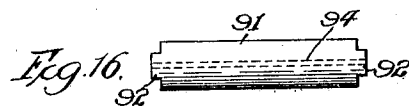
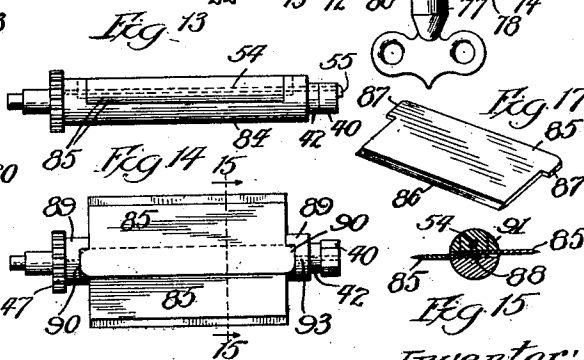
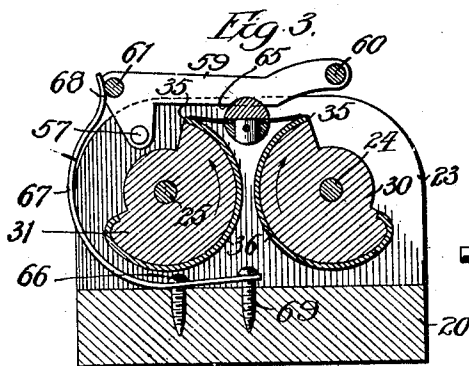
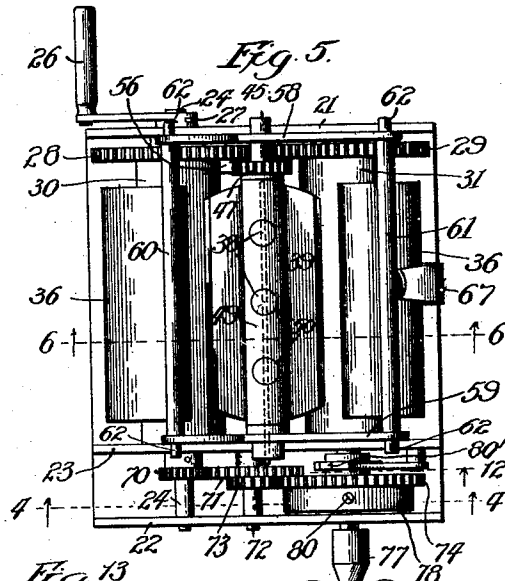
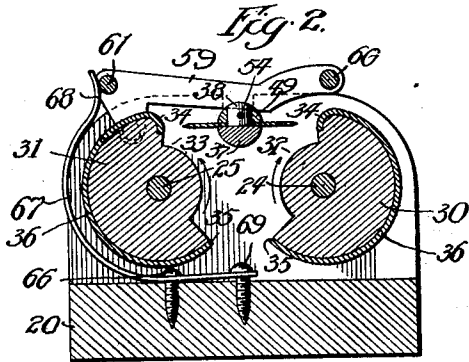
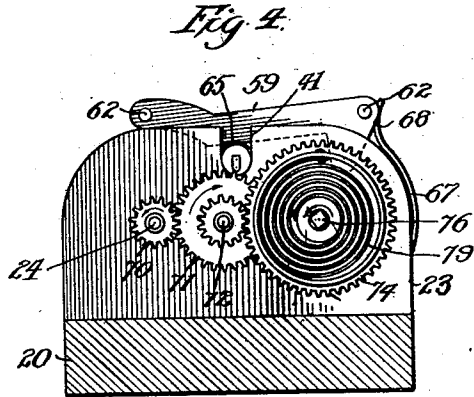
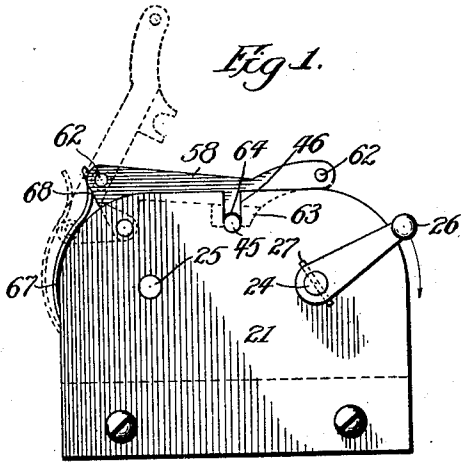


G. G. FLOYD.
RAZOR BLADE SHARPENER.
APPLICATION FILED JULY 28, 1909.

959,496.

Patented May 31, 1910.

2 SHEETS—SHEET 1.



Witnesses:
Ed. C. Davison.
Oliver L. Roseman.

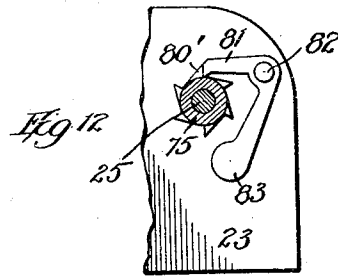
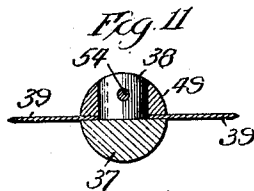
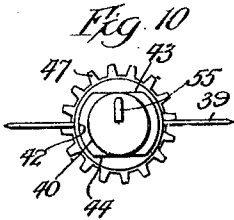
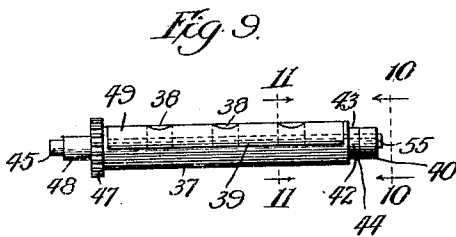
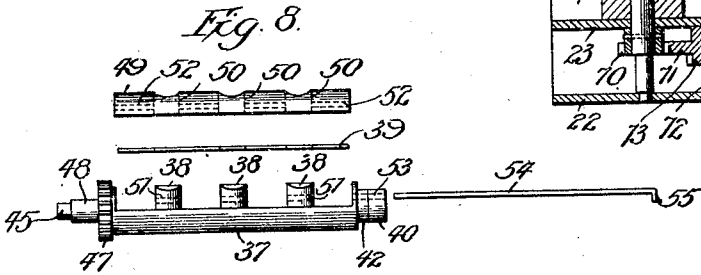
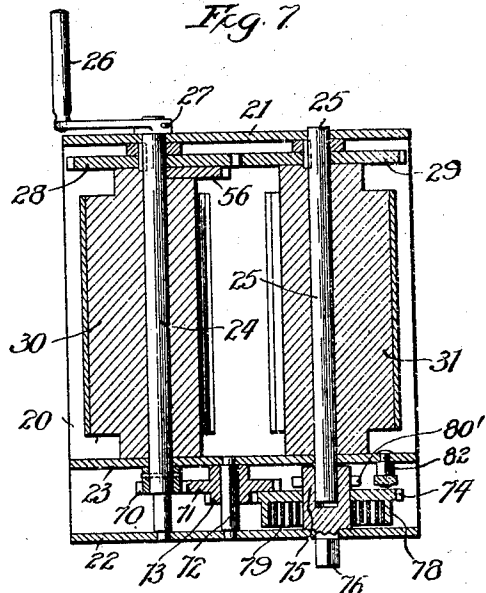
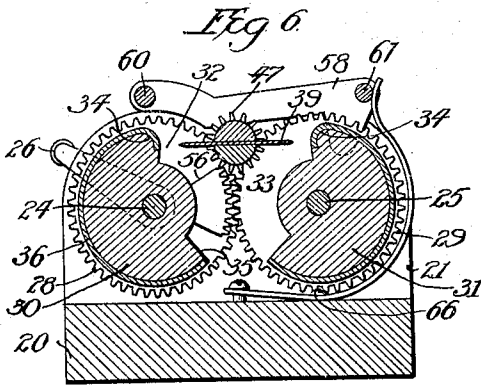
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George L. Floyd
By Lintzmann, Belt & Fuller
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G. G. FLOYD.
 RAZOR BLADE SHARPENER.
 APPLICATION FILED JULY 28, 1909.

959,496.

Patented May 31, 1910.

2 SHEETS—SHEET 2.



Witnesses:
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Inventor:
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 By Luthincum Belt & Fuller
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UNITED STATES PATENT OFFICE.

GEORGE G. FLOYD, OF GRANITE, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
TWINPLEX MANUFACTURING COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION
OF MISSOURI.

RAZOR-BLADE SHARPENER.

959,496.

Specification of Letters Patent.

Patented May 31, 1910.

Application filed July 28, 1909. Serial No. 510,054.

To all whom it may concern:

Be it known that I, GEORGE G. FLOYD, a citizen of the United States, residing at Granite, in the county of Madison and State of Illinois, have invented certain new and useful Improvements in Razor-Blade Sharpeners, of which the following is a specification.

My invention relates to razor blade sharpening or stropping devices or similar appliances, its various objects and purposes including the production of a mechanism of this character which will effect the sharpening of the blades efficiently, which will be economical to manufacture, which will sharpen or strop either single or double-edged blades, which will produce an alternate sweeping stropping effect on the opposite sides of the cutting edge, and which will sharpen both edges of a double-edged blade, or the two edges of a pair of single-edged blades, during the continued actuation of the appliance and without necessitating the removal or adjustment of such blades. These with several other features of novelty and improvement will become apparent to those skilled in the art from a study of the following detailed description of a desirable exemplification of this invention, which description should be read in connection with the accompanying drawings forming a part of this specification, and throughout the various views of which like reference characters refer to the same parts.

In these drawings—Figure 1 is an end elevation of one embodiment of my improved sharpening or stropping device; Fig. 2 is a cross-section showing the mutilated cylindrical stropping or sharpening elements in such position that they do not act on the blade; Fig. 3 is a similar view showing the elements in a different position and about to begin the sharpening action on the blade; Fig. 4 is a transverse section on line 4—4 of Fig. 5; Fig. 5 is a plan view of the appliance; Fig. 6 is a cross-section on line 6—6 of Fig. 5, the parts being viewed in the direction indicated by the arrows; Fig. 7 is a section parallel to the base of the device on a plane passing through the axes of the stropping elements; Fig. 8 shows in elevation the parts of the blade holder and illustrates also a blade in edge view; Fig. 9 shows in assembled relation the elements illustrated separately in Fig. 8; Fig. 10 is an end view

of the blade holder and the blade on an enlarged scale, looking at the parts in the direction indicated by the arrows on Fig. 9; Fig. 11 is an enlarged cross-section on line 11—11 of Fig. 9; Fig. 12 is a fragmentary section on line 12 of Fig. 5; Fig. 13 shows a modified form of blade holder with two single-edge blades; Fig. 14 illustrates in plan such a holder with the two blades in position and with the top of the holder removed; Fig. 15 is a cross-section on line 15—15 of Fig. 14; Fig. 16 illustrates the top part of such a holder; and Fig. 17 shows in perspective one of the single-edge blades.

By reference to the drawings it will be observed that this particular embodiment of the invention has a wooden or other base 20, upstanding from and fixed to the ends of which by suitable screws are two metallic supporting plates 21 and 22, the base having in addition a similar upright intermediate plate 23. Journaled in such plates and extended longitudinally of the device is a pair of parallel shafts 24 and 25, the end of the former protruding outwardly beyond the plate 21 for the application thereto of an operating handle 26 which is conveniently secured to such shaft by being pinned thereto at 27. Shaft 24 has keyed thereto near one end a gear 28, the teeth of which mesh with those of a similar gear 29 of the same diameter keyed or otherwise fixed rigidly with the companion shaft 25. It will, therefore, be obvious that by the rotation of handle 26 the two shafts will be rotated at the same speed in opposite directions. On each of these shafts I mount a wooden cylinder 30 and 31, respectively, each of which is cut away or mutilated at 32 and 33, respectively, such mutilations or recesses being capable of assuming matched relation or register, as is clearly indicated for example in Figs. 2 and 6. One longitudinal edge of each of these cylinders is rounded off at 34, the other edge 35 being comparatively sharp. The curved surfaces of these cylinders are covered with leather or other suitable strops 36 which extend from the edge 35 around the entire outer cylindrical surface of each member and around the curved portion 34, being glued or otherwise affixed in place.

The intermittently-actuated holder for a razor blade of the thin double-edged type is illustrated in detail in Figs. 8 to 11, inclusive, and includes a main substantially

semi-cylindrical holder 37 upstanding from the flat surface of which are three spaced posts or pins 38 adapted to fit in the three correspondingly-spaced apertures through the thin double-edged blade 39. At one end and integral therewith this holder has a cylindrical journal 40 adapted to fit and rotate in the slot 41 of the plate 23, the bottom of such slot being semi-circular, as illustrated, and forming a bearing and support for such journal. The proper adjustment and relation of such journal with respect to the bearing is maintained by the portion 42 of the holder just inside of the journal 40 and of somewhat greater diameter, such enlarged portion being adapted when the holder is in the frame to bear against the inner surface of the plate 23 and prevent outward displacement of the holder and the blade held thereby. On opposite sides and parallel to the top flat surface of the holder 37 this enlargement 42 is flattened at 43 and 44 for a purpose hereinafter indicated. At its opposite end the holder is equipped with another smaller bearing or journal 45 adapted to be received in and rotate in a bearing slot 46 in plate 21 and similar in construction to the slot or recess 41. The holder is also equipped with a pinion 47 fixed thereto and between which and the bearing or journal 45 is a cylindrical portion or enlargement 48, the outer end of which acts as a stop shoulder to co-act with the inner face of the plate 21 to prevent dislodgment or displacement of the holder and blade. Coöperating with this holder is a supplemental substantially semi-cylindrical clamp member 49 having extended laterally therethrough three holes 50 to receive the pins 38, the flat surface of such clamp member being adapted to bear on the top face of the blade to hold it in proper position between itself and the holder proper 37. As is clearly illustrated, the pins 38, the clamp member 49, the journal 40, and the enlargement 42 all have extended therethrough longitudinally of the holder aligned apertures 51, 52 and 53 for the accommodation of a removable locking-pin 54, one end of which is bent laterally at 55 to form a handle or holder. When the blade 39 has been placed on the pins 38 and the clamp 49 applied, the locking-pin 54 may be pushed through the registering holes so as to hold the clamp and blade firmly and rigidly to the holder, as is shown in Figs. 9 and 10.

Fixed to the inner face of gear 28 and rotatable therewith and with the shaft 24, I provide a toothed sector 56 having desirably one-half as many teeth as the pinion 47 of the holder, such teeth being adapted to intermittently engage those of such pinion during the rotation of the sharpening or stropping elements to effect the intermittent rotation of the blade holder through

approximately 180° so as to reverse the positions of the edges of such a double-edged blade.

On pins 57 projecting inwardly from the inner faces of the plates 21 and 23 I fulcrum or hinge a pressure frame composed of two end bars 58 and 59 connected together by the two rods 60 and 61, the extended reduced ends 62 of which pass through suitable holes or apertures in such end bars. And bar 58 has a downwardly-extended portion 63 supplied with a substantially semi-cylindrical recess 64, such portion 63 being adapted to bear against the top of the part 48 of the blade holder, the companion frame end bar 59 having a flat bottom surface 65 to bear against the parts 42, 43 and 44 of the holder, and when engaging the latter two acting to yieldingly maintain the holder against rotation. At 66 (Figs. 2 and 3) by means of a screw I secure to the top of the base 20, a curved spring 67 having a reversely-bent upper end portion 68 adapted to bear against and coöperate with the rod 61, the spring being so bent or curved that it will act to yieldingly hold the pressure frame down on the blade holder or maintain such frame in elevated position, as is indicated by dotted lines in Fig. 1, the rod 61 passing by the dead center or contacting with the opposite portions of the curved part of the spring. To vary and adjust the amount of the pressure which this spring will impose on the frame and on the blade-holder, I supply the device with an adjustable screw 69, which will be turned to increase or decrease the pressure, as appears necessary, the screw 66 acting somewhat as a fulcrum during such adjustment.

The operation of the mechanism so far as described and which in itself constitutes a complete operative appliance, is substantially as follows: The operator applies the dull blade to be sharpened to the holder 37 over the pins 38 and places the clamp member 49 on such pins, subsequently inserting the locking-pin 54. This application of the blade to the holder may be done while the latter is in position in the appliance, or, if desired, by raising the pressure frame to the dotted line position shown in Fig. 1, the holder may be removed from the device for such purpose, and then replaced and the pressure-frame turned down so as to apply its pressure to the holder. This application of the blade to the holder is accomplished while the stropping or sharpening elements are in the inoperative portion of their rotation, that is, while the recesses or cavities 32 and 33 are in register as in Figs. 2 and 6. The member 59 of the pressure frame now bears on the flat part 43 of the holder, acting to retain the latter against rotation and hold the blade substantially parallel to the base. The operator then turns the handle

26 in the direction indicated by the arrow in Fig. 1, which causes the rotation of the two stropping or sharpening elements in the direction indicated by the arrows in Figs. 2 and 3. As the strop equipped cylindrical portions of these rotary sharpening elements turn about, they simultaneously engage the two edges of blade 39, as shown in Fig. 3, lifting the whole blade and holder somewhat against the pressure of spring 67 and concaving the blade to some extent, as is indicated in Fig. 3. Continued actuation of the handle 26 results, as will be readily understood, in the passage of the strops under and against the lower sides of both cutting edges of the blade, it being understood that the diameters of these sharpening elements, the distance apart of their shafts, and the location of the blade are so chosen and related that the proper stropping and sharpening effect on the cutting edges will be secured.

When the curved ends of the strop over the faces of the parts 34 of the cylinders pass from beneath the blade, the holder with its blade drops suddenly, under the action of the pressure frame, to the bottoms of the slots 41 and 46, and soon afterward the teeth of the toothed sector 56 engage those of the pinion 47, the latter and the blade being held in proper position for this engagement of the teeth by coaction of the pressure frame with the flat surface 43. As the sector rotates it revolves the holder and blade through an arc of 180°, the bar 59 of the pressure frame riding on the part 42 of the holder and finally engaging the flat surface 44 to hold the blade and holder in their new position with the blade parallel to the base. Obviously, the mutilated or cut-away parts of the sharpening or stropping elements permit this rotation of the blade, and during further and continued rotation of the stropping elements they again engage the blade, as shown in Fig. 3, but this time each acts on the opposite side of the cutting edge whose other side was previously acted upon by the other stropping or sharpening element. During this further sharpening operation of the device the blade and holder are raised against the action of the spring and the blade is concaved as in the previous instance.

The construction of the device is such that the blade is turned through 180° for each revolution of the cylindrical strops, whereby the proper alternate action of the latter on the opposite sides of the cutting edges is effected and secured. The rotation of the handle and the sharpening elements and the intermediate action of the holder is continued for a few seconds until the cutting edges of the razor blade are rendered sharp and are put in condition for a smooth and easy shave. When the blade has

reached the desired degree of sharpness the pin 54 may be withdrawn by means of its bent end 55, and the clamp 49 and blade 39 readily removed by inverting the appliance, and a new blade may be easily put in place, or, if desired, the pressure frame may be raised, being held in elevated position by the spring, and the holder wholly removed from the device to effect the removal of the blade.

In order to decrease the time for stropping and sharpening such a blade, the device instead of being actuated by the handle 26 may be operated through a spring motor mechanism clearly shown on the drawings. In this case the shaft 24 is provided with a gear 70 between the plates 22 and 23, such gear meshing with another one 71 on an intermediate shaft 72 journaled in the two plates 23 and 24, such latter shaft in turn having a smaller gear 73 in mesh with the teeth of a large gear 74 on a sleeve 75 loosely mounted on the end of shaft 25 and provided with an angular end 76 protruding through a hole in plate 22, such end being intended and adapted to cooperate with a detachable winding key 77. The gear 74 has a barrel 78 integral therewith and housing a coil expansion spring 79, one end of which is fixed to the barrel 78 by a rivet or otherwise at 80, the other end of the spring being fixed to the sleeve 75 on which the barrel and gear are freely rotatable. Sleeve 75 in addition, as is shown in Fig. 12, is equipped with a ratchet 80', co-acting with which is a stop pawl 81 pivoted on the plate 23 at 82 and having a lower weighted end 83.

In the device shown the handle 26 is ordinarily not employed, although the appliance can be readily actuated by such a handle, the spring motor being omitted. When such motor is used, however, the handle 26 is ordinarily detached and unemployed. The spring 79 is wound up in the usual manner by the key 77 after the blade has been applied to the holder, the stop pawl 81 preventing unwinding of the spring, the expansive force of which is employed through the gearing for the rotation of the two stropping elements. When the motor is thus used the friction and pressure of the blade on the sharpeners or strops is used as a retarding means to replace the ordinary escapement, the sharpening or stropping of the two edges of the blade occurring in substantially the same manner as has been indicated above. With a device having such a spring motor the person shaving may be sharpening one blade while employing another, some persons requiring two sharp blades for a single shave, or the blade for the morrow's use may be sharpening by such a spring motor after having been used for the present day's shaving operation.

Actual demonstration of this device indicates, however, that but a comparatively few seconds suffice to put blades of this character in proper condition for a smooth and pleasing shave.

Whereas I have hereinabove indicated that this improved appliance is especially adapted for sharpening thin double-edged blades, its employment is not limited to blades of any particular character or to blades having two cutting edges, since, as will be readily understood, single-edged blades can be readily and easily sharpened by such a device, and in Figs. 13 to 17, inclusive, I have indicated a modified form of holder suitable for use in sharpening two of such blades at the same time, although they may be sharpened separately if desired. Referring to these figures, it will be noticed that the construction of the holder 84 is modified so as to accommodate and hold in place a pair of blades 85, one of which is shown in perspective in Fig. 17, each of such blades having a single cutting edge 86 and a protruding ear 87 at each end. The main body 84 of the holder is cut away at its central part so as to provide a flat surface 88, and arising from the opposite ends of the same are the two enlargements 89 each having on its inner face a recess 90 adapted to accommodate two ears 87 of a pair of blades 85 oppositely disposed in the holder with their edges projecting in opposite directions, as is clearly indicated. The clamp member 91 of such a holder has a tongue 92 at each end to fit in the recesses 90 on top of the blades, as is shown in Fig. 15, the clamp being locked in blade holding position by the removable locking-pin 54 which passes through aligned holes 93 in the enlargements 89 and 94 in the clamp. A pair of or a single single-edged blade may be held in such a holder and have its edge properly sharpened by the stropping elements.

Although I have herein indicated only two forms and styles of holders, those skilled in the art will have no trouble in constructing holders for all sorts of blades for a sharpening device of this character.

It is to be particularly noted that this device will sharpen both edges of a double-edged blade, or the two edges of a pair of single-edged blades, by action of the stropping elements on the opposite sides of each cutting edge, one side of each edge being acted upon by one stropper or sharpener, and the other side of the same edge operated upon by the other or companion stropper or sharpener, whereby I am enabled to secure that rapid alternate stropping effect which is so desirable in the sharpening of razor or other blades. I believe that I am the first person to provide a simple and economical appliance which will

produce such a result, and which will so stop or sharpen the blades as to produce universal satisfaction on the part of the users. It is to be noted furthermore that my improved and novel device requires no handling, adjustment, replacing or manual shifting of the blade after it has once been secured in the holder, and that the complete sharpening action is secured by merely turning the handle or operating the device by the spring motor indicated or by any other suitable means. If for any reason the spring should break in the motor the detachable handle may be applied to carry on the sharpening operation. It is to be noted that the invention is not limited or restricted in any way as to what particular means shall be employed for operating the sharpening elements and the blade holder. As far as I am aware, I am the first person to employ mutilated cylindrical stropping or sharpening elements the cut-away parts of such elements being utilized for the reversal of the blade, whereby to secure the action of such stropping device alternately on both sides of both edges.

Even though one or more embodiments of this invention have been described and illustrated in detail, I do not wish to have it understood that the invention is in any way limited and restricted to the precise and exact structural features set forth, because these may be modified within considerably wide limits without departure from the substance of the invention and without the loss of any of its benefits and advantages. For example, the number of teeth on the sector need not be exactly one-half those of the blade holder pinion and the blade need not be rotated exactly 180° at each actuation, since the stoppers themselves when engaging the blade act to right the same to secure the proper and correct sharpening action by the mutilated cylinders.

I claim:

1. In a razor blade sharpener or the like, the combination of a pair of sharpening elements, a blade-holder rotatable intermittently in one direction and adapted to swing the blade alternately from one element to the other, and operating means for said elements and holder, whereby one side of the cutting edge of the blade is acted upon by one of said elements and the other side of the blade edge acted upon by the other element, substantially as described.
2. In a razor blade sharpener or the like, the combination of a pair of rotary sharpening elements, a blade-holder rotatable intermittently in one direction and adapted to swing the blade alternately from one element to the other, and operating means to rotate said elements and holder, whereby one side of the cutting edge of the blade is acted upon by one of said elements and the

other side of the blade edge acted upon by the other element, substantially as described.

3. In a razor blade sharpener or the like, the combination of a pair of sharpening elements, a blade-holder, means acting on said holder to yieldably maintain the blade in operative engagement with both of said elements at the same time, and means actuated in one direction only to operate said elements and holder, whereby one side of the cutting edge of the blade is acted upon by one of said elements and the other side of its edge acted upon by the other element, substantially as described.

4. In a razor blade sharpener or the like, the combination of a pair of rotary mutilated cylindrical sharpening elements, an intermittently-movable blade-holder, and operating means to rotate said elements and intermittently actuate said holder, whereby the opposite sides of the cutting edge of the blade are acted upon alternately by said elements, the mutilated portions of said elements permitting the intermittent actuation of said holder and blade, substantially as described.

5. In a razor blade sharpener or the like, the combination of a pair of rotary mutilated cylindrical sharpening elements, an intermittently rotatable blade-holder, and means actuated in one direction only to rotate said elements and holder, whereby the opposite sides of the cutting edge of the blade are acted upon alternately by said elements, the mutilated portions of said elements permitting the intermittent rotation of the holder and blade, substantially as described.

6. In a razor blade sharpener or the like, the combination of sharpening means, a holder for cutting means having two cutting edges, and operating means adapted to be actuated in one direction only, whereby one side of both edges are simultaneously acted upon by said sharpening means, substantially as described.

7. In a razor blade sharpener or the like, the combination of sharpening means, a holder for cutting means having two cutting edges, and operating means for said sharpening means and holder, whereby during actuation of said operating means in one direction said sharpening means, act alternately on one side of said edges simultaneously and on the opposite sides of said edges simultaneously, substantially as described.

8. In a razor blade sharpener or the like, the combination of a pair of sharpening elements, an intermittently movable holder for cutting means having two cutting edges, and operating means for said elements and holder, whereby during actuation of said operating means in one direction one side of one edge is acted upon by one of said elements while one side of the other edge is

acted upon by the other element, substantially as described.

9. In a razor blade sharpener or the like, the combination of a pair of sharpening elements, a movable holder for cutting means having two cutting edges, and operating means for said elements and holder adapted to be actuated in one direction to secure the alternate action of said sharpening elements first simultaneously on one side of both of said edges and then simultaneously on the opposite side of both of said edges, substantially as described.

10. In a razor blade sharpener or the like, the combination of a pair of rotary sharpening elements, a holder for cutting means having two cutting edges intermittently rotatable in one direction, and operating means to rotate said elements and holder, whereby to secure an alternate action of said sharpening elements first simultaneously on one side of both of said edges and then simultaneously on the opposite sides of said edges, substantially as described.

11. In a razor blade sharpener or the like, the combination of a pair of rotary cylindrical sharpening elements, a holder for cutting means having two cutting edges intermittently rotatable in one direction, and operating means adapted to be actuated in one direction only to rotate said elements and holder, whereby to secure the alternate action of said sharpening elements first simultaneously on one side of both of said edges and then simultaneously on the opposite sides of said edges, substantially as described.

12. In a razor blade sharpener or the like, the combination of a pair of movable sharpening elements, an intermittently movable holder for cutting means having two cutting edges, said sharpening elements having mutilated or cut-away portions adapted to match to permit actuation of said cutting means, and means to operate said elements and holder, whereby to secure the alternate action of said elements first simultaneously on one side of both of said edges and then simultaneously on the opposite sides of both of said edges, substantially as described.

13. In a razor blade sharpener or the like, the combination of a pair of cylindrical sharpening elements, an intermittently rotatable holder for cutting means having two cutting edges, said sharpening elements having mutilated or cut-away portions adapted to match to permit turning of said cutting means, and means to operate said elements and holder, whereby to secure the alternate action of said elements first simultaneously on one side of both of said edges and then simultaneously on the opposite sides of both of said edges, substantially as described.

14. In a razor blade sharpener or the like, the combination of a pair of rotary cylin-

drical sharpening elements, a holder for cutting means adapted to apply said cutting means to said elements, means to apply pressure to said holder to concave said cutting means when in operative relation with said sharpening elements, and means to rotate said elements, substantially as described.

15 In a razor blade sharpener or the like, the combination of a pair of rotary cylindrical sharpening elements; an intermittently actuated holder for cutting means adapted to apply said cutting means to both of said elements at the same time, means to apply pressure to said holder to concave said cutting means when in operative relation with said sharpening elements, and means to rotate said elements and actuate said holder, substantially as described.

20 In a razor blade sharpener or the like, the combination of a pair of rotary sharpening elements, a blade-holder intermittently rotatable in one direction and adapted to apply the edge of the blade to said elements, and means to operate said elements and holder, substantially as described.

25 In a razor blade sharpener or the like, the combination of a pair of rotary sharpening elements geared together, means to rotate said elements, an intermittently rotatable blade-holder, a pinion fixed to said holder, and a toothed sector rotatable with

one of said elements and adapted to engage said pinion at intervals to effect the intermittent rotation of said holder, substantially as described.

35 18. In a razor blade sharpener or the like, the combination of a pair of rotary sharpening elements geared together, means to rotate said elements, an intermittently rotatable blade-holder, a pinion fixed to said holder, a toothed sector rotatable with one of said elements and adapted to engage said pinion at intervals to effect the intermittent rotation of said holder, and means acting on said holder to maintain it in proper position for the engagement of the teeth of such sector with those of said pinion, substantially as described.

40 19. In a razor blade sharpener or the like, the combination of a pair of sharpening elements, a holder adapted to receive cutting means having a pair of cutting edges, and means to effect the alternate sharpening action of said elements simultaneously on the same side of both edges and then simultaneously on the opposite sides of both edges, substantially as described.

GEORGE G. FLOYD.

Witnesses:

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EDWIN B. SHERZER.