

(Model.)

2 Sheets—Sheet 1.

T. S. HUNTINGTON.

## BUTTON HOLE ATTACHMENT FOR SEWING MACHINES.

No. 299,928.

Patented June 3, 1884.

Fig:1.

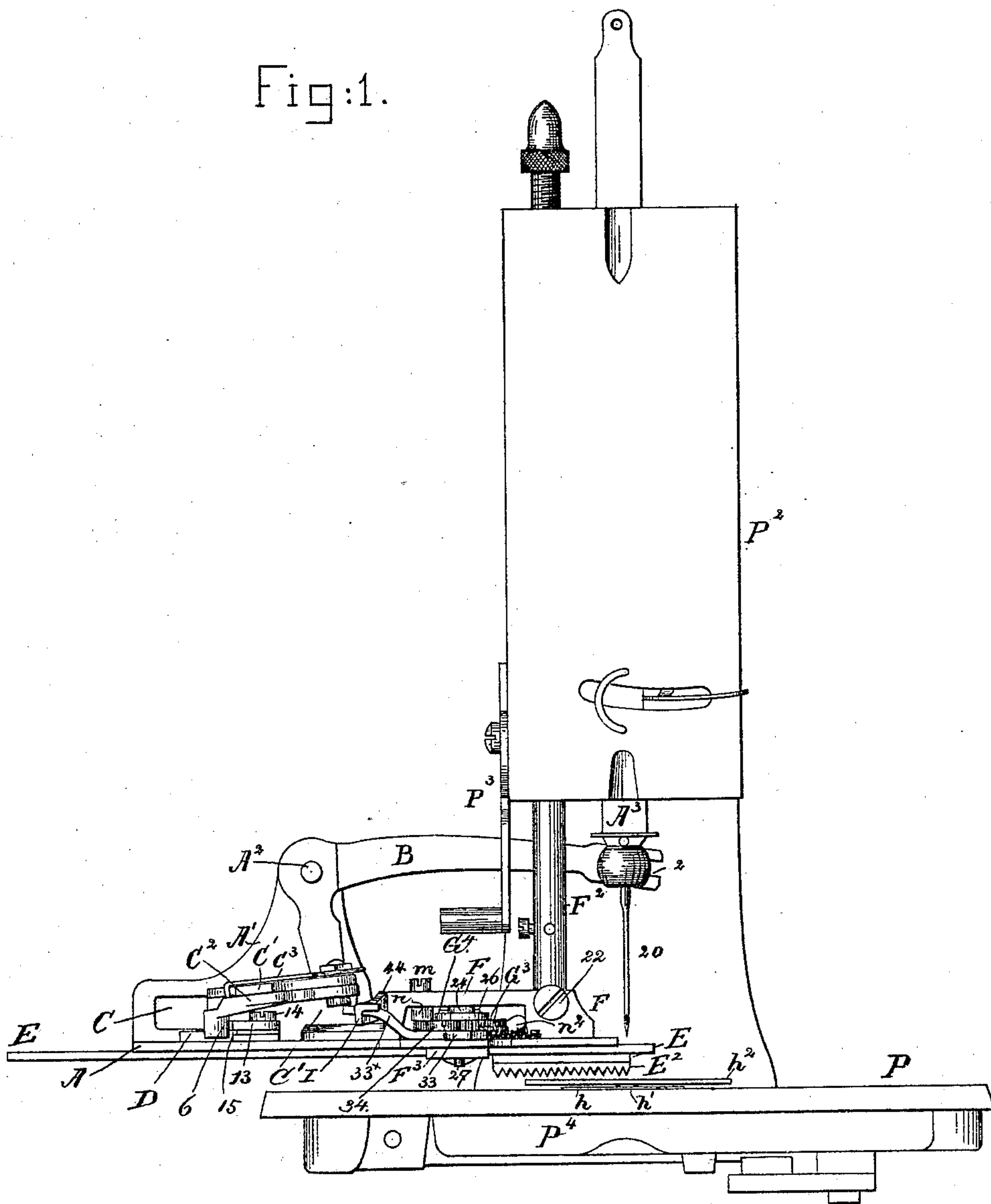
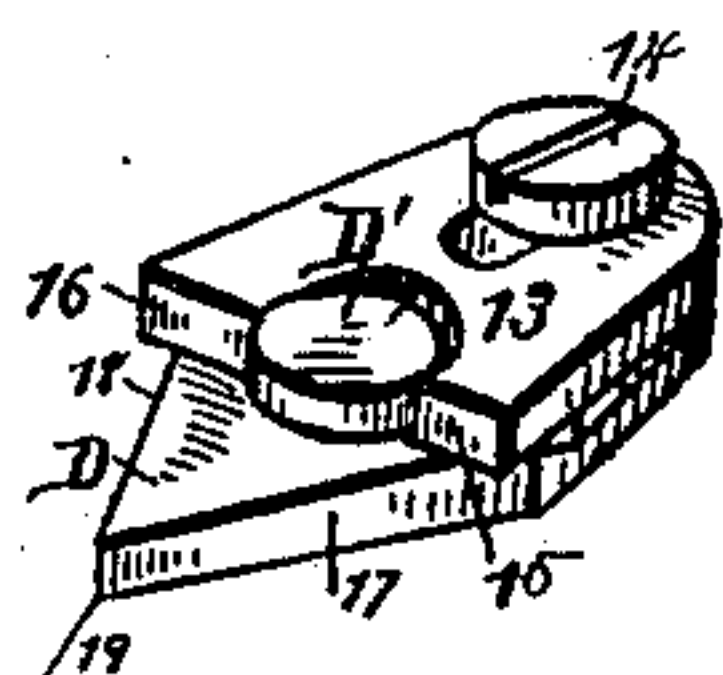


Fig. 9.



Witnesses.  
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(Model.)

2 Sheets—Sheet 2.

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Fig:2.

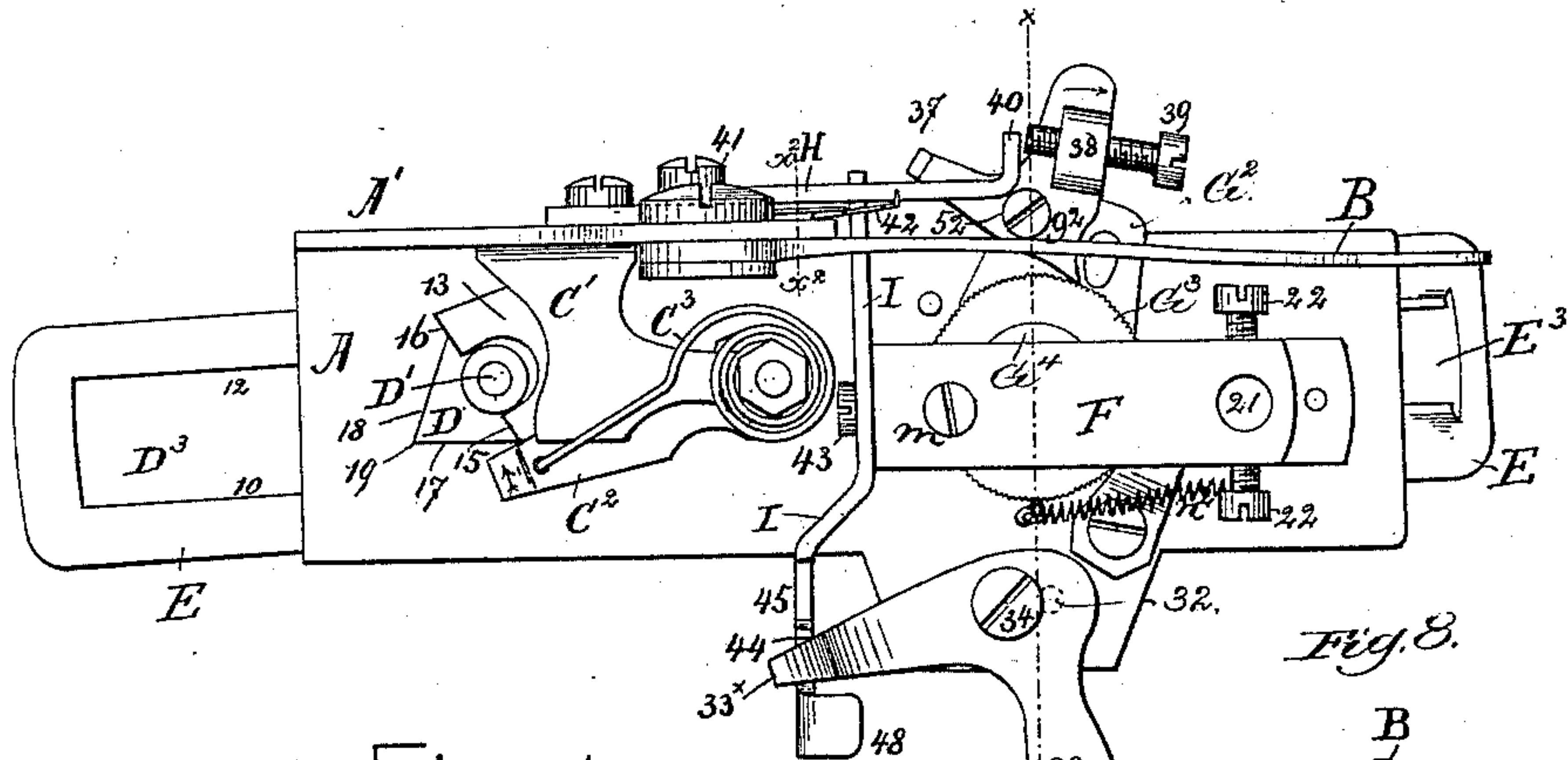


Fig:4.

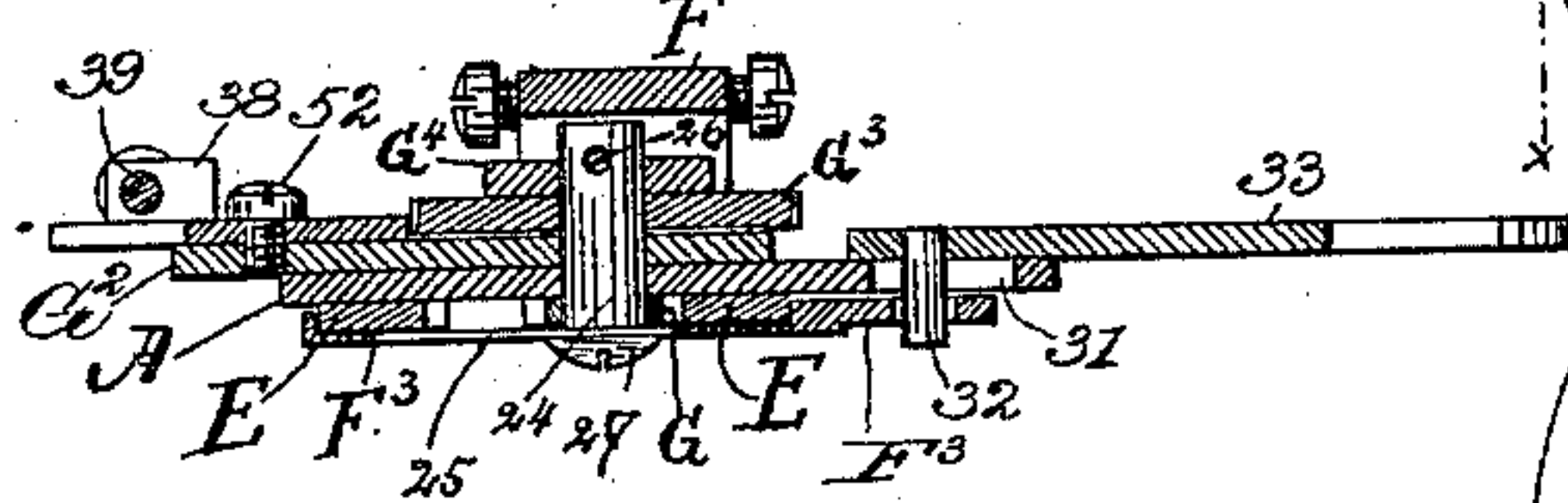


Fig:8.

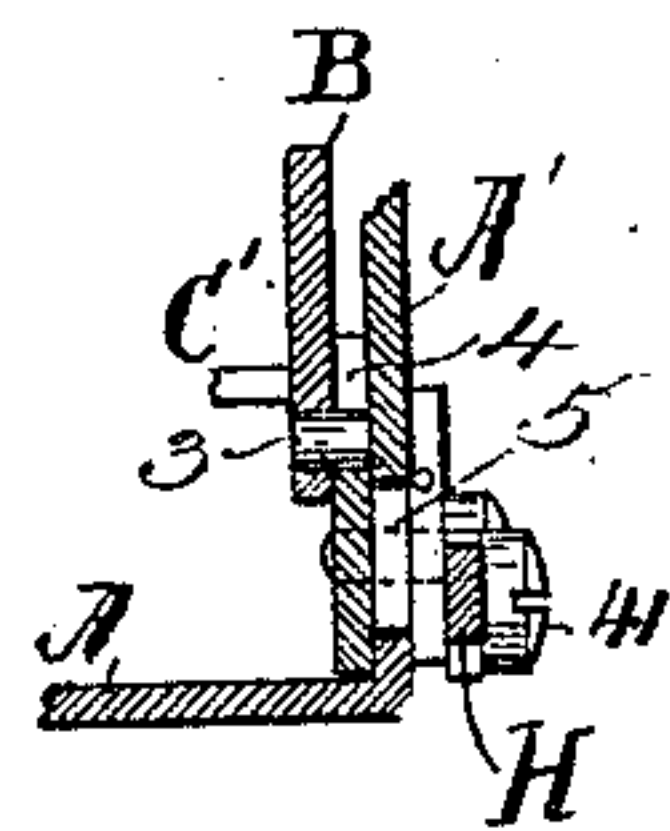


Fig:3.

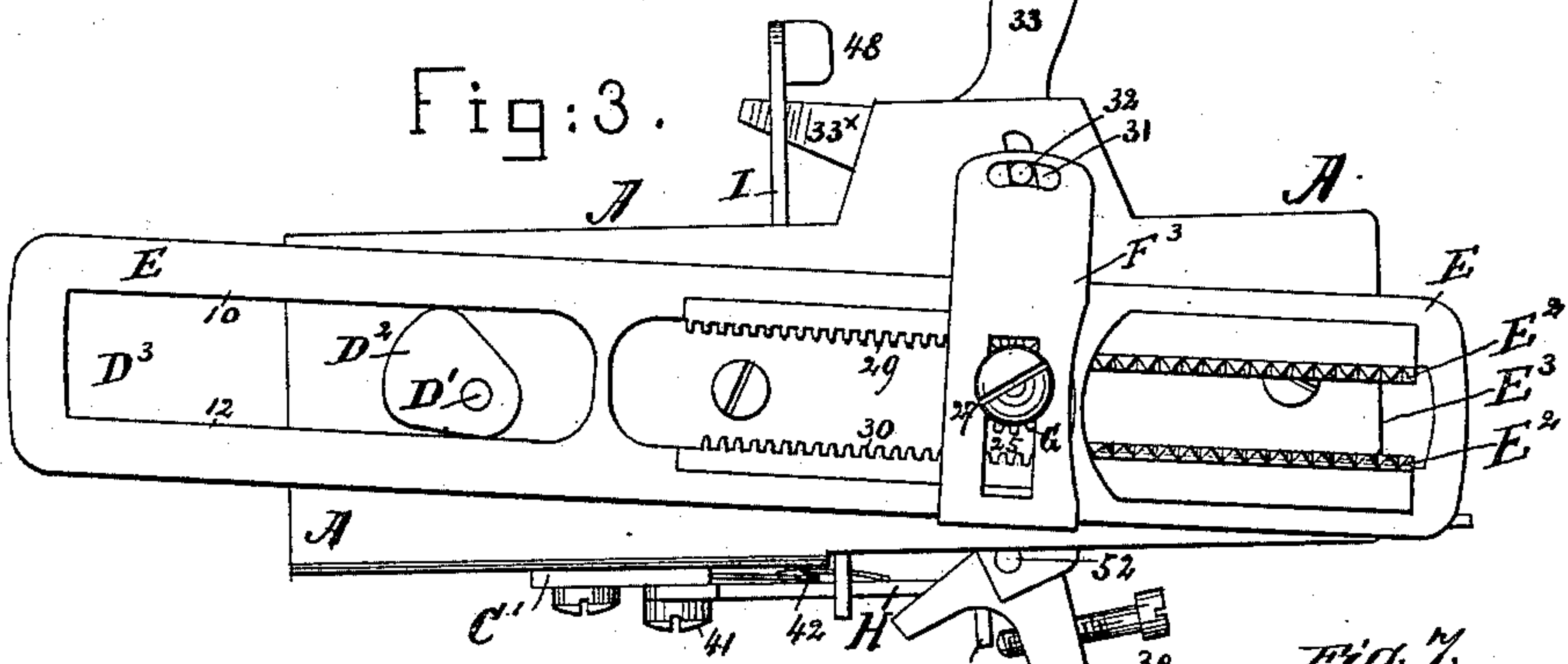


Fig:5.

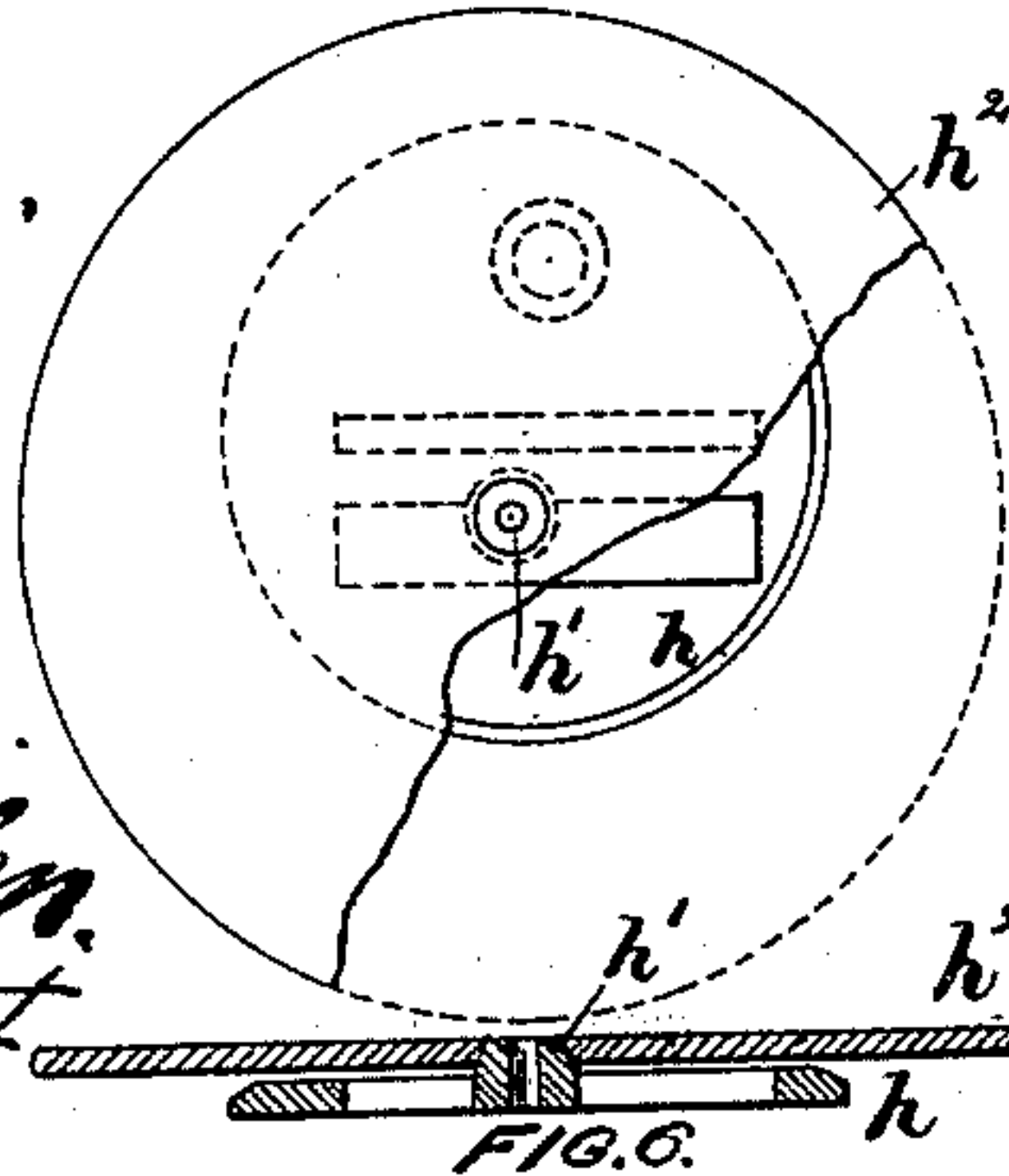
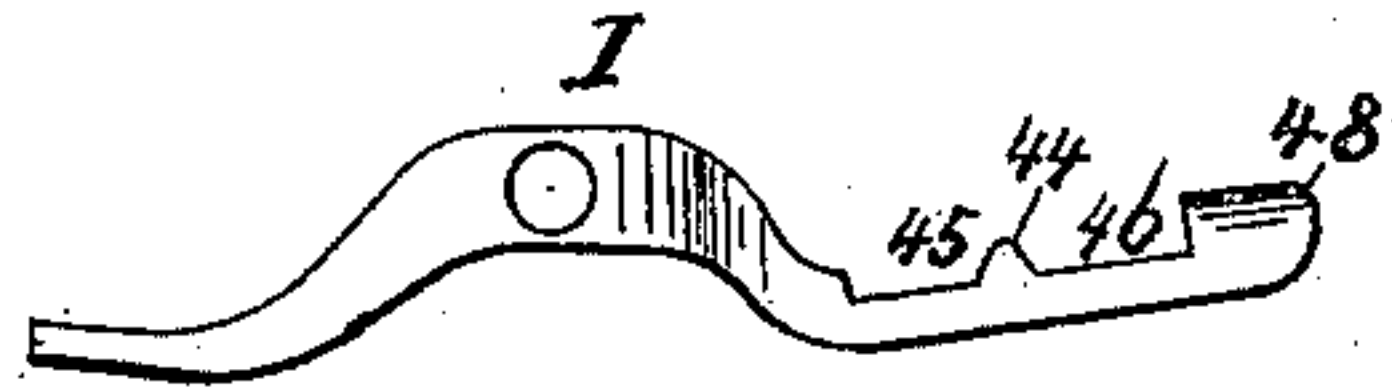


Fig:7.



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# UNITED STATES PATENT OFFICE.

THOMAS S. HUNTINGTON, OF NEW YORK, N. Y., ASSIGNOR TO THE NEW HOME SEWING MACHINE COMPANY, OF ORANGE, MASSACHUSETTS.

## BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 299,928, dated June 3, 1884.

Application filed August 13, 1883. (Model.)

*To all whom it may concern:*

Be it known that I, THOMAS S. HUNTINGTON, of New York city, county, and State, have invented an Improvement in Button-Hole or Overseaming Attachments for Sewing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention has for its object the production of a sewing-machine attachment by which to work button-holes.

The features of my invention will be hereinafter described, and specified in the claims at the end of the specification.

15 Figure 1 in front elevation represents a sewing-machine known as the "New Home" with my improved button-hole-stitching attachment applied thereto in working position, the presser-foot bar, to which the attachment is secured, being partly lifted preparatory to placing below it the cloth or material containing the button-hole to be worked. Fig. 2 is a top view of the attachment removed from the machine. Fig. 3 is an under side view of Fig. 2. Fig. 4 is a section in the dotted line  $x$ , Fig. 2, through the ratchet of feeding mechanism, for feeding forward and backward the plate which engages and carries with it the said material. Fig. 5 is a top view of the rocking plate to support the material around the needle-hole in the throat-plate and under the feeding-plate, a part of the rocking plate being broken away to show the said throat-plate. Fig. 6 is a section of Fig. 5; Fig. 7, a detail of the barring-lever; and Fig. 8, a sectional detail on the line  $x^2 x^2$ , Fig. 2. Fig. 9 is a perspective detail of the "vibrator," so called.

40 The frame A of the attachment is bent up at one side, as at A', to form a standard, which serves to hold the fulcrum-pin A<sup>2</sup> of the elbow-lever B, slotted at one end, as at 2, to receive a suitable pin or projection carried by the needle-bar A<sup>3</sup>, or needle-holding nut, as in ruffling and other attachments, the said pin vibrating the said lever and causing the same, by its shortest arm, having a pin, 3, to engage a slot, 4, and move the pawl-carriage C', a part,

5, of which is extended through a slot, C, in the standard A'. The carriage C' is provided with a pivoted pawl, C<sup>2</sup>, acted upon by a spring, C<sup>3</sup>, which normally keeps the projecting wedge-shaped end or finger 6 thereof in the line of the center of the shaft and the needle-hole, in order that the finger of the said pawl, when the carriage C' is reciprocated by the bell-crank lever, will first strike against one and then against the opposite inclined face of a vibrator, now to be described.

60 The vibrator is composed of a wedge-shaped arm, D, attached to a short vertical shaft, D', extended down through the plate A, where it is provided with a cam or eccentric, D<sup>2</sup>, which is placed between the walls 10 12, formed by making a slot, D<sup>3</sup>, in the vibrating and horizontally-moving feed-plate E. The arm D has a block, 13, adjustably attached to it by a screw, 14, the position of the said block on the said arm D enabling the finger of the pawl C<sup>2</sup> to engage one of its shoulders 15 16 sooner or later at each reciprocation, and consequently the vibration of the feed-plate E may be made variable according to the width desired for the stitching back from the edge of the button-hole slit, the greater the extent of movement of the cam D the greater the vibration of the plate E and the width of the edge covered by the stitch, and vice versa. As the carriage C' is moved forward at one stroke, the finger 6 of the pawl C<sup>2</sup> meets the inclined side 17 of the vibrator and shoulder 15 of the block 13 of the vibrator and turns the same into the position Fig. 2. As the carriage is next moved backward, the spring C<sup>3</sup> acts to move the pawl C<sup>2</sup> in the direction of the arrow into its central-line position, which places the finger 6 at one side of the point of the arm D, so that as the carriage is again moved forward or toward the right in Fig. 2 the needle-bar then rising, the said finger 6, at such time acting against the inclined side 18 and, striking the shoulder 16, will move the arm D of the vibrator in the opposite direction. This movement of the arm D of the vibrator causes the cam D<sup>2</sup> to operate first against the wall 10 and then against the wall 12 of and vibrate the feed-plate E, the teeth E<sup>2</sup> of which engage the cloth or other ma-



terial and compel the same to move in unison with the plate E, thus enabling the eye-pointed needle 20 of the machine to penetrate the material in which the button-hole is to be moved—as cloth or leather—first near the edge of the button-hole slit, and then to pass through the said slit, and so on in usual manner.

The plate A at its upper side is provided with a stiff yoke, F, having a hole, 21, for the reception of the lower end of the presser-bar F<sup>2</sup>, screws 22 serving to attach the said yoke to the said presser-bar. The plate A is provided with a hole, which receives a shaft, 24, having an enlarged head, and extended upward through the said plate, it first passing, however, through slot 25 in a fulcrum-slide, F<sup>3</sup>, and then through a pinion, G, and then through a pawl-carrier, G<sup>2</sup>, provided with a pawl, g<sup>2</sup>, and through a ratchet-wheel, G<sup>3</sup>, the hub G<sup>4</sup> of which is notched to receive a pin, 26, extended through the said shaft 24, thus connecting the ratchet with it. The pinion G is fast on the shaft 24, and its teeth are adapted to engage with either of the series 29 30 of teeth with which the feed-plate E is provided, according to the position of the said plate with relation to the usual needle-hole of the throat-plate h of the sewing-machine.

The plate E is fitted to slide in grooves of the fulcrum-slide F<sup>3</sup>, and the shaft 24 acts to hold the said fulcrum-slide and plate E up against the under side of plate A. The fulcrum-slide F<sup>3</sup> has a curved or inclined slot, 31, which receives a pin, 32, of a feed-changing lever, 33, pivoted to the plate A at 34, and as the said lever is turned the slide F<sup>3</sup> is moved to place either the series of teeth 29 or 30 in contact with the teeth of pinion G, which latter then moves the feeding-plate backward or forward, as the case may be, the cam D<sup>2</sup> vibrating the said plate as each stitch is made, so as to stitch through and over the edge.

In Figs. 1, 2, and 3 the feeding-plate has been fed fully back, and before the said plate is next moved forward the feed-changing lever 33 must be moved in the direction of the arrow upon it to move the fulcrum-slide and cause the teeth 30 to engage the pinion G, the latter giving the plate E an intermitting forward movement. The shaft 24 derives its movement from the pawl g<sup>2</sup>, pivoted at 52 on the pawl-carrier, pivoted on the said shaft. The pawl g<sup>2</sup> has a toe, 37, and an ear, 38, provided with a regulating-screw, 39. The forward movement of the pawl g<sup>2</sup>, to engage the ratchet G<sup>3</sup>, is produced by the toe 40 of the pawl H striking the screw 39 and forcing it in the direction of the arrow on said pawl. The return movement is effected by the toe of the lever H on its return engaging the toe 37; or it may be automatically accomplished by a spring, n<sup>2</sup>, at the other end of the pawl-carrier, pivoted at 41 upon the carriage C', and held by spring 42 down upon the upper side of a barring-lever, I, pivoted at 43, and having a toe, 44, and two depressions or notches, 45 and 46—one at each side of it. (See Fig. 7.)

When the end 33<sup>x</sup> of the lever 33 is stopped directly upon the toe 44 of the barring-lever I, that end of the said lever under the pawl H is lifted so high as to prevent the toe 40 of the latter striking the regulating-screw 39, and at such time the shaft 24 and pinion G are not moved, and the feed-plate E then has only a movement of vibration derived from the cam D<sup>2</sup>, which enables any desired number of stitches to be put in at the end of a button-hole slit, to bar the same, as will be understood. The operator, by pushing on the pad 48 of the barring-lever, may stop the forward or backward movement of the feeding-plate E.

In this attachment the material in which the button-hole is being stitched is moved only by the feed-plate E, its teeth E<sup>2</sup> resting upon the said material about the button-hole slit, the latter occupying a position substantially central with relation to the opening E<sup>3</sup> in the said plate.

The usual throat-plate of the sewing-machine is removed, and a throat-plate, h, having a raised needle-throat, h', is substituted for it, and on this throat-plate is placed a rocking plate, h<sup>2</sup>, herein shown as circular, and having a conical seat, which is placed over the elevated throat h', also made conical, so that the said plate is free to rock or turn to a limited extent to adapt its top or face to the requirement of the feed-plate E, which takes the place of the usual cloth-clamp, and to the thickness of the material between the feed-plate E and the rocking plate h<sup>2</sup>, and enables the pressure of the plate E on the material to be equalized, notwithstanding variations in the thickness of the latter. The plate h<sup>2</sup> prevents the usual four-motioned feeding-dog, P<sup>4</sup>, of the machine from engaging the under-side of the material. The plate h<sup>2</sup> enables the material to be moved more accurately than were it omitted, and this is especially so when the material is swung laterally under the needle by the feed-lever as the latter is vibrated by the cam D<sup>2</sup>. Adjustment of the screw 39 enables a variation in the proximity of the stitches to be made. The screw m acts on a friction-block, n, of leather or other suitable material, to prevent retrograde movement of the ratchet G<sup>3</sup>.

The bed-plate of the sewing-machine is marked P, the usual head, P<sup>2</sup>, the presser-foot lifting-lever P<sup>3</sup>, and the usual feed-dog, P<sup>4</sup>. With slight changes in construction my apparatus may be adapted to various different sewing-machines.

I do not broadly claim a longitudinally movable and vibrating plate.

I claim—

1. The base-plate A, the elbow-lever, the pawl C<sup>2</sup>, moved by it, the arm D, the cam D<sup>2</sup>, moved by it, and the adjustable shouldered block carried by the said arm, combined with the feed-lever E, and the pivoted fulcrum slide or plate F<sup>3</sup>, to operate substantially as described.

2. The base-plate and the feed-lever toothed



or serrated at its under side to engage the upper side of the material, and means to move the same longitudinally and laterally, combined with a rocking plate having its pivot-connection with the needle-throat  $h'$  on the throat-plate, substantially as described.

3. The bed-plate A, the elbow-lever, the carriage moved by it, the feeding-lever having teeth 29 30, a cam to vibrate it, the pinion to engage and move the said lever longitudinally, and a pawl and ratchet to move the said pinion, combined with a pawl, H, and with a barring-lever, I, having the toe 44 and depressions, 45 46, and the lever 33 to engage it, to enable the longitudinal movement of the said feeding-lever to be suspended at will, substantially as described.

4. The base-plate A and the presser-bar, to which it is attached and held by it above the bed-plate of the sewing-machine, the toothed feed-lever E, the fulcrum-slide to receive it, the shaft to hold the said lever at the under side of the plate A, and the pinion G, combined with the lever 33, to move the said fulcrum-slide, substantially as described.

5. In a button-hole-stitching mechanism, a feeding-lever provided with feed-teeth on its under side to operate upon the upper side of the material to feed it, means to vibrate said lever, and the pinion to move it and the material forward, combined with a pawl and ratchet to move the said pinion tooth by tooth, and with a pawl, H, and barring-lever I, to act-

uate or leave at rest the said pawl and ratchet, which directly operate the said pinion, substantially as described.

6. The base-plate A, having a portion,  $A'$ , upwardly turned and slotted, the bridge provided with a hole to receive the presser-bar, the elbow-lever, and the carriage moved thereby, the toothed feeding-lever provided with slot  $D^3$ , and teeth 29 30, arm D, block 13 thereon, and cam  $D^2$ , constituting a vibrator, and the pinion G, combined with a pawl,  $G^2$ , to move the vibrator, and means to rotate the said pinion, substantially as described.

7. The combination, with a button-hole attachment for sewing-machines and the bed-plate, of a conical needle-throat,  $h'$ , and the plate  $h^2$ , having a conical recess, and thereby seated on said throat to tip or rock thereon, substantially as described.

8. The combination, with a button-hole attachment and sewing-machine bed, of a throat-plate, its upwardly-extended throat having a conical tip, and the rocking plate seated or pivoted on said tip, substantially as and for the purpose described.

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

THOS. S. HUNTINGTON.

Witnesses:

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EUGENE BREHM.