

Knox & Ditchburn,
Sole-Cutting Machine,
 No 27,453, *Patented Mar. 13, 1860.*

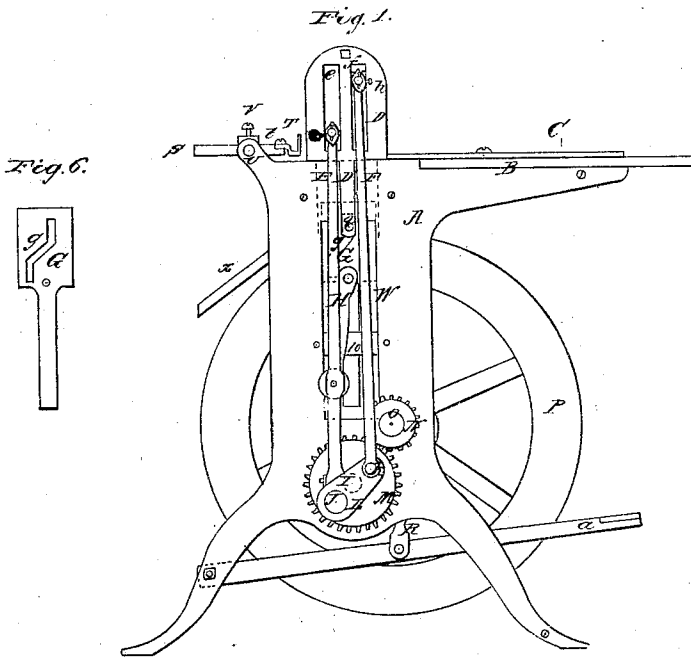


Fig. 6.

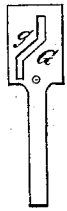


Fig. 2.

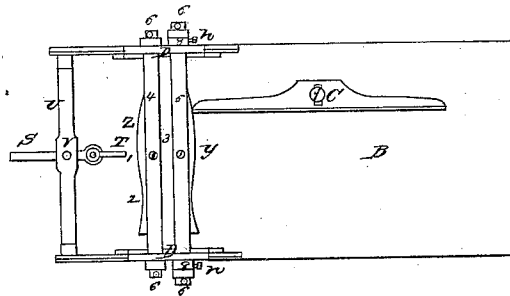


Fig. 3.

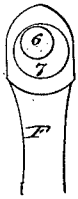
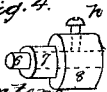
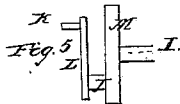


Fig. 4.



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UNITED STATES PATENT OFFICE.

DAVID KNOX AND THOMAS DITCHBURN, OF LYNN, MASSACHUSETTS.

SOLE-CUTTING MACHINE.

Specification of Letters Patent No. 27,453, dated March 13, 1860.

To all whom it may concern:

Be it known that we, DAVID KNOX and THOMAS DITCHBURN, of Lynn, in the county of Essex and Commonwealth of Massachusetts, have invented a new and useful Sole-Cutting Machine; and we 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; Fig. 2, a top view; Fig. 3, an enlarged view of the eccentric bush; Fig. 4, a perspective view of the bush detached; Fig. 5, a side view of the double crank arrangement; and Fig. 6, a detached view of the slotted slide that gives a reciprocating motion to the head or frame, for carrying the knives.

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

To enable others, skilled in the art, to make and use our machine, we will now describe its construction and operation.

The nature of our invention consists, 1st, in the slot, *g*, in the slide, *G*, so constructed and operating as to answer the double purpose of giving a reciprocating motion to the movable head, or frame, and holding the same stationary for each of the knives to cut alternately; 2d, in the use of an eccentric bush in the eye of the connecting rods, to raise, or lower, the knives; 3d, in so constructing the back gage that it shall be capable of a lateral movement, whereby both knives can always be made to cut the same-sized sole; and 4th, in attaching the connecting rods, that actuate the knives, to double cranks, so that said rods, when the knives are cutting, shall draw in a line as nearly as possible at right angles with the table; while at the same time we avoid the noise of the extra pinions that must otherwise be used to move the connecting rods.

A is one side of the frame, of cast-iron, the opposite side being similar to it, and the two sides united by cross-bars in the usual manner.

B is the table on which the leather, to be cut into soles, is placed and fed.

C is the adjustable lateral guide.

D D are the reciprocating heads of iron, or other suitable material, united at the top by the bar, 3; while the bottom is beveled and runs in a corresponding groove in the top of the frame, A.

D' is an arm, or continuation, of the head, D, the lower end being furnished with a pin, 9, which projects on the inner side and bears on the upper end of the large slot, W, and thus prevents the head from rising.

e and *f* (Fig. 1) are slots in which slide the ends of the beams, 4 and 5, (see Fig. 2) to the bottom of which are attached the plates, *y*, *z*, provided with knives of the proper contour to form the sole.

E and F are connecting rods through the upper extremities of which the ends of the knife-carrying beams, 4, 5, pass, as shown in Figs. 1 and 2; the lower extremities of said rods being attached to pins, J and K, of the double crank L,—a side view of which crank arrangement is shown in Fig. 5.

M is a pinion turning on the pin, I, which is fast in the frame, A.

N is a pinion attached to the shaft of the fly-wheel, P, and half the diameter of pinion, M. Motion is communicated to pinion, N, by means of the treadle, Q, pitman, R, and the crank-shaft, O, of fly-wheel, P.

G is a slide, of cast-iron or other suitable metal, shaped as seen in Figs. 1 and 6, and kept in place by means of cleats on the inner side of the frame, A, and cross-bar 10. This slide, G, is made to move up and down in slot, W, by means of pitman, H, the lower end of which is attached by a pin to connecting rod E, as represented in Fig. 1.

g is a slot (the shape of which is shown in Figs. 1 and 6) in the slide, G.

9 is a pin, fast in the lower end of arm, D', and projecting into slot, *g*. Thus it will be seen that as the slide, G, moves up and down, the head, D, will be made (by pin, 9, and slot, *g*) to slide backward and forward as far as necessary; and as the top, and bottom, parts of slot, *g*, are parallel with slots, *e* and *f*, the knives will have no lateral motion while cutting,—the lateral motion being performed while the pin 9 is passing through the oblique part of, *g*.

S is the back-gage (for regulating the width of the sole) passing through the beam, U, and confined by set-screw, V. Ordinarily it is sufficient to simply move the gage, S, in a direct line; but, (when new, or different, knives are used, or the machine gets worn) it sometimes happens that one knife will cut a wider sole than the other,—to obviate which difficulty we attach to the end of S an arm, or swivel, T, which is capa-

ble of a lateral motion, and is confined by set-screw, *t*. By simply moving said arm from point, 1, (see Fig. 2) toward point, 2, or vice versa, the two knives can always be made to cut soles of the same width. If, for instance, knife, Y, cuts a sole too narrow, we move the swivel, T, from point, 1, toward 2, when it is obvious that knife, Y, will cut a wider sole, and knife, Z, a narrower one.

10 In order to raise, or lower, one end, or both ends, of a knife, we furnish the eye of the connecting rods (as seen in F, Fig. 1) with an eccentric bush provided with a set-screw, *h*. An end view of the bush on a connecting rod is shown in Fig. 3, and a perspective view in Fig. 4. The eye of the connecting rod turns on part 7 of the bush; part, 8, being of greater diameter, as shown in Fig. 4, so as to form a shoulder and afford sufficient thickness for holding the set-screw. Through this bush, and parallel to its axis, is an eccentric hole of the proper size to receive the ends, 6, of the knife beams, 4 and 5. Thus, by turning this bush,

25 it is obvious that the knives may be brought nearer to the table, or farther from it, at pleasure.

X is a board for conducting the soles from the machine to the floor, or any suitable receptacle. 30

What we claim as our invention and desire to secure by Letters Patent, is—

1. Giving a reciprocating, or vibrating, motion to the head, D, by means of the slot, *g*, and pin, 9, substantially as set forth, and for the object specified. 35

2. The use of an eccentric bush in the eye of the connecting rods, substantially as described, for the purpose of raising, or lowering, the knives. 40

3. Giving a lateral motion to the back-gage, by the use of a swivel, T, or in any equivalent manner, as described, so that both knives can always be made to cut the same-sized sole. 45

4. The use of the double crank for actuating the connecting rods, E, F, in combination with the movable head, D, substantially as, and for the objects, specified.

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