Jan. 22, 1935. C. E. BEARDSLEY 1,988,474

SHARPENING DEVICE FOR SAFETY RAZOR BLADES

Filed March 24, 1934

Fig. 1

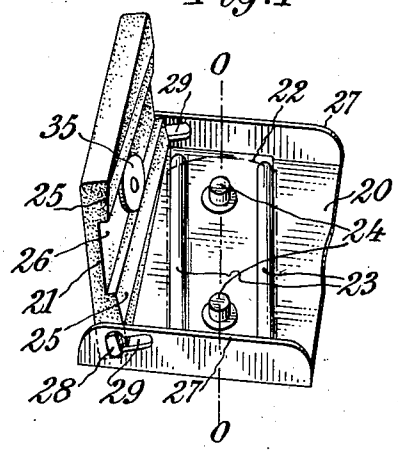


Fig. 2.

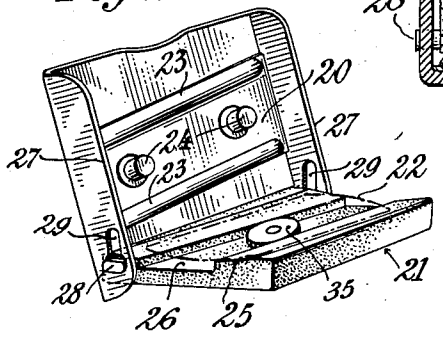


Fig. 3.

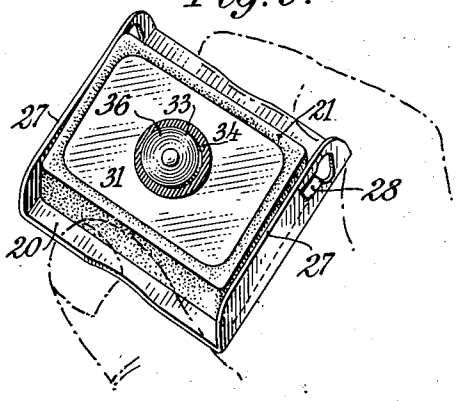


Fig. 4.

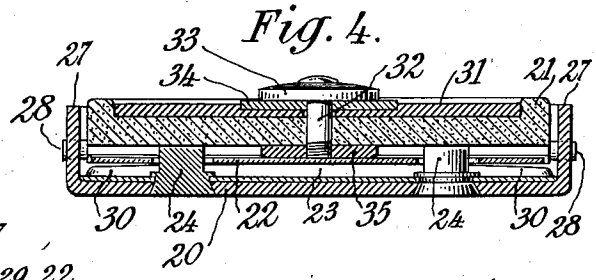
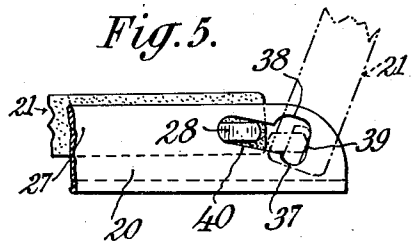


Fig. 5.



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SHARPENING DEVICE FOR SAFETY RAZOR BLADES

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Application March 24, 1934, Serial No. 717,162

14 Claims. (Cl. 51—57)

This invention relates to improvements in sharpening devices for safety razor blades and similar edged tools, and is in the nature of a modification and development of the invention disclosed and claimed in my prior application, Serial No. 639,537, filed October 26, 1932.

The present invention relates in general to a sharpening device comprising a blade-holder and a sharpening tool between which a blade to be sharpened may be interposed. The holder should be provided with suitable means to serve as a rest for the blade and with means whereby the blade may be held in a definite position on the holder. The sharpening tool should have abrasive portions adapted to lie along the marginal portions of the blade, and such portions should be inclined with respect to the surface of the blade at acute angles appropriate for sharpening purposes.

The tool and holder should be provided with mutually interengaging portions adapted to limit the movement of the holder along the surface of an interposed blade in every direction while permitting a sufficient amount of such movement in any desired direction to effect a satisfactory conditioning of the edges of the blade.

The relations of the parts of the sharpening device should be such that the tool may be readily moved in a direction such as to have a material crosswise component of movement over the edges of the blade, but, if desired, the movement-limiting means may be such as to permit a sharpening movement of the tool over the surface of the blade in any direction including a direction lengthwise of the blade.

The tool and holder may, if desired, be connected together in such manner that they may not be detached one from the other, but the connection should be such that they may be readily separated to an extent such as to facilitate the positioning of a blade in the holder and the removal of the blade from the holder after it has been sharpened. The connection should also be such as to permit the tool to at all times assume a position such that it will make contact with the edges of an inserted blade from end to end. This may most readily be accomplished by making either the tool or the holder of a weight such that, when the sharpener is positioned with that part uppermost, force of gravity alone may be relied upon to produce a satisfactory degree of sharpening pressure between the tool and the blade. The upper part of the sharpening device which thus merely rests upon the blade, which is in turn supported by the other part of the sharpening device, may freely move in any direction along the surface of the blade, and such movement may include a slight rocking movement determined by the zones of contact between the inclined surfaces of the tool and the marginal portions of the blade. It is of no material importance which element of the sharpener is designed to be uppermost. What is of importance is that the lowermost element be of a form such that it may be vibrated when held by the user in order to reciprocate the upper element and thus produce the sharpening movement between the two elements without interfering with the desired amplitude of relative movement between the parts.

The device may be used in sharpening blades having either one edge or two edges. The sharpening tool may be constructed entirely of abrasive material. If used to sharpen a two-edged blade, at least the two inclined surfaces which move over the edges of the blade must be of abrasive material. If used to sharpen a single-edged blade, it is sufficient that the portion of the tool which contacts with the edge to be sharpened be of abrasive material.

It is an object of the invention to provide a sharpener of the above-described character of which the part of the holder which serves as a blade rest is slightly crowned from end to end instead of being perfectly level so that the end portions of the edges of the blade may yield slightly when subjected to the sharpening pressure of the sharpening tool.

It is a further object of the invention to provide a blade sharpener of the above-described character of which the portion of the sharpening tool which faces the central portion of the blade will be so positioned with respect to the surface of the blade during a sharpening operation as to oppose any undue bowing of the blade at its center which might be caused by the opposed forces exerted against the blade along its marginal portions by the blade-contacting portions of the holder and the portions of the tool which engage the edges of the blade.

The feature of crowning the part of the holder which serves as a blade rest and the feature of providing the tool with means for preventing the undue bowing of the blade at the center are of importance as improvements whether used independently of each other or in combination. It has been found, however, that the best results are attained if the sharpener is so constructed as to permit the end portions of the blade edges to

yield slightly while at the same time preventing undue bowing of the blade at the center.

It is a still further object of the invention to provide the tool and holder with interengaging parts which will permit a limited degree of sharpening movement in every direction and which will also serve as a hinged attaching means adapted to allow one part to be swung with respect to the other part about one of its margins to an extent of approximately ninety degrees to facilitate the insertion and removal of a blade and to prevent further swinging movement of one part with respect to the other so as to hold one element of the sharpener in a position substantially at right angles to the other element during the insertion or removal of a blade.

In the accompanying drawing representing the invention in its preferred form,—

Figure 1 is a perspective view of the blade sharpener, the tool and holder being represented in their opened positions, an inserted blade being indicated in broken lines.

Fig. 2 is a view of the sharpener illustrated by Fig. 1, the sharpening tool, rather than the holder, being represented in a horizontal position.

Fig. 3 is a perspective view of the sharpening device illustrated by Figs. 1 and 2, the parts being represented as having been closed to the relative positions appropriate for sharpening purposes.

Fig. 4 is a large-scale, longitudinal, cross-sectional view of the sharpener illustrated by Figs. 1, 2 and 3.

Fig. 5 is a large-scale view of a portion of one end of the sharpener illustrated by Figs. 1 to 4, inclusive.

The preferred form of the invention illustrated by means of the above-described drawing may comprise a blade-holder 20 and a sharpening tool 21, between which may be inserted a blade 22 to be sharpened, the blade being represented in broken lines in Figs. 1 and 2 and in full lines in the cross-sectional view, Fig. 4.

As a means of spacing the edges of the blade from adjacent portions of the holder so that portions of the sharpening tool may move freely over its edges, a part of the holder which may comprise a single element or a number of elements may be raised above the general surface of the holder so as to provide a backing against which one surface of the blade may rest. As illustrated by Figs. 1, 2 and 4, an appropriate form of backing may comprise a pair of upstanding ribs 23 so positioned that their outer margins will be spaced inwardly from the adjacent edges of a blade seated on the rest.

Any appropriate blade-positioning means may be provided to hold a blade in a predetermined position over the backing means 23. Such blade-positioning means may comprise a pair of upstanding lugs 24 so located as to pass through spaced openings commonly provided in safety razor blades of forms well known in the prior art. The character of the blade-positioning means is not of importance. What is of consequence is that some means shall be provided to engage spaced parts of the blade when in the desired position on the blade-backing means and prevent it from sliding over the backing means during a sharpening operation.

The blade-sharpening element may comprise a slab of suitable abrasive material having portions 25 slightly inclined one relatively to the other so as to be disposed at acute sharpening angles with respect to the surface of the blade when in contact with its edges, and an intervening channeled portion 26 free from contact with the blade-positioning means.

Means should be provided for limiting the movement of the sharpening tool over the surface of the blade in all directions without preventing a sufficient degree of such movement to effect the desired sharpening. In the form of the invention herein illustrated movement of the tool with respect to the holder in one direction is limited by means of a pair of flanges 27 on one of said parts, the holder, between which the sharpening tool 21 may freely move. Movement of the sharpening tool in a direction perpendicular to the lengthwise direction of the flanges is dependent upon the difference between the length of the sharpening tool and the clear distance between the inner surfaces of the flanges. As a means of limiting movement of the sharpening tool in a direction parallel with the flanges, one of the elements of the sharpener, the tool, may be provided with a pair of outwardly-extending lugs 28 which may pass through a pair of slots 29 located in corresponding end portions of the flanges 27. These lug-and-slot connections may be relied upon to limit the extent of movement of the sharpening tool in a direction parallel with the flanges without in any manner interfering with its movement in a direction perpendicular to the flanges to the extent permitted by the flanges. The lengths of the lugs 28 may be such that they will not be withdrawn from either of the slots 29 during the movement of the sharpening tool in its direction perpendicular to the flanges, and may serve not only as a means of permanent connection between the tool and the holder and a means of limiting relative movement of said parts in a direction parallel with the flanges, but also as a hinge connection between said parts such as to permit one to be swung to a position substantially at right angles with respect to the other to facilitate the insertion or removal of a blade, as indicated in Figs. 1 and 2.

If desired, the blade-positioning elements 24 and the blade-backing ribs 23 may be symmetrically disposed with respect to an axis O—O, Fig. 1, slightly inclined as compared with the longitudinal edges of the holder, so that the tool may be given a sharpening movement which will have a predetermined lengthwise component and a predetermined longitudinal component with respect to the edges of the blade when vibrated in a direction parallel with the flanges of the holder. However, by making the tool of a length materially less than the distance between the inner surfaces of the flanges, as best indicated in Figs. 3 and 4, the tool may be vibrated in a direction parallel with the edges of the blade or at any desired angle with respect thereto.

It has been discovered that if the blade is seated against a backing means, all parts of which lie in the same plane when being sharpened by a tool having contact with its edges throughout their entire lengths, the edges are oversharpened along their end portions and undersharpened along their central portions. It is one of the important objects of this invention to correct this lack of uniformity as to the effectiveness of the sharpening device, and this has been accomplished by slightly crowning the blade-seating means, herein disclosed as the ribs 23, from end to end, as indicated to an exaggerated degree at 30, 30, Fig. 4. This crowning or rounding-off of the ribs 23 towards their ends permits the end portions of the edges of the blade to yield to a minute extent

when subjected to pressure by the sharpening tool, thus reducing the sharpening friction at the end portions of the blade edges, and correspondingly increasing the sharpening friction along the central portions of the blade edges, as a result of which the desired uniformity of sharpening from end to end of the edges of the blade is effected.

It has also been found that if the blade to be sharpened is relatively thin, the opposed forces set up by the pressure of the sharpening tool along the edges of the blade and the pressure of the blade-seating means along zones spaced inwardly from the edges may cause the blade to be bowed to an extent such as to reduce the sharpening angle between the surface of the blade and the contacting portions of the tool to an extent such as to be detrimental. It is an object of this invention to correct such a possible imperfection in the sharpener by so positioning a part of the tool adjacent the central portion of the blade that it will be engaged by the blade and oppose an undue extent of bowing of the same during the sharpening operation. In the form of the invention herein disclosed, the sharpening tool 21 is provided with an inset exterior strengthening plate 31 held in place by a fastening element comprising a shank 32 having a head 33 at one end, separated from the plate 31 by a washer 34, and a disk 35 at its other end, the surface of which is so positioned as to serve as the means to prevent the undue bowing of the blade. The head 33 and disk 35 may be secured to the ends of the shank 32 in any appropriate manner. The shank and one of said parts may be formed as a single integral structure, and the other part, herein shown as the disk 35, may be secured thereto by a threaded connection which, if desired, may also be riveted to prevent accidental separation.

The head 33 may be knurled as indicated at 36, or may be otherwise adapted for use as a thumb or finger hold by means of which the sharpening tool may be moved with respect to the holder. The head, shank and disk therefore serve a double function in that these intimately associated elements of the sharpener provide means for manipulating the sharpening tool and means for opposing undue bowing of a blade during a sharpening operation.

It is not essential that the disk 35 be so positioned as to prevent any bowing whatever of the blade by the tool. It should preferably permit the blade to be very slightly bowed in order that the disk may move along its curved surface during the rocking movement of the tool determined by the zones of contact between the edges of the blade and the overlying inclined portions of the tool.

As a means of preventing the opening of the sharpener without first moving the tool to a position such that the marginal portion which bears the lugs 28 may clear the blade, the lugs may be given a rectangular form in cross-section, as shown, and the major axis of each may be of a length greater than the width of the groove. The grooves 29 should be of lengths greater than the longest diameters of the lugs to an extent dependent upon the desired amount of crosswise sharpening movement. In order that the sharpener may be opened when the lugs have been moved to the ends of the slots nearest the ends of the flanges, the ends of the slots may be enlarged, as best indicated in Fig. 5. The enlargement 37 nearest the base of the flange need be only of a size such as to accommodate the end of the lug. The enlargement 38 at the side of the slot nearest the free edge of the flange should be of a size and form such as to permit the end of the lug directed away from the end of the flange to move freely as the lug is swung about the end which enters the enlargement 37 during the opening movement of the sharpener. Each of the above-described slots 29 may be aptly referred to as of the form of a boot. The part of the slot 39 representing the sole of the boot is disposed towards the end of the flange; the enlargement 37 corresponds with the part representing the toe of the boot; the part 38 corresponds with the part representative of the heel; and the narrow part of the slot 40 is the part which is represented by the leg of the boot.

In view of the rocking component of the movement of the tool over the blade in a crosswise direction due to the inclination of the sharpening surfaces of the tool, the slots should be inclined, as indicated in Fig. 5, in a manner which corresponds with the tilting of the leg of the boot representative of the slot upwardly towards the free edge of the flange, the entire boot being rotated slightly in a clockwise direction, as illustrated in Fig. 5, about the toe 37.

In order that the parts may be arrested after one has been moved to a position approximately at right angles to the other, and preferably to an extent slightly in excess of ninety degrees, as indicated in Figs. 1, 2 and 5, the longest dimension of the lug 28 should be slightly greater than the distance from the wall of the groove where it meets the surface of the enlargement 37 to the wall at the opposite enlargement 38, thus preventing rotation of the lug in a clockwise direction beyond the position indicated in Fig. 5. With the parts thus constructed, the sharpener may be held with either of its parts horizontal, as indicated in Figs. 1 and 2, and the other part will remain in its opened position during the insertion or removal of a blade. Due, however, to the size and form of the enlargment 38 of the groove, the parts may be readily closed so as to assume the relative positions indicated in Fig. 3.

A sharpener embodying the foregoing invention may be used to effect a conditioning of a blade corresponding with a simple stropping or a conditioning corresponding with what is known as honing. To use the sharpener as a stropping device the parts may be opened to the relative positions illustrated by Fig. 1, the blade seated on the backing means 23 in engagement with the positioning means 24, and the parts of the sharpener closed to the positions indicated in Fig. 3. The holder may then be vibrated for a few seconds between the thumb and fingers, as indicated by broken lines in Fig. 3, after which the sharpener may be inverted and then opened so that the parts will assume the relative positions indicated in Fig. 2, with the blade lying upon the sharpening tool as indicated in broken lines. When so positioned the blade may be readily lifted by grasping it at its ends between the thumb and finger, the holder turned to the position indicated in Fig. 1, and the blade dropped onto the backing means of the holder in engagement with the positioning elements 24. The sharpener may then be again closed and vibrated a few seconds after thus reversing the position of the blade in the sharpener. The sharpener may then again be inverted and opened to the position indicated in Fig. 2, from which the blade may be readily removed and inserted in the razor frame in readiness for use in shaving.

When a conditioning of the blade corresponding to a honing is to be effected, the procedure is exactly the same except that instead of merely vibrating the sharpener between the fingers and thumb of the hand, while leaving the upper element free and relying upon the force of gravity to supply the sharpening friction, the holder may be permitted to rest upon the fingers of the hand or upon any support and the sharpening tool moved back and forth in any desired direction while exerting a slight pressure by application of the thumb or finger to the knurled head 33. After thus honing the blade it may be given a final treatment corresponding with a stropping by again vibrating the sharpener a few seconds without applying additional pressure to the sharpening tool.

It is of no consequence which element of the blade sharpener is designed to be uppermost during the sharpening operation, subject to the condition that the element intended to be uppermost, the sharpening tool in the form herein disclosed, should be of sufficient weight to afford a satisfactory sharpening pressure for a conditioning corresponding with a stropping of the blade, and the further condition that the lowermost element, the holder in the form herein disclosed, be of a form such that it may be held during the vibration of the sharpener without interfering with the relative movement of the upper part.

The invention is not intended to be limited to the preferred form of the invention herein disclosed for purposes of illustration, but should be regarded as covering modifications and variations thereof within the scope of the appended claims.

What is claimed is:—

1. A safety razor blade sharpener comprising, in combination, a holder and a sharpening tool between which may be interposed a blade to be sharpened, the holder and tool having mutually interengaging portions so disposed as to limit the relative movements of the tool with respect to the holder along the surface of the blade in all directions, a limited relative movement of the tool and holder away from each other to an extent such as to separate one of said parts from the surface of an interposed blade being unrestricted otherwise than by force of gravity, and the weight of one of said parts being sufficient, when the sharpener is disposed with that part uppermost, to serve as a means of maintaining a satisfactory degree of sharpening pressure along the zones of contact between the tool and the margins of the blade, blade-positioning means comprising fixed parts of the holder to engage spaced parts of the blade and hold it in a predetermined position, and blade-backing means comprising a raised portion of the holder against which one surface of the positioned blade may rest, said backing means being very slightly crowned from end to end so as to permit the edges of the blade to yield to a trifling extent at their ends as the tool is moved over them, the outer margins of the backing means being spaced inwardly of the margins of the blade so as to hold them away from the adjacent parts of the holder, the portions of the tool facing and lying along the marginal portions of a positioned blade being inclined at acute sharpening angles with respect to the surface of the blade, the portion of the tool facing the central portion of the positioned blade being so disposed as to make contact with the adjacent surface of the blade and prevent it from being materially bowed upwardly at the center when pressed along its margins by the overlying portions of the tool, and the parts of the tool and holder being prevented from moving towards each other only by the interposed blade, whereby the tool may be reciprocated along the surface of the blade, the movement of the tool relative to the holder being a composite one having a material crosswise component and a rocking component determined as to direction and extent by the zones of contact between the margins of the blade and the adjacent surface portions of the tool and by the interengaging portions of the tool and holder.

2. A safety razor blade sharpener comprising, in combination, a holder and a sharpening tool between which may be interposed a blade to be sharpened, the holder and tool having mutually interengaging portions so disposed as to limit the relative movements of the tool with respect to the holder along the surface of the blade in all directions, blade-positioning means comprising fixed parts of the holder to engage spaced parts of the blade and hold it in a predetermined position, and blade-backing means comprising a raised portion of the holder against which one surface of the positioned blade may rest, the outer margins of the backing means being spaced inwardly of the margins of the blade so as to hold them away from the adjacent parts of the holder, the portions of the tool facing and lying along the marginal portions of a positioned blade being inclined at acute sharpening angles with respect to the surface of the blade, the portion of the tool facing the central portion of the positioned blade being so disposed as to make contact with the adjacent surface of the blade and prevent it from being materially bowed upwardly at the center when pressed along its margins by the overlying portions of the tool, and the parts of the tool and holder being prevented from moving towards each other only by the interposed blade, whereby the tool may be reciprocated along the surface of the blade to an extent dependent upon the limiting effect of the interengaging portions of the tool and holder, while the tool and holder are acted upon by opposed forces tending to move one towards the other.

3. A sharpener, as defined by claim 2, of which the interengaging portions of the tool and holder are so disposed as to permit the tool to move along the surface of the blade in a direction having a material crosswise component and a rocking component determined as to direction by the zones of contact between the margins of the blade and the adjacent surface portions of the tool.

4. A sharpener, as defined by claim 2, of which a relative movement of the tool and holder away from each other, to an extent such as to separate one of the said parts from the surface of an interposed blade, is not restricted otherwise than by force of gravity, and of which the weight of one of the said parts is sufficient, when the sharpener is positioned with that part uppermost, to serve as a means of maintaining a satisfactory degree of sharpening pressure along the zones of contact between the tool and the margins of the blade.

5. A sharpener, as defined by claim 2, of which the tool is provided with a structure consisting of a stem passed through its approximate center and having fixed enlargements at its opposite ends, the outer enlargement being of an appropriate character to serve as a finger-hold and the

inner enlargement being of a size and location such as to serve as the part of the tool which prevents any material upward bowing of a blade during a sharpening operation.

6. A sharpener, as defined by claim 2, of which the backing means with which the marginal portions of an interposed blade make contact when pressed by the tool during a sharpening operation is very slightly crowned from end to end so as to permit the edges of the blade to yield to a trifling extent at their ends as the tool is moved over them.

7. A safety razor blade sharpener comprising, in combination, a holder and a sharpening tool between which may be interposed a blade to be sharpened, the holder and tool having mutually interengaging portions so disposed as to limit the relative movements of the tool with respect to the holder along the surface of the blade in all directions, blade-positioning means comprising fixed parts of the holder to engage spaced parts of the blade and hold it in a predetermined position, and blade-backing means comprising a raised portion of the holder against which one surface of the positioned blade may rest, the outer margins of the backing means being spaced inwardly of the margins of the blade so as to hold them away from the adjacent parts of the holder, the portions of the tool facing and lying along the marginal portions of a positioned blade being inclined at acute sharpening angles with respect to the surface of the blade, the backing means with which the marginal portions of the blade make contact when pressed by the tool during a sharpening operation being very slightly crowned from end to end so as to permit the edges of the blade to yield to a trifling extent at their ends as the tool is moved over them, and the parts of the tool and holder being prevented from moving towards each other only by the interposed blade, whereby the tool may be reciprocated along the surface of the blade to an extent dependent upon the limiting effect of the inter-engaging portions of the tool and holder, while the tool and holder are acted upon by opposed forces tending to move one towards the other.

8. A sharpener, as defined by claim 7, of which the interengaging portions of the tool and holder are so disposed as to permit the tool to move along the surface of the blade in a direction having a material crosswise component and a rocking component determined as to direction by the zones of contact between the margins of the blade and the adjacent surface portions of the tool.

9. A sharpener, as defined by claim 7, of which a relative movement of the tool and holder away from each other, to an extent such as to separate one of the said parts from the surface of an interposed blade, is not restricted otherwise than by force of gravity, and of which the weight of one of the said parts is sufficient, when the sharpener is positioned with that part uppermost, to serve as a means of maintaining a satisfactory degree of sharpening pressure along the zones of contact between the tool and the margins of the blade.

10. A safety razor sharpener comprising, in combination, a holder and a sharpening tool between which may be interposed a blade to be sharpened, the holder and tool having mutually interengaging portions so disposed as to limit the relative movements of the tool with respect to the holder along the surface of the blade in all directions, said portions comprising a pair of flanges on one of said parts spaced at a sufficient distance from each other to permit the other part to move freely between them, and lug-and-slot connections between corresponding end portions of the flanges of one of said parts and adjacent portions of the other part adapted to serve as the means for limiting relative movements of said parts in directions parallel with said flanges and to serve as a hinge connection whereby one of said parts may be swung about one of its marginal portions relative to the other through an angle of approximately ninety degrees to facilitate the placing of a blade between the holder and the tool and the removal of a blade from such a position, the relative sizes and forms of the respective lugs and their slots being such as to permit free movement through such an angle but such as to oppose angular movement of greater extent.

11. A sharpener, as defined by claim 10, of which the lugs are of non-circular form in cross-section having major axes which are longer than the widths of the slots, and of which the slots are enlarged at their opposite sides at the ends in which the lugs are to be positioned when the parts are to be swung to their open position, the enlargements into which the parts of the lugs at the ends of the slots are to be turned being of a size sufficient to permit the lugs to enter and the opposite enlargements being of a size and form such as to permit the opposite portions of the lugs to move freely until the lugs assume positions substantially crosswise of the slots, the the distances from the walls of the slots where they terminate at the first-mentioned enlargements to the most distant parts of the opposite enlargements being less than the lengths of the major axes of the lugs, so that the rotation of the lugs will be prevented after they have been turned to positions crosswise with respect to the slots.

12. A sharpener, as defined by claim 10, of which the lugs are of an oblong form in cross-section, and of which each slot is of the form of a boot having its sole directed towards the near end of the flange, its leg towards the far end of the flange, its toe towards the base of the flange, its heel towards the free edge of the flange, and the entire boot tilted up slightly at the leg end about the toe, the major diameter of each lug being of greater length than the width of the part of the slot represented by the leg of the boot, and also of greater length than the distance from the part of the slot corresponding with the front of the leg near the toe to the back of the heel, the part corresponding with the toe of the boot being of a size such as to permit the lug to enter when turned crosswise of the slot, and the form and size of the part corresponding with the heel being such as to permit the lug to turn freely when in the end of the slot to a position substantially crosswise thereof, in which position further movement will be prevented by the interlocking engagement between the part of the lug which enters the part of the slot represented by the toe of the boot and the adjacent walls of the slot.

13. A safety razor blade sharpener comprising, in combination, a holder and a sharpening tool between which may be interposed a blade to be sharpened, the holder and tool having mutually interengaging portions so disposed as to limit the relative movements of the tool with respect to the holder along the surface of the blade in all

directions, said portions comprising a pair of flanges on one of said parts spaced at a sufficient distance from each other to permit the other part to move freely between them, and lug-and-slot connections between corresponding end portions of the flanges of one of said parts and adjacent portions of the other part, adapted to serve as the means for limiting relative movements of said parts in directions parallel with the said flanges and to serve as a hinge connection whereby one of said parts may be swung about one of its marginal portions relative to the other to facilitate the placing of a blade between the holder and the tool and the removal of a blade from such position, the flanges on one of the sharpener parts being spaced at a sufficient distance from the adjacent marginal portions of the other part to permit a limited degree of sharpening movement in a direction perpendicular to the flanges, and the lugs being of a length such that they will not be withdrawn from the slots in the flanges during such movement.

14. A safety razor blade sharpener comprising, in combination, a holder and a sharpening tool between which may be interposed a blade to be sharpened, the holder and tool having mutually interengaging portions so disposed as to limit the relative movements of the tool with respect to the holder along the surface of the blade in all directions, blade-positioning means comprising fixed parts of the holder to engage spaced parts of the blade and hold it in a predetermined position, and blade-backing means comprising a raised portion of the holder against which one surface of the positioned blade may rest, the outer margins of the backing means being spaced inwardly from the margins of the blade so as to hold them away from the adjacent parts of the holder, the portions of the tool facing and along the marginal portions of a positioned blade being inclined at acute sharpening angles with respect to the surface of the blade, the mutually interengaging portions of the tool and holder comprising a pair of flanges on one of said parts spaced at a sufficient distance from each other to permit the other part to move freely between them, and lug-and-slot connections between corresponding end portions of the flanges of one of said parts and adjacent portions of the other part, the lugs being of an oblong form in cross-section, and each of the slots being of the form of a boot having its sole directed towards the near end of the flange, its leg towards the far end of the flange, its toe towards the base of the flange, its heel towards the free edge of the flange, and the entire boot tilted up slightly at the leg end about the toe, the major diameter of each lug being of greater length than the width of the part of the slot represented by the leg of the boot, and also of greater length than the distance from the part of the slot corresponding with the front of the leg near the toe to the back of the heel, the part corresponding with the toe of the boot being of a size such as to permit the lug to enter when turned crosswise of the slot, and the form and size of the part corresponding with the heel being such as to permit the lug to turn freely when in the end of the slot to a position substantially crosswise thereof, in which position further movement will be prevented by the interlocking engagement between the part of the lug which enters the part of the slot represented by the toe of the boot and the adjacent walls of the slot.

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