

No. 771,784.

PATENTED OCT. 4, 1904.

W. E. LOMBARD.
SHOE SEWING MACHINE.
APPLICATION FILED AUG. 12, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

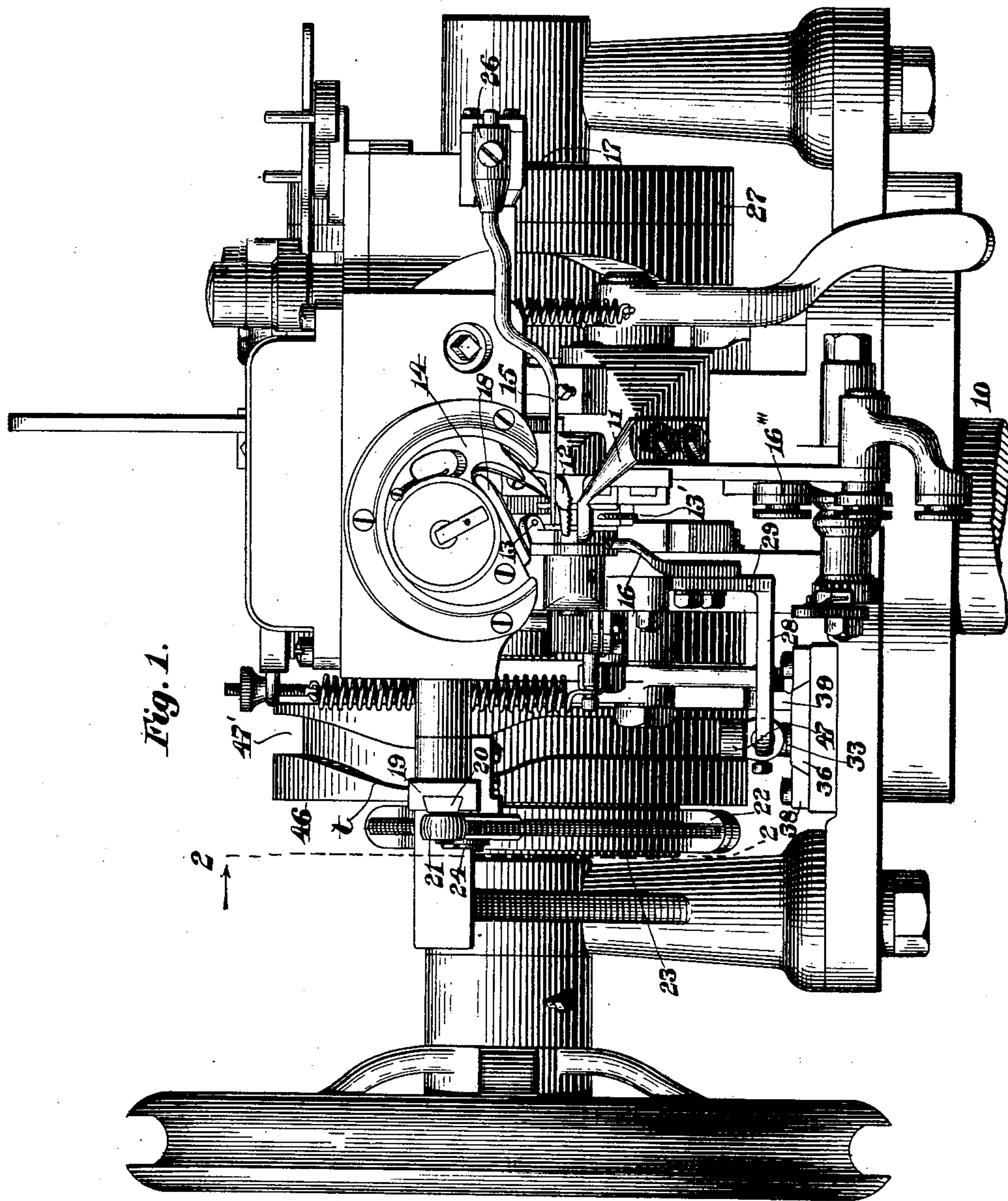


Fig. 1.

Witnesses:

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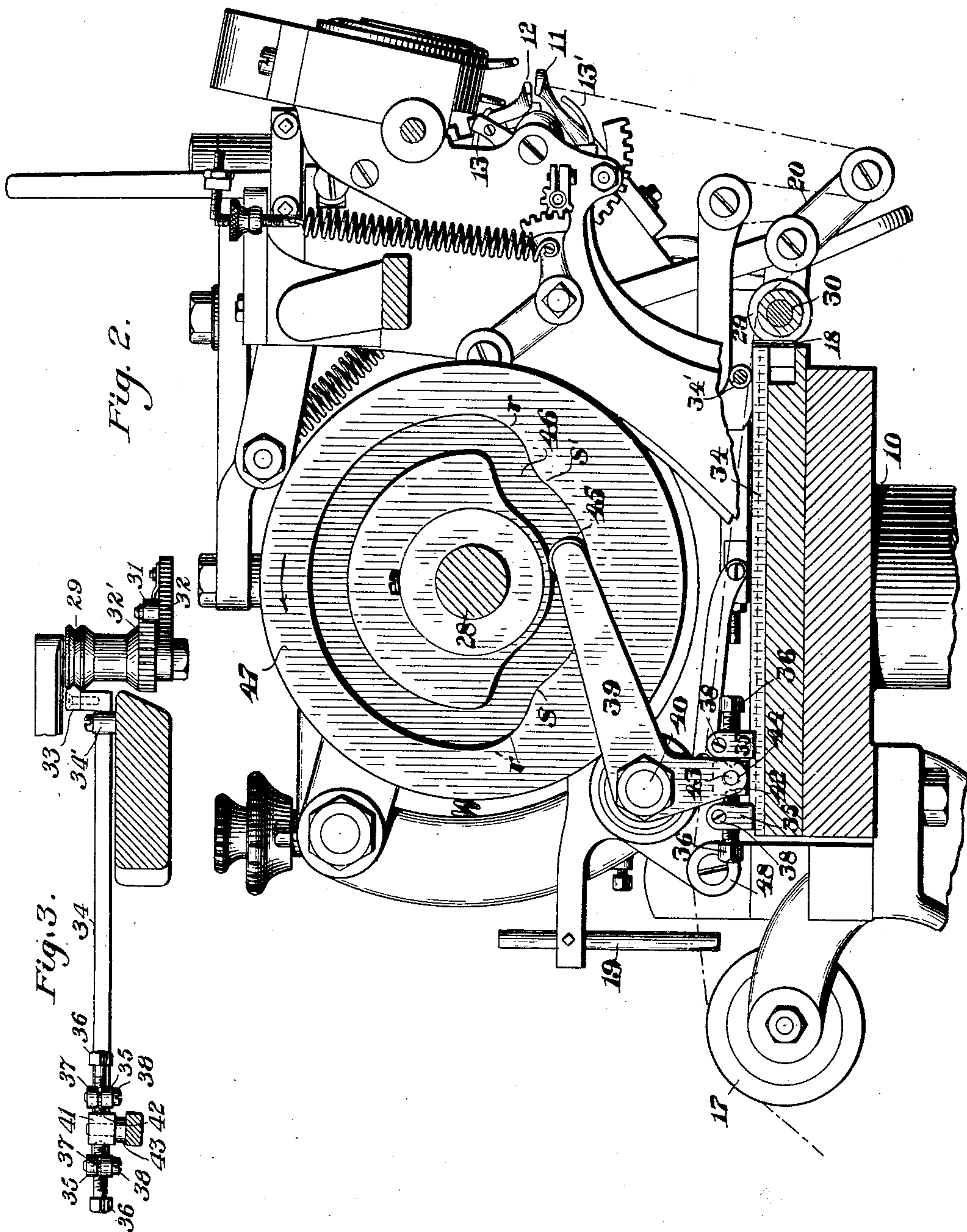
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Nathan C. Lombard 2nd
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Inventor:

Walter E. Lombard,

UNITED STATES PATENT OFFICE.

WALTER E. LOMBARD, OF ARLINGTON, MASSACHUSETTS.

SHOE-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 771,784, dated October 4, 1904.

Original application filed May 4, 1903, Serial No. 155,483. Divided and this application filed August 12, 1903. Serial No. 169,180.
(No model.)

To all whom it may concern:

Be it known that I, WALTER E. LOMBARD, a citizen of the United States, residing at Arlington, in the county of Middlesex and State of Massachusetts, have invented a new and useful Sewing-Machine, of which the following is a specification.

This invention relates to improvements in shoe-sewing machines, and more especially to a lock-stitch wax-thread machine for stitching outer soles of shoes to the welt—such as is shown, for example, in the United States Patent to J. E. Bertrand, No. 646,594, dated April 3, 1900—it being especially directed to mechanism for acting upon the needle-thread to expand the loop formed in it and for locking said thread against movement.

Of the drawings, Figure 1 represents a front elevation of a sewing-machine embodying one form of my invention. Fig. 2 represents a broken vertical transverse section thereof, the cutting plane being on line 2 2 on Fig. 1 looking from the left; and Fig. 3 represents a detail in plan, portions being in section, of the thread-locking device.

Similar characters designate like parts throughout the several figures of the drawings.

The machine is supported on a suitable pedestal 10, carrying the necessary arms or standards, upon which the elements coöperating to produce the line of stitches and their actuating mechanisms are mounted. These coöperating elements comprise a work-support 11, a presser-foot 12, a barbed needle 13, an awl 13', a shuttle 14, provided with a hook 14' and carrying the usual bobbin of thread, a loop-expanding device 15, a looper 16, and tension, locking, measuring, and take-up devices 17, 18, 19, and 20, respectively, for controlling the needle-thread. Of these elements my present invention concerns only the loop-expanding and thread-locking devices. The others may be of any suitable form adapted to properly coöperate in a machine of the type above referred to.

As the hook of the shuttle 14 approaches the loop of the needle-thread brought up through the work by the barb of the needle

13, this loop must occupy such a position that the hook will pass through it with certainty. To effect this, a loop-expanding device 15 is provided. This is here shown as consisting of a bent finger 21, normally situated just below and to the front of the shuttle. It is secured at one end to a supporting-bar 22, passing through an opening in a head 22', carried by the bar and being adjustably secured in place by a set-screw 23. The head is preferably provided with a spindle 23', projecting into a cylindrical recess in the end of the bar, being clamped therein by a set-screw 23''. By turning the spindle in its recess an angular adjustment of the finger may be secured. The bar 22 is mounted to slide longitudinally in a bearing 24, carried upon an arm from the pedestal, and at the opposite end from the finger is a roller 25, extending into a cam-groove 26 in a disk 27 at or near one end of the main driving-shaft 28 of the machine. This groove is formed with a portion from v to v' curved upon the arc of a circle concentric to the driving-shaft, and while the roller is in this portion the finger will remain stationary. From v' to v'' the groove quickly increases its distance from the center, at which time the loop will have been brought up by the needle in proximity with the finger, and this is then moved out by the bar to engage one side of the loop, moving transversely thereof in a substantially horizontal plane. It thus expands the loop and holds the same while the roller is moving in a short portion of the groove from v'' to w , less in length than from v to v' , which is also substantially concentric to the shaft. The hook will now have engaged the loop and is ready to be spread over the shuttle. So to permit the finger to readily release the loop under the pull of the hook the groove at w turns abruptly and extends for a short distance toward the center, moving the bar and finger quickly inward. The finger is now at a convenient time returned to its normal position to await the recurrence of this cycle.

After the hook of the shuttle has carried the loop to a point where it should be dropped to encircle and be drawn up, with its com-

panion thread, to form a stitch the take-up device 20 puts the proper stress upon the needle-thread to effect this result. It is then necessary to lock this thread between the take-up and the thread-supply (not shown) to prevent it from being drawn from the latter. For this purpose a locking device is provided, being in the form of a brake acting upon the thread. As here shown, one of the elements of this brake is a support for the thread consisting of a grooved sheave 29, mounted to rotate freely in one direction upon a stud 30, fixed to a portion of the framework and located adjacent to the take-up device. The sheave is preferably prevented from turning in the opposite direction by a spring-pressed detent 31, mounted upon an arm 32, supported upon the stud 30, engaging a ratchet-wheel 32', turning with the sheave. This arrangement, while permitting the thread, which makes a turn about this sheave, to move freely toward the work, prevents it from being readily drawn in the opposite direction by the action of the measuring device when thread is taken from the source of supply to form a new stitch. The element cooperating with the sheave or the brake member proper, as illustrated, consists of a contact-piece 33, provided with a vertically-extending beveled end adapted to enter the groove in the sheave. This contact-piece is secured to or integral with the end of a shank 34, mounted to slide longitudinally in ways, here shown as formed in the base-plate of the machine, the shank being retained in said ways by a projection 34' from the frame of the machine, which may be provided with a roll pressing upon the upper surface of the shank. The brake member is provided upon the shank thereof with a pair of contact members, consisting of lugs 35 35, through which are threaded oppositely-placed adjusting-screws 36 and 36. The lugs may be split at 37 and each provided with a screw 38 to draw the portions together and clamp the adjusting-screws in position. Above the shank is situated a bent lever 39, fulcrumed at 40 to the frame. A block or connector 41, formed with depressions at 42, into which extend the ends of the screws 38, furnishing a pivotal support therefor, is preferably provided with a somewhat elongated opening 44, into which extends a lateral pin or projection 43 upon the lower arm of the lever. This projection may, if desired, be integral with the arm of the lever, and it will be seen that while in the machine illustrated herewith it is convenient to use such a projection in others it might be omitted and the end of a lever lying in a single vertical plane project directly between the lugs. The other arm is provided with a projection 45, which may carry an antifriction-roll extending into a cam-groove 46 in a disk 47, fast upon the driving-shaft. This cam-groove is formed with a portion from r to r' concentric to the

driving-shaft, then with an inwardly-inclined portion from r' to s , approaching the shaft, from which point it continues concentric thereto to s' and is from that point inclined outward to join the other concentric portion at r .

The needle-thread coming from a suitable wax-pot (not shown) passes about the tension device 17, under the measuring device 19, over a guide-sheave 48 to the front of the machine about the supporting and retaining sheave 29, under the brake member, and then over the sheaves of the take-up 20, as usual, to the work. The cam-disk is so set on the shaft that while the loop is being formed, expanded by the finger, and passed over the shuttle to surround the companion thread the brake member will be held clear of the sheave 29, the projection on the lever being in the portion of the groove from r to r' . Then as the inwardly-inclined portion of the groove is reached the contact-piece of the brake is advanced into the groove in the sheave and is pressed against the thread therein, locking it against movement and enabling the take-up to tighten the stitch, the brake member being held in its thread-locking position while the projection on the lever is within the second concentric portion of the groove from s to s' . When this has been accomplished, the outwardly-inclined portion of the groove withdraws the brake member and leaves the thread free for the formation of the next stitch. It will be seen that with this locking device the thread is positively held against movement without the danger of the take-up "stealing thread" from the supply and failing to properly set the stitch, as may be the case when spring-pressed brakes are used, and also that by the location of the locking device near the take-up there is practically no length of loose thread to become stretched and impair the efficiency of the machine in drawing up the stitches.

Having thus described my invention, I claim—

1. In a shoe-sewing machine, the combination of a take-up, and a thread-locking device comprising a thread-support, a brake member cooperating therewith, a carrier for said brake member, actuating mechanism for said brake-member carrier, an adjustable connector between the actuating mechanism and brake-member carrier, and means for operating said actuating mechanism to cause the brake to operate upon the needle-thread while the take-up operates.

2. In a shoe-sewing machine, the combination of a take-up, and a thread-locking device comprising a thread-support, a brake member cooperating therewith only when the take-up is operating, a carrier for said brake member, an adjustable connector movable with the brake-member carrier, a lever coacting with the connector, and means for moving the lever.

3. In a shoe-sewing machine, a thread-locking device comprising a thread-support, a brake member cooperating therewith, a carrier for said brake member, a block adjustably supported upon the brake-member carrier, a lever coacting with the block, and means for moving the lever.

4. In a shoe-sewing machine, a thread-locking device comprising a thread-support, a brake member cooperating therewith provided with adjustable supports, a block pivoted upon the supports of the brake member, a lever coacting with the block, and means for moving the lever.

5. In a shoe-sewing machine, a thread-locking device comprising a grooved thread-support, guideways radial to the center of said thread-support, a brake member slidable in said ways and cooperating with the groove in said thread-support, actuating mechanism for the brake member, and a lever intermediate the brake member and actuating mechanism.

6. In a shoe-sewing machine, a thread-locking device comprising a grooved thread-support, guideways radial to the center of said thread-support, a brake member slidable in said ways and cooperating with the groove in said thread-support, a connector carried by the brake member, a lever coacting with the connector, and means for moving the lever.

7. In a shoe-sewing machine, a thread-locking device comprising a thread-support, a brake member slidable in ways and cooperating therewith, an adjustable connector carried by the brake member, a lever coacting with the connector, and means for moving the lever.

8. In a shoe-sewing machine, a thread-locking device comprising a sheave, a brake cooperating therewith, a shank projecting from said brake and sliding in ways, lugs carried by the shank, a lever extending between the lugs, and means for moving the lever.

9. In a shoe-sewing machine, a thread-locking device comprising a sheave, a brake cooperating therewith, a shank projecting from said brake and sliding in ways, lugs carried by the shank, a lever extending between the lugs, and a cam for actuating the lever.

10. In a shoe-sewing machine, a thread-locking device comprising a sheave, a brake cooperating therewith, a shank projecting from said brake and sliding in ways, lugs carried by the shank, a block pivoted between the lugs, a lever coacting with the block, and means for moving the lever.

11. In a shoe-sewing machine, a thread-locking device comprising a sheave, a brake cooperating therewith, a shank projecting from said brake, and sliding in ways, lugs carried

by the shank and provided with oppositely-placed screws, a lever extending between the screws, and means for moving the lever.

12. In a shoe-sewing machine, a thread-locking device comprising a sheave, a brake cooperating therewith, a shank projecting from said brake and sliding in ways, lugs carried by the shank and provided with oppositely-placed screws, a lever extending between the screws and provided with a projection, and a rotatable disk provided with a cam-groove into which said projection extends.

13. In a shoe-sewing machine, the combination with a thread-measuring device and a take-up device, of a sheave situated intermediate the two and adjacent to the take-up device and provided with means to prevent its rotation in one direction, and a brake cooperating with the sheave to prevent its rotation during the operation of the take-up device.

14. In a shoe-sewing machine, the combination with a thread-measuring device and a take-up device, of a sheave situated intermediate the two and adjacent to the take-up device, a ratchet-wheel rotatable with the sheave, a pawl cooperating with the ratchet, and a brake cooperating with the sheave to prevent its rotation during the operation of the take-up device.

15. In a shoe-sewing machine, a thread-locking device comprising a grooved thread-support, guideways radial to said thread-support, a brake member slidable in said ways and cooperating with the groove in said thread-support, and means for operating said brake member.

16. In a shoe-sewing machine, the combination of a take-up, and a thread-locking device comprising a grooved thread-support, guideways radial to said thread-support, a brake member slidable in said ways and cooperating with the groove in said thread-support, and means for operating said brake member to clamp the thread during the operation of the take-up devices.

17. In a shoe-sewing machine, a thread-locking device comprising a grooved thread-support, guideways radial to said thread-support, a brake member slidable in said ways and cooperating with the groove in said thread-support, a lever for operating said brake member, means for moving the lever, and a connector between said lever and brake member.

Signed by me at Boston, Massachusetts, this 17th day of July, 1903.

WALTER E. LOMBARD.

In presence of—

WM. H. VARNUM,

NATHAN C. LOMBARD, 2d.