W. F. RUNDEL.

RAZOR SHARPENING MACHINE.

APPLICATION FILED FEB. 27, 1909.

976,927.

Patented Nov. 29, 1910.

2 SHEETS—SHEET 1.

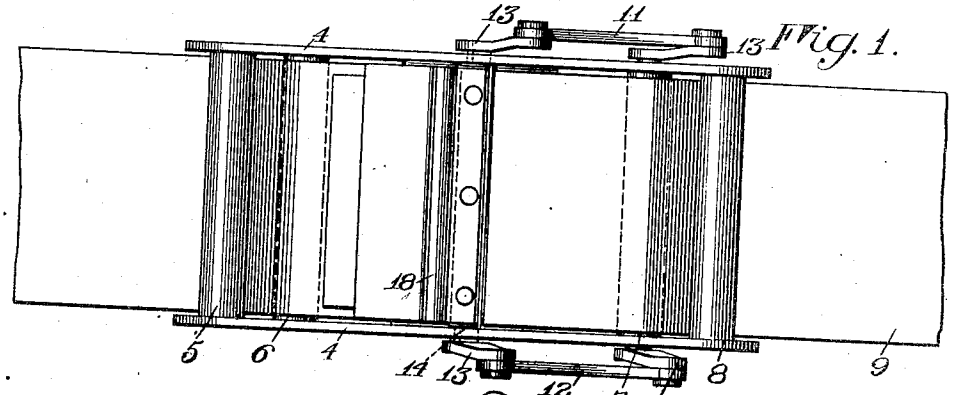


Fig. 1.

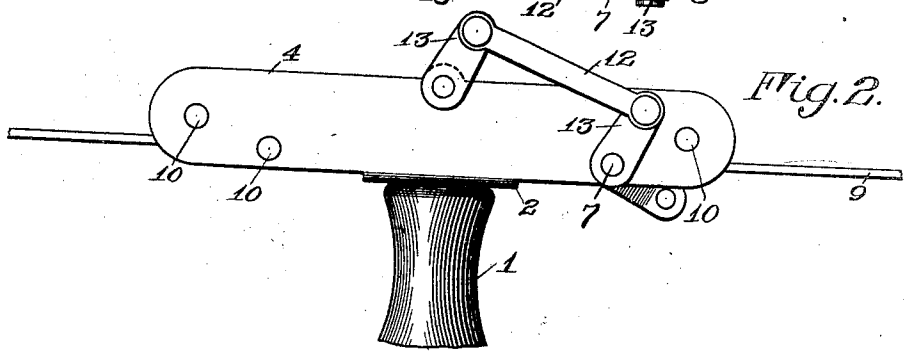


Fig. 2.

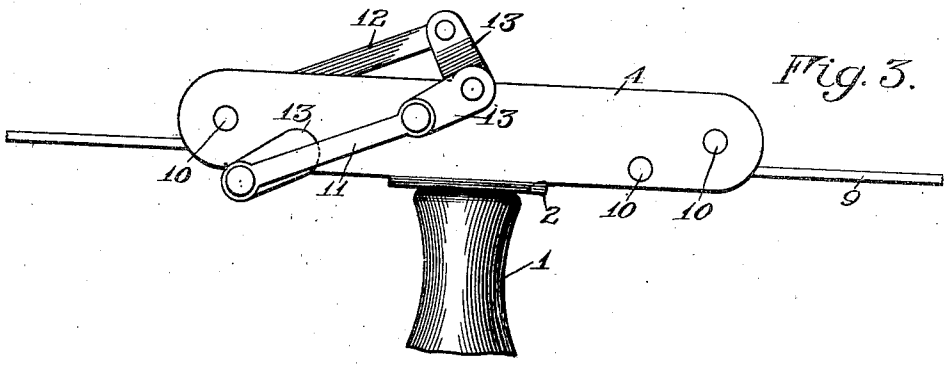


Fig. 3.

Witnesses

Nelson Cobb.

H. H. Simms

Inventor

William F. Rundel

By Church & Rich

His Attorneys

W. F. RUNDEL.

RAZOR SHARPENING MACHINE.

APPLICATION FILED FEB. 27, 1909.

976,927.

Patented Nov. 29, 1910.

2 SHEETS—SHEET 2.

Fig. 4.

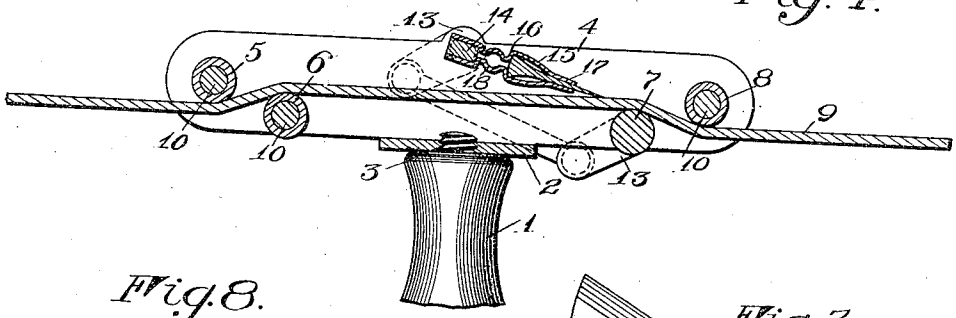


Fig. 8.

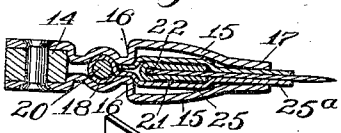


Fig. 7.

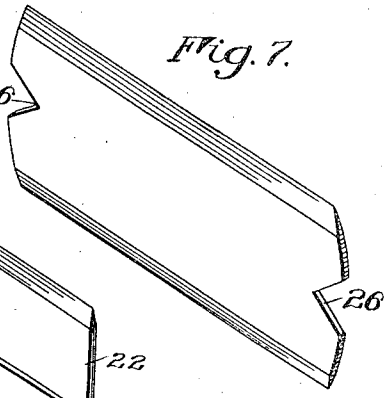


Fig. 6.

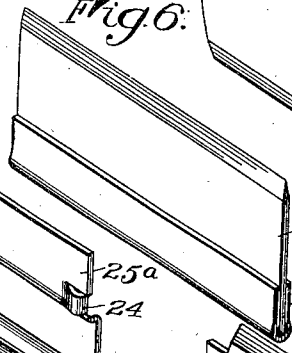


Fig. 5.

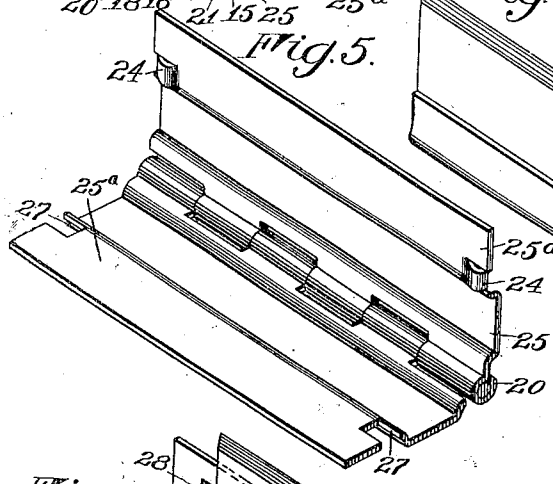


Fig. 10.

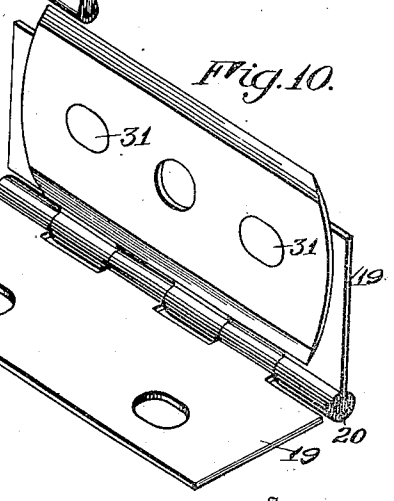
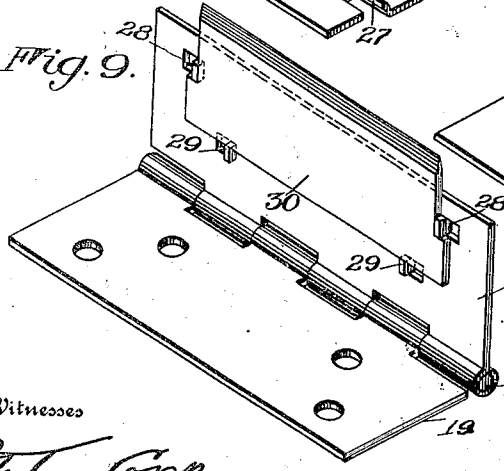


Fig. 9.



Witnesses

Nelson Copp

H. H. Simms

Inventor

William F. Rundel

By Church & Rich

his Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM F. RUNDEL, OF FAIRPORT, NEW YORK, ASSIGNOR TO RUNDEL MANUFACTURING COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

RAZOR-SHARPENING MACHINE.

976,927. Specification of Letters Patent. Patented Nov. 29, 1910.

Application filed February 27, 1909. Serial No. 480,391.

To all whom it may concern:

Be it known that I, WILLIAM F. RUNDEL, of Fairport, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Razor-Sharpening Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference numerals marked thereon.

The present invention relates to razor sharpening machines, and it has for an object to provide a construction adapted to be used for sharpening any of the present commercial safety razor blades.

Another object of the invention is to provide a simple and effective means for shifting a blade holder on movements of the machine in opposite directions over a sharpener.

A further object is to provide an improved blade-holder formed to receive an auxiliary blade-holder which carries a blade not adapted to be held by the main blade-holder.

A still further object is to provide an auxiliary blade-holder adapted to receive several forms of blades.

To these and other ends the invention consists of certain improvements and combinations of parts all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings: Figure 1 is a top view of a razor sharpening machine embodying the present improvements; Figs. 2 and 3 are views of opposite sides of the machine, the handle being broken away at its lower end; Fig. 4 is a longitudinal section of the machine showing one type of razor blade in the main holder; Fig. 5 is a perspective view of one of the auxiliary holders; Figs. 6 and 7 are perspective views of two blades adapted to be received within the holder shown in Fig. 5; Fig. 8 is a transverse section of the main holder showing the auxiliary holder illustrated in Fig. 5 containing the blade shown in Fig. 6; Fig. 9 is a perspective view of another form of auxiliary holder with the blade which it is adapted to hold shown in position thereon, and Fig. 10 is a perspective view of still another form of holder with the blade for which it is adapted positioned thereon.

In the present embodiment of the invention there is employed a frame preferably comprising a handle 1 secured to the under side of a cross piece 2 by a screw extension 3, said cross piece connecting upright side members 4 of the frame and preferably being formed in one piece with said side members which are bent laterally from the flat stock from which the frame is made. The side pieces 4 support the sharpener guide which, in this instance, is in the form of four rollers 5, 6, 7 and 8, the outer rollers 5 and 8 being arranged slightly above the rollers 6 and 7 in order that the sharpener 9, in this instance in the form of a flexible strop, may be passed between them in the manner shown in Fig. 4. This arrangement causes that portion thereof lying between the rollers 6 and 7 to be flat and taut when the strop is placed under tension while the flexed portions will cause the rollers to rotate due to the friction thereon. The rollers 5, 6 and 8 preferably turn on pins 10 which are rigid with the main frame and connect the side pieces 4 while the roller 7 is journaled in the side pieces and may project beyond the latter for the purpose to be hereinafter set forth.

Operating to one side of the plane of the rollers 6 and 7 and in a plane transverse to said plane and between said rollers is a blade holder which, in this instance, is mounted to oscillate so as to carry a blade therein from one side of its axis to the opposite side. In order to effect the oscillation of the blade holder the latter is connected to the roller 7 so that when said roller moves in one direction under the action of the sharpener the blade will be caused to bear upon the strop on one side of the axis of the oscillatory holder and when the roller is shifted in the other direction the holder will also be shifted so as to bear on the strop on the opposite side of said axis.

The connection between the roller 7 and the oscillatory blade holder is preferably in the form of a pair of links 11 and 12 of equal length and eccentrically connected to both the holder and the roller at the same distances from the turning axes of said parts, the points of connection of one link however being shifted relatively to those of the other at distances about the axes less than 180° so that it is impossible for said parts to strike a dead center. To permit the eccentric con-

nection of the links with the holder and the roller, said parts are provided at each end with arms 13 arranged beyond the sides of the frames, the arms of the roller being arranged at an angle to each other and those on the holder having the same angular relation.

The main razor blade holder preferably embodies a shaft 14 to which the arms 13 of the holder are secured. Carried by this shaft is a pair of jaws which may be made from spring material and formed with opposed longitudinally extending grooves, the walls 15 of which preferably converge toward the outer ends of the jaws and have shoulders 16 at their inner ends. The shape of these grooves permits the holder to receive a blade of wedge-shaped cross-section, the portions 17 at the outer sides of the grooves serving to clamp the blade near its edge and the shoulders 16 abutting the rear edge of the blade to limit the inward movement of the latter. On the inner or rear sides of the grooves 15 the jaws may be provided with clamping portions which may also have opposed longitudinal grooves 18 of curved cross section. These clamping portions serve for securing blades of other shapes, as will be now pointed out.

In order to permit the main holder to receive blades having other shapes there is provided one or more auxiliary holders which preferably are of a common form but have different means for engaging and retaining the blades, varying with the shape or form of the blade. The auxiliary holder may embody a pair of jaws 19 hinged together at 20 along a line parallel with the edges of a blade held thereby. This holder clamps a blade and is itself clamped between the jaws of the main holder, the hinge thereof being clamped and supported by the grooved clamping portions 18.

In Figs. 5 and 8 the jaws of the auxiliary holder are formed of two pieces of sheet material stamped or pressed outwardly near the hinge 20 so as to provide flat faces 25^a near the outer edges of the jaws and grooves or depressions 25 to receive an enlargement 21 on the blade 22, longitudinal shoulders on the blade being engaged by shoulders formed by the inner edges of the grooves to retain the blade in the holder. When in the main holder the enlargement formed on the auxiliary holder lies in the grooves 15 and the shoulders 16 are engaged by the shoulders formed on the rear face of the enlargement on the auxiliary holder, while the hinge lies in grooves 18 and the outer ends of the auxiliary jaws are clamped by the forward ends of the main jaws. One jaw may also be provided with projections 24 in the flat portions 25^a in advance of its enlarged or depressed portions 25 to coöperate with the ends of the blade 22 or with the walls of the notches 26 in the blade, shown in Fig. 7, the opposite jaw being recessed at 27 to receive the projections.

In Fig. 9 the jaws of the auxiliary holder are flat and two pairs of projections or shoulders 28 and 29 are provided on one jaw, one pair 28 being nearer the outer edge of said jaw than the other pair 29 which has its members closer together than the first named pair. This holder is adapted for a blade 30 of the form illustrated.

In Fig. 10 the holder is the same as shown in Fig. 9 except that the projections 31 are larger and pass through openings in the blade instead of coöperating with the edges of the blade.

In operation a blade is inserted directly into the main holder from one side of the jaws of the latter, or it is placed in an auxiliary holder which is introduced between the jaws, the strop preferably having first been threaded between the guide rollers as shown in Fig. 4. When the strop is secured at both ends, the handle 1 is grasped and the machine is moved back and forth on the strop which acting on roller 7 causes the latter to turn or oscillate and in turn transmit its motion to the blade holder, thereby presenting to the strop first one side of the blade edge and then the other.

A machine constructed in accordance with this invention is simple to operate and inexpensive to manufacture. It is adapted for sharpening any of the present commercial safety razor blades, thus adding life to blades which are now thrown away.

I claim as my invention:

1. The combination with a main holder having a pair of jaws formed with opposed grooves and clamping portions on the inner and the outer sides of the grooves, of an auxiliary holder embodying a pair of jaws formed with enlarged portions between its inner and outer ends lying in the grooves and with portions on opposite sides of the enlarged portions clamped by the inner and outer clamping portions of the main holder.

2. The combination with a main holder embodying a pair of jaws formed with opposed grooves, the walls of which converge toward the outer ends of the jaws and have shoulders formed at their inner ends, said jaws being provided with opposed grooves in rear of the shoulders, of a removable auxiliary holder embodying a pair of hinged jaws formed with enlarged portions between the hinge and their outer ends, the hinge being engaged by the walls of the inner grooves and the enlarged portion being received within the outer grooves and engaging the shoulders.

3. The combination with a main holder embodying a pair of jaws formed with opposed grooves converging toward the outer ends of the jaws, said jaws being provided

with clamping portions in rear of the grooves, of a removable auxiliary holder embodying a pair of jaws engaged by the clamping portions of the main holder on opposite sides of the grooves of the latter.

4. The combination with a main holder embodying a pair of jaws formed with opposed grooves, and opposed grooves in rear of the first named grooves, of an auxiliary holder having two hinged jaws, the hinge lying in the rear grooves and the forward portions of the auxiliary jaws being engaged by forward portions of the main jaws.

5. An auxiliary razor blade holder embodying a pair of jaws hinged together along a line parallel with the edges of the blade in the holder, one of said jaws having a shoulder thereon to coöperate with a shoulder on a blade to retain the latter in a certain position between the jaws.

6. An auxiliary blade holder embodying a pair of jaws hinged together along a line parallel with the edges of the blade in the holder, one of said jaws being provided with a longitudinally extending shoulder for cooperation with a shoulder on the blade to retain the latter between the jaws.

7. The combination with a main holder having opposed grooves on their inner faces formed by walls converging toward the outer ends of the jaws, of an auxiliary holder embodying two hinged jaws held between the main jaws, one of said hinged jaws being provided with a longitudinally extending shoulder.

8. An auxiliary blade holder embodying a pair of jaws hinged together and formed with opposed flat surfaces near their outer edges, and depressed portions or grooves in rear of the flat portions.

9. An auxiliary blade holder embodying a pair of jaws formed with opposed flat surfaces near their outer edges and grooves or depressed portions in rear of the flat portions, one of said flat portions having projections near opposite sides thereof and the other having recesses to receive said projections.

10. The combination with an oscillatory blade holder, and a sharpener guide arranged in proximity thereto embodying an oscillatory roller, of a pair of links of equal length eccentrically connected to the roller and the holder, the points of the connections of said links being the same distance from the centers of turning of both parts but those of one link being shifted relatively to those of the other a distance less than 180°.

11. The combination with an oscillatory blade holder, and a sharpener guide arranged in proximity thereto embodying an oscillatory roller, of arms extending from opposite ends of said rollers and said blade holder, the arms on the roller being arranged at an angle to each other less than 180°, while those on the holder have the same angular relation, and links of equal length connecting the arms of the roller with those of the holder.

WILLIAM F. RUNDEL.

Witnesses:
HENRY W. HALL,
HAROLD H. SIMMS.