

(No Model.)

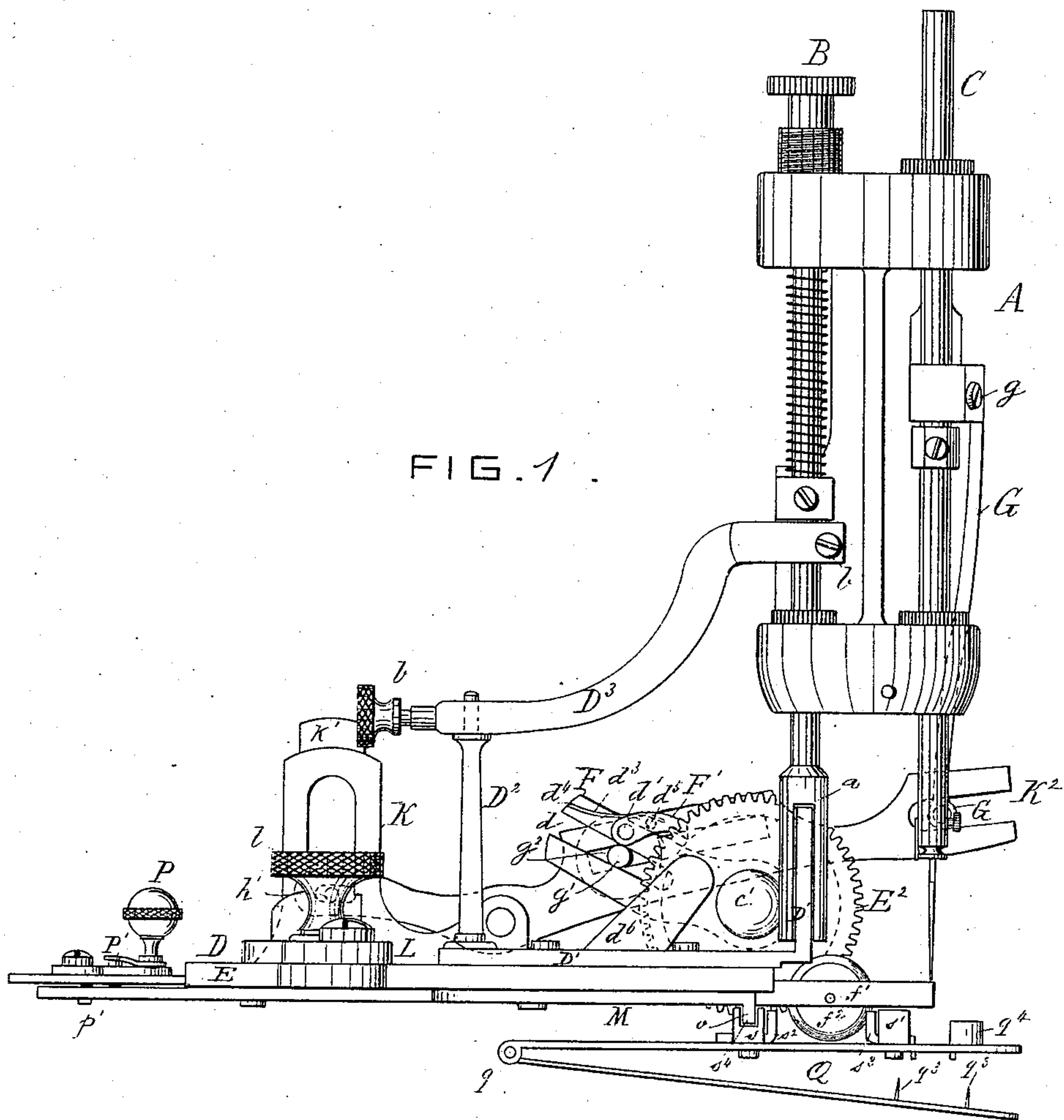
3 Sheets—Sheet 1.

W. SCHOTT.

BUTTON HOLE ATTACHMENT FOR SEWING MACHINES.

No. 336,165.

Patented Feb. 16, 1886.



WITNESSES

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INVENTOR

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(No Model.)

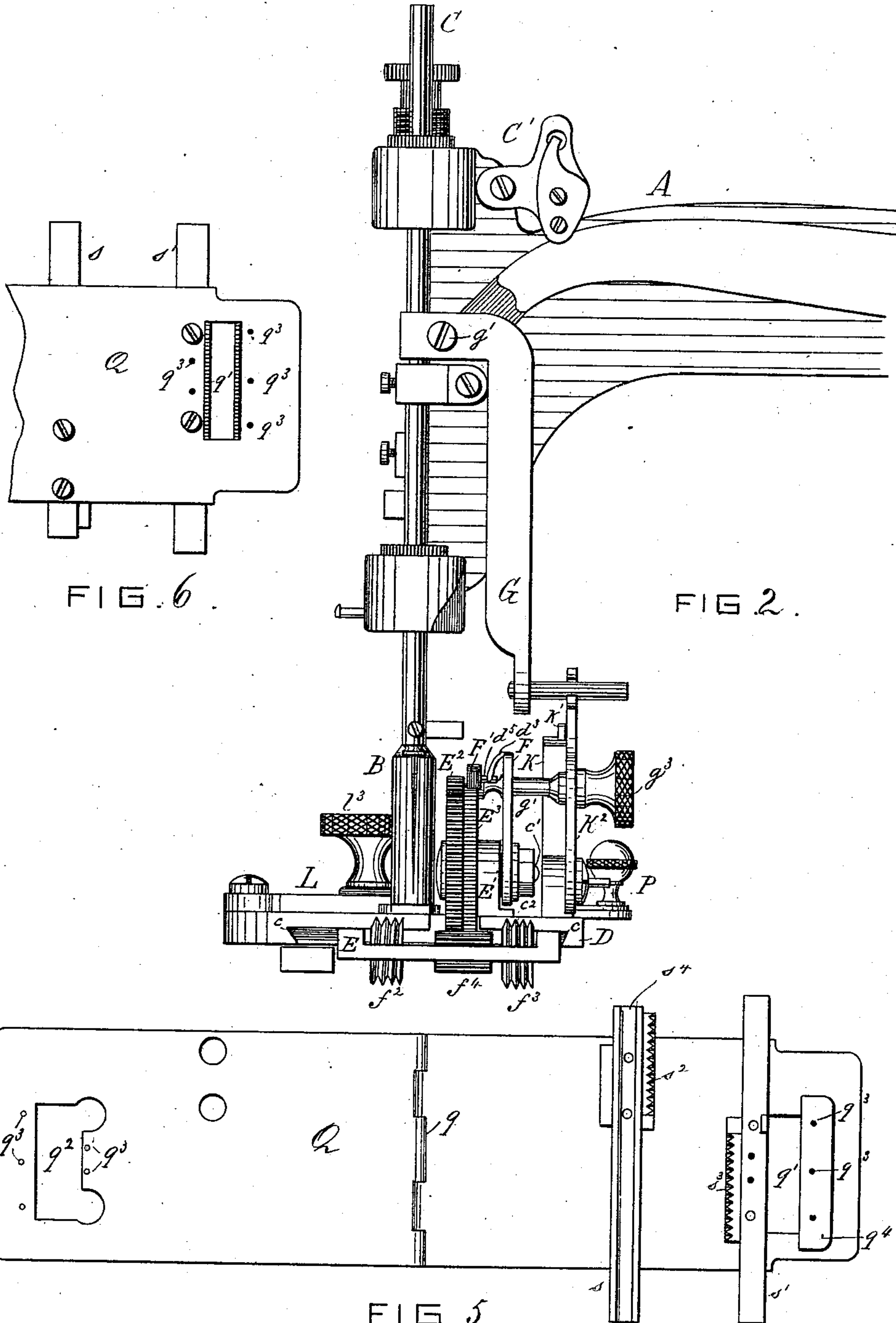
3 Sheets—Sheet 2.

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BUTTON HOLE ATTACHMENT FOR SEWING MACHINES.

No. 336,165.

Patented Feb. 16, 1886.



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FIG. 3.

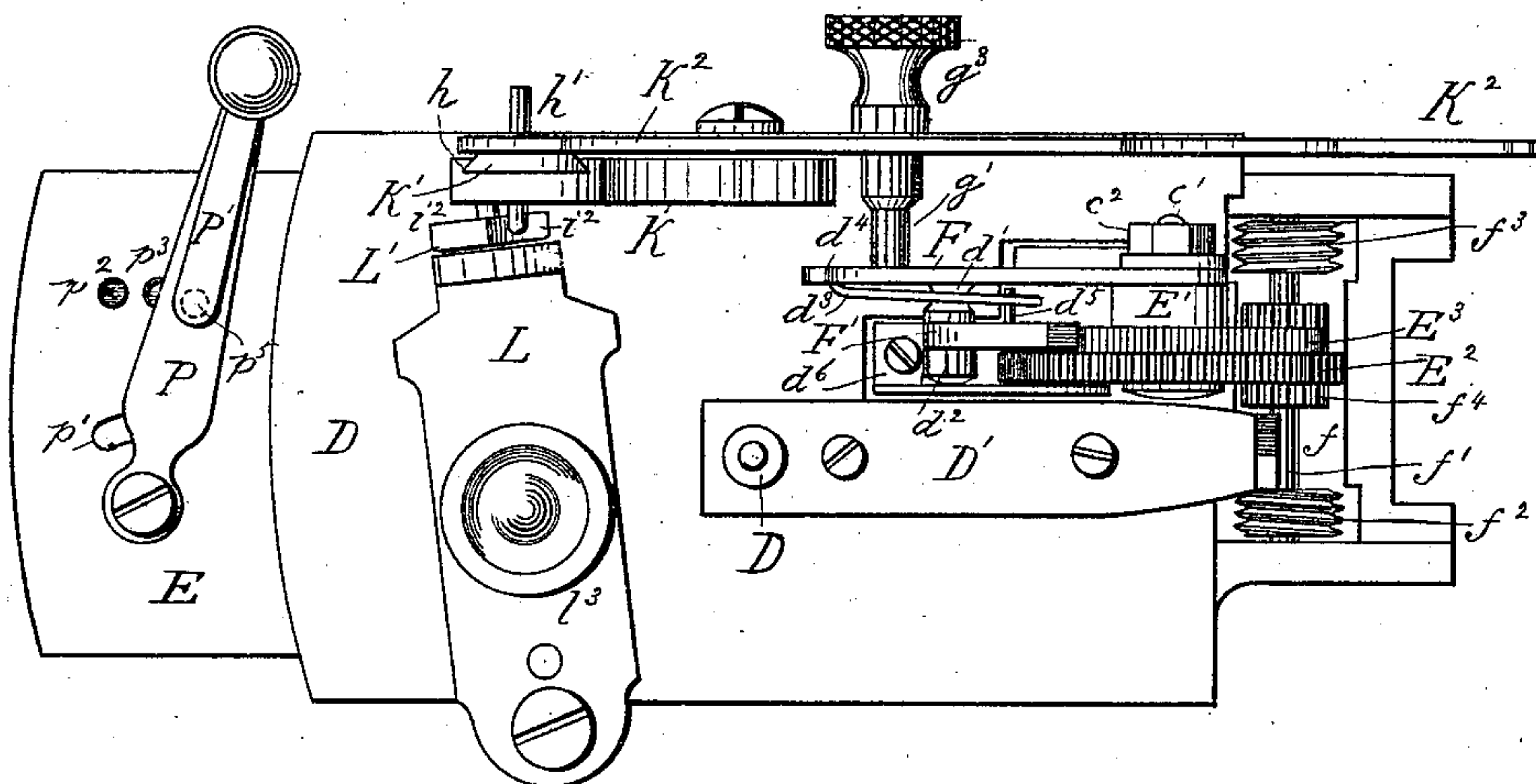


FIG. 4.

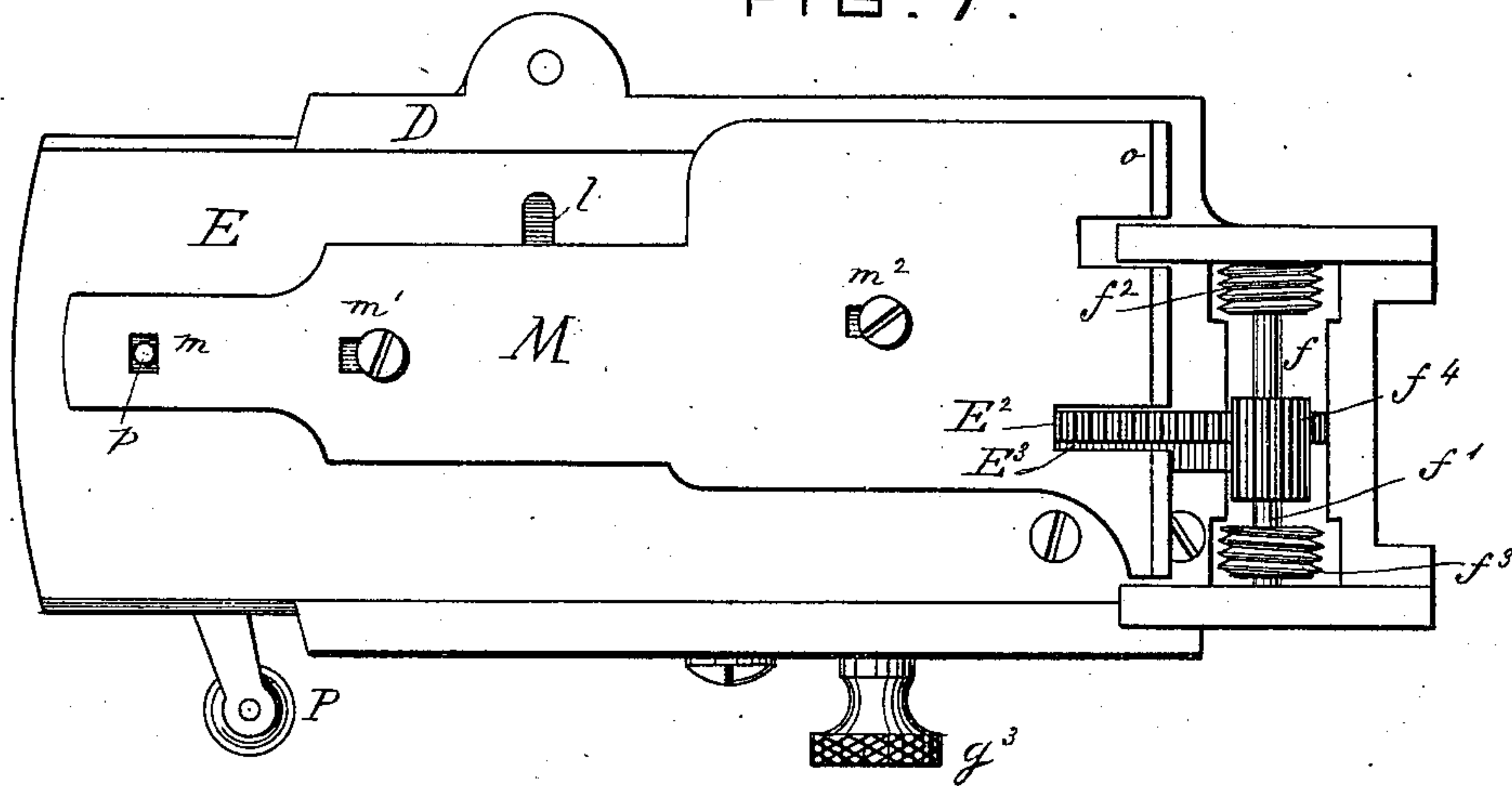


FIG. 7.

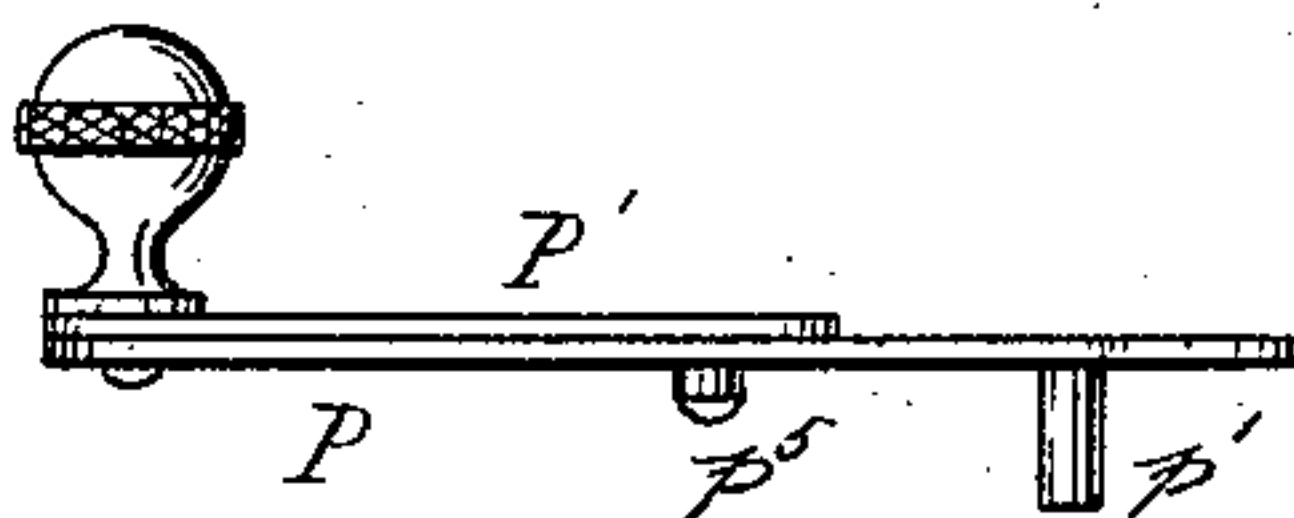
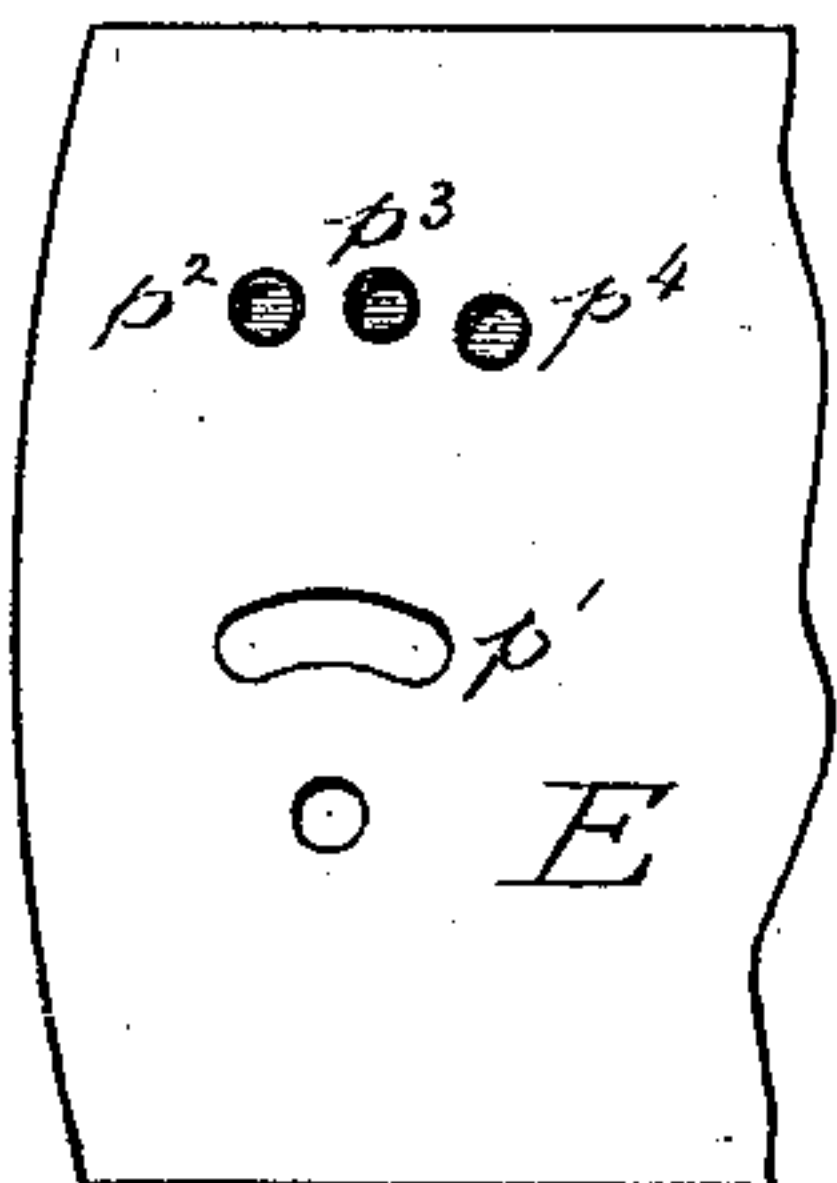


FIG. 8.

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UNITED STATES PATENT OFFICE.

WILLIAM SCHOTT, OF NEW YORK, N. Y., ASSIGNOR TO THE SCHOTT
BUTTON HOLE ATTACHMENT COMPANY, OF SAME PLACE.

BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 336,165, dated February 16, 1886.

Application filed May 21, 1885. Serial No. 166,231. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SCHOTT, a citizen of the United States of North America, and a resident of the city, county, and State of New York, have invented a new and useful Improvement in Button-Hole Attachments to Sewing-Machines, of which the following is a specification.

This invention is designed as an improvement on the button-hole attachment to sewing-machines for which I have obtained Letters Patent of the United States Nos. 292,591 and 310,915, dated January 29, 1884, and January 20, 1885, respectively.

The objects of this invention are to provide devices for giving a back-and-forth or in-and-out movement to the button-hole form-plate, in preference to the usual turning or rotary movement, so that the turning around of the cloth or garment to be operated upon may be avoided, to make a straight button-hole with straight end bars, and at the same time to simplify the attachment, increase its durability, and reduce the cost of its construction.

The invention consists of a double worm or two worms—a right-hand worm and a left-hand worm—on the worm-shaft; of an improved button-hole form-plate provided with adjustable and reversible toothed opposite jaws for the worms to engage in; of an improved cloth-clamp; of an improved device for barring the ends of a button-hole, and of other novel points of construction and arrangement, all of which will be hereinafter fully set forth.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of my improved attachment in position on a sewing-machine head. Fig. 2 is a front end elevation of the same. Fig. 3 is a plan of the attachment. Fig. 4 is a plan view of the obverse of the attachment. Fig. 5 is a plan of the cloth-clamp open with button-hole form-plate attached. Fig. 6 is a plan of the obverse of a portion of the same. Fig. 7 is a plan of the rear end of the reciprocating foot. Fig. 8 is a side elevation of the lever for operating the button-hole-barring device.

In the drawings, A represents the head of a sewing-machine; B, the presser-foot bar with the presser-foot removed.

C represents the needle-bar, and C' the ordinary thread-guide.

The presser-foot bar has in its lower end a vertical slot, *a*, by means of which and a screw (not shown) the ordinary presser-foot is secured thereto.

The carrier-plate D has firmly secured horizontally on its superior face a narrow plate, D', whose forward end is turned up at a right angle, as shown in Figs. 1 and 2, and projecting up from said plate D' is a post, D², rigidly fixed thereto.

The button-hole attachment is held to the sewing-machine by the engagement of the vertical end of the plate D' in the slot *a* of the presser-foot bar and by means of a brace, D³, whose slotted or hooked end is held on the presser-foot bar by a screw, *b*, and whose eyed end engages over the top of the post D², where it is firmly held by a thumb-screw, *b'*. Hence it will be seen that the attachment may be elevated and depressed by the movement of the presser-foot bar of the sewing-machine.

The reciprocating foot E is held so as to freely move back and forth, as desired, in the grooves *c* in the under side of the carrier-plate D, and the latter has several slots or openings made in it for the upward projection of certain of the parts which are fixed on the reciprocating foot, as hereinafter described.

Fixed upon the reciprocating foot E is a standard, E', and on a horizontal stud, *c'*, extending laterally therefrom are set so as to move freely thereon a peripherally-cogged wheel, E², and a ratchet-wheel, E³, of less diameter, which wheels are firmly held together by screws or other suitable devices; and held on the same stud or axle *c'* by a nut, *c*², is a lever, F, with its rear end forked, as shown at *d*. Secured to the upper tine of the fork of this lever F by a screw or stud, *d'*, and a nut, *d*², is a pawl, F', whose terminal tooth is held in contact with the teeth of the wheel E³ by means of a spring, *d*³, that has one end firmly secured in a slot, *d*⁴, in the upper tine of the lever F, while the other end bears upon a stud, *d*⁵, which projects laterally from the

toothed end of the said pawl F' . A brace-plate, d^0 , secured at one end to the reciprocating foot E , extends upward in contact with a side of the wheel E^2 , and steadies it and the wheel E^3 against lateral motion.

In the front and narrower end of the reciprocating foot E is formed a large rectangular opening, f , and journaled in suitable bearings on either side thereof is a transverse horizontal shaft, f' , having firmly fixed thereon and close to the bearings thereof two worms, $f^2 f^3$, respectively, the one a right-hand and the other a left-hand worm, and between them about centrally on said shaft is a pinion, f^4 , into which the wheel E^2 is designed to mesh, while the said worms are to alternately engage in the jaws of the button-hole form-plate, as hereinafter set forth.

From one side of the carrier-plate D , near the rear end thereof, there rises a vertical standard or frame, K , having a groove, h , for holding and guiding a gate, K' , which is provided with a horizontal rod, h' , rigidly fixed in it, and extending through and beyond each face thereof. The outward end of this rod h' is designed to be engaged in the closed slotted end of the feed-lever K^2 , that is pivoted on a horizontal prolongation of the standard K , and has its forward open slotted end engaged over the horizontal finger of an arm, G , whose upper hooked or slotted end is firmly secured to the needle-bar C by a set-screw, g . Thus the reciprocating motion of the needle-bar is transmitted to the feed-lever K^2 , and thence to the lever F by means of a screw-stud, g' , that projects laterally through a slot, g^2 , in the lever K^2 into the fork of the lever F , and has on its outer threaded end a thumb-nut, g^3 . On loosening this nut g^3 the stud g' may be moved to the one hand or the other in the fork of the lever F and the slot g^2 of the lever K^2 , and be again fixed in position by turning down said nut, and by thus adjusting said stud the limit of motion of the lever F and of the pawl F' over the teeth of the ratchet-wheel E^3 is determined, and consequently the extent of the peripheral movement of the said wheels E^2 and E^3 at each upward reciprocation of the needle-bar, and as the distance traveled by the button-hole form-plate between the downward strokes of the needle-bar is governed through the worms and pinion on the shaft f' by the distance moved by the peripheries of the wheels E^2 E^3 at each upward stroke of the needle-bar, it follows that in stitching a button-hole the distance between the stitches may be determined by the adjustment of the stud g' to regulate the throw of the lever F .

The reciprocating lever L , which is constructed and operated like that shown and described in the patents above referred to, is pivoted at one end on the carrier-plate D , and consists of a flattened plate having a central longitudinal slot, (not shown,) and on one end of the said lever is pivoted the vibrating latch L' , provided with opposite lateral arms, i^2 . A

spring (not shown) secured in the under face of the lever L has its free end bearing up against the inferior points of the said latch L' , for the purpose of holding the latter temporarily at whichever angle it may be moved by the downward motion of the rod h' , when the latter is forced down alternately upon the inclined planes of the head of the said latch L' . A screw-stud (not shown) having its head engaged so as to be movable therein in a slot, l , of the reciprocating foot, and having its threaded end projecting up through a slot (not shown) in the carrier-plate and slot (not shown) in the said lever L , and provided with a thumb-nut, l^3 , serves as the adjustable connection between the lever L and the reciprocating foot E , as set forth in the patents above referred to. By loosening this nut l^3 the operator is enabled to move the stud on which it is fixed along the slots of the reciprocating foot, the carrier-plate, and the lever L , and thereby adjust—shorten or lengthen—the throw or reciprocation of the said foot E , and consequently shorten or lengthen the bight of the stitches.

My improved device for the straight barring of the ends of a button-hole consists of a flat plate, M , slotted, as shown at m , m' , and m^2 , and having its front end turned down to form a lip, o , designed to engage in the longitudinal groove of the button-hole form-plate. Said barring-plate is secured so that it can be moved longitudinally to the under side of the reciprocating foot by means of screws entered through the slots m' m^2 into the said reciprocating foot.

A lever, P , secured at one extremity on the rear end of the reciprocating foot, has a stud, p , projecting from its under side through a slot, p' , in said foot and into the slot m of the barring-plate M , so that by moving said lever to the right or left the operator moves, when desired, the said plate M longitudinally, and thereby the button-hole form-plate is moved laterally.

In the upper face of the reciprocating foot three sockets, $p^2 p^3 p^4$, are made, and a spring, P' , attached to the handle of the lever P , has on its free end a stud, p^5 , that projects downward through said lever, so that it may be engaged in one or the other of the said sockets at the will of the operator.

The cloth-clamp Q is constructed of two flat plates or leaves, hinged together, as shown at q , and in the free end of each leaf is an opening, q' q^2 , respectively, through which the sewing-machine needle is designed to move in stitching a button-hole, and about the edges of these openings, on the inner faces of the leaves when closed, are projecting pins or teeth q^3 , for holding the cloth about the button-hole which is to be stitched.

The button-hole form-plate consists of two straight parallel bars, $s s'$, respectively, which are brazed or otherwise secured on the upper face of one of the leaves of the cloth-clamp, as shown in Figs. 5 and 6, and, further, of two

toothed jaws, $s^2 s^3$, each designed to be of the length of the button-hole, for the worms $f^2 f^3$ to engage in. Said jaws are made of angle iron or steel, and, being placed beneath the bars $s s'$, are secured thereto—one on each bar facing a blank space on the opposite bar—by pins or screws, so that said jaws are removable and adjustable, so that other jaws may be substituted for them as they become worn out, or when it is desired to stitch a longer button-hole. These jaws are set in such a manner that their teeth are presented inward from the opposing faces of the bars $s s'$, and flush with the upper faces thereof. The bar s has a groove, s^4 , extending along its upper face, for the engagement therein of the lip o of the barring-plate M , as hereinbefore set forth, and the bar s' is designed to be placed close to one edge of the opening q' in the upper leaf of the cloth-clamp, and fixed on the said clamp, along the opposite edge of the said opening, is a bar, q^4 , for stiffening the cloth-clamp thereabout, and for holding the pins projecting from about one side of said opening.

In using this device the cloth to be operated upon is placed between the leaves of the cloth-clamp, which is then closed, with the effect of firmly gripping the material, so that it will not be distorted or stretched at the parts about the button-hole during the operation of cutting or stitching the same. Then the button-hole is cut by a suitable cutter, and the cloth-clamp and attached button-hole form-plate are set in place with the lip o of the barring-plate M engaged in the groove s^4 of the bar s —the stud p^5 of the lever P being first entered in the central socket, p^3 —so that the consequent position of the barring-plate permits the ready introduction of the said cloth-clamp and form-plate in place without contact of the jaws of the latter with either of the worms $f^2 f^3$. Then the operator by means of the presser-foot lever releases the presser-foot bar of the sewing-machine to which the device is attached, and the complete attachment is thereby brought and held down in position on the sewing-machine table. Then the lever P is moved so that the stud p^5 is sprung into the rear socket, p^2 , whereby the barring-plate and form-plate are moved so as to bring the worm f^2 in gear with the left-hand end of the row of teeth on the bar s' . The sewing-machine is then put in motion, and the reciprocating foot and its attachments are reciprocated by means of the lever K^2 and connections, so that the form-plate and cloth-clamp, together with the material to be operated upon, are reciprocated back and forth under the threaded needle, whereby the stitches are made. As soon as the worm f^2 has moved the form-plate in one direction the length of the jaw in which it is engaged, the operator slowly moves the lever P toward the forward socket, p^4 , thereby disengaging said worm from said jaw, arresting the longitudinal movement of the cloth-clamp and form-plate, and causing them to move laterally,

and during this lateral movement of the clamps and form-plate the threaded needle, still operating, forms a cross-bar of the button-hole. Then the stud p^5 is sprung into the socket p^4 , with the effect of engaging the worm f^3 with the right-hand end of the row of teeth on the bar s , and consequently the motion of the clamp and form-plate is changed in the opposite direction longitudinally to that which was first given to them, and under the continuing operation of the sewing-machine the unstitched edge of the button-hole is now stitched. As soon as this second edge of the button hole is stitched, the operator moves the lever P toward the socket p^2 , thereby moving the barring-plate, form-plate, and clamp, so that the other button-hole cross-bar is made.

The machine is stopped in the usual way, and the clamp and form-plate, with the article operated upon, are removed.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a button-hole attachment for a sewing-machine of the character herein specified, the combination, with the mechanism for transmitting the motion of the needle-bar to the button-hole form-plate, and with the form-plate, of right and left worms fixed on a revolving shaft, and means for shifting the form-plate to bring the worms successively into engagement with the toothed jaws thereon, whereby said plate may be moved longitudinally back and forth without reversing the shaft of the worm-wheels, as specified.

2. In a button-hole attachment for a sewing-machine, substantially as herein shown and described, the movable barring-plate M , provided with lip o , combined with the button-hole form-plate, the clamp, and bar s , having recess s^4 , substantially as and for the purposes described.

3. The combination, with the barring-plate M , movably secured on the reciprocating foot, the form-plate, and cloth-clamp, of the lever P , for moving the same, the worms, and gears, all arranged and operated as set forth.

4. The button-hole form-plate, constructed substantially as herein shown and described, consisting of two bars, $s s'$, fixed parallel and apart from each other on the cloth-clamp, each provided with a toothed jaw, $s^2 s^3$, set so as to face a blank space on the opposite bar, combined with the right and left worms $f^2 f^3$ and connections, substantially as shown and described.

5. In a button-hole attachment for a sewing-machine, a button-hole form-plate provided with removable toothed jaws, combined with the gears, the worms $f^2 f^3$, lever P , and connections, substantially as herein shown and described.

6. In a button-hole attachment for a sewing-machine, a button-hole form-plate provided with a longitudinal groove for the engagement therein of a barring device, as M , for moving the said form-plate transversely, for

the purpose of barring the ends of a button-hole, combined with said barring device, as set forth.

5 7. The combination, with the cloth-clamp Q, of the button-hole form-plate $s s'$ and jaws $s^2 s^3$, combined with the worms $f^2 f^3$ and operating-connections, all constructed and arranged substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 29th day of April, 1885.

WILLIAM SCHOTT.

Witnesses:

JACOB J. STORER,
HAMILTON RUDDICK.