F. H. PERRY.

TRIMMING MACHINE.

APPLICATION FILED SEPT. 30, 1907.

1,047,283. Patented Dec. 17, 1912.

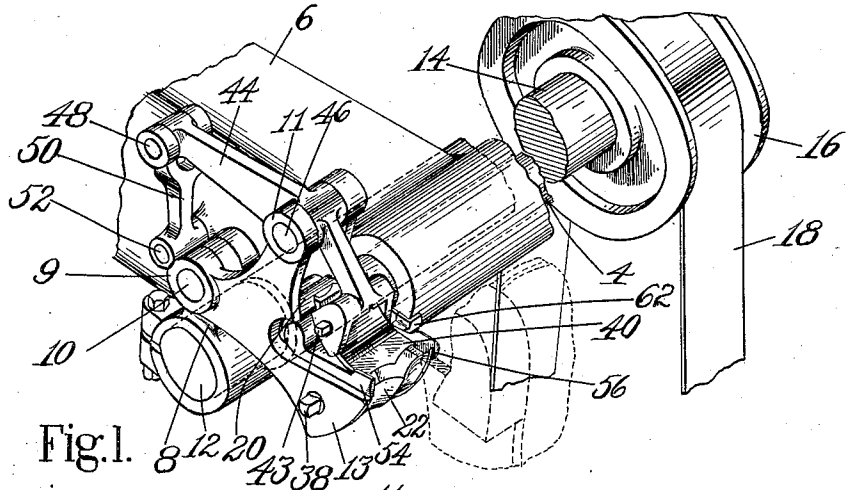

Fig. 1.

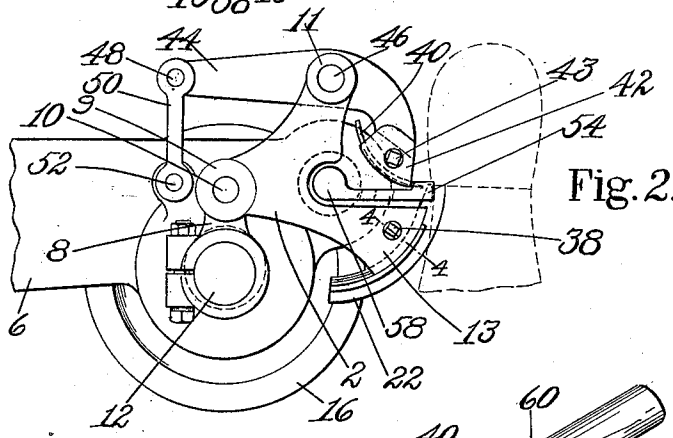

Fig. 2.

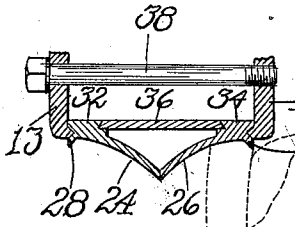

Fig. 4.

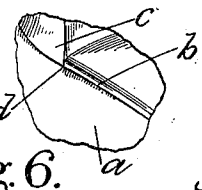

Fig. 6.

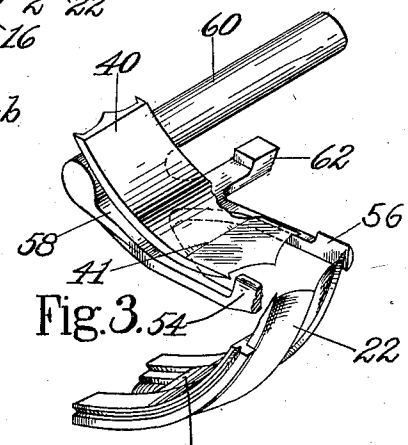

Fig. 3.

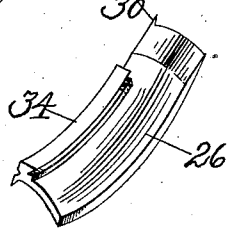

Fig. 5.

WITNESSES.

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TRIMMING-MACHINE.

1,047,283. Specification of Letters Patent. Patented Dec. 17, 1912.

Application filed September 30, 1907. Serial No. 395,194.

To all whom it may concern:

Be it known that I, FREDERICK H. PERRY, a citizen of the United States, residing at Beverly, in the county of Essex and Commonwealth of Massachusetts, have invented certain Improvements in Trimming-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to edge trimming machines. In particular it relates to a machine for trimming the edge of a boot or shoe sole in the region of the heel breast.

An object of the invention is to provide a machine for performing quickly and effectively a trimming operation which has hitherto been performed by hand. In the usual methods of shoe manufacture the trimming of the sole edge follows the attachment of the outsole to the heel and the trimming and breasting of the heel. After these last mentioned operations have been performed, the forepart of the sole and a part of the shank are trimmed by an ordinary edge trimming machine, and the welt or upper edge of the sole is usually beveled or randed at the same time. The edge trimming machine, however, owing to the interference of the heel with the action of the trimming knives, is not adapted to trim the edge of the shank portion of the sole adjacent to the heel breast. This part of the sole is therefore trimmed by hand.

In the hand-trimming operation the workman usually cuts along the edge of the sole with a suitable knife until the heel breast is reached, and then makes a transverse cut in line with the heel breast to remove the material trimmed from the sole edge.

The present invention aims to provide a machine by which the trimming of the sole edge in the region of the heel breast will be performed automatically.

To this end the invention comprises means for trimming the edge of the shoe sole adjacent to the heel breast, and means for severing from the sole the material trimmed by said means.

The invention also provides novel knives for performing the cutting and trimming operations, and novel gaging and protecting means whereby a shoe may be placed readily in proper position for the trimming operation, and whereby the trimming of the upper edge of the sole may be effected without danger of injury to the upper.

In the accompanying drawings;—Figure 1 is a perspective view of a machine embodying this invention, certain parts being broken away for the better illustration of other parts; Fig. 2 is a side elevation; Fig. 3 is a detailed perspective of the two knives and of the guard for the upper; Fig. 4 is a section on the line 4—4 of Fig. 2, showing the construction of the edge-trimming knife; Fig. 5 is a perspective view of one of the sections of the edge-trimming knife; Fig. 6 illustrates the part of the shoe operated upon by this machine.

The machine as illustrated comprises a rocking knife-carrying frame 2 having a pivot stem 4 mounted in bearings in an arm 6 which may be attached to, or form an integral part of, any suitable base or standard. The rocking frame 2 is oscillated or rocked by means of a link 8 held at one end between forked extensions 9 of the frame 2 by a pivot pin 10, and surrounding at its other end an eccentric pin 12 upon the driving shaft 14. A belt pulley 16 upon said shaft 14 is connected by a belt 18 to any suitable source of power. The frame 2 comprises three pairs of arms or forked extensions 9, 11 and 13, these arms, in the construction shown, being integral with the recessed hub 20 of the frame 2 and with the pivot stem 4 of the said frame. Between the fork members 13 of the frame 2 is clamped the edge-trimming and welt-beveling knife 22. The knife 22 is curved concentrically about the center of oscillation of the rocking frame 2 and has its cutting edge continuous with its outer surface. The knife 22 has a cutting edge for trimming the shank of a right shoe, and another cutting edge for trimming the shank of a left shoe and is also provided with right and left welt-beveling or randing portions. For convenience both in manufacture and in grinding, the knife 22 is formed in two sections 24, 26, (see Fig. 4) the welt-beveling or randing portions of the respective sections being shown at 28 and 30. A portion of a shoe is shown in dotted lines in Fig. 4 in a position to illustrate the functions of the different portions of one of the knife sections although in operation the part of

the knife shown in this figure does not contact with the shoe.

Each of the sections 24, 26 is provided upon its inner side with a clamping rib, the rib upon the section 24 being shown at 32 and the one upon the section 26 at 34. The ribs 32 and 34 are provided with grooves upon their opposite sides, and with the respective outer grooves the ribs upon the adjacent fork members 13 engage. A stiffening and spacing plate 36 has edges shaped to fit the inner grooves of the ribs 32 and 34 and the knife sections are held together by the action of a clamping bolt 38 which causes the fork members 13 to force the ribs against the edges of the plate 36, the outer and inner grooves of the ribs being offset whereby the inner edges of the sections are pressed toward each other.

A second knife 40 is arranged to act transversely to the knife 22 and to this end is clamped between fork members 42 upon one arm of a lever 44 pivoted at 46 between the arms 11 of the frame 2. The other arm of the lever 44 carries a pivot 48 to which is connected one end of a link 50, the other end of said link 50 being pivoted at 52 upon the arm 6. The distance between the centers of the pivots 48 and 52 is the same as that between the center of the pivot 46 and the center of oscillation of the frame 2, whereby the operating surface of the knife 40 is caused to reciprocate in parallelism with itself as the frame 2 rocks, its reciprocations alternating with the oscillations of the knife 22. The welt-beveling or rand-trimming portions 28, 30 of the edge trimming knife are arranged to operate upon the upper edge of the sole, and in order to protect the upper from accidental injury by these portions and at the same time to aid the operator in positioning the work, guards 54, 56 are provided, these guards being formed as forked members of a guard-supporting plate 58 having a stem 60 extending into a central bore in the pivot stem 4 of the rock frame 2. The guards 54, 56 are adapted to enter the crease between the upper of the shoe and the upper side of the sole. The hub of the rock frame 2, as hereinbefore pointed out, is recessed to receive the outer part of the stem 60.

To prevent the guards 54, 56 from oscillating with the rock frame 2, the plate 58 is provided with an offset lug 62 which engages a notch in the side of a bearing for the pivot stud 4, as shown in Fig. 1.

Fig. 6 shows a portion of a shoe sole adjacent to the breast of the heel, after it has been trimmed by this machine, the part *a* in this figure being a portion of the upper, *b* the trimmed edge of the sole, and *c* a portion of the heel. The line to which the knives 22 and 40 travel in succession is shown at *d*. It will be seen from an inspection of Fig. 6 that the edge of the sole has been rounded or beveled somewhat in trimming. To produce an edge of this shape, the edge-trimming knife 22 or the section of this knife which operates along the sole edge, in this case the section 26, must be curved transversely of its path of movement as shown in Figs. 5 and 6. In order that the knife 40 which travels in line with the heel breast may sever completely the material which has been trimmed up from the sole edge back to the heel breast, the cutting edge of the knife 40 must be curved in the path of its movement, so that in its travel it will reach at all points the surface formed by the trimming operation of the knife 22.

For convenience of adjustment, the cutting edge of the knife 22 is in the outer surface of this knife whereby, by simply grinding back to this surface, the knife may be sharpened without varying the relative position of the edge to the body of the knife in more than one dimension of the knife. In order that the knife 40 may be of considerable length without interfering with the operation of the rocking frame 2 it is made arc-shaped in its greatest dimension and for convenience in obtaining the desired outline of the cutting edge, it is shaped in cross-section so that the outer part of its cross-sectional outline is like the foreshortened outline of its desired cutting edge.

By grinding the knife 40, shaped as shown in Fig. 3, along a tangent to its inner curve a cutting edge of the shape there shown may be obtained and so long as the grinding is done upon a tangent to this inner curve the edge will always have the same outline. In this way an edge may be readily obtained upon the knife 40 which, in outline, is identical with the cross-sectional outline of the edge of the knife 22, or with the transverse contour of the sole edge after it has been trimmed by the knife 22, and which permits the two knives to be readily so adjusted that in their reciprocations they travel alternately to the same line.

This application and applicant's co-pending application, Serial No. 543,071, filed Feb. 10, 1910, contain in common, certain broad patentable subject matter which is not claimed in this application, but is claimed in the later case. The claims of the present case are confined to subject matter not disclosed in the other application.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. In an edge-trimming machine, the combination with an edge-trimming knife having right and left trimming edges inclined to each other, of a knife movable in a path transverse to that of said edge-trimming

knife and having an edge with right and left portions, the outline of said edge corresponding to a section through said edge-trimming knife adjacent to its cutting edge.

2. In an edge trimming machine the combination with an edge trimming knife having right and left trimming edges extending in the same direction, of a knife movable in a path transverse to that of said edge trimming knife, having right and left portions to cut off the material trimmed by said edge trimming knife, and guards located on opposite sides of said knives in position to protect the upper of a shoe from contact with said knives while the knives trim the sole edge.

3. In an edge trimming machine the combination of an edge trimming knife having right and left trimming edges extending in the same direction, a rocking frame in which said knife is supported, means for rocking said frame about an axis, a second knife having right and left edges corresponding in outline to a section through said edge trimming knife adjacent to its cutting edges, a holder supporting said second knife, said holder being pivotally connected to said frame, a link pivotally connecting said holder with a stationary part of the machine frame, guards located on opposite sides of said knives in position to protect the upper of a shoe from contact with said knives during the trimming operation, and a stem supporting said guards and itself supported in axial alinement with the axis of said rocking frame.

4. In an edge trimming machine, an edge trimming knife comprising two sections, said sections having edges lying adjacent to each other and non-adjacent edges provided with ribs, a stiffening plate positioned between said ribs, and means for clamping the ribs of said sections against said stiffening plate.

5. In an edge-trimming machine a trimming knife comprising two sections inclined to each other with their adjacent edges contacting, means for spacing their outer edges apart to give a determined relative inclination to said sections, and means for locking said sections in the determined relative inclination.

6. In an edge-trimming machine a trimming knife comprising two sections inclined to each other with their adjacent edges contacting, said sections having cutting edges in line with their outer surfaces, means for spacing their outer edges apart to give a determined relative inclination to said sections, and means for locking said sections in the determined relative inclination.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FREDERICK H. PERRY.

Witnesses:

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FREDERICK L. EDMANDS.