

J. KEITH.

Sewing Machine for Sewing Shoes.

No. 97,518.

Patented Dec. 7, 1869.

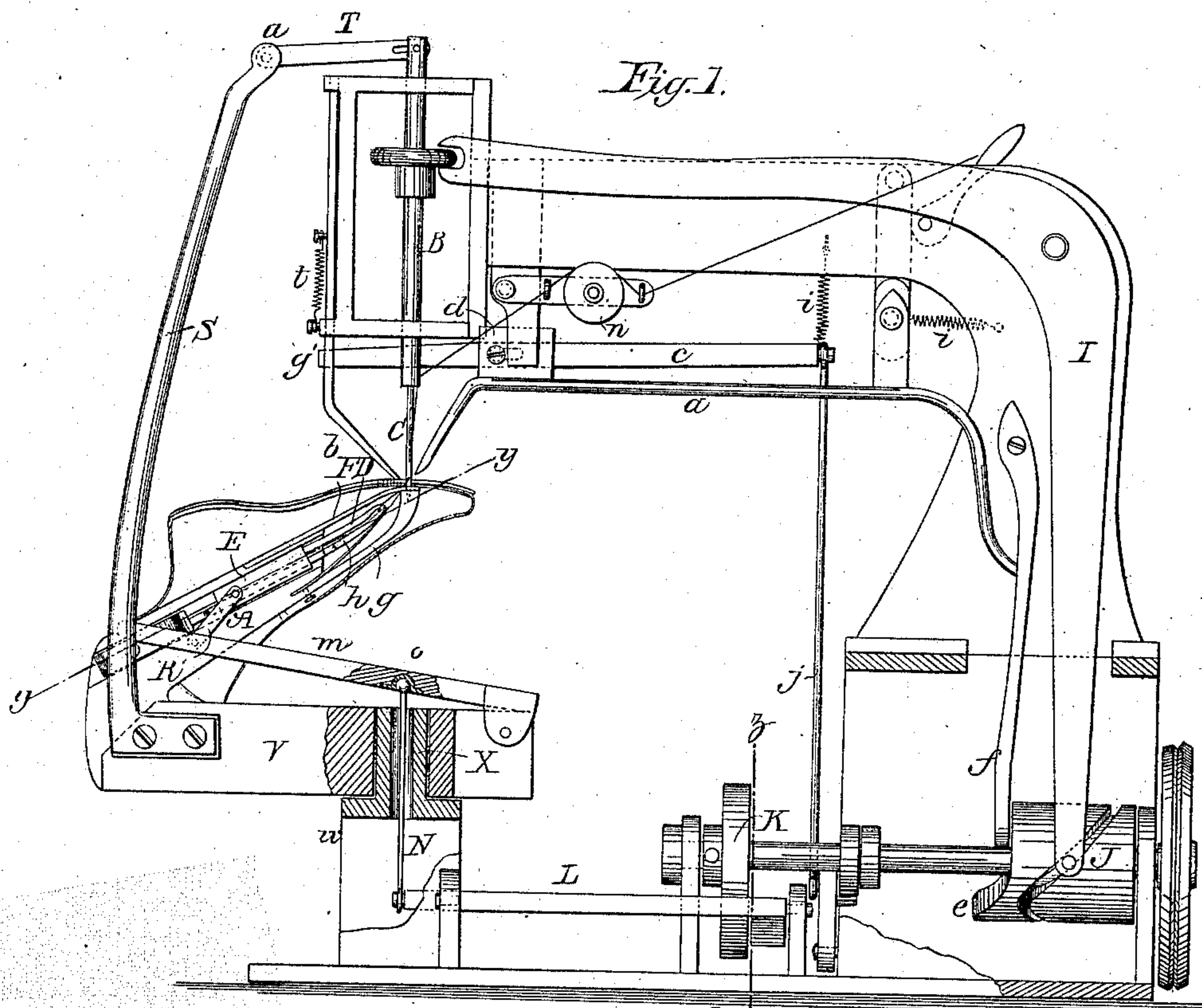


Fig. 3.

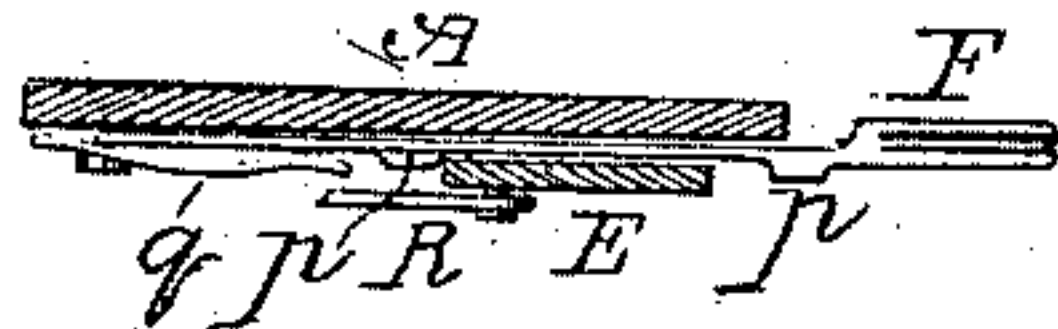


Fig. 2.

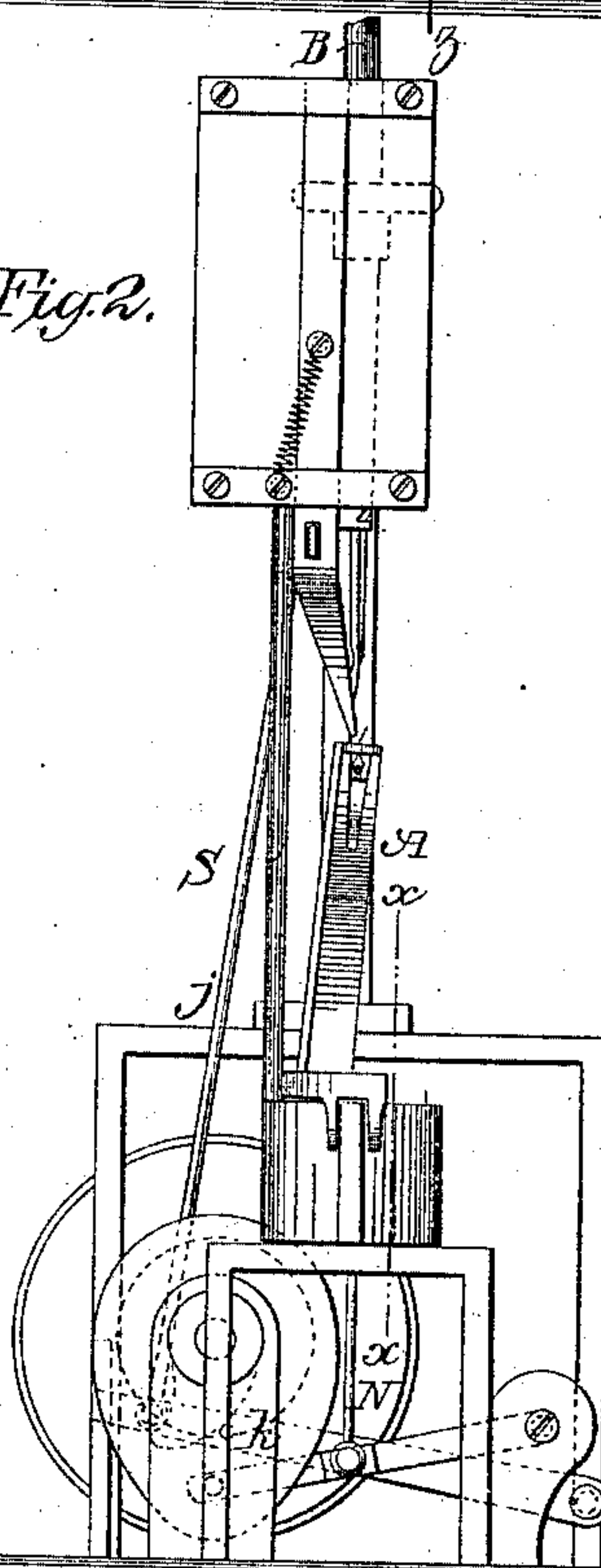


Fig. 4.

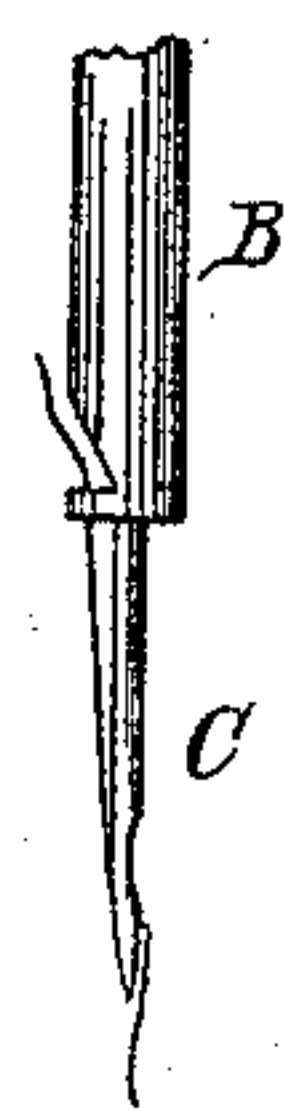
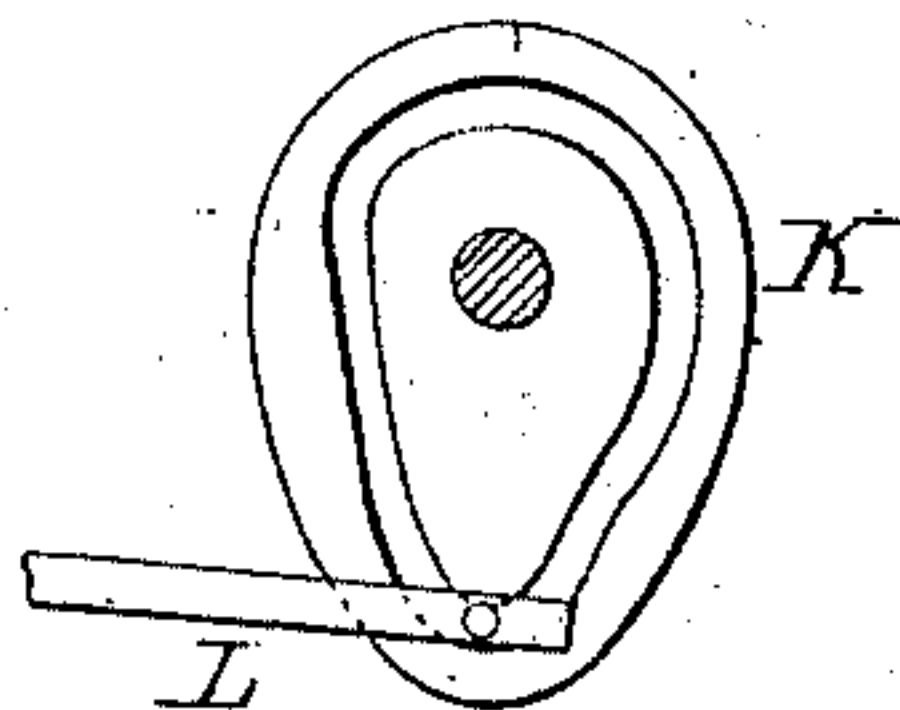


Fig. 5.



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JEREMIAH KEITH, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN SEWING-MACHINES FOR SEWING SHOES.

Specification forming part of Letters Patent No. 97,518, dated December 7, 1869.

To all whom it may concern:

Be it known that I, JEREMIAH KEITH, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Sole-Sewing Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings forming part of this specification.

This invention relates to sewing-machines of that class used for sewing soles in the manufacture of boots and shoes; and consists, first, in the construction of the looper arranged within the horn to form the stitches, with the chain on the inside, without turning the boot or shoe inside out. It consists, secondly, in the combination of devices for rotating the needle-bar and horn simultaneously; thirdly, in the mechanism for operating the looper; and, lastly, in the arrangement of devices by which the feed-bar and presser-foot are operated.

In the accompanying plate of drawings, Figure 1 represents an elevation of the machine, with parts broken away to show the construction and method of operation, the left-hand lower portion being a vertical section of Fig. 2 through the line *xx*. Fig. 2 is a front elevation, with the horn and bed turned around to an angle with the side of the machine. Fig. 3 is a longitudinal section of the horn through the line *yy* of Fig. 1. Fig. 4 represents the needle and the lower end of the needle-bar detached. Fig. 5 is a vertical section, looking from the line *zz* of Fig. 1, showing the grooved cam by which the hook or looper and detacher are actuated.

Similar letters of reference indicate corresponding parts.

A is the horn, which, in operating with the machine, is placed in the shoe or boot, as seen in the drawings, where the boot is represented in red color. The horn is so made that the mechanism by which I am enabled to form the stitch on the inside of the shoe is contained in and supported thereby. B is the needle-bar of the machine. C is the needle. D is a hook or looper operated in the horn A, and connected with the sliding bar E. As the needle C carries the thread through the

hole in the needle-plate F the looper or hook D catches the loop, which is held by the spring *g* until it is liberated by the detacher *h*. In this manner the ordinary chain-stitch is formed; but the chain is on the inside instead of on the outside, thus rendering it unnecessary to channel the bottom side of the sole for receiving and hiding the thread.

The needle-bar B is operated by means of the arm I, the lower end of which is given a vibratory motion by means of the zigzag groove in the cylinder-cam J. The looper-bar E is operated by a cam movement imparted from the grooved cam K by means of the vibrating frame L and lever M. N is a rod which connects the frame L with the lever M. This rod is connected with the lever M by a ball-and-socket joint, as seen at *o*, which allows the lever to turn while the connecting-rod remains stationary. The vertical motion imparted to this lever M operates the looper bar or hook D. The detacher *h* is a separate piece, with two stops upon it, forming shoulders, which the bar E strikes as it moves back and forth, thereby moving the detacher the right distance either way and at the right time. A sufficient degree of friction on the back end of the detacher is produced by the spring *g*, seen in Fig. 3. R is a short bar which connects the lever M with the looper-bar E. The needle C and the looper work to the center, and in forming the stitch the latter passes the needle C in catching the loop. To allow the hook or looper to pass, a curve is formed just above the eye of the needle C, as seen in Fig. 4.

To explain more plainly the method of forming the stitch I will here refer to the particular movements made for that purpose by the needle, and the other parts employed in connection therewith.

As the needle reaches its lowest point the actuating-cam movement is such that it rises slightly with the thread, so as to loosen and spread the loop for the hook or looper to pass through. As the needle ascends, the hook or looper D draws the loop down and back, and holds it until the needle brings down the thread again, and another loop is formed. The first loop is held in position by the spring *g*, while the looper D moves forward through the second loop, catches it, and draws it back

through the first loop, which first loop is then detached, and the second loop is held by the spring, as before, and so the operation is continued.

In operating with the machine, or sewing around the sole of a boot or shoe, it is, of course, necessary to give the horn with the shoe a part of a revolution horizontally. In my machine I give it three-fourths, or thereabout, of a revolution, which, by changing the shoe or boot on the horn, is all that is necessary to sew entirely around the sole, and in forming the stitch after my method it is necessary that the horn, with the parts attached thereto, and the needle C, should move in a revolving direction simultaneously. To insure this the horn and the needle-bar B are connected together by the curved back-piece S and the bar T. This bar T is jointed at *u* to the back, which allows the other end to rise and fall with the needle-bar. The bar *u* passes through a slot in the top of the needle-bar, or it may be connected with it in any other manner to insure a movement simultaneous and uniform with that of the horn. The horn is connected with the bed V, which is supported by and turns on the post *w*, as seen in Fig. I. The connecting-rod N passes up through the pivot X, on which the bed V turns. *a* is the feed-bar, and *b* is the presser-foot. The point of the feed-bar receives a vertical motion by means of the lever *c*. *d* is a plate attached to the feed-bar, and the lever *c* has its fulcrum therein (for raising the presser-foot *b*) on a pin passing through a slot in the plate. The slot allows the feed-bar to receive a longitudinal movement for giving the feed. This longitudinal movement is imparted by the cam *e* and bar *f*, which may be made variable by any suitable mechanism. After the bar has given the feed, or received its longitudinal movement, it is raised by the lever *c*, the fulcrum of the lever then being in the presser-foot, as seen at *g'*. The back movement of the feed-bar and the lever *c* is produced by the spiral springs *i i*, as seen in the drawing. The rod *j* connects the lever *c* with the cam by means of the bar *k*.

The proper tension of the thread is obtained by passing it around the pulley *n* as many times as it may be necessary after it has been suitably prepared by passing through a reservoir of heated wax. The back movement of the presser-foot is produced by the recoil of the spiral spring *t*.

By this method I am enabled to sew the sole without turning the boot inside out, and to form the stitch or chain on the inside of the boot or shoe, thus greatly increasing the durability of the article, as it is necessary, in order to conceal the chain, to cut or channel the leather when the stitch is formed on the outside after the old method.

Having thus described my invention, I claim as new and desire to secure by letters Patent—

1. The combination, with the rotating horn, of the slide E, looper D, and detacher *h*, constructed and operating within the horn F, substantially as herein described, for the purpose specified.

2. The combination of the curved back-piece S, pivoted bar T, and swinging bed V with the horn F, and needle-bar, for the purpose of rotating the needle-bar and horn simultaneously, substantially as herein shown and described.

3. The looper D in combination with the cam K, the frame L, connecting-rod N, pivoted lever *m*, short bar *k*, and sliding bar E, the rod N, and lever *m*, being connected together by a ball-and-socket joint, *o*, all arranged and shown as herein described, and for operating the looper.

4. In combination with the feed bar *a* and presser-foot *b*, I claim the lever *c*, slotted plate *d*, rod *j*, and its operating-cam, the cam *e*, bar *f*, and springs *i*, substantially as herein described, for the purpose specified.

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