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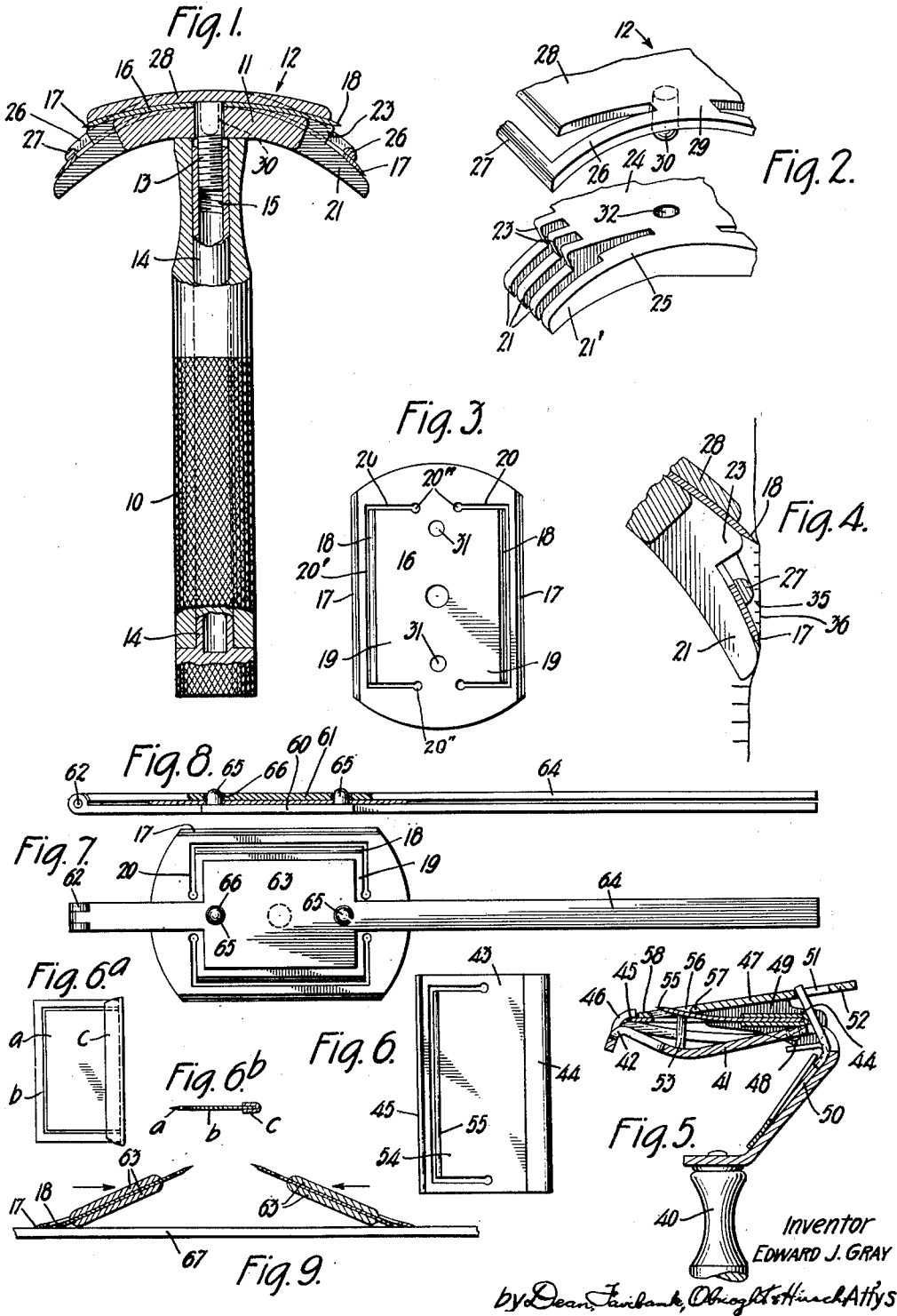
E. J. GRAY

1,975,757

SAFETY RAZOR

Filed Aug. 1, 1927

2 Sheets-Sheet 1



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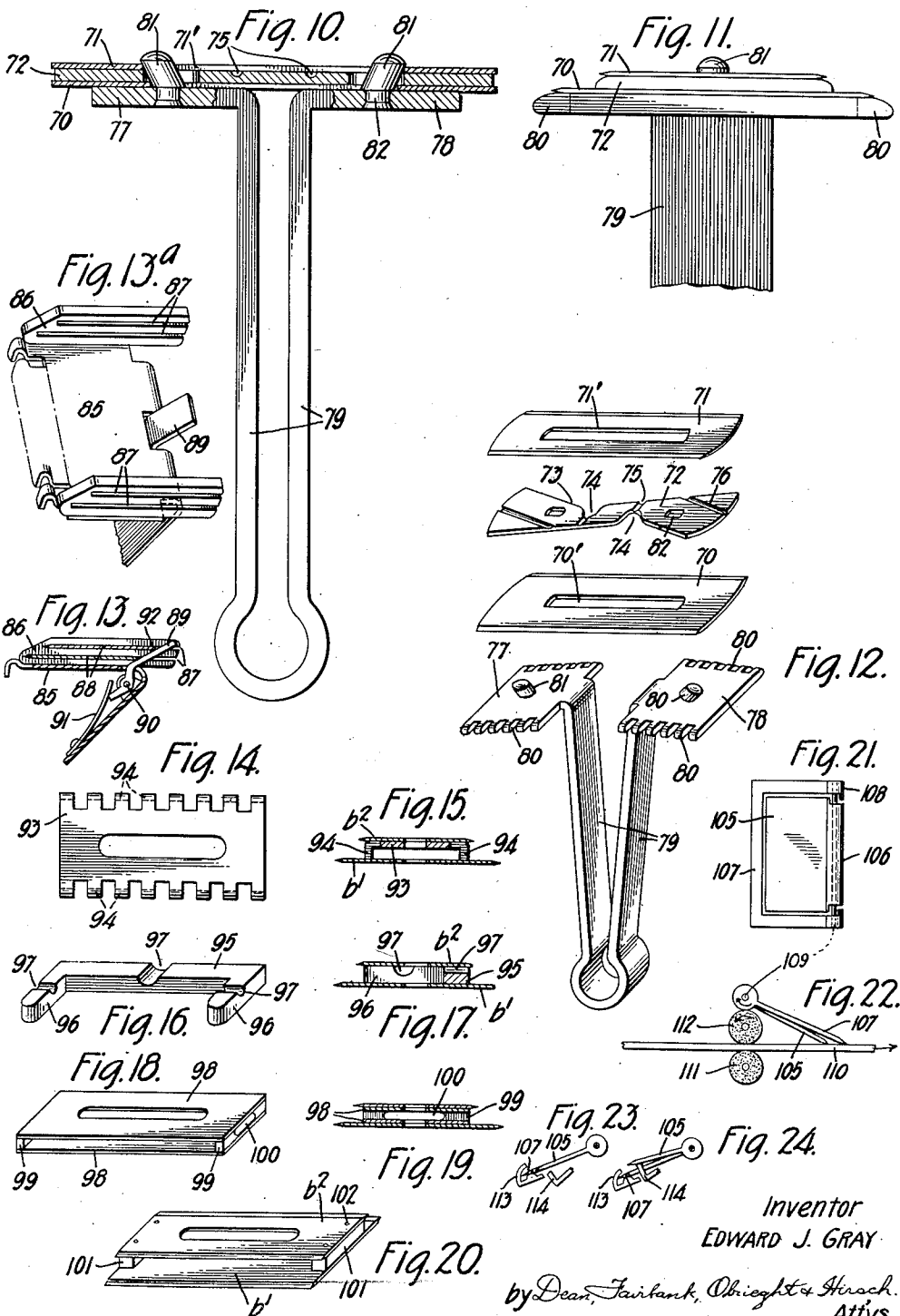
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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

1,975,757

SAFETY RAZOR

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Application August 1, 1927, Serial No. 209,660

35 Claims. (Cl. 30—12)

My present invention relates to razors and primarily to safety razors.

It is an object of the invention to provide a safety razor of simple and rugged construction which by shaving but once over removes the stubble substantially completely, and this without danger of cutting or bruising the skin.

Another object is to provide a razor of the above type, which is equally applicable for use with shaving lather or with shaving grease or cream, and which in operation will not become clogged and thus will avoid the need for washing or cleaning the razor at intervals in the course of the shave.

Another object is to provide a razor of the multi-cutting edge type which does not necessitate the handling of more than one blade in use, and in which the adjustment of the various cutting edges is automatically and accurately effected by the assembly or setting of the razor parts for use.

According to the invention two cutting edges are to function simultaneously and are so mounted with respect to each other in the razor as to afford ample space therebetween for free drainage of the lather in a direction transversely of the length of the cutting edge. Preferably each of the edges has a distinct toothed guard for free drainage of the lather.

According to another feature the operation of the razor at the leading cutting edge tends to draw the skin tight to afford a proper angle for causing the trailing edge to complete the shaving operation. To this end I prefer to dispose the leading edge at a relatively acute angle and the trailing edge at a relatively steeper angle, with respect to the surface being shaved.

The leading and the trailing cutting edge both may be embodied in a single unit, preassembled from distinct blade elements which may be welded or clamped together. Both cutting edges may, if desired, be formed from a single unitary blade, in which case one of the edges is at the end of a wide tongue struck out of the body of the spring steel blade and extending parallel to and nearly the full length of the extreme cutting edge of the blade.

In the accompanying drawings in which are shown one or more of various possible embodiments of the several features of the invention

Fig. 1 is a view in longitudinal cross-section of one embodiment showing the blade applied,

Fig. 2 is a fragmentary perspective view showing the compound head and blade clamp,

Fig. 3 is a plan of a preferred razor blade,

Fig. 4 is a fragmentary diagrammatic view indicating the mode of operation of the cutting blades,

Fig. 5 is a fragmentary view in transverse cross-section showing an alternative embodiment of razor,

Fig. 6 is a plan view of the blade employed in the embodiment of Fig. 5,

Fig. 6a is a modification of the blade shown in Fig. 6,

Fig. 6b is a cross-section of the latter,

Fig. 7 is a diagrammatic plan showing a stropping implement for one of my split razors with the razor in place,

Fig. 8 is an edge view of the stropper of Fig. 7 with parts in section,

Fig. 9 is a diagrammatic view indicating the mode of use of the stropper,

Fig. 10 is a view similar to Fig. 1 of another alternative embodiment,

Fig. 11 is a fragmentary end elevation of the embodiment of Fig. 10,

Fig. 12 is a dropped perspective view of the embodiment of Fig. 10,

Fig. 13 is a fragmentary view partly in cross-section of an alternative embodiment of blade holder,

Fig. 13a is a perspective view thereof,

Fig. 14 is a plan view of an alternative blade spacer,

Fig. 15 is a sectional view indicating the position of the spacer in use,

Fig. 16 is a perspective view of another form of spacer,

Fig. 17 is a sectional view showing the latter in use,

Fig. 18 is a perspective view of a further embodiment of spacer,

Fig. 19 is a transverse sectional view showing the spacer of Fig. 18 in use,

Fig. 20 is a perspective view indicating the two blades and a form of spacer combined in a unitary assembly,

Fig. 21 is a plan view of a razor blade suitable for another type of razor,

Fig. 22 is a diagrammatic view indicating the stropping of the razor shown in Fig. 21,

Fig. 23 is a diagrammatic view indicating one stage in the application of the blade of Fig. 21 to the razor, and;

Fig. 24 is a view similar to Fig. 23 showing the blade set in the razor ready for operation.

Referring now to the drawings I have shown in Figs. 1 to 3, a safety razor of the Gillette type embodying a handle 10, a head 11 affixed thereto,

a blade clamp 12 having a threaded stud 13 and a fastening tube 14 applied from the opposite end through the hollow handle and tapped at 15 at its extremity for threading upon stud 13 to clamp plate 12 in position.

In the present embodiment, I employ the wafer blade 16 shown in Fig. 3, made of flexible or spring steel and provided with lateral cutting edges 17. The blade 16 moreover has secondary cutting edges 18, said latter edges also extending longitudinally of the blade and being formed at the ends of tongues 19 struck out of the metal of the blade by forming two transverse slits 20 near the ends of the blade and a connecting slit 20' therebetween. To avoid splitting the metal of the thin blade in slitting the same, it is preferred to first perforate the blade as at 20'' and to start each of the slits 20 at one of said perforations.

Edges 18 extend for nearly the length of the blade and parallel and contiguous to the primary cutting edges 17. The secondary cutting edges being at the outer ends of tongues or tabs 19, they are rendered deflectable out of the plane of the blade.

The identical blade shown in Fig. 3 may, if desired, be formed of two distinct segments, the central rectangular piece bounded by edges 18 and slits 20, and the outer frame piece thereabout, which pieces are welded together along the short transverse lines joining the pairs of holes 20'.

I have broadly designated by the term "split blade" my new unitary blade construction which affords a pair of parallel cutting edges that operate simultaneously, as hereinafter described.

The razor is formed with a unitary head, provided with a compound guard, however, which includes the usual toothed guard 21 at the extreme edges thereof and an additional or secondary toothed guard spaced inward from the edge of the head. The secondary guard preferably comprises humps or teeth 23 upstanding from the shanks of the primary guard teeth 21. Preferably the secondary teeth are less in number than the primary, the extreme primary teeth 21' lacking the secondary humps 23. The curvature of the blade holder at the crest 24 between the secondary guards 23 is of lesser convexity than that of the primary teeth 21, and of the longitudinal frame edge 25 connecting corresponding teeth 21'.

The blade clamp is of compound construction complementary to that of the holder or guard structure, said clamp as shown, comprising a curved frame portion 26 having a curved longitudinal edge conforming to that of the head frame 25, and a cross bar 27 to overlie the primary guard teeth 21. The guard also includes a central plate portion 28, integral with the frame portion, to which it is connected by webs 29, and the curvature of which corresponds to that of the crest 24 of the head 11.

It will be apparent that with the construction described the blade is applied for use with the same facility as an ordinary blade. The flat blade of Fig. 3 being laid upon the inverted clamp 12 with the upstanding studs 30 of the latter passing through the usual holes 31 in the blade, said prongs are passed through the corresponding apertures 32 in the head. The rod 14 inserted through handle 10 is then threaded upon stud 13, whereby the clamping frame 12 deflects the outer or primary cutting edges 17 of the blade into engagement with the primary guard 21, and the humps 23 that constitute the secondary guard, retain the secondary cutting edges thereagainst,

clamped in position by the central plate 28 of the clamp 12. Thus in the process of application, the secondary cutting edges of the blade are automatically deflected out of the plane of the blade as the latter is curved for effective use, or from another point of view, the primary edges are deflected well beyond the secondary edges, the latter being flexed along a curvature of less convexity than the former. When the blade is thus mounted for use, the associated primary and secondary edges 17 and 18 respectively are displaced from each other by a distance greater than in the flat separate plate as shown in Fig. 3, with the secondary guard extending substantially between said cutting edges.

By providing the compound guard shown and described, the teeth 21 afford space for drain of the lather, cream or other beard treating medium to avoid clogging the primary cutting edge, and the spaces between the humps 23 constituting the secondary guard, similarly afford an effective drain with respect to the secondary cutting edge, the lather draining freely from the secondary edge through the opening determined thereby, near the primary edge of the blade.

Thus while two distinct cutting edges function simultaneously, and each has an effective guard, yet the beard treating lather or other medium readily escapes transversely of the length of each of the cutting edges not only of the primary, but also of the secondary blade and clogging in the course of use is effectively avoided.

In Fig. 4, I have indicated diagrammatically the general mode of use of the razor. The primary blade 17, by this construction extends at a more acute angle with respect to the common plane of the two cutting edges than does the secondary blade portion 18. The common plane of the cutting edges, of course, determines the general plane of the surface being shaved, as appears clearly from Fig. 4.

The parts are so correlated that the primary blade width fits closely against the guard 21 for a light cut, while the secondary blade width extends preferably substantially to the extremity of the corresponding guard humps 23 for a relatively heavy cut.

In use of the razor the primary or leading edge effects a light cut of the beard leaving a short stubble 35. The secondary edge 18 immediately follows and by reason of its steeper angle and its adjustment for close cut, it will remove all of said stubble 35. In this operation it should be noted that the progress of the leading or primary edge with its advance acutely inclined guard 21 is resisted by the skin to a greater degree than that of the secondary blade which extends at a steeper angle and has a lesser quantity of lather and length of stubble to resist.

Accordingly the primary edge will stretch smooth the skin immediately therebehind as at 36 affording the proper cutting angle for the secondary or trailing blade 18.

By my invention I have thus obviated the need for shaving two or three times in order to effect reasonable closeness, as would be required were only a single edge employed adjusted for a light cut. I have also avoided the danger of cutting into the skin and causing irritation at the places where the surface of the skin would tend to pile up, were it attempted to effect a close shave with only a single edge adjusted for heavy cut.

It is of course understood that while I prefer the double edge blade, affording four cutting edges as embodied in my split blade construction,

the primary and secondary cutting edges may be provided, if desired, for only one edge of the blade, and omitted for the other edge.

In Figs. 5 and 6 I have shown the application of the general principles of my invention to a razor of the Gem type. In this type of razor the handle 40 has a sheet metal head plate 41 formed at its outer edge with the guard 42. The removable blade 43 which has a stiffening back 44 has its cutting edge 45 arrested by stops 46 at the ends of the guard 42. The blade is clamped in position against the guard by means of a clamping plate 47 hinged at 48 by ears 49 and having a leaf spring construction 50 for resiliently maintaining the plate 47 against the blade. The leaf spring extends through a port 51 near the finger piece 52 of the clamp. In the present embodiment the head 41 is provided with an auxiliary guard 53 extending the length thereof contiguous to the primary guard 42. The blade 43 has a cut-out tab 54 similar to tab 19 in Fig. 3, the edge of which is sharpened to form a secondary cutting edge 55.

When the compound or split blade is applied, it will be seen that the upstanding or secondary guard 53 will deflect the secondary blade or tab 54 above the plane of the primary blade. The clamping cover 47 is provided with a longitudinal opening 56 through which the secondary blade 55 extends, the upper edge 57 of said opening serving to clamp said secondary blade width in position, while the border strap 58 of the clamp plate, retains the primary cutting edge 45 in position against guard 42. The mode of operation will be apparent from the description of the embodiment previously described.

In Figs. 6a and 6b is shown a blade equivalent to that of Fig. 6 and embraced within my definition of a split blade. In this embodiment the secondary element a is distinct from the primary or U-shaped frame elements b, said two elements being retained in a unitary assembly by a back c doubled over the mounting edges of the two blade elements and clamped thereto. Blades a and b may both be of flexible steel, or part b may be stiffer than part a, so that only the latter flexes, when applied in the razor as shown in Fig. 5.

In Figs. 7, 8, and 9 I have diagrammatically shown a blade holder by which a split blade of the type described may be stropped or resharpened. Illustratively, this holder comprises a pair of blade gripping arms 60 and 61 hinged together at 62, the free extremities 64 of the arms constituting the handle. The blade holder 63 comprises similar rectangular enlargements on each of the arms and near the hinge 62. One of the arms has studs 65 to extend through the holes 31 of the blade to be stropped, and into corresponding holes 66 in the other arm 61, whereby the blade is securely retained as long as the handle is grasped. The secondary edges 18 of the blade extend immediately beyond the edges of blade holder 63, the length of which is wholly between slits 20. Holder 63 thus securely retains tab 19, while permitting flexure of the rest of the blade with respect thereto.

The manner of use will be clear from Fig. 9 in which it will be seen that drawing the razor over the strop 67 from left to right effects simultaneous sharpening of one side of the primary and of the secondary edge, while the return stroke from right to left similarly effects sharpening of the other side of said edges. While the secondary edge in each case is firmly retained

at the angle at which the stropping tool is inclined the primary edge is in each case deflected by the pressure of the tool against the strop or stone, to the more acute angle shown, which corresponds to the inclination of said edge when used in shaving.

The principle indicated in the device just described may obviously be readily applied to various known types of stropers heretofore used with ordinary blades and in which only one cutting edge functions at a time.

In Figs. 10 and 11 is shown an embodiment of the type, in which two separate and distinct blades are employed for simultaneous shaving. As best shown in Fig. 10, the two blades may be of well known type, one being shown at 70 and the other at 71, the latter of width slightly less than the former. Preferably an intermediate plate 72 is interposed between the two main plates, and serves not only to correctly space the blades, but also to afford an adequate path of escape for the soap, cream, or other hair treating medium. If the plate 72 were of the width of the blades or of nearly said width, the soap or other hair treating medium would fill the shallow groove determined between the blades and would have no adequate path of escape, thereby hindering efficient shaving. My spacer is preferably a wing-shaped plate affording wide notches 73 from opposite lateral edges for passage of the soap, each of these notches delivering into a deep notch 74 connected with a groove 75 to the opposite edge of the plate so that the lather can traverse from the cutting edge through the opposite edge of the blade. In addition, oblique grooves 76 are preferably provided near the ends of the plate 72 to afford a further path of escape for the lather.

While the two blades with a spacer may be held in position in a holder by any of various possible means, I have shown a preferred embodiment which is distinguished by cheapness and facility of use. In this embodiment, the handle and head are formed of a unitary stamping of resilient sheet metal. This sheet comprises end wings 77 and 78 which together form the head of the holder, and the intermediate or connecting portion 79 is a reversely bent length of reduced width. The lateral edges of the divided head are formed with the toothed guard construction 80. Upon each section of the head is formed a locking stud 81 preferably an oblique stud, which may be riveted in position as at 82. In assembly the handle parts 79 are drawn together, the primary blade is passed over studs 81 at longitudinal slit 70' followed by the spacer plate which is passed over studs 81 at its holes 82, and finally the secondary blade 71 is superposed over the plate 72 by passing its longitudinal slot 71' over the studs 81. Thereupon, the pressure on the handle parts 79 is released, so that the metal handle portions spring apart until the oblique locking studs 81 overlap the extremities of the outer blade 71 thereby securely retaining the parts in assembled position. It will be obvious that by again pressing the two sections of the handle together the blades and spacer may be released and removed.

In Figs. 13 and 13a is shown an alternative embodiment for mounting a pair of the distinct blades in a razor of the general type shown in Fig. 5. In this embodiment I have shown a frame piece comprising a base 85 and upstanding end walls 86 affording a pair of longitudinal notches or grooves 87 for lodging the two blades 88 in

parallelism. Preferably a locking lever 89 is pivoted as at 90 to the head 85 and is urged by a leaf spring 91 against the back or non-cutting edges 92 of the blades to force the latter against the bottoms of their holding slots or grooves 87.

In Figs. 14 and 15 is shown a razor of the type of Figs. 10 and 12 with an alternative form of spacer. The spacer here comprises a single plate 93 of metal having down-turned serrated edges 94 affording space for the drainage of the lather or other beard treating medium between the two blades b' and b^2 .

In Figs. 16 and 17 is shown a further alternative form in which the spacer comprises a U-shaped block of metal having its base bar 95 retained in close contiguity to the secondary blade b^2 , the arms 96 of said block with the base bar thereof serving to maintain the two blades b' and b^2 in parallelism. The cross bar is formed with transverse grooves 97 to facilitate the flow or passage of the lather.

In Figs. 18 and 19 is shown a further embodiment of spacer composed of a pair of plates 98 spaced by a pair of end blocks 99 to which said plates are welded or otherwise integrally secured. The end plates 99 are formed with openings 100 for escape of lather.

In Fig. 20 is shown an embodiment in which the two blades b' and b^2 are integrally and irremovably secured together by intermediate spacer blocks 101 preferably riveted together at the ends of said blades as at 102.

If desired the blocks 101 may be provided with draining slots (not shown) similar to those shown at 100 in Figs. 18 and 19.

Each of the embodiments described thus affords an open space through which the lather or other beard treating medium can readily escape in a direction transversely of the cutting blade without clogging the latter.

In Figs. 21 to 24 is shown a construction embodying the general principle of my invention as applied to a razor of the Auto Strop type. To this end the secondary or inner blade 105 has a roller back 106 rigid thereon, and the primary or frame blade piece 107 has similar roller structures 108 at the ends thereof opposite the cutting edge. The backs 106 and 108 have a pintle 109 longitudinally therethrough about which the two blades may pivot relatively, and which combines the blades into a unitary structure. The blade elements may both be flexible, or only the inner one 105 may be flexible as in the embodiment of Fig. 6a.

In the stropper shown diagrammatically in Fig. 22, the strop 110 is shown between rollers 111 and 112 the latter of which frictionally engages roller backs 106 and 108 so that the rollers 106 and 108 revolve until arrested by the contact of the cutting edges of the corresponding blades with the strop, as best shown in Fig. 22. When the strop is pulled in direction opposite that indicated by the arrows the blades will flop over to the opposite side of roller 112, and be stropped at the corresponding faces of the cutting edges.

As appears in the diagrammatic views of Figs. 23 and 24, the usual guard 113 of the razor is brought in position in the usual manner to retain the primary blade in place, and an auxiliary or secondary guard 114 is provided, to be pushed in for deflecting the secondary blade 105 to trailing or operative position.

It will thus be seen that there is herein described a device in which the several features of this invention are embodied, and which device

in its action attains the various objects of the invention and is well suited to meet the requirements of practical use.

As many changes could be made in the above construction, and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A safety razor comprising a pair of cutting edges, a holder for supporting the same in effective closely continuous and parallel relation, said holder including passageways through the holder from each cutting edge for escape of the hair treating medium from therebetween.

2. A safety razor including a handle, a primary cutting edge support, a secondary cutting edge support parallel and in contiguity thereto, means for retaining a pair of cutting edges against and on the upper side of said supports, each of said supports having an open passage transversely thereof for escape of the hair treating medium to the underside of the said supports.

3. A razor comprising a handle, a pair of blade edges and means for retaining said edges for simultaneous use in parallelism to each other for simultaneous use, and with the advance edge directed at a more acute angle with respect to the plane connecting said edges, than the trailing blade.

4. As an article of manufacture a razor blade having for simultaneous use a primary cutting edge and a secondary similarly directed cutting edge substantially parallel to said primary edge and between the lateral edges of the blade.

5. A safety razor blade comprising a thin steel wafer having a pair of lateral cutting edges, reversely facing tongues slit in said wafer and presenting secondary cutting edges parallel to the respective cutting edges of the blade and of nearly the length of said blade.

6. A razor unit including a pair of cutting edges for simultaneous use, said razor comprising a pair of distinct blade elements including an inner and an outer blade, the latter extending as a frame about the lateral and cutting edges of the former connected thereto, and means remote from the cutting edges for retaining the two blades in assembled position.

7. A safety razor comprising a handle, a head having a primary guard and a secondary guard, each having drain passages transversely therethrough, a removable blade having a primary cutting edge and a secondary cutting edge parallel thereto for coaction with said respective guards, and means retaining said blades in position, said razor having parts for retaining said secondary edge deflected out of the general plane of the blade.

8. A split razor blade including a primary cutting edge, a stiffening back at the opposite edge and a secondary cutting edge parallel to said primary edge and struck out of the material of the blade.

9. A safety razor comprising a handle, a head having a guard at one edge thereof, stop means on said guard for positioning the primary edge of a compound cutting blade, an upstanding ledge in said head for deflecting the secondary cutting edge out of the plane of the blade and a pivoted

clamping plate for concurrently pressing the primary and the secondary edges against the corresponding parts of the holder.

10. A safety razor comprising a handle, and
5 a blade holder affording means for supporting a pair of cutting edges in contiguous parallel relation, said holder affording an open passageway between said cutting edges from one to the other, to prevent clogging with the hair treating
10 medium.

11. A safety razor comprising a handle and a pair of relatively movable widths of blade, said razor having a blade holder retaining said widths with their cutting edges in parallelism to each other for simultaneous use of the cutting edges
15 thereof, the advance blade width extending with respect to the plane connecting said edges at an angle more acute than the trailing blade width.

12. A thin steel razor blade having a lateral cutting edge and a tongue slit from the material of the blade, said tongue presenting a cutting edge parallel to said first cutting edge.

13. A safety razor blade of thin flexible steel having a lateral primary cutting edge and a tongue slit therein, presenting a secondary cutting edge parallel and contiguous to said primary edge, said tongue being flexible to permit deflection of said secondary edge out of the plane of said blade.

14. A safety razor comprising a handle and a head having a primary blade support and a secondary blade support, a removable flexible blade presenting a pair of contiguous cutting edges in a common plane and a compound blade clamping member for relatively deflecting said cutting edges, for coaction with the respective supports.

15. A safety razor for a split blade of the type having a pair of contiguous cutting edges, said razor comprising a handle, a head including a blade holder and a blade clamp, said holder and clamp including parts for deflecting the cutting edges of the split blade to be in different planes, and for retaining said cutting edges in effective position.

16. A razor comprising a holder, a head thereon, said head including a pair of lateral primary guards, a pair of lateral secondary guards unitary therewith and parallel thereto, the primary guards extending beyond and along a curve of greater convexity than the secondary guards, and a compound blade clamping member having parts coacting with the respective guards for clamping a double-edged split blade in effective position.

17. A safety razor comprising a handle, a head, a guard at one edge of the head, a split blade, stops retaining the cutting edge of said blade with respect to said guard, a stop for deflecting the secondary edge of the split blade out of the plane of said blade and a retainer for clamping the two cutting edges in position.

18. A safety razor for a split blade of the type having a pair of contiguous cutting edges, said razor comprising a handle, a head having a lateral guard, a secondary guard unitary therewith and parallel thereto, a unitary compound blade clamping member having an outer edge coacting with the outer guard to clamp the primary blade edge thereagainst and an inner portion coacting with the inner guard to clamp the secondary blade edge thereagainst.

19. Means for sharpening or stropping a split razor blade of the type comprising an extreme edge and an edge parallel thereto on the end of a cutout tab, said means comprising a clamp for

retaining the tab in rigid position and leaving free for deflection, the outer frame portion carrying the primary edge.

20. A razor unit including a pair of cutting edges for simultaneous use, said razor comprising a pair of distinct blade elements including an inner and an outer blade, the latter extending as a frame about the lateral and cutting edges of the former, and a frame clamping the edges of the two blades opposite the cutting edge in fixed position as a unitary assembly.

21. A razor having a blade of the split type comprising an inner and an outer blade, the latter extending as a frame about the lateral and cutting edges of the former, a common pivot support for the two blades at the edge thereof opposite the cutting edges, a razor head for retaining said composite blade in position, said head comprising a shiftable stop for retaining the outer cutting edge and a shiftable stop for deflecting and retaining the inner of the cutting blades out of the plane of the outer blade.

22. A razor blade having slits transverse to a cutting edge and spaced from the corners of the blade, the portion of the blade containing said cutting edge being intermediate said slits and flush with the surface of the blade.

23. A razor blade having slits at right angles to a cutting edge and spaced from the corners of the blade, the portion of the blade containing said cutting edge being intermediate said slits and flush with the surface of the blade.

24. A razor blade having one or more cutting edges and a pair of slits transverse to each cutting edge and spaced from the corners of the blade, the portions of the blade containing said cutting edge or edges being intermediate the slits corresponding thereto and flush with the surface of the blade.

25. An oblong razor blade adapted to be flexed about its longitudinal axis and having transverse slits near its longitudinal ends and a cutting edge intermediate said slits, the portion of the blade containing said cutting edge being flush with the surface of the blade.

26. The process of preparing a cutting edge of a plane razor blade made of sheet steel intermediate slits therein, which consists in flexing relatively to one another the blade portion intermediate said slits and the portion external thereto, applying sharpening operations to an edge of said intermediate blade portion, and letting said intermediate portion return to its normal position in the plane defined by said blade.

27. A guarded safety razor blade comprising a single sheet of flexible metal, a slot there-through longitudinally of the blade and so spaced from an edge thereof as to form a metal strip outside the slot, and the ends of the slot extending angularly inward of the blade in a manner rendering the said strip laterally resilient relative to the body portion of the blade, the long edge of the body portion of the blade formed by the slot being sharpened and the said strip being normally in the plane of the blade whereby to protect the sharpened edge.

28. As a new article of manufacture, a flexible wafer type razor blade of generally oblong shape having a generally U-shaped slot therein, the legs of said slot extending transversely of the blade near the ends of the latter and the intermediate portion of said slot extending longitudinally of the blade, that portion of the blade which defines the inner wall of the intermediate portion of said slot being sharpened to af-

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ford a cutting edge, the legs of the slot being sufficiently long to permit flexing of the sharp edged strip of material between them out of the plane of the blade.

- 5 29. A flexible wafer type blade apertured in the region of its longitudinal median line to receive centering devices, said blade having longitudinally extending slots spaced inwardly from the sides thereof and having transverse slots communicating with the ends of said first mentioned slots and extending inwardly therefrom and terminating short of said longitudinal median line, said longitudinal and transverse slots cooperating to define blade sections flexibly displaceable from the plane of the blade, those portions of the blade which define the inner walls of the longitudinal slots being sharpened to afford cutting edges.

30. A flexible razor blade including a sharp edged cutting section disposed wholly within the confines of the periphery of the blade and spaced from all of the edges of the blade and displaceable by flexing from the plane of the blade to present said cutting edge in operative cutting position.

31. A flexible wafer type blade having a cutting edge and a pair of slits transverse of said cutting edge and spaced from the ends of the blade, the portion of the blade containing said cutting edge lying between the slits and being capable of flexing independently of the blade portions from which it is separated by said slits.

32. A safety blade for razors comprising a flat blank provided with a longitudinal slot adja-

cent to one edge and having inturned ends which set off transversely extending tongues, the said tongues and the portion outside the slot forming a resilient guard, and the inner edge of the slot being sharpened.

33. A safety razor comprising a cap and a cooperating clamping member adapted to engage a flexible blade between them, and a blade having a cutting edge and a resilient guard lying normally in the plane thereof, the cap being shaped to displace the guard laterally with respect to said cutting edge when the blade is clamped in shaving position.

34. A safety razor comprising a guard plate, a slotted cap therefor, a handle securing the cap to the guard plate, a blade provided with a plurality of shaving edges and disposed between the cap and guard plate in a manner whereby some of said edges extend from between the longitudinal edges of the cap and guard plate while the remaining edges extend through the slots.

35. A safety razor comprising a guard plate, a cap for said guard plate and being provided with longitudinally arranged slots, a handle for securing the cap to the guard plate, a blade detachably disposed between the cap and guard plate and being provided with a plurality of cutting edges, said guard plate and cap being shaped to dispose the cutting edges in superimposed pairs, the lower edges being straight and extending from between the cap and guard plate, and the upper edges extending through the slots.

EDWARD J. GRAY.

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