Nov. 14, 1944. J. F. C. PRZYBYSZ 2,362,851

SAFETY RAZOR

Filed Jan. 7, 1944

FIG. 1.

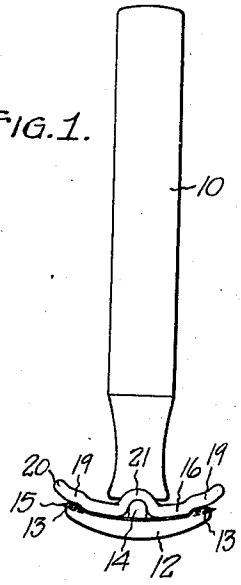


FIG. 3.

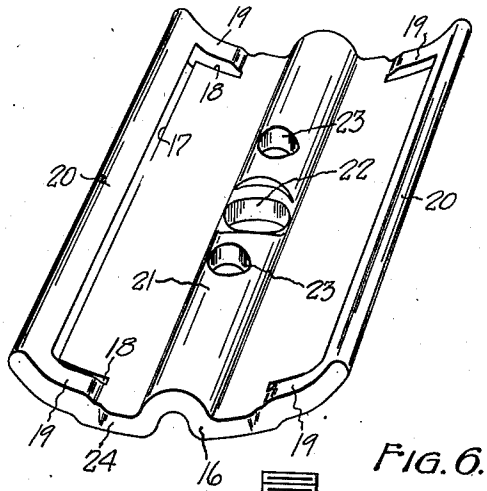


FIG. 2.

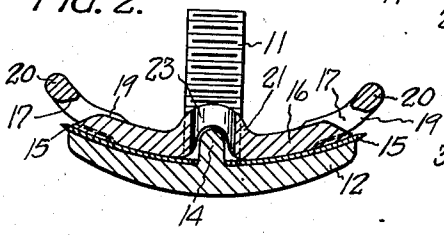
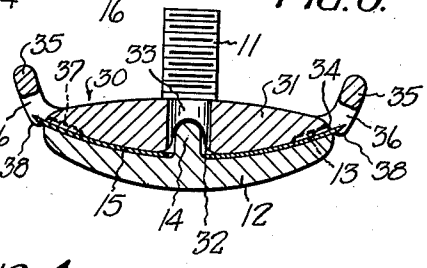


FIG. 6.



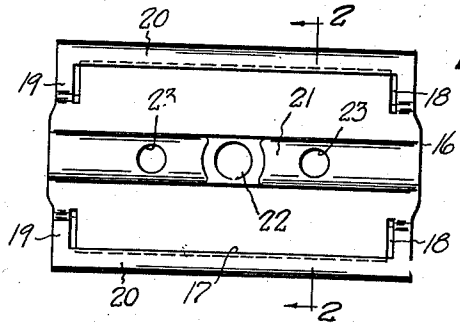
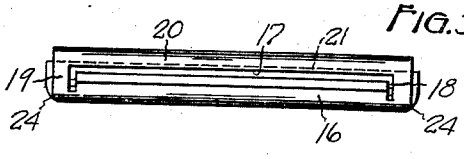


FIG. 4.

FIG. 5.



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UNITED STATES PATENT OFFICE

2,362,851

SAFETY RAZOR

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Application January 7, 1944, Serial No. 517,384

8 Claims. (Cl. 30—70)

This invention relates to improvements in safety razors.

The primary object of the invention is to provide a razor which is easy to clean, which will not clog in use, which clamps the blade continuously and uniformly near its cutting edge to prevent blade distortion, and which stretches the skin uniformly and smoothly in advance of the cutting blade.

A further object is to provide a novel inner razor head effectively engaging a flexible blade near its cutting edge to prevent distortion thereof and carrying a guard bar to provide a non-clogging and easily cleaned passage for shaving cream defined in part by said blade, which head is adapted for use on multiple models and styles of razors.

Other objects will be apparent from the description and appended claims.

In the drawing:

Fig. 1 is an edge view of the razor.

Fig. 2 is an enlarged transverse sectional view taken on line 2—2 of Fig. 4.

Fig. 3 is a perspective view of the inner blade-clamping plate.

Fig. 4 is a top plan view of the inner clamping plate.

Fig. 5 is a side view of the inner clamping plate.

Fig. 6 is a transverse sectional view similar to Fig. 2, illustrating a modified embodiment of the invention.

Referring to the drawing, the numeral 10 designates an elongated handle member having an internally screw threaded end bore adapted for connection with the central screw threaded stud 11 of an outer blade clamping plate 12. Plate 12 may be of any standard or conventional construction, preferably curved transversely. As illustrated, the plate 12 has thickened corner portions or lugs 13 projecting from its inner face and a central longitudinal rib 14. A conventional flexible double-edged blade 15 seats against the inner face of plate 12, being provided with notched corners clearing the corner lugs 13 of plate 12 and with a central longitudinal configured cut-out fitting around rib 14 and stud 11.

The inner clamping plate 16 is curved transversely with its outer blade-engaging surface conforming to the contour of the inner face of plate 12, whereby blade 15 may be solidly clamped between said plates when handle 10 is securely mounted and tightened on stud 11 to draw said plates together. Plate 16 is wider than plate 12, and is longitudinally slotted at 17 at each side thereof. The slots terminate in spaced relation to the ends of plate 16 and communicate with short transverse inwardly extending slots or notches 18. The spacing between slots 17 is preferably substantially equal to the width of plate 12 whereby blade 15 is effectively gripped and supported throughout the major portion of its width with the plate edges substantially registering and only a narrow edge portion of the blade projects from said plates at each side of the razor. The transverse slots 18 define end bars 19 at the corners of the plate which are preferably of a width substantially equal to the width of the corner lugs 13 of plate 12 and which are bent relative to the plate 16 per se to clear and fit snugly over said corner lugs 13 when the plates are in blade-clamping position. The outer portions of end bars 19 are curved to position the guard bar 20 in desired relation to the longitudinal edges of the central blade-engaging portion of plate 16. As best illustrated in Figs. 2 and 5, guard bars 20 are spaced laterally outwardly from the central blade engaging plate portion and are off-set inwardly sufficiently to provide a free channel for passage of shaving cream which has a clearance of at least 1/64 of an inch from the inner surface of the edge portion of blade 15.

The central portion of plate 16 may be suitably longitudinally off-set or dished at 21 to receive the rib 14 of outer plate 12, and has a central hole 22 therein to receive stud 11. Spaced holes 23 in longitudinal alignment with and on opposite sides of hole 22 may be provided to receive blade positioning studs (not shown) which are to be found on the outer clamping plates of some razors. Plate 16 may be slightly longer than plate 12, and its end edges may be beveled at 24 to facilitate separation of the clamping plates for removal of a blade.

In this razor the functions of centering, aligning and positioning the blade are served primarily by the stud 11, rib 14 and corners lugs 13 of the outer plate 12. The inner plate 16 serves its usual purpose of clamping and flexing blade 15. Note, however, that the outer surface of the central or body portion of plate 16 conforms to the contour of the inner surface of the outer plate and extends the full width thereof. Thus the blade is clamped and held between said plates for the major portion of its width and is effectively supported thereby against longitudinal distortion and flexure. Only a narrow portion at each side of the blade, constituting its

ground cutting edges, projects outwardly from said plates, and these projecting edge portions are held against distortion by the registering adjacent clamping plate edge portions. In this connection, previous razor constructions, and particularly those having longitudinal guard bars, have generally been such that the effective engagement of the inner clamping plate with the blade has been much narrower than the engagement of the outer plate with the blade. Thus the effective clamping action of the plates on the blades has been spaced inwardly of the cutting edge of the blade a substantial distance in such constructions, thereby permitting longitudinal distortion or waviness of the cutting edge of the blade which may result in cutting or scraping of the skin in use.

Another important advantage of the instant construction is that a long free channel is provided, defined by the guard bar **20** at one side and by the blade and the central blade-engaging portion of plate **16** at the other side. This channel permits shaving cream and embedded hair particles to pass therethrough freely so that the razor will not clog or interfere with an accurate fast simple shaving operation. Also, the grooves facilitate cleaning of the razor simply and quickly after shaving. Note that this groove is accommodated by the transverse slots **17** which permit the end bars **19** to be bent or off-set relative to the central blade-engaging portion in inwardly spaced relation to the side edges of the central blade-clamping portion thereof. The longitudinal guard bar provides for uniform smooth stretching of the skin in advance of the cutting edge. Also, it facilitates positioning of the razor at any angle desired by or natural for the user.

A modified embodiment of the invention, utilizing an inner clamping plate **30** of slightly different construction, is illustrated in Fig. 6. Plate **30** is preferably formed as a die casting, although it may be manufactured by other processes if desired. Plate **30** comprises a central body portion **31** having a convex blade-engaging face interrupted by a longitudinal groove **32** adapted to receive a positioning rib **14** on the outer clamping plate **12**. A hole is formed centrally in plate **30** for reception of the threaded stud **11** of the outer plate and a plurality of holes **33** may be provided in the plate **30** in longitudinally spaced relation for the reception of other positioning studs (not shown). The longitudinal edges **34** of central body portion **31** preferably register with the longitudinal side edges of outer plate **12**.

Guard bars **35** extend longitudinally at each side of the plate **30** in laterally spaced off-set relation to edges **34** and are carried by end bars **36** projecting from the corners of plate **30**. The convex faces of bars **36** are interrupted adjacent the points at which end bars **36** merge with body portion **31** by recesses **37** adapted to receive the positioning lugs **13** at the corners of outer plate **12**. Projections **38** are formed in the end bars **36** extending outwardly of the curved contour of the blade-engaging face of body portion **31** and outwardly of edges **34** to define the outer end portions of recesses **37**. Projections **38** are shaped and proportioned for alignment with the edged portions of the blade which project laterally from the clamping plates to protect the corners of said blades. The slot or groove separating the guard from body portion **31** at each side of the plate **30** is preferably of substantially the same U-shape defined and illustrated in the Fig. 2 embodiment, so that end bars may be bent or curved relative to the body **31** along longitudinal lines spaced inwardly from the edges **34** of the body.

This construction possesses the same advantages as the Fig. 2 embodiment. Additionally, by provision of projections **38** the corners of the blade are protected against breakage upon accidental impact, as when the razor is dropped, and danger that the user will nick or cut himself upon the corners of the blade incident to improper positioning or manipulation of the razor is avoided.

I claim:

1. In a razor, the combination with an outer concavo-convex blade-clamping plate having a threaded stud and blade positioning projections, and a handle detachably mounted on said stud, of an inner blade-clamping plate clamped between said outer plate and said handle and having a central concavo-convex portion complementary to said outer plate whose side edges register with the side edges of said outer plate, said side edges being outlined by U-shaped slots, the corner portions of said inner plate positioned outwardly of said slots being bent relative to said central portion to position a longitudinal integral guard bar in outwardly and rearwardly off-set relation to the cutting edge of a blade clamped between said plates.

2. In a razor, the combination with an outer concavo-convex blade-clamping plate having a threaded stud and blade positioning projections, and a handle detachably mounted on said stud, of an inner blade-clamping plate clamped between said outer plate and said handle, said inner plate having a central blade-engaging concavo-convex portion of substantially the same width as said outer plate, longitudinal guard bars off-set outwardly and rearwardly from said central portion and integral end bars carrying said guard bars and bent from said central portion, opposite end bars being spaced transversely a distance less than the width of said central portion.

3. In a razor, the combination with an outer curved blade-engaging plate and a handle detachably secured thereto, of an inner blade-engaging plate clamped between said outer blade and handle and including a central blade-engaging portion of substantially the same curvature and width as said outer plate and an integral U-shaped laterally projecting guard whose leg portions at the corners of said plate are bent relative to said central portion in inwardly spaced relation to the side edges of said central portion.

4. In a razor, the combination with an outer plate having an inner blade-engaging face and a handle detachably secured to said plate, of an inner plate having a U-shaped slot adjacent one longitudinal edge thereof to define a blade-engaging portion whose longitudinal edge substantially registers with the edge of said outer plate and a U-shaped guard whose legs are bent relative to said plate inwardly of the edge of said blade-engaging portion to position the cross bar therebetween in off-set outwardly spaced relation to the longitudinal edge of said blade-engaging portion.

5. In a razor, the combination with an outer blade-clamping plate having lugs projecting from its inner face at its corners and a handle detachably secured to said plate, of an inner blade-clamping plate urged against said plate by said handle and having U-shaped slots at opposite sides to define a central blade-engaging portion and longitudinal guard portion, said central portion being of substantially the same width as said

outer plate and cooperating therewith to firmly and continuously clamp a blade adjacent its cutting edges, said guard portion including end portions bent relative to said central portion inwardly from the side edges of said central portion and fitting over said lugs.

6. In a razor having an outer blade-clamping plate provided with blade-positioning projections at its inner face, an inner blade-clamping plate having a blade-engaging portion of a width slightly less than the spacing of the edged portions of a double-edged razor blade, and integral U-shaped laterally projecting guard portions having leg portions at the ends of said plate bent relative to said plate along bend lines spaced inwardly from the longitudinal edges of said blade-engaging portion, said blade-engaging portion having a central dished portion provided with a plurality of spaced openings and adapted to receive said blade positioning projections.

7. In a razor, the combination with an outer blade-engaging plate, a blade and a handle detachably secured to said plate, of an inner blade-engaging plate clamped between said outer plate and handle and including a central blade-engaging portion of substantially the same width as said outer plate and an integral U-shaped laterally projecting guard whose leg portions at the corners of said plate have outwardly projecting off-sets aligned with and protecting the portion of said blade projecting from said plates.

8. In a razor, the combination with an outer plate having an inner blade-engaging face interrupted at its corners by projecting lugs, a blade notched at its corners and positioned by said lugs, and a handle carried by said plate, of an inner plate clamped between said outer plate and handle and having a U-shaped slot adjacent one side thereof to define a blade-engaging portion of substantially the same width as said outer plate and an integral U-shaped projecting guard including a longitudinal guard bar and transverse end bars, the outer surfaces of said end bars being recessed to fit around said lugs and outwardly off-set laterally of said outer plate for alignment with the portion of said blade projecting from said plates.

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