

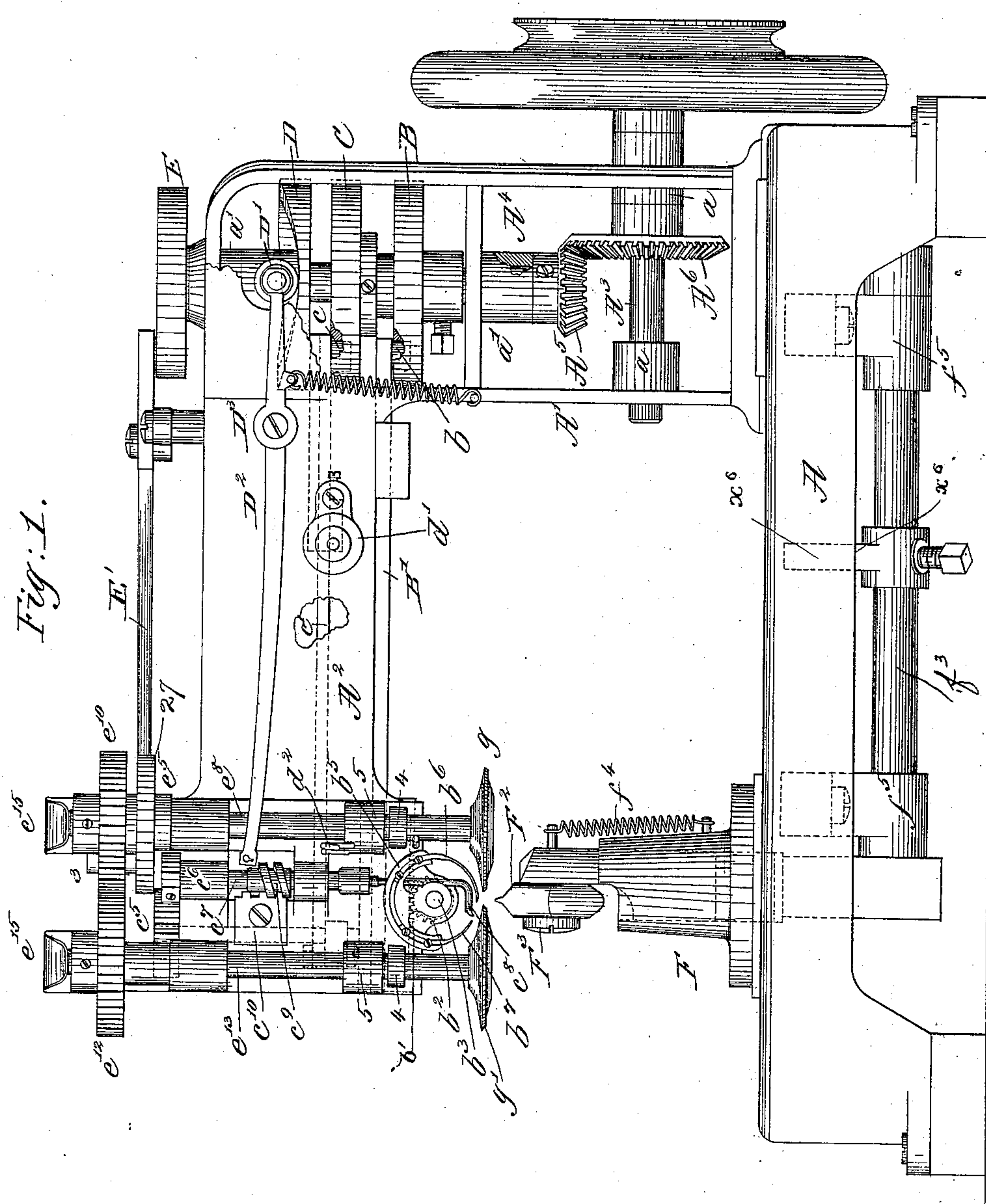
(No Model.)

2 Sheets—Sheet 1.

J. REECE.  
SEWING MACHINE.

No. 370,412.

Patented Sept. 27, 1887.



Witnesses.  
Arthur Zippertsen.  
Fred L. Emery

Inventor:  
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(No Model.)

2 Sheets—Sheet 2.

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Fig: 2.

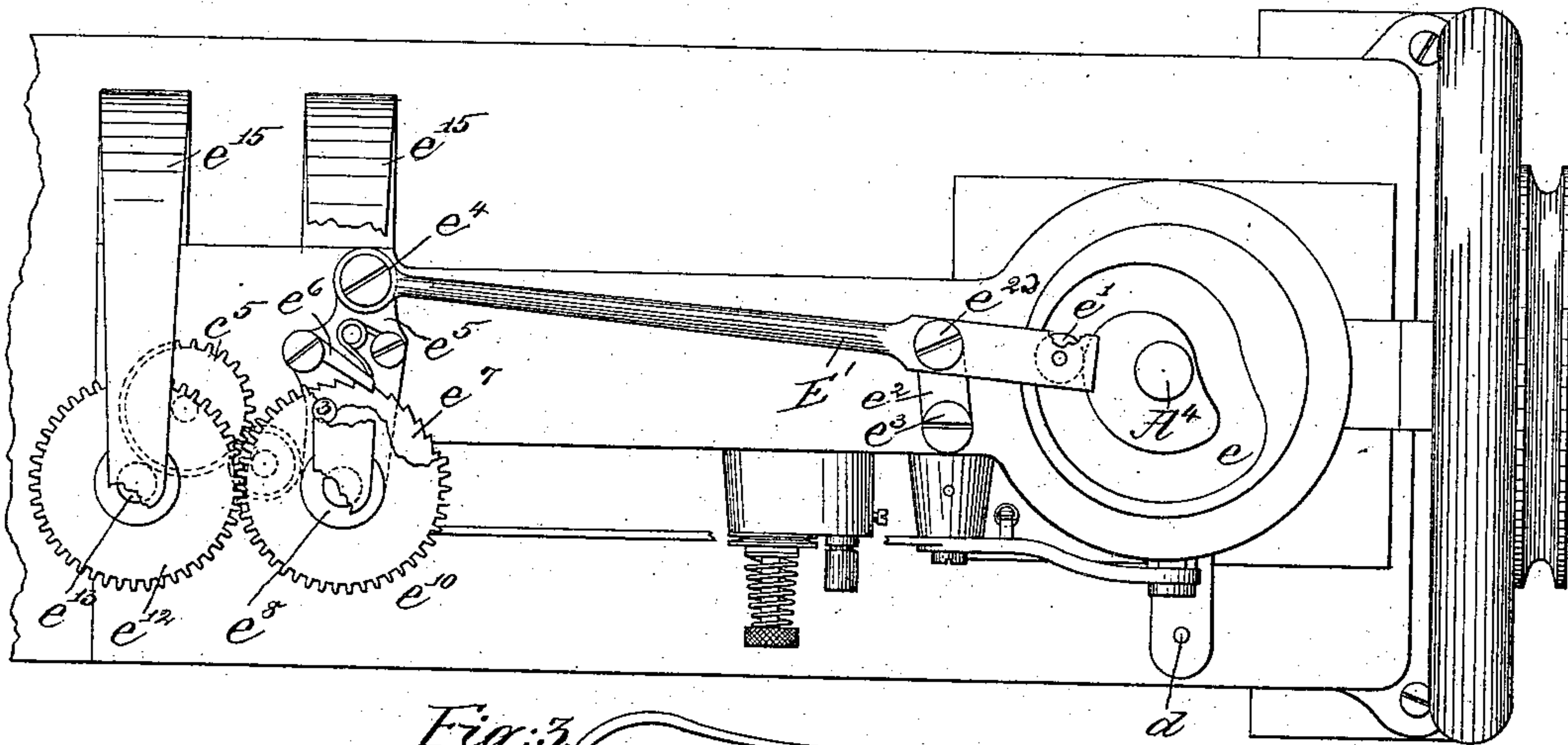


Fig: 3.

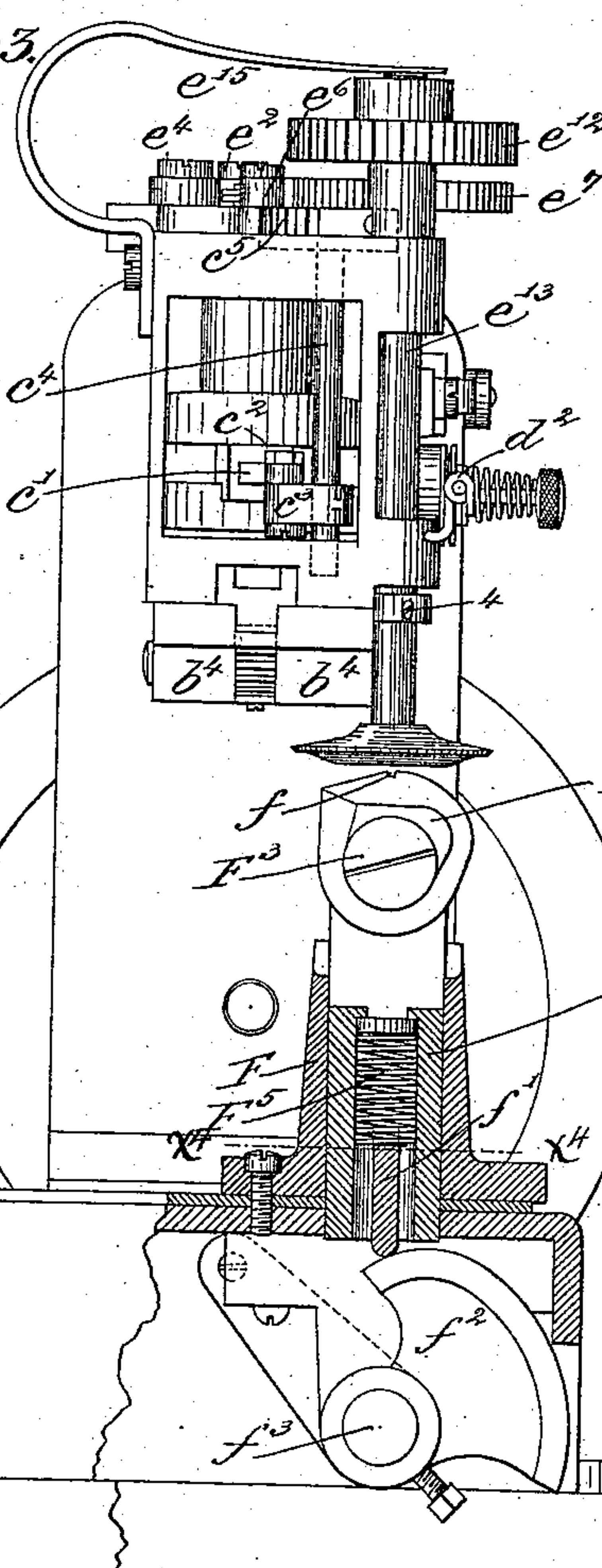


Fig: 5.

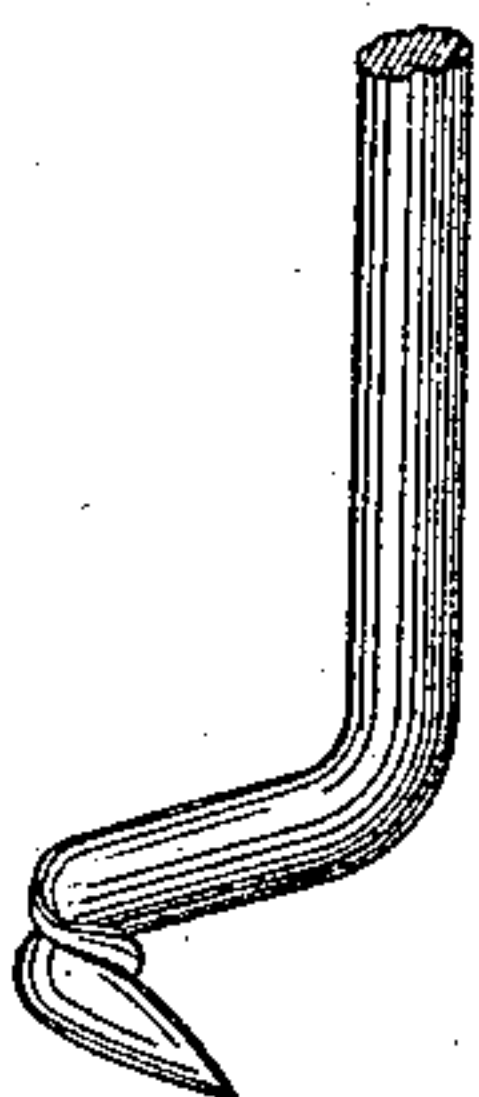


Fig: 4.

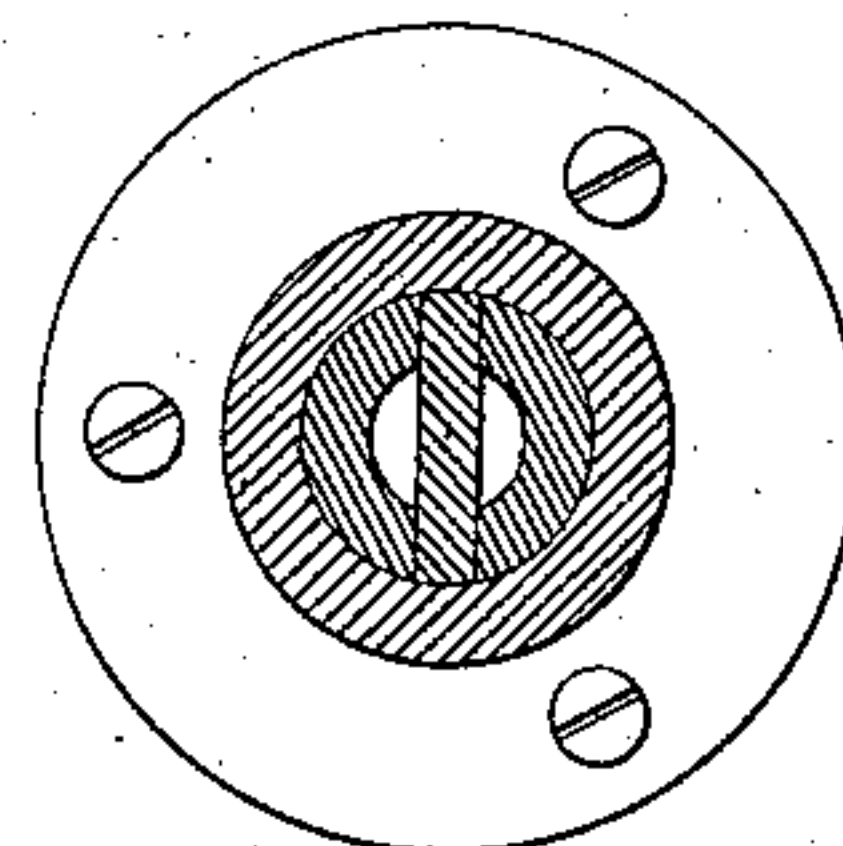
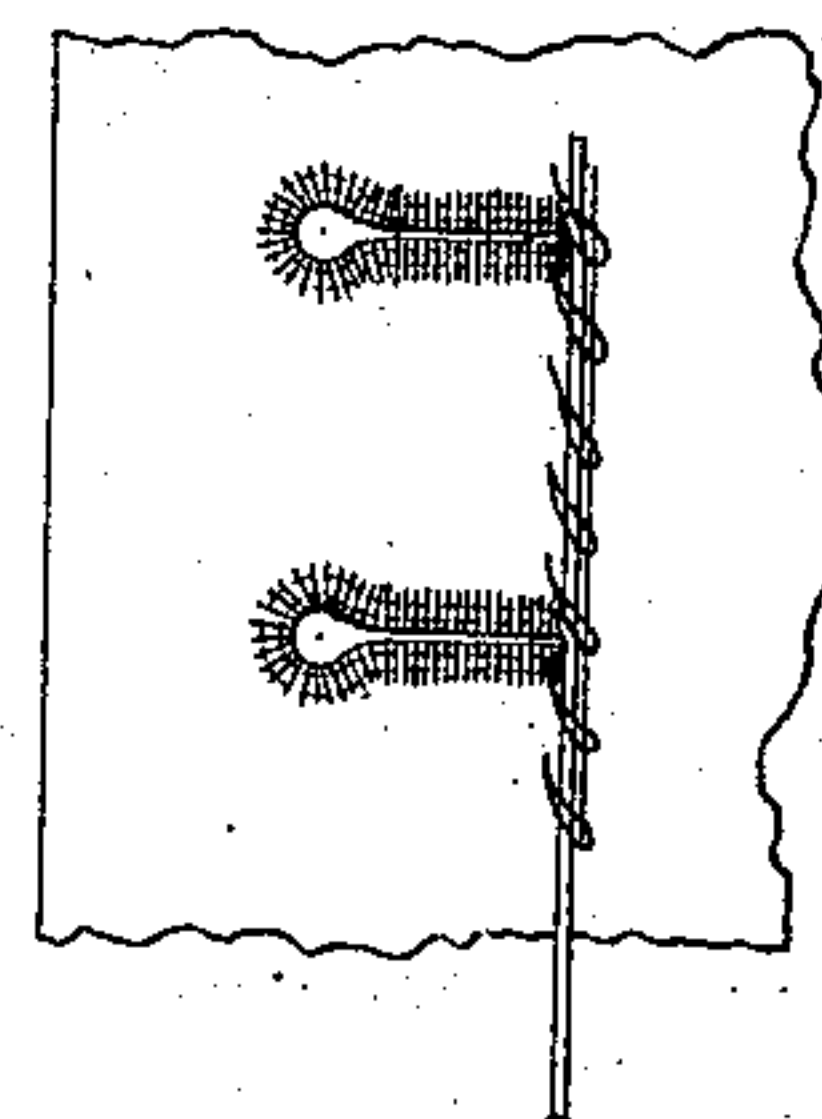


Fig: 6.



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# UNITED STATES PATENT OFFICE.

JOHN REECE, OF BOSTON, MASSACHUSETTS.

## SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 370,412, dated September 27, 1887.

Application filed September 21, 1886. Serial No. 214,157. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN REECE, of Boston, county of Suffolk, and State of Massachusetts, have invented an Improvement in Sewing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention has for its object to improve the construction of that class of sewing-machines using a single thread and producing an over-stitch, my improved machine being especially applicable for use in stitching button-hole-staying cords to the material in which the button-hole is made; also, for stitching cords or reeds to hat-linings and to bonnet-frames. In fact, my improved machine, with but slight changes, may be employed to overseam the edges of material properly placed together and fed to the needle to be described.

In my improved machine the feeding and stitch-forming mechanism are located above the work-support, the latter being herein shown as a post or horn, and, as herein shown, the feeding-wheels also perform the function of presser-feet to keep the material down upon the work-support. The needle employed is circular, and it has co-operating with it a looper, which enters the loop of needle-thread just after the needle has been sufficiently retracted to throw out a loop, and carries the said loop backward in the direction of the receding needle and holds it at rest, so that the needle in its next operative thrust first enters the said loop, when the looper gives the said loop up to the needle and moves backward to take a new loop from the needle, as before.

In order to stitch down closely to the inner side of the material, not only the "thrums" or ends of the needle-thread employed in over-stitching the button-hole, but also the usual stay-cord, which in practice is extended around the button-hole under the said stitching, and from the inner end of one to the inner end of an adjacent button-hole in a button-hole piece, I have herein shown a mechanism having an eye-pointed needle to enter and emerge from the same side of the material, the said needle passing partially into the substance of the material, under, however, the said collected thrums and stay-cord, the needle-thread being so manipulated, as herein shown, by a

looper that the loop of needle-thread emerging from the material is wound about or made to co-operate in binding down to the material the collected thrums and stay-cord. Here-  
55 tofore this work has been done by hand.

Figure 1 in elevation shows the front side of a machine embodying my invention, the cover-plate of the upright part of the over-  
60 hanging arm being removed to show the main shaft and its attached cams, part of the frame-work being broken out to show parts behind it. Fig. 2 is a top or plan view of Fig. 1, the gear at the upper end of one of the feed-shafts  
65 being broken out to show the ratchet-wheel below it. Fig. 3 is a left-hand elevation of Fig. 1, the sleeve holding the work-supporting post or horn and the end of the bed-plate being broken out to show the parts for raising  
70 and locking the said post or horn in working position. Fig. 4 is a section of Fig. 3 on the line  $x^4$ . Fig. 5 shows the looper enlarged; and Fig. 6 represents a part of a button-hole piece  
75 of a boot or shoe, showing the staying-cord to be stitched down to the material in accordance with my invention.

The frame-work, consisting, essentially, of a bed-plate, A, upright A', and overhanging arm A<sup>2</sup>, has suitable bearings,  $a$ , to contain  
80 the driving-shaft A<sup>3</sup>, and bearings  $a'$  for the cam-shaft A<sup>4</sup>, the latter shaft having a bevel-toothed gear, A<sup>5</sup>, which is engaged and driven by a bevel-gear, A<sup>6</sup>, fast on the driving-shaft A<sup>3</sup>.

The shaft A<sup>4</sup> has fast on it four cams, B, C, D, and E, the said cams having at their sides or  
85 faces suitable grooves or inclines to actuate parts to be described.

The bed-plate has erected upon it a sleeve, F, which receives the shank F' of a post or  
90 horn, provided at its upper end with a work-support, herein shown as a block, F<sup>2</sup>, held in place by a screw, F<sup>3</sup>. The shape of the top of this work-support may be varied according  
95 to the work to be held upon it or being done in the machine, the said support being shown as provided with a notch,  $f$ , for the passage of the needle, to be described.

The lower portion of the post F' is bored for the reception of a spring, F<sup>5</sup>, the upper  
100 end of which serves to support the said post, the spring being in turn supported upon a flattened shoe,  $f'$ , which is made to slide in slots made in the said post, (see Figs. 3 and 4,) the



lower end of the said shoe resting upon the surface of a cam,  $f^2$ , attached to a rock-shaft,  $f^3$ , the said cam, when turned in one direction, serving to elevate the said post and work-  
 5 support and lock it in place, the movement of the said locking device in an opposite direction permitting the spring  $f^4$  (see Fig. 1) to depress the said horn or post and work-support.

10 The rock-shaft  $f^3$ , sustained in bearings  $f^5$ , has attached to it a lever,  $x^6$ , by which the said rock-shaft may be turned.

The cam B has at its upper side a cam-groove, which receives a roller or other stud,  $b$ , near  
 15 the rear end of a slide-bar,  $B'$ , having suitable bearings, the outer or front end of the said bar having teeth, as at  $b'$ , thus constituting a rack-bar, the said teeth engaging the teeth of a pinion,  $b^2$ , fast to a rock-shaft,  $b^3$ , held in  
 20 suitable bearings, as  $b^4$ . (See Fig. 3.)

The rock-shaft  $b^3$  has fastened to it a carrier,  $b^5$ , to one end of which is attached, by a screw or other usual manner, the butt of an arc-shaped eye-pointed needle,  $b^6$ , the opposite  
 25 end of the said carrier having attached to it in like or suitable manner an arc-shaped awl,  $b^7$ , the latter being preferably used, when the material is hard, to form a hole for the needle, thus reducing the strain put upon it;  
 30 but I desire it to be understood that the said awl may be omitted for many classes of material.

The cam C, provided at its upper side with a cam-groove, receives in the said groove a  
 35 roller or other stud,  $c$ , carried by a link,  $c'$ , the opposite end of the said link being jointed at  $c^2$  to an arm,  $c^3$ , of a rock-shaft,  $c^4$ , extended upward through the head of the machine and provided with a toothed gear,  $c^5$ , the latter  
 40 gear engaging the gear  $c^6$ , fast to and thus rotating the looper-shaft  $c^7$ , provided at its lower end with a looper,  $c^8$ . (Shown separately in Fig. 5.)

The shaft  $c^7$  has fast to it a worm,  $c^9$ , which,  
 45 in the oscillation of the said shaft  $c^7$  co-operates with one or more teeth of a stationary nut or plate,  $c^{10}$ , thus causing the said looper-shaft to have imparted to it a longitudinal motion, as will be described, to aid the looper in controlling the loop of needle-thread in the formation of the stitch, the gear  $c^5$  being enough  
 50 broader than the gear  $c^6$  to permit vertical motion of the looper-shaft without disengaging the said gears.

55 The cam D is cut away at its upper side and acts upon a roll,  $D'$ , carried at the rear end of a take-up lever,  $D^2$ , pivoted at  $D^3$ .

The thread used will be taken from a suitable spool, which may be held upon a pin,  $d$ ,  
 60 (see Fig. 2,) the said thread being led from the spool through a tension device,  $d'$ , of any usual or suitable construction, thence to an eye,  $d^2$ , attached to the head of the machine, thence up through an eye at the end of the take-up, and  
 65 down to and through the eye of the needle  $b^6$ . The take-up is moved in such time as to not

only give up its thread when the looper is taking the loop, but also to take up the loop of needle-thread after the looper has cast it off and the needle has entered its own loop, the  
 70 final upward movement of the take-up being sufficient to not only set the stitch, but also pull from the tension device enough thread for the next stitch to be made.

The cam E has a cam-groove,  $e$ , which receives in it a roller or other stud,  $e'$ , near one  
 75 end of a link,  $E'$ , pivoted at  $e^2$  to a guide-crank,  $e^{22}$ , pivoted at  $e^3$ , the front end of the said link being jointed by a screw,  $e^4$ , to a pawl-carrier,  $e^5$ , having its fulcrum on a shaft,  $e^8$ , (see Fig. 1,) the said pawl-carrier having a  
 80 pawl which engages a ratchet-wheel,  $e^7$ , mounted loosely on the said shaft  $e^8$ , the said ratchet-wheel rotating the said shaft through a pin or stud, 3, extended from the said ratchet-wheel up through a gear,  $e^{10}$ , fast on the  
 85 shaft  $e^8$ .

The gear  $e^{10}$  engages a like gear,  $e^{12}$ , on a shaft,  $e^{13}$ , arranged parallel to the shaft  $e^8$ , the said shafts at their lower ends being provided  
 90 with feeding-wheels  $g$   $g'$ , the wheel  $g$  being fast to the shaft  $e^8$ . Each shaft  $e^8$   $e^{13}$  is acted upon by a like spring,  $e^{15}$ , the said springs acting to keep the said feed-wheels pressed down upon the work lying upon the work-support  $F^2$   
 95 when the latter is in its elevated position. The shafts  $e^8$   $e^{13}$  are provided each with a collar, 4, which, by coming in contact with the under side of the bearings 5 5, serves as up-stops for the feed-shafts and their wheels. 100

The spring  $F^5$ , supporting the post  $F'$ , is of sufficient strength to not only sustain the said post, but also to overcome the pressure of the two springs  $e^{15}$   $e^{15}$  and normally keep the collars 4 pressed upward against the bearings 5  
 105 above them, when the post is lifted, the springs  $e^{15}$  serving to keep the wheels pressed downward against the material on the support  $F^2$ , notwithstanding any diminution in thickness of material, the spring  $F^5$  yielding to  
 110 any unusual increase in thickness of the material.

Fig. 6 shows the inner side of a piece of a button-boot, having a staying-cord,  $h$ , laid about the button-holes and stitched from one  
 115 button-hole to another in usual manner, the said work being accomplished on a button-hole-stitching machine.

Manufacturers usually "whip down," as it is called, the staying-cord  $h$  between adjacent  
 120 button-holes, and this is done by the employment of a hand-operated needle.

The machine herein described is especially adapted to whip this staying-cord down upon or stitch it to the leather, and in doing so the  
 125 material will be laid upon the narrow upper edge of the work-support with the staying-cord in position to come in the line of the crown or top of the support and in the space between the peripheries of the feed-wheels  $g$   
 130 and  $g'$ , the said wheels thus also serving as a means for collecting the said thrums closely



against the stay-cord just before the arrival of the material opposite the stitching-point. The post and work-support are then elevated against the under side of the feed-wheels  $g g'$ , and in so doing the said wheels are lifted, so that their shafts act upon and push upward the springs  $e^{15} e^{15}$ , and thereafter the said wheels, in addition to their function of feeding the material over the support, also act as pressers to keep the material down upon the work-support. After the material has been somewhat bent about the top of the work-support the curved needle  $b^6$  is caused to enter the material near one side of the staying-cord, the point of the needle passing under the said cord and emerging from the material at the same side at which it entered, but at the opposite side of the staying-cord. Then the needle is slightly retracted to aid in throwing out a loop of needle-thread, and the point of the looper  $c^8$  enters the loop of needle-thread and holds it while the needle is fully retracted. As the needle is being retracted after the looper has entered and caught the loop of needle-thread, the looper is oscillated or turned to carry the loop of needle-thread held on its notch  $t$  over across the staying-cord, and there hold the said loop until the needle  $b^6$  in its next forward movement enters the said loop or a loop of its own thread, when the looper is quickly turned back, casting off the loop previously held upon it and coming into position to again enter, draw out, and spread the next loop of needle-thread. When the looper is turned in the direction to carry the loop of needle-thread across the staying-cord and spread it, the looper is also raised by the worm described on the looper-shaft.

I desire it to be understood that for some work—such as overseaming the edges of two thicknesses of material, as carpet—I might run the material to be sewed directly between the peripheries of the two wheels  $g g'$ , the material being held up by hand or otherwise, the work-support and post being omitted.

I claim—

1. The work-support  $F^2$ , having the raised central portion and two wheels or disks bearing upon and bending the material over the raised central portion of the work-support, combined with a circular or segmental needle, and means to cause said needle to penetrate the material bent over the work-support, substantially as described.

2. The work-support  $F^2$ , having the raised central portion, two feeding-wheels bearing

upon and bending the material over the said raised central portion, and means to rotate the said wheels intermittingly, combined with a circular or segmental needle, means to cause the said needle to penetrate the material bent over the said work-support, and with the looper to co-operate with the said needle, substantially as shown and described.

3. In a sewing-machine, the two feed-wheels, two rotary shafts to which they are attached, the circular needle  $b^6$ , and the work-support, and the post  $F'$ , to which it is attached, and the guide for the said post, combined with the spring  $F^5$ , pin  $f'$ , and cam to elevate the post, substantially as described.

4. The two feed-wheels  $g g'$ , the shafts to which they are attached, and means to rotate the said shafts, combined with the circular or annular needle located, substantially as shown and described, with relation to the said feed-wheels, means to move the said needle, and the looper having both an oscillating and sliding movement, substantially as described, in entering and spreading the loop of needle-thread.

5. The oscillating carrier  $b^5$ , its attached needle and awl, means to oscillate the said carrier, the two shafts  $e^8 e^{13}$ , their attached wheels  $g g'$ , means to rotate the said wheels intermittingly to feed the material, the looper  $c^8$ , the looper-shaft  $c^7$ , its worm, and the toothed nut or plate to co-operate with the said worm, combined with a work-support, substantially as described.

6. In a sewing-machine for finishing button-holes in button-pieces, the following instrumentalities, in combination, viz: an eye-pointed thread-carrying needle, means to collect together the thrums and stay-cords between the inner ends of adjacent button-holes, and holding devices to bend the button-piece in the direction of its length or transversely to the length of the button-hole, whereby the needle is compelled to enter the material at one side of the said collected thrums and stay-cord and emerge from the same side of the material, but at the other side of the collected thrums and stay-cord, for the purposes set forth.

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

JOHN REECE.

Witnesses:

G. W. GREGORY,  
F. L. EMERY.