

V. SANDAHL.
SEWING MACHINE.

APPLICATION FILED SEPT. 28, 1907.

Patented May 18, 1909.

3 SHEETS—SHEET 1.

922,048.

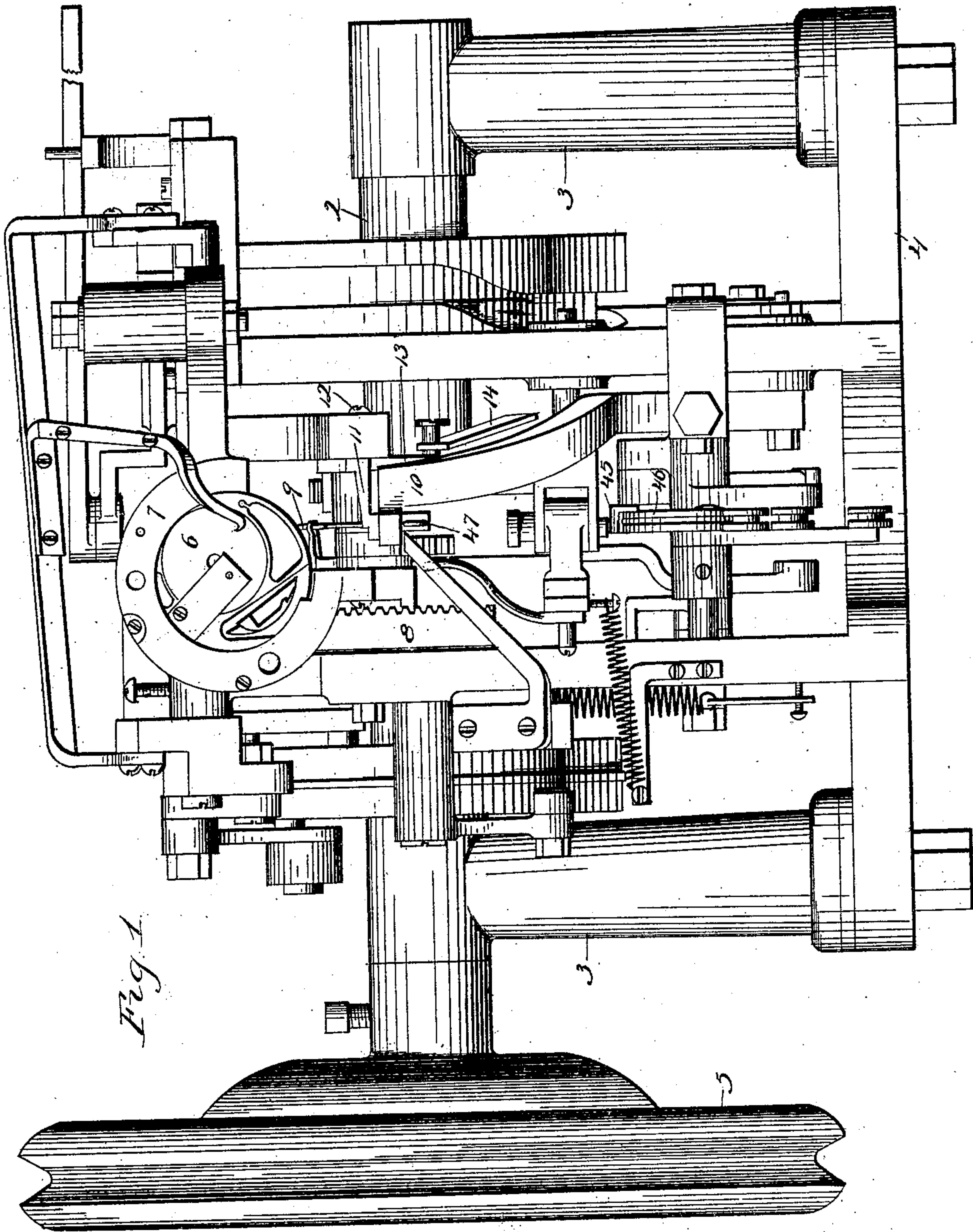


Fig. 1.

Witnesses
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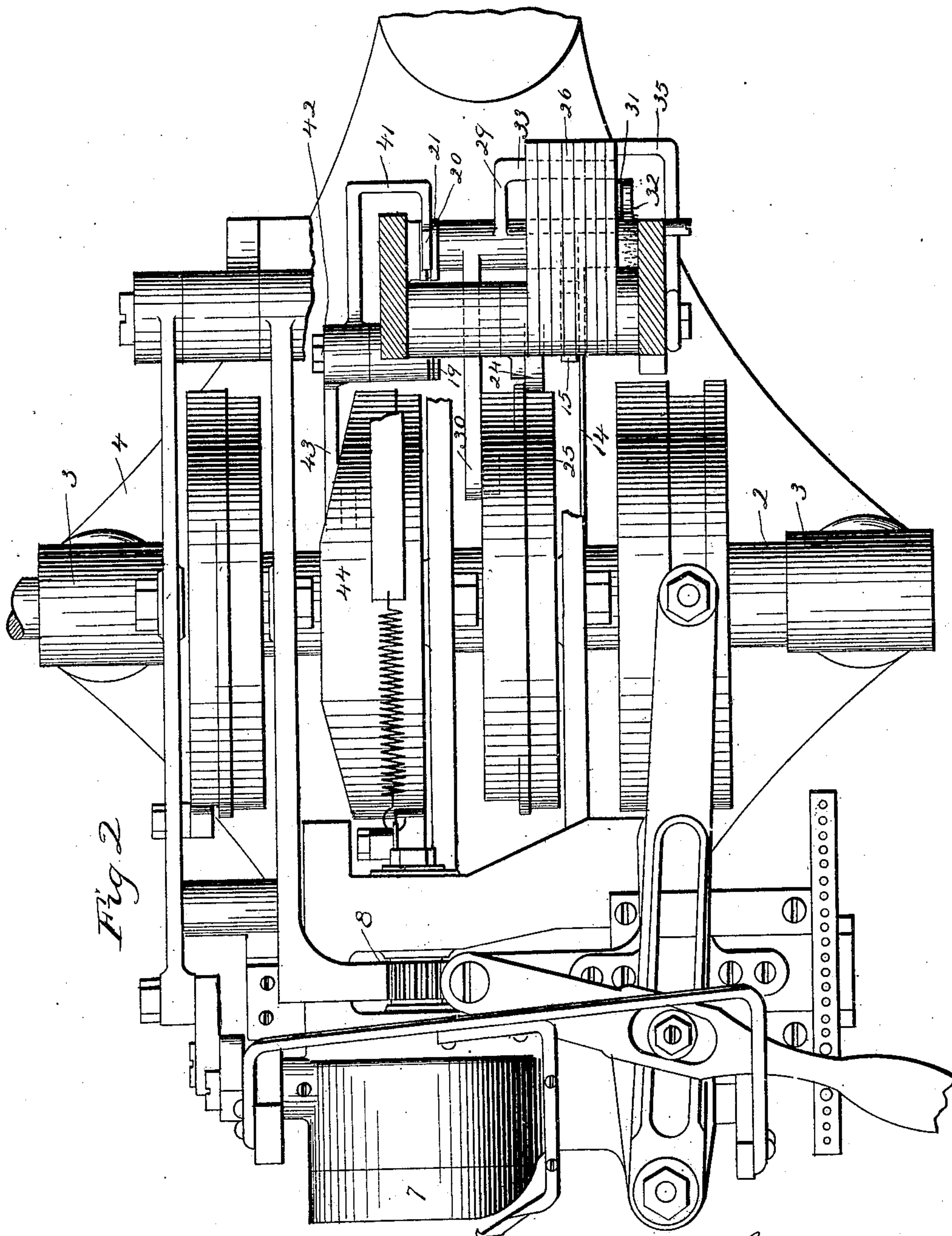
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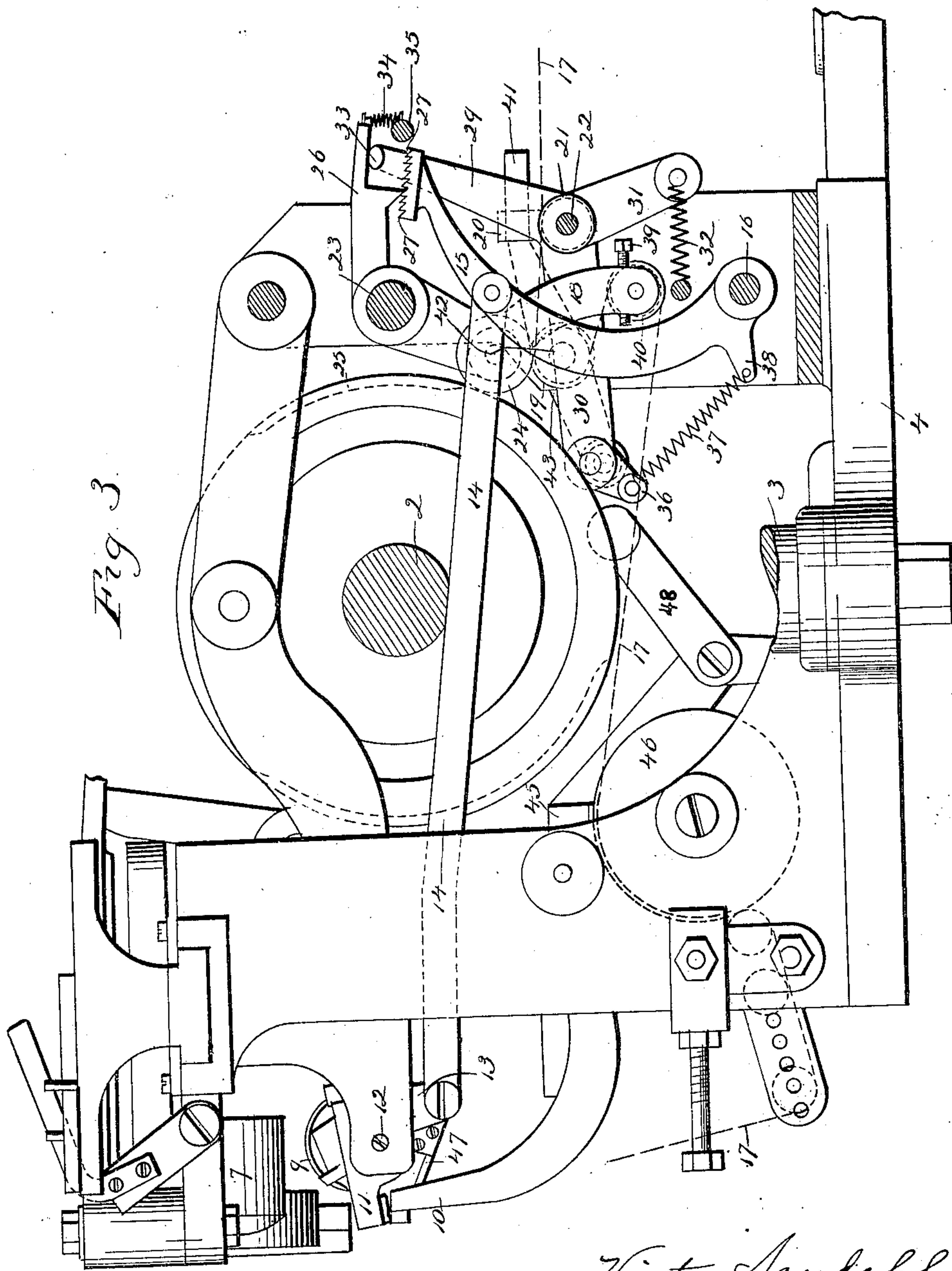


Fig. 3.

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UNITED STATES PATENT OFFICE.

VICTOR SANDAHL, OF NEW YORK, N. Y., ASSIGNOR TO L. WHEELER BEECHER, OF NEW HAVEN, CONNECTICUT.

SEWING-MACHINE.

No. 922,048.

Specification of Letters Patent.

Patented May 18, 1909.

Application filed September 28, 1907. Serial No. 395,039.

To all whom it may concern:

Be it known that I, VICTOR SANDAHL, a citizen of the United States, residing at New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Sewing-Machines; and I do hereby declare the following, when taken in connection with the accompanying drawings and the numerals of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1 a front view of a sewing machine constructed in accordance with my invention. Fig. 2 a top or plan view of the same. Fig. 3 a side view, a portion of the frame broken away.

This invention relates to an improvement in sewing machines, and particularly to machines for stitching outer soles of boots and shoes to welts, the form of the machine being known as lock-stitch, and comprising a needle and shuttle mechanism, the special object of the invention being to improve the thread controlling mechanism so that the machine is automatically adapted to stitch soles of varying thickness; and the invention consists in the construction and combinations of parts as will be hereinafter described and particularly recited in the claims.

As in the usual construction of machines of this class the main shaft 2 is mounted in uprights 3 springing from a base 4 the shaft being driven through the usual driving wheel 5. The shuttle carrier 6 is of usual construction mounted in a housing 7 and rotated by a rack 8 the mechanism for driving this shuttle and moving the needle 9 and awl 47 being those of usual construction, and not requiring further description, the parts all being moved through various racks and cams operating by the driving shaft 2. The work is placed between a support 10 and a presser foot 11. This presser foot mounted upon a pivot 12 has a tail 13 to which is attached a presser foot connecting rod 14 which extends rearward and is pivotally connected with a thread-measuring adjusting lever 15, this lever being mounted to turn upon a shaft 16, the thread 17 coming over the needle, passes over the usual take-up mechanism and extending rearward passes around a guide roller 40 in the end of the lever 18, thence over a

guide 19 and rearward between the thread clamp 20 and a roller 21 on a shaft 22, the thread clamp being carried by an arm 41 which extends around the frame and is mounted on a bearing 42 and is turned by an arm 43 which extends into engagement with a cam 44 whereby the thread may be held at this point when the stitch is made. The thread measuring lever 18 is mounted upon and fixed to a shaft 23 and carries a roller 24 which is engaged by a cam 25 whereby the lever is rocked. Mounted upon and fixed to the shaft 23 are a series of pawls 26 adapted to engage with teeth 27 on the upper end of the thread measuring adjusting lever 15.

Mounted upon the shaft 22 is a pawl lifting lever 29 having a rearwardly extending arm 30 which is moved by a cam on the driving shaft 2. The lever 29 is also provided with a downwardly extending arm 31 which is engaged by a spring 32. The upper end of the lever 29 has a transversely arranged finger 33 by which the pawls 26 are lifted out of engagement with the teeth 27, these pawls being held downward by means of springs 34 which are connected with a stationary bar 35. The arm 30 of the pawl-lifting lever is provided with a tail-piece 36 which is connected by a spiral spring 37 with a lug 38 on the lower end of the thread measuring adjusting lever 15 so as to normally depress the presser-foot. The spring 37 is lighter than the spring 32 so that the pressure of the spring 32 will overcome the pressure of the spring 37 on the lever 30. The spring 37 is so arranged that the tension of the spring varies with the position of the lever 15. The thicker the sole is the more the spring must yield and a heavier tension will be imparted to the presser foot. The spring 37 is also placed between the levers 15 and 30 so that the tension of the spring will be increased and decreased by the movement of the lever 30, the greatest tension being applied when the lever is operated by its cam to permit the pawls to engage the lever 15 which are timed to do so just after the stock has come to rest before a stitch is made. When the pawls are raised by the lever just before the feeding of the stock, the spring is shortened and a lesser pressure is applied to the presser foot. By this arrangement it will be seen that a light pressure is on the sole when fed along and a heav-

ier pressure is applied after the sole has come to rest and the presser foot will be locked with a heavier pressure on the sole.

In the lower end of the thread-measuring lever 18 is a stop screw 39 which bears against the thread-measuring adjusting lever 15 at the inward stroke of the lever. The thread entering the machine from the spool passing between the roller 21 and clamp 20 over the guide 19 and around the guide roll 40 at the end of the thread-measuring lever 18, thence forward to the needle beneath the clamp 45 by which it is held against the grooved thread wheel 46; the tension of the thread beyond this point being of usual construction. The clamp 45 is carried by a bell crank lever 48 adapted to be turned by a cam on the main shaft. At a predetermined time the thread is held by the clamp 45 and the lever 18 is turned by its cam so as to throw its lower end carrying the roller 40 rearward which in turn draws the thread beneath the thread clamp 20 from the spool. The thickness of the sole determines the length of thread to be drawn from the spool. The sole is placed on the support and the presser-foot rests upon it, and as the thicknesses of the soles vary the presser-foot is raised and lowered accordingly. As the presser foot is raised or lowered the lever 15 will be moved accordingly by the connecting rod 14. Before a stitch is taken the awl 47 punches the sole and the presser-foot is held so as not to be lifted by the awl by the engagement of the pawls 26 with the teeth 27. After the awl has punched the hole and before it is withdrawn, the pawl 26 will be lifted out of engagement with the teeth 27 so that the lever 15 is free to turn, and so as to permit the feeding of the sole by the awl in the usual way. At the time the stitch is taken the thread from the spool is held by the clamp 20 and if the sole increases in thickness more thread is required, and a thicker sole raises the presser-foot which draws the connecting rod 14 moving the lever 15 forward, and if the lever 15 moves forward it allows the lower end of the thread-measuring lever 18 to swing forward to a greater extent before the stop screw 39 engages with the lever 15 so that when it returns a greater length of thread will be drawn from the spool. The depth to which the thread is pulled into the sole may be adjusted by the stop screw 39. At the time the drawing of the thread from the spool takes place, the thread-clamp 20 is raised and the clamp 45 brought into action to hold the thread. On the other hand, a thinner sole moves the connecting rod 14 rearward and hence moves the thread-measuring adjusting lever 15 rearward so that the stop screw 39 in the lever 18 will strike the lever 15 at an earlier point in the operation of the machine so that its return movement is not so great, and

therefore a less amount of thread is drawn. The spring 32 holds the cam roll carried by the arm 30 in contact with its cam, and as it is stronger than the spring 37 it overcomes the influence of the spring 37 on the arm 30. If thinner stock is being sewed the lever 15 will be turned rearward to a greater extent thereby diminishing the tension on the spring 37 and thence the pressure of the presser-foot; on the other hand, thicker stock turns the lever 15 forward, increases the tension of the spring 37 and hence increasing the pressure at the presser-foot.

I claim:—

1. In a sewing machine, the combination with a presser foot, of a spring applying tension to the presser foot, mechanism to lock and unlock the presser foot in relation to the feeding of the stock, said spring connected with said mechanism and operated thereby, whereby the tension of the presser foot is varied, substantially as described.

2. In a sewing machine, the combination with a presser foot, a connecting rod extending rearward therefrom, a thread measuring adjusting lever connected with the connecting rod, provided at its upper end with teeth, a thread measuring lever, pawls operated thereby and adapted to be engaged with said teeth, and means for lifting said pawls out of engagement with said teeth.

3. In a sewing machine, the combination with a presser foot, a connecting rod extending rearward therefrom, a thread measuring adjusting lever connected with the connecting rod, provided at its upper end with teeth, a thread measuring lever, pawls adapted to be moved thereby and adapted to be engaged with said teeth, a spring attached to the said thread adjusting lever, and means for automatically adjusting the tension of the spring with relation to the thickness of the sole.

4. In a sewing machine, the combination with a presser foot, a connecting rod extending rearward therefrom, a thread-measuring adjusting lever connected with the connecting rod and provided at its upper end with teeth, a thread measuring lever cooperating with the thread-measuring adjusting lever, pawls adapted to be moved by said thread measuring lever and to engage with said teeth, a spring attached to said thread measuring adjusting lever, and means for automatically adjusting the tension of the spring with relation to the thickness of the sole.

5. In a shoe sewing machine, the combination with a presser foot, of a connecting rod connected therewith and extending rearward therefrom, a thread measuring adjusting lever connected with said connecting rod and formed at its upper end with teeth, a thread-measuring lever carrying an adjusting screw at its lower end for engagement

with said measuring adjusting lever, pawls moved by said thread measuring lever and adapted to engage with said teeth, a pawl-lifting lever having a forwardly extending arm and a downwardly extending arm, springs connected with said arms, and cams for moving said levers, substantially as described.

6. In a sewing machine, the combination with a presser foot, a connecting rod extending rearward therefrom, a thread measuring adjusting lever connected with the connecting rod, provided at its upper end with teeth, pawls adapted to be engaged with said teeth, means for lifting said pawls out of engagement with said teeth, and a thread measuring lever cooperating with the thread measuring adjusting lever, substantially as described.

7. In a sewing machine, the combination

with a presser foot, a connecting rod extending rearward therefrom, a thread measuring adjusting lever connected with the connecting rod, provided at its upper end with teeth, pawls adapted to be engaged with said teeth, a spring attached to the said thread adjusting lever, means for automatically adjusting the tension of the spring with relation to the thickness of the sole, a thread measuring lever cooperating with the thread measuring adjusting lever, and an adjustable stop screw mounted in said thread measuring lever, substantially as described.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

VICTOR SANDAHL.

Witnesses:

E. S. BOWERS,
LAURA GIBB.