.

In testimony whereof I hereunto affix my signature.

HARRY BUXTON HARTMAN.