

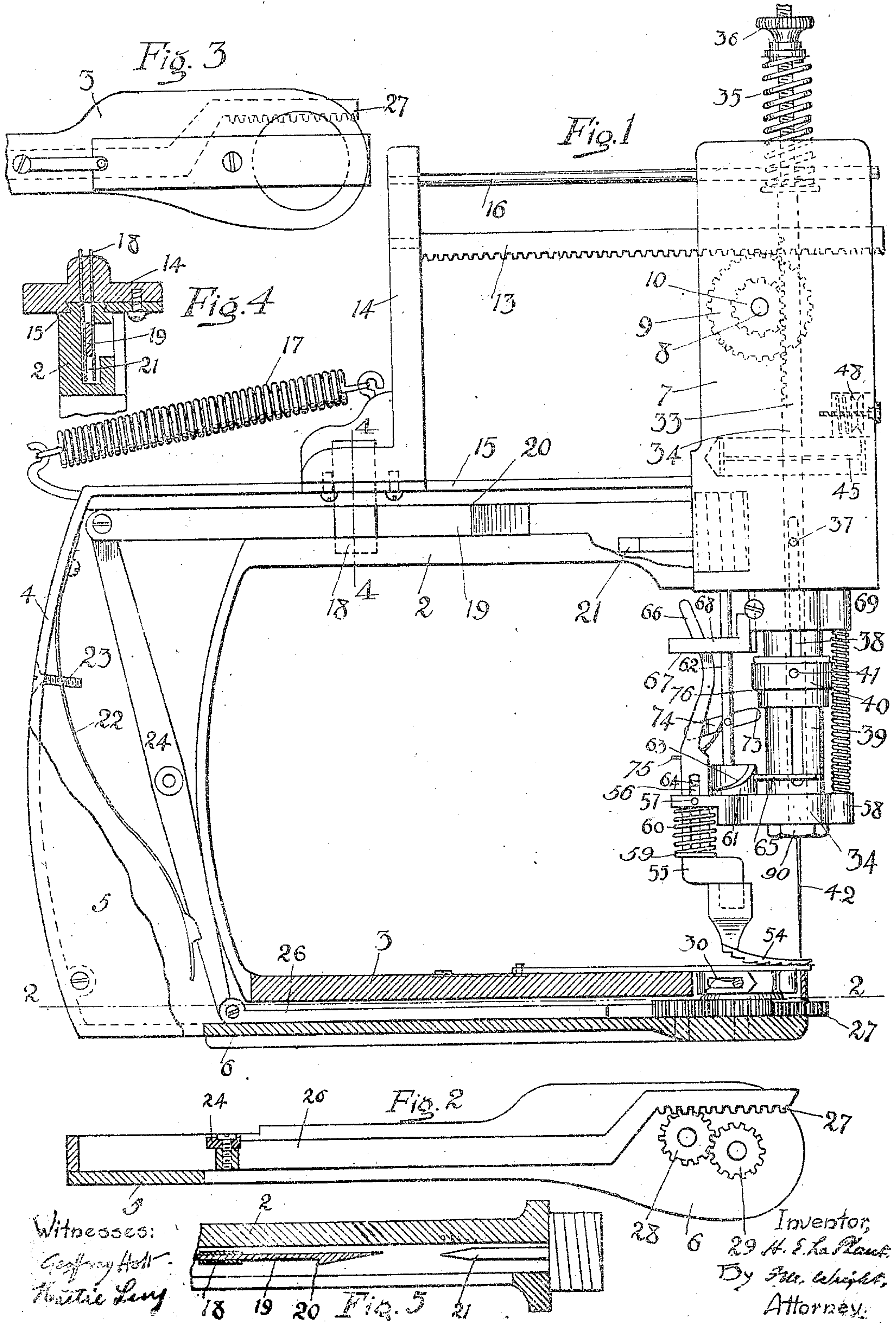
No. 880,890.

PATENTED MAR. 3, 1908.

H. E. LA PLANT.
SEWING MACHINE.

APPLICATION FILED DEC. 15, 1906.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 9

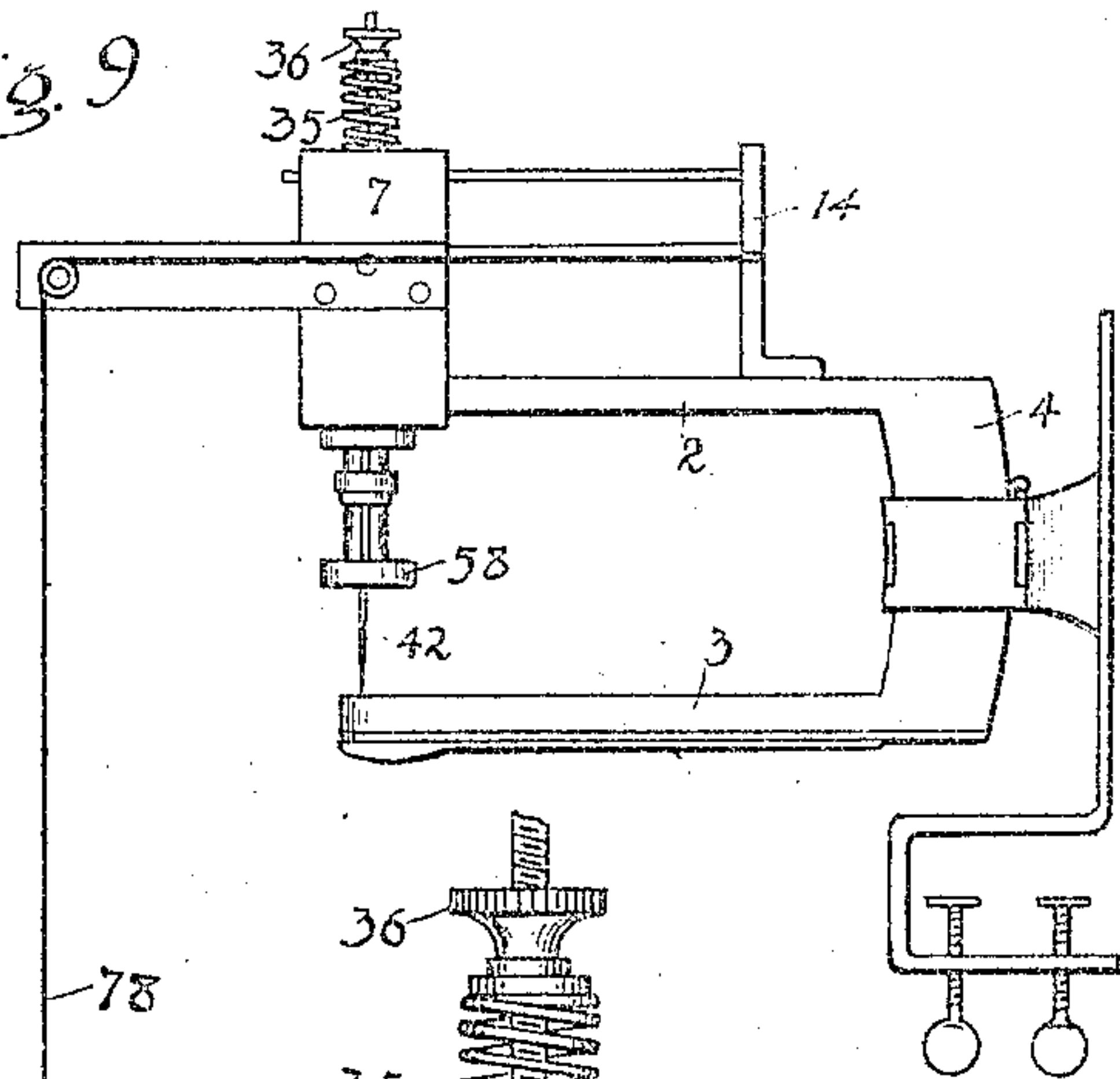


Fig. 6

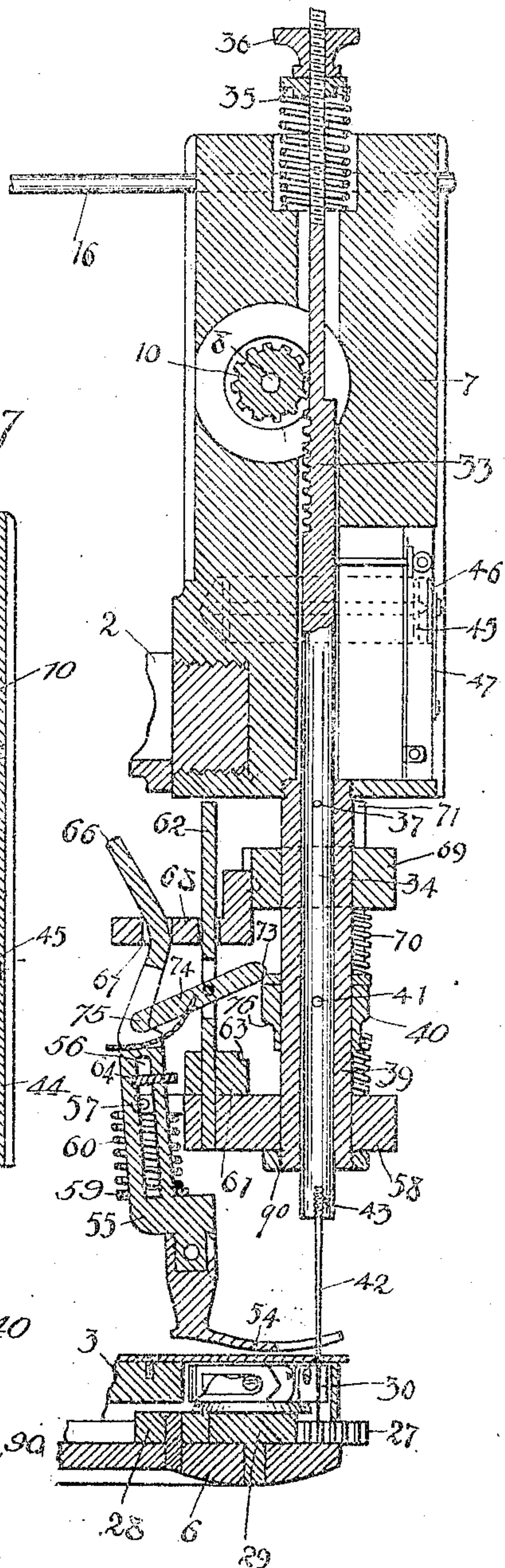


Fig. 7

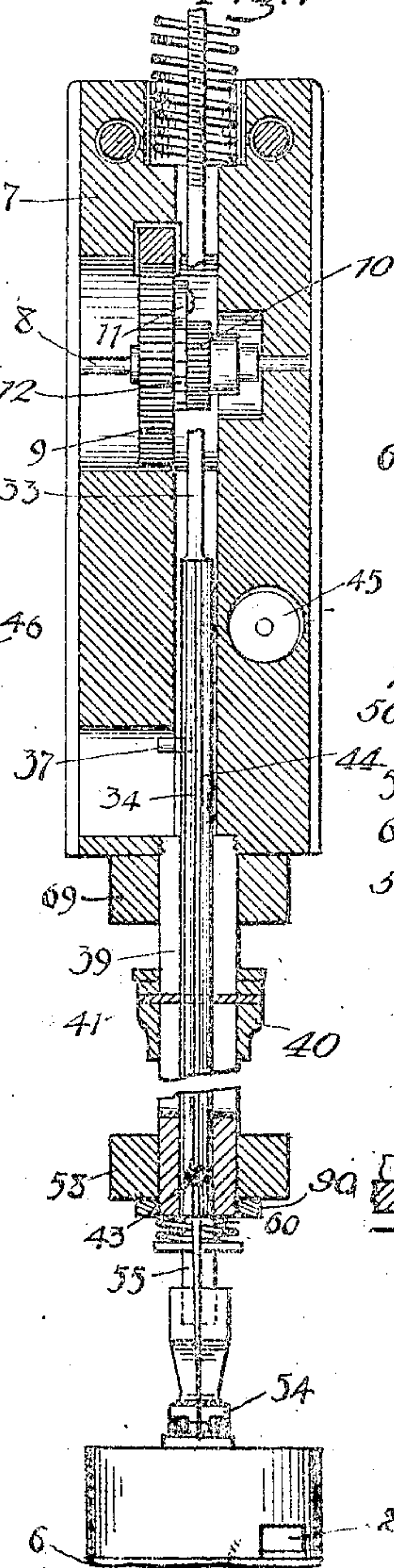
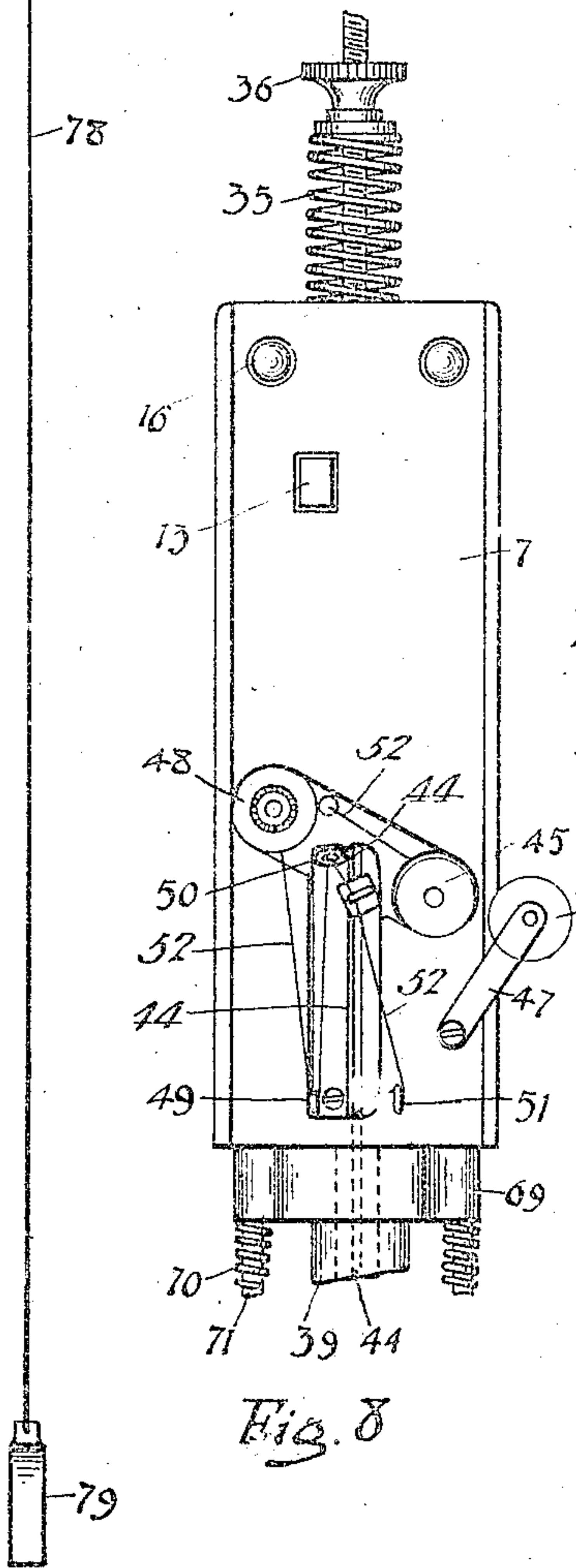


Fig. 8



Witnesses:
Geoffrey Holt
Heath Lewis

Inventor.
H. E. La Plant
By F. W. Wright
Attorney.

UNITED STATES PATENT OFFICE.

HARRY E. LA PLANT, OF KENNETT, CALIFORNIA.

SEWING-MACHINE.

No. 880,890.

Specification of Letters Patent.

Patented March 3, 1908.

Application filed December 15, 1906. Serial No. 345,038.

To all whom it may concern:

Be it known that I, HARRY E. LA PLANT, a citizen of the United States, residing at Kennett, in the county of Shasta and State of California, have invented new and useful Improvements in Sewing-Machines, of which the following is a specification.

The object of the present invention is to provide a sewing machine which can be manufactured and sold at a low cost, especially adapted for stitching leather, although it may also be used for stitching cloth and other material.

In the accompanying drawing, Figure 1 is a side elevation, partly broken away, of my improved sewing machine; Fig. 2 is a section on the line 2—2 of Fig. 1; Fig. 3 is a broken plan view of a portion of the lower arm of the machine; Fig. 4 is a cross section of the upper arm on the line 4—4 of Fig. 1; Fig. 5 is a broken horizontal section thereof; Fig. 6 is a vertical section of the head and the parts supported thereby taken longitudinally of the supporting arm; Fig. 7 is a vertical section taken at right angles to that of Fig. 6; Fig. 8 is a broken end view; Fig. 9 is a side view on a small scale showing an attachment for using foot power.

Referring to the drawing, it will be seen that the frame of the machine comprises a yoke-shaped hollow casting 1 having upper and lower arms 2 3 and a back 4. This hollow casting is closed at the back and top by a plate or cover 5, and the bottom of the lower arm 3 is closed by a plate 6. Screwed upon the front end of the upper arm is a head 7, through which passes a transverse shaft 8 carrying a gear wheel 9, and a pinion 10. The pinion 10 is loose on the shaft 8 and is actuated from the gear wheel by means of a pawl 11 on the gear wheel 9 and a ratchet 12 secured to the pinion 10. The gear wheel 9 meshes with a horizontal rack 13 reciprocating in said head 7, and attached to a handpiece 14, the lower end of which is grooved to slide upon a tongue 15 upon the top of the upper arm 2, the top of said handpiece being also provided with guide rods 16, which pass through the top of the guide, and are guided thereby. A spring 17 normally retracts the handpiece after it has been moved towards the guide. Depending from the lower portion of the handpiece are two spring plates 18 which pass on each side of a link 19 guided in the upper arm, one of which plates, when the handpiece is drawn for-

ward, is adapted to engage a shoulder 20, of the link at its forward end, and thereby move said link forward. When the link reaches the end of its forward movement, a wedge 21 in the front end of the arm 2, and beneath said link 19, spreads the lower ends of the spring plates apart, and thereby withdraws the plate from the shoulder, permitting the link to return to its original position. This it does instantaneously under the action of a spring 22, which is inclosed within the hollow back of the yoke-shaped frame, and is adjusted by means of a screw 23, and bears upon the lower arm of a lever 24, the upper arm of said lever being pivoted to said link 19. The lower arm of said lever, which is pressed by the said spring, is pivotally attached to a lower link 26, which slides in the lower arm 3 and is offset at its forward end and formed into a rack 27, engaging a gear wheel 28, which in turn engages a gear wheel 29, which carries an oscillating shuttle 30. This shuttle is of the same character as that used in the Singer sewing machine, and need not be here further specified. By means of the reciprocating movement imparted to the upper link by the handpiece 14 and the spring 17, an oscillating movement of nearly a complete revolution is imparted to said rotary shuttle.

The transverse shaft 8 in the head 7, which is oscillated by the movement of the gear 9, imparts through the medium of the pinion 10, a reciprocating movement, of smaller amplitude than that of the rack 13, to a rack 33, formed on a vertical needle carrier 34, normally pressed upwards by means of a coiled spring 35, contained between the top of the head 7 and an adjusting screw 36 upon the end of said carrier. The lower portion of said carrier has a pin 37 moving in a slot 38 formed in a cylindrical extension 39 of said head 7. The lower end of said carrier slides in said extension 39 and has also a sleeve 40 attached thereto by a pin 41 through said slot, said sleeve 40 sliding on the extension 39. The needle 42 is secured in the lower end of the carrier by a set screw 43, and the thread 52 is passed to the needle along a groove 44 in said carrier from a spool 45 held in place by means of a cap 46 attached to a spring 47. The thread passes from said spool, first to a tension device 48, of usual construction, then through guide loops 49, 50, and 51, and then along the groove 44 in the needle carrier to the

point of the needle. The parts are so arranged that, after the needle has carried the thread through the cloth, the rotary shuttle makes an oscillation to catch the thread which has been passed through the cloth, making a stitch in the manner common to the Singer and other sewing machines.

The presser foot 54 is carried by a presser 55 having a slot 56 through which passes a pin 57 carried upon a plate 58 rotatably carried upon the lower end of said extension 39, and secured thereon by a nut 90 said pin and slot thus form a vertical guide for said presser. A coiled spring 60 is interposed between the plate 58 and a disk or washer 59 upon the presser, and tends to press the foot down upon the material. To raise the presser foot there is provided a cam 61 rotating upon a vertical post 62 and having an inclined shoulder 63 adapted to engage a pin 64 upon the presser, said cam being provided with an arm 65 to rotate the same. Thus by turning said arm 65 through an angle of a little over 90° the presser foot can be raised from off the material.

The material is fed, as the stitching takes place, by the following contrivance. The upper end of the presser is formed into a tongue 66 which passes through an aperture 67 in an arm 68 extending from a collar 69 which surrounds the extension 39. Said collar is normally upheld by means of coiled springs 70 on posts 71 on the plate 58. When the needle descends the pin 37 in the slot 38 engages said collar 69 at the end of the downward movement of the needle, and moves said collar downwards.

The tongue 66 at its upper end is inclined downwards and inwards or towards the needle carrier, while, at its lower end, it is inclined downwards and outwards therefrom. Consequently, the first part of the downward movement of the collar 69 is to move the upper end of the presser inwards or towards the needle carrier, so that the lower end moves outwards or away therefrom, the pin 57 acting as a pivot, upon which the presser turns as a lever. Simultaneously with this movement, a shoulder 76 upon the sleeve 40 engages the inner end 73 of a lever 74 passing through the slot in the post and there pivoted, the outer end of said lever passing through a slot in the presser and being secured to said presser by a spring 75. The engagement of said shoulder with said nose depresses the nose and thereby raises the presser foot. The continued downward motion of the needle carrier causes the inner end of the lever 74 to slip past the upper side of the sleeve 40, so that said lever is released, and the presser is thereby dropped instantaneously by the pressure of the spring 75. This takes place during the time that the slotted arm 68 of the collar 69 is descending, so that the instantaneous movement of the

lower outwardly inclined slotted portion of the tongue 66 in the slotted arm 68 has the effect of similarly moving the presser foot inwards again or towards the needle. The operation, then, is that the presser foot is first raised from the material, and, as the needle descends, the presser foot is simultaneously moved forward and downward, thus assuming a position upon the material forward of that which it had before the needle entered. Then as the needle is withdrawn, the collar 69 rises, being engaged by the sleeve 40 and the slotted arm 68 of said collar engages again the upper portion of the tongue 66 of the presser, causing the foot to move rearwards or away from the needle, and advancing the cloth the length of a stitch.

Just before the spring plates 18 are spread to release the shoulder 20 in the link 19, the needle springs up to produce a loop on the underside of the cloth. This upward jump of the needle is caused by the pinion 10 arriving, in its rotation, at the upper end of the rack 33. As the pinion then continues to rotate, the rack jumps up a distance of one tooth, and this imparts a corresponding movement to the needle, producing a loop in the thread. This movement takes place at a time, corresponding to the movement of the horizontal rack, just before the spring plates 18 are released from the shoulder 20. Immediately after the needle has jumped up, leaving the loop of thread beneath the cloth, the said spring plates are released from the shoulder in the upper link 19, and the upper link in like manner quickly springs back under the action of the spring 22, causing the lower link to actuate the oscillating shuttle to make its return movement, and in such movement of the shuttle, the loop of thread is passed over the shuttle to make the lock stitch. It is evident from this that it cannot be permitted that the pinion 10 should be fast on the shaft 8, for if it were, since the pinion gains a tooth on the rack 33 at each stitch, the rack 13 would also gain on the rack 33 at each stitch, in which case the device would be inoperative. Consequently the pinion 10 is advanced upon the shaft 8 by means of the pawl 11 and ratchet 12.

I claim:

1. In a sewing machine, the combination of a head, a needle carrier reciprocating vertically therein, a shaft, a gear wheel carried thereon, a pinion loose on the shaft, a pawl on the gear wheel, and a ratchet on the pinion of said pawl, a horizontal rack engaging said gear wheel a hand piece attached to said rack, and a spring for returning the needle carrier substantially as described.
2. In a sewing machine, the combination of a hand reciprocating device, spring plates depending therefrom, a link and a guide therefor, said link passing between said spring plates, said link having at its forward

end a shoulder adapted to be engaged by one of said plates to move said link forward with the hand piece, a wedge arranged to spread the lower ends of the spring plates and thereby release the link when it has arrived at a predetermined position, a spring for retracting said link, a shuttle, and means actuated by the movement of the link for moving said shuttle, substantially as described.

10 3. In a sewing machine, the combination of a hand reciprocating device, spring plates depending therefrom, a link and a guide therefor, said link passing between said spring plates, said link having at its forward end a shoulder adapted to be engaged by one of said plates to move said link forward with the hand piece, a wedge arranged to spread the lower ends of the spring plates and thereby release the link when it has arrived at a predetermined position, a spring for retracting said link, a shuttle, and means actuated by the movement of the link for moving said shuttle, said means comprising a lower link and a guide therefor, an operative connection between said lower link and the shuttle, a lever attached at its ends to said links, a spring acting upon said lever, and a screw screwed through said spring for adjusting the same, substantially as described.

30 4. In a sewing machine, the combination of a head having a downward slotted extension, a needle carrier reciprocating vertically in said extension, a sleeve around said extension and attached to said needle carrier, a plate rotatably carried upon the lower end of said extension, a presser carried by said plate, the upper end of the presser being formed into a tongue, and an apertured collar surrounding said extension and through which said tongue passes, substantially as described.

5. In a sewing machine the combination of a head having a downward slotted extension, a needle carrier reciprocating vertically

in said extension, a sleeve around said extension and attached to said needle carrier, a plate rotatably carried upon the lower end of said extension, a presser carried by said plate, the upper end of the presser being formed into a tongue, an apertured collar surrounding said extension and through which said tongue passes, a pin carried by the needle carrier and adapted to engage said collar to move it therewith, the tongue being so formed that the reciprocating movement of the collar produces a vibratory movement of the presser, substantially as described.

6. In a sewing machine the combination of a head having a downward slotted extension, a needle carrier reciprocating vertically in said extension, a sleeve around said extension and attached to said needle carrier, a plate rotatably carried upon the lower end of said extension, a presser carried by said plate, the upper end of the presser being formed into a tongue, an apertured collar surrounding said extension and through which said tongue passes, a pin carried by the needle carrier and adapted to engage said collar to move it therewith, the tongue being so formed that the reciprocating movement of the collar produces a vibratory movement of the presser, a pin carried by said plate upon which the presser is pivoted, a post upon said plate, a lever pivoted to said post, the outer end of said lever engaging said presser, and the needle carrier sleeve having a shoulder adapted to engage the inner edge of the lever, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HARRY E. LA PLANT.

Witnesses:

D. B. RICHARDS,
FRANCIS M. WRIGHT.