Nov. 17, 1931. C. SCHUMACHER 1,832,834

SAFETY RAZOR

Filed Dec. 13, 1929

Fig. 1

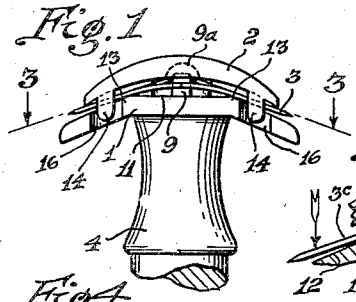


Fig. 2

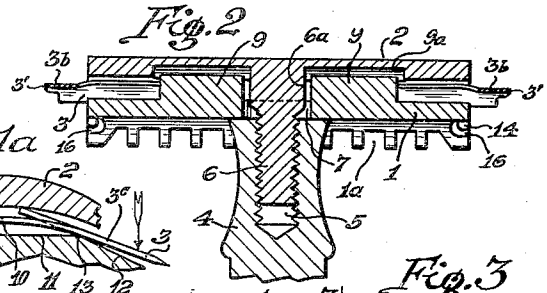


Fig. 1a

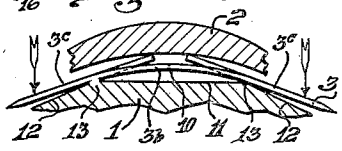


Fig. 4

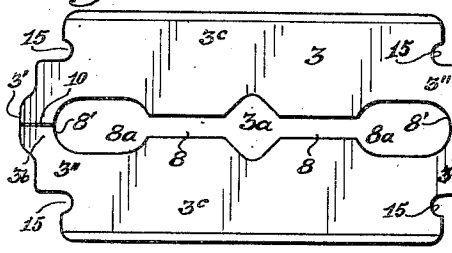


Fig. 3

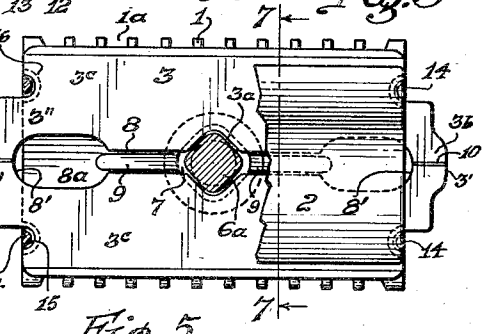


Fig. 7

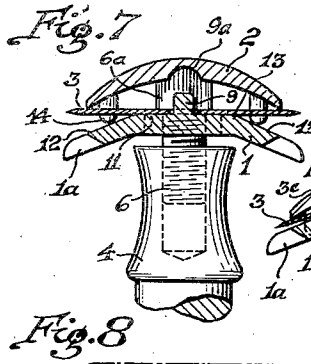


Fig. 4a

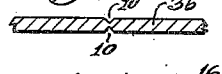


Fig. 7a

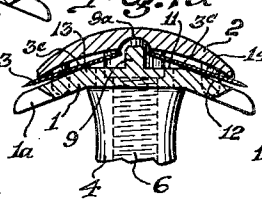


Fig. 5

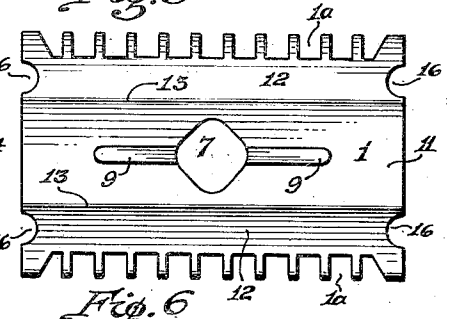


Fig. 8

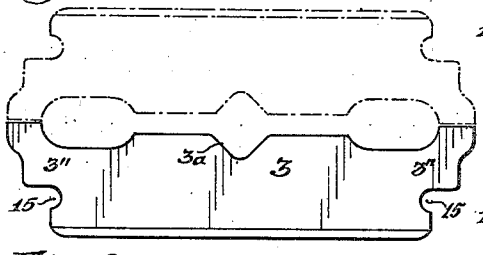


Fig. 6

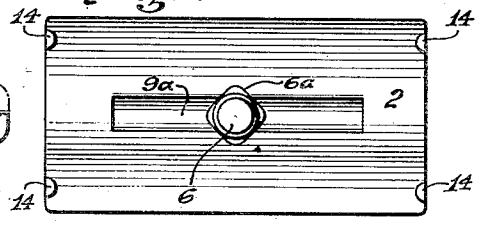
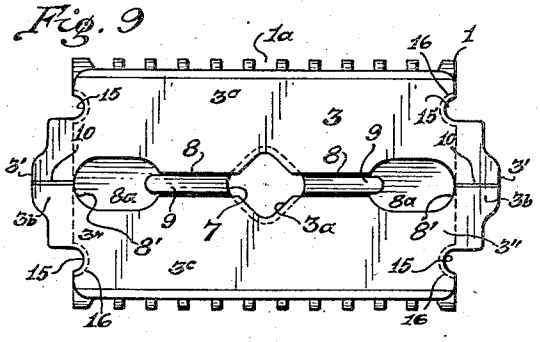


Fig. 9



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UNITED STATES PATENT OFFICE

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SAFETY RAZOR

Application filed December 13, 1929. Serial No. 413,787.

My invention relates to improvements in safety razors and blades therefor, and has particular reference to the class of safety razors in which a blade is clamped between two clamping members, such as a guard member and a blade backing member.

One of the objects of my invention is to provide a safety razor blade having such characteristics that it will bend readily between the clamping member of the blade holder and danger of cracking or breaking of the blade will be minimized.

Another object is to provide a blade holder having blade clamping members so organized that end portions of the blade will extend beyond the adjacent ends of the holder in such a way as to bend freely without restrictions from the holder. The construction is such that while the end portions of the blade may bend, the intermediate or cutting-edge portions of the blade may assume a lesser degree of bending than the end portions, or may assume flatwise positions between the clamping members, according to the degree of clamping pressure of the members, and such portions of the blade will not be influenced between the clamping members by the bendable portions of the blade.

In carrying out my invention I provide a razor blade having a longitudinally slotted portion and end portions therebeyond, whereby said end portions may readily bend without danger of cracking or breaking of the blade. The blade I have illustrated is of such a length with reference to the length of the blade holder that the end portions of the blade extend beyond the latter and beyond the ends of the cutting edges of the blade so as to be free to bend without restriction from the holder or the main body of the blade along the cutting edges.

My 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, wherein

Fig. 1 is an edge view of my improved razor; Fig. 1*a* is an enlarged detail view; Fig. 2 is a longitudinal section of Fig. 1; Fig. 3 is a plan view partly in section on line 3, 3 in Fig. 1; Fig. 4 is a plan view of the blade; Fig. 4*a* is an enlarged detail section on line 4*a*, 4*a* in Fig. 4; Fig. 5 is a plan view of the guard member; Fig. 6 is an inverted plan view of the backing member; Fig. 7 is a section on line 7, 7 in Fig. 3, showing the assembled parts before being clamped together; Fig. 7*a* is a similar view showing the parts clamped together for shaving; Fig. 8 is a plan view illustrating half of a blade, as broken away from a whole blade, and Fig. 9 is a plan view illustrating a modified blade on a guard member.

Similar numerals indicate corresponding parts in the several views.

The blade holder illustrated includes clamping members and a handle. The clamping member 1 is shown as a guard member, having guards 1*a* and the clamping member 2 is illustrated as a backing member, between which members a blade 3 is adapted to be clamped for shaving. The handle 4 is shown provided with a threaded recess 5 to receive a threaded stud 6 projecting from the member 2, in a well known way, for clamping the parts together. Other desired means may be provided for retaining the members clamped against the blade. The guard member 1 has an opening 7 for the stud 6. The blade has a substantially centrally disposed aperture 3*a* adapted to receive the stud 6. Said aperture is shown in non-cylindrical form adapted to receive a non-cylindrical portion 6*a* of stud 6, whereby the backing member will be retained by the blade in desired shaving relation thereto. The blade is provided with substantially centrally disposed longitudinal open or slot portions 8 communicating with aperture 3*a* and extending on opposite sides thereof toward the ends of the blade. Member 1 is shown provided with studs or projections 9 adapted to enter the slot portions of the blade, to retain the latter in shaving relation to the guards 1*a*, and into recesses 9*a* in member 2.

When the parts are assembled, as shown in Figs. 1 and 7*a*, the projections 9 in the slot portions of the blade retain the latter with its cutting edges in shaving relation to the

guards 1*a*, and the non-cylindrical stud portion 6*a* in the aperture 3*a* of the blade retains the backing member with relation to the blade edges, in a manner set forth in Letters Patent to Henry J. Gaisman No. 1,633,739, issued June 28, 1927.

The end portions 3*b* of the blade, between the adjacent ends of the open or slotted portions 8 and the adjacent outer edges 3′ of the blade, may be weakened in a longitudinal direction, at 10, substantially in the axis of the slotted portion, as by scoring or indenting the metal of the blade, as illustrated in Figs. 3, 4 and 4*a*. The weakening preferably extends entirely from the outer edge 3′ to the edge 8′ of the adjacent open or slotted portion of the blade. The slotted portion of the blade is of such a length that the end edges 8′ of the slots preferably extend beyond planes extending substantially transversely of the blade between its cutting edges, as shown in Fig. 9. The end portions 3*b* of the blade are shorter than the width of the blade between its cutting edges, so that said end portions 3*b* are free to bend without restraint from the main body or cutting edge portions adjacent to the portions 3*b*.

The clamping members are shown shorter than the overall length of the blade and preferably shorter than the length of the slotted portion thereof. As shown in Fig. 3 the ends of member 1 do not extend so far as the edges 8′, while in Fig. 9 the ends of member 1 approximate the edges 8′, whereby the portions 3*b* of the blade at its ends extend freely beyond the ends of the members in such a way that the portions 3*b* are free to bend without restraint from the members, as illustrated in Figs. 1 and 2. The guards 1*a* and the cutting edges of the blade may be substantially of the same length, as in Fig. 3.

The upper or blade receiving surface of the guard member 1 is shown provided with a relatively flat surface 11, at the mid-portion, and with outwardly extending relatively flat surfaces 12, on opposite sides thereof, the surfaces 12 being angularly related to the surface 11, providing longitudinally extending edges 13 along the guard member. The under surface of the backing member 2 may be suitably curved so that its outer side edges will bear on the blade near the cutting edges. When the parts are assembled, as shown in Fig. 7, the blade will rest on the guard surface 11, and when the handle is screwed on stud 6 the members 1 and 2 will clamp against the blade, causing its side or body portions 3*c*, beyond the slots 8 and aperture 3*a*, to contact and fulcrum against the edges 13 and to tilt toward the surfaces 12. Such blade portions 3*c* will remain more or less flat and extend in angular relations, as shown in Fig. 7*a*, until under some clamping pressures the edges of the slot portions 8 may engage member 2, causing suitable curvature of the blade. The end portions 3*b* of the blade will bend in suitably curved form, free from influence from the side portions 3*c* of the blade, and from the clamping members, (Figs. 1, 2 and 1*a*), to prevent breaking of the portions 3*b*. The cutting edges of the blade may be adjusted toward or from the guards 1*a*, according to the clamping of the members 1 and 2 against the blade, as for a coarse or a close shave.

The backing member 2 is shown provided with projections 14 at its ends adapted to enter recessed parts 15 at the blade ends, adjacent to the end portions 3*b*, as well as recesses 16 at the ends of member 1, whereby in the event that the end portions 3*b* of the blade should break the parts 3*c* of the blade will be retained by said projections between the clamping members.

The blade recesses 15 are shown adjacent to the ends of the end portions 3*b*. The aperture-like enlargements 8*a*, of the open portions of the blade, extend toward the recesses 15, providing reduced blade areas at 3″ therebetween, aiding the side portions 3*c* of the blade to bend between the clamping members.

By means of the weakening or scoring of blade portions 3*b*, at 10, the blade may be intentionally broken thereat to permit the individual use of a desired half of the blade, in the holder shown, being retained by projections 9 and 14, or in a holder for such a half blade.

In accordance with my invention I provide a safety razor blade that is not liable to crack or break when clamped between members 1 and 2, since the end portions 3*b* of the blade are not only exceedingly flexible but are free from restrain by the clamping members, and the side portions 3*c* of the blade may bend while the end portions 3*b* follow unrestrained curved lines during bending, so as not to crack.

Having now described my invention what I claim is:

1. A safety razor blade adapted to be flexed transversely by the clamping action of a holder and comprising two cutting-edge portions separated longitudinally by a slot and connected at their ends by flexing hinges which are located beyond the cutting-edge portions, said flexing hinges being weakened to prevent breaking thereof outside the weakened area during the flexing operation in the holder or while the blade is kept under tension therein.

2. A safety razor blade adapted to be flexed transversely by the clamping action of a holder and comprising two cutting-edge portions separated longitudinally by a slot and connected at their ends by flexing hinges which are located beyond the cutting-edge portions, said flexing hinges being weakened in alignment with the longitudinal axis of

the blade slot to prevent breaking of the flexing hinges outside the weakened area during the flexing operation in the holder or while the blade is kept under tension therein.

3. A safety razor blade adapted to be flexed transversely by the clamping action of a holder and comprising two cutting-edge portions separated longitudinally by a slot and connected at their ends by flexing hinges which are located beyond the cutting-edge portions, said flexing hinges being so shaped as to limit the cutting-edge portions to a length not exceeding that of the slot and being weakened to prevent breaking of the flexing hinges outside the weakened area during the flexing operation in the holder or while the blade is kept under tension therein.

4. A safety razor blade adapted to be flexed transversely by the clamping action of a holder and comprising two cutting-edge portions separated longitudinally by a slot and connected at their ends by flexing hinges which are located beyond the cutting-edge portions, said flexing hinges being so shaped as to limit the cutting edge portions to a length not exceeding that of the slot and being weakened in alignment with the longitudinal axis of said slot to prevent breaking of the flexing hinges outside the weakened area during the flexing operation in the holder or while the blade is kept under tension therein.

5. A safety razor comprising a flexible blade, cap and guard members adapted to receive the blade between them and flex it transversely, said blade comprising two cutting-edge portions separated longitudinally by a slot and connected at their ends by flexing hinges which are located beyond the cutting-edge portions, the slot in said blade extending when the latter is clamped between said cap and guard members beyond the ends of said members.

6. In a safety razor according to claim 5, the flexing hinges of said blade being weakened to prevent breaking thereof outside the weakened area during the flexing operation between said cap and guard members or while the blade is kept under tension between said members.

7. In a safety razor according to claim 5, the flexing hinges of said blade being weakened in alignment with the longitudinal axis of the blade slot to prevent breaking of the flexing hinges outside the weakened area during the flexing operation between said cap and guard members or while the blade is kept under tension between said members.

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