May 19, 1936. T. J. PILLIOD ET AL 2,041,680

SELF SHARPENING SAFETY RAZOR

Filed Feb. 20, 1935

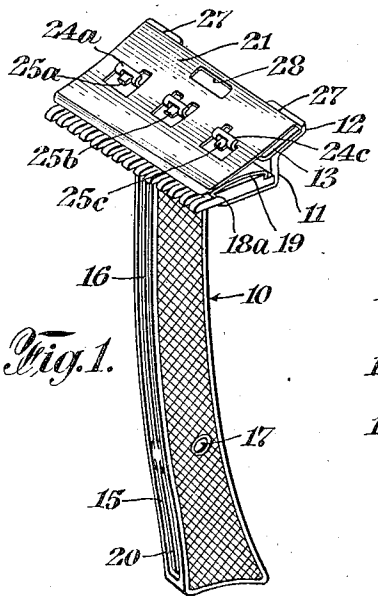


Fig. 1.

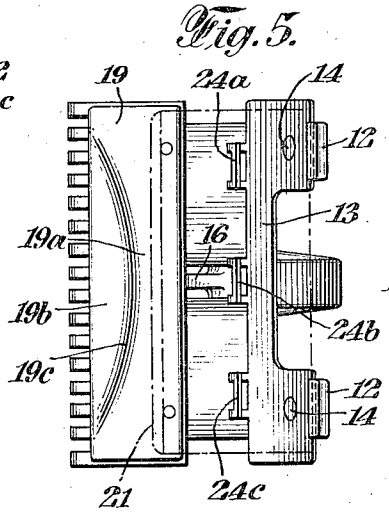


Fig. 5.

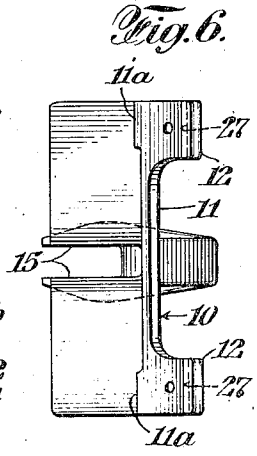


Fig. 6.

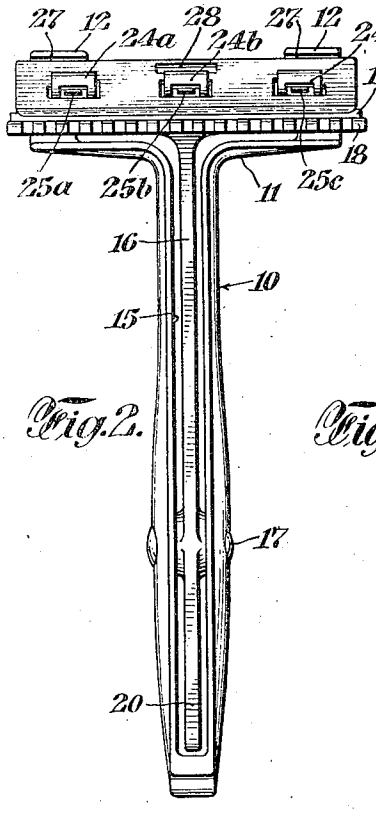


Fig. 2.

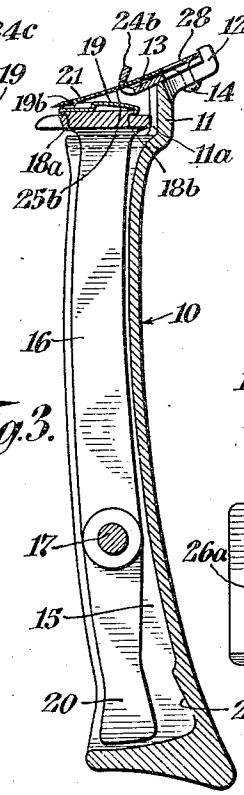


Fig. 3.

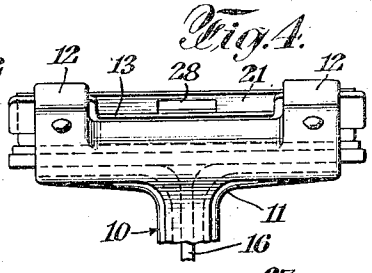


Fig. 4.

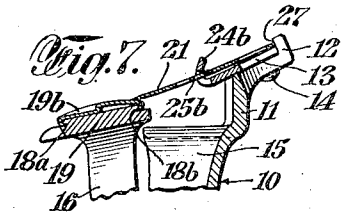


Fig. 7.

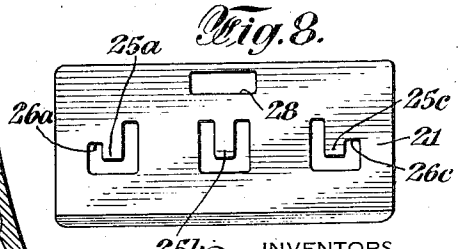


Fig. 8.

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UNITED STATES PATENT OFFICE

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SELF-SHARPENING SAFETY RAZOR

Thomas J. Pilliod and Ferdinand C. Müller, Swanton, Ohio, assignors to De Haven Razor Corporation, a corporation of Delaware

Application February 20, 1935, Serial No. 7,316

26 Claims. (Cl. 30—36)

Our invention relates to self-sharpening safety razors, and it has, among other advantages, those hereinafter specified, and having reference to the drawing, wherein:

Fig. 1 is a perspective view of the razor, with the blade in shaving position;

Fig. 2 is a front view of the razor and blade of Fig. 1;

Fig. 3 is a substantially central vertical section of the razor and blade in shaving position;

Fig. 4 is a fragmentary rear view of Fig. 1;

Fig. 5 is a plan view of the razor with the blade removed and the hone-plate and guard in a forward sharpening position (outline of blade is shown in dot and dash lines);

Fig. 6 is a plan view of the razor body with certain parts removed;

Fig. 7 is a fragmentary view similar to Fig. 3, showing the relationship of the parts during a sharpening operation; and

Fig. 8 is a face view of the razor blade.

The razor comprises a handle 10, having at its upper end a head having an upright back 11 that is preferably integral with the handle, and which carries at its upper edge inclined brackets 12, on which a blade-support 13 is secured, in the present instance by rivets 14, but which may be made integral with the said back.

The handle 10 has a slot 15 in which a lever 16 is mounted on a fulcrum 17. The said lever carries at its upper end a guard plate 18 that is preferably integral with the said lever, but which may be pivotally mounted thereon. A hone-plate 19 is also mounted on the said lever, preferably by being superposed upon the said guard plate.

The lower arm 20 of the lever is so shaped and placed as to limit the forward movement of the hone-plate and prevent its escaping from under the razor blade 21. This is effected by providing a shoulder or stop 23 in the slot 15 within the handle. Stop lugs 11*a* are provided in the back 11 to cooperate with the rear edge of the guard to limit the rearward movement of the hone-plate.

The said blade-support 13, in the illustrated example of our invention, consists of the plate 13, having hooks 24*a*, 24*b*, and 24*c*, respectively, which are adapted to be engaged by and to hold the blade 21 down by engagement therewith of flexible tongues 25*a*, 25*b*, and 25*c*, which are formed in the flexible razor blade and which normally lie in the plane of the blade. The blade preferably is made of very thin steel, such as ten one-thousandths (.010) of an inch in thickness.

The brackets 12, or the plate 13, has lugs carrying shoulders 27, in front of which the rear edge of the blade snaps when the blade has been flexed downward, so as to permit the said tongues to pass under their respective hooks, and to permit the blade to be moved forward until its rear edge can spring down in front of the said shoulders, thus latching the blade in place with the tongues under tension. The slots which surround the two outer tongues, respectively, have shoulders 26*a* and 26*c* which cooperate with the hooks to position the rear edge of the blade against the shoulders 27 and thus keep the cutting edge in exactly correct relation to the guard plate.

The blade preferably has a finger-hold on or in its rear edge, which, in the present instance, takes the form of a slot 28 that extends parallel to the rear edge of the blade. Access to the finger-hold is afforded by the space between the two brackets 12.

A hone-plate 19 is secured to the guard plate 18, as by riveting, clinching its front and rear edges around and under shoulders 18*a* and 18*b*, formed on the guard plate, and the plate 13 is set at such an angle that the blade, when mounted thereon and fixed by the engagement of its aforesaid tongues with the said hoooks 24*a*, 24*b*, and 24*c* on the said plate, will be yieldingly held against the hone-plate as the latter rides back and forth under the blade when the razor is shaken, and the blade will thus be sharpened.

The flexibility of the blade causes it normally to hold the hone-plate, and with it the guard plate, in the retracted or shaving position, and yet permits the blade to be oscillated back and forth merely by shaking the razor and without requiring the release of any detent. To aid in such sharpening, the upper surface of the hone-plate is made of two levels, viz., an upper and larger level 19*a* and a lower and segment-shaped level 19*b*, the arc-shaped ridge 19*c* thus formed causing the points of contact between the said ridge and the razor edge to travel back and forth along the said edge, as the razor is shaken.

We have found this form of hone-plate to be so efficient that sharpening can be effected without requiring the use of emery paste or other abrasive.

Our razor has many advantages:

It is extremely simple and yet is very efficient.

It requires no cap over the razor, such as is found in most safety razors.

The blade is yieldingly held down by clips or hooks from below, and the blade is bowed along its center line by tension applied along such line.

Tension to bow the blade along such line is applied only by the tongues.

The blade is weakened only by cuts along the center line, giving easy flexing.

The blade is positively held down, as distinguished from caps which snap up.

The blade is held in sharpening and shaving positions by the said tongues.

Both the blade itself and the tongues give flexure and spring to the blade.

The flexure in the blade holds the guard in shaving position.

The blade can be put exactly in place, or removed and turned over with the greatest ease.

While the blade is held by the tongues, the latter are all within the usual outlines of the razor; and, when the blade is out of the razor, the tongues lie exactly in the plane of the razor, and do not interfere, in any way, with stacking the blades in packages.

While we have chosen for the illustration of our invention the foregoing embodiment thereof, it is to be understood that such embodiment is typical only and that the invention is susceptible of embodiment in many different forms.

We claim:

1. In a safety razor, the combination of a seat for a blade, a blade having flexible tongues within its boundaries and over-hanging parts connected with such seat which are adapted to hold said tongues in depressed positions, whereby said blade may yieldingly be held in shaving position.

2. In a safety razor, the combination of a seat for a blade, a blade having flexible tongues within its boundaries and over-hanging parts connected with such seat, whereby said tongues may be held in depressed positions, a hone plate under said blade, and means for causing relative movement between said blade and said hone plate.

3. In a safety razor, the combination of a seat for a blade, a blade having flexible tongues within its boundaries and perpendicular to its cutting edge, and over-hanging parts connected with such seat which are adapted to hold said tongues in depressed positions, said tongues, when not deflected, normally lying in the same plane as a the body of said blade.

4. In a safety razor, the combination of a seat for a blade, a blade having flexible tongues within its boundaries and perpendicular to its cutting edge, over-hanging parts connected with such seat which are adapted to hold said tongues in depressed positions, said tongues, when not deflected, normally lying in the same plane as the body of said blade, and a guard-plate normally underlying said blade.

5. In a safety razor, the combination of a seat for a blade, a flexible blade having a flexible tongue within its boundaries and perpendicular to its cutting edge, an over-hanging part connected with such seat, which is adapted to hold said tongue in depressed position, whereby said blade may yieldingly be held in shaving position.

6. In a safety razor, the combination of a seat for a blade, a flexible blade having a flexible tongue within its boundaries and an over-hanging part connected with such seat, whereby said tongue may be held in depressed position, a hone plate under said blade, and means for causing relative movement between said blade and said hone plate.

7. In a safety razor, the combination of a seat for a blade, a flexible blade having a flexible tongue within its boundaries and perpendicular to its cutting edge, and an over-hanging part connected with such seat which is adapted to hold said tongue in depressed position, said tongue, when not deflected, normally lying in the same plane as the body of said blade.

8. In a safety razor, the combination of a seat for a blade, a flexible blade having a flexible tongue within its boundaries and perpendicular to its cutting edge, an over-hanging part connected with such seat which is adapted to hold said tongue in depressed position, said tongue, when not deflected, normally lying in the same plane as the body of said blade, and a guard-plate normally underlying said blade.

9. In a safety razor, the combination of a seat for a blade, a blade having flexible tongues within its boundaries, over-hanging parts connected with such seat which are adapted to hold said tongues in depressed positions, said tongues, when not deflected, normally lying in the same plane as the body of said blade, a guard-plate normally underlying said blade, and a hone-plate mounted on said guard-plate.

10. In a safety razor, the combination of a seat for a blade, a blade having flexible tongues within its boundaries, and over-hanging parts connected with such seat which are adapted to hold said tongues in depressed positions, whereby said blade may yieldingly be held in shaving position, means for sharpening said blade and means for causing relative movement between said blade and said means for sharpening said blade.

11. In a safety razor, the combination of a seat for a blade, a blade having flexible tongues within its boundaries, overhanging parts connected with such seat which are adapted to hold said tongues in depressed positions, whereby said blade may yieldingly be held in shaving position, a hone-plate under said blade and a lever, said hone-plate being so mounted on said lever that shaking said razor may cause relative movement between said blade and said hone-plate.

12. In a safety razor, the combination of a seat for a blade, a blade having flexible tongues within its boundaries, over-hanging parts connected with such seat which are adapted to hold said tongues in depressed positions, whereby said blade may yieldingly be held in shaving position, a hone plate under said blade and a lever, said hone-plate being so mounted on said lever that shaking said razor may cause relative movement between said blade and said hone-plate, said lever having an arm below its fulcrum which, by contact with the handle, limits the movement of the hone-plate.

13. In a safety razor, the combination of a seat for a blade, a blade having flexible tongues within its boundaries and overhanging parts connected with such seat which are adapted to hold said tongues in depressed positions, whereby said blade may yieldingly be held in shaving position, a hone-plate, and a guard so mounted beneath said blade that relative movement between the blade and the hone-plate may be effected by shaking the razor.

14. In a safety razor, the combination of a seat for a blade, a blade on said seat, said seat having a shoulder to prevent backward movement of said blade relative to said seat, said seat also having over-hanging parts so connected with said seat as to hold said blade from forward movement relative thereto, said blade having slots therein and flexible tongues, whereby said tongues may be thrust beneath said over-hanging parts to hold said tongues in depressed positions, whereby said blade shall yieldingly

be held downward, a hone-plate, and means whereby said hone-plate may be reciprocated in contact with said blade.

15. In a safety razor, the combination of a seat for a blade, a blade having flexible tongues within its boundaries, and over-hanging parts connected with such seat which are adapted to hold said tongues in depressed positions, said seat having a shoulder to stop the back edge of the blade, and said blade having shoulders which are adapted to contact with said over-hanging parts to prevent forward movement of said blade relative to said seat.

16. In a safety razor, the combination of a seat for a blade, a blade having flexible tongues within its boundaries and over-hanging parts connected with such seat which are adapted to hold said tongues in depressed positions, said seat having a shoulder to stop the back edge of the blade, and said blade having shoulders which are adapted to contact with said over-hanging parts to prevent forward movement of said blade relative to said seat, and a hone-plate beneath said blade, so mounted that relative movement between said blade and said hone-plate may be effected.

17. In a safety razor, the combination of a seat for a blade, a blade having flexible tongues within its boundaries and over-hanging parts connected with such seat which are adapted to hold said tongues in depressed positions, said seat having a shoulder to stop the back edge of the blade, and said blade having shoulders which are adapted to contact with said over-hanging parts to prevent forward movement of said blade relative to said seat, and a hone plate beneath said blade, so mounted that relative movement between said blade and said hone plate may be effected by shaking the razor.

18. In a safety razor, the combination of a seat for a blade, said seat having a shoulder for the rear edge of the blade, a blade having flexible tongues within its boundaries and over-hanging parts connected with such seat, the under side of which parts are so inclined as to guide said tongues under the same and to hold said tongues in depressed positions.

19. In a safety razor, the combination of a seat for a blade, said seat having a shoulder for the rear edge of the blade, a blade having flexible tongues within its boundaries and over-hanging parts connected with such seat, the under side of which parts are so inclined as to guide said tongues under the same and to hold said tongues in depressed positions, a hone-plate and means whereby said hone-plate may be reciprocated beneath said blade.

20. A flexible razor blade having a cutting edge, said blade having perforations within its boundaries symmetrically placed relative to the cutting edge, said perforations each having a spring tongue therein, the bases of all the tongues lying in the same straight line, said tongues projecting toward said cutting edge, two of said perforations each having a shoulder therein, said shoulders being symmetrically placed relative to the cutting edge, said shoulders lying between a line drawn along the base of the tongues and the cutting edge.

21. In a safety razor, the combination of a seat for a blade, a blade having flexible tongues within its boundaries and perpendicular to its cutting edge and overhanging parts connected with said seat which are adapted to hold said tongues in depressed positions below the adjacent area of the blade, whereby said blade may be yieldingly held in shaving position.

22. A flexible razor blade having a cutting edge and having within its boundaries a row of perforations along substantially the center line of the blade, each of said perforations having a spring tongue therein extending from one of its edges to and beyond the center line of the blade and toward said cutting edge, the length of each tongue being such that it will readily flex out of the plane of the adjacent surface of the blade.

23. In a self-sharpening safety razor the combination of a guard plate having a dove-tail shaped ridge and sheet-metal hone plate secured thereto by being clinched under the overhang of said guard plate.

24. A safety razor blade having a line of perforations within its boundaries, parallel to its cutting edge, and flexible tongues in said perforations, said tongues beginning on that side of a median line between the two edges of the blade which is opposite to the cutting edge, said tongues pointing toward the cutting edge and extending beyond said median line.

25. A safety razor blade having a plurality of flexible tongues within its boundaries which are perpendicular to the cutting edge of said blade, said tongues all beginning on that side of a median line, between the two edges of the blade, which is opposite to the cutting edge and ending on the opposite side of said median line.

26. A flexible razor blade having a cutting edge and having within its boundaries a row of perforations along the center line of the blade, each of such perforations having a spring tongue extending from that one of its edges, which is on the opposite side of the center line from said cutting edge, to a point between said line and said cutting edge, the length of each tongue being sufficient, so that it readily may be flexed out of the plane of the adjacent surface of the blade.

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FERDINAND C. MÜLLER.

4

CERTIFICATE OF CORRECTION.

Patent No. 2,041,680. May 19, 1936.

THOMAS J. PILLIOD, ET AL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, first column, line 46, claim 3, strike out the article "a"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 1st day of September, A. D. 1936.

(Seal)

Leslie Frazer
Acting Commissioner of Patents.