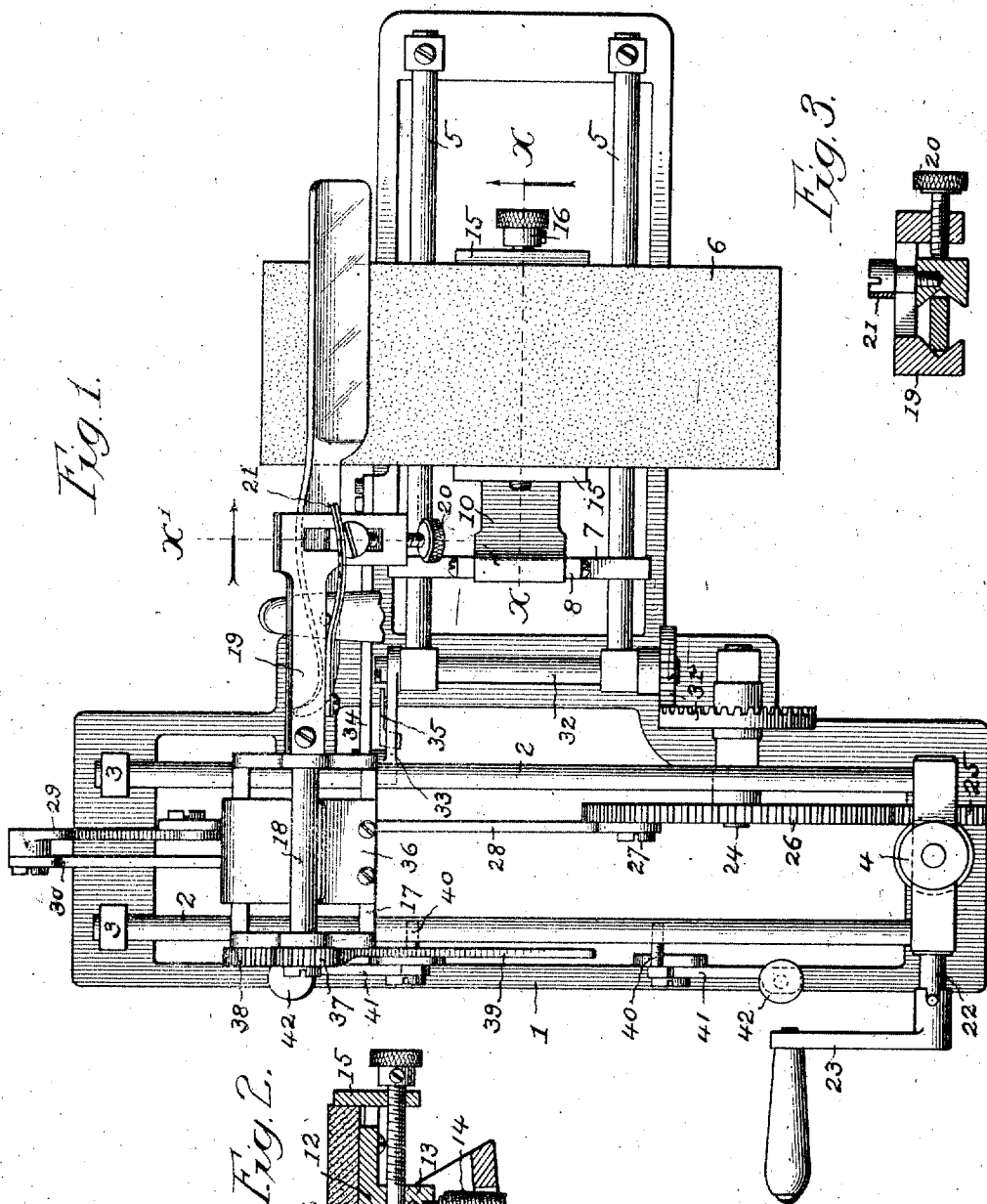


L. E. DENISON.
 RAZOR SHARPENING MACHINE.
 APPLICATION FILED AUG. 22, 1910.

1,001,735.

Patented Aug. 29, 1911.

2 SHEETS—SHEET 1.



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2 SHEETS-SHEET 2.

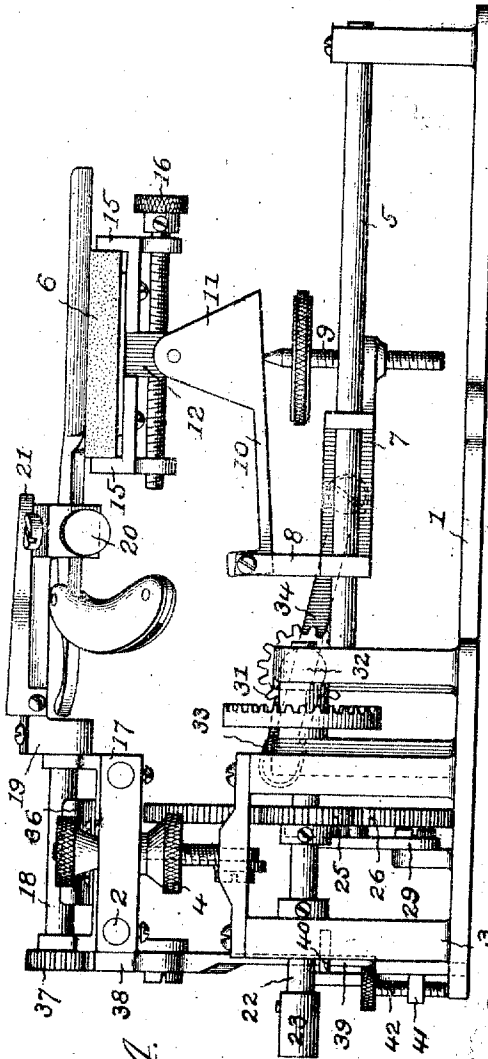


Fig. 4.

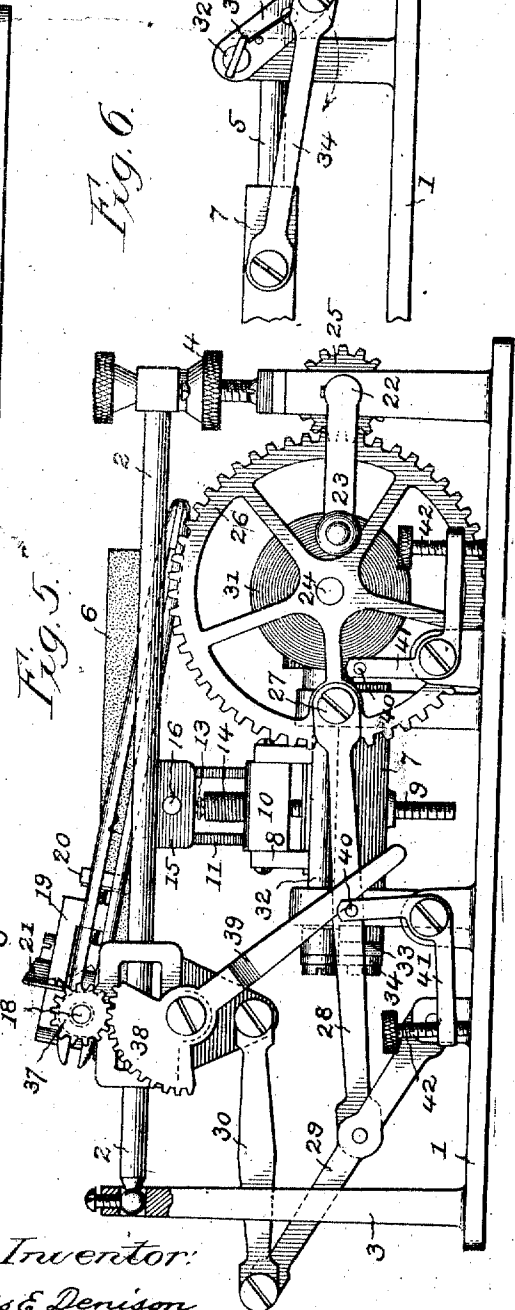


Fig. 6.

Fig. 5.

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UNITED STATES PATENT OFFICE.

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RAZOR-SHARPENING MACHINE.

1,001,735.

Specification of Letters Patent. Patented Aug. 29, 1911.

Application filed August 22, 1910. Serial No. 578,310.

To all whom it may concern:

Be it known that I, LOUIS E. DENISON, a citizen of the United States of America, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Razor-Sharpener Machines, of which the following is a specification.

This invention relates to a machine for honing or sharpening razors and like cutting instruments, and has for its object to provide a simple and efficient structural formation and combination of parts whereby the blade of a razor or the like receives a rectilinear reciprocating motion, and a semi-revolution at the end of each stroke, while the sharpening hone receives rectilinear reciprocation in a plane at right-angles to that of the movement of the razor blade, the combined movements resulting in an oblique contact movement between the blade edge and the hone, adapted to afford a very effective sharpening action.

Minor objects of the present invention comprise different adjustments and connections whereby the relative arrangement of the razor blade and hone can be varied to attain the desired angle as well as contact of the edge of the blade best adapted to afford a perfect sharpening action, all as will hereinafter more fully appear and be more particularly pointed out in the claims.

In the accompanying drawings: Figure 1, is a plan view illustrating the general arrangement of parts of the present invention. Fig. 2, is a detail section on line $x-x$, Fig. 1. Fig. 3, is a detail section on line $x'-x'$, Fig. 1. Fig. 4, is a side elevation. Fig. 5, is an end elevation. Fig. 6, is a detail side elevation of the crank and operative connections with the hone carrier.

Similar numerals of reference indicate like parts in the several views.

Referring to the drawings, 1 represents the bed plate of the machine provided with a series of uprights or standards for the support of the shaft and other operating parts of the machine hereinafter described.

2 is a transverse slideway of any usual construction secured in a vertically adjustable manner to standards 3 of the bed plate, preferably by being connected at one end to a standard by a vertical adjusting screw 4 as shown, and at the other end in a pivotal manner to the other standard. Said slideway is adapted to support and guide the

hereinafter described carriage upon which the razor to be sharpened is carried.

5 is a longitudinal slideway of any usual construction and arranged in substantially right-angle relation to the transverse slideway 2, above described. Said longitudinal slideway is secured to supporting standards on the bed plate 1, and is adapted to support and guide the hereinafter described carriage upon which the flat rectangular sharpening hone 6 or like body is mounted.

7 is a sliding frame moving on the longitudinal guideway 5 and provided at one end with pivot cars 8 for the attachment of the hereinafter described intermediate member, and at the other end with a vertically arranged adjusting screw 9 for effecting a vertical adjustment of said intermediate member.

10 is the intermediate member above referred to, pivoted at one end to the cars 8 aforesaid, and at its other end having operative connection with the adjusting screw 9. Adjacent to such last mentioned end the intermediate member is provided with vertical pivot cars 11 for the pivotal connection of the central member of the holder for the hone 6.

12 is the central member of the hone holder pivoted between the cars 11 aforesaid, and having a centrally depending finger or lug 13 adapted to engage a spring 14 carried by the intermediate member 10, and yieldingly maintain the hone holder and hone in a normal horizontal position.

15 are a pair of opposed jaws sliding upon the central member 12 and connected together by a right-and-left hand screw shaft 16, the action of which is to draw said jaws together against the sides of the hone 6 to clamp the same in proper position in the machine.

17 is a carriage moving on the slideway 2 aforesaid and provided with journal bearings for the carrying shaft 18 of the holder for the razor or other instrument to be sharpened.

19 is the razor holder above referred to, secured to one end of the aforesaid carrying shaft 18, and formed with a pair of clamping jaws between which the shank portion of a razor blade is clamped and held. One of said jaws is made adjustable, and for such purpose is provided with an adjusting screw 20 by which it is forced to clamping action, and with a spring 21 tending to re-

tract the jaw from said clamping action. From the holder 19, the razor blade overhangs the sharpening hone 6, with its cutting edge in proper inclined relation to, and in contact with the upper surface of the hone. In the present mechanism the razor blade receives a rectilinear stroke along the surface of the hone with a semi-rotary reversal at the end of the stroke to bring the cutting edge of the razor into proper position for the succeeding rectilinear stroke in the other direction, and so on serially during a continued operation of the machine with a view to duplicate the ordinary movements generally used in the proper honing of razors by hand, and to such end the sharpening hone receives a simultaneous reciprocating rectilinear movement in a path at substantially a right-angle to the razor blade. The described movements, at their proper periods, are attained in the present invention by a construction and combination of parts as follows: 22 is the main driving shaft receiving rotation from any suitable source, and usually a manually operated hand crank 23, as shown. 24 is a primary countershaft operatively connected to the aforesaid driving shaft by a pinion 25 and gear wheel 26 as shown. 27 is a crank pin, preferably arranged on the gear wheel 26, and having link connections 28 with a vibratory arm 29 pivoted at its lower end to the bed plate 1 with its upper and free end connected to the carriage 17 carrying the razor, by a link 30, as shown. The described mechanism is adapted to impart rectilinear reciprocation to the carriage 17 during a continued operation of the machine. 31 are angle gear wheels forming operative connection between the aforesaid primary countershaft 24 and a secondary countershaft 32 journaled on the bed plate 1 in right-angle relation to the said countershaft 24. 33 is a crank arm carried by the secondary countershaft 32, and having link connection 34 with the sliding frame 7 of the carrier of the sharpening hone 6. The described connections are adapted to impart rectilinear reciprocation to said hone carrier in unison with the reciprocation of the razor carriage. In the preferred form of this part of the present invention, the crank arm 33 is connected to the countershaft 32 by a spring pawl and detent connection 35 of any ordinary construction, and by which the reciprocation of the hone carrier is only effected when the said crank arm revolves in one direction and it receives no reciprocation when the crank arm is revolved in the other direction. The useful function derived from said construction is that the rotation of the other shafts can be effected in a reverse direction with a normal movement of the razor carriage, and with the hone carrier stationary, in the operation of honing

out a nick in the cutting edge of the razor blade, and which is a frequent necessity in the operation of honing razors.

36 is a spring plate or friction member engaging the semi-rotary shaft 18 of the razor holder before described, and adapted to retard the semi-rotary motion thereof, so that the same will stop in its reversing movements with a ceasing of the positive impelling action of the intermittent operating mechanism now to be described.

37 is a pinion carried by the shaft 18 above referred to, and 38 is a companion sector gear meshing therewith. Said sector gear is pivoted on the carriage 17 and is provided with a depending arm 39 adapted to be intermittently moved in the automatic manner hereinafter described.

40 are stop pins arranged in separated relation on the bed plate 1 in the path of the depending arm 39 above described, and adapted to alternately contact with the same and impart oscillation thereto, as the same travels with the carriage 17, and as said carriage nears the end of its stroke in one direction, or the other. With the described construction the reversal movements of the razor holder and razor at the end of the rectilinear reciprocations thereof, as heretofore described, are effected in an automatic manner. In the preferred construction of the present invention said stop pins 40 are adjustable in order to regulate the degree or amount of reversal movement, and to such end are carried on one of the arms of the pair of bell crank levers 41 pivoted on the bed plate 1 as shown. The other arms of said bell crank levers are formed to receive vertical adjusting screws 42 having abutment or bearing upon the said bed plate.

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

1. In a honing machine, the combination of a carriage, a holder journaled on said carriage, a slideway imposing rectilinear movement on said carriage, a carriage for the sharpening hone, a slideway imposing rectilinear movement on the same, the two slideways being arranged in substantially right-angle relation, means for imparting simultaneous reciprocation to the carriages, and means for effecting a semi-rotary reversal of the aforesaid holder at the ends of its stroke, substantially as set forth.

2. In a honing machine, the combination of a carriage, a holder journaled on said carriage, a slideway for said carriage, a carriage for the sharpening hone, a slideway for the same, the two slideways being arranged in substantially right-angle relation, means for imparting simultaneous reciprocation to the carriages, a one way ratchet device arranged in the intermediate operative connections of the hone carriage,

and means for effecting a semi-rotary reversal of the aforesaid holder at the ends of its stroke, substantially as set forth.

5 3. In a honing machine, the combination
of a carriage, a holder journaled on said carriage, a slideway for said carriage, a hone
carrier, a centrally located means for yield-
10 ingly maintaining the hone carrier in a hori-
zontal position, a slideway for said carrier,
the two slideways being arranged in sub-
stantially right-angle relation, means for
imparting simultaneous reciprocation to the
carriage and carrier aforesaid, and means
15 for effecting a semi-rotary reversal of the
aforesaid holder at the ends of its stroke,
substantially as set forth.

4. In a honing machine, the combination
of a carriage, a holder journaled on said
carriage, a slideway for said carriage, a
20 carrier, a hone secured thereto in a yielding
manner, a yielding means for normally hold-
ing the carrier in a horizontal position, a
slideway for said carrier, the two slideways
being arranged in substantially right-angle
25 relation, means for imparting simultaneous
reciprocation to the carriage and carrier

aforesaid, a one way ratchet device arranged
in the intermediate operative connections of
the hone carrier, and means for effecting a
semi-rotary reversal of the aforesaid holder 30
at the ends of its stroke, substantially as
set forth.

5. In a honing machine, the combination
of a carriage, a holder journaled on said car-
riage, a slideway for said carriage, means 35
for imparting reciprocation to said carriage,
a sharpening hone, a carrier for said hone,
a supporting frame for said carrier, a uni-
versal connection between said frame and
carrier, intermediate means for yieldingly 40
holding said carrier in a horizontal posi-
tion, and means for effecting a semi-rotary
reversal of the aforesaid holder at the ends
of its reciprocation, substantially as set
45 forth.

Signed at Chicago, Illinois this 19th day
of August 1910.

LOUIS E. DENISON.

Witnesses:

ROBERT BURNS,
HENRY MOE.