

No. 623,098.

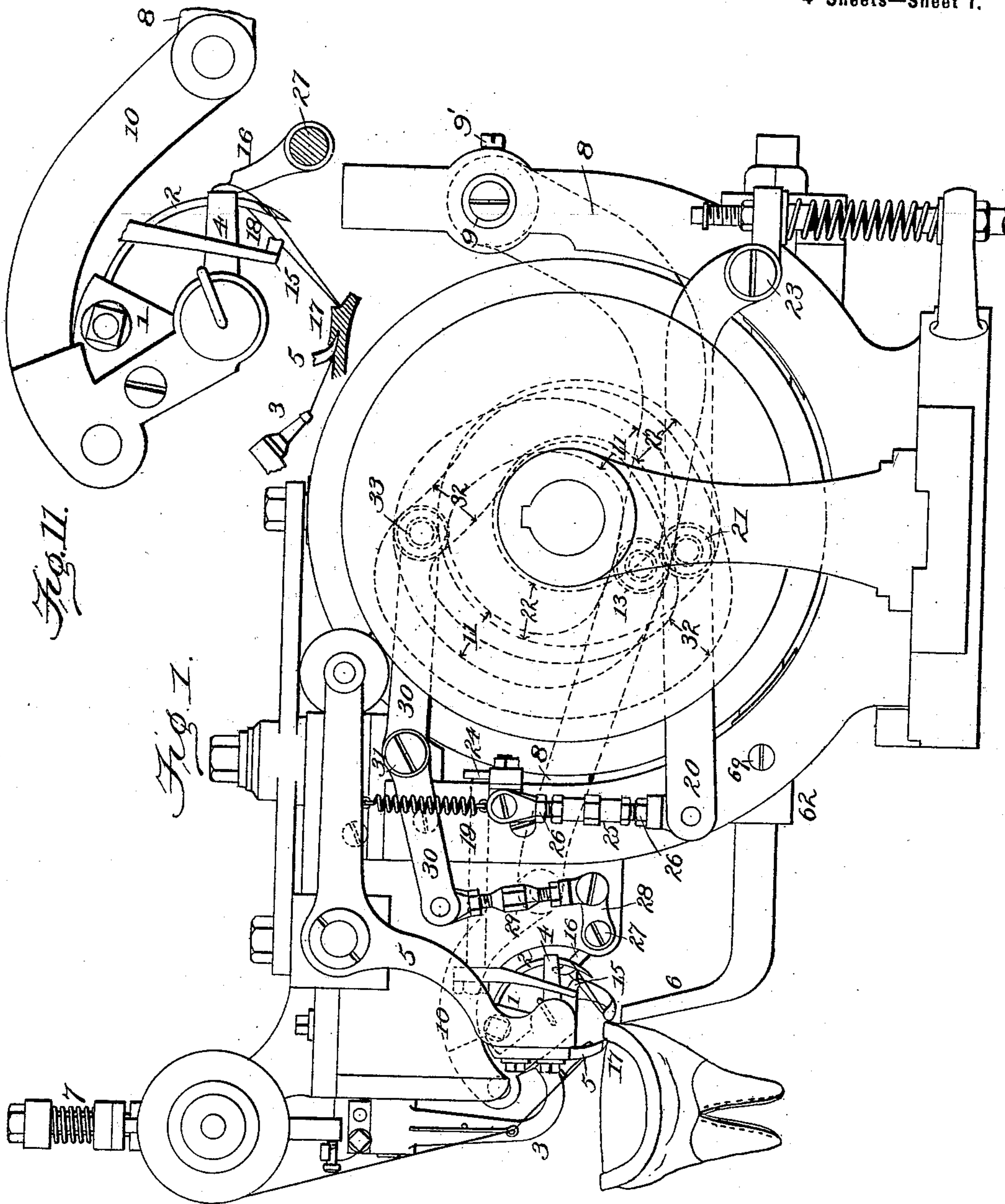
Patented Apr. 11, 1899.

F. A. MILLS.
SHOE SEWING MACHINE.

(Application filed Sept. 9, 1896. Renewed Feb. 8, 1899.)

(No Model.)

4 Sheets—Sheet 1.



WITNESSES:

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M. S. Schmitt, Jr.

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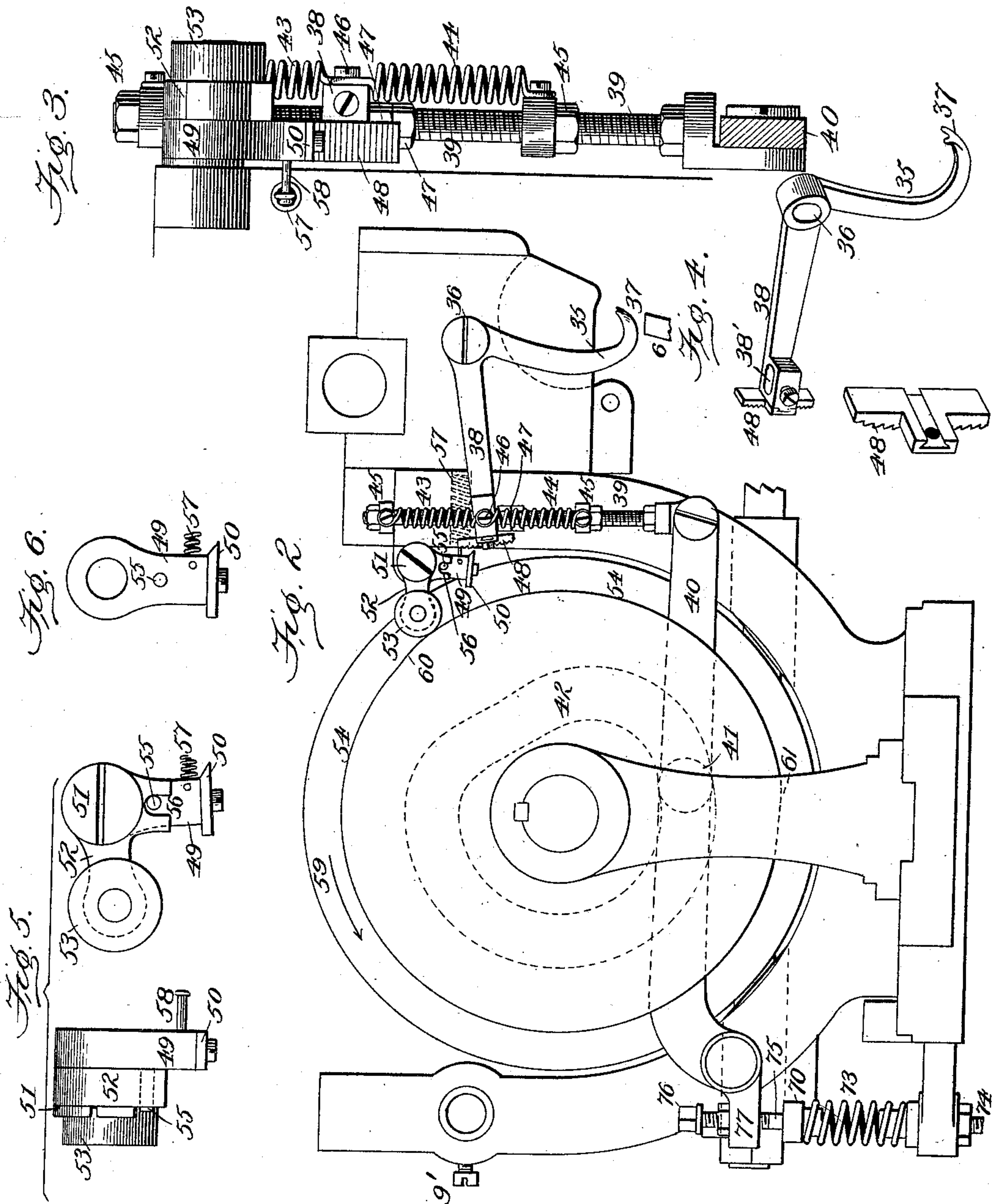
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4 Sheets—Sheet 2.



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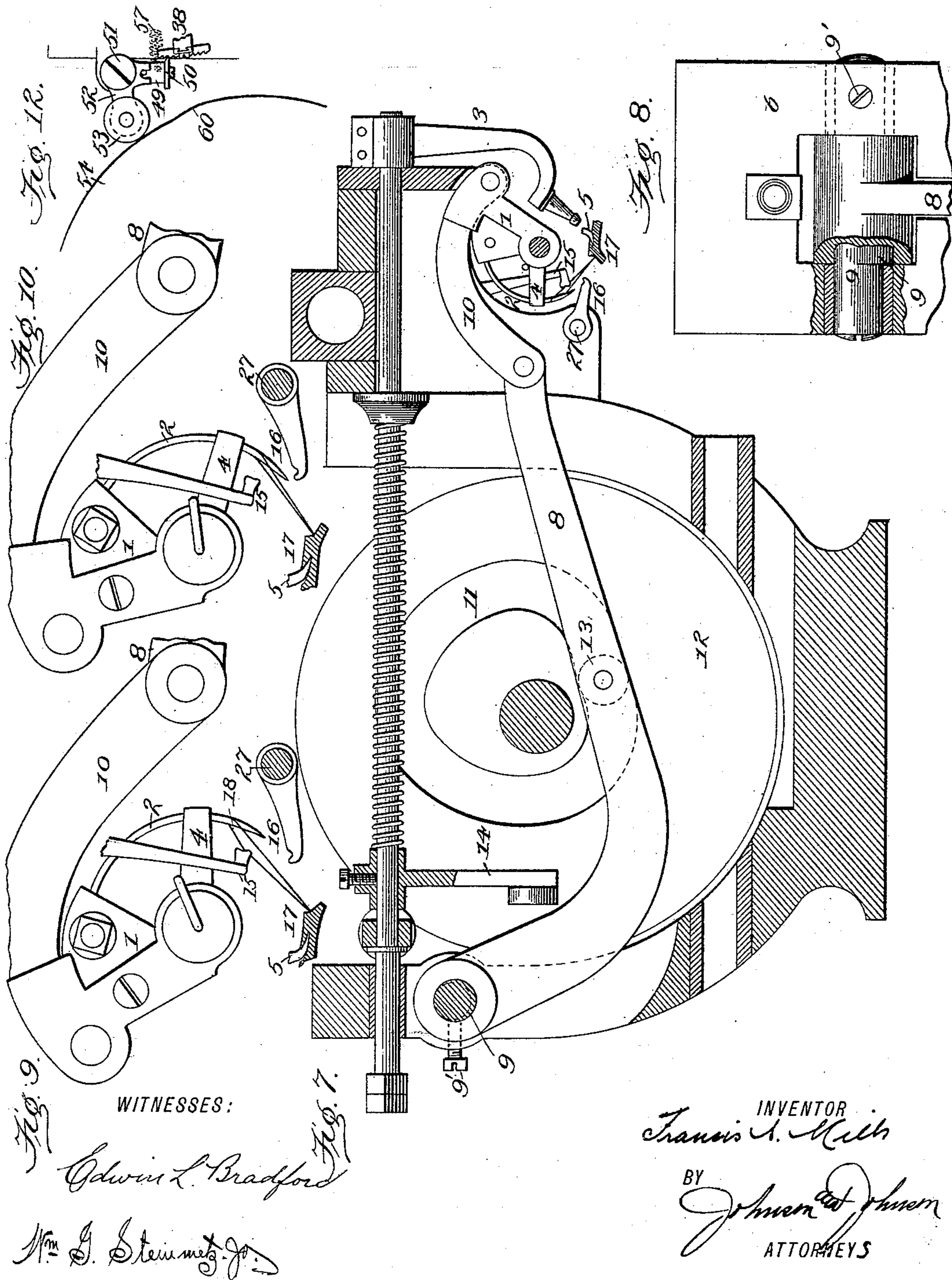
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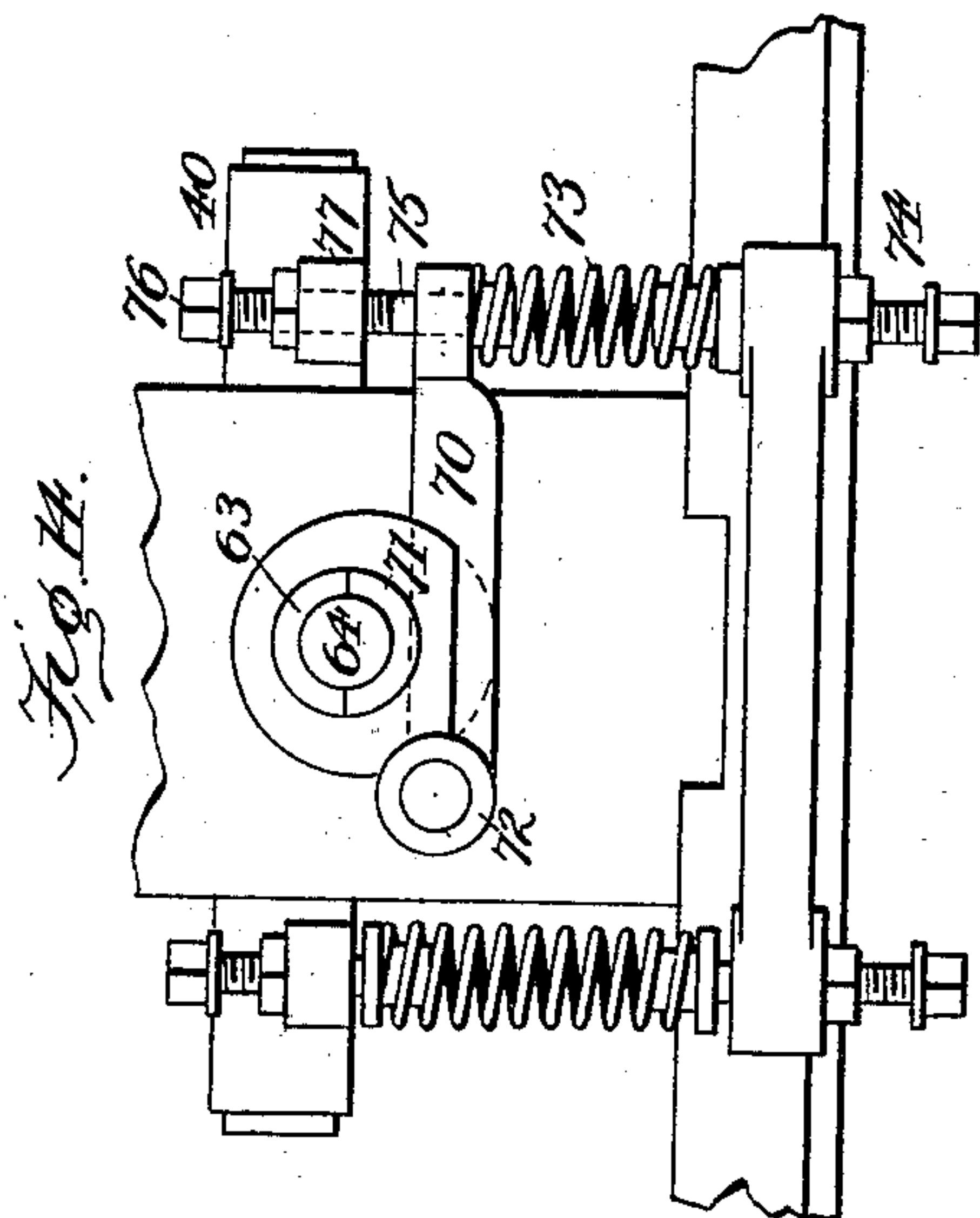
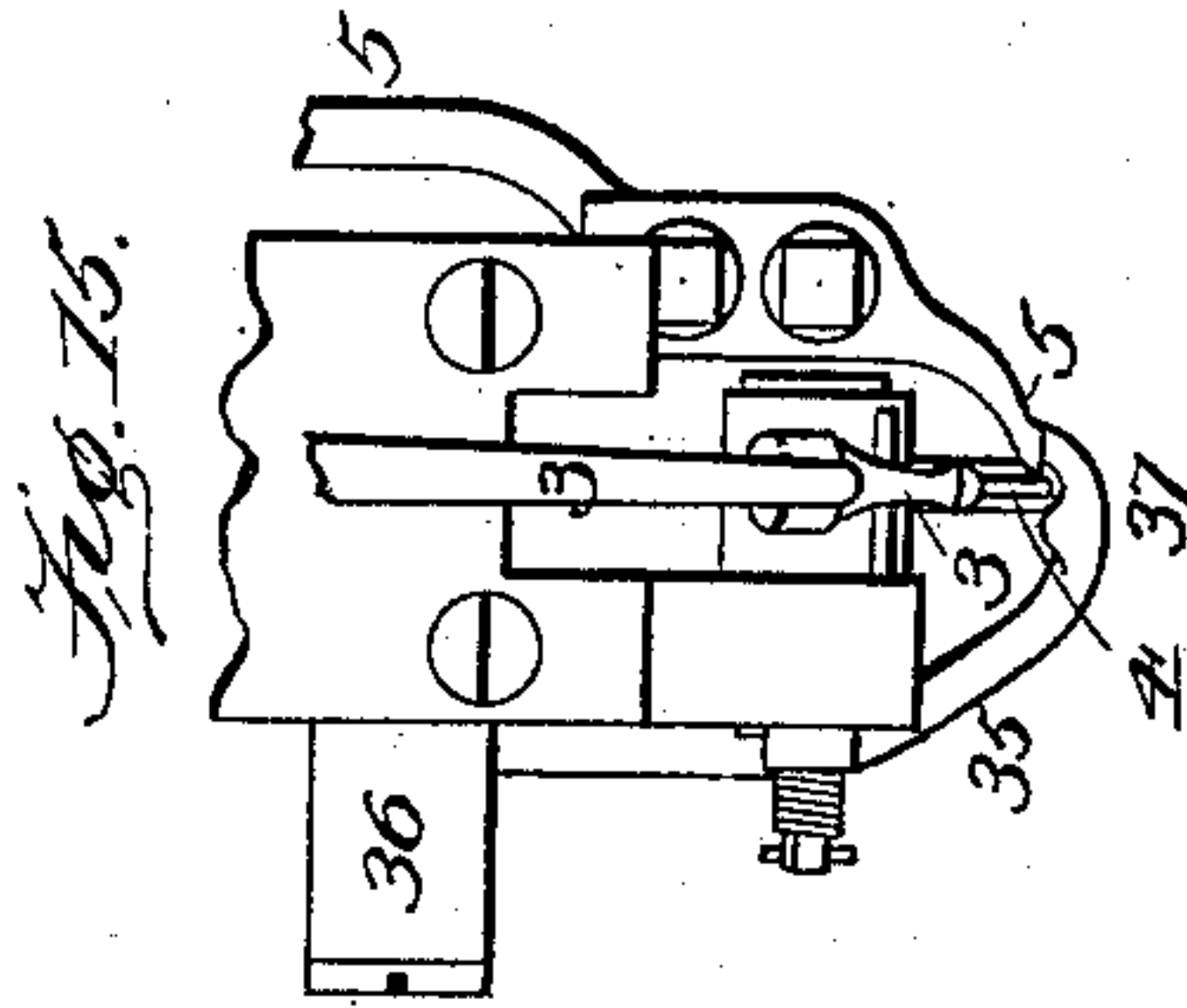
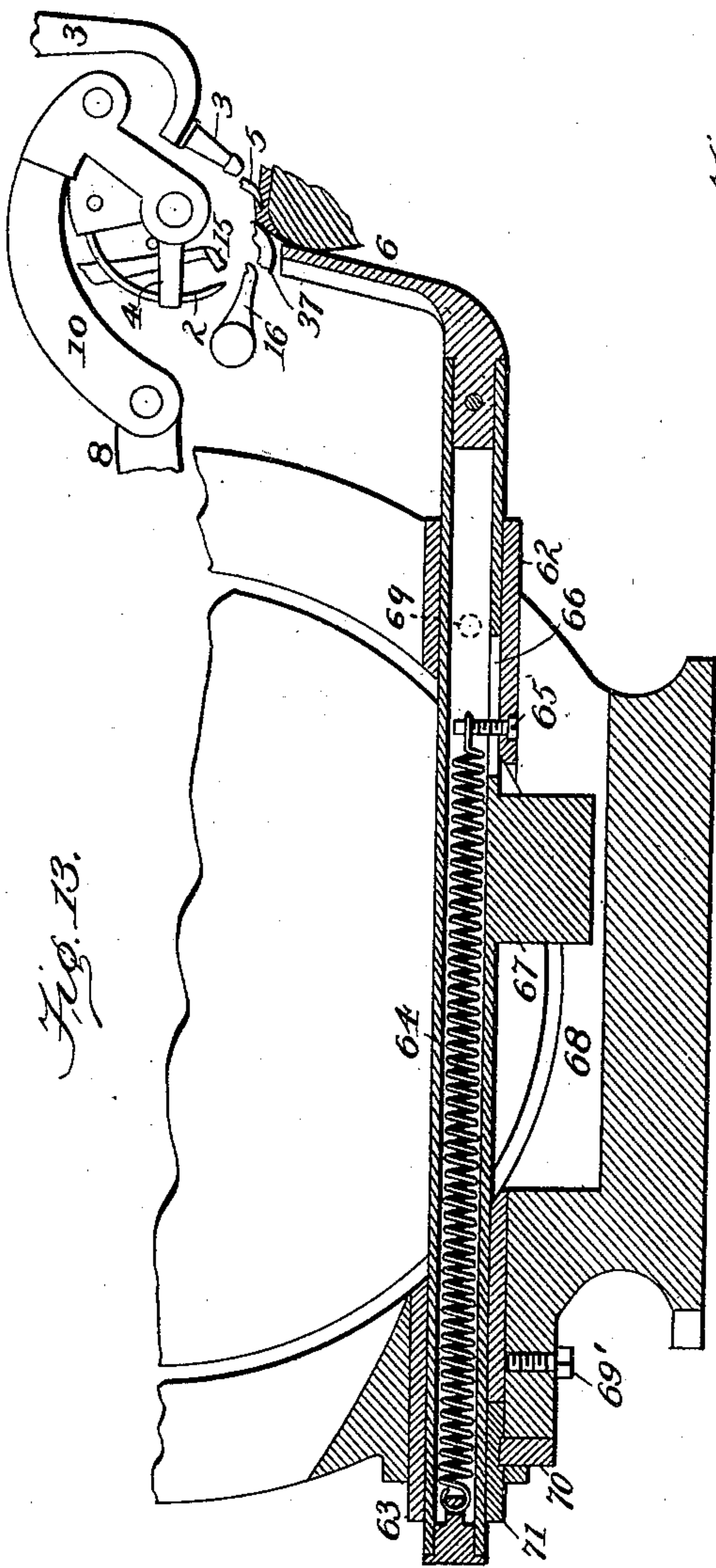
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(No Model.)

4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

FRANCIS ARTHUR MILLS, OF METHUEN, MASSACHUSETTS.

SHOE-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 623,098, dated April 11, 1899.

Application filed September 9, 1896. Renewed February 8, 1899. Serial No. 704,986. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS ARTHUR MILLS, a citizen of the United States, residing at Methuen, in the county of Essex, in the State of Massachusetts, have invented certain new and useful Improvements in Shoe-Sewing Mechanism, of which the following is a specification.

These improvements consist of certain novel parts and combinations of parts, which are particularly designated in the claims.

The features to which my improvements are specially directed are the work-supporting parts, and particularly the back-gage, to obtain a more satisfactory working thereof in supporting the shoe while the stitch is being set and tightened and a more sensitive yielding function in the contact of the back-gage with the shoe; also, in the combination with the stitch-forming mechanism, comprising a needle and an independent stitch-tightening device, the work-supporting mechanism comprising a back-gage consisting of a lever and balanced springs engaging with said lever and acting oppositely on one end thereof, whereby a yielding pressure is imposed upon the work during the penetration of the needle, and means for locking the said lever during the retraction of the needle and the pulling action of the stitch-tightening device, whereby the pull of said stitch-tightening device upon the work is opposed.

I have represented in the accompanying drawings so much of a shoe-sewing machine as will enable those skilled in the art to apply and use my said improvements.

In the drawings, Figure 1 shows in elevation the right side of a shoe-sewing machine in which my improvements are embodied. Fig. 2 shows in side view the back-gage and its operating parts as they are applied to the left side of the machine. Fig. 3 shows in side view the ratchet-arm and rack, the springs, and the cam connecting parts of the back-gage. Fig. 4 shows the back-gage and its rack attachment. Fig. 5 shows the ratchet-tooth carrying-arms in side and edge views for locking and releasing the back-gage. Fig. 6 shows the ratchet-tooth arm. Fig. 7 shows so much of the machine in longitudinal section as illustrates the adjustment of the needle-actuating parts in relation to the loop-opening device.

Fig. 8 shows the eccentric bearing for the needle-actuating lever. Fig. 9 shows in detail view the needle in its full backward movement, the loop thereon having been opened in readiness to receive the stitch-tightening instrument, which is in its normal position. Fig. 10 shows the relation the loop-opener would have to the needle in the event of the extreme backward movement of the latter not being sufficient to bring the loop in position to be engaged by the opener to open the loop to receive the stitch-tightening instrument, and it is for such a contingency that I have provided for increasing or diminishing the extent of the backward movement of the needle. Fig. 11 shows the stitch-tightening instrument as having entered the loop, pulled it back of the needle, and tightened the stitch, and the loop-opener having returned to its normal position in line with the loop. Fig. 12 shows the relation of the cam and locking devices when the back-gage is locked. Fig. 13 shows in longitudinal section the slide-rest for the work and its relation to the sewing devices. Fig. 14 shows the locking and releasing device for the slide-rest at the rear end of the machine, and Fig. 15 shows a partial front view of the sewing-head and the relation of the back-gage with the needle.

While I have shown my improvements embodied in the form of machine which I prefer, I wish to be understood as not limiting myself to the form shown or to the use of my improvements in the particular machine shown, as it is obvious that my improvements can be used with other forms and constructions of machine for forming the well-known loop-stitch in which a hook-needle is employed.

The sewing mechanism is contained within a sewing head or housing in position for the presentation and manipulation of the work to the devices for supporting and feeding it. The sewing-head is at the front of and overhangs the frame, wherein are mounted the cams and operating connections for the working parts.

The needle-carrier 1 is mounted in the sewing-head, and the needle 2, which is of the curved barbed form, has an oscillating movement toward and from the looper-arm 3, which depends and operates in front of the sewing-head to place the loop of the thread upon the

needle. 4 is the needle-guide, 5 is the channel feed-lever, 6 is the slide-rest for the work, and 7 is the tension device, all of which have operating connections for imparting to them their proper functions in the operation of sewing the shoe.

In the operation of the needle I have made provision for increasing or diminishing the extent of its backward movement to render certain its proper working relation to cooperating devices or members—one a loop-opener and the other a stitch-tightener—which operate separately and conjointly, as I shall presently state.

The function of the back-gage is to hold the shoe firmly in position to permit the needle to pull out of the work and the stitch to be tightened and set by the pulling of the loop, and in the construction and operation of the back-gage I have made provision for its better working with the shoe, as I shall presently state.

The needle-operating lever 8 is mounted upon an eccentric fulcrum 9, Figs. 7 and 8, in the rear of the frame and is connected to the needle-carrier by a link 10, and between the link and the said fulcrum the lever is engaged by a cam-groove 11, preferably formed in the face of a cylinder 12, such engagement being made by a roll 13, placed about mediately of the lever. I prefer to curve the lever downward between its cam-engaging roll and fulcrum the better to give an easy movement to the needle-carrier and to permit of the arrangement of the pendent arm 14, which by means of a suitable face-cam (not shown) is adapted to operate the looper.

In Figs. 1, 9, and 11 I have shown the cooperative relation of the needle, the loop-opener, and the stitch-tightener, and referring to the loop-opener 15 it is seen in Figs. 1 and 11 in the position in which it has engaged and opened the loop on the needle, while the stitch-tightener 16 is shown in the position in which it has entered and engaged the loop after it has been spread or opened.

The loop-opener consists of an arm arranged to operate upon the loop between the needle and the work 17 within the circle of the needle and is adapted to engage one strand or part 18 of the loop and open it to one side on the needle to allow the stitch-tightening instrument 16 to enter within the loop to perform its function. The loop-opener is mounted upon a shaft 19, Fig. 1, supported in horizontal position in the sewing-head, and is by suitable connections caused to vibrate in pendent relation above and at right angles to the line of the loop. The connections may be a lever 20, having a roll 21 and a suitable cam 22, engaging the roll to actuate said lever at the proper time for the purpose stated. This lever has its fulcrum 23 preferably at the rear of the machine and at its front end is adjustably connected to the loop-opener shaft 19 by an arm 24, whereby the loop-opening finger can be timed to engage and

open the loop in proper relation to the movements of the needle. The means shown for making this adjustment is a pivotally-connected right-and-left screw-coupling 25, having jam-nuts 26, whereby the coupling is lengthened and shortened to cause the loop-opening finger to engage the loop sooner or later to correspond with the movements of the needle. The cam 22 for operating the loop-opening-finger connections is so formed and timed as to cause said finger to engage and open the loop after the needle has pulled the loop, so that it can be engaged by the opening-finger. During the engagement of the stitch-tightening finger with the loop the needle will start to move slightly forward and will continue such movement to assist the tightener in taking the loop from the eye of the needle, which will be prior to tightening the stitch, after which the needle will remain at rest long enough to permit the feed of the shoe. At the time the stitch is about to be tightened the action of said cam will cause the loop-opener to return in line with the needle while the stitch is being tightened. The loop-opening finger will then move to its starting position to allow the needle, needle-guide, and needle-carrier to move forward.

The stitch-tightening instrument consists of an arm or finger 16, arranged to enter within the open loop, and is constructed to engage the loop at the side of the needle and to pull the loop in an oblique direction from the needle and from the work to tighten and set the stitch. This stitch-tightening device is mounted upon a horizontal shaft 27, Fig. 1, supported in position in the sewing-head, and is by suitable connections caused to vibrate parallel with the line of movement of the needle. These connections may be a crank-arm 28 and a link 29, connecting a lever 30, which is fulcrumed at 31 upon the frame, and a suitable cam 32, engaging a roll 33 of said lever to actuate the lever at the proper time for engaging the loop in proper relation to the movements of the needle. The cam 32 for operating the stitch-tightening finger is so formed and timed as to cause the said finger device to enter within the loop after the needle has pulled the loop through the work and the loop-opening finger has performed its function. Having entered the loop, the stitch-tightening finger will be caused to engage the loop and pull upon it, so as to carry it back of the needle, as in Fig. 11, and by such pulling action upon the loop to tighten and set the stitch. During this stitch-tightening operation the loop-opening finger 15 will be caused to return after its opening action on the loop to allow a more effective pull upon the loop by the tightening-finger. The stitch having been tightened, the tightening-finger will be caused to move forward to give a sufficient slack in the loop to permit of the feed of the shoe the length of a stitch, and in this position said finger 16 will remain at rest until the loop-

opener has moved back to its starting position to permit the needle, the needle-guide, and the needle-carrier to move forward to the work. When the needle commences to move forward, the stitch-tightener will also commence to move forward to give up the loop to permit the formation of the next stitch.

For adjusting the stroke of the stitch-tightening instrument in its function of tightening the stitch by a longer or shorter pull upon the loop back of the needle I connect the stitch-tightening instrument with its cam-actuating lever by means of an adjustable connection—such as a right-and-left screw-coupling stem 29, having jam-nuts—whereby the connection may be lengthened and shortened to cause the stitch-tightening instrument to have a longer or shorter pull upon the loop to tighten and set the stitch or to come in contact with the loop sooner or later in relation to the loop-opener and needle movements, which are all made adjustable in relation to each other in the formation of a stitch and in tightening the same.

I prefer to arrange the loop-opener as shown.

The provision for adjusting the backward movement of the needle in relation to the loop-opener is important, because it is very likely to happen that in fitting the parts together the stroke of the needle would fail to pull the loop back far and high enough, so that the opening-finger would not engage it, as shown in Fig. 10, Sheet 3, whereas by giving the needle greater backward movement it would pull the loop so that it would be engaged by the opening-finger, as shown in Fig. 9. Therefore by adjusting the eccentric fulcrum 9 of the needle-actuating lever so that it will move the latter to the front it will give a longer backward movement to the needle, and thereby cause it to pull a longer loop and present it for engagement by the opening-finger. By reversing the adjustment of the eccentric fulcrum of the needle-actuating lever the needle will be caused to pull a shorter loop if required to effect the engagement of the opening-finger with the loop. This adjustment also compensates for any wear in the working connection of the needle. As seen in Fig. 8, this adjustment is made by fitting the eccentric fulcrum-pin 9 loosely in its bearing in the frame and by fitting the needle-actuating lever loosely upon said fulcrum-pin, so that the latter can be turned as a screw by its nicked end and fastened by jam-screws 9'.

The loop-opening finger can be adjusted for timing its contact with the loop in relation to the stroke or timing of the needle so that the finger's engagement with the loop will be in the proper time. Looking to the same result, the needle can also be timed to cause the loop-opening finger to engage the loop at the proper time. The object of these adjustments is to provide a remedy for any inaccurate construction of such parts or in any imperfection thereof when assembled and for compensating

for all wear of the parts. This adjustment for the stitch-tightening instrument is to time its stroke longer and shorter in its pull upon the loop as well as its time of engagement with the loop. When the stroke of the needle is varied, the stroke of the stitch-tightener can be correspondingly varied.

The back-gage as now used in shoe-sewing machines in coming in contact with the shoe thrusts it against the feed-lip of the channel-guide or feed-lever device 5 with great force and causes the lip to cut into and through the between substance of the shoe, and particularly if the shoe-sole is of inferior or soft leather. My improved back-gage obviates this objection.

I prefer to use the back-gage 35 in the form of a bell-crank lever medially mounted upon a pivot 36, preferably at the left side of the sewing-head, so that its acting arm will stand downward and extend beneath the sewing-head and present a supporting-bearing 37 for the shoe against the edge of the sole in the line of the needle, as in Fig. 15. The other arm 38 of the back-gage extends rearward horizontally and has a cushioned connection adapted to impart to its work-supporting arm a movement toward and from the work. This cushioned connection has the novel function of giving a balanced or equalized support to the back-gage, whereby its end 37 is caused to strike the shoe with a gentle blow and prevent the feed-lip from being forced into the between substance. In the rear of its pivot the back-gage is connected to and between two springs of equal tension adapted to pull in opposite directions and maintain a balanced resistance to the shoe without regard to any difference there may be in the thickness of the between substance against which the feed-channel lip acts. This balancing action gives a gentle yielding pressure against the shoe in coming in contact with it.

The inner end of the back-gage terminates in an eye 38', through which passes a vertical rod 39, which at its lower end is pivotally connected to a cam-actuated lever 40, which is fulcrumed at the rear of the frame and which engages by a roll 41 a cam-path 42 in the side of a cylinder, so as to vibrate the lever and thereby raise and lower the rod. Two springs 43 and 44 are each connected to this rod—the lower spring by its lower end and the upper spring by its upper end—and at the meeting ends of these springs they are connected to the eyed end of the back-gage, so as to pull equally thereon in opposite directions to operate the gage to and from the work with a balanced action which is self-adjusting to the thickness of the work. The springs are connected to the rod by collars and nuts 45 and at 46 with the eyed end of the back-gage. By adjusting the collars and nuts on the rod the tension of the springs can be regulated, as may be desired. By adjusting the nuts 47 on the rod the stroke of the back-gage is regulated with reference to the feed-lip,

and for effecting these adjustments I make the rod 39 screw-threaded.

When the back-gage is supporting the work, it must be locked to resist the pulling 5 of the needle out of the work and allow the stitch to be tightened and set. For this purpose I have provided a locking and releasing device. On the eyed end of the back-gage is fixed a ratchet-rack 48, the teeth of which 10 stand upward, and in pendent relation thereto hangs an arm 49 on pivot 51, the lower end of which has a ratchet-tooth 50, adapted to engage the teeth of the rack 48, hanging for that purpose in front of and in horizontal relation to the rack. On the pivot 51 of the 15 hanging arm is also an arm 52, provided with a roll 53, which engages a circumferential cam 54 on the cylinder and which cam acts to release the locking function of the ratchet-tooth. This cam-actuated arm 52 engages 20 the ratchet-tooth arm 49 by a coupling which permits the two arms to have a limited movement upon their pivot 51 independent of each other. This coupling is preferably made by 25 a pin 55 on the arm of the ratchet-tooth and a slotted or forked part 56 on the arm 52, the pin being a little smaller than the slot to allow such independent movement, as seen in Fig. 5. A spring 57 connects by a pin 58 the 30 ratchet-tooth arm 49 and frame and acts to maintain the locking action of the ratchet-tooth when the cam 54 is not acting to pull the ratchet-tooth away from the rack, as seen in Fig. 12. This spring holds the ratchet- 35 arm 49 in locked position with the rack so long as the back-gage rests against the shoe, and so long as the thickness of the work does not vary the ratchet-arm will engage the same tooth of the rack. When, however, the 40 thickness of the substance being sewed varies, the ratchet-arm will be caused to lock in any other tooth of the rack. After the needle has pulled out of the work and the stitch set and tightened the ratchet-arm will be released from its engagement with the rack by 45 the action of the raised portion of the cam 54 raising the roll 53, which swings its arm upon its pivot and causes the slotted part of said arm by its connection with the pin 55 on the ratchet-tooth arm to pull the latter away 50 from the rack, thereby releasing the lock. This release permits the back-gage to be drawn or pulled away from the work by the action of the cam upon the lever which connects the balanced springs, so as to raise by 55 a positive action the spring-connected arm 38 of the back-gage. This raising of said arm is effected by the nuts 47 on the vertical spring-connected rod, which latter is raised 60 by said lever, and when the back-gage is so withdrawn the shoe is fed for the next stitch. The back-gage is then moved forward in advance of the needle against the work and the ratchet-arm will be drawn by its spring 57 65 into engagement with the rack. The coupling causes the ratchet-arm to strike the rack 48 by a gentle contact and avoids the jam-

ming and destroying of the rack-teeth and ratchet-tooth and at the same time allows the roll 53 to maintain a bearing contact upon the 70 cam 54. In this way the work is supported by the back-gage while the needle is piercing it, and just before the needle starts to pull out of the work the back-gage will be locked to repeat the operation of forming the next 75 stitch.

Referring to Fig. 2, the arrow 59 shows the cam to turn to the left and the roll 53 upon the highest part, which extends between the points 60 61, and it is during the travel of 80 the roll between these points that the ratchet-tooth arm is held out of engagement with the rack of the back-gage, while in Fig. 12 the roll is seen upon the lowest part of the cam and the ratchet-tooth arm to be held in en- 85 gagement with the rack of the back-gage during the travel of the roll upon the lower part of the cam.

The slide-rest 6 is arranged below the back-gage, and its function is to assist in support- 90 ing the work under the operation of sewing. As shown in Fig. 13, I make the slide-rest preferably of cylindrical form and seat it so as to slide in guideways or boxes 62 63 in the lower part of the frame, so that it extends 95 beyond the rear end thereof to receive the action of a locking and releasing device, as I shall presently state. The slide-rest part, which is seated in the frame, is tubular to receive a coiled spring 64, which is connected 100 to the rear end of the slide-rest, the other end of said spring being connected to the front box by a pin or screw 65, passing through a slot 66 in the lower side of the slide-rest, so that the spring constantly tends to force the 105 latter forward. The limit of the forward movement of the slide-rest is determined by a fin 67 on the slide abutting against the box 62, which is fixed in the frame. This fin fits and slides in a recess 68 in the frame to hold 110 the slide-rest in its working position and give it a free and easy movement. The placing of the spring within the chamber of the slide-rest and securing it to the front box gives the advantage of allowing the slide-rest to 115 be removed from the machine with its connected front bearing-box 62 and without disturbing any other part of the machine. The bearing-boxes are tubular, and each is secured in its seat by a jam-screw 69, so that by loos- 120 ening the screw of the front box the slide-rest, with its front box, can be pulled out at the front of the machine when from any cause it may be found necessary to remove and replace it. The placing of the spring within 125 the chamber of the slide-rest gives the advantage of using a very long spring, and thereby gives a more regular pressure of the rest against the shoe, whether the slide-rest be all the way in or all the way out. For 130 locking and releasing the slide-rest I utilize the cam-lever 40, which actuates the back-gage. This is shown in Figs. 2 and 14, wherein the said lever is seen as having at its pivoted

end an adjustable connection with an arm or latch 70, adapted to engage a friction-block 71, which partly embraces and conforms to the circumference of the slide-rest. This friction-block is preferably made a section of the bearing-box (see Fig. 14) and is loosely seated in the frame at the rear end of said box, so that it will have a slight vertical play beneath the slide-rest upon the locking-arm 70. This locking arm or latch is pivoted upon the rear end of the machine at 72, extends beneath and engages a notch, Fig. 13, in the friction-block, and is seated at its outer end upon a spring 73, which constantly tends to lift its connected end of said arm 70 and to maintain the pressure of said arm upon the friction-block when the lever is in the position as shown in Fig. 2. This spring is seated upon a screw 74 in the frame, by which the tension of the spring can be increased or diminished. The spring-sustained end of the locking arm or latch 70 abuts by means of a screw 75 with a locked screw 76 in an extension 77 of the lever 40, whereby the latter is caused by the action of the cam 42 to depress the spring-sustained end of said arm 70 to release its upward pressure upon the friction-block 71, and thereby release the gripping action of the friction-block upon the slide-rest to unlock it. In the position of the lever 40 in Fig. 2 in relation to its actuating-cam path it will be seen that the locking-arm 70 is relieved from downward pressure and locked by the spring 73 with the slide-rest, and this locking action will be maintained by the concentric part of the cam-path 42, while the unlocking of the slide-rest is effected by that part of the cam-path out of the circle.

I claim—

1. In combination in a shoe-sewing machine, a pivoted back-gage forming the work-support, a pair of balanced springs connecting with and pulling upon one end of said back-gage in opposite directions, actuating mechanism for said back-gage connected to its spring-connected end and means for locking and unlocking the back-gage in its supporting function.

2. In a shoe-sewing machine, a back-gage for supporting the work, in combination with a cam-actuated lever, a pair of springs connecting said cam-actuated lever and back-gage and adapted to pull with a balanced force in opposite directions upon said back-gage, and means for locking and unlocking it in its supporting function, substantially as and for the purpose specified.

3. In a shoe-sewing machine, a pivoted back-gage for supporting the work, having a rack at one end, in combination with a pair of springs connected to said rack end, a cam-actuated lever and a rod connecting said lever and springs, and a locking and unlocking device for said back-gage consisting of a pivoted cam-actuated arm and a spring-controlled pivoted tooth-carrying arm loosely coupling with said cam-actuated arm and

adapted to be engaged and released from the rack of the back-gage in the way and for the purpose stated.

4. In a shoe-sewing machine, a back-gage having an eyed arm, a vertical screw-threaded rod loosely connecting said arm and having nuts upon which said gage-arm rests, a pair of springs connecting said arm and rod and adapted to pull equally upon the said arm in opposite directions, a lever connected to said rod, a cam for actuating said lever to impart a vertical movement to said rod, and a locking and unlocking device for the back-gage consisting of a rack on the eyed arm and a tooth-engaging device consisting of a pivoted hanging tooth-carrying arm, a spring acting to constantly pull said tooth-arm into engagement with said rack, a pivoted roll-carrying arm, a coupling for the said arm adapted to give a cushioned engagement to the toothed arm and rack, and a cam for actuating said roll-arm for disengaging the locking device substantially in the way and for the purpose stated.

5. In a shoe-sewing machine, the combination, with a back-gage pivoted and having a rearward-extending arm, a vertical rod having an adjustable support for said arm, a spring above said arm and a spring below said arm both adjustably connecting said rod and arm and pulling upon said arm in opposite directions, a cam-actuated lever connecting said rod and suitable means whereby said back-gage is locked and unlocked.

6. In a shoe-sewing machine, the combination with the back-gage having a rearward-extending arm terminating in a vertical rack, a vertical rod having a support for said arm, a pair of springs on said rod connected to pull in opposite directions upon said arm, a cam-actuated lever connected to said rod, and a device for locking and unlocking the back-gage consisting of a hanging arm having a horizontal tooth adapted to engage said rack, a spring constantly tending to effect such engagement and a roll-carrying arm having a pin-and-slot connection with the tooth-carrying arm and a cam for actuating said roll-carrying arm, for operation substantially as described.

7. In a shoe-sewing machine and in combination with the needle and actuating mechanism therefor, a pivoted back-gage, balanced springs connected to and acting in opposite directions upon said gage, a ratchet-rack carried by said back-gage, a spring-controlled ratchet-arm adapted to engage said rack, a cam-controlled arm engaging said tooth-arm, and a cam-controlled lever connected to and actuating said pivoted back-gage, substantially as described.

8. In a shoe-sewing machine, and in combination with the stitch-forming mechanism comprising a needle and an independent stitch-tightening device, the work-supporting mechanism comprising a back-gage consisting of a lever and balanced springs connect-

ing with said lever and acting oppositely on one end thereof, whereby a yielding pressure is imposed upon the work during the penetration of the needle, and means for locking the said lever during the retraction of the needle and the pulling action of the stitch-tightening device, whereby the pull of said stitch-tightening device upon the work is opposed as set forth.

9. In a shoe-sewing machine, a hollow work-supporting slide-rest a spring contained within said slide-rest and having a connection at one end with the slide-rest and a fixed frame part to which said spring is connected at its other end, for the purpose stated.

10. In a shoe-sewing machine, a work-supporting slide-rest, a work-supporting back-gage and a cam-actuated lever connecting and controlling both the slide-rest and the back-gage, the said lever having a clamping action upon the rear end of the slide-rest and a spring-cushioned connection with the lever-arm of the back-gage.

11. In a shoe-sewing machine, a hollow slide-rest having a slot and a box-bearing having a projection passing through said slot, into the chamber of the slide-rest, in combination with a coil-spring within the chamber of the slide-rest, said spring connecting one end of the latter and the said box projection, for the purpose stated.

12. In a shoe-sewing machine and in combination with a frame having a recess, of a

slide-rest having a circular shank provided with a fin adapted to engage said recess for keeping the slide-rest in proper position in relation to the work, a spring connected to constantly force the slide-rest forward and a fixed stop to engage the said fin to limit the forward movement of the slide-rest.

13. In a shoe-sewing machine, a back-gage for supporting the work pivoted at the side of the sewing-head above the needle-carrier, and having its work-supporting end standing down and under the side of the sewing-head, the other end of the back-gage connecting balanced springs, mechanism for vibrating the spring-connected end and mechanism for locking the spring-connected end in the way and for the purpose stated.

14. In a sole-sewing machine, the work-supporting slide-rest and a pivotally-mounted back-gage in combination with the lever its actuating-cam the locking arm or latch and its actuating-spring, and means of connection between the lever and the balanced springs, whereby one end of said lever is caused to have a releasing action upon the slide-rest, and a pair of balanced springs connected to a lever-arm of the back-gage for operation in the way described.

FRANCIS ARTHUR MILLS.

Witnesses:

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PATRICK DEMPSEY.