

No. 762,544.

PATENTED JUNE 14, 1904.

R. L. LYONS.

NEEDLE VIBRATING MECHANISM FOR SEWING MACHINES.

APPLICATION FILED MAY 12, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

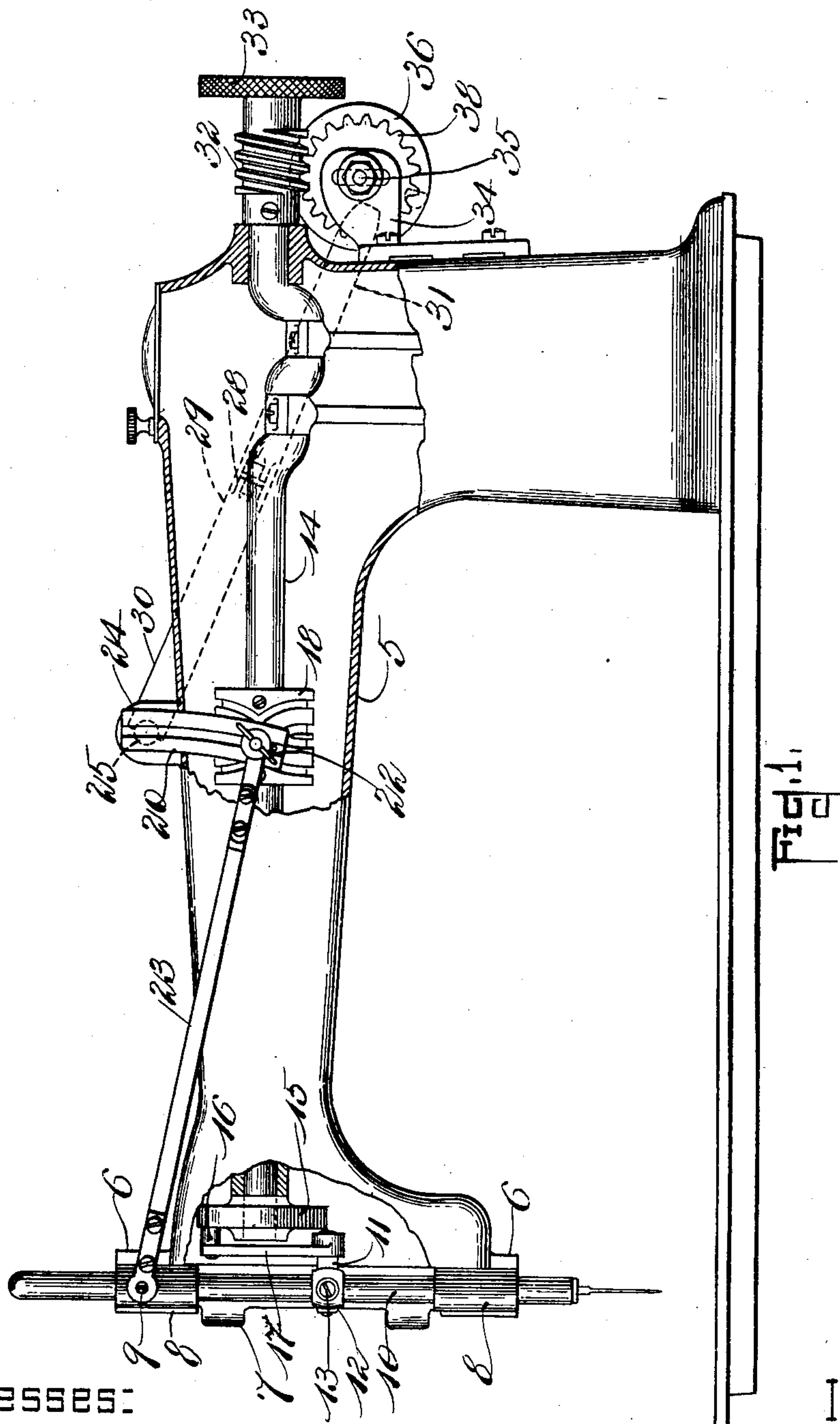


Fig. 1.

Witnesses:

Wm. H. Varnum
C. A. Bick

Inventor:

Robert L. Lyons
By Henry J. Miller
att'y.

No. 762,544.

PATENTED JUNE 14, 1904.

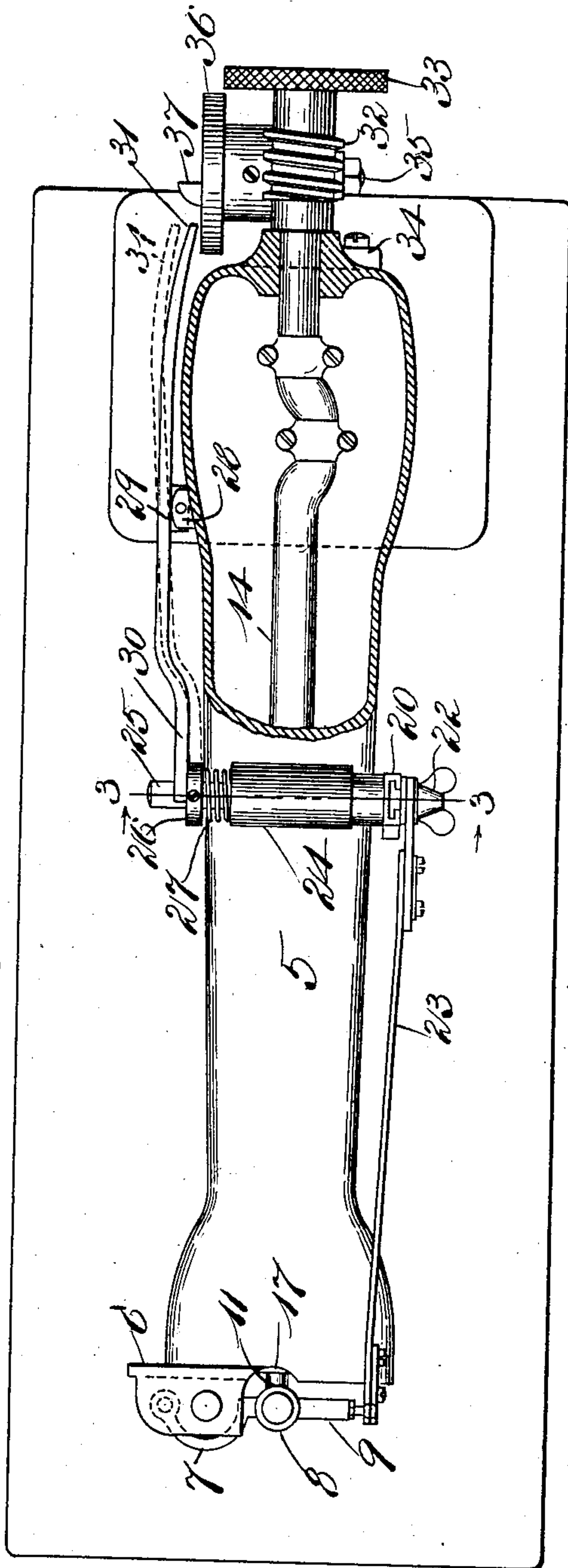
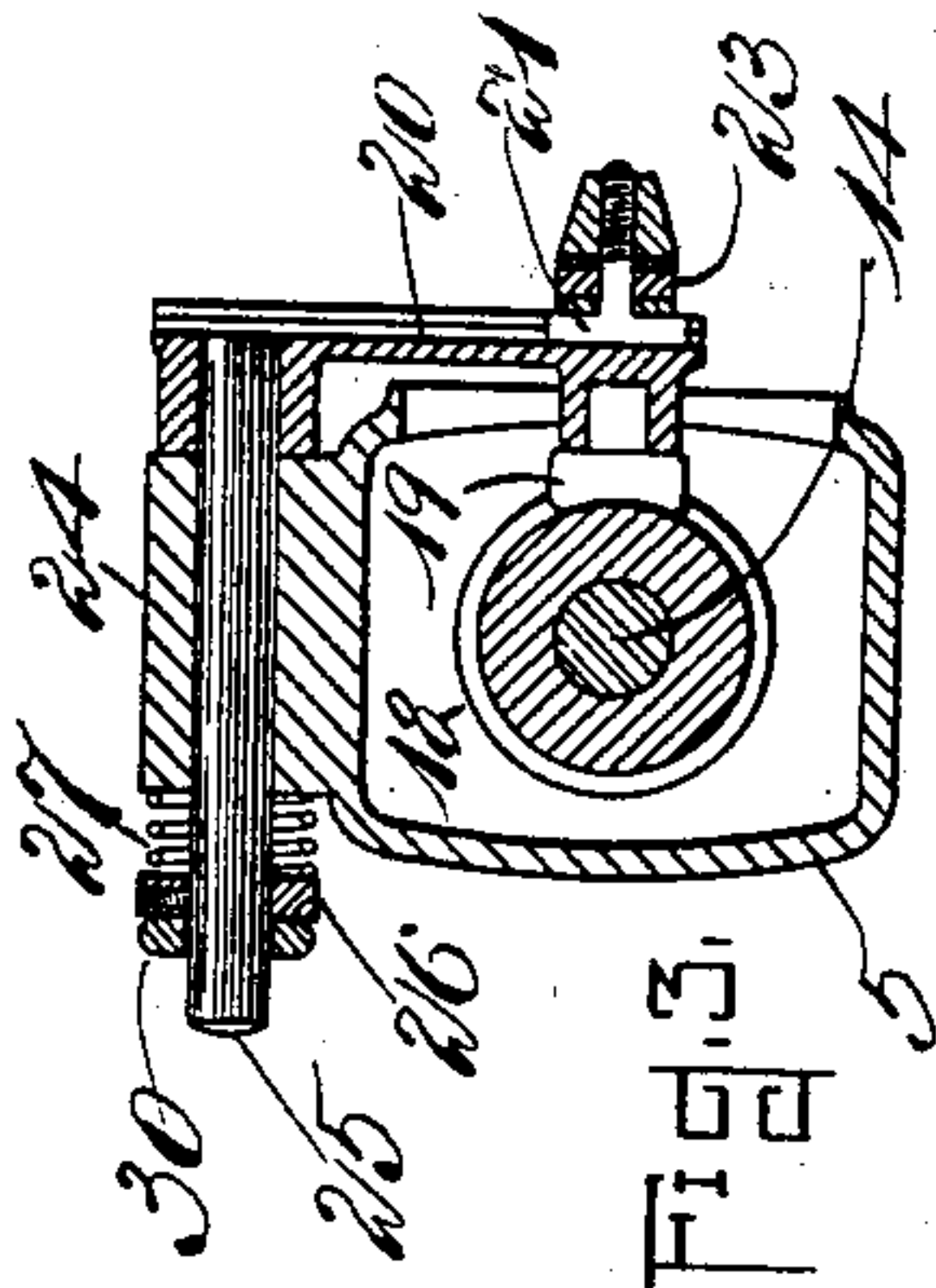
R. L. LYONS.

NEEDLE VIBRATING MECHANISM FOR SEWING MACHINES.

APPLICATION FILED MAY 12, 1903.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses:
Wm. H. Varnum
C. A. Diet.

Inventor:
Robert L. Lyons
By Henry J. Miller
att'y.

UNITED STATES PATENT OFFICE.

ROBERT L. LYONS, OF WALTHAM, MASSACHUSETTS, ASSIGNOR TO UNION
BUTTON SEWING MACHINE COMPANY, OF BOSTON, MASSACHUSETTS,
A CORPORATION OF MASSACHUSETTS.

NEEDLE-VIBRATING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 762,544, dated June 14, 1904.

Application filed May 12, 1903. Serial No. 156,799. (No model.)

To all whom it may concern:

Be it known that I, ROBERT L. LYONS, of Waltham, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Needle-Vibrating Mechanism for Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention has reference to improvements in sewing-machines, relating more particularly to improvements in the means for controlling the operation of the needle-bar.

The object of the invention is to so construct a sewing-machine provided with a needle-bar mounted in swinging bearings and means for swinging the bearings that such means may be disconnected from its actuator at a predetermined point in the operation of the machine.

Another object of the invention is to improve the general construction of sewing-machines with relation to needle-bar-vibrating mechanism and the controlling means therefor.

The invention consists in the peculiar construction of the controlling means and in its combination with the needle-bar-operating shaft.

The invention also consists in such other novel features of construction and combination of parts as shall hereinafter be more fully described, and pointed out in the claim.

Figure 1 represents a side elevation of a sewing-machine, partially broken away and illustrating this invention. Fig. 2 represents a plan view of parts of the same, partially broken away. Fig. 3 represents a cross-sectional view taken on line 3 3, Fig. 2.

Similar numbers of reference designate corresponding parts throughout.

It is often desirable, as in button-sewing machines, that the needle-bar should be so mounted and actuated that the point of operation of the needle on the work can be varied without changing the position of the work. This has been accomplished by mounting the needle-bar in bearings mounted for lateral movement with respect to the path in which

the needle works and in supplying means connected with some movable part of the machine whereby the bearings may be moved back and forth at suitable times. As in machines of this character the needle is shifted to a different point of action on the material after each stitch, the single operation of the needle at the last of a group of stitches leaves the thread in a condition from which it may readily be loosened under ordinary conditions.

In carrying this invention into practice it has been my desire to so construct a sewing-machine having a needle-bar movable with relation to the point at which the needle operates on the material and means for moving the needle-bar or its bearings that at a predetermined point in the operation the lateral movement of the needle-bar ceases, while the sewing movement continues, thus causing the needle to carry its thread several times through the same perforation in the material and effecting, in conjunction with the well-known operation of the shuttle under these conditions, a knotting or securing of the threads.

As shown in the drawings, 5 represents a sewing-machine head or frame of the usual construction and having extensions 6 6, to which is pivoted the frame 7, having the bearings 8 8 and the projection 9. In the bearings 8 8 is movably mounted the needle-bar 10, adapted to carry any usual form of needle, and on the needle-bar is secured the stud 11 by means of its strap 12, which embraces the needle-bar, and the set-screw 13.

Journaled in bearings in the frame 5 is the needle-bar-operating shaft 14 of any usual construction and adapted to be operated in any usual manner. Secured at the forward end of this shaft is the plate 15, having the pivot 16, the connecting-rod 17 being pivoted on this pivot 16 and on the stud 11 of the needle-bar to effect a rapid reciprocation of the needle-bar under the rotation of the shaft 14.

On the shaft 14 is secured the cam-block 18 of the usual construction and formation for this purpose, and working in the groove of this cam is the follower 19, adapted to work through a suitable opening in the frame

5 when actuated by the cam or actuator 18 under the rotation of the shaft 14. On this follower is mounted the curved guide 20, in which the plate 21 may be adjustably positioned and secured by means of the thumb-nut 22, working on the stem extending from said plate. Also secured to such stem by this clamping-nut is the operating rod or means 23, connected at its forward end with the projection 9 of the frame 7 by a universal joint. If now the shaft 14 be rotated, the needle-bar will be reciprocated through its connection therewith, while the frame 7 will be swung back and forth by the action of the groove of the cam 18 on the follower 19 transmitted to the frame 7 by the operating-rod 23.

To effect the purpose of this invention, I provide the frame 5 with the laterally-extending bearing 24, in which is mounted for rotative and lengthwise movement the shaft 25, one end of which is secured to the upper portion of the guide 20, while the other end portion of this shaft is provided with the collar 26, secured thereto by a set-screw, and between this collar and the end of the bearing 24 is the expansion-spring 27, which by its action on the collar 26 tends to draw the shaft 25 and the guide 20 in the direction to maintain the engagement of the follower 19 with the groove of the cam 18.

At the back of the frame 5 is the lip 28, Fig. 2, and to this lip is pivoted the lever 29, having the forked end 30, engaging the shaft 25 and bearing against the collar 26 and the rear end 31.

On the rear end portion of the shaft 14 is mounted the worm 32, which may have the thumb-nut 33, if desired, and at this portion of the frame 5 is mounted the bracket 34, in which is secured the spindle 35, carrying the rotatable cam-plate 36, having the cam 37 and the gear 38, meshing with the worm 32, whereby the rotation of the shaft 14 causes the rotation of the gear 38 and the cam-plate 36 to at times carry the cam 37 beneath the end 31 of the lever 29.

The worm 32 and the gear 38 are so pro-

portioned that at the completion of a group of the desired number of stitches or at any other desired point in the operation of the machine the cam-plate 36 has been rotated sufficiently to bring the cam 37 beneath the end 31 of the lever 29, thus forcing this end outward and moving the end 30 of this lever toward the bearing 24 and at the same time moving the shaft 25 against the action of the spring 27 to carry outward the guide 20, and to thereby disengage the follower 19 from the groove of the cam 18, the continued operation of the shaft 14 then resulting in driving the needle through the same hole in the work and effecting a knotting or series of loops with the shuttle-thread until the cam-plate 36 has been sufficiently rotated to carry the cam 37 from beneath the end 31 of the lever 30.

I have herein shown and described my invention in its preferred form; but I do not desire to limit myself to this particular construction, as I am well aware that equivalents for the same may be used to accomplish the same results.

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

In a sewing-machine and in combination with a needle-bar vibrator comprising the shaft 14, the cam 18 on said shaft, the follower 19 working in said cam, and the plate 20 mounted on said follower; the shaft 25 secured to the plate 20, the bearing 24 in which said shaft is mounted, the collar 26 on said shaft, the spring 27 between the collar and the bearing, the lever 29 pivotally mounted on the frame and bearing against the collar, the worm 32 on the shaft 14, the spindle 35 suitably mounted, and the cam-plate 36 journaled on the spindle 35 and having the plate 36 with its cam 37, adapted to actuate the lever 29, and the gear 38 engaged with the worm 32, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT L. LYONS.

Witnesses:

C. W. HODGDON,
H. J. MILLER.