Jan. 25, 1938. H. H. BATES ET AL 2,106,587

SAFETY RAZOR

Original Filed May 25, 1934

Fig. 1.

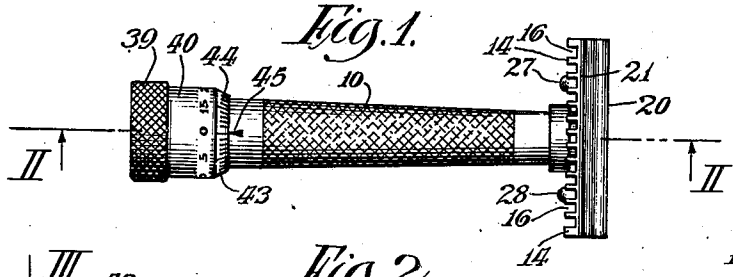


Fig. 2.

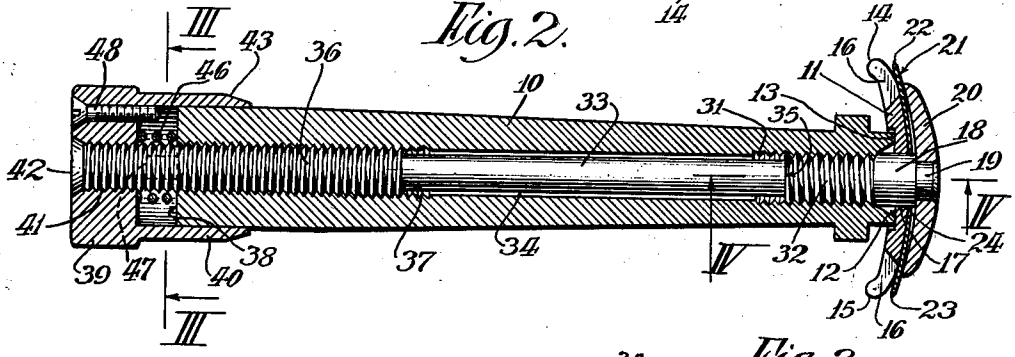


Fig. 3.

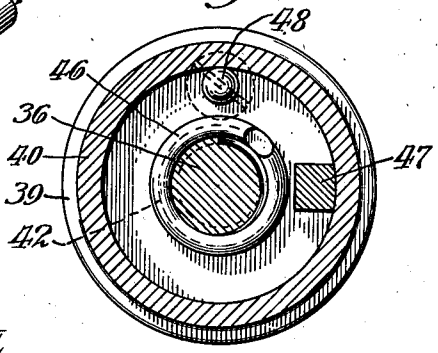


Fig. 5.

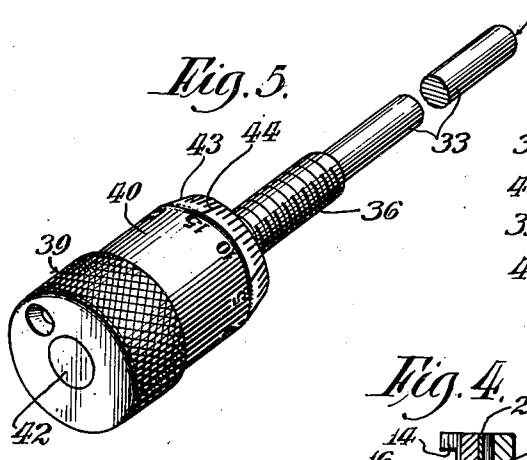
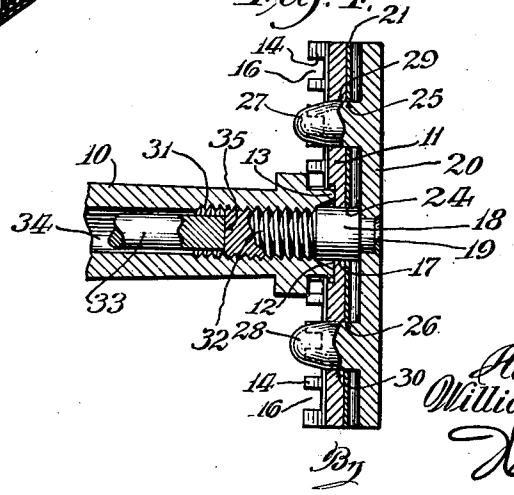


Fig. 4.



Inventors:
Harry H. Bates and
William O. Bates Jr.
By Harry C. Albright
Attorney.

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UNITED STATES PATENT OFFICE

2,106,587

SAFETY RAZOR

Harry H. Bates and William O. Bates, Jr., Joliet, Ill.

Application May 25, 1934, Serial No. 727,417
Renewed December 7, 1937

5 Claims. (Cl. 30—34)

This invention relates to razors and more particularly to safety razors although certain features thereof may be employed with equal advantage for other purposes and different types of razors.

It contemplates more especially the provision of novel means in connection with a razor blade holder for indexing or measuring the position of a blade adjustably associated therewith.

Many types of razors have heretofore been employed for shaving purposes, and they have been successfully used for home shaving without resort to the services of a barber. It is true, nevertheless, that the primary objection to home shaving is the inability to procure the desired uniformity in the results of shaving consistent with an individual's skin, beard, and sensitiveness to the shaving effect or reaction. This is especially prevalent with the use of safety razors which involve a blade that is adjustably associated with the holder to the extent of varying the shaving effect responsive to the use thereof. Safety razors embodying a transversely flexible blade associated with a holder are capable of varying the degree of flexing to enable either a close, coarse, or a varying shave result depending upon the adjustment and the position of the cutting edge. For instance, in the repeated use of such razors, the individual will necessarily flex the blade to a varying and non-uniform effect because of the inability to govern the degree of flexing which controls the directional position of the blade cutting edge. Consequently, each time an individual uses a safety razor there is every likelihood that the blade is associated with the holder so that the blade is differently flexed each time or at least a uniform repeated flexing would be an accidental coincidence rather than a certainty which is required to enable uniform shaving so as to procure the desired result for any one individual.

Then, too, each individual's skin is of different texture, degree of toughness, and this is also true of the beard that has varying characteristics. As a result, the degree of blade flexing or directional position of the blade cutting edge varies with each individual and such can only be determined by testing the results that are obtainable with the blade flexed to different degrees so as to eventually find the proper adjustment for each individual. After the proper adjustment has been ascertained, it has been found highly desirable to provide indexing means that designates or determines the degree of flexing or position of the blade cutting edge that most effectively imparts the desired shaving results or reactions from a skin and beard standpoint with each individual. After this particular adjustment has been found advantageous to the individual who possesses any particular razor, then the same degree of flexing or blade adjustment may be repeatedly provided so as to impart substantially uniform shaving results depending upon the wishes or requirements of each individual user.

One object of the present invention is to provide a razor having indexing means for determining the blade adjustment.

Another object is to simplify the construction and improve the operation of a razor having blade adjusting means in association therewith.

Still another object is to provide indexing means in association with a safety razor to determine the degree of blade flexing or the adjustment thereof.

A further object is to provide a safety razor with means for measuring the degree of blade flexing or blade cutting edge adjustment.

A still further object is to provide a safety razor having a measuring device associated with a handle member thereof so as to govern the degree of blade flexing or blade cutting edge adjustment.

Still a further object is to provide indexing means in combination with a razor so as to enable predetermined adjustment thereof for governing the position of the blade when assembled in association therewith.

Other objects and advantages will appear from the following description of an illustrative embodiment of the present invention.

In the drawing:

Figure 1 is a side view in elevation of a razor showing an indexing mechanism embodying features of the present invention.

Figure 2 is a sectional view in elevation taken substantially along line II—II of Figure 1.

Figure 3 is a sectional view taken substantially along line III—III of Figure 2.

Figure 4 is a sectional view taken substantially along line IV—IV of Figure 2.

Figure 5 is a perspective view of the indexing mechanism associated with a razor blade holder in a manner that indexes the position of the blade in association therewith.

The structure selected for illustration comprises a handle member 10 which is elongated and of substantially cylindrical configuration to enable a manual grasp and manipulation thereof in conjunction with a blade holder 11 which has a substantially circular countersunk surface 12

for cooperation with the correspondingly shaped handle extremity 13 for reasons which will appear more fully hereinafter.

As shown, the blade holder 11 is of substantially rectangular configuration and possessed of a curved cross-section to present serrated edges 14 and 15 defined by transverse slots 16. It is to be noted that the blade holder 11 is provided with a central aperture 17 extending transversely therethrough in concentric relation with the countersunk area 12 to receive a stem 18 therethrough. The stem 18 is provided with a reduced extremity 19 to enable the swaged connection thereof to a blade cap 20 corresponding in curved configuration and length with the holder 11, but of lesser breadth so as to enable the confronting application thereto without obstructing the serrated edges 14 and 15 and their slots 16.

The razor blade 21 preferably composed of sheet steel of such thinness as to enable the ready flexing thereof, is of a length consistent with the confronting blade holder 11 and cap 20, but of a width intermediate in size relative thereto so as to present shaving or cutting edges 22 and/or 23 depending upon the dictates of commercial practice. The blade 21 is punched to provide a central aperture 24 corresponding in size with the stem 18, and a pair of apertures 25—26 are provided along the longitudinal line on either side thereof to receive lugs 27 and 28, respectively, projecting from the cap 20 and extending through correspondingly shaped apertures 29 and 30 provided in the blade holder 11, thereby enabling the flexible blade 21 to be positioned and guided for predetermined reception between the confronting blade holder 11 and cap 20 for retention and variable flexing responsive to the threaded engagement of the handle 10 with the stem 18.

To this end, the handle 10 is provided with an axial bore 31 which is threaded to intermesh with the correspondingly threaded stem extremity 32 so as to effect inter-engagement therewith for flexibily grasping the blade 21 between the holder 11 and cap 20 so as to present the blade edges 22 and/or 23 in different directional positions depending upon the degree of blade flexing from the minimum to the maximum determined by the curved configuration of the confronting surfaces comprising a part of the holder 11, and cap 20. The closeness of the shave or the cutting effect of the blade edges 22 and/or 23 is determined by the degree of flexing imparted to the blade 21 or in other words to the flexed position thereof determined by the degree of engagement between the handle bore 31 and the threaded extremity 32 of the cap stem 18 with the serrated edges 14 and 15 of the holder 11 serving as guards in the application of the razor over the skin surface to be shaved.

Now, then, in order to determine, measure, and/or index the degree of blade flexing or the flexed position of the blade 21, a simple and dependable device is provided, in this instance, in association with the handle 10. The indexing or measuring device comprises, in this instance, a rod 33 which extends through a bore 34 which is provided axially through the handle 10 so as to communicate with the threaded extremity 31 thereof which engages the cap stem extremity 32. As shown, the rod 33 has a flat extremity 35 adapted to contact the correspondingly shaped extremity of the stem 18, thereby governing the extent of the threaded engagement between the handle 10 and the stem extremity 32.

It is to be noted that the rod 33 has an enlarged threaded region 36 which is in engagement with a correspondingly threaded portion 37 of the handle bore 34 proximate to the other extremity 38 of the handle 10. An indexing member 39 of circular configuration is provided with a tubular extension 40 sized interiorly to correspond with the exterior diameter of the handle extremity 38 so as to serve as a complement thereof and to be telescopically projected thereon. In order to retain the indexing member 39 in telescopic association with the handle extremity 38, the threaded rod end region 36 axially engages the indexing member 39 as at 41 with its extremity 42 projecting through an aperture in the end surface of the member 39, it being exteriorly swaged thereto so as to preclude accidental removal or relative rotation between the threaded rod extremity 36 and the indexing member 39 to the end that these members rotate in unison owing to their fixed inter-engagement.

As shown, the tubular region 40 of the indexing member 39 is provided with a tapered peripheral edge 43 convergent in the direction of the handle 10 so as to provide a suitable surface for calibrations 44 impressed thereon to index or measure the relative position of the member 39 with respect to the handle member 10 having a reference line or arrow marking 45 for cooperation with the calibrations 44 to determine the degree of flexing of the blade 21 or the predetermined flexed position desired thereof.

A spiral spring 46 envelops the threaded rod extension 36 between the handle extremity 38 and interior 40 of the tubular member 39, thereby precluding accidental movement between the handle 10 and rod 33 and maintaining the selected adjustment thereof. To limit the rotation of the index member 39, a lug 47 is formed on the end wall of the handle extremity 38 to cooperate with a stop member, in this instance a machine screw 48 that extends through the end of the member 39 so as to project into the path of the lug 47, thereby limiting its rotation to a fractional revolution within the extent of the calibrations 44. Of course, the calibrations of the measuring device 39 are of an arbitrary character and this also pertains to the pitch of the threads 32 and 36 which are factors that must be taken into consideration in connection with the measuring device 39.

It is clear, however, that so far as this particular or specific use is involved, the calibrations 44 may be of an arbitrary character and merely indexes or determines the extent of blade flexing or the position of the blade edges 23 insofar as such is desired in connection with the shaving effect procured therewith by any particular individual. For instance, should an individual find that the razor imparts the desired character and type of shave in any particular instance, the position of the member 39 so far as the calibrations 44 relative to the marker 45 is noted, and thereafter this individual can procure the same adjustment insofar as flexing the blade 21 uniformly in preparation of each shave.

As an example, should the individual attempt shaving with the blade 29 flexed to different degrees, and in one of these positions such as designated by number 0 (Figure 1), the best shave is procured by any particular individual, then this adjustment can be always retained in that the rod 33 is then in a predetermined position. Thereafter the razor may be assembled and dismantled for the placement and removal of the

blade 21 by manipulating the handle 10 which in no way will influence or change the adjustment member 39 relative thereto. At the next shave, the razor is again assembled by manipulating the handle 10 and effecting the threaded engagement thereof with the stem extremity 32 so far as permitted by the rod 33 which contacts therewith. This limits any further flexing of the blade 21 and gives the desired and same adjustment previously found to be desirable by said individual.

Then, too, should the adjustment member 39 have been manipulated by another individual or through accident, it would be a comparatively easy matter for procuring the same adjustment previously used successfully by merely turning the adjustment member 39 to the calibration 0 for alignment with the marker 45. Certain ranges in the positioning of the indexing device 39 may give, within predetermined limits, a coarse shave, a close shave, or a medium shave and when ascertained such can be indicated upon an instruction sheet accompanying the razor. An individual making a purchase of such a razor may determine a finer adjustment for his particular requirements and retain such in memory so as to insure the uniform flexing of the blade 21 with each use of the razor.

Various changes may be made in the embodiment of the invention herein specifically described without departing from or sacrificing any of the advantages of the invention as defined in the appended claims.

We claim:

1. In a safety razor, the combination with a transversely flexible blade having a longitudinal cutting edge, of a blade holder, a blade cap having a stem, means for positioning the blade between said blade holder and said cap, a handle having one end in threaded connection with said stem for adjusting the vertical distance between said blade cutting edge and said blade holder, calibrated measuring means rotatively mounted on the other end of said handle, a rod extending from said calibrated means axially through said handle, said rod having an external screw in operative contact with an internal screw in said handle, and tension means compressed between said calibrated measuring means and one end of said handle to effect sliding frictional resistance to rotative movement of said external screw relative to said internal screw.

2. In a safety razor, the combination with a transversely flexible blade having a longitudinal cutting edge, of a blade holder, a blade cap having a stem, means for positioning the blade between said blade holder and said cap, a handle having one end in threaded connection with said stem for adjustably flexing the blade transversely, calibrated measuring means rotatively mounted on the other end of said handle, a rod extending from said calibrated means axially through said handle for linear displacement relative thereto, tension means compressed between said calibrated measuring means and one end of said handle for maintaining said measuring means in adjusted position, and threaded inter-engaging means on said rod and handle to effect a predetermined rod displacement to correspond with the degree of blade flexing and the calibrations on said measuring means.

3. In a safety razor, the combination with a transversely flexible blade having a longitudinal cutting edge, of a blade holder, a blade cap having a stem, means for positioning the blade between said blade holder and said cap, a handle threadedly connected to said stem for adjustably flexing the blade transversely, a rod extending axially through said handle in engagement with the extremity of said stem, calibrated measuring means attached to one end of said rod, said calibrated measuring means being in exterior telescopic association with one end of said handle, resilient friction means resisting the free rotative movement of said rod, and means whereby said rod may be disconnected from engagement with the extremity of said stem by free rotative movement of said calibrated measuring means relative to said handle.

4. In a razor, the combination with a blade having a cutting edge for shaving purposes, of a blade holder to maintain said blade in a predetermined position, a blade cap having a stem, a handle for operative contact with said blade holder for effecting the grasp and release of said blade relative to said holder, a rod co-axial with said handle for interior association therewith and having one end cooperating with said stem, an indexing member connected to other end of said rod, said indexing member being in exterior telescopic association with one end of said handle and having threaded connection therewith, and resilient friction means compressed between said indexing member and said handle.

5. In a safety razor, the combination with a transversely flexible blade having a longitudinal cutting edge, of a blade holder, a blade cap having a stem, means for positioning the blade between said blade holder and said cap, a handle having one end in threaded connection with said stem for adjustably flexing the blade transversely, calibrated measuring means rotatively mounted on other end of said handle, a rod extending from said calibrated means axially through said handle for linear displacement relative thereto, means in the path of said rotary measuring means for limiting said rod displacement relative to the end of said stem in contact therewith, spring means for maintaining said measuring means in adjusted position, and threaded inter-engaging means on said rod and handle to effect a predetermined rod displacement to correspond with the degree of blade flexing and the calibrations on said measuring means.

HARRY H. BATES.
WILLIAM O. BATES, JR.