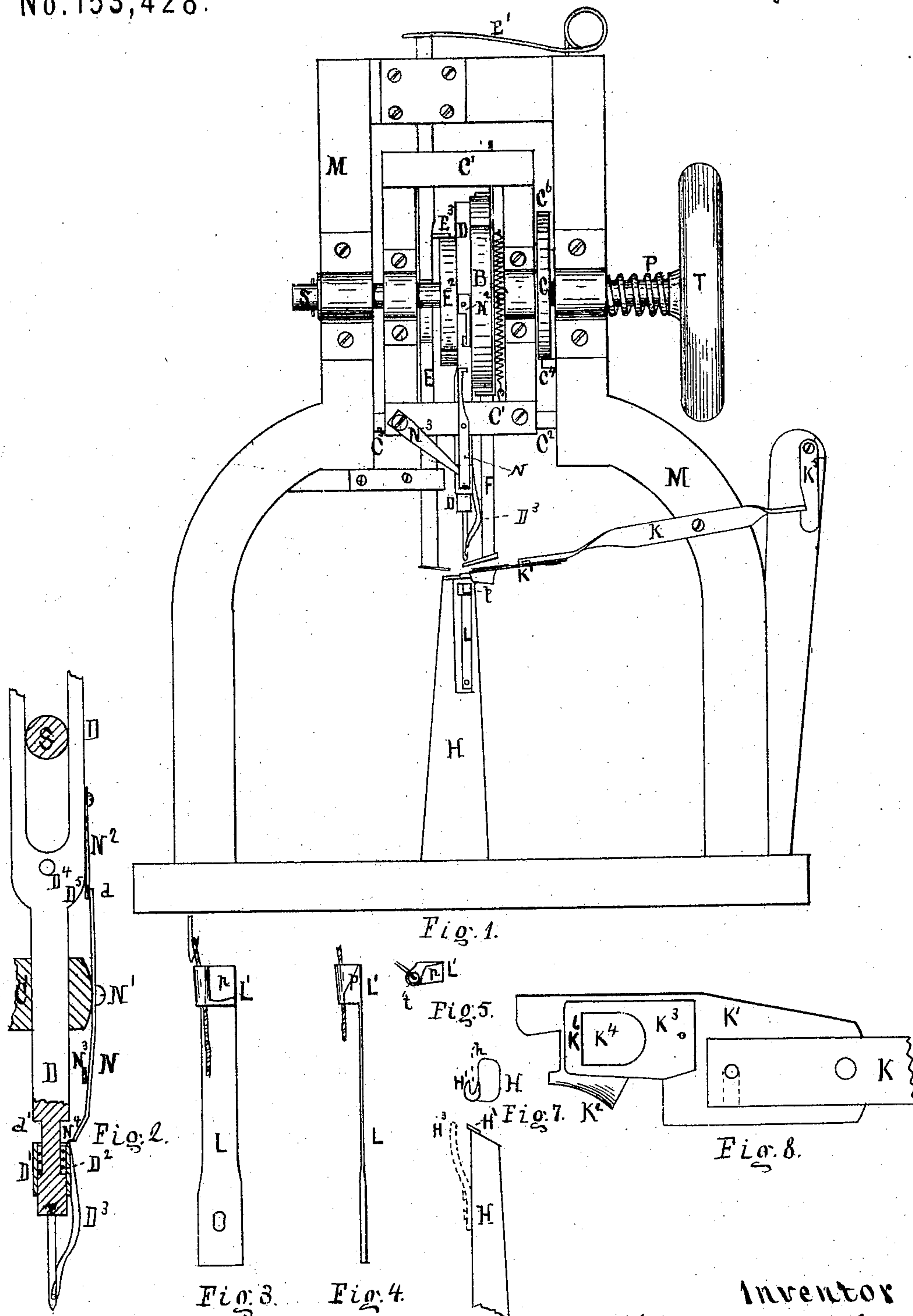


**W. DUCHEMIN.**  
**Machines for Sewing Shoes.**

No. 153,428.

Patented July 28, 1874.



Witnesses

Frankl. Parker  
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# UNITED STATES PATENT OFFICE.

WILLIAM DUCHEMIN, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE  
BOSTON TURNED-SHOE ASSOCIATION, OF SAME PLACE.

## IMPROVEMENT IN MACHINES FOR SEWING SHOES.

Specification forming part of Letters Patent No. **153,428**, dated July 28, 1874; application filed  
July 31, 1873.

*To all whom it may concern:*

Be it known that I, WILLIAM DUCHEMIN, of Boston, in the county of Suffolk and State of Massachusetts, have invented a certain new and useful Machine for Sewing the Soles to the Uppers of a Turned Welt Shoe, of which the following is a specification:

My invention relates to a machine for sewing a shoe invented by, and secured to, me by Letters Patent of the United States, entitled Improvement in Turned Shoes, dated June 24, 1873, and numbered 140,258, and is of the class known as a single-thread machine, the exact nature of which will be best understood by reference to the specifications and drawings.

Figure 1 is an elevation of my machine. Fig. 2 is a vertical section through the needle-bar. Fig. 3 is an elevation of the spring-looper. Fig. 4 is a side elevation of the same. Fig. 5 is a plan, showing the upper end. Fig. 6 is a side elevation of the arm for supporting the shoe while being sewed. Fig. 7 is a plan, showing the top of the same. Fig. 8 is a plan, showing the sewing guide and welter.

Let M M represent the frame of the machine. In this frame I hang the shaft S. Upon this shaft S I hang a supplemental frame, C<sup>1</sup>, said frame being held in position vertically by the projections C<sup>2</sup> C<sup>3</sup>, which slide in recesses made for them in the frame M. The shaft S is so connected with the frame C<sup>1</sup> that though it may revolve freely it cannot move longitudinally, except the frame C<sup>1</sup> also moves. The movement of the shaft S and frame C<sup>1</sup> is effected by means of the side cam C and the counter-spring P. The operation is as follows: As the cam C revolves, the wedge portion, indicated at C<sup>6</sup>, contacts with the boss C<sup>4</sup>, and, as it continues to revolve, forces the shaft and frame to the left. As the cam continues its revolution the wedge part passes the boss or projection C<sup>4</sup>, so as to allow the spring P to act against the wheel T, and thus throw the shaft and frame to the right, into the position indicated in Fig. 1. The frame C<sup>1</sup> has attached to it the needle-bar D D and the pressure-foot F, the needle-bar D and pressure-foot F partaking of its motion. The auxiliary pressure-bar E slides vertically in the fixed frame M,

and passes through slots in the movable frame C<sup>1</sup>, so that it does not interfere with the motion of the same. The pressure-bar F is thrown up by the cam B, and is drawn down by spiral springs, one of which is shown at F<sup>1</sup>. In the face of the cam B I have a cam-groove, (not shown in the drawings,) into which a stud, D<sup>4</sup>, Fig. 2, attached to the needle-bar D, enters, so that, as the cam B revolves, the needle-bar receives a positive up-and-down motion. Upward motion is given to the auxiliary pressure-foot E by the cam E<sup>2</sup> working against a stud, E<sup>3</sup>. Downward motion is given to the same by the spring E<sup>1</sup>. The needle-hook guard D<sup>3</sup> is attached to a sliding collar, D<sup>1</sup>, which is fitted to the needle-bar D. (See Fig. 2.) D<sup>2</sup> is a spiral spring within the collar D<sup>1</sup>, so arranged as to throw the collar and guard D<sup>3</sup> upward against the shoulder d<sup>1</sup> of the needle-bar D. N is a clutch-lever, attached by a rocking joint at N<sup>1</sup> to the sliding frame C<sup>1</sup>. N<sup>3</sup>, Figs. 1 and 2, is a flat spring, also attached to the frame C<sup>1</sup>, which serves to throw out the lower end of this clutch N, so that its point N<sup>4</sup>, Fig. 2, will not engage the upper end of the collar D<sup>1</sup>. This throwing out of the lower end of the lever takes place whenever the upper end of the lever N is free to pass inwardly toward the smaller part of the shaft of the needle-bar—that is, whenever the large part D<sup>5</sup> of the needle-bar is above the end of the lever N—then the lower part, N<sup>4</sup>, of the lever N may be thrown out by the spring N<sup>3</sup>. As the needle-bar descends the part D<sup>5</sup> will come in contact with the upper end of the lever N and throw it out, causing the lower end, N<sup>4</sup>, to move inwardly and press against the bar D. As this lever N is flexible the point can rest against the needle-bar D, and be ready to spring into the joint between the shoulder on the needle-bar and the upper end of the collar D<sup>1</sup>. This takes place during the upward stroke of the needle-bar, and thus holds the guard D<sup>3</sup> down so as to cover the barb of the needle until it has passed the loop. Then the continued upward motion of the needle-bar will cause the latch N<sup>2</sup>, Figs. 1 and 2, to pass upward and behind the lever N, holding it out, as shown at d, Fig. 2, until the ends at d pass each other; then the lower end of the



lever N is thrown out by the spring N<sup>3</sup>. This leaves the collar D<sup>1</sup> free to be thrown up by the spring D<sup>2</sup>, and it takes with it the guard or cast-off D<sup>3</sup>. The upper end of the lever N, and the lower end of the latch N<sup>2</sup>, are each provided with lateral projections, as shown in Fig. 1. One or both of these projections are wedge shape, and so arranged that, as the needle-bar descends, the upper end of the lever N rests against the shoulder D<sup>5</sup>, and passes between the needle-bar and latch N<sup>2</sup>, but in the ascending stroke of the bar the lever N passes outside of the latch N<sup>2</sup>. The arm or standard H is made as shown in Figs. 1, 6, and 7. The upper end has a hooked projection, H<sup>1</sup>, as shown in Figs. 6 and 7. The needle in its downward stroke passes through the recess *h*, Fig. 7. This projection H<sup>1</sup> runs in the channel of the sole, and assists in guiding the shoe. H<sup>3</sup>, Fig. 6, is a guard-piece, which may be attached to the arm H, and is intended as an auxiliary guide to be used in some cases to rest against the edge of the sole, and assist in guiding it. The looper L L', shown in Figs. 1, 3, 4, and 5, consists of a spring part, L, and a head, L'. This head part of the looper has an incline plane, *p*, Figs. 1, 3, 4, and 5, and a thread-tube, *t*, through which the thread passes, as shown. The needle in descending strikes the incline *p* and throws the head of the looper back; then the needle receives its lateral motion, and passes by the head to the left, and the looper flies back into position. This carries the thread across the hook in the needle, and as the needle ascends the thread is carried through the work; then the needle receives its lateral motion back to the right. This lateral motion of the needle is regulated to suit the length of the stitch required. On the right side of the frame M the lever K is fitted with a pivot-joint. This lever terminates in a spring, to which is fitted, with a movable joint, the sewing-guide K<sup>1</sup>. (See Figs. 1 and 8.) This guide is so formed that it will press the sole firmly against the upper surface of

the arm H, its outside edge being bent downward, as shown at K<sup>2</sup>, and presses against the edge of the shoe and assists in keeping it in place. K<sup>3</sup>, Fig. 8, is a small strip of metal attached to K<sup>1</sup>, and has an opening, K<sup>4</sup>, Fig. 8, through which the welt passes. The welt passes between the bar K<sup>6</sup> and the plate K<sup>1</sup>, and is drawn through that, is fed along by the lateral motion of the needle, and, of course, moving as the shoe moves, is sewed with the vamp to the sole. K<sup>5</sup> is a latch, used for holding the guide K<sup>1</sup> K<sup>2</sup> firmly down against the shoe.

To use my machine I proceed as follows: The shoe is channeled and lasted, as fully set forth in the specification of my patent already referred to. The sewing-guide K K<sup>1</sup> is turned away from the rest H, and the shoe placed upon the rest, the projection H<sup>1</sup> being in the channel. Now, the sewing-guide K K<sup>1</sup> is brought back to place, and the welt passed through the welt-guide K<sup>3</sup>, its end projecting under the needle. Now, the machine is started and the sewing takes place automatically.

I claim as my invention—

1. The fixed supporting-arm H and looper L L' *p*, in combination with the needle-bar and its horizontally-reciprocating carrying-frame C<sup>1</sup>, said frame being also provided with cast-off and presser-foot, substantially as specified.
2. The needle-bar D *d*, carrying the sliding guard D<sup>3</sup> D<sup>1</sup>, which is held in its normal position by a spring, D<sup>2</sup>, in combination with the bar N, latch N<sup>2</sup>, and spring N<sup>3</sup>, substantially as specified.
3. The fixed arm H, in combination with the elastic lever K, hinged yielding presser-plate K<sup>1</sup>, which is provided with a guide-lip, K<sup>2</sup>, and a welt-guide, and detent K<sup>5</sup>, substantially as and for the purposes specified.

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Witnesses:

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