No. 896,383. PATENTED AUG. 18, 1908.

J. HARTNESS.

SAFETY RAZOR.

APPLICATION FILED MAY 26, 1905.

Fig. 2.

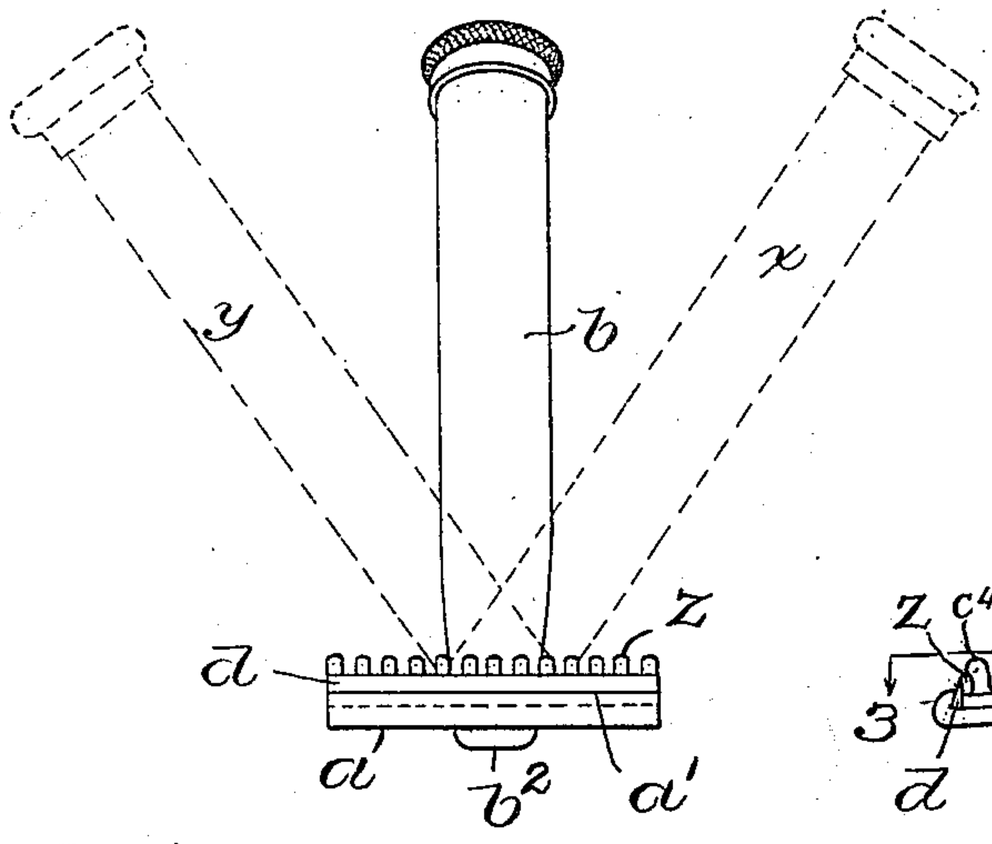


Fig. 1.

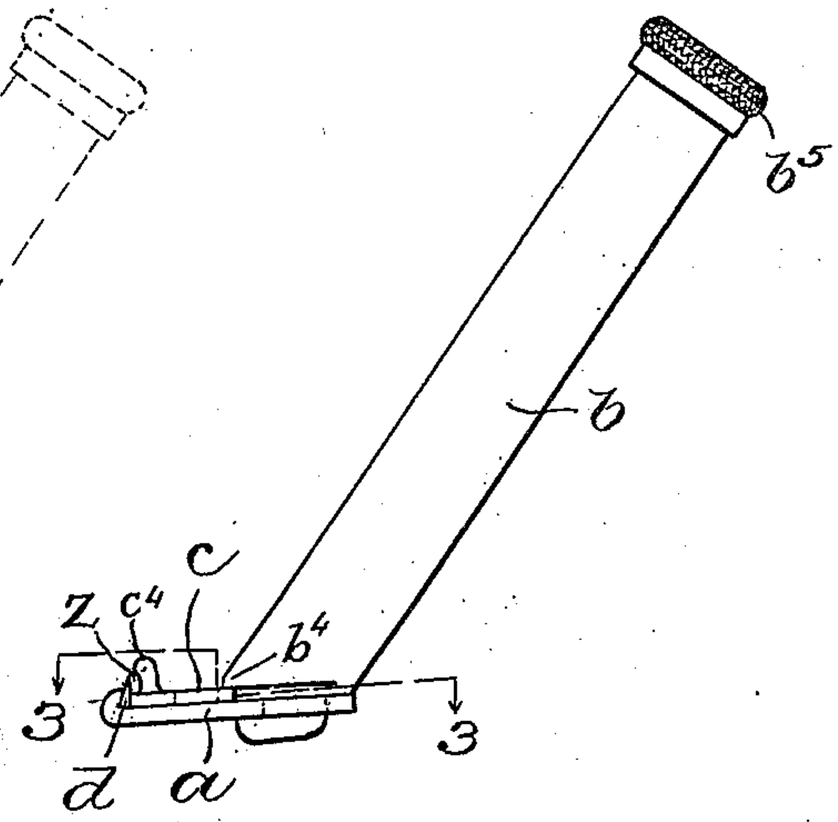


Fig. 14.

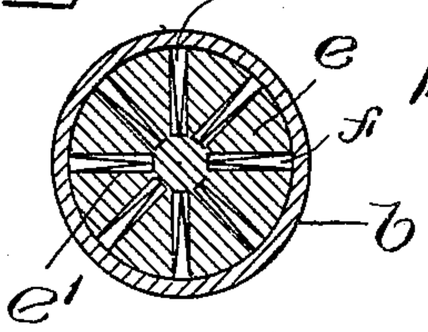


Fig. 5.

Fig. 3.

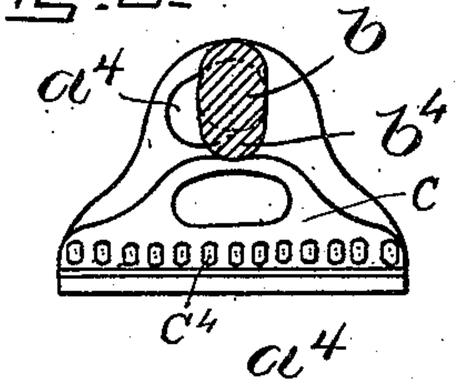


Fig. 8.

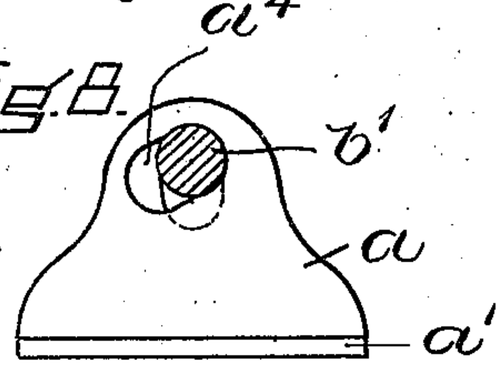


Fig. 4.

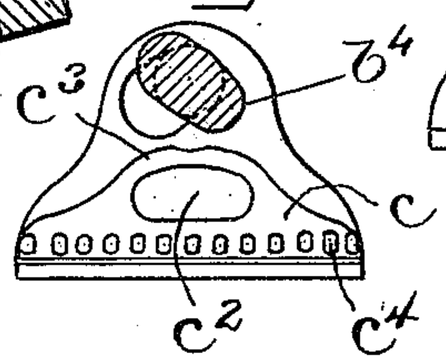


Fig. 6.

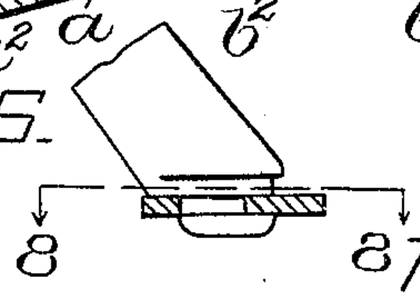


Fig. 9.

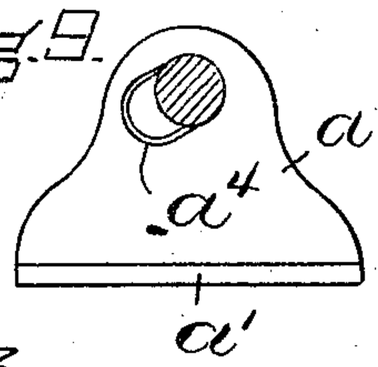


Fig. 10.

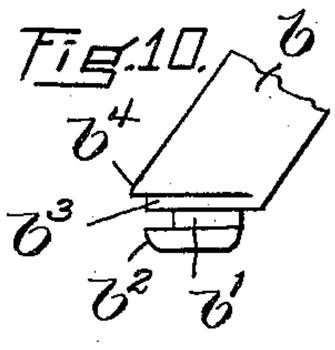


Fig. 11.

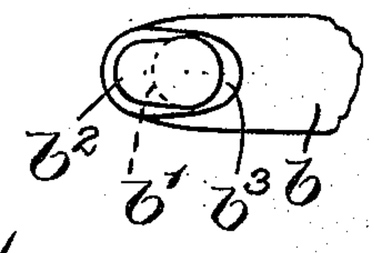


Fig. 7.

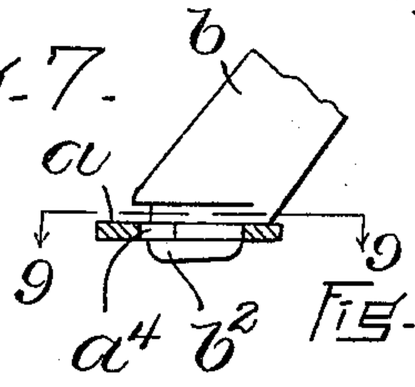


Fig. 13.

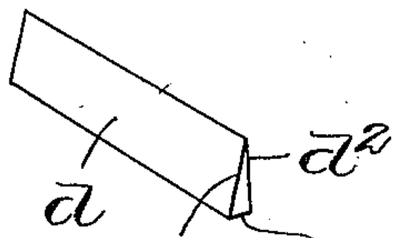
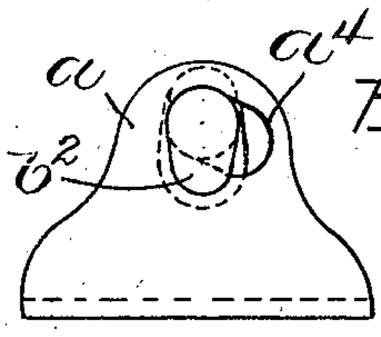


Fig. 12.



WITNESSES.
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C. C. Steeher

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James Hartness
by Wright Brown Quinby & May
his attys

UNITED STATES PATENT OFFICE.

JAMES HARTNESS, OF SPRINGFIELD, VERMONT.

SAFETY-RAZOR.

No. 896,383. Specification of Letters Patent. Patented Aug. 18, 1908.

Application filed May 26, 1905. Serial No. 262,420.

To all whom it may concern:

Be it known that I, JAMES HARTNESS, of Springfield, in the county of Windsor and State of Vermont, have invented certain new and useful Improvements in Safety-Razors, of which the following is a specification.

This invention has relation to safety-razors, and has for its object to provide certain improvements therein, among which may be noted the following:

One of the primary objects of the invention is to provide a safety-razor with a miniature blade which may be used so long as it is sharp or keen, and then discarded and thrown away. Preferably, the blade is made of wire. Instead of being formed of sheet metal, the blade, while extremely small in cross-section, is so constructed as to be as rigid as possible, said blade having faces converging at the proper angle to form a sharp cutting edge.

Another object of the invention is to provide certain improvements by means of which the blade may be clamped to a suitable holder, and to leave sufficient clearance for the reception of lather when the razor is in use. This is accomplished, in the present embodiment of the invention, by so forming the clamp that a space is left adjacent the projecting edge of the blade. The clamp in said embodiment is constructed to coöperate with the handle of the razor, so that by moving the handle, the clamp member may be locked in position or unlocked, as desired.

Referring to the accompanying drawings, which illustrate one embodiment of the invention,—Figure 1 represents a safety-razor in side elevation. Fig. 2 represents a front elevation of the same. Fig. 3 represents a section on the line 3—3 of Fig. 1. Fig. 4 represents a similar section with the handle rotated to release the clamp member. Fig. 5 represents an enlarged section through the holder, the blade, and the lower portion of the handle. Fig. 6 is a detail view illustrating the connection between the handle and the base member of the holder. Fig. 7, is a view similar to Fig. 6, the parts being shown in different relative positions. Fig. 8 represents a section on line 8—8 of Fig. 6. Fig. 9 represents a section on line 9—9 of Fig. 7. Figs. 10 and 11 illustrate the end of the handle. Fig. 12 represents a bottom plan view. Fig. 13 represents an enlarged view of the blade. Fig. 14 represents a section on the line 14—14 of Fig. 5.

The holder comprises a base member a having a flange a', a movable clamp c to coöperate with the flange in grasping the wedge-shaped blade d, and a handle b. The said base member a consists of a flat plate or piece of sheet metal with its front end upturned or flanged, as at a' to furnish a backing for the blade d. The upper surface of the base member a is slightly inclined, as at a^2, with relation to the plane of the upper face, and the inner wall a^3 of the backing or flange a' is at an angle slightly less than ninety degrees, so that the two walls a^2 a^3 shall form an angle similar to the angle formed by the back and one face of the blade d, and hence the blade will fit snugly thereagainst, with the blade, as a whole, standing upright and forming an acute angle with respect to the upper surface of the base member of the holder, as best shown in Fig. 5.

The blade itself, as previously stated, is made of wire. It is very small in size, being not more than one eighth of an inch wide and one sixteenth of an inch, or less, thick, at its back. The two faces d' d^2 of the blade are preferably ground flat, and they form with the base or back d^3 an isosceles triangle. The blades are made from a length of wire which is properly ground and tempered.

The base member a may have the approximate shape of a triangle, as shown in Fig. 8, for instance, its exact shape being a matter of fancy and being immaterial. The said base member is formed with a slot a^4 which extends at an angle to the flange a', this slot being for the reception of the lower end of the handle b.

It will be seen from Figs. 1 and 5 that the lower end of the handle is at an inclination to its median line, so that when the handle is in proper position, it forms an obtuse angle with respect to the base member. Projecting from the end of the handle at right angles thereto is a round stud b' with a projecting flange or shoulder b^2. The stud and the shoulder may be introduced through the slot a^4 which is long enough to receive them, after which the handle may be rotated about the axis of the stud, (which is at an angle to the longitudinal median line of the handle) to cause the shoulder to extend under the under-face of the base member of the holder, as shown in Figs. 8 and 12, so as to secure the handle and the base member together.

The movable clamp c is best shown in Figs. 4 and 5. It consists of a flat plate or piece

of sheet metal adapted to rest upon the surface of the base member *a*, and its front edge is coincident in length with the backing or flange *a'* of the base member which flange constitutes a fixed clamp member to cooperate with the movable clamp *c* and the base member of the holder, so as to render the normally flexible wedge-shaped blade sufficiently stiff for practical use. The front wall *c'* of the clamp *c* is slightly beveled, so that when it is in place, it is adapted to lie flat against the inner face d^2 of the blade. It will be understood that the clamp *c* is relatively thin and that it and the fixed clamp member or flange *a'* cover slightly more than one-half of the blade, which stands upright between them, so as to leave the remainder of the blade projecting beyond them, as shown in Fig. 5. The clamp *c* is formed with a transverse slot c^2 to leave a resilient arch or spring c^3, which may be engaged by a cam b^3 on the handle, as shown in Figs. 1, 3 and 5. When the handle is in operative position, the cam b^3 engages the spring or arch c^3 and firmly locks the clamp *c* in place so as to tightly secure the blade *d* upright between the end of the clamp *c*, the wall a^2 and the fixed member *a'*. The spring or arch c^3 is slightly hollowed at its center, so that when the parts are in the relative positions shown in Fig. 3, they will remain without danger of being accidentally shifted during the operation of shaving.

It will be noted from Figs. 1 and 5 that the handle is provided with a shoulder b^4 which will project over and lock the clamp *c* against movement away from the base member *a*. The handle is preferably formed of metal, as are the parts of the base member, and it is hollow to a point substantially near its end so that it may receive extra blades which are not in use. The upper end of the handle is closed by a cap b^5 which may be friction-tight thereon, or which may be screwed in place, said cap having a milled bead, as shown. Within the handle, however, is placed a core *e* of wood or other suitable material which has radial slots *e'* for the reception of the blades *d*.

By reason of the construction thus illustrated and described, the base member, the handle, and the blade may all be easily detached by rocking the handle to the dotted position *x* in Fig. 2 about the axis of the stud *b'*, which brings the flange or lip b^2 into position to register with the slot a^4, as shown in Fig. 9. Should it be desired, however, to simply release the blade without disengaging the base member of the holder from the handle, the handle may be rocked to dotted position illustrated at *y* in Fig. 2, so that the cam b^3 will be disengaged from the bridge or spring c^3, as shown in Fig. 4, in which event, a dull blade may be removed and a sharp one inserted in its place.

It should be noted that since the beveled front wall *c'* of the clamp *c* is at an angle less than 90 degrees to its under face, the lateral thrust of the cam on the handle against the spring or bridge not only binds the said beveled end wall *c'* against the inner face of the blade, but also forces the base or back of the blade and the under face of the clamp firmly against the upper surfaces of the base member of the holder.

The parts are all designed to fit accurately together, so that the blade will be held tightly in upright position relatively to the base member and against the backing *a'* when the razor is in use. The clamp is formed with a guard or comb consisting of teeth c^4 which project from its face adjacent its end wall *c'*. These teeth are so formed, however, that there is a space *z* left between each one of them and the inner face of the blade. The comb operates to rest against the face when the operator is shaving so as to prevent the blade from cutting the skin.

The flange or backing *a'* is relatively thick and its outer surface is beveled or curved to constitute a guard to rest upon the face, so that the razor is thus provided with two guards, between and separated from which is the projecting portion of the blade, and it will be noticed that the edge of the razor does not project beyond or outside of a plane connecting the ends of the guards (indicated by the dotted line *w—w*, Fig. 5).

It will be apparent that the razor as a whole is of the simplest possible construction and possesses the smallest possible number of parts.

The terms "upper," "under," "rear," "front," "inner," "outer," "lower," etc. are relative, and I use them in no limiting sense, but simply to aid in the description of the razor.

Having thus explained the nature of the invention, and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made, or all of the modes, of its use, I declare that what I claim is:—

1. A normally flexible blade wedge-shaped in cross-section.

2. A normally flexible blade of drawn steel wedge-shaped in cross-section.

3. The combination with a normally flexible blade wedge-shaped in cross-section, of a holder having clamping members for stiffening said blade for use.

4. A safety razor comprising a holder having a base member, a blade standing upright therefrom, and clamping members for holding said blade in upright position relatively to said base member, one of said clamping members having a guard or comb.

5. A safety-razor comprising a holder with a substantially flat base member having an upturned end to form a backing, a clamp

resting upon the face of said base member and having a wall opposing the backing, and a blade interposed between the said wall and the said backing.

6. A safety razor comprising a substantially flat base member, a blade having its back bearing against the face of the base member and standing upright therefrom so that the edge projects at an angle to said face, and clamping means for engaging the faces of said blade and securing it to said base member.

7. A safety razor comprising a holder with a base member having a projecting flange for engaging the skin, a clamp opposing said flange and having a comb for engaging the skin, said comb and flange being separated to provide a lather receiving space, and a blade backed by the base member and secured in place by said flange and clamp, said blade having its edge projecting into said lather receiving space.

8. In a safety razor, a holder comprising a base member and clamp members having adjacent walls which form a substantially triangular space, one of the walls being movable to widen the space, and a normally flexible blade triangular in cross section adapted to be arranged in said space with its edge projecting outside of said space with a clearance adjacent both faces of the projecting edge.

9. In a safety razor, a holder having a base member provided with two walls at an angle, one for the back of the blade, and one for one face of the blade, a slidingly-supported clamp having a wall to engage the other face of the blade, and means for forcing the clamp towards both the said walls of the base member of the holder.

10. In a safety razor, a holder consisting of a base member having an upturned wall, a clamp slidingly supported on the base member and having a wall confronting the upturned wall, a blade adapted to be arranged between said walls with its back against said base member, and means for holding said clamp against said blade.

11. In a safety razor, a holder having a base member and clamp members provided with confronting converging walls at an angle to said base member, one of said clamp members being movable, a wedge-shaped blade adapted to be clamped between said walls, and a handle having means for positively moving and operating the clamp.

12. In a safety-razor, a holder comprising a base member and a clamp having confronting walls, a blade arranged between said walls and projecting therefrom at an angle to the said base member, and a guard on the clamp having its teeth recessed to form clearances between the rear of the blade and said teeth.

13. In a safety-razor, a holder comprising a flat plate having at its end a flange to provide a flat inner wall at an angle to its face, a blade adapted to be arranged in said angle with one face against said wall and to project beyond said flange, a flat clamp on the face of the holder having an outer wall to engage the other face of the blade, and a guard on the face of the said clamp.

14. In a safety razor, a holder having a base member and a fixed clamp member, a clamp slidingly supported on the base member, a blade between the two clamp members, and a rotatable handle having a cam for operating the slidingly-supported clamp.

15. In a safety-razor, a holder having a base member formed with a slot, a handle having a shouldered or flanged stud to project through said slot and to attach the holder thereto when the handle is rotated to normal position, and means for clamping a blade.

16. In a safety-razor, a holder having a base member formed with a slot, a handle having a shouldered or flanged stud to project through said slot and to attach the holder thereto when the handle is rotated to normal position, a clamp on the holder, and a cam on the handle for operating the clamp when said handle is in said normal position.

17. In a safety-razor, a holder having a base member formed with an upturned flange or backing, a blade, a clamp on the face of the holder, a handle adapted to be rotatively engaged with the base member with its axis of rotation transverse to the faces of the clamp and the holder, and means on the handle for operating the clamp and locking it in position on the holder.

18. In a safety-razor, a holder having a base member formed with an upturned flange, the inner wall of which forms, with the upper face of the holder, an acute angle, a clamp resting on said face and having a beveled front wall likewise at an acute angle to said face, a blade adapted to be inserted between said inner wall of the flange and the outer beveled wall of the clamp, and means adapted to engage the rear end of the clamp to force it toward the flange.

19. In a safety-razor, a holder having a base member, a blade, a handle adapted to be rotatively engaged with the base member and having a cam, a clamp for clamping the blade against the holder, said clamp having a spring arch adapted to be operatively engaged by said cam.

20. In a safety-razor, a holder having a base member and a clamp formed of plates, or sheet metal, with the under face of the clamp adapted to rest upon the upper face of the base member, said base member having a flange confronting the front end of the clamp, a blade adapted to be inserted be-

tween the clamp and the flange, and a handle adapted to be inserted through an aperture in the base member in the rear of the clamp, said handle having means for binding the clamp and base member together and for forcing the clamp operatively against said blade.

In testimony whereof I have affixed my signature, in presence of two witnesses.

JAMES HARTNESS.

Witnesses:
MARTIN J. MEARA,
C. PIENTZLIEN.