

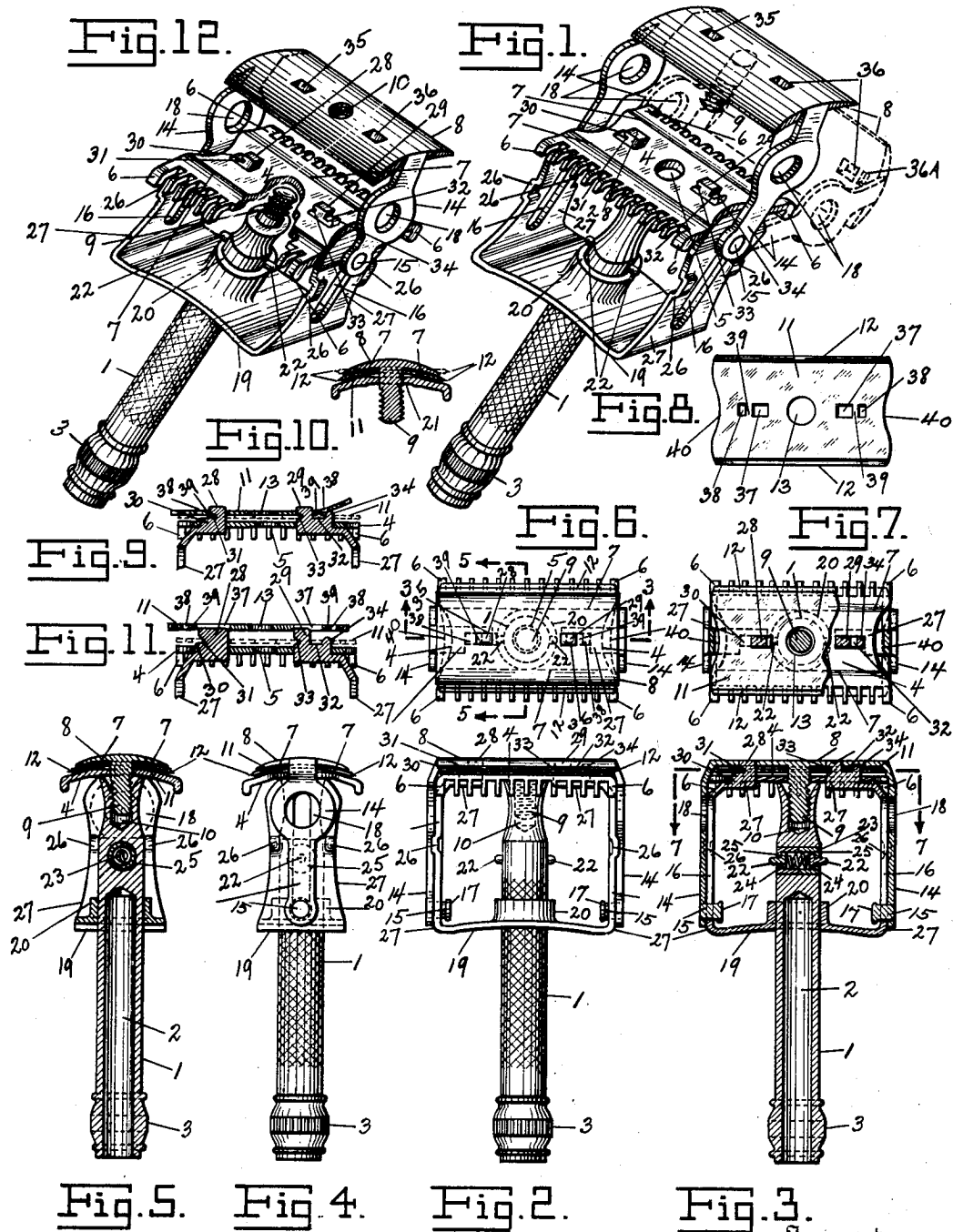
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SAFETY RAZOR

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SAFETY RAZOR

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My invention relates to the type of safety razors commonly known as the Gillette, employing a guard, backing and a flexible blade of two opposite cutting edges clamped between the guard and backing through the means of a handle and attendant parts tightened by screw operation.

The principal objects of my invention are: first, to have these various parts of the holder in one unit to avoid assembly for shaving purpose, with provisions at the same time for disassociating the handle for packing purpose; secondly, to provide for the binding of the blade to the guard member, irrespective of the clamping arrangements for shaving purpose, in such way as to permit the cleansing of every part of the holder and blade without removal of the latter, and keeping the blade at the same time positioned in operative co-relation for such clamping purpose; thirdly, to provide a blade that will afford greater safety in the handling of the same, and also such improved means for increasing the flexibility thereof as will at the same time not permit the blade to be distorted out of its perfect flatness, and the configuration of which blade for the aforementioned benefits shall also at one and the same time have a distinct functional relation in binding the blade to reciprocal parts in the guard member to bring about the resultant benefits mentioned; and fourthly, to provide a safety razor the top of which on a level with the clamped blade therein shall have nothing protruding beyond a line at right angles to the ends of the cutting edges of the blade, and neither shall any portion of the ends of said blade protrude beyond said line, so as to permit shaving in close quarters and the full advantage of the extreme ends of said cutting edges. Further benefits of my invention and details of improvement will be set forth as this specification proceeds. It will be understood, however, that the invention is not limited to this particular disclosure, but is susceptible of many changes and modifications, and I would further have it known that the claims are not limited to the forms shown and described, and that the terms of the claims are terms of description rather than of limitation except as may be required by the state of the art.

For a more particular description of my invention, reference is to be had to the accompanying drawing, forming a part hereof, in which

Fig. 1 is a view of the entire holder in perspective, with the comprising parts in unclamped position, and showing through broken lines the relative movement of the backing 8 to one of the two

optional sides to uncover the guard for insertion and removal of the blade.

Fig. 2 is a side elevation of the holder with the blade fully clamped therein ready for shaving purpose.

Fig. 3 is a longitudinal sectional view along the line 3—3 of Fig. 6 looking in the direction of the arrows.

Fig. 4 is an end elevation of the holder with the blade fully clamped therein ready for shaving purpose.

Fig. 5 is a cross sectional view along the line 5—5 of Fig. 6 looking in the direction of the arrows.

Fig. 6 is a top view of the holder with the blade fully clamped therein ready for shaving purpose.

Fig. 7 is a sectional view along the line 7—7 of Fig. 3, with portion of the blade cut away to reveal the structure underneath.

Fig. 8 is a plan view of the blade.

Fig. 9 is an explanatory view in section illustrating the insertion of the blade shown in Fig. 8 on the mounts 28 and 29 and showing utilization of the springy action and tension of the blade in checking it about the hump 34.

Fig. 10 is an explanatory view in section illustrating the alternate levels taken by the blade with reference to the guard 4 when clamped and unclamped though remaining in both instances bound to the mounts 28 and 29.

Fig. 11 is an explanatory view in section showing the function of binding the blade on to the mounts 28 and 29 by resort only to apertures 37 for that purpose, with consequent elongation of such apertures 37 and of the mount 28 to conform therewith, and also the shifting endwise of the apertures 38, it being understood that the aperture 35 in the backing 8 will be proportionately lengthened to admit this modified mount 28.

Fig. 12 is another view of the entire holder in perspective, with part of the guard member broken away to reveal the modification therein of clamping the parts in the reverse way, that is having the threaded stem fixed to the handle and the reciprocally threaded hole located in the backing 8, and also with consequent shortening of the body 19 and the arms 14 and portions thereof.

Throughout the drawing, similar reference characters indicate similar parts.

The safety razor herewith shown has the handle 1 with the longitudinally hollow center 2 and the knob 3, the guard 4 with the centrally disposed hole 5, and which guard has the customary

opposite rows of teeth terminating in the end teeth 6, the said rows of teeth being located externally of and parallel with the bevels 7, the said bevels sloping down toward said teeth from the central flat portion of said guard 4 as shown. In addition, there is the backing 8, and by which and the aforementioned guard and handle, and also through the medium of the screw 9 operating in the internally threaded hole or hollow 10, the flexible blade 11 is releasably clamped together for shaving purpose. The said blade has the two opposite cutting edges 12 and the centrally disposed hole 13 adapted to allow the screw 9 to pass therethrough in such clamping operation. These aforementioned parts, except for the modifications shown, are those usually employed in the type of razors aforementioned. The particular improvements herewith embrace substantially all that follows. The backing 3 has the uniform sidearms 14, near the free ends of which are the uniform pivots 15 operating snugly in the uniform slots 16, the free ends of which pivots located internally of said slots have the uniform heads 17 of greater diameter than the width of said slots to help maintain said arms in constant alignment for the functions intended and against lateral spreading. The said arms have the uniform holes 18 for finger rests in manipulating the same. Fixed to the guard 4, by means as will later appear, is the body 19 having a centrally disposed bushing 20, and through which bushing the handle 1 operates and is kept in alignment for clamping purpose, such alignment also being assisted by the circular groove 21 as shown in Fig. 10 in which the upper end of the handle 1 revolves. The said handle is prevented from downward escape from said bushing through the medium of the uniform pins 22 located at right angles to said handle and urged laterally and outwardly to their limit by the coil spring 23 pressing against the uniform flat pin heads 24, and which spring and pins are encased in the uniform housings 25 placed back to back and tightly positioned in a corresponding aperture transversely of said handle, the fronts of said housings being flush with the external surface of said handle. The body 19 has the drawn-out uniform stops 26 positioned on the same level on the sidewalls 27 of said body, and which stops limit the distance of travel of the backing 8 and attendant parts when the holder is unclamped and placed in position for insertion or taking away of the blade, the predetermined distance however being such as to allow a perfect clearance and no more than what is absolutely necessary for such blade manipulation and positioning, as shown by the broken lines in Fig. 1, it being apparent also that said backing and attendant parts can be swung also to the opposite side of said broken lines for the same purpose and exactly with the same results, the arrangements in this respect being symmetrical.

The method of fixing the body 19 to the guard 4 is accomplished through bending the upper parts of the sidewalls 27 as shown in Fig. 3, the first bend on each of said walls being inwardly at an angle of about 45 degrees, followed by a portion of each of them at right angles to the longitudinal position of said sidewalls and parallel and in contact with the under surface of the guard 4, and followed by about one-half of said last mentioned right-angled portions measured transversely being bent up longitudinally at right angles to said guard 4, such terminals being then tightly jammed through the corresponding aper-

tures in said guard, as shown in Figures 6 and 7, resulting as can be seen in the protruding non-circular mounts 28 and 29 on top of said guard and along the line of its longitudinal center. It is obvious, of course, that the fixing of the body 19 to the guard 4, and the resultant fixing of the mounts 28 and 29 can be accomplished one independently of the other, through well known variable means of securing structures one to the other. These mounts 28 and 29 serve as receptive means for inserting the blade 11 in position ready to be clamped for shaving purpose, and in their contour contain novel means in operative correlation with blade 11 for withdrawably binding the blade to them to bring about particular benefits in the use of the holder and blade. Such novel means consist of an offset 30 frontward of the slot 31 in the mount 28, and an offset 32 rearward of the slot 33 in the peg 29. These slots 31 and 33 are uniform in every dimension, said slots also being on an equal plane above the upper surface of the guard 4 and substantially touching the under surface of the backing 8 when the latter is in clamped position as shown in Figures 2 and 3. The opening in said slots is appreciably wider than the thickness of the blade to allow the necessary play for curvature of the blade when brought to clamped position, although the amount of curvature in the short space traversed by the blade at the position of the mounts 28 and 29 is negligible. At the respective mouths of these slots 31 and 33 the upper jaws are substantially beveled as is shown in Figures 9 and 11 to permit easy insertion and release of the blade. The offset 32 has the hump 34, the top of which is midway approximately between the top of the mount 29 and the slot 33 therein, and in the backing 8 are the corresponding apertures 35 and 36 and the groove 36A adapted to receive respectively the upper portions of said mounts 28 and 29 and the said hump 34 when said backing is brought into clamped position, except that when used in connection with the elongated mount 28 shown in the modification in Fig. 11, the aperture 35 will be of corresponding length. As can be seen from the Figures 2 and 3, when my device is in clamped position, the tops of these mounts will be flush with and at least not beyond the upper surface of the backing 8 so as to have nothing protrude against the face when shaving.

As a means of releasably binding the blade 11 to the mounts 28 and 29, and incidentally to carry out at the same time a certain improvement with regard to flexibility of the blade, the said blade is provided with the non-circular apertures 37 and 38, the former being longer than the latter, and which apertures with respect to those shown in Figures 8 and 9 are all functionally related to binding the blade on the mounts 28 and 29 shown in Fig. 9. In Fig. 11 merely the elongated apertures 37 are employed to bind the blade on to the mounts 28 and 29 shown in that figure, the shorter apertures 38 therein serving only toward the flexibility of the blade. It is to be noted that these non-circular apertures in the blade are of predetermined dimensions and spaced in a predetermined way with respect to each other with distinct relation to the novel function and resultant benefits of releasably binding the blade on the mounts as aforementioned. While these longitudinal apertures or cutaways in the blade also increase the flexibility thereof transversely, the intermittent closures 39 help to keep the blade perfectly flat, that is from part thereof getting out of level with the other part due to sagging

caused by physical pressure against either side of said cutaways and which sagging is unavoidable where a continuous cutaway exists. The said improved blade also has the ends 40 which are concaved in unbroken line at and near its longitudinal center, merging into a partly convexed shape toward each of the two cutting edges 12 as shown in Fig. 8, the length of the blade being such that its concaved ends will reach beyond the concaved ends of the guard 4 when properly positioned for clamping purpose so as to facilitate the placing and picking up of said blade on and off said guard and afford a non-dangerous position for gripping said blade in said manipulations. In addition, the concaved ends of said blade, when the latter is properly positioned for clamping, permit the upper part of the sidearms 14 above the holes 19 to slantingly connect and be flush with the ends of the backing 8, so that with all parts, including the blade, in clamped position, there will be at the top level about the blade nothing protruding outwardly beyond the end guard teeth 6 where the cutting edges 12 terminate, giving the user the freedom of employing the remote ends of the cutting edges of the blade where necessary in close quarters on the face without any physical obstruction either from the blade or the holder.

Operation

Assuming that the holder is in a clamped position without any blade therein, the user turns the handle 1 to the left until the backing 8 is disengaged therefrom. He then lifts the said backing upwards initially in a longitudinal direction, resting the fingers doing such lifting with the tips thereof in the holes 18, until the pivots 15 prevent further movement in such upward direction by contact with the upper edges of the slots 16, at which time the backing 8 may be swung to either side of the guard 4, one of such sides being shown by the broken lines in Fig. 1, until the further angular movement of said backing is prevented by the sidearms 14 engaging the stops 26. The backing 8 is then left at rest in such last named position, and which in turn leave the guard 4 wholly unencumbered with respect to manually placing a blade on same for shaving purpose. The user then picks up the novel blade herewith disclosed for use in this holder, gripping the same with the fingers employed resting in the concaved ends 40 bridge-like between both of said ends. He then places the blade on the mounts 28 and 29 by first having the same come through the non-circular apertures 37. In this first position of adjustment, one end of the blade rests on the upper surface of the offset 30, while the other end rests on a somewhat higher level on top of the hump 34 but below the level of the top surface of the mount 29. In this position the entire blade is completely below the level of the top surfaces of the mounts 28 and 29 and is kept from assuming a horizontal position resting on the top surface of the offset 30 by a portion of the blade externally of the aperture 38 as is shown in Fig. 9, or by the portion 39 as is shown in Fig. 11, resting on the top of the hump 34. All that is then required is to slide the blade in a longitudinal direction toward the inner ends of the slots 31 and 33, and along with this movement the top bevels of the mounts 28 and 29, and especially of the latter mount, will cause the blade to be depressed at the end portion near the mount 29 to bring the blade resting on the top surface of the offset 30, such depression being facilitated by

the springy action of the blade and continuing against the tension of said blade until either the aperture 38 as shown in Figure 9, or the aperture 37 as shown in Figure 10, rides clear over the hump 34 and the blade then snaps down at that location to the top surface of the offset 32 and which is on an equal plane with the top surface of the offset 30 and thus giving the blade a horizontal position parallel with the guard 4. The depression of the blade, brought about as aforementioned, could also be facilitated by the user very lightly pressing against the upper surface of the blade about midway between the central hole 13 and the aperture 37, at the same time sliding the blade into the slots as aforementioned. In this second position of adjustment the blade is actually bound in the mounts 28 and 29 and kept in perfect alignment and unmovable therefrom for the clamping to follow for shaving purpose. This immobility of the blade can be seen from the circumstance that the hump 34 does not allow any lateral movement in the direction of emergence from the slots 31 and 33, neither of course can any opposite lateral movement be had because of the fact that the end edges on one side of the apertures 37 are in contact with the structure at the end of each of said slots, neither can any movement in a transverse direction be had because of the snug fitting of the apertures 37 on the mounts 28 and 29, neither can any downward movement be had because of the blade resting on the elevated table of equal level provided by the said mounts and their surrounding structure, and neither can any upward movement be had because of the locking of said blade in said slots assisted by utilizing the springy action and tension of said blade in checking it about the hump 34 as indicated; the only freedom being the slight play in said slots in an up and down direction for the purpose aforementioned and which incidentally allows for thorough cleansing. After the blade is thus bound, the user returns the backing 8 to the original position by simply reversing the process of unclamping as aforementioned. As the backing 8 sets down on the blade the upper parts of the mounts 28 and 29 above the slots 31 and 33 respectively pass through the apertures 35 and 36 and with the subsequent tightening in the usual way by engagement between the screw 8 and the threaded portion 10, the blade 11 is transversely convexed against the under surface of the backing 8, the limit of curvature of this last position of the blade being when the same is pressed against the inner edges of the bevels 7 by the backing 8. In this convexed position of the blade, the offsets 30 and 32 as well as the slots 31 and 33 permit the blade to attain the proper height of arc at the longitudinal center and without in any wise interfering with the clamping operation. The blade is thus properly clamped for shaving purpose.

After the shaving has been accomplished the unclamping is had in the way aforescribed. With the blade optionally remaining in bound position on said mounts, all accumulations of soap and other substances about the holder and blade may be removed by any appreciable force of water directed thereon, and so also may all these parts stand a brisk shaking for drying purpose and otherwise, the tension of the blade being amply sufficient to keep it in place. The blade, of course, is especially of non-rust material, need never be removed until it is too dull for shaving purpose. Whenever it is desired to

remove the blade, all that is necessary is to pick up the end nearer to the hump 34 a sufficient height for bringing it over the top of said hump, and then slide the blade out of the slots 31 and 33, after which the blade is picked upwards out of the mounts 28 and 29. In these sliding operations of the blade the concaved ends 40 are of material benefit against non-slipping of the blade while being thus fingered. It is to be noted that the apertures 37 and 38 in the blade as shown in Figure 8 are of respective lengths reduced to a minimum in their functional cooperation with the mounts 28 and 29 as shown in all the figures except Figure 11. It is also to be noted that the blade is reversible and it is immaterial which end is closer to either of said mounts, thus relieving the user of unnecessary fumbling or attention to the blade proper.

In presenting the modified holder as shown in Figure 12, attention is called to the benefit that may be derived through reversing the screw arrangement for clamping the blade, the parts here being in all respects common to the parts shown in Figure 1. By having the screw stem 9 in connection with the handle 1 instead of on the backing 8, there is not so much clearance necessary to revolve the backing so as to properly uncover the guard 4 for insertion of the blade, hence the sidearms 14 may be shorter and accordingly the body 19 and attendant parts shorter. It is to be noted that this screw stem on the handle, when the parts are fully clamped, will not reach beyond the upper surface of the backing 8.

In order to reduce the size of the holder for packing purpose, by pressing the pins 22 inwardly against the tension of the spring 23, they may be brought flush with the external surface of the handle 1 and thereby the said handle may be slid through the bushing 20 and laid aside as an independent part, reinsertible in a way that is quite apparent. While these pins are shown as a means of keeping the handle in place, it is obvious that any other transversely placed removable obstruction will suffice.

A particular benefit in my device lies in the screw stem 9 being safeguarded from any damage due to its suspension from contact with any object except when in proper mesh with the reciprocal part. Another benefit is that the clamping parts of the holder are engaged and disengaged forthwith automatically with precision. A still further benefit is had in the user being able to conveniently steady the holder in his hand while shaving by allowing some of his fingers to rest along the external concaved edges of the sidearms 27 or the floor of the body 19, the said floor also being longitudinally convexed for the same convenience, these different shapes also preventing the fingers from slipping.

While I have shown and described one embodiment of my invention, it is obvious that it is not restricted thereto, but is broad enough to cover all structures that come within the scope of the annexed claims.

Having described my invention, what I claim is:

1. An all-flat flexible razor blade of two opposite cutting edges having a centrally disposed aperture and a horizontally aligned uniform set of two rectangular apertures of equal width and varied lengths located in opposite directions and equally spaced from said central aperture and from each of said cutting edges for receiving in reversible position predetermined projections of

hooks and other structure of a plan shape substantially complementary thereto as and when said blade is operatively mounted thereon and thereupon causing said blade upon longitudinal movement thereof to be secured to said projections by utilization at the same time of the flexibility of the blade, the disposition of said apertures on said blade at the same time increasing the normal flexibility thereof for convexing purpose off the entire longitudinal center while at the same time constantly maintaining each longitudinal half of said blade on equal plane.

2. In a safety razor, the combination with a flexible 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, with attendant means for clamping said blade for shaving purpose, the said blade having two opposite cutting edges and two opposite ends whose edges are unbrokenly concaved at and near its longitudinal center, such concaved edges merging in two opposite directions into partly convexed edges reaching the ends of said cutting edges, reciprocal means in said blade and guard for withdrawably securing the former on to the latter on a primary level above the upper surface of said guard in position ready for such clamping, the various parts aforementioned being so disposed that when such clamping is had the blade will assume a transversely convexed position reaching about its cutting edges the contiguous surface of said guard and that as said clamping is released the blade will yield back to its primary level.

3. In a safety razor, the combination with a flexible 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, with connecting means for maintaining said comprising means operatively joined each to the other and as one unit, and with attendant means in said holder for clamping said blade for shaving purpose, the said blade having two opposite cutting edges and two opposite ends whose edges are unbrokenly concaved at and near its longitudinal center, such concaved edges merging in two opposite directions into partly convexed edges reaching the ends of said cutting edges, reciprocal means in said blade and guard for withdrawably securing the former on to the latter on a primary level above the upper surface of said guard in position ready for such clamping, the various parts aforementioned being so disposed that when such clamping is had the blade will assume a transversely convexed position reaching about its cutting edges the contiguous surface of said guard and that as said clamping is released the blade will yield back to its primary level, and being also so disposed that when such clamping is had none of the various parts then on a level with said blade will protrude beyond a line coincident with the extreme ends of said blade and neither will any portion of the ends of said blade protrude beyond the various parts last described, and spring urged projections existing laterally in opposite directions on said handle for replacing withdrawably the latter from the rest of said holder.

4. A safety razor having in its construction a handle, guard and backing, together with an all-flat flexible blade of two opposite cutting edges, with attendant means for clamping the latter between said guard and backing in position for shaving purpose, the said guard having on the upper face thereof along its longitudinal

center two fixed projections of a hook-like design facing in the same direction, the hind portion of the rear hook being greater in height than the uniform level of the under surface of said hooks, complementary apertures symmetrically disposed along the longitudinal center of said blade whereby with the utilization of the resiliency and tension of said blade the latter may, in an interchangeable position, be withdrawably secured on to said projections in position ready for such clamping.

5. A safety razor comprising a handle, guard and backing together with an all-flat flexible blade with attendant means for clamping the latter between said guard and backing in position for shaving purpose, hook-like projections fixed to said guard in combination with a peg similarly stationed and reaching a plane above the under-surface of said hooks co-operating with complementary apertures existing in said blade, so relatively spaced and designed whereby, with the utilization of the resiliency and tension of substantially the full blade relative to its flatness, the

latter may be withdrawably pegged as to said projections, and while so pegged free to travel thereon perpendicularly to and from the under-surface of said hooks but not laterally and always in registered position for such clamping.

6. A safety razor comprising a handle, guard and backing with attendant means adapted to clamp an all-flat flexible blade in between said guard and backing in position for shaving purpose, hook-like projections fixed to said guard in combination with a peg similarly stationed and reaching a plane above the under-surface of said hooks adapted to co-operate with complemental apertures in said blade so relatively spaced and designed whereby, with the utilization of the resiliency and tension of substantially the full blade relative to its flatness, the latter may be withdrawably pegged as to said projections, and while so pegged free to travel thereon perpendicularly to and from the under-surface of said hooks but not laterally and always in registered position for such clamping.

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