

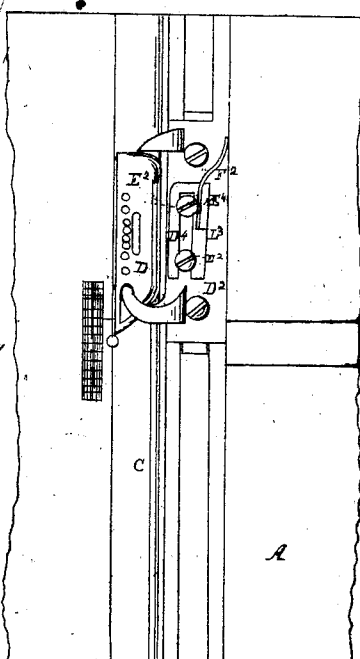
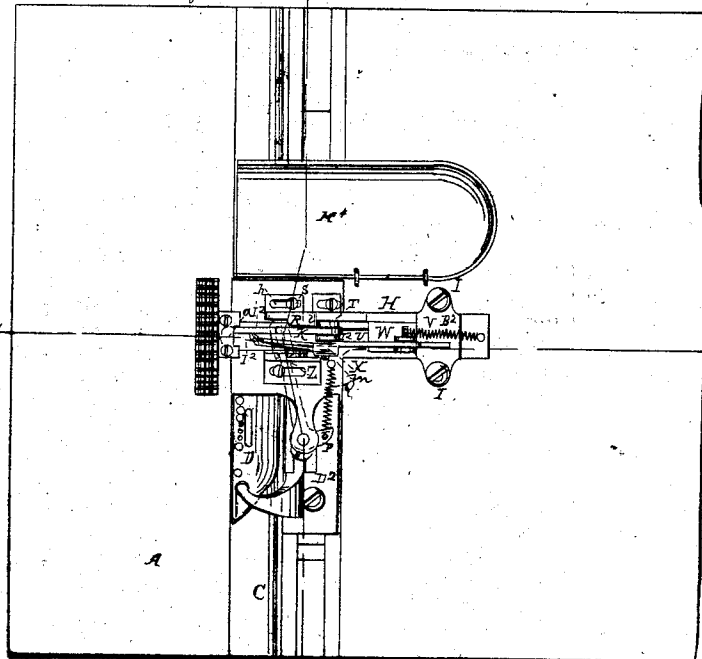
Howard & Jackson, Sewing Machine.

No. 69671

Patented Oct. 8, 1867.

Fig. 1.

Fig. 2.



No. 2.

Fig. 5.

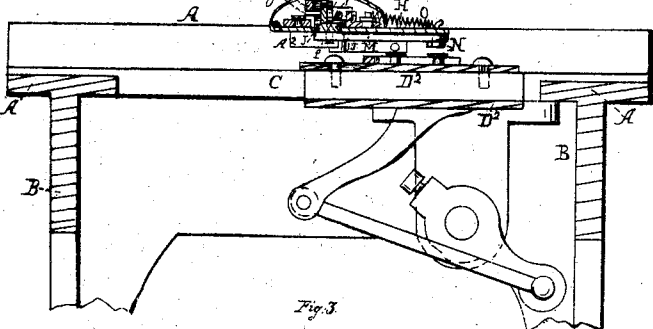
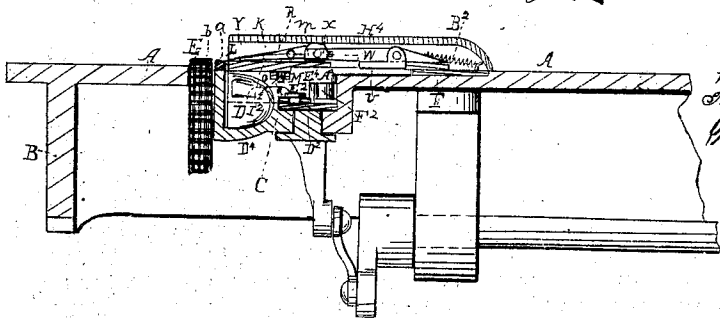


Fig. 3.

Fig. 6.



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UNITED STATES PATENT OFFICE.

EDMUND HOWARD, OF FLUSHING, AND WILLIAM H. JACKSON, OF NEW YORK, N. Y.

IMPROVEMENT IN SEWING-MACHINES FOR WORKING BUTTON-HOLES.

Specification forming part of Letters Patent No. 69,671, dated October 8, 1867.

To all whom it may concern:

Be it known that we, EDMUND HOWARD, of Flushing, in the county of Queens and State of New York, and WILLIAM H. JACKSON, of the city, county, and State of New York, have invented a new and Improved Attachment to Sewing-Machines; and that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein we have set forth the nature and principles of our said improvements, by which our invention may be distinguished from all others of a similar class, together with such parts as we claim and desire to have secured to us by Letters Patent.

The present invention relates to an attachment for sewing-machines, and for that class of such machines more particularly known as the "shuttle-machines," or those in which two threads are employed to form the stitch, the object and purpose of the attachment being to produce a "button-hole stitch," so called, along and over the edge of the goods or materials as it is being sewed therein.

The invention consists of an attachment having its several parts so constructed and arranged as to operate, in connection with the forward and backward movement of the shuttle in the machine, and of the needle through the cloth or material, to take up the slack of the thread at the heel of the shuttle, just previous or at the time the ordinary shuttle-stitch has been completed, and to carry it forward upon the under side of the cloth to its edge, and thence up and around such edge to and over the upper side of the cloth, in time for the next downward movement of the needle to pass through the loop of the shuttle-thread which is thus formed, and there secure such loop, completing the button-hole stitch in the goods, while the downward movement of the needle continuing, in connection with the forward movement of the shuttle, (which, as the button-hole stitch was being formed, as above described, has moved back to its original position,) the next shuttle-stitch is formed, and in combination therewith, as before, the slack of the shuttle-thread at the heel of the shuttle again taken and made to form a button-hole stitch, by

drawing it to the edge, and up and around it to the upper side of the cloth, as before, and so on as long as the machine is properly operated.

In the accompanying plate of drawings our improved attachment is illustrated, Figure 1 being a plan or top view of the attachment secured to and in its place upon the machine; Fig. 2, a vertical section taken in the plane of the line *x x*, Fig. 1; Fig. 3, a transverse section taken in the plane of the line *y y*, Fig. 1; Fig. 4, a plan or top view of the bed-plate to the machine, with our attachment detached and the shuttle-way open; Fig. 5, an edge or side view of the attachment, and Fig. 6 a view showing stitch greatly enlarged and spread.

A in the drawings represents the bed or platform of the machine, which platform is supported upon legs B at each corner, and on it are to be arranged, in the ordinary manner, the devices and parts common to any of the shuttle-machines, or those in which two threads are employed to form the stitch; C, the way in bed or platform A for the play of the shuttle; D, the shuttle, and D² its carrier; E, the feed-wheel, and F the groove in bed-plate H, where the ordinary throat-plate to the machine is inserted. In the groove for the throat-plate to the machine, after such plate has been removed, the plate H, carrying the attachment embraced by this invention, is inserted and secured by set-screws I, or in any other proper manner which will allow of its ready attachment, and of its removal when so desired, this plate H extending across and over the shuttle-way C of the machine.

To and on the plate H are arranged the parts or mechanical devices to be now described, which, in connection with the forming of the shuttle-stitch by the needle and shuttle, as in ordinary sewing-machines of that class, operate to form the button-hole stitch desired, the plate H being suitably constructed to receive such parts, and with a throat or opening, *a*, for the needle to pass down through it to the shuttle-way below. I², a narrow slide arranged in a slot, J, of the plate H, which slot extends from the throat *a* of such plate in a direction back of the same, and in a line at right angles to the movement of the shuttle in

the machine. This slide extends under the throat to the plate H, and through such extension a throat or opening, *b*, is made, corresponding in position to the plate-throat, and forming a continuation thereof when under the same. K, a lever or arm, hung by one end on a fulcrum-pin, *c*, at the rear or farther end of the slide, and to its upper side, from which it extends toward the plate-throat *a*, and, when not in operation or at rest, lies in a groove made in the upper face of such plate, extending by its extreme end L, which is made of a hook shape, under the throat to the attachment-plate, between it and the throat in the slide I²; M, a right-angular-shaped lever, hung at its angle, N, to a fulcrum-pin upon the under side of the attachment-plate H. The longer arm O of this lever M is hung, by its slot *d*, upon a pin or stud, *f*, of the slide I, while to the outer end of its shorter arm P is connected one end of a spring, Q, that at its other is fixed to the upper side of the plate or attachment-holder H. *g*, a pin secured in one side of hook-lever K, at or near its tail or fulcrum end, which pin, as the slide to which such lever is attached is moved backward, plays under the horizontal arm R, secured by its slot *h* and a set-screw, S, to the top of the holder-plate, and against the under side of such arm, until, at its issue from the open end *l* of the same, it passes up and upon the raised lip or edge T, secured by a slot and set-screw, as has been described for the arm R, to the plate H, both the arm R and lip T extending in a direction parallel to that in which the slide moves, and forming a continuation, as it were, of each other.

In continuation of slot J for slide I², another slide, U, is arranged to move between the rear or tail end of said slide I² and cross bar or piece V to plate or holder H. To the upper side of this slide U a lever or arm, W, is hung, which arm extends forward toward the throat *a* of the holder, and has secured in its socket X, by set-screw *m*, a needle or piece of steel, Y, split from its outer end in the direction and for a portion of its length. Z, a raised rib or bridge, secured, by slot and set-screw on plate H, in position for the lever, having split needle, as it is carried forward and backward, to move over the same, and thus to swing the said lever upon its fulcrum; A², a lug or projection on under side of slide U, carrying split needle, through which lug such slide is operated, as will be hereinafter described; B², a spring, connected with slide U, to throw or draw back the same after operation; D⁴, a slotted plate, secured by set-screws E² to upper side of shuttle-carriage D², which plate has a raised lip, E⁴, provided at one end with a bent spring, F², the said lip and its bent spring, as the shuttle-carriage moves forward and backward in the shuttle-way, producing the operation of the parts composing our improved attachment hereinabove described.

We will now describe the manner of using

the attachment, as well as its operation with a shuttle sewing-machine of the Singer manufacture, so known:

First, remove the throat-plate of the machine; when in its place, secure, by means of screws L², the holder or plate H, carrying the working mechanism, in the relative position shown; then adjust the feed-wheel to a height corresponding with the attachment, and having the machine otherwise adjusted, it is ready for sewing the button-hole desired by properly bringing and subjecting its edge to the action of the sewing mechanism, or, in other words, for the needle to pass through it and form the stitch, which, so far as it relates to the shuttle-stitch, is the same as if the attachment were not in place upon the machine; but with our attachment, in addition to the shuttle-stitch, the thread from the shuttle is made to form what is known as a "button-hole stitch," or, in other words, carried around the edge of the button-hole by means of the hook and split levers acting the one after the other, the hook-lever first taking the slack thread at the heel of the shuttle, at or near the completion of its forward movement, and carrying it up therefrom into the split needle or lever, where, leaving it as the shuttle moves backward, it is carried by such needle around the edge of the cloth to its upper side, in position thereon for the needle, as it again descends, to pass into the loop of the thread thus formed, and there secure and hold it, while the split needle withdraws and comes to its proper position to again receive the shuttle-thread, for again carrying it around and over the edge of the button-hole, as before, and so on as long as the machine may be run or kept in motion.

The hook-lever thread-carrier is operated by the abutment of the end I² of the lip E⁴ to the shuttle-carrier against the short arm of the lever, connected with the said thread-carrier, as the shuttle moves forward, which causes the said hook to be drawn away from the throat of the attachment, while, at the same time, by its pin *g* moving over the raised edge T of the holder-plate H, it is made to rise or lift sufficiently to bring the thread carried by it into the split needle or lever, when, the shuttle-lip having passed by the said arm to the lever, the hook-lever is then thrown back to its original position under the throat to the plate H by the action of its spring Q.

The split needle, upon the backward movement of the shuttle-carrier, is actuated by the spring of the lip formed upon such carrier, as in the backward movement of such carrier it presses against the side of the lug attached to the under side of the slide carrying such split needle, and causes such slide to be moved forward, and consequently its split needle, and when the said lip has passed by the lug of the split-needle slide the spring B², connected with such slide, throws or draws it back to its original position for the next movement of the hook-shaped thread-carrier.

In the sewing of the button-holes, in order

to hold the button-hole open while being sewed, a raised cover, H⁴, is hung to the attachment, in such manner that when closed over it, it will form a rest for the opposite edge of the button-hole to that on which the needle is operating, above the plane of such edge, and thereby hold the same open or away therefrom sufficiently to prevent any interference with the needle movement.

In Fig. 6 the stitch made by our improved attachment is shown on an enlarged and somewhat open form, one representation of the thread being that from the shuttle, and the other that from the needle.

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

1. The combination of the hook-lever or needle K and split lever or needle Y, or their respective equivalents, both acting, the one after the other, to carry the thread from the

shuttle or other under-thread carrier of a sewing-machine to the upper side of the cloth being sewed, and around its edge, when such levers are arranged to operate together, and with reference to the ordinary sewing mechanism of the machine, substantially as described, and for the purpose specified.

2. Operating the hook and split levers K and Y, or their respective equivalents, with reference to the ordinary sewing mechanism of a machine, by and through the forward and backward movement of the shuttle or other under-thread carrier of the machine, substantially as and for the purpose described.

The above specification of our invention signed by us this 21st day of February, 1867.

EDMUND HOWARD.

W. H. JACKSON.

Witnesses:

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ALBERT W. BROWN.