No. 775,134. PATENTED NOV. 15, 1904.

K. C. GILLETTE.

RAZOR.

APPLICATION FILED DEC. 3, 1901.

NO MODEL.

Fig. 1.

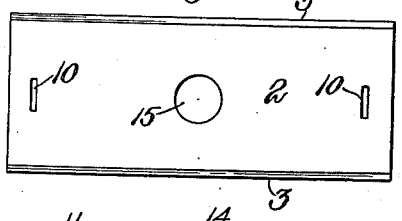


Fig. 4.

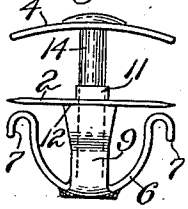
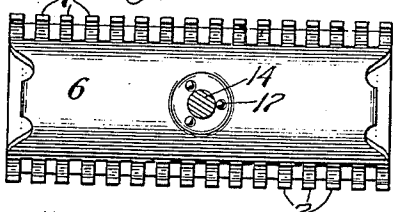
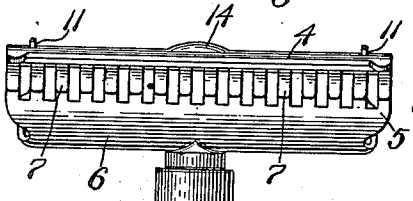
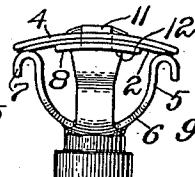


Fig. 5.







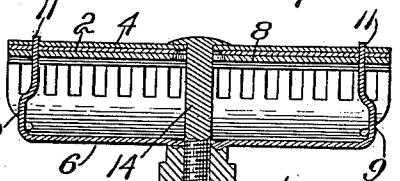


Fig. 2.

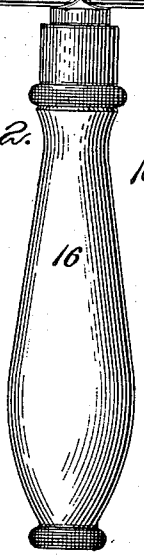


Fig. 8.

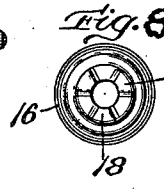


Fig. 3.

Fig. 6.

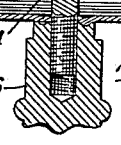
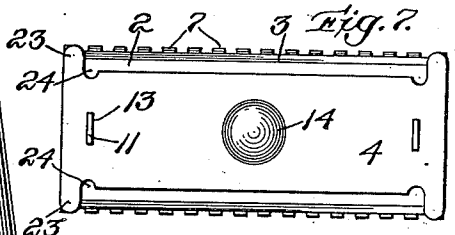


Fig. 7.



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No. 775,134. Patented November 15, 1904

UNITED STATES PATENT OFFICE.

KING C. GILLETTE, OF BROOKLINE, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO FEDERAL TRUST COMPANY, OF BOSTON MASSACHUSETTS.

RAZOR.

SPECIFICATION forming part of Letters Patent No. 775,134, dated November 15, 1904.

Application filed December 3, 1901. Serial No. 84,552. (No model.)

To all whom it may concern:

Be it known that I, KING C. GILLETTE, a citizen of the United States, residing at Brookline, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Razors, of which the following is a specification.

My invention is particularly applicable to razors of the safety type, the use of which as heretofore constructed involves a considerable amount of trouble, time, and expense on the part of the user in keeping the blades sharp, not only for the reason that the blades used in razors of this type require to be stropped and honed frequently, which cannot be done satisfactorily by the average individual user himself, but also for the reason that the blades are worn out by honing and have to be replaced at considerable expense.

A main object of my invention is to provide a safety-razor in which the necessity of honing or stropping the blade is done away with, thus saving the annoyance and expense involved therein, and to this end I make the blade of my razor of very thin sheet-steel, thereby getting rid of a large amount of metal which has heretofore been required to give the blade the proper amount of strength and rigidity, and I secure this blade to a holder so constructed as to provide a rigid backing and support for the blade, as well as a handle therefor, so that although my blade itself is readily flexible by reason of its thinness and lacks the rigidity of the ordinary razor-blade, yet when it is combined with its holder it receives a degree of rigidity sufficient to make it practically operative. Thus the material from which my blades are made need only be just thick enough to take a suitable edge, so that the blades require but a small amount of material and can be ground very quickly and easily, and hence I am able to produce and sell my blades so cheaply that the user may buy them in quantities and throw them away when dull without making the expense thus incurred as great as that of keeping the prior blades sharp, and, moreover, will always have the cutting edge of his razor-blade in the same perfect condition as that of a new blade. It will be understood, of course, that my blades are made of uniform size and are detachably combined with the holders, so that a purchaser need buy but one holder and can then readily substitute a sharp blade for a dull one whenever necessary.

Other objects of my invention are to provide a holder adapted to receive a blade having two cutting edges, so that the life of a blade may thus be doubled, and also to provide a simple arrangement for adjusting the cutting edge or edges of a blade toward or from the guard to accommodate light or heavy growths of beard or to suit the skill and convenience of the user, and with the above ends in view I have devised a blade-holder which enables me to utilize the flexibility and elasticity of my blades in a very advantageous manner, my holder being also simple in construction and easily cleaned and having other advantages which will hereinafter appear.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of one form of my blade. Fig. 2 is a side elevation of the corresponding form of the complete holder and blade combined. Fig. 3 is an end view of the parts shown in Fig. 2. Fig. 4 is a similar view of the same parts slightly modified and without the handle, showing said parts separated from one another, but in position to be clamped together. Fig. 5 is a transverse section taken just above the guard, showing the latter in top plan view. Fig. 6 is a central longitudinal section through the razor-blade, guard, and adjacent parts; and Fig. 7 is a plan view of the outer face of the head of the razor. Fig. 8 is a plan view of the inner end of the handle shown in Figs. 2 and 3.

The blade 2 of my razor is made of sheet-steel having preferably a uniform thickness of about six one-thousandths of an inch and is shown in Fig. 1 as provided with two opposite cutting edges 3, so that when one edge becomes dull the other may be used. My blade-holder comprises a backing adapted to support the blade in such manner as to give its cutting edge or edges sufficient rigidity, a

guard arranged to limit the exposure of the cutting edge or edges of the blade and prevent the skin of the user from being cut thereby, a handle, and means whereby these parts are secured together and the blade is held against the backing with its cutting edge adjacent to the guard.

My preferred form of holder is arranged to present at the same time both cutting edges of the blade 2 in position for use in order that either edge may be used without changing the position of the blade, and to this end the two sides of the holder are made alike, the handle of the device being located midway between them and symmetrically arranged with respect thereto.

According to the construction shown in Figs. 2, 3, 5, 6, and 7 the supporting-backing for the blade 2 consists of a metal plate 4 of the same length as the blade, but slightly narrower than the same, and the guard 5, which may be stamped from sheet metal, is formed to provide a central portion 6, which is approximately semicylindrical in shape and presents its concave side to the backing 4 to provide a receptacle for lather, its side edges being notched to provide at each edge a series of teeth 7, which are bent outward and backward, as shown. The blade 2 is clamped between the backing 4 and guard 5, and to provide means for engaging the inner surface of the blade the guard may be provided with a narrow longitudinally-extending plate 8, secured to posts 9, formed integral with or otherwise secured to the guard at the ends thereof. In order to position the blade with respect to the guard and hold it against lateral movements, said blade may be provided with slots 10, adapted to receive the extended free ends 11 of the posts 9, the plate 8 being similarly slotted to receive the end portions 11 and supported on shoulders 12, formed at the base thereof. I prefer to make the end portions 11 long enough to pass through corresponding slots 13, formed in the backing 4, said backing also being thus positioned with respect to the blade and guard. The blade 2 is of course suitably tempered and is of such size that its cutting edges project slightly beyond the rounded bases of the teeth 7, and it and the backing and guard are detachably clamped together by means such as a threaded bolt 14, secured to the backing 4 and passing through a central perforation 15 in the blade 2 and through corresponding perforations in the plate 8 and guard 5, into the internally-screw-threaded hollow end of a handle 16, which bears against the outside of the guard, the clamping action being exerted in an obvious manner by screwing up the handle, and thus drawing the parts together. When the parts are thus clamped together, the blade is firmly supported so near its cutting edges that said edges are given a degree of rigidity which is not only amply sufficient to prevent them from bending or vibrating in use, but is, in fact, considerably greater than is usually found in razor-blades of the common type, which are generally concaved to such an extent as to permit a considerable vibration of the cutting edge.

It is desirable that the edges 3 of the blade shall incline somewhat toward the handle 16 in order that they may be presented at a convenient angle with respect to the surface of the skin in the operation of shaving, and I accordingly prefer to make the inner surface of the backing 4 slightly concave transversely and to cause the blade to conform to said surface, so that both its cutting edges will point in the desired directions. The flexibility and elasticity of my blades, however, enable me to utilize the transverse curvature of the backing 4 to obtain other important results by merely making the blades themselves flat, this being, moreover, the simplest and most inexpensive way in which they can be made. Thus when my flat flexible blade is placed upon the plate 8, which is curved transversely to correspond with the backing 4, the curvature of said plate will cause it to engage the blade along its longitudinal center only, and when said backing is placed against the blade the latter will be first engaged by said backing at its edges only, and before the handle is screwed up and made to exert a clamping action on these parts the cutting edges of the blade will be separated from the edges of the guard by a distance depending on the curvature of said plate 8. As the handle is screwed up, however, the blade will be bent transversely, and its edges will be thus made to approach the edges of the guard more and more closely until finally the blade will be brought into contact throughout with the backing and the plate 8 and clamped between the same with its edges close to the edges of the guard. When the handle is unscrewed, the edges of the blade will spring away from the edges of the guard as fast as such movement is permitted, and thus in a very simple manner I provide an adjustment for the edges of the blade toward and from the guard for varying the space between them to provide for light or heavy growths of beard or to suit the skill or custom of the user. Furthermore, the act of bending the blade imparts a considerable amount of rigidity to it, partly because of the tension which is put upon it and partly because of the curved shape which it is made to assume, and the pressure exerted by the elasticity of the blade tends to hold the handle by friction against the guard, and thus to prevent it from becoming unscrewed accidentally. As an additional means for locking the handle in any desired position I have shown the guard 5 in Fig. 5 as provided with three small rounded projections 17 on its top surface beneath the inner end of the handle, the latter being provided with a number of shallow re-

cesses 18, adapted to receive said projections, which are held therein by the pressure exerted by the bent blade with sufficient firmness to prevent the turning of the handle accidentally.

The plate 8 may be omitted from the guard 5, if desired, in which case the blade will be supported directly on the shoulders 12, as shown in Fig. 4; but when the blade is to be bent by the act of clamping it to the holder I prefer to employ said plate in order to provide a bearing for the inner surface of the blade throughout its length.

In order to prevent the corners of the blade 2 from coming in contact with and cutting the skin of the user, I prefer to provide at each corner of the backing a laterally-extending projection 23, so located that it will extend slightly beyond the edge of the corresponding corner of the blade and lie close against the same, thus covering the rear side thereof, as best shown in Fig. 7. This arrangement for protecting the corners of the blade is one of the important features of my invention and has the advantage that being located on the rear or outer side of the blade it makes it possible to leave a wholly-unobstructed space between the edge of the blade and the guard, extending throughout the length of the former and allowing a free passage of the lather at all points. To give sufficient flexibility to the projections 23 to enable them to follow the edges of the blade 2 as it is bent and to lie close against the corners thereof at all times, notches 24 may be provided at the bases of said projections, as shown in Fig. 7, thus increasing the length and relative flexibility thereof.

It will be evident that the thinner the material is of which my blades are made the more flexible will the blades be and the greater will be the ease and speed with which their cutting edges may be ground, and I have found that sheet-steel as thin as three one-thousandths of an inch may be used for my blades practically and successfully; but tempered blades having the usual transverse dimensions of safety-razor blades and made of steel which is considerably thicker than is required for a suitable cutting edge may still be sufficiently flexible to be capable of adjustment toward and from the guard in the manner described.

While I prefer to employ a flexible blade having two cutting edges, as herein described, yet my invention is not limited to a blade with two cutting edges nor to the particular construction of holder herein described, since, so far as I am aware, I am the first to produce a razor-blade which may be thrown away when dull without loss of economy and to combine such a blade with a holder adapted to support the blade and also to give its cutting edge the rigidity necessary to make it operative, which rigidity the blade itself lacks on account of its thinness and resulting flexibility. It will be evident also that the blade-holder herein described has novel features and advantages which are independent of the particular form of blade used with it, and I consider said holder itself to constitute an important portion of my invention.

I claim as my invention

1. As a new article of manufacture, a flexible and detachable blade for safety-razors.

2. As a new article of manufacture, a detachable razor-blade of such thinness and flexibility as to require external support to give rigidity to its cutting edge.

3. As an article of manufacture, a flexible and detachable razor-blade having two opposite cutting edges.

4. As an article of manufacture, a flexible and detachable razor-blade made of sheet-steel of uniform thickness and provided with two opposite cutting edges.

5. As an article of manufacture, a detachable, transversely-flexible razor-blade for safety-razors, said blade having a longitudinal cutting edge.

6. As an article of manufacture, a detachable, transversely-flexible razor-blade having two opposite longitudinal cutting edges.

7. In a razor, the combination with a flexible blade of a holder comprising a handle, means for supporting the blade and giving rigidity to its cutting edge, and means for detachably securing the blade thereto.

8. In a razor, the combination with a transversely-flexible blade having a longitudinal cutting edge, of a holder comprising a handle, a guard, and means for bending the blade transversely and thereby adjusting its cutting edge with relation to the guard.

9. In a razor, the combination with a flexible blade of a holder comprising a handle, a backing adapted to support said blade and give rigidity to its cutting edge, and means for detachably securing the blade thereto.

10. In a razor, the combination with a flexible blade of a holder comprising a guard, a handle, a backing adapted to support said blade and give rigidity to its cutting edge, and means for detachably securing the blade thereto.

11. In a razor, the combination with a flexible blade of a holder comprising a rigid backing adapted to support said blade and give rigidity to its cutting edge, a guard, and means for detachably clamping the blade between said backing and guard.

12. In a razor, the combination with a flexible blade having a cutting edge of a holder comprising a handle, a rigid backing arranged to support said blade near its longitudinal edges, a guard arranged to engage the opposite side of said blade between said edges, and means for adjustably clamping said backing and guard together.

13. In a razor, the combination with a flat,

flexible blade having two opposite cutting edges, of a holder comprising a handle, a double guard, a rigid backing adapted to support said blade, and means for simultaneously bending the blade transversely and clamping it against said backing.

14. In a razor, the combination with a flexible blade of a rigid backing adapted to support said blade, a guard, a handle, and means operated by said handle for bending the blade with respect to the guard and simultaneously clamping it against said backing.

15. In a razor, the combination with a flexible blade having two opposite cutting edges, of a holder comprising a handle, a rigid backing adapted to support said blade, a double guard, and means operated by the handle for bending said blade transversely and thereby adjusting its edges with relation to said guard.

16. In a razor, the combination with a flexible blade of a holder comprising a handle, a transversely-curved, rigid backing adapted to engage said blade near its edges, a correspondingly-curved guard adapted to engage the opposite side of said blade between its edges, and means for drawing said backing and guard together, thereby clamping the blade between them and bending it transversely.

17. In a razor, the combination with a blade having two opposite cutting edges, of a guard having two opposite edges coöperating with said cutting edges respectively, means for clamping said blade thereto, and a handle located midway between the edges of the guard.

18. In a razor, the combination with a blade having two opposite cutting edges, of a holder comprising a backing, a guard having two opposite edges coöperating with said cutting edges respectively, means for clamping the blade between said backing and guard, and a handle located midway between the edges of said guard and symmetrically arranged with respect thereto.

19. In a razor, the combination with a blade having two opposite cutting edges, of a holder comprising a central handle, a guard, a backing, and means operated by the handle for clamping the blade between the guard and backing.

20. In a razor, the combination with a perforated blade having two opposite cutting edges, of a holder comprising a guard having two opposite edges coöperating with said cutting edges respectively, a backing, a handle, and clamping means passing through said blade.

21. In a razor, the combination with a blade of a holder comprising a guard, a handle, and a backing located on the opposite side of the blade from said guard and handle and provided with projections arranged to cover the corners of the blade without crossing its cutting edge.

22. In a razor, the combination with a blade of a holder comprising a handle, a guard, a backing having projections arranged to cover the corners of the blade without crossing its cutting edge, and means for clamping said blade and backing together.

23. In a razor, the combination with a flexible blade having two opposite cutting edges, of a holder comprising a backing adapted to support and give rigidity to said blade near its cutting edges, a double guard, a handle symmetrically arranged with respect to the blade, and means for detachably securing the blade between the backing and the guard.

24. In a razor, the combination with a perforated blade of a holder comprising a guard, a backing, a handle, and positioning and clamping means passing through the perforations in the blade.

25. In a razor, the combination with a perforated blade of a holder comprising a correspondingly-perforated guard, a backing, a handle, and clamping and positioning means passing through the perforations in the blade and guard.

26. In a razor, the combination with a perforated blade having two opposite cutting edges, of a holder comprising a handle, a backing, a double guard, and clamping and positioning means passing through the perforations in the blade.

27. In a razor, the combination with a perforated flexible blade of a holder comprising a transversely-curved rigid backing, a guard curved transversely to correspond with said backing, positioning means passing through the perforations in the blade, and means for detachably clamping the blade between the backing and the guard.

28. In a razor, a holder comprising a backing, a guard, positioning means secured to one of said parts and passing through perforations formed in the other of said parts, a handle, and means for drawing the guard and backing together.

29. In a razor, a holder comprising a guard having opposite longitudinal edges formed to coöperate with a double-edged blade, means for holding a blade in proper relation to said guard, and a handle secured to said guard between the longitudinal edges and symmetrically arranged with respect thereto.

30. A safety-razor comprising a supporting-plate having studs, a blade having openings fitting said studs, a securing-plate also having openings fitting said studs, and means for adjusting said securing-plate with relation to the supporting-plate.

In testimony whereof I have hereunto subscribed my name this 23d day of November, 1901.

KING C. GILLETTE.

Witnesses:
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