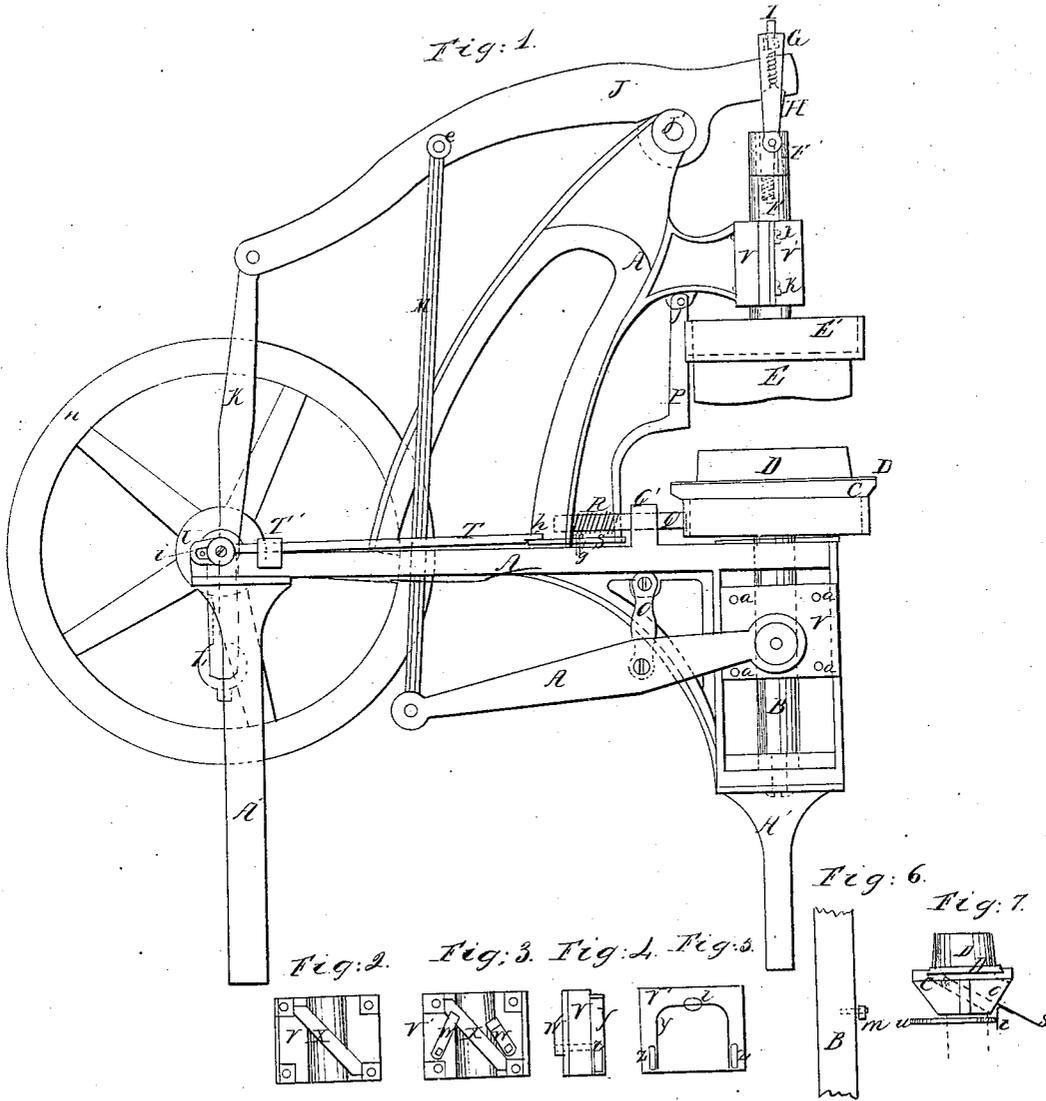


S. S. Weed,

Shoe-Sole Machine,

N^o 39,137.

Patented Aug. 4, 1863.



Witnesses:

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SAMUEL S. WEED, OF STONEHAM, MASSACHUSETTS.

IMPROVEMENT IN SOLE-CUTTING MACHINES.

Specification forming part of Letters Patent No. 39,437, dated August 4, 1863.

To all whom it may concern:

Be it known that I, SAMUEL S. WEED, of Stoneham, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Sole-Cutting Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation. Figs. 2, 3, 4, and 5, are different views of the grooved boxes by means of which the die and cutting-block are rotated. Fig. 6 is a view of a part of the rotating-shaft B, provided with the friction-roller *m*, which travels in grooves X in said boxes; and Fig. 7 is an end view of the bed C.

Like parts are indicated by the same letters in all the drawings.

The nature of my invention consists, first, in causing a die or knife (making a semi-rotation after each cutting operation, so as to cut alternately heel and toe) to strike upon a rotating last-shaped cutting-block or blocks, so that the toe of said knife or die shall always point in the same direction as the toe of the said block or blocks, whereby the proper bevel for a finished shoe may be cut on the sole; second, in the peculiar devices for giving a semi-rotation of the knife or block after each cutting operation, said devices consisting of a pin on the rotating shaft of the knife or block, acting in combination with grooves and spring valves or dogs in the boxes through which said shaft plays up and down; third, in the peculiar combination of devices, whereby the die and block are held while the cutting operation is performed; fourth, in the employment of a slotted vibrating-cam, U, and fixed pin *i*, so that said cam may operate equally well whichever way the machine is driven; fifth, in the use of a vibrating door, *s*, to prevent the cut soles from dropping through at the wrong time and place, and thereby impede the movement of the machine; and, sixth, in regulating—*i. e.*, raising or depressing—the cutting-block by means of a screw, I, passing through the lever J onto the top of the toggle H, at the top of the shaft that carries said block.

To enable others skilled in the art to make

and use my invention, I will now proceed to describe its construction and operation.

A is a frame, of cast-iron or other suitable material, and A' are the legs.

B is a vertical shaft passing through and turning freely in the frame A, as shown in Fig. 1.

C is the knife bed, fast to the top of the shaft B.

D is the die or knife, constructed like those in general use, and so shaped as to cut a sole of the proper contour for a finished shoe, and D' is a flat piece of iron to which the die is attached, the sides of said piece being beveled so as to slide into a corresponding groove in the top of C, by means of which the die is securely held in place.

o, Fig. 7, is an opening in the side of die-bed C, through which the cut-out soles drop down.

s is a hinged door, provided with an arm, *t*, which, by striking on the cam *u* on the frame A, lifts said door, and thus prevents the soles from dropping out, except at the proper time and place, so as not to impede the action of the machine.

V and V' are the two parts of a box which c'asps the shaft B, being held together by screws *a*. In each half of the box is a groove, X, as shown in Figs. 2 and 3, sufficiently large to admit the friction-wheel *m*, (see Fig. 6,) which turns on a pin projecting from the side of the shaft B.

W W are spring-valves or dogs, shaped and placed as shown in Figs. 3 and 4, the lower ends of said valves being fast to the pin Z, which passes through the half V' and turns over at a right angle, as represented in Fig. 4.

Y is a flat spring, held by the start *l*, and bent as shown in Fig. 5, so as to rest against the pin Z, by means of which it is obvious that the valves W, when free to move, will be forced into the position shown in Fig. 3.

N is a lever vibrating on the fulcrum-arm O, and attached at one end of the box V by means of a pin, *b*, and at the other extremity to the connecting-rod M by means of the pin *d*. The upper end of the rod M is pivoted to the arm J, which vibrates on the fulcrum J' and is actuated by means of the pitman K and crank L, the latter being driven by any suitable power applied to the pulley or fly-wheel *n*. Thus, the machine being set in motion, it

is obvious that the box V will be made to slide up and down on the shaft B, and, as the roll *m* on the latter travels in the grooves X, it follows that the shaft B will be made to rotate. The roll *m*, first moving in a straight line past one of the spring-valves W, pushes it aside, and as the box ascends (the top of the valves being beveled, as shown in Figs. 3 and 4) said valve will force the roll *m* to pass through one of the grooves X, giving a half-rotation to the shaft B and its appendages. The roll *m* will then move in a straight line past the other spring-valve, and be by it in turn forced into the other groove, X. Thus after each cutting operation, a semi-rotation will be given to the die, so as to cut heel and toe alternately.

E is the wooden cutting-block, the bottom of which is shaped like the bottom of a last, so that (the leather being pressed against it by the die) the sole will be cut out with the requisite bevel in the hollow as well as in the flat of the foot, said block E being attached to the bed E' by means of a dovetail mortise and tenon, or in any other obvious manner. This block E is fast to the bottom of the shaft F, which (being provided with a roll, *m*, in the same manner as the shaft B) passes through the stationary boxes V V', which are provided with grooves and spring-valves, exactly like those described and shown in Figs. 2, 3, 4, and 5, by which it is obvious that a semi-rotation will be given to the block E, after each cutting operation, precisely as it is given to the die D.

F' is a continuation of the shaft F, the top of the latter being turned smaller, so as to form a shoulder and enter a hole in F', as represented in Fig. 1 by the dotted lines, which arrangement allows the shaft F to turn, while the part F' is prevented from turning by means of the strap G, which supports it.

H is a toggle, the top of which bears on the under side of J, or the end of screw I, and the bottom on the top of F.

I is a screw, which, passing freely through a slot in the top of the strap G, screws into and through the lever J, so that its point or end shall rest on the top of the toggle H, by means of which it is obvious that the block E can be readily raised or depressed at pleasure.

In order to bring the block and die with perfect accuracy into the proper position previous to each cutting operation, I make a vertical groove in the center of both ends of the beds C and E', as represented in Fig. 7 and by the dotted lines in Fig. 1, and cause the

guides P and Q to enter and leave said grooves at the proper time. The guide P is shaped as shown in Fig. 1, being pivoted at its top to the frame at *j*, its lower extremity passing through the guide Q and into the lever S. The guide Q passes through a start, Q', and into the frame A, as shown in Fig. 1, being a spring by means of which both Q and P are forced toward the beds C and E' and into the grooves in their ends. P and Q are withdrawn from the grooves in the beds at the proper time by means of the lever S, (which turns on the fulcrum *g*), the connecting-rod T, (which is pivoted to S and passes through the start T') and the cam U, attached to the axle of the crank L. The cam U is loosely attached to the axle of L, and is provided with a slot, as shown in Fig. 1, being prevented from turning too far in either direction by means of the pin *i*, which is fast in the axle of L, the object of said pin and slot in the cam being to allow the same to vibrate to either side, so as to move the rod T at the proper time for withdrawing the guides P and Q which ever way the pulley *n* may happen to be driven.

Having thus described the construction and operation of my machine, what I claim as new, and desire to secure by Letters Patent, is—

1. Rotating the die D and a last-shaped cutting-block simultaneously, so that the toe of the knife shall always correspond with the toe of the block, substantially as set forth, and for the purpose described.

2. The particular combination of devices for giving a partial rotation of the knife or block after each cutting operation, said devices consisting of the pin or roller *m*, grooves X, and spring-valves W, substantially as and for the purpose described.

3. Holding the die and block, while the cutting operation is performed, by means of grooves in their ends, and the guides P and Q, or their equivalents, substantially as set forth, and for the purpose described.

4. The slotted vibrating cam U, arranged and operating substantially as described.

5. The valve or door *s*, arranged and operating substantially as set forth.

6. Raising or depressing the cutting-block by means of the screw I, strap G, lever J, and toggle H, substantially as described.

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Witnesses:

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