

(No Model.)

2 Sheets—Sheet 1.

W. SCHOTT.

BUTTON HOLE ATTACHMENT FOR SEWING MACHINES.

No. 348,640.

Patented Sept. 7, 1886.

FIG. 1.

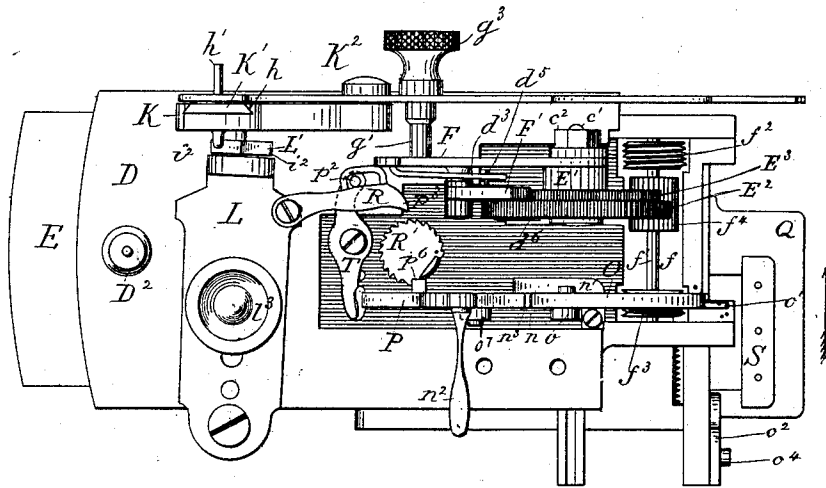
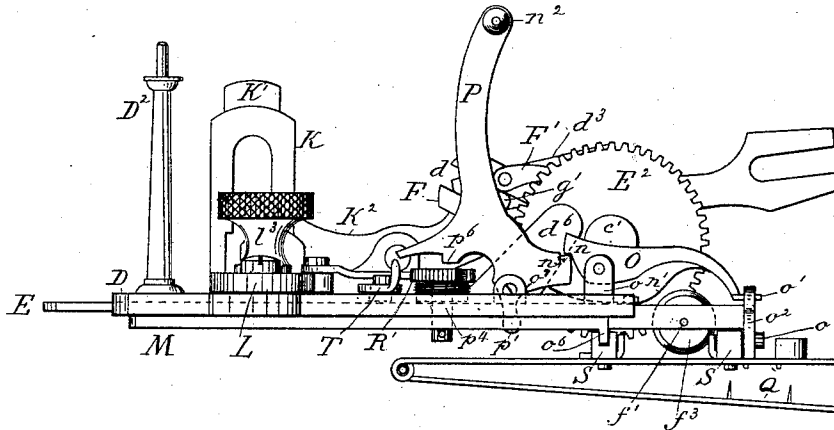


FIG. 2.



WITNESSES

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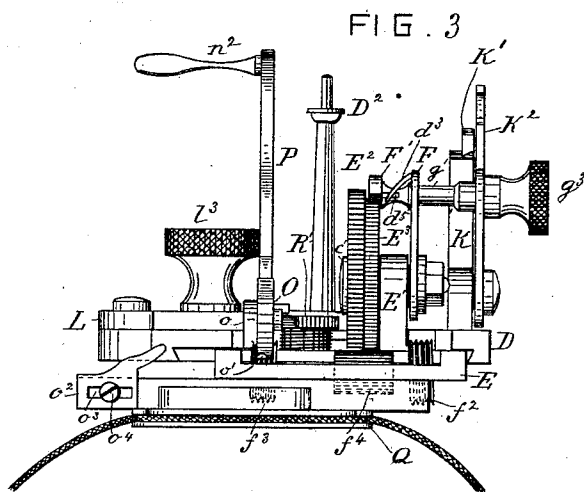


FIG. 4.

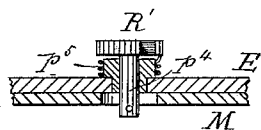
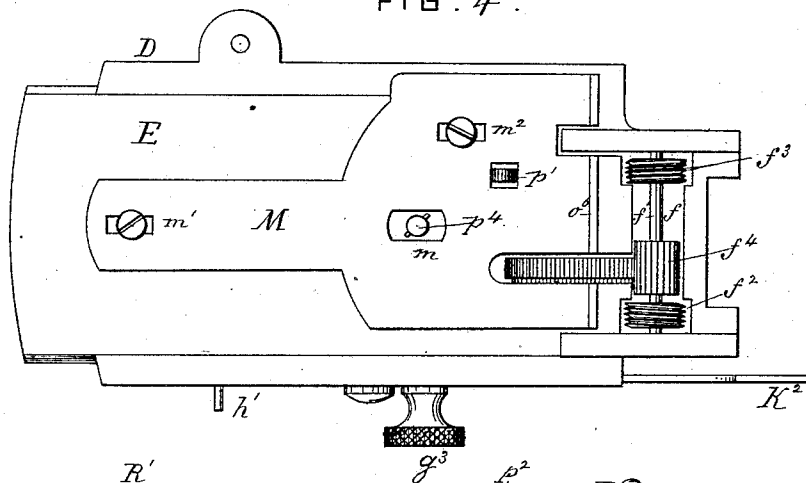


FIG. 5.

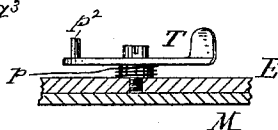


FIG. 6.

WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM SCHOTT, OF NEW YORK, N. Y., ASSIGNOR TO THE SCHOTT
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BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 348,640, dated September 7, 1886.

Application filed October 19, 1885. Serial No. 180,294. (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, and for which applications for Letters Patent of the United States were filed by me June 10, 1884, Serial No. 134,464, and May 21, 1885, Serial No. 166,231.

The object of this invention is to provide devices for automatically adjusting the button-hole form-plate for the barring of a button-hole, and for determining the length of the stitched button-hole.

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 plan view showing my improved device fixed on the button-hole attachment, some parts of the latter being removed to better exhibit my improvement. Fig. 2 is a side elevation of the same. Fig. 3 is a front elevation of the same. Fig. 4 is a plan of the reverse of the same. Fig. 5 is a partly sectional side elevation of a portion of the button-hole attachment, showing the main lever-stop of my improvement in position. Fig. 6 is a partly sectional side elevation of a portion of the button-hole attachment, showing the dog of my improvement in position.

In the drawings, D represents the carrier-plate, and D² the post forming a portion of the devices for securing the button-hole attachment to a sewing-machine. The other members of said devices being shown and described in the patents and applications hereinbefore alluded to, are in this instance removed for the purpose of better exhibiting the improvements hereinafter described.

E represents the reciprocating foot, movable in the carrier-plate grooves, E¹ the standard fixed on the reciprocating-foot and carrying a

horizontal stud, c', on which 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 c', by a nut, c², 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 and nut, is a pawl, F', whose terminal tooth is held in contact with the teeth of the ratchet-wheel E³ by means of a spring, d², that has one end firmly secured to the lever F, while the other end bears upon a stud, d³, which projects laterally from the toothed end of the said pawl F'. A brace-plate, d⁴, secured at one end to the reciprocating foot E, extends upward in contact with the side of the wheel E², and steadies it and the wheel E³ against lateral or reverse 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, f² f³, respectively, the one a right-hand and the other a left-hand worm; and between them, about centrally on said shaft, is a pinion, f⁴, into which the wheel E² 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 K², that is pivoted on a horizontal prolongation of the standard K, and has its forward end slotted to engage over the horizontal finger of an arm (not shown) which is designed to be firmly secured to the needle-bar. Thus the reciprocating motion of the needle-bar is designed to be transmitted to the feed-lever K², and thence to the lever F by means of a screw-stud, g', that projects laterally through a slot in the lever K² 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 of the lever K², 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 E³ is determined, and consequently the extent of the peripheral movement of the said wheels E² and E³ 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 E² E³ 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 oscillating 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 reciprocating 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 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.

The button-hole barring-plate 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^6 , 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.

My improved device for barring the ends of a button-hole is constructed as follows: Rising from a side of the reciprocating foot, near the front thereof, is a standard, o , to which is piv-

oted a trigger, O, whose front end is drawn out into a finger, o' , extending forward to make contact with the tripping device o^2 , which has a slot, o^3 , in it, and is adjustably secured on a side bar of the button-hole form-plate by a screw, o^4 , passing through said slot, as shown in Fig. 3. The rear end of said trigger O is notched or shouldered, as shown at n , to engage with the corresponding notched or shouldered front end of the main operating three-armed lever P, and a spring, n' , secured on the reciprocating foot, has its free front end bearing up against the under side of the said trigger O, and its rear end bearing up against the under side of the main lever P, to make them fully operative. The main operating three-armed lever P, pivoted to a standard, o^7 , as shown in Figs. 1 and 2, has its heel extended down through the reciprocating foot and into the barring-plate M, as shown at p' , so that the movement of said plate M may be controlled by said lever, and has its longest arm extending upward and provided with a handle, n^2 , for convenience of the operator, while its front arm, extending forward in contact with the rear end of the trigger O, is provided with a shoulder or notch, n^3 , for the said trigger to engage with. The rear arm of said main lever P makes contact with the rounded head of a dog, T, which is pivoted on the reciprocating foot and has a spring, p , coiled about its pivot-shank to restore and hold it at suitable periods to its normal position. An ear, p^6 , projects laterally from the rear arm of the said lever P, and when at times it rests on the head of the stop R', hereinafter described, the latter holds the lever P up, as shown in the drawings, and consequently the said lever and the trigger engage with each other. From the tail of the dog T a stud, p^2 , projects upward, and is engaged in a slot of the pawl R, which is pivoted on the oscillating lever L, and has a nose, p^3 , adapted to be engaged at times with the teeth of a segmental ratchet-stop, R', which is pivoted at p^4 in the reciprocating foot and through the barring-plate, and has a spring, p^5 , fixed about its shank or pivot to make it operative.

The cloth-clamp Q and button-hole form-plate S are the same as described and shown in my application for United States Patent filed May 21, 1885, Serial No. 166,231, and hence require no further description herein.

In Figs. 1, 2, and 3 the parts of the button-hole attachment are in position for beginning the stitching of a button-hole. The parts being put in motion, the cloth-clamp Q and attached button-hole form-plate S move in the direction of the arrow, Fig. 1, and the threaded needle (not shown) operates to make stitches along the front side of the button-hole. (Not shown.) The tripping device o^2 is first set to determine the length of the finished button-hole. The farther said device is set inward toward the trigger O, the sooner it will come in contact therewith when the attach-

ment is operating, and stop the longitudinal stitching of the button-hole, making a short button-hole, while the farther out said tripping device is set by its adjustment on the screw o' , the longer will be the time elapsing before the trigger is tripped; hence the longer will the longitudinal stitching of the button-hole continue. The parts being in operation, the said tripping device comes in contact with the finger of the trigger O and presses said finger down, thus automatically disengaging said trigger from the main lever P, which in turn is instantly thrown back by the action of the spring n' , so that extremity of the rear arm of said lever makes contact with the head of the dog T, and thereby swings said dog so that it causes the nose of the pawl R to engage in the teeth of the stop R'; also on the disengagement of the trigger O from the lever P, the resultant swinging of said lever on its pivot forces the lever's heel forward with the effect of moving the barring-plate M and clamp and plate Q S, respectively, forward sufficiently to disengage the front toothed jaw of the latter from the worm which has engaged with it, and at the same time the rear arm of said lever P, or the ear p^6 thereof, is brought to rest on the head of the stop R'. At this moment, then, the movement of the form-plate S ceases and the continuing operation of the threaded needle forms a bar on one end of the button-hole. While the button-hole is being barred at one end, as above set forth, the oscillating lever L continues in motion, which motion is imparted through the pawl R to the stop R', with the effect of turning the latter so that its straight edge shall come just beneath the rear arm of the lever P or of the ear p^6 thereof; then under the influence of the spring n' the lever P is thrown farther rearward, (to the limit of its movement,) the stop R' being removed from beneath it, with the effect of forcing the barring-plate M farther forward, so that the form-plate S is moved to engage its rear toothed jaw with the other worm, whereby the said form-plate and cloth-clamp are moved along under the needle until the opposite side of the button-hole is stitched. When the lever P is thrown rearward to its extreme limit by the action of the spring n' , which is made possible by the almost simultaneous removal of the stop R' from beneath said lever, the contact between the lever P and the dog T and lever P and the upper surface of the stop R' is broken, and the spring p then operates to swing the nose of the dog T forward and its tail rearward with the effect of liberating its pawl R from engagement with the teeth of stop R'—that is, with the effect of restoring the dog T and pawl R to their normal positions, as shown in Figs. 1 and 2, while the stop R' is held immovable by the contact of its straight edge against the side of the lever P. Then when the opposite side of the button-hole is stitched, as above, the operator, taking hold of the handle of the lever P, brings the latter up to "half-cock" above the

stop R', so that the latter shall be again turned under it by the action of the spring p^5 , and by this half-cocking of the lever P the barring-plate M and clamp and plate Q S, respectively, are moved rearward, so as to disengage the rear toothed jaw of the latter from the worm which has engaged with it. At this moment the movement of the form-plate S ceases, and the bar is formed on the other end of the button-hole by the continued reciprocation of the threaded needle. As soon as this second bar is made, the operator stops the sewing-machine, moves the handle of the lever P forward to the limit of its movement, and sets the said lever at "full-cock." Then the said lever, being engaged and held by the trigger O in the original position shown in the drawings, the spring p operates to restore the dog T and pawl R to their normal positions, and all parts are again ready for working another button-hole.

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

1. In a button-hole attachment to a sewing-machine, 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 the spring-actuated trigger O, spring-actuated three-armed lever P, spring-actuated dog T, pawl R, spring-actuated stop R', and tripping device o^2 , all arranged and operated substantially as herein shown and described.

2. In a button-hole attachment to a sewing-machine, the combination, with the lever P, the form-plate, and mechanisms for operating the same, of a spring-actuated trigger having extension o' , and a tripping device, o^2 , adjustably fixed on the form-plate, substantially as and for the purposes herein set forth.

3. In a button-hole attachment to a sewing-machine provided with a reciprocating foot and barring-plate adjustable thereon, substantially as herein shown and described, the combination therewith of a lever, P, pivoted to the said foot, and having its heel extended down through and engaging the barring-plate, as shown, whereby the said plate can be moved by said lever.

4. In a button-hole attachment to a sewing-machine of the character substantially as herein described, the combination, with the lever P and tripping device, of a spring-actuated trigger, O, arranged in relation to said tripping device o^2 and lever P, as described, and means whereby said trigger is moved by the former to release the latter, as set forth.

5. In a button-hole attachment to a sewing-machine of the character substantially as herein specified, the combination, with the form-plate and lever P, of a spring-actuated stop, R', adapted and arranged to check the rearward movement of said lever, as and for the purposes set forth.

6. In a button-hole attachment to a sewing-machine of the character substantially as herein set forth, the combination, with the form-

plate, stop R', and lever P, of the pawl R, pivoted on the oscillating lever L, and adapted and arranged to move said stop to permit the full rearward movement of said lever, as set
5 forth.

7. In a button-hole attachment to a sewing-machine of the character substantially as herein specified, the combination, with the form-plate, oscillating lever L, the lever P, stop R',
10 and pawl R, of a spring-actuated dog, T, arranged and adapted to hold said pawl at times

from contact with said stop, and to permit the engagement of said pawl with said stop at times, as and for the purposes set forth.

In testimony that I claim the foregoing as my
15 invention I have signed my name, in presence of two witnesses, this 24th day of September, 1885.

WILLIAM SCHOTT.

Witnesses:

JACOB J. STOVER,
WM. E. STILLINGS.