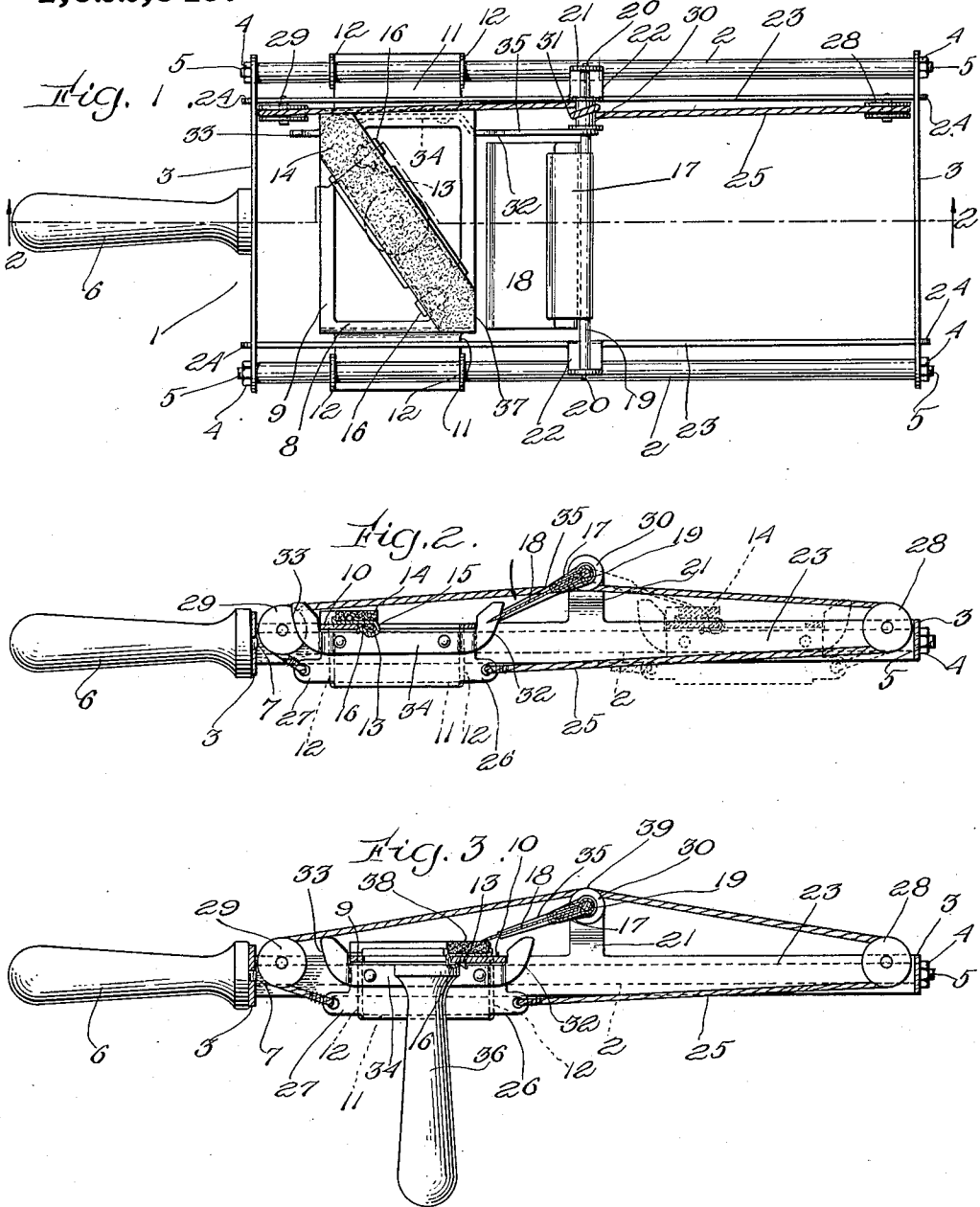


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RAZOR STROPPER AND HONER.
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UNITED STATES PATENT OFFICE.

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RAZOR STROPPER AND HONER.

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To all whom it may concern:

Be it known that I, ARTHUR C. HAYDEN, a citizen of the United States, and resident of Brockton, in the county of Plymouth and State of Massachusetts, have invented an Improvement in Razor Stropplers and Honers, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to devices for sharpening and stropping blades, especially the thin relatively short blade-sections used in safety razors of the various standard types.

The improved device consists in a holder for a strop or hone and a holder for a razor blade, these holders being relatively movable and having provision for guiding the movable holder to present the blade-section in proper relation for action thereupon by the strop or hone, this being, as is well known, a drawing action, preferably diagonal, over a stropping surface, and a forward thrusting movement over a honing surface.

More particularly, the invention comprises a holding frame for one of the relatively movable parts, *i. e.* the blade or the sharpening surface, and a holder for the other part slidably guided thereon with connections whereby the blade is positively shifted down across the path of movement of the sharpening or stropping surface after it has been passed over the same and again brought into exact position for the next operative engagement.

A further feature of the invention relates to an improved means for removably holding the stropping or sharpening surface in its holder.

The above and other detail objects of the invention will be more fully understood from the following description, taken in connection with the accompanying drawings, and will be thereafter pointed out in the appended claims.

Referring to the drawings, Figure 1 is a plan view of my improved device; Fig. 2 is a sectional side view thereof on the line 2—2, Fig. 1, with the parts arranged for stropping the blade; and Fig. 3 is a like sectional view with the parts arranged for holding the blade.

In the particular embodiment of the invention to be set forth, operative reciprocatory movement is imparted to the strop or hone holder, and the blade is oscillated

to present the blade in proper position for sharpening, but it is to be understood that this is merely illustrative, and that operative movement may be imparted to either the strop-holder or the blade at option, and likewise the movement for presenting it in position for engagement with the hone is to be considered a relative one which may be imparted either to it or to the holder for the sharpening element.

In the embodiment of the invention shown, a frame 1 is composed of longitudinal rods 2 rigidly united at their ends to bars 3, as by nuts 4 threaded on reduced extremities 5 of said rods. To one of the bars 3 a handle 6 is removably secured, having as shown a projection 7 threaded into the central portion thereof. A carriage 8, preferably formed of metal stamping, is fitted to slide on the bars 2, this carriage having a central peripheral skeleton frame 9 with a holder-receiving portion 10 extending diagonally thereacross, downwardly bent extensions 11 at either side, and ears 12 upstanding from the projections 11 with apertures therethrough to fit the rods 2. The diagonal holder portion 10 has depressions formed in the bottom thereof which may be conveniently produced by punching holes 13 through the plate. The stropping element 14 is fixedly mounted on a plate carrier 15, this having spring snaps 16 formed near its ends and spaced apart so that when the strop carrying plate is positioned on the holder portion 10, the snaps 16 will extend underneath the member 10 and press up into the depressions 13, thus holding the strop firmly and fixedly in place.

The holder 17 for the blade 18 to be sharpened is carried by an oscillatory shaft 19, and this shaft has its reduced ends fitted in bearing apertures therefor formed in ears 21 upstanding from lateral projections 22 formed on bars 23 suitably fixed at 24 to the end bars 3 of the frame. The bars 23 may be sprung outward by moderate pressure so that the bearing pin extensions of the shaft 19 may be disengaged from the ears 21, which form bearings therefor, to permit reversal of the operative connections to the blade holder as later explained. Connection is provided from the carriage 8 so that its reciprocation effects an oscillation of the blade holder to bring it into operative position for each stroke, and to this end a stout cord or cable 25 has its ends fixed to

ears 26, 27 on the slidable carriage 8 and thence extends around pulleys 28, 29 journaled to a bar 23 on one side at the ends of the frame. This cord has a turn 31 around a spool 30 fixed to the blade-holder shaft 19, and the length of the cord is such that, when this turn around the spool is made in it, all the slack is taken up so that it produces a considerable turning tendency upon the spool 30 as its ends are drawn back and forth by a reciprocation of carriage 8.

With the construction so far as explained up to this point, the blade would naturally be caused to swing over the frame, *i. e.* up away from the sharpening element after the completion of one stroke and as the movement of the carriage is started to begin the next stroke. This outward and upward swing of the blade is found in practice to have a number of objections and disadvantages incident thereto, and hence a prominent feature of the present invention consists in means whereby the blade is properly directed to have a downward movement within the frame and across the path of the carriage. To this end, cam formations 32, 33 are formed to extend upward at the ends of the carriage 8 to engage a part carried by the oscillatory blade-holder and cause its movement to be in a downward path through the frame. These cams as shown are formed at the ends of a plate 34 fixed to the carriage. The oscillation of the blade 18 from these cams may be effected by the direct engagement of it or its holder therewith, but I preferably provide a separate arm 35 fixed to the shaft 19 and extending into the path of said cams as the carriage is reciprocated. As a means for conveniently reciprocating the carriage 8, any suitable handle 36 may be removably fixed, preferably at a central point of the diagonal plate portion 10. As stated, my improved device is designed for presenting the blade to the sharpening member in proper relation for either stropping or honing and, as described, the sharpening member is instantly detachable so that a strop may be substituted for a hone and vice versa very quickly. With the device arranged as shown in Figs. 1 and 2, the blade is yieldingly pressed against the stropping surface 14 as it is drawn thereunder by reason of the friction grip of the turn 31 of cord 25 upon the spool 30. Just before the carriage 8 arrives at the end of its stroke in either direction, the blade passes off an extremity 37 of the strop, and is turned down beneath the same by the final movement of the carriage. This positions the arm 35 below the end of the cam 32. As the carriage is now started in the opposite direction, the cam surface 32 forces the arm 35 continuously downward, thus turning the blade down through the frame and upward on the other side of its shaft until it passes

off the cam 33 at the other end of the carriage, when the blade is again freed to be pressed downward by the turning tendency of the turn 31. This occurs just as the advance end of the stropping element 14 is moved by the carriage 8 into position underneath the edge of the blade, so that the further movement of the strop in the same direction stropps the blade, which is constantly held thereagainst by the turning tendency of the cord upon the spool 30. Upon the return of the carriage, these movements are duplicated, the cam 33 engaging the arm 35 and pressing the blade downward through the frame while the cam 32 releases it in time to permit the other side of the blade to rest upon the strop as it is drawn thereunder. For honing the blade, a suitable honing element 38 is substituted for the strop 14, and the shaft 19 carrying the blade-holder is removed by springing outward the bars 23 as described. The cord 25 is now taken off the spool 30 and turned thereon from the opposite direction as shown at 39, thus causing the blade to be urged thereby against the hone as the hone is thrust toward the blade at the beginning of the carriage movement. The blade is prevented from engaging the hone too soon by the arm 35 riding over the top of one of the cams 32, 33, thus avoiding any danger of chipping into the advance edge of the hone. Likewise, as the blade passes off the rear end of the hone, it is prevented from turning downward abruptly by the arm 35 riding over the adjacent cam. As soon as the blade has got well past the hone, however, the cam releases arm 35, permitting the blade to swing downward through the frame as before, turning up on the other side as soon as released by the cam into position for like operation on the next stroke. It is thus to be observed that the cams 32, 33, acting upon the oscillatory carrier, exert a perfect and exact control over the blade, permitting it to be urged against the strop or hone only at the proper times and holding it lifted therefrom as the blade passes onto and off of the edges of the sharpening element, thus effectually preventing any chipping into the edges of the strop or hone or damage to the blade. Likewise the turning of the blade downward through the frame largely protects the same and is in many ways a much more mechanical construction.

It is to be understood that where the term "sharpening element" is employed, it is intended to include any material for acting upon the blade, whether of a stropping or honing character and, further, that by the terms "strop" and "hone," I intend to include any materials usual for these purposes or which may be adapted thereto. It is to be further understood that my invention is not limited as to details of construction, that

the movements of the blade and sharpening element are to be understood as relative, and that the particular nature of the movements as set forth is illustrative and not restrictive except as set forth in the appended claims.

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

1. A device of the kind described, comprising a frame, a carriage slidable thereon, operative elements consisting of a blade holder and a sharpening device, one of said elements having reversible connections with the carriage whereby said operative elements may be held in pressing engagement for either drawing or thrusting strokes at will, and means for holding the blade edge away from the edge of the sharpening device as said elements are brought into operative relation for either drawing or thrusting strokes.

2. A device of the kind described, comprising a support, a carriage slidable thereon, means for holding a blade, and means for holding a sharpening device, one of said holding means being arranged to permit reversal relative to the other whereby the blade and sharpening device may be held in pressing engagement for either drawing or thrusting strokes at will, and cams arranged to hold the blade edge away from the edge of the sharpening device at the beginning and end of operative movement for either drawing or thrusting strokes.

3. A device of the kind described, comprising a frame, a carriage slidable thereon, one of said elements being adapted to carry a blade and the other a sharpening member in operative relation, means to oscillate the blade relative to the sharpening member and to hold said parts in yielding engagement, said oscillating means being connected for actuation from the carriage, and cams mounted on the carriage arranged to hold positively the blade edge from wiping across the edge of the sharpening member.

4. A device of the kind described, comprising a frame, a carriage slidable thereon, operative elements consisting of a blade holder and a sharpening device mounted one on the frame and the other on the carriage in relatively reversible connection whereby they may be held in pressing engagement for either drawing or thrusting strokes at will, and cams carried by the carriage arranged to hold the blade edge away from the edge of the sharpening device as they are moved in to and out of operative relation with either drawing or thrusting strokes.

5. A device of the kind described, comprising a frame, a carriage reciprocable thereon, a pivotally mounted blade holder, and a sharpening device mounted one on the

frame and the other on the carriage, the blade holder having reversible connections to present the blade in pressing engagement with the sharpening device for either drawing or thrusting strokes as desired, said connections tending to swing the blade upward over the frame, and means carried by the carriage for compelling the movement of the blade down through the frame from operative position on either side of its pivotal axis to operative position on the other side thereof.

6. A device of the kind described, comprising a frame having an oscillatory blade holder reversibly mounted thereon for either drawing or thrusting strokes, a carriage slidable on said frame and adapted to receive a sharpening element, means for yieldingly oscillating said blade holder and mounted for either drawing or thrusting strokes, and cams movable with the carriage for compelling the movement of the blade down through the frame in opposition to said yielding oscillating means from one side of its axis to the other to present the same in working position in either direction.

7. A device of the kind described, comprising a skeleton frame having an oscillatory blade holder reversibly mounted thereon to cooperate for either drawing or thrusting strokes, a carriage slidable on said frame and adapted to receive a sharpening element, means for yieldingly oscillating said blade holder when mounted for either drawing or thrusting strokes whereby the blade may be presented in pressing engagement for either stropping or honing, and cams mounted on the carriage adapted to swing the blade down through the frame from one side of its axis to the other in opposition to said oscillating yielding means and arranged to hold the blade edge away from the edge of the sharpening element when arranged for operative movement with either drawing or thrusting strokes.

8. A device of the kind described, comprising a frame, a carriage slidable thereon, operative elements consisting of a blade holder and a sharpening device, one of said elements having reversible connections with the carriage whereby said operative elements may be held in pressing engagement for either drawing or thrusting strokes at will, and means for moving the oscillating element down through the frame from one side of its axis to the other to present the same in successive working positions for either thrusting or drawing strokes.

9. A device of the kind described, comprising a frame having an oscillatory blade holder mounted thereon, a carriage slidable on said frame and adapted to receive a sharpening element, reversible means for yieldingly oscillating said blade holder

from said carriage whereby the blade may be presented in pressing engagement with the sharpening element with either drawing or thrusting strokes, as desired, and cams
5 movable with the carriage for swinging the blade down through the frame from one side of its axis to the other to present the same in successive working positions.

In testimony whereof, I have signed my name to this specification, in the presence of 10 two subscribing witnesses.

ARTHUR C. HAYDEN.

Witnesses:

CLYDE L. ROGERS,
EDWARD MAXWELL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
