O. KAMPFE.

EDGE TOOL SHARPENER.

APPLICATION FILED APR. 3, 1920.

1,426,083. Patented Aug. 15, 1922.

Fig. 1

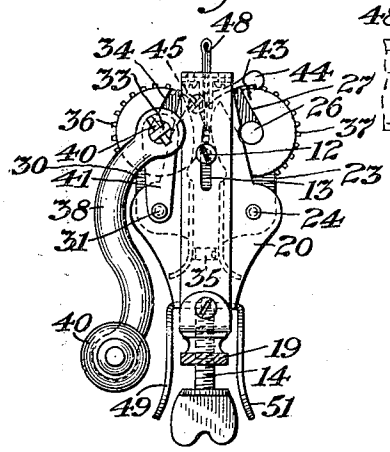
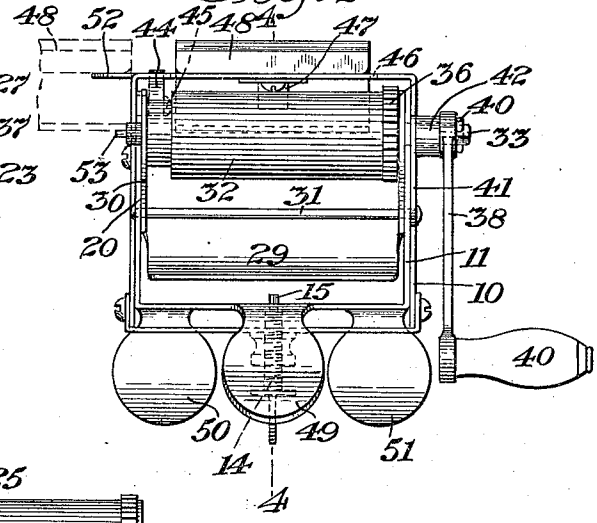


Fig. 2



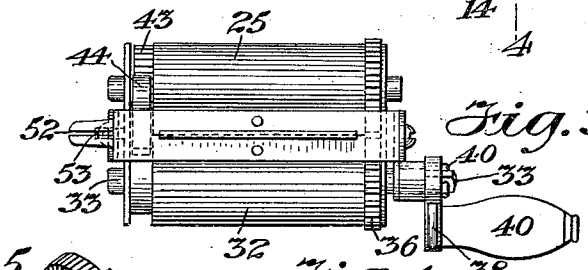


Fig. 3

Fig. 5

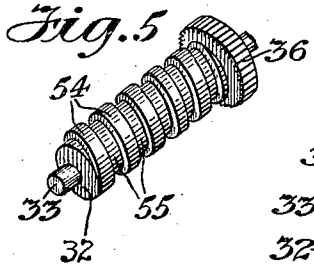
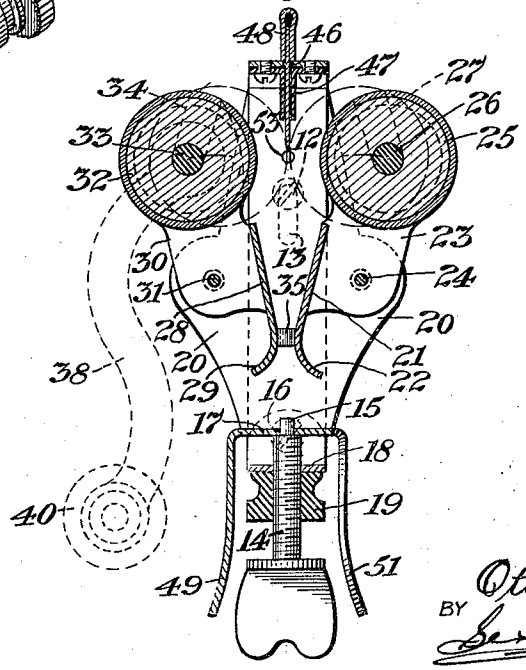


Fig. 4



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EDGE-TOOL SHARPENER.

1,426,083. Specification of Letters Patent. Patented Aug. 15, 1922.

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To all whom it may concern:

Be it known that I, OTTO KAMPFE, a citizen of the United States, residing at Bellmore, in the county of Nassau, State of New York, have invented an Improvement in Edge-Tool Sharpeners, of which the following is a specification.

This invention relates to an edge tool sharpener and more particularly to a device for stropping or sharpening razor blades, especially safety razor blades, whether the same be of the usual sheet steel construction or of the regular razor blade section, although, as will be understood, the edge tool sharpener made in accordance with this invention is not limited to this particular use. The apparatus as herein shown and described is designed to strop or sharpen safty razor blades and the object of the same is the provision of an instrument of this character in which any form of safety razor blade may be properly and adequately sharpened or stropped after the same has become too dull for satisfactory use, whereby any form of safety razor blade may be resharpened and used even that type of razor blade which is ordinarily discarded after the same has become too dull for ordinary use.

In carrying out the invention, the apparatus preferably comprises a frame in which there is adjustably mounted a pair of sharpening rolls adapted to be turned in opposite directions with the edge of the razor blade in a predetermined position between them so that when the surfaces of the rolls are properly prepared, the grinding, sharpening, and stropping of the razor blade will be effected. The sharpening rolls are so adjusted in the frame as to be movable relatively to one another, that is so their axes may be brought together or separated, and in this manner the razor blade to be sharpened is yieldingly held between the sharpening rolls. The sharpening rolls are also adjustable to position relatively to the frame in which the razor blade is fixed so as to bring the rolls into the proper position relatively to the width of the blade to sharpen the blade at the required place. The invention also includes means for turning the sharpening rolls in one direction and preventing their revoluble movement in the opposite direction, as well as means for determining the proper position of the sharpening rolls for stropping or sharpening any particular razor blade. Still furthermore, in carrying out the invention, I prefer to so construct the sharpening rolls as to provide the same with spiral ribs and intervening recesses in juxtaposed positions in the operation of the rolls so as to create a proper edge in the razor blade and at the same time receive and supply the material that may be employed as a stropping or grinding agent.

The edge tool sharpener made in accordance with this invention will be hereinafter more particularly described in conjunction with the accompanying drawings in which:—

Fig. 1 is an end elevation of the instrument.

Fig. 2 is a front elevation of the same.

Fig. 3 is a plan view of the same.

Fig. 4 is an enlarged sectional view on line 4—4 Fig. 2, and

Fig. 5 is a perspective view of one of the rolls.

By referring to the drawing, it will be seen that in carrying out the invention I employ an outer frame which is preferably rectangular and may be made of any suitable material as indicated at 10. While made in separate parts, as shown, the frame may, as will understood, be constructed as a unit or integral structure. An inner frame 11 is employed within the outer frame 10 and is adjustable to position therein. In suitable places the inner frame 11 is provided with trunnions 12 which pass through slots 13 provided therefor in the walls of the outer frame 10 to permit of this adjustment, and as illustrated the adjustment may be effected by a screw 14 which passes through the lower wall of the frame and at its inner end 15 is of reduced cross section so as to be swiveled in the lower portion of the inner frame as indicated at 16, the bottom or lower wall of the inner frame being indicated at 17, while the lower or bottom wall of the outer frame is indicated at 18. Also as illustrated, the adjusting screw 14 may pass through a nut 19 suitably secured to or forming part of the bottom wall 18 in order to form the necessary purchase for the screw threads of the adjusting screw in shifting the inner frame to position. Furthermore, as clearly indicated in Figs. 1 and 4 of the drawing, the sides of the inner

frame are preferably provided with extensions 20 reaching appreciably beyond the adjacent sides of the outer frame 10.

In the inner frame 11, I employ roller frame bodies which are similar in construction but oppositely disposed in the apparatus. One of these roller frame members is indicated at 21 and at its inner or lower edge is preferably curved as indicated at 22. The ends of this roller frame body are outturned at 23 and pivotally connected to the extensions 20 on the corresponding side of the inner frame by a rod 24 or otherwise. 25 indicates a sharpener roll which is mounted on an axle 26 and journaled at the base of a slot 27 extending from the upper or outer edge of the roller frame body, the base of the slot, as will be understood, forming a journal for the axle. Similarly, the other roller frame body is indicated at 28. This also extends between the side members of the inner frame and at its lower edge is curved as indicated at 29. The roller frame body 28 is also provided with outturned sides 30 which are pivotally connected in the corresponding extensions 20 of the inner frame by the rod 31 or otherwise. The other sharpener roll is indicated at 32. This is provided with an axle 33 journaled at the base of slots 34 extending from the upper edges of the sides 30 so that the bases of the slots form bearings for the axle 33. Below the pivotal points of these roller frame bodies the same are fitted with a spring 35 which, as shown, is a leaf spring, although, of course, it may be a spring of any suitable type by which the curved lower ends of the roller frame bodies are normally forced away from each other to maintain the adjacent surfaces of the rollers normally in contact with one another.

On the axle 33 a gear 36 is mounted and on the axle 26 a corresponding gear 37 is mounted, these gears being normally in mesh with one another so that when one gear is turned the other gear and the roller carried by its axle will also be turned but in the opposite direction. On the axle 33, which at one side of the apparatus extends appreciably beyond the outer frame. there is mounted a crank 38 fitted with a handle 40 by which, as will be understood, the axle 33 and the roller 34 may be revolved so as to turn the gear 37 and the roll 25. The crank 38 may be fixed on the axle 33 by a suitable pin 40 or otherwise and in order to prevent any shifting movement of the axle 33 in the slots 34 I may employ a link 41 which at one end surrounds the axle 33 and at the other end is engaged with the rod 31 so as to maintain the distance between the centers of the rod and the axle and to prevent the roller 42 from shifting accidentally. A collar 42 may be fitted on the axle 33 so as to extend between the link 41 and the inner or adjacent surface of the crank 38 in the sharpening or stropping operation. As will be appreciated, it is necessary to cause the rolls to turn toward each other at the point or line at which the sharpening or stropping is effected and in order to prevent the rolls from turning in the opposite direction the axle 26 may be provided with a ratchet 43 engaged at one end by a pawl 44 which at the opposite end is pivotally connected as indicated at 45 in the wall of the inner frame 11, the pawl 44 being maintained in engagement with the ratchet by a spring or any other suitable means as is customary.

In the upper or outer member of the outer frame 10 there is a slot 46 provided to receive a razor blade, and interiorly this member of the outer frame is fitted with guides 47 spaced at a distance equal to the width of the slot so as to guide the razor blade when being inserted in the apparatus to prevent the edge of the same from coming improperly into contact with the surface of the rolls. A blade indicated at 48 is shown in the drawing as placed in position for stropping or sharpening in the apparatus. Furthermore, as illustrated, the lower member of the inner frame may be provided with projections or fingers indicated at 49, 50 and 51 in order to permit the instrument to be conveniently held in the hand of the user in sharpening or stropping a razor blade, the finger 49 being centrally disposed at one side of the frame, while the fingers 50 and 51 are on the opposite side and at the ends of this part of the inner frame.

As will be apparent in the use of this instrument, the inner frame carrying the rolls must be adjusted to the required position relatively to the outer frame to bring the edge to the required place between the rolls, and in order to enable the user to properly adjust the inner frame and rolls to position, the outer frame, as indicated in Figs. 2 and 3, may be provided with a projection having a slot 52, or other blade receiver, in order to maintain the blade in the same relative positions as is required when placed in the apparatus for being sharpened or stropped, and the inner frame provided with a guide or index 53 extending through the slot in the outer frame and placed so as to contact with the edge of the razor blade at the end or corner thereof when the inner frame is adjusted to its proper position. This, of course, necessitates the placing of the upper surface of the guide or index 53 slightly above the center of the axes of the rolls 25 and 32.

Also as indicated in the drawing, the roll members preferably are made of a cylinder of wood or other material each provided with a spiral groove and covered with a layer of rubber or other substance made to

cover the ribs on the cylinder so that exteriorly each roll presents a substantially even surface having a relatively unyielding part over the spiral rib 54, and a relatively yielding part over the recess 55. The rollers act in conjunction with one another in producing the proper edge on the razor or other cutting tool to be sharpened in the instrument, this being effected by applying a quantity of ground emery or other grinding material to the rolls, a portion of which material will accumulate in the yielding parts of the surface of the roll and will be fed to the grinding surfaces over the ribs which progress to produce the edge on the tool as will be apparent.

It will furthermore be understood that the operation of the rolls may be effected manually as illustrated, or by the use of a motor and a suitably geared apparatus if desirable in the original manufacture of the razor blades or in sharpening other tools, and that during the sharpening operation the rolls are yieldingly maintained against the instrument to be sharpened by means of the spring 35 or its equivalent.

I claim as my invention:

1. An instrument for sharpening edge tools comprising an outer frame adapted to receive and hold a tool in a fixed position for the sharpening operation, an inner frame adjustable to position in the outer frame, a pair of roller frames pivotally mounted in the inner frame so as to be movable therewith, a roller mounted adjacent the corresponding ends of each roller frame, a tension device extending between the opposite ends of the roller frames to normally maintain the rollers in contact with each other, and means for turning the said rollers in opposite directions.

2. An instrument for sharpening edge tools comprising an outer frame adapted to receive and hold a tool in a fixed position for the sharpening operation, an inner frame movable longitudinally in the outer frame, means for shifting the inner frame to position relatively to the outer frame, a pair of roller frames pivotally mounted in the inner frame so as to be movable therewith, a roller mounted adjacent the corresponding ends of each roller frame, a tension device extending between the opposite ends of the roller frames to normally maintain the rollers in contact with the each other, and means for turning the said rollers in opposite directions.

3. An instrument for sharpening edge tools comprising an outer frame adapted to receive and hold a tool in a fixed position for the sharpening operation, an inner frame movable in the outer frame and having lateral projections, a pair of roller frames each comprising side members and a connecting member, the side members being pivotally mounted in the projections of the inner frame, a roller mounted adjacent one end of each roller frame, a tension device extending between the connecting members of the roller frames at the ends thereof opposite those in which the said rollers are mounted, and means for turning the said rollers in opposite directions.

4. An instrument for sharpening edge tools comprising an outer frame adapted to receive and hold a tool in a fixed position for the sharpening operation, an inner frame movable in the outer frame and having lateral projections, a pair of roller frames each comprising side members and a connecting member, the side members being pivotally mounted in the projections of the inner frame, a roller mounted adjacent one end of each roller frame, a tension device extending between the connecting members of the roller frames at the ends thereof opposite those in which the said rollers are mounted, means for adjusting the inner frame to position relatively to the outer frame, and means for turning the said rollers in opposite directions.

5. An instrument for sharpening edge tools comprising an outer frame adapted to receive and hold a tool in a fixed position for the sharpening operation, an inner frame movable in the outer frame and having lateral projections, a pair of roller frames each comprising side members and a connecting member, the side members being pivotally mounted in the projections of the inner frame, a roller mounted adjacent one end of each roller frame, a tension device extending between the connecting members of the roller frames at the ends thereof opposite those in which the said rollers are mounted, an adjusting screw swiveled at one end in a portion of the inner frame and passing through and engaging in an adjacent portion of the outer frame for adjusting the inner frame to position relatively to the outer frame, and means for turning the said rollers in opposite directions.

Signed by me this 16th day of March, 1920.

OTTO KAMPFE.