Jan. 7, 1930. J. HOLTZMAN 1,742,707

RAZOR BLADE SHARPENER

Filed March 17, 1922

Fig. 1

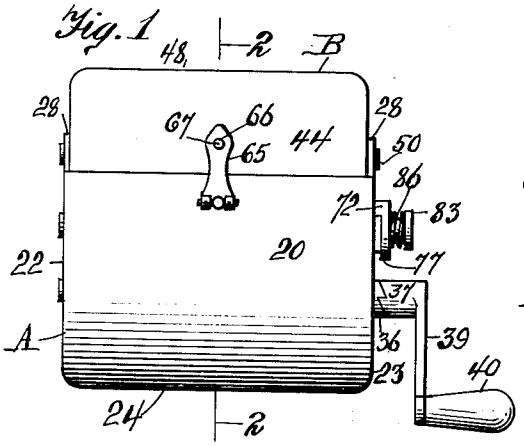


Fig. 2

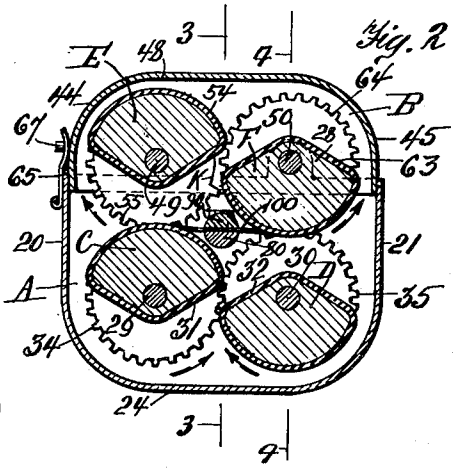


Fig. 3

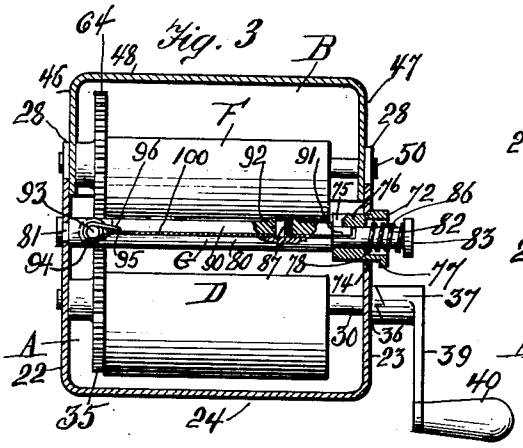


Fig. 4

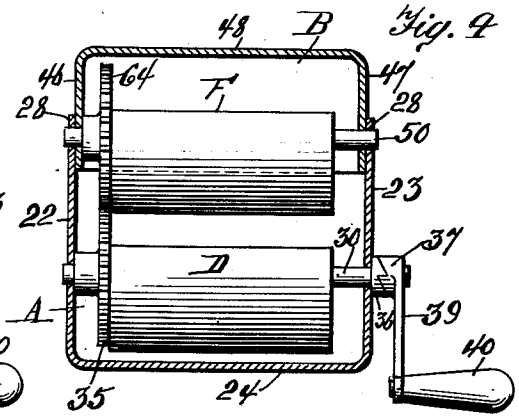
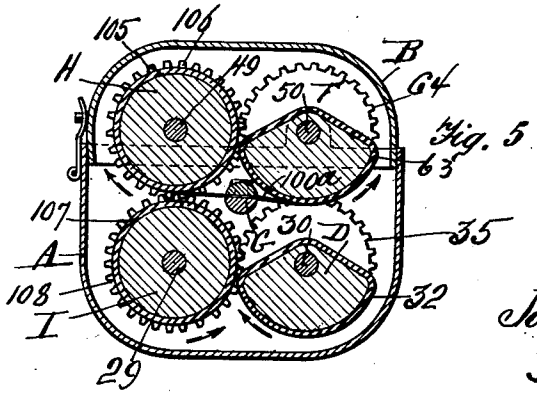


Fig. 5



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1,742,707

UNITED STATES PATENT OFFICE

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RAZOR-BLADE SHARPENER

Application filed March 17, 1922. Serial No. 544,500.

This invention relates to a razor blade sharpener. Its object is the production of a razor blade sharpener, wherein the opposite faces of the opposite cutting edges of a blade are simultaneously sharpened.

A second object is the production of such a sharpener, wherein the cutting appurtenaces of the sharpener locate the blade operated upon in proper operative position.

A third object of the invention is the production of a sharpener wherein one of the shafts therein that supports a sharpening roll constitutes a hinge for the members of the casing of the sharpener.

In the accompanying drawings Fig. 1 shows a front elevation of an exemplification of the razor blade sharpen; Fig. 2 shows a section of Fig. 1 on the line 2, 2; Fig. 3 is a section of Fig. 2 on the line 3, 3; Fig. 4 indicates a section of Fig. 2 on the line 4, 4 and Fig. 5 is a section similar to Fig. 4 with a modification.

A box shaped casing comprises the lower member indicated in its entirety by the letter A, and the top member indicated in its entirety by the letter B.

The member A comprises the front wall 20, the rear wall 21, the side walls 22, 23 and the bottom wall 24. Journal lugs 28 are formed with the side walls 22 and 23. A shaft 29 and a driving shaft 30 are journaled in the side walls 22 and 23. A segmental prismatic sharpening roll C is fastened to the shaft 29 and a similar roll D is fastened to the driving shaft 30. A cover 31 of abrasive material is fastened to the roll C and a similar cover 32 is fastened to the roll D. A spur gear 34 is fastened to the shaft 29 and a spur gear 35 is fastened to the shaft 30. The spur gears 34 and 35 mesh with each other. One member 36 of clutch coupling is fastened to the shaft 30 outside of the wall 23. The second member 37 of the coupling is loosely supported on the shaft 30, and has formed therewith the arm 39, and to the latter is fastened the operatitng handle 40.

The member B comprises the front wall 44, the rear wall 45, the side walls 46, 47 and the roof or top wall 48. A shaft 49 is journaled in the side walls 46 and 47 and a shaft 50 is also journaled in the side walls 46 and 47 and in the journal lugs 28. The coaction of the shaft 50 with the openings therefor in the walls 46, 47 and the lugs 28 forms a hinge between the members A and B. When the said members are locked to each other, the lower edges of the walls of the member B extend into the member A.

A segmental prismatic sharpening roll E with a cover 54 of abrasive material is fastened to the shaft 49. A gear segment 55 is fastened to the shaft 49.

A roll F similar to E is fastened to the shaft 50 and has a cover 63 similar to 54. A spur gear 64 is fastened to the shaft 50 and meshes with the teeth of the gear segment 55.

A spring latch 65 is hinged to the member A and has an opening 66 that can lock with a pin 67 extending from the member B. When the members A and B are locked to each other the spur gear 35 meshes with the spur gear 64, the spur gear 34 meshes with the gear 35 and the gear segment 55, while the latter meshes with the spur gear 64.

A slidable support 72 is supported in an opening 74 in the wall 23. A pair of side lugs 75, a nose 76 and an operating flange 77 are formed with the support 72. The support 72 has formed therewith the counter bore 78.

A blade holder is indicated in its entirety by the letter G, and comprises the supporting member 80 with the square supporting plug 81 that is fastened thereto, and the journal end 82 with the flange collar 83. A spring 86 encircles the journal end 82, and bears between the collar 83 and the bottom of the counter bore 78. Pins 87 extend up from the supporting member 80.

A clamping member 90 having the latch lug 91 and openings 92 is hinged to the supporting member by means of the hinge pin 93. The openings 92 can register with the pins 87. A spring 94 is wound around the ends of the hinge pin 93 and its ends 95 bear on the supporting member 80, while its ends 96 bear up against the clamping member 90.

A blade 100 is located upon the supporting member 80 with its openings engaging the pins 87. The clamping member 90 bears on

said blade 100 to hold it in place. The latch lug 91 is shown in engagement with the nose 76 of the support 72. When the operator pulls out the support 72, by means of the flange 77, the nose 76 will be disengaged from the latch 92, and the spring 94 will cause the clamping member 90 to swing up from the blade 100, which can then be removed from the blade holder G.

In Fig. 5 the invention is indicated with the casing having the lower member A and the upper member B. The rolls F and D with their abrasive covers 63 and 32 are respectively fastened to the shafts 50 and 30 as already described. The spur gears 64 and 35 are shown fastened to their respective shafts 50 and 30.

On the shaft 49 is fastened a cylindrical roll H with its abrasive cover 105, and a spur gear 106 is fastened to the shaft 49. A cylindrical roll I with its abrasive cover 107 is fastened to the shaft 29, and a spur gear 108 is fastened to said shaft 29. The blade holder is shown at G clamping the blade 100^a.

When the members A and B are locked to each other, the spur gear 35 meshes with the spur gears 64 and 108, and the spur gear 108 also meshes with the spur gear 106, while the latter meshes with the spur gear 64.

To use the razor blade sharpener, and referring to Figs. 1 to 4 inclusive, the blade 100 is clamped in the blade holder G as indicated in the drawings, and the members A and B of the casing are locked to each other as shown. The operator then turns the shaft 30, by means of the handle 40 and thereby the sharpening rolls C, D, E and F are turned as indicated by the arrows in Fig. 2. By this means the blade 100 is sharpened with one position of the rolls, with roll C on the bottom side of one cutting edge and with the roll F on the top side of the other cutting edge as indicated in Fig. 2. When the rolls make a turn of 180 degrees, the roll E sharpens the top side of one cutting edge of the blade 100, and the roll D sharpens the bottom side of the other cutting edge of the blade.

To avoid the rotation of the rolls when the members A and B are swung, the gear 55 has a portion of its teeth removed as indicated at K to prevent injury to the rolls, when the member B is swung down to lock with the member A. Because if a full gear were substituted for the gear segment 55 the rolls would turn in a direction opposite to that shown in Fig. 2 with the swinging down of the member B.

Referring to Fig. 2, it will be noted that the axial centers of the shafts 29, 30, 49 and 50 are located at the four corners of a square.

The sum of the radii of any pair of the segmental prismatic sharpening rolls taken on the lines of said square, is greater than the distance between the axes of their shafts. It will be noted that the radii of the pitch circles of the gears are smaller than the radii of the rolls. By this disposition only four gears are required to actuate all the sharpening rolls, and also flex the razor blade being operated upon in opposite directions, which prevents the razor blades breaking when being flexed and sharpened.

In the modification shown in Fig. 5 with the blade 100^a, the ends of the blade holder can rock in their supports in the walls 22 and 23, the portion 81 of the plug that is journaled in the wall 22 being cylindrical.

In this modification the rolls F and H simultaneously sharpen both cutting edges on the top face of the blade, and the rolls D and I simultaneously sharpen both cutting edges on the bottom face of the said blade. The rollers D and F rock the blade 100^a in proper position for the sharpening thereof.

It is to be understood that the present exemplifications of the invention are only illustrative and are not to be considered limitative, as various modifications may be made therein.

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

In a sharpener for a razor blade, the combination of a casing including a lower member, and an upper member hinged thereto, a pair of substantially vertical side walls on the lower member, a pair of substantially vertical side walls on the upper member, the side walls of one member overlapping the side walls of the other member whereby the inner faces of the side walls of one member lie substantially in the same plane as the corresponding outer faces of the side walls of the other member, said members being arranged to swing substantially freely and unobstructedly to allow the entrance of the side walls of one member into the other member, sharpening rolls mounted in the lower member, a sharpening roll mounted in the upper member, said rolls being arranged for the reception of a razor blade in sharpening relation thereto, a holder for a razor blade carried by said lower member, gears operatively connecting said rolls, one of said gears being mounted on the hinge of said casing, said rolls being operatively connected by said gears and parallel to each other in all positions of the casing members, means interposed between the lower member and the upper member to obstruct the free swing of one member toward the other, and thereby normally determining the positions of the rolls and the pressure of the rolls on a blade, and means to turn the rolls.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 15th day of March, A. D. 1922.

JOHN HOLTZMAN.