

A. DESTOUY

3 Sheets—Sheet 1.

Sewing Machine for Sewing Boots and Shoes.

No. 56,729.

Patented July 31, 1866.

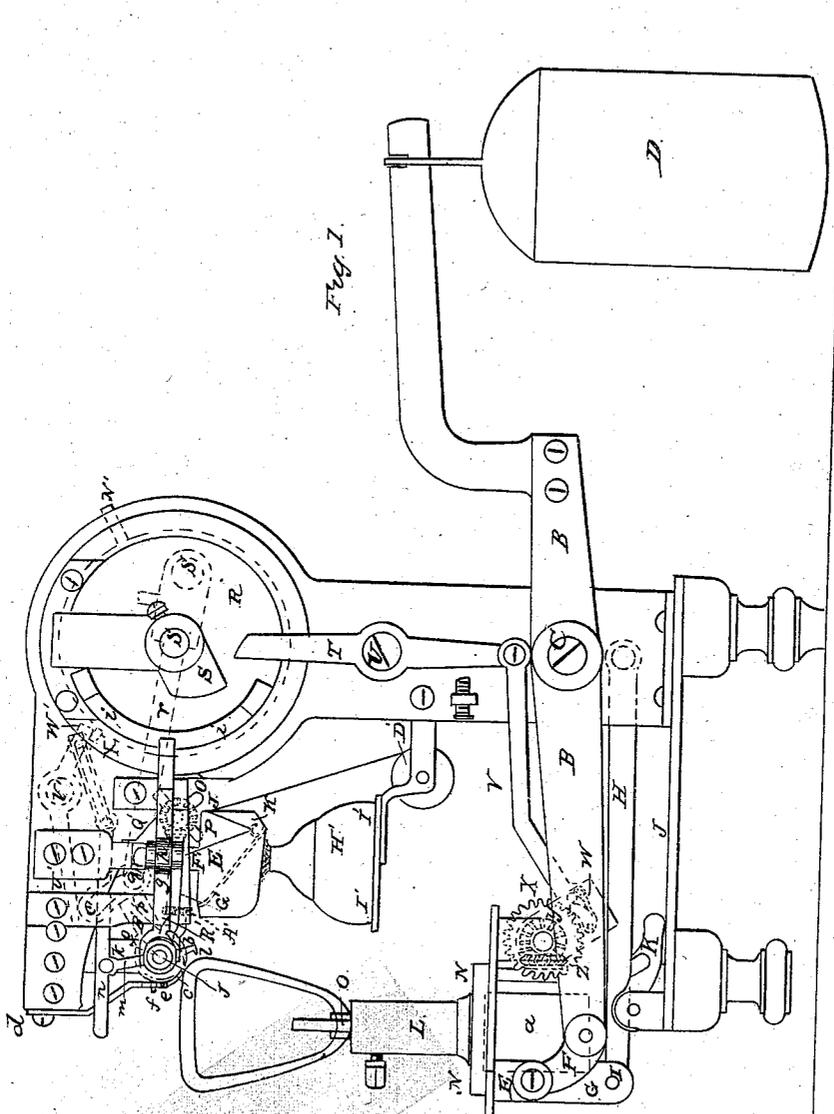


Fig. 1.

WITNESSES
Josiah Coombs
Charles Hamburg

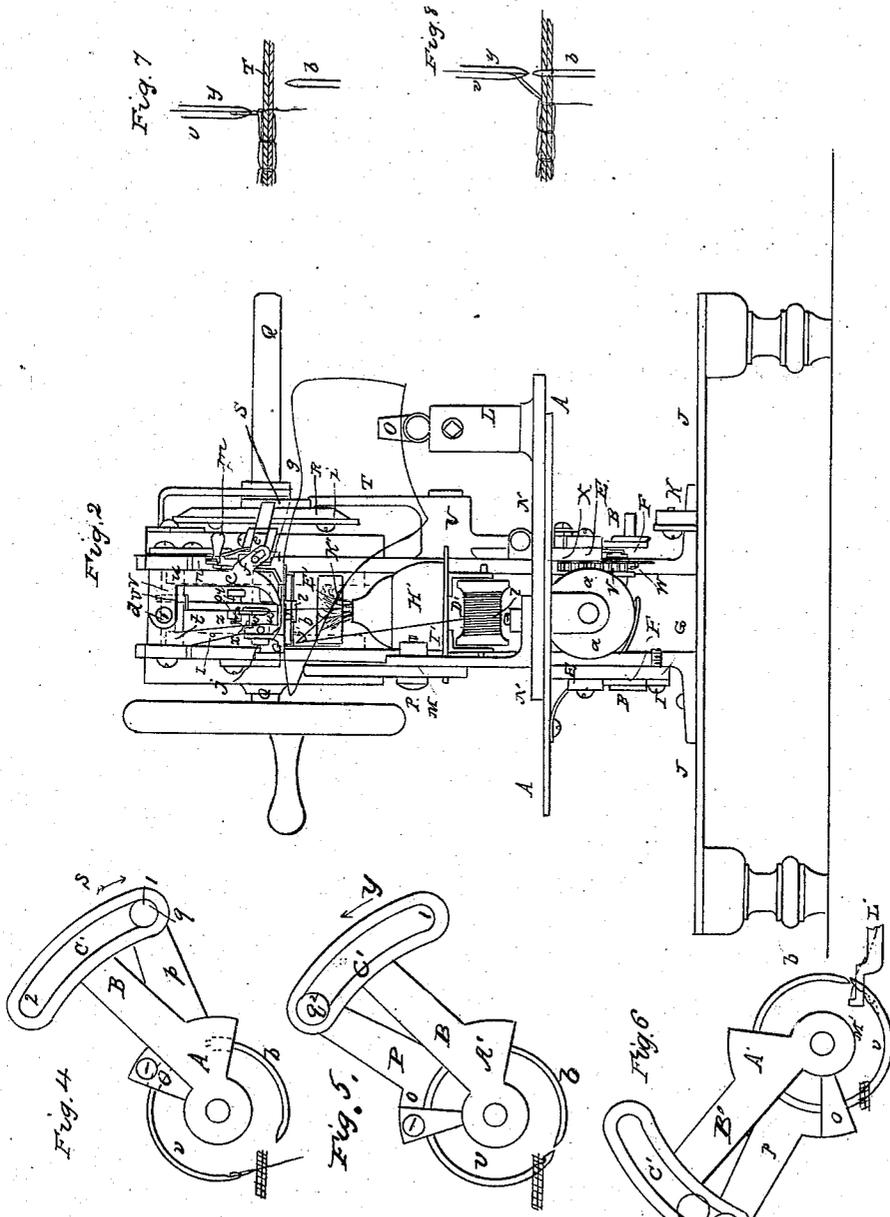
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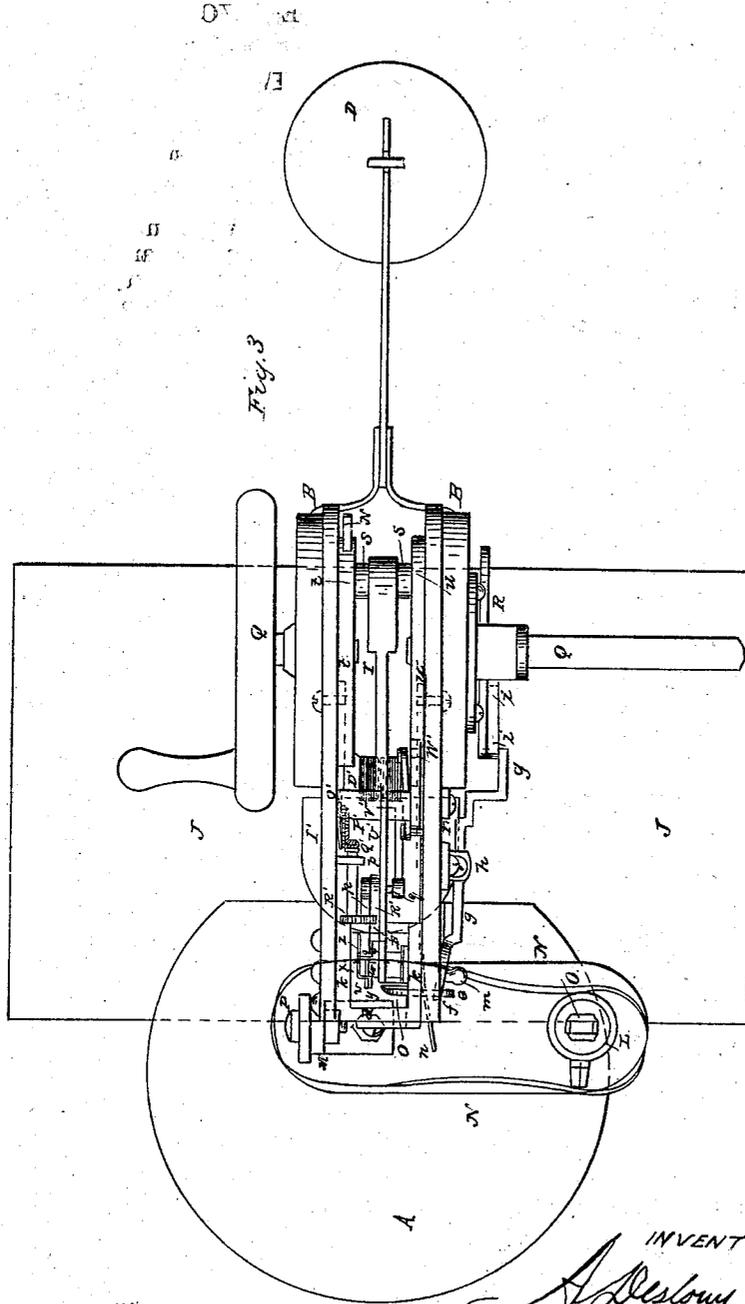
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UNITED STATES PATENT OFFICE.

AUGUSTE DESTOUY, OF NEW YORK, N. Y.

IMPROVEMENT IN SEWING-MACHINES FOR SEWING BOOTS AND SHOES.

Specification forming part of Letters Patent No. 56,729, dated July 31, 1866.

To all whom it may concern:

Be it known that I, AUGUSTE DESTOUY, of New York, in the county and State of New York, have invented certain new and useful Improvements in Machinery for Sewing Boots and Shoes; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation, Fig. 2 a front view and Fig. 3 a plan view, of my improved machine; and Figs. 4, 5, 6, 7, and 8 are diagrams in illustration of its operation.

The first part of my invention relates to the method of holding the material to the work or to the sewing mechanism.

Heretofore a stationary table or support has been used, upon which the material to be sewed was held and moved by hand or by automatic means. This has been found not to answer the purpose well.

I have conceived the principle of holding the material up to the sewing mechanism and feeding it by automatic means, yet so that it may adapt itself according to the undulations or configurations of the seam, both vertically and horizontally. To this effect I use a table on the end of a lever, pivoted and so balanced by weight or spring that the work shall be held to the sewing mechanism with a yielding pressure.

In the drawings, A is the table which supports the work, which is here indicated in red lines, as prepared on a shoe-last.

The table is supported by two parallel levers, B, pivoted to the frame of the machine at C, and weighted on their opposite ends by the weights D.

To maintain the table in a horizontal position the lever is connected to the ears E, on the under side of the table, by means of links F and the levers G and H, which, being pivoted to the table and frame, respectively, and articulated at I, produce what is known as "parallel motion." Whatever the position of the lever B may be the table will always be in a horizontal position, or nearly so.

When the machine is not used the table is hooked to the platform J by means of the hook K engaging the pin at I.

The work is generally prepared on a last, which is supported by standards L M, fast in

a disk, N, whose under surface is roughened. The standards are arranged to admit of adjustment. To this effect the one has a tenon, O, jointed or movable on a horizontal axis. The other is provided with a slide and set-screw, P, whereby it may be elevated and depressed according to the work.

With the table is combined a feeding mechanism of the following construction and arrangement: On the main driving-shaft Q of the machine is mounted a cam-disk, R, one of the cams of which, S, operates the feed. This cam is so timed as to operate the feed at the proper intervals of time. The feed is the ordinary wheel-feed, and is composed of a roller, a, furnished with a rubber sleeve to give increased friction, and slightly protruding from the surface of the table, so as to bite on the under surface of the disk N. This roller is moved intermittently by means of the bevel-toothed wheels Y and Z, the latter being mounted on the shaft of the roller a. The former receives its motion from the toothed wheel X, which is rotated intermittently by the spring-pawl W, which, in its turn, is actuated by the connecting-rod V and the lever T, which, being pivoted at U, receives its oscillatory movement from the cam S.

In conjunction with the feed described there is an auxiliary feed, which partakes of the character of the needle-feed, which, however, is effected by an awl or independent piercing-instrument, b, to which an alternately oscillating and lateral movement is given, as will be hereinafter explained in connection with the mechanism for making the stitch.

To properly direct the work to the action of the needle there is a third element in the feeding mechanism, which I call the "feed-dog." This is a dull-pointed instrument, (marked in the drawings c,) which is hung at d to the face-plate of the neck. It is provided with a slotted arm, e, in which the guide-pin f of the lever g is engaged. When the lever g, whose fulcrum is at h, is moved by the cam i on the cam-disk R, the pin f will actuate the dog and impart to it a lateral movement in unison with the awl before referred to, which is moved by the same instrumentality—i. e., the lever g—which, in rear of the pin f, is bifurcated to embrace the neck of a spindle, j, which is capable of a sliding motion in its bearing in

the two pendent brackets *k*. The awl is mounted on this spindle. Hence it will partake of its lateral movement when, together with the dog *c*, it is actuated by the lever *g*. The dog *c* is set to engage in the groove or channel previously cut in the sole, so that while thus preventing the work from moving away it will assist the awl in the performance of its office.

An additional contrivance to properly guide the work consists in the stationary gage *l*, the projecting front edge of which is engaged between the upper and welt by means of the handle *m*, which, when adjusted, may be locked by the notched bar *n*.

It will be seen that the feeding and guiding of the work, which is of great importance in this class of machinery, is effected by a wheel-feed and awl-feed combined and by the dog *c* and gage *l*.

The stitch I use is the well-known chain-stitch. I produce it by the mechanism as follows: On the spindle *j* is mounted, to freely revolve on it, a needle-stock, *o*, which is provided with an arm or crank, *p*, which, by means of the connecting-rod *r*, is coupled at *s* with the two interior cam-disks, *t* and *u*. In the needle-stock *o* is secured the curved crochet or barbed needle or hook *v*. On the same spindle is mounted a friction-sleeve, *w*, carrying a stripping-plate, *x*, auxiliary needle *y*, and guard-plate *z*. The auxiliary needle is shorter than the hook, but otherwise of the same configuration, so that the two, during a portion of their movement, move in unison and penetrate the leather together.

The guard-plate has for its object to keep the hook and the auxiliary needle in close frictional contact. To this effect it is made in one piece or connected with the needle *y*, and between the two the hook is confined.

The horizontal connection *x* constitutes the stripping-plate—that is, the plate which strips the leather from the needles when they recede from it.

The proper movements of these parts (*x*, *y*, and *z*) are effected in the following manner: The guard-plate *x* is slotted concentrically with its center of motion, and a pin projecting from the face of the arm *p* plays in this slot, which is of such a length as to admit of the hook traversing the leather until it comes opposite the thread-carrier to receive the thread after the auxiliary needle shall have stopped or receded. When the pin, in its course, reaches either end of the slot the three parts will move together to the end of the stroke.

The awl *b* is mounted in a stock, *A'*, which is also provided with an arm, *B'*, with slotted link *C'*, in which the pin *q* of the arm *p* moves; but the pin is sufficiently long to admit of the ordinary variations in the lengths of stitches, and thus, while imparting an oscillatory motion to the awl at certain intervals of its own rotation, it will allow the awl, when actuated by the outside lever, *g*, to move to and from the hook.

In order, now, to explain the relative motions of these parts I must first refer to the thread-carrier. The thread derived from a spool, *D'*, passes first through a vessel, *E'*, where it is coated with wax. This vessel is suspended by a pin, *F'*, in the horizontal frame *G'* of the thread-carrier, and its contents are heated by a lamp, *H'*, supported by a little platform, *I'*, for the purpose provided. The thread passes through eyes *J'* and *K'*, over the border, down the bottom, and over the pin *F'*, whence it is conveyed through the hollow shank of the thread-carrier *L'*. The latter is angular, so that when revolving its delivery end will describe an arc of a circle around the hook *V* when the latter is in place to receive the thread. Revolution of this carrier in one direction only is effected by the cam-stud *N'* striking successively in its rotary travel one of the four cam-studs *O'*, whose movements are transmitted, by means of toothed bevel-gear *P'* and *Q'*, to the toothed wheels *R'* *R'*, the gear being so arranged as to effect the complete revolution of the carrier during the portion of the revolution of the cam-disk *t* that its stud *N'* is in contact with either of the studs *O'*. The operation of all these devices may be understood by reference to the drawings; but to more clearly convey their relative functions I shall explain their movements with reference to the forming of stitches.

The views in Figs. 1, 2, and 3 represent the machine just as the stitch is completed and when ready to make a new stitch. The hook *V*, the auxiliary needle *y*, and awl *b* are in the position shown in side elevation in Fig. 4 and front view in Fig. 1.

It will be seen by reference to Fig. 7 that the awl is moved sidewise the distance which is equal to the length of the stitch. On continuing the motion of the arm *p* in the direction of the arrow *S'* the awl is caused to pierce the leather at *T'*. When this is done, the arm *U'*, pivoted at *V'*, is actuated by the stud *X'*, on the cam-wheel *u*, to strike on the tail-piece *W'*, whereby the link *C'* is detained or prevented from following the arm *p*. At this moment the side cams, *i* and *S*, acting on the levers *g* and *T*, effect the lateral movement of the awl and dog and of the wheel *a*. Thus the feed is effected, and the views in Figs. 1, 2, and 3 represent the machine placed at this point. Of course the material has moved, and the awl has come opposite the hook, which remained in the same plane, though commencing its advance-stroke.

The leather having been pierced, and the hook farther advancing to meet the awl, (the pin *g* moves at this time in the slot from 1 to 2,) as shown in Fig. 6, the two now move together in the direction of the arrow *Y'*, Fig. 5, until the end of their stroke, as shown in Fig. 6. Then the hook recedes in the direction of the arrow *Z'*, the awl remaining stationary, and when at the point indicated in red lines the whirl or thread-carrier throws a loop over the hook. When the pin *g*, in the return-

stroke, reaches the angle 1 in the slot C', the awl will move with it, but not till after it has resumed a position, as shown in Fig. 7, in advance of the stitch and ready to feed it the required length.

The movement of the auxiliary needle, it will be seen, is timed to aid in the formation of the stitch, also to protect the leather from being injured by the barb of the hook, and, finally, to strengthen the hook.

It will be seen that when the hook, after having caught the loop, draws it up through the leather, the needle meets it in the leather and confines the thread in the hook by closing it. When the material is thus fed the loop is drawn sidewise, and by the farther descent of the hook it is opened or bulged. Then the needle recedes, keeping the loop distended over the hole to be pierced by the awl. The hook, in traversing the leather, leaves the loop formed, as before described, behind, through which the new loop is drawn up.

It is of the greatest importance to sew with the thread and wax at a high temperature. The lamp, bobbin, and wax-vessel should therefore be inclosed in a hood, which shall keep these parts hot, and shall emit the heat so as to maintain the mechanism quite warm.

Having thus described my said invention, and the manner in which the same is or may be performed, I claim—

1. The self-adjusting table or platform for the support of the material to be sewed, the same being arranged to exert a yielding press-

ure against a sewing-gage, substantially in the manner and for the purposes herein set forth.

2. The combination of a wheel-feed in the adjustable platform or table with an awl-feed, the two operating conjointly in the manner and for the purposes set forth.

3. In combination with a double feed, as described, a dog to guide the work in the manner and for the purposes set forth.

4. The employment, in a sewing-machine such as described, of adjustable standards to support the last in the manner and for the purposes set forth.

5. In combination with the herein-described machine for sewing boots and shoes, a reservoir to contain wax or other suitable substance, together with a heater, substantially as and for the purposes set forth.

6. The thread-carrier, revolving intermittently in one direction only, in combination with the hook operating substantially as herein described, and for the purposes set forth.

7. In combination with the hook and awl, the auxiliary needle, when constructed and arranged for operation as herein shown and described.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

AUGUSTE DESTOUY.

Witnesses:

A. POLLOK,
JOS. L. COOMBS.