S. KANNER.

RAZOR BLADE SHARPENING MACHINE.

APPLICATION FILED AUG. 18, 1919.

1,385,622. Patented July 26, 1921.

Fig. 1.

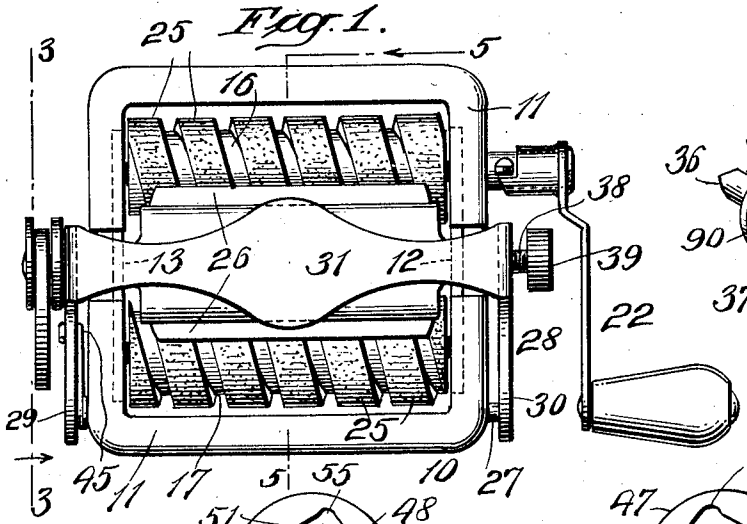


Fig. 7.

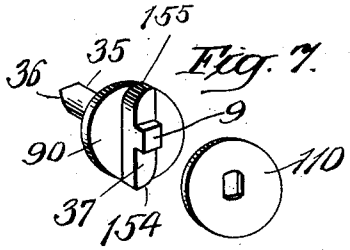


Fig. 2.

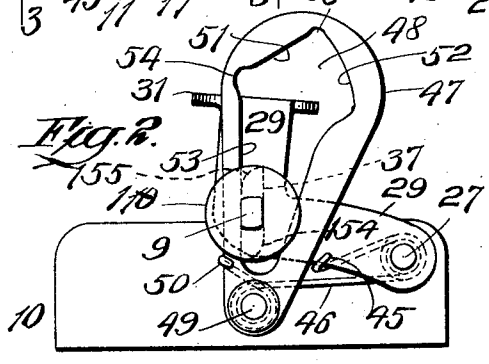


Fig. 5.

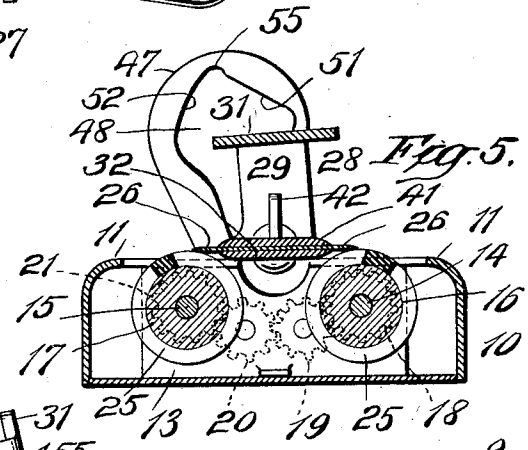


Fig. 3.

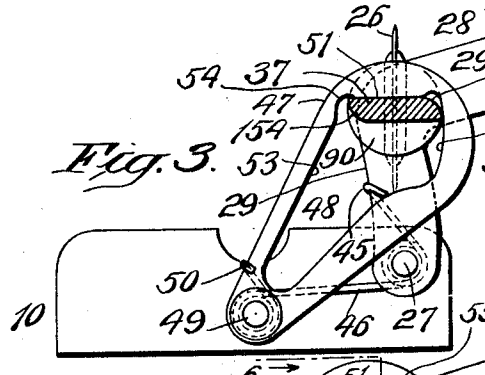


Fig. 6.

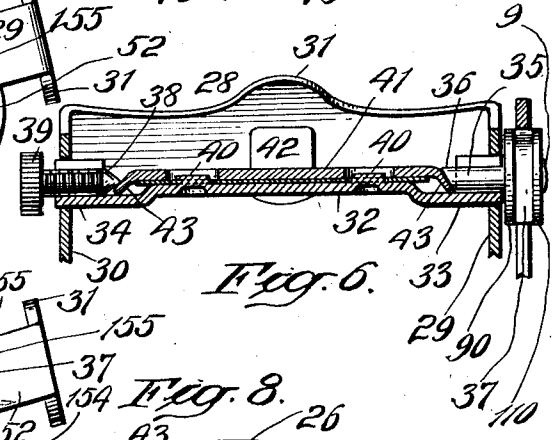


Fig. 4.

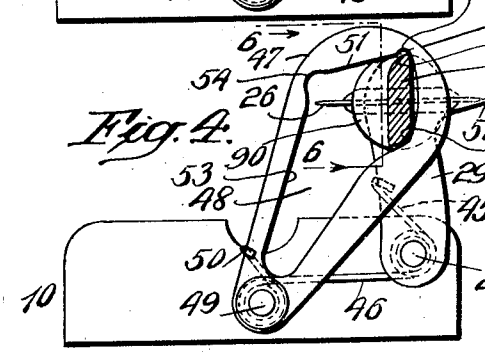
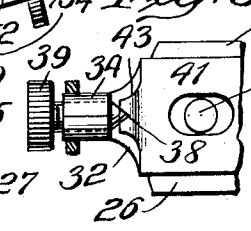


Fig. 8.



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RAZOR-BLADE-SHARPENING MACHINE.

1,385,622. Specification of Letters Patent. Patented July 26, 1921.

Application filed August 18, 1919. Serial No. 318,359.

To all whom it may concern:

Be it known that I, SAMUEL KANNER, a citizen of the United States, and a resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Razor-Blade-Sharpening Machines, of which the following is a specification.

The invention provides a machine for sharpening thin razor blades of the kind used in safety-razors, and the object is to provide a small inexpensive machine by means of which a person may conveniently sharpen both edges of a safety razor-blade having two edges or both sides of a razor-blade having only one cutting edge and a stiffening member on the other edge, both types of blades being well-known.

The machine of my invention comprises a box, a pair of sharpening rolls therein, a frame mounted on and extending over said box and movable toward and from said rolls, a blade-holder rotatably mounted in said frame and adapted to hold a blade for presentation to said rolls, a spring normally acting to hold said blade-holder frame in its outer position, and means whereby the blade holding member may be automatically reversed in position so that the side of the blade which faced outwardly when the other side was presented to the sharpening rolls, may be turned to face downwardly preparatory to the blade being again subjected to the action of the sharpening rolls. The reversal of the blade and its holder preferably takes place during the downward movement of the frame carrying the blade holding or clamping members, so that on each downward movement of said frame the side of the blade not on the next previous movement placed against the sharpening rolls, may be caused to engage said rolls.

The sharpening rolls or rollers are preferably made of wood having applied thereto a spiral winding of a leather strip, so that the leather may, in its action on the blades, produce the effect of an edge movement thereagainst, or, to such extent as may be possible, the effect of the heel to toe movement in the ordinary stropping of razor blades.

Referring to the drawings:

Figure 1 is a top view of a razor blade sharpening machine embodying my invention, the parts of the machine being shown in their operative position with a razor blade pressed against the sharpening rollers;

Fig. 2 is a side elevation of the same, taken from the left hand side of Fig. 1;

Fig. 3 is an elevation taken from the left hand side of Fig. 1 with the parts in their inoperative position and the same being partly in section on the dotted line 3—3 of Fig. 1;

Fig. 4 is a view corresponding with Fig. 3, but illustrating the parts in such position that the razor-blade holder is turned horizontally to receive or release a blade;

Fig. 5 is a vertical section through the machine, taken on the dotted line 5—5 of Fig. 1 and showing the parts of the machine in operative position with a blade held against the sharpening rollers;

Fig. 6 is a vertical section through the upper portion of the machine, taken on the dotted line 6—6 of Fig. 4;

Fig. 7 is a detached perspective view of the follower connected with the blade-holder and adapted to coöperate with certain cam features for reversing the blade for presentation to the sharpening rollers, Fig. 7 also showing in perspective a disk utilized to secure the said follower to the cam-arm hereinafter referred to and shown in side elevation in Figs. 2, 3 and 4, and

Fig. 8 is a top view, partly in section, of the left hand end portion of the razor-blade holder, a blade being in position therein.

In the drawings, 10 designates on open top box having an inwardly extending flange 11 along its upper edges and near its sides vertical plates 12, 13, which serve as bearings for the shafts 14, 15 of the parallel sharpening rollers 16, 17. The rollers 16, 17 are properly spaced apart and their shafts at one end are connected by gear-wheels 18, 19, 20, 21, the gear-wheels 19, 20 being idlers and transmitting the motion of the gear-wheel 18 to the gear-wheel 21. The gear-wheel 18 is on the shaft of the roller 16, and on one end of said shaft, which projects through the side of the box 10, is a driving crank 22 of any suitable construction, and the crank 22 in connection with the aforesaid gear-wheels is employed to rotate the sharpening rollers in reverse directions so that

the surfaces of the rollers may be constantly carried in a direction away from the edges of the razor blade.

The sharpening rollers are, except at their upper portions, housed within the box 10, and these rollers may be variously constructed. I illustrate the preferred construction of sharpening rollers, and in this construction the body of the roller is made of wood and spirally wound with strips of leather 25, which will be secured by gluing or otherwise to the body of the rollers. The spirals of the rollers 16, 17 are reverse to each other so that both edges of the blade 26 may be correspondingly treated by the leather strips 25. The spiral strips, when the rollers are in motion, have what may be said to be a traveling effect or action on the edges of the blade in imitation of the heel to toe movement ordinarily applied to razor blades in hand stropping. I do not limit my invention, however, to the spirally wound rollers, since plain covered rollers may be used with good effect as substitutes therefor.

I secure on pins or pivots 27 at opposite sides and near one end of the box 10, a blade and blade-holder carrying frame 28 comprising two end members 29, 30 and a connecting bar 31, said parts preferably being in one integral piece of sheet metal. The frame 28 carries a clamp or holder for the blade 26, or other form of blade, when the latter is to be moved to and held against the rollers 16, 17, and said clamping means comprises a rotary bar 32 whose end portions are made tubular, as at 33, 34 and mounted in bearing openings formed in the sides 29, 30 of the frame 28. The tubular end portion 33 of the bar 32 has rigidly secured within it a pin 35 which is undercut at its inner end, as at 36 (Fig. 6), and at its outer end is integral with or carries a traveler 37 formed on the face of a disk or head 90 on said pin 35, as shown in Fig. 7. The traveler 37 has parallel sides and reversely curved cam end portions 154, 155 and is also preferably formed with a polygonal central pin 9 to enter and be upset in a correspondingly formed hole in a disk 110, as indicated in Figs. 2, 6 and 7. The tubular portion 34 of the rotary bar 32 is internally threaded and receives a pointed screw 38 whose head 39 is exposed beyond the side 30 of the frame 28. The bar 32 may be formed with upwardly projecting studs 40, when the machine is to be employed for sharpening safety razors of the Gillette type, as the blade 26. The bar 32 may be considered as the lower clamping member to receive the blade 26, and upon said blade and bar 32 is detachably applied an upper clamping member 41 having a finger-piece or lift 42 and downwardly deflected ends 43 which are adapted to lie below the inclined portion of the inner end of the pin 35 and below the point of the screw 38, as shown in Fig. 6. The screw 38 will be removed outwardly when the blade 26 is to be applied to or removed from the bar 32. When the screw 38 is screwed outwardly the bar 41 may be easily lifted from the bar 32, and thereafter when a blade 26 has been applied upon the bar 32, the bar 41 may be restored to position and fastened by the inward movement of the screw 38 against the adjacent end 43 of the bar 41. The screw 38 and undercut end 36 of the pin 35 operate in connection with the inclined ends 43 of the bar 41 to wedge said bar 41 downwardly against the razor blade, thereby holding the same firmly in position on the bar 32. The bar 41 is formed with openings to receive the upper ends of the studs 40.

The frame 28 has angular side members, as shown in Figs. 2, 3 and 4, and has in use an oscillatory movement or from its upper position, shown in Fig. 3, to its lower position, shown in Figs. 2 and 5, and then back to its upper position. When the frame 28 is in the position shown in Figs. 2 and 5, the blade 26 is against the sharpening rollers 16, 17. The frame 28 is moved to its lower position by the pressure of the hand against the cross-bar 31 of said frame, and said frame is moved to its upper position by the action of a spring 45 formed from a rod 46, one end of which is wrapped around one of the pins 27 and then carried upwardly and folded against the inner edge of the arm 29 of said frame 28, as shown in Figs. 1 to 4 inclusive. The spring 45 is always under tension and when, by the pressure of the hand against the cross-bar 31, the frame 28 is moved to its lower position, shown in Figs. 2 and 5, such movement is against the stress of the spring 45.

The mechanism which automatically reverses the blade-holder and the blade held thereby during each downward movement of the frame 28 toward the sharpening rollers, comprises a bar or plate 47 having an opening 48 therein, the traveler 37 and disks 90 and 110, which engage the sides of said bar or plate 47 and confine the traveler 37 within the opening 48 and against the cam surfaces, hereinafter described, on said bar or plate 47 at the edges of said opening 48. The bar or plate 47 is pivotally mounted by means of a pin 49 at one side of the box 10, and said bar or plate 47 has, in use, a limited oscillatory motion from its position, shown in Fig. 3, to its position shown in Fig. 2, and then back to its position shown in Fig. 3, and said bar or plate 47 is given a spring tension acting to move it from its position shown in Fig. 2 to that shown in Fig. 3 by means of a spring 50 which is formed from one end of the rod of wire 46, said end being wrapped around the pin 49 and then folded against the forward edge

of the bar or plate 47, as shown in Figs. 2, 3 and 4. The frame 28 and bar or plate 47 therefore are both under a tension acting to move said parts 28, 47 simultaneously to their upper position.

It may be seen on reference to Fig. 6 that the disks 90, 110 are close to the opposite faces of the bar 47, and, with the spring 50, said disks serve to retain the traveler 37 against the operative edges of the opening 48 in said bar 47. The bar 47 has the edge of its opening 48 shaped in accordance with the shape of the traveler 37 whatever the shape of the traveler may be. In the present instance the traveler 37 is in the form of a somewhat elongated bar having oppositely curved end portions 54, 55. In the employment of this form of traveler the edge of the opening 48 in the bar 47 will be formed at its upper end with the right-angular edges 51, 52 and along its forward side with the plain straight edge 53. At the juncture of the plain straight edge 53 and deflected edge 51, the edge of the opening 48 is formed with an outwardly curved recess 54, and at the junction between the edges 51, 52 is an outwardly curved recess 55.

In the construction shown, when the frame 78 is turned downwardly to carry the blade 26 against the sharpening rollers, considering Fig. 3, one side of the traveler 37 being against the edge 51 of the bar 47 with the blade 26 standing vertically, the first action will be that the forward edge of the traveler 37 will enter the recess 54 of the bar 47 and being restrained thereby, said traveler will turn to cause what is its lower surface in Fig. 3 against the straight edge 53 of the bar 47, and then be continued downwardly along said edge 53, the result being that the blade-holder and blade will reach a position at which both edges of the blade are presented horizontally to the sharpening rollers. While the frame 28 is held by the hand of the user in its lower position, shown in Figs. 2 and 5, said user will, by means of the crank 22, rotate the sharpening rollers against which the blade is then positioned. After the crank 22 has been operated to a sufficient extent, the pressure of the hand on the frame 28 is relaxed and said frame and the bar 47 are allowed to turn to the position shown in Fig. 3, the springs 45, 50 compelling said frame and bar to turn upwardly. During the upward movement of the frame 48 and bar 47, the traveler 37 first moves upwardly along the plain edge 53 of the bar 47 and then straddling the recess 54 engages and rides along the deflected edge 51 of the bar 47 and finally stops when reaching the position shown in Fig. 3, the blade-holding members and blade 26 being turned to stand vertically on edge by the movement of the traveler 37 from the straight edge 53 of the bar 47 to the deflected edge 51 of said bar, and, looking at Fig. 3, that face of the blade 26 which was against the sharpening rollers being turned to face toward the left. On the next down-stroke of the frame 28 the operation hereinbefore described will be repeated, the left hand end of the traveler 37, looking at Fig. 3, entering the recess 54 and operating to turn what appears to be the lower face of the traveler, looking at Fig. 3, against the straight edge 53 of the bar 47, and this having the effect of turning the blade-holding members and blade so that that face of the blade, which in Fig. 3 faces the left, becomes turned over and the opposite face of said blade turns downwardly so that during the continued down-stroke of the frame 28 the blade becomes fully turned over so that that face of the blade which did not engage the sharpening rollers on the preceding down-stroke of the frame 28 may be presented to said rollers and become thereby, on the rotation of the crank 22, sharpened at its cutting edges.

The operation of the traveler 37 just hereinbefore described is repeated with each down-stroke and each up-stroke of the frame 28. The traveler 37 is caused to turn over on each down-stroke of the frame 28 so as to reverse the blade 26 for presentation to the sharpening rollers, but said traveler 37 does not become wholly reversed on the up-stroke of the frame 28, but simply rides upwardly to the position in which it is shown in Fig. 3.

The reversal of the blade is accomplished automatically, the means reversing the blade and blade-clamping members being actuated from the pivoted manually operated frame 28. I illustrate the traveler 37 and bar 47 as one convenient means for effecting the reversal of the blade during the movement of the frame 28, but I desire it to be understood that I do not limit the invention to the employment of the particular shape of traveler 37 and particular shape of bar 47 illustrated, since I am aware that other forms of devices my be used to insure a reversal of the blade during the movement of the frame 28. I have, however, illustrated in the traveler 37 and bar 47 a very durable and reliable construction and one which enables me to produce a very efficient and strong razor-blade sharpening machine.

I do not limit my invention to the particular form of clamping members 32, 41 shown in the drawings, since this form is intended for use in holding a razor-blade of the Gillette type having two cutting edges. The clamping members 32, 41 will be variously shaped to suit the different styles of safety razor-blades in use, such as blades having only one cutting edge.

The machine of my invention is comparatively small and inexpensive, and it is de-

signed to, when in use, be held in the left hand, the fingers of the hand being below the box 10 and the thumb upon the member 31 of the frame 28, and when the device is thus held with a blade in position against the rollers, the crank 22 will be rotated by the right hand.

When a blade having two cutting edges is treated said blade will engage both sharpening rollers at one time, as shown in Fig. 5, while when a blade having only one cutting edge is treated, one side of one edge thereof will first engage one of said rollers and then the other side of the same edge will engage the other roller, said blade engaging the rollers alternately.

What I claim as my invention and desire to secure by Letters Patent, is:

1. A razor-blade sharpener of the character described comprising an open-top box, rotary sharpening rolls therein, a frame movable toward and from said rolls, a rotatably mounted blade holder carried by said frame and blade reversing means for automatically reversing said blade holder including an actuating traveler on the end of said blade holder, a bar pivoted on said box and containing an opening therein receiving said traveler and having surfaces to coöperate therewith for reversing the blade holder and a spring pressing the said bar against said traveler, said bar being an integral closed one-piece frame presenting unbroken outer edges and confining on all sides said traveler in the opening formed therein.

2. A razor-blade sharpener as in claim 1, characterized by said traveler being on a disk which engages the inner face of said bar and having a disk engaging the outer face of said bar, whereby said traveler becomes confined between said disks while within said opening in said bar and said bar becomes confined between said disks.

Signed at New York city, in the county of New York and State of New York, this 13th day of August A. D. 1919.

SAMUEL KANNER.

Witnesses:
ARTHUR MARION,
CHAS. C. GILL.