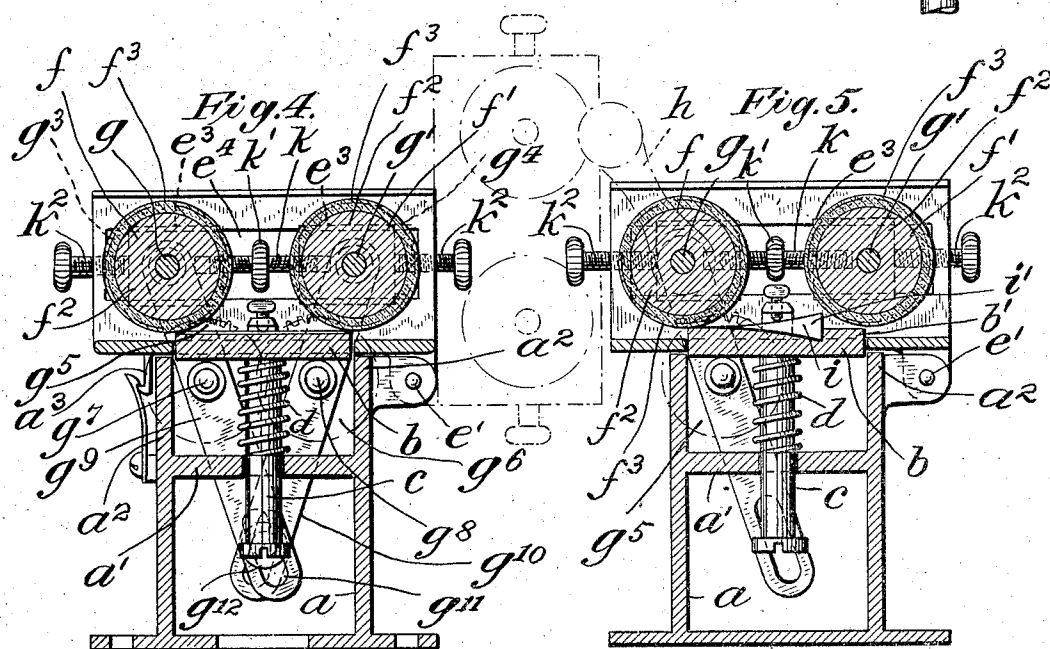
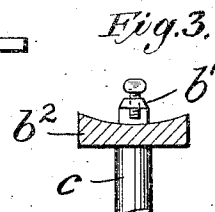


988,285.

2 SHEETS—SHEET 1.



Witnesses:
Georg Hatz.
J. Hubert

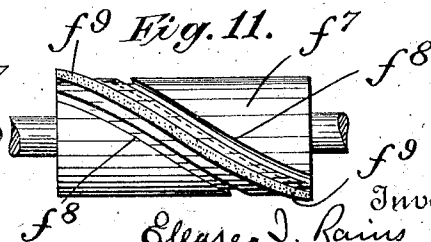
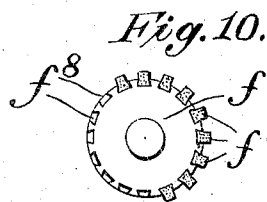
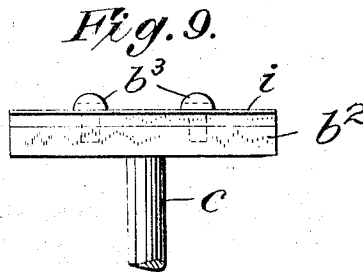
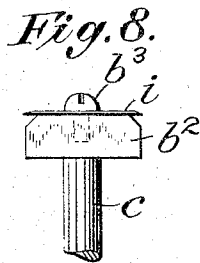
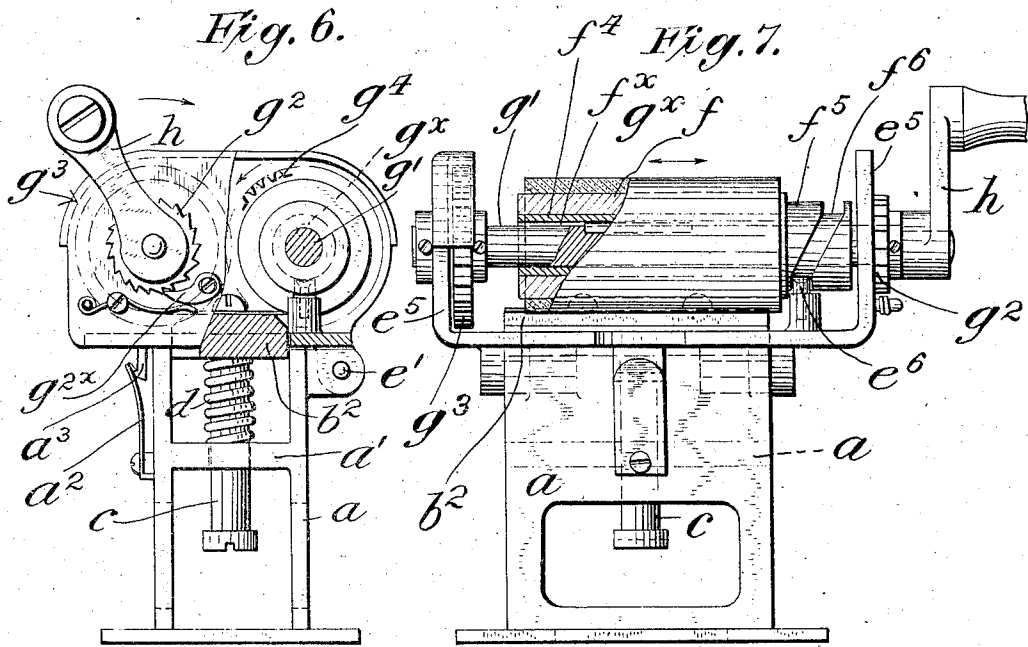
Eleazer J. Raine Inventor
 By his Attorneys
 Redding, Green & Austin

E. I. RAINS.
MACHINE FOR SHARPENING RAZOR BLADES.
APPLICATION FILED MAY 4, 1910.

988,285.

Patented Mar. 28, 1911.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

ELEAZER I. RAINS, OF NEW YORK, N. Y.

MACHINE FOR SHARPENING RAZOR-BLADES.

988,285.

Specification of Letters Patent.

Patented Mar. 28, 1911.

Application filed May 4, 1910. Serial No. 559,818.

To all whom it may concern:

Be it known that I, ELEAZER I. RAINS, a citizen of the United States, residing in the borough of Manhattan of the city of New York, in the State of New York, have invented certain new and useful Improvements in Machines for Sharpening Razor-Blades, &c., of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This invention has for its object to produce an improved machine for sharpening and particularly for putting a fine edge on blades such, for example, as the blades used in safety razors, although, as will be seen hereinafter, the machine is capable of use for sharpening blades other than the double edged blades commonly used in safety razors.

In the improved machine the blade to be sharpened is pressed yieldingly against the sharpening roll, or if a blade having two edges is to have both edges sharpened simultaneously, the blade is similarly pressed against two sharpening rolls, one edge of the blade in contact with each roll. Provisions are also made whereby the blade may be readily secured in place to be subjected to the action of the sharpening roll or rolls.

The improved machine is also very compact and easy to manipulate.

The invention will be more fully explained hereinafter with reference to the accompanying drawings in which it is illustrated, and in which—

Figure 1 is a view partly in end elevation and partly in section showing one form of the improved machine. Fig. 2 is a view of the same in side elevation, partly in longitudinal section. Fig. 3 is a detail view showing one form of blade holder which may be employed. Fig. 4 is a view in transverse section showing a modified form of the machine in which the sharpening rolls are adjustable toward and from each other to accommodate blades of different widths. Fig. 5 is a view similar to Fig. 4, illustrating the machine shown in Fig. 4 as adapted for the sharpening of an ordinary razor blade, having but one cutting edge. Figs. 6 and 7 are views similar to Figs. 1 and 2, but showing still another form of the machine in which provision is made for an endwise movement of the sharpening roll or rolls with reference to the blade. Figs. 8 and 9 are detail views of another form of blade

holder. Figs. 10 and 11 are detail views of a modified form of sharpening roll.

As shown in Figs. 1, 2, 4, 5, 6 and 7, the working parts of the machine are supported upon a suitable frame or base *a* which may be conveniently secured upon a table or shelf. In the base *a* is mounted loosely, so that the position of the blade may be adjusted automatically with respect to the surface of the sharpening rolls, the blade support which, in the machine shown, consists of a head *b*, upon which the blade is secured, a stem *c* extending downwardly through a cross-bar *a'* of the frame, and a spring *d*, bearing at one end against the head *b* and at the other end against the cross-bar *a'*, which presses the head yieldingly upward. The head *b* has a loose fit between suitable guides, which may be the upper ends *a²* of the frame, and the stem *c* fits loosely in the aperture in the cross-bar *a'*, so that the head may have a limited capacity for free movement, particularly in a longitudinal direction as well as in a vertical direction.

Movably secured upon the base *a*, preferably by being hinged thereto, as at *e'*, is a frame *e* in which are mounted the sharpening rolls *f, f'*. These rolls may be formed in any suitable manner and of any suitable material. As shown in Figs. 1, 2, 4 and 5 each roll consists of a cylindrical body *f²*, clothed with leather *f³*, which may be treated in the usual manner for stropping or sharpening purposes. The body *f²* is mounted tightly on a shaft *g* or *g'*, as the case may be, the shafts *g, g'*, being mounted for rotation in the frame *e*. The shaft *g* has secured thereto an operating handle *h*, the hub of the handle being preferably threaded upon the end of the shaft, as indicated at *h'* in Fig. 2, so that the sharpening roll can be rotated by the rotation of the crank or handle in one direction only, rotation of the crank or handle in the opposite direction serving merely to unscrew the handle from the shaft. The shaft *g* may also be provided with a ratchet wheel *g²*, engaged by a spring pressed pawl *g^{2x}* to prevent rotation of the roll in the wrong direction, that is, against the edge of the blade. The two sharpening rolls are geared together to rotate in opposite directions, as by intermeshing gears *g³* and *g⁴* secured on the shafts *g* and *g'* respectively. In the machine shown in Figs. 1 and 2, the blade to be sharpened, indicated at *i*, is secured in place upon the head *b* by screw clamps *b'* which

are secured to the head b . In Figs. 1 and 2 the head b is shown as having a flat upper surface so that the blade is held flat. It may have, however, any other suitable form, such as a concave form, as in the head b^2 shown in Fig. 3.

In the machine shown in Figs. 1 and 2 the sharpening rolls are mounted in fixed bearings in the frame e . It may be desirable in some cases to provide for adjustment of the sharpening rolls toward and from each other. A construction which permits such adjustment is shown in Figs. 4 and 5, in which the shafts g, g' , are mounted in journal boxes e^3 which are movable toward and from each other in a long slot e^4 in the frame e^2 . One of the shafts, as g , as indicated by dotted lines in Fig. 5, may have a crank h applied thereto. The journal boxes or bearing blocks e^3 may be adjusted toward and from each other by a right and left threaded screw shaft k , provided with a milled turning disk k' , and may be held in proper position in the frame e^2 by adjusting screws k^2 threaded in the ends of the frame.

In order that the two rolls g and g' may be rotated together in opposite directions notwithstanding their adjustment toward and from each other, each gear g^3 and g^4 , indicated only by the pitch lines in Fig. 4, meshes with a corresponding gear g^5 and g^6 , each of the gears g^5 and g^6 being carried by a stud g^7, g^8 , projecting from a bar g^9, g^{10} , hung at its upper end upon the corresponding shaft g, g' . The two bars are slotted at their lower ends, as at g^{11} , and, being overlapped, are connected by a clamping screw g^{12} . The two gears g^5 and g^6 are held in mesh with each other, notwithstanding adjustment toward and from each other of the gears g^3 and g^4 with which they are respectively in mesh through relative adjustment of the lower ends of the bars g^9 and g^{10} , the clamping screw g^{12} being loosened for the purpose and then set up tightly.

The machine shown in Fig. 5 is adapted for sharpening of a blade having but one edge, such as an ordinary razor blade indicated at i' . The head b' is suitably formed to support the blade i' and the gear through which the roll f' is otherwise driven from the roll f is dispensed with.

If it be desired to give the sharpening rolls a longitudinal movement as well as a rotary movement, the frame e^5 is somewhat elongated, as shown in Fig. 7, and the shafts g and g' mounted therein are provided each with a spline g^x which engages a longitudinal groove f^x formed in the sleeve lining f^4 of the corresponding roll f or f' as the case may be, and the roll has secured thereto at one end a hub f^5 with an inclined groove f^6 engaged by a pin e^6 on the frame e^5 . Therefore, as the sharpening

rolls are rotated they receive at the same time a longitudinal reciprocating movement.

The head b^2 of the blade supporter, shown in Figs. 6-9, has its edges cut away somewhat so as to leave the edges of the blade free, as clearly shown in Figs. 6-8, and the blade i , if it is provided with holes, as is sometimes the case, may be secured to the head b^2 by screws or pins b^3 which pass through the holes in the blade into the head.

A desirable form of sharpening roll is shown in Figs. 10 and 11, in which the body f^7 of the roll is formed with spirally disposed, dove-tailed grooves f^8 in which are placed strips f^9 of leather or other suitable material.

If it is thought necessary to fasten the hinged frame e down upon the frame a a spring latch a^2 may be secured to the frame a and adapted to engage a hooked stud a^3 on the frame e .

Various other changes may be made in details of construction and arrangement without departing from the spirit of the invention, which is not limited to the precise construction and arrangement shown.

I claim as my invention:

1. A machine for sharpening razor blades and the like, comprising a sharpening roll, means to rotate the same, a spring-pressed blade support adapted to press the blade yieldingly toward the roll, and movable bodily toward and from the roll, and guides in which said support is loosely guided.

2. A machine for sharpening two-edged safety razor blades, comprising a pair of sharpening rolls geared to rotate together, means to rotate the rolls, a spring-pressed blade support having its blade-supporting surface substantially parallel with the plane of the axes of the rolls and adapted to press the blade yieldingly toward the rolls with its edges in contact therewith respectively, said support being movable bodily toward and from the rolls and guides in which said support is loosely guided.

3. A machine for sharpening razor blades and the like, comprising a base, a blade support mounted loosely and yieldingly in the base, a frame mounted movably on the base above the blade support, a sharpening roll mounted in the frame and means for rotating the sharpening roll, said support being movable bodily toward and from the roll.

4. A machine for sharpening razor blades and the like, comprising a base, a blade support mounted loosely and yieldingly in the base, a frame mounted movably on the base above the blade support, and a pair of sharpening rolls mounted in the frame and geared to rotate together, said support being movable bodily toward and from the rolls with its supporting surface substantially parallel with the plane of the axes of the rolls.

5. A machine for sharpening razor blades

and the like, comprising a blade support and sharpening roll mounted to rotate and to have longitudinal movement, means to rotate the roll, and means to cause the roll to reciprocate longitudinally as it rotates.

6. A machine for sharpening razor blades and the like, comprising a blade support, a frame, a shaft mounted for rotation in the frame, a sharpening roll mounted to rotate with and to move longitudinally upon the

shaft, a hub secured to the roll and having an inclined groove, and a stud mounted on the frame and entering said groove.

This specification signed and witnessed this 3d day of May, A. D., 1910.

ELEAZER I. RAINS.

Signed in the presence of—

W. B. GREELEY,
AMBROSE L. O'SHEA.