

(No Model.)

J. E. BERTRAND.
SEWING MACHINE.

2 Sheets—Sheet 1.

No. 502,875.

Patented Aug. 8, 1893.

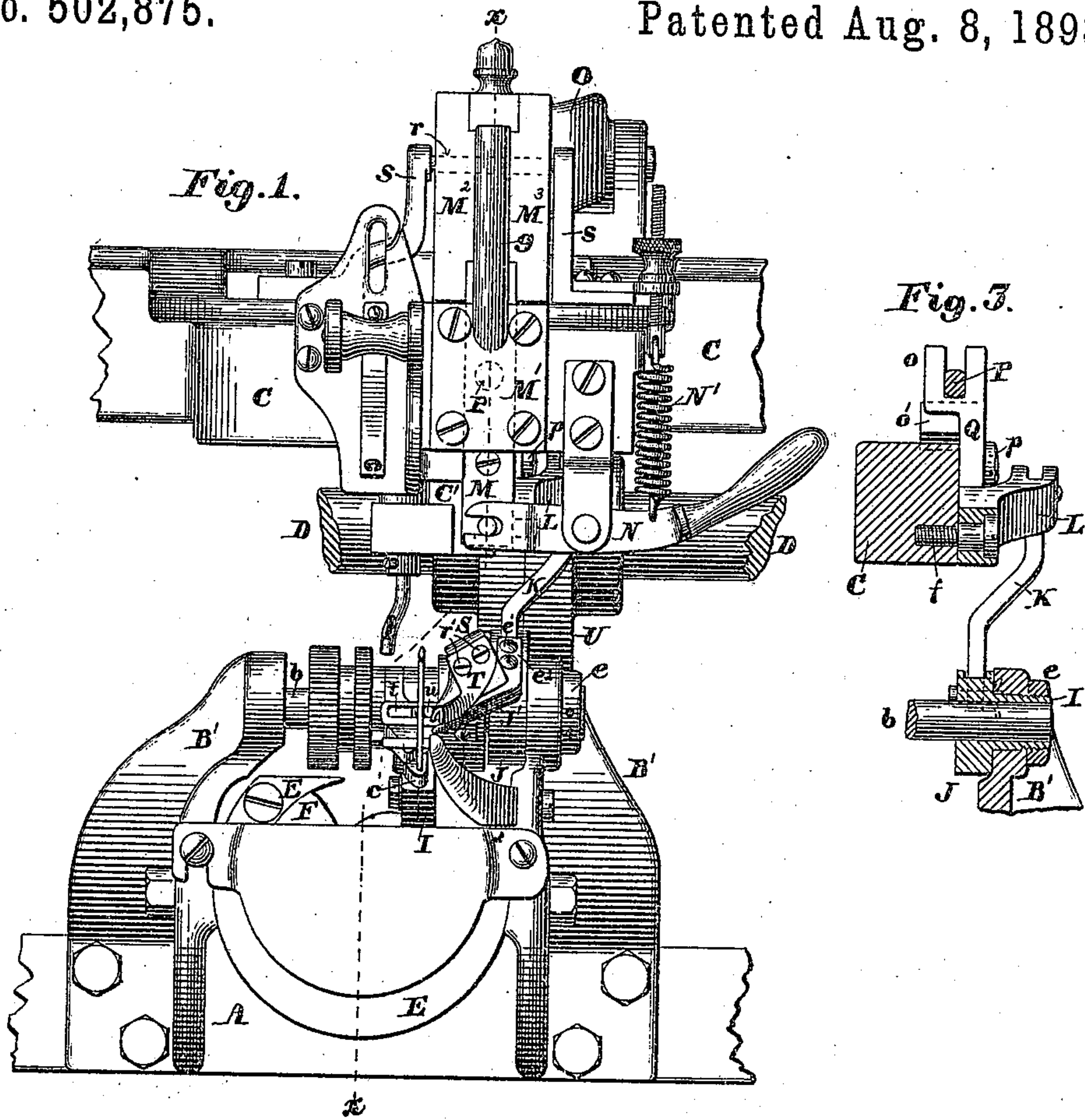
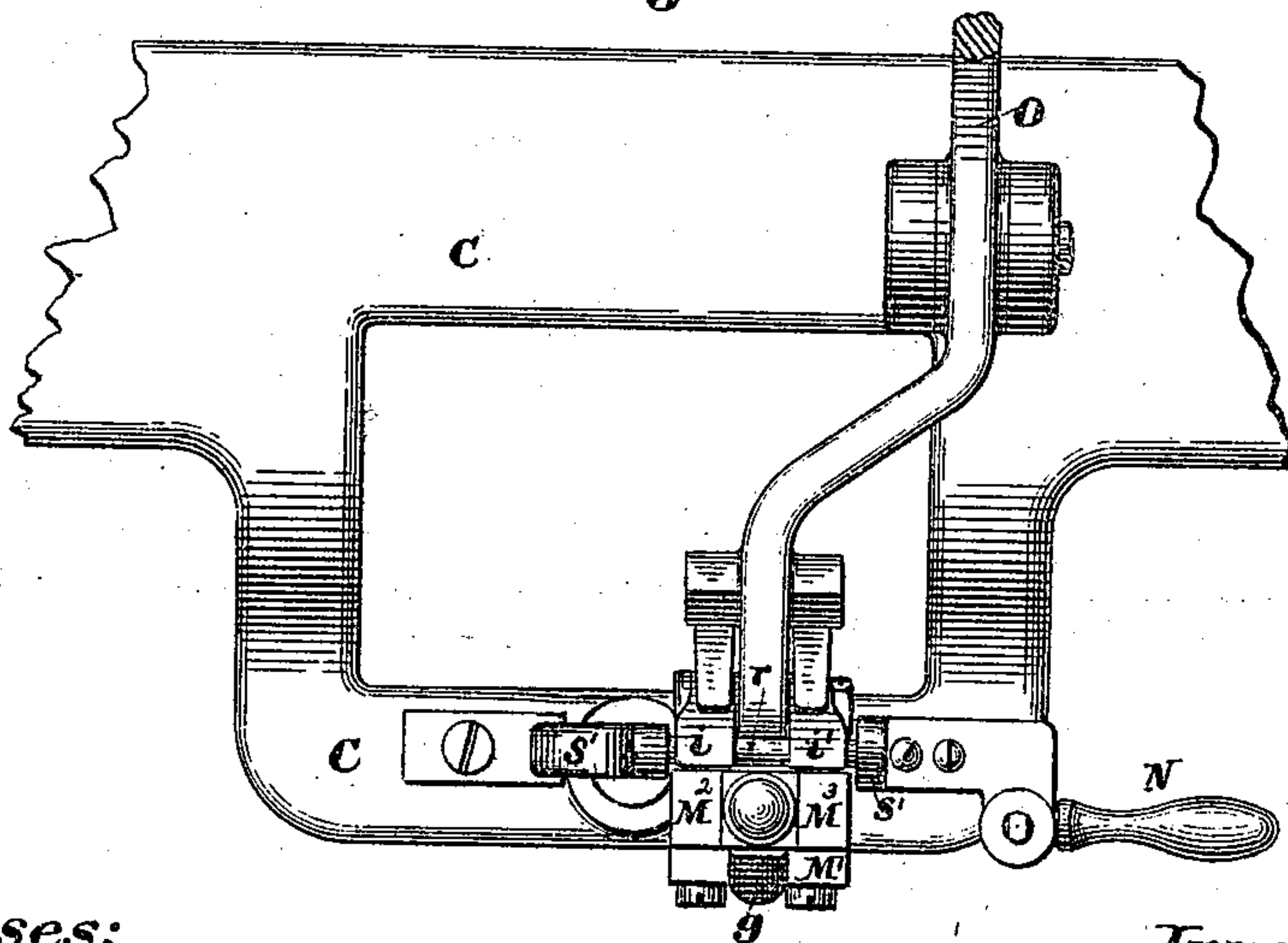


Fig. 4.



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Inventor:
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by N. E. Lombard
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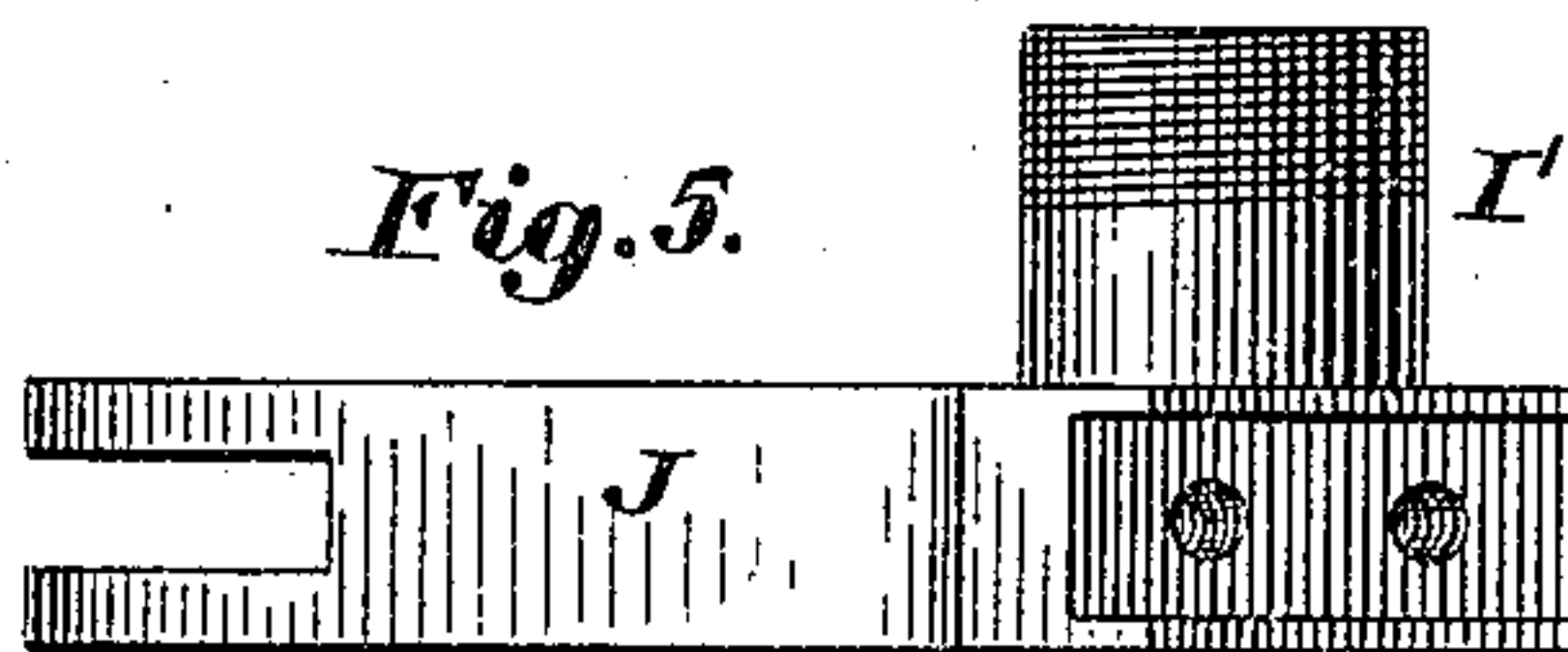
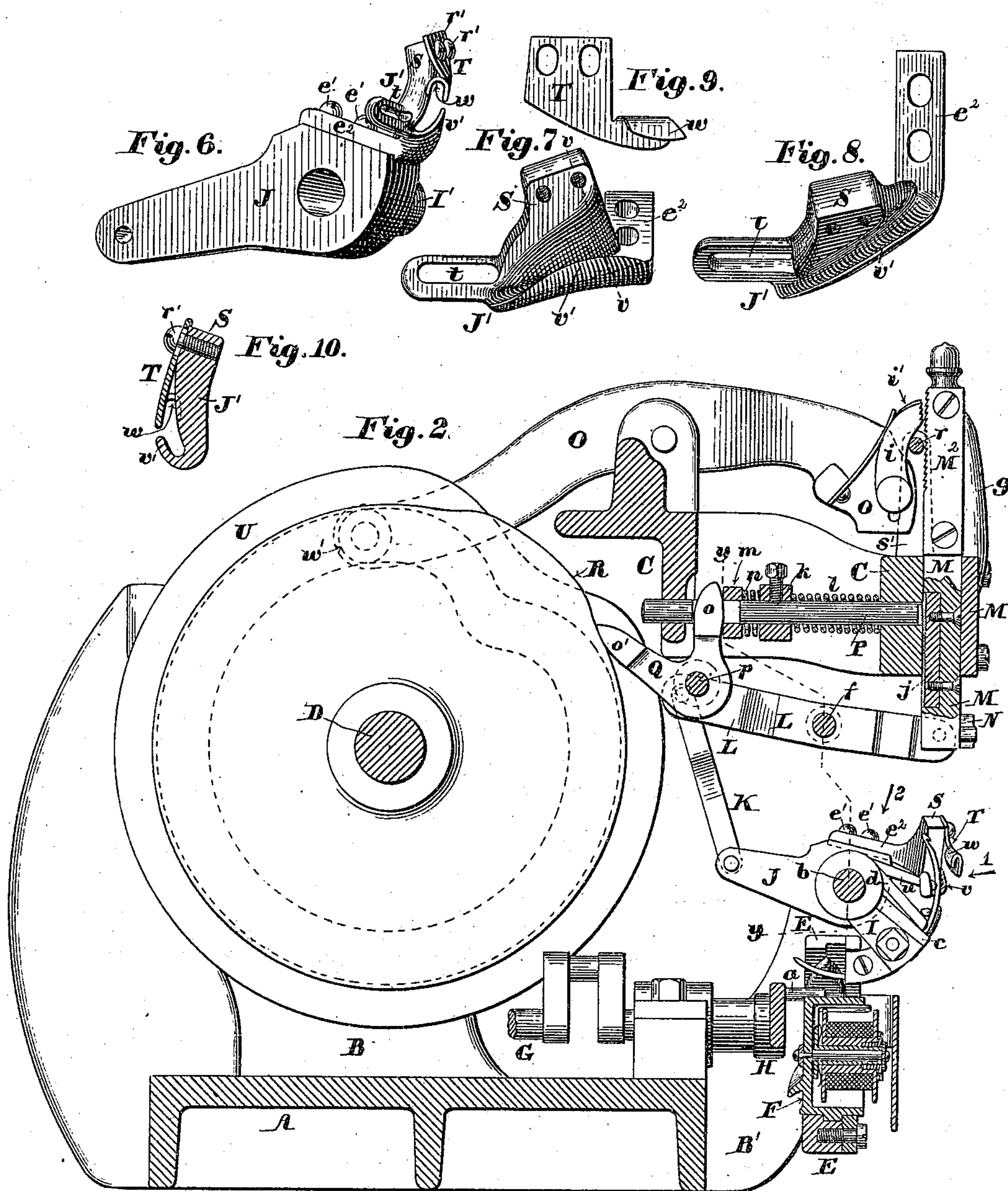
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2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

JOSEPH ELI BERTRAND, OF BOSTON, ASSIGNOR OF ONE-HALF TO MELLEN BRAY, OF NEWTON, MASSACHUSETTS.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 502,875, dated August 8, 1893.

Application filed March 15, 1893. Serial No. 466,128. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH ELI BERTRAND, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to sewing machines and especially to that class of such machines as are adapted to the sewing of turned shoes or the sewing of welts to inner soles and it consists in certain novel features of construction, arrangement and combination of parts which will be readily understood by reference to the description of the drawings and to the claims hereinafter contained and in which my invention is clearly pointed out.

Figure 1 of the drawings is a partial front elevation of a machine embodying my invention, only so much of the machine being shown as is necessary to properly illustrate my invention. Fig. 2 is a sectional elevation of the machine the cutting plane being on line *x, x*, on Fig. 1, said view showing only such parts as are necessary to the proper understanding of my invention. Fig. 3 is a vertical section on line *y, y*, on Fig. 2. Fig. 4 is a plan of the presser-foot operating bar and the lever and pawls for lifting the same. Fig. 5 is a plan of the presser foot carrying lever. Fig. 6 is a perspective view of the presser-foot, its carrying lever and the rand guide. Fig. 7 is a front elevation of the presser-foot viewed in the direction indicated by the arrow 1, on Fig. 2. Fig. 8 is a plan of the same viewed in the direction indicated by the arrow 2 on Fig. 2. Fig. 9 is an elevation of the back side of upper portion of the rand guide. Fig. 10 is a section through the presser-foot and rand guide on line *v, v*, on Fig. 7.

In the drawings A is the bed of the head of the machine, B one of the end frames, C the tie girt connecting the upper ends of said end frames, D the cam shaft, E the shuttle race, F the shuttle, G the shuttle operating shaft, H *a* the shuttle driver, B' one of the stands for supporting the shuttle race, *b* a shaft mounted in bearings in the upper ends of the stands B', I the needle carrying radius arm mounted on said shaft *b*, *c* the needle guide, and *d* the loop

spreader all constructed, arranged, and operating substantially as shown and described in the Letters Patent No. 432,011, granted to me July 15, 1890.

The parts of the machine not shown in the accompanying drawings are constructed, arranged and operate the same as shown and described in said cited prior patent, and as they do not form parts of my present invention they are omitted in order to more clearly illustrate the special features of my invention.

In the machine illustrated in the before cited Letters Patent the presser-foot was attached directly to a vertically movable bar and was movable only vertically or in a direction tangential to the curve of movement of the needle and awl. That arrangement was all right for that kind of work for which that machine was designed, viz: the sewing of the outer sole of a boot or shoe to the welt after said welt and the inner sole had been secured to the upper, but I have found by practical test that in performing some kinds of work such for instance as the sewing on of the soles of turned shoes or sewing welts to inner soles a better result can be obtained by having the presser foot arranged to move in an arc of a circle approximately the same as that in which the needle and awl move. To accomplish this I mount upon the shaft *b*, so as to be movable about the axis thereof, the lever J provided with the hub I' which has a bearing in the stand B', to which it is held in close contact by the nut *e* as shown in Figs. 1 and 3, but so as to be freely movable therein. To this lever J is secured the presser foot J' by means of the arm *e*² and the screws *e*' as shown in Figs. 1, 2, and 6. The rear end of the lever J has pivoted thereto one end of the link K the opposite end of which is pivoted to the rear end of the lever L fulcrumed at *f* and pivoted at its front end to the lower end of the bar M mounted in a vertical position in a bearing in the tie girt C and movable vertically by the lever N and spring N' substantially as the presser-foot bar was mounted and moved in said before cited Letters-Patent. The bar M is held in place in its bearing by the cap M' which is provided with the upwardly projecting stay arm *g*, de-

signed to act as a support for the upper end of the bar M and receive the outward thrust of the pawls i and i' when acting upon said bar to lift it. The bar M has secured to opposite sides thereof the two steel blocks M^2 and M^3 in the rear faces of which are cut ratchet teeth with their engaging shoulders downward, with which the pawls i and i' respectively engage at different times, according to the thickness of the work beneath the presser foot, to automatically raise said bar M and thereby cause the presser-foot J' to be raised from the work moving in a path concentric with the axis of motion of the needle and awl.

In the machine shown and described in the before cited patent the two blocks answering to those marked M^2 and M^3 in the drawings of this case were provided with ratchet teeth the shoulders of which faced in opposite directions, one of said ratchets being used to raise the presser foot and the other to lock it against any possibility of its being lifted at certain times, and the pawls were of the simple form having only one engaging point each. This has been found to be unsatisfactory because in order to provide for the variations in the thickness of stock the teeth were necessarily too fine, and the points of the pawls were not strong enough to be durable. To obviate this objection I use two pawls i and i' pivoted upon opposite sides of the lever O and each provided with a series of teeth corresponding to the teeth on the blocks M^2 and M^3 the shoulders of the teeth on both of said pawls facing upward and so arranged relative to the teeth on the blocks that when the teeth of one pawl are in engagement with the teeth of its ratchet the shoulders of the teeth on the other pawl will be removed from contact with the shoulders of the ratchet teeth a distance equal to one half the distance between two shoulders of said ratchet and "vice versa."

To lock the presser foot against being lifted when not required, I set into a recess in the back side of the bar M near its lower end a steel block j having formed in its rear face a series of serrations or ratchet teeth extending transversely across the same with which the locking bolt P having formed on its front end a corresponding series of teeth, engages, said bolt being mounted in a horizontal position in bearings in the tie girt, and having secured thereon the collar k between which and the front part of said tie girt said bolt is surrounded by the spiral spring l the tension of which tends to move said bolt away from the block j . The bolt P also has loosely fitted thereon the collar m between which and the fixed collar k is placed a spring n , said collar m being engaged by the forked upper end of the arm o of the elbow lever Q mounted upon the stud p set in the tie C' of the tie girt C, as shown in Fig. 3. The other arm o' of said lever Q, bears against and is acted upon by the face cam R to force said locking bolt into engagement with the toothed block j with a yielding pressure as shown in Fig. 2. The

pawls are pressed toward the ratchet blocks M^2 and M^3 by springs q , and are held out of engagement with the teeth of said blocks by the pin r set in the stands s and s' and extending between said pawls and ratchet blocks as shown in Figs. 1 and 2.

The presser foot has formed therein the slot t to receive the front end of the upper needle guide or stay u , and with the outwardly and upwardly projecting curved lip v' , which forms the lower half of a guide-way for directing the rand into position to be sewed to the inner sole, and with the upwardly projecting rectangular boss S to which is adjustably secured by the screws r' the plate T provided with the curved lip w which forms the upper half of said rand guide as shown in Figs. 1, 2 and 6.

The presser-foot J' is automatically raised from the work while the work is being fed preparatory to forming a new stitch by the action of the cam path formed in the side of the cam disk U upon the truck w' carried by the rear end of the lever O as indicated in dotted lines in Fig. 2.

A very great advantage is obtained in the result produced by having the presser foot movable about the same axis as the needle and awl, particularly when sewing material of varying thicknesses because the presser foot bears upon the work at the same distance from the needle whatever the thickness of the material being sewed.

The operation of my invention will be readily understood from the foregoing without further description here.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination with a curved needle constructed and arranged to reciprocate in an arc of a circle, of a lever mounted upon and movable about the same shaft as said needle; a presser-foot secured to said lever and movable therewith; a second lever fulcrumed upon a fixed part of the machine; a link connecting the rear ends of said two levers; a vertically movable bar pivoted at its lower end to said second lever; means for automatically lifting said bar and through it the presser-foot; and means having provision for automatically locking said bar and presser-foot in position to clamp the work.

2. The combination with a curved needle constructed and arranged to be reciprocated in an arc of a circle, of the levers J and L; the link K; the presser-foot J' carried by the lever J and movable in a plane concentric to the axis of motion of said needle; the bar M provided with the lifting ratchets M^2 and M^3 and the toothed locking block j and connected at its lower end to the lever L; the lever O; the lifting pawls i and i' carried by said lever O; the cam U for operating said lever; the locking bolt P and means having provision for automatically reciprocating said bolt to lock and unlock the presser-foot.

3. In combination with a vertically recip-

5 roating presser-foot operating bar; a toothed surface formed upon or secured to said bar; the locking bolt P; the fixed collar *k*, the loose collar *m* and the springs *l* and *n* all mounted on said bolt; the elbow lever Q; and the cam R all constructed and arranged to operate substantially as described.

In testimony whereof I have signed my

name to this specification, in the presence of two subscribing witnesses, on this 10th day 10 of March, A. D. 1893.

JOSEPH ELI BERTRAND.

Witnesses:

N. C. LOMBARD,

H. T. CROSBY.