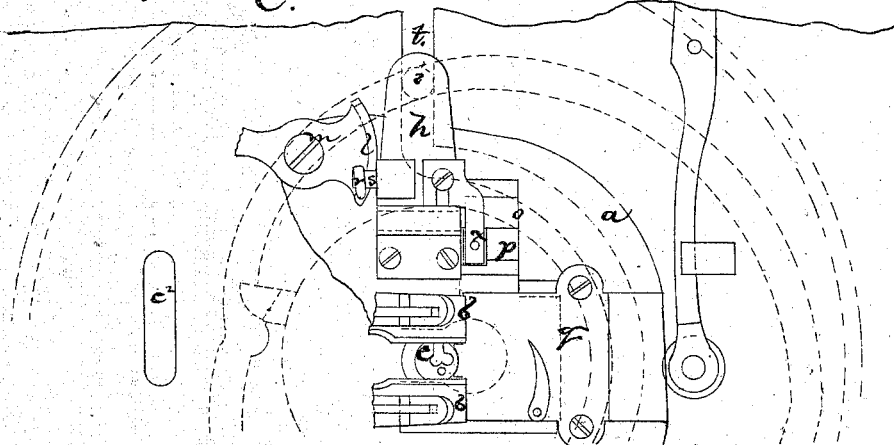
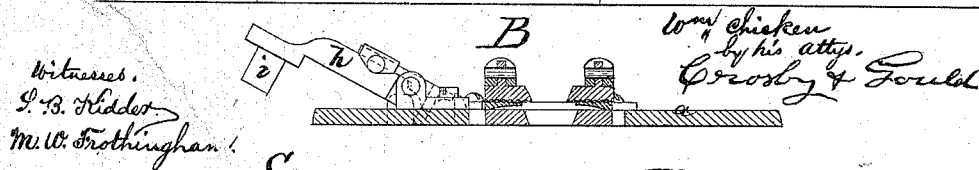


No. 115,163.

Patented May 23, 1871.



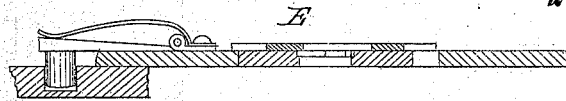
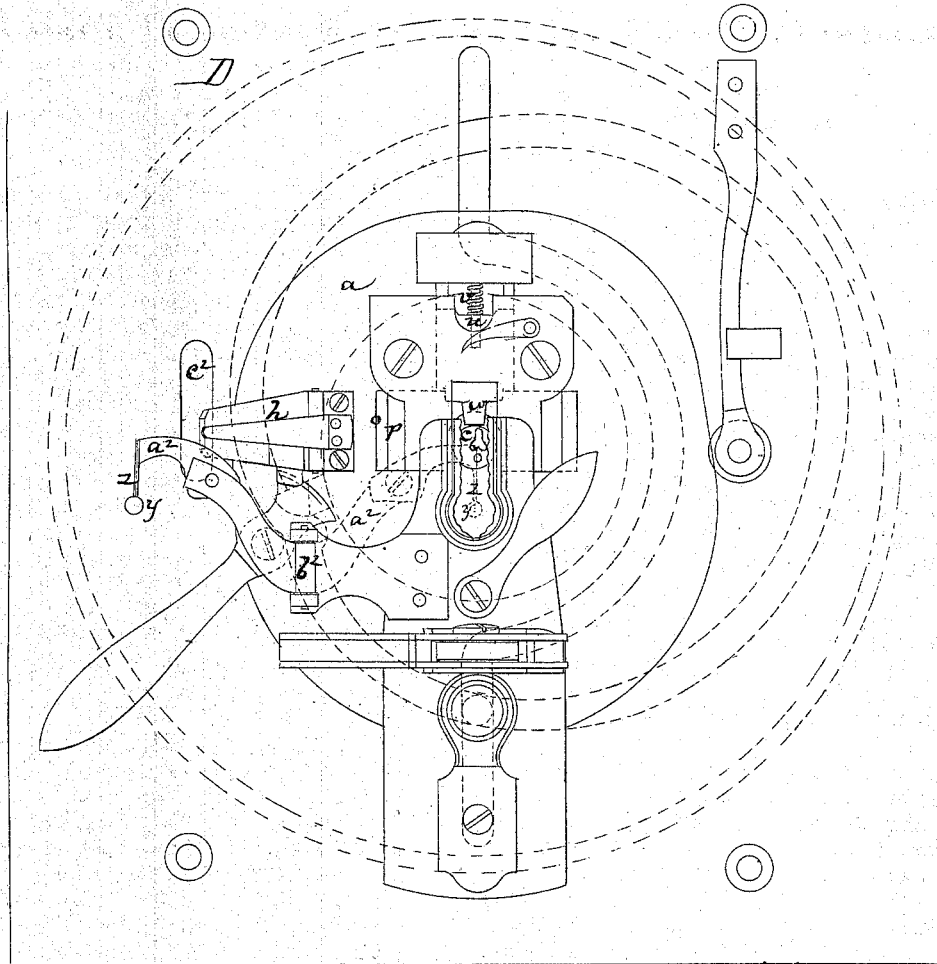
WILLIAM CHICKEN.

2 Sheets--Sheet 2.

Improvement in Sewing Machines for Working Button-Holes.

No. 115,163.

Patented May 23, 1871.



Wm. Chicken
by his attys.
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UNITED STATES PATENT OFFICE.

WILLIAM CHICKEN, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO AMOS L. WOOD, TRUSTEE, OF SAME PLACE.

IMPROVEMENT IN SEWING-MACHINES FOR WORKING BUTTON-HOLES.

Specification forming part of Letters Patent No. 115,163, dated May 23, 1871.

To all whom it may concern:

Be it known that I, WILLIAM CHICKEN, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Working Button-Holes; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

In working or stitching button-holes by machine the angle of the button-hole slit, (opposite the eye,) so far as I know, has always been left unfinished by the machine, and has had to be subsequently worked by hand, requiring (with the Union button-hole machine) the hand-work of two button-hole makers to finish off the work of one machine per day.

The principal object of my present invention is to save this extra labor by so constructing the machine that not only are the sides and eye of the button-hole worked, but so is also the point, so that no after work is necessary to complete the stitching around the hole; and my invention consists, primarily, in a machine or a work-supporting plate and clamp mechanism having such an organization that the button-hole is worked along the sides and around the eye, and also across the point or angle, so that the hole is completely worked or finished on the machine, needing no hand-stitching to work or strengthen it at the point.

By reference to United States Letters Patent Nos. 49,627, 50,253, and 72,994, it will be seen that the cloth-clamp therein described has a continuous movement, which is made up of three movements, namely, a forward straight movement to feed the work from the point to the eye of the button-hole, a rotative movement to feed the work to form the stitches around the eye of the button-hole, and then a reverse straight movement to feed the work from the eye to the point on the opposite side of the hole.

My invention is shown in the accompanying drawing in connection with the clamp or work-supporting plate of one of these machines, and in practicing the invention in connection therewith I impart to the clamp or work-supporting plate a lateral or right angular movement relatively to its last movement, or when the

movement for stitching the second side of the button-hole is completed this lateral movement (in conjunction with the movements of the stitch-forming mechanism) causing a row of stitches to be inserted across the point or angle, or so as to flank the button-hole slit, and in continuation of the stitching along one side, around the eye, and down the opposite side.

The drawing shows the work-supporting plate and clamp mechanism with my invention connected or embodied therewith. A shows the mechanism in plan. B is a section on the line *x x*. C is a plan, showing the auxiliary pin in the cam-slot.

a denotes the plate upon which the work is clamped and supported, and which, with the work upon it, is fed to the action of the stitch-forming mechanism. *b* is the clamp or jaw that holds the work to the plate, the work-plate and jaw being each made with a straight-sided and round-ended slot, the round boss or button *c* upon the top of the machine through which the needle works extending through the slot in the work-plate, and being the guide upon which the plate moves. The edges of the work at the button-hole slit project over the slot in the work-plate, the slot being of such size as to permit free play and lateral movement of the needle during the stitching operation.

In the ordinary work-supporting plate there is simply the long slot, and over the plate the clamping-jaw, forced down by an eccentric lever and raised by a suitable spring, this plate having a pin projecting from its under side into the cam-groove, by which, through the action of the cam-groove upon the pin, the movements of the work-plate are effected, the pin being a stud projecting from and fixed to the plate, this being all the mechanism of the plate.

In my improvement the plate and clamp-jaw are the same, or substantially the same, as in the old machine, and the plate is moved in precisely the same manner in stitching the sides and eye of the button-hole; but the cam-operated pin (seen at *d*) is made movable, and its shank extends through a vertical sleeve and has a head, *f*, by which it may be raised, and a spring, by the stress of which it is forced down. At one side of the plate is a hinged

arm, *h*, projecting from the underside of which, at the end, is a pin, *i*. This arm is forced down by a spring or by a lever, *k*, and is raised by an incline, *l*, on the lever, said lever turning on a fulcrum-screw, *m*, and being actuated by a handle, *n*; and, when the sides and eye of the button-hole are being stitched, the pin *d* projects from the plate into the cam-groove, and the pin *i* is above the plane of the plate, where it is held by the lever-incline. Under the open end of the clamp-jaw a rectangular slot or opening, *o*, is cut through the plate, in which slot or opening is a lateral guide, *p*, which may be covered or kept down in the plate and slot by a cap-plate, *q*.

When the button-hole stitching is to begin the pin *d* is in the cam-slot, and the pin *i* raised by the lever-incline, as seen at A. The plate being then fed to stitch the hole the pin is carried around one hundred and eighty degrees in moving forward for one side, turning for the eye, and moving back for the other side. The pin *d* is now drawn up and the plate is swung around, turning on the boss or button *c* a quarter of a circle, carrying the pin *i* around to the point where the pin *d* was. The lever-handle *n* is now swung in, and a spring (or a hook, *r*, acting on a stud, *s*, projecting from the arm *h*) throws down the pin *i*, which enters the cam-groove *t*, as seen at C, the work-plate being drawn over on the table slightly in a direction toward the pin *i*, the plate sliding in the guide-plate, the end of the slot in which encircles the boss *c*, thereby carrying the side of the slit just stitched to one side of the path of the needle. As the machine now continues to operate the stitching will be effected in a line at right angles to the slit, (at the point,) and will make a bar across the point, the work-plate moving on the guide-plate, and until it is stopped by a projecting finger on an arm, *x*, striking a projection on the slide, or by any other suitable stops. To make the bar across the point it is, of course, essential that the plate be so swung around when the point is reached that the feed shall be in a direction at right angles to the slit, and to be so moved laterally as to begin the bar at a point a little distance on one side of the slit, so as to stitch from said point across the end of the slit to a point equidistant on the other side of the slit.

The clamp or work-plate is turned by hand in swinging it around to bring the pin *i* into the cam-slot from which the pin *d* is thrown, and the lateral motion of the plate to bring it into position to start the bar may be effected by hand or mechanism, the guide-plate *p* forming the stationary guide upon which the work-plate moves in bringing it into position to start the bar and in stitching the bar, the boss *c* being at all times stationary, and the guide-plate *p* being held by it during the barring, and the needle and stitches forming such having no change of movement or operation in consequence of the movement of the work-plate in forming the bar.

It will be obvious, therefore, that the bar is made as a direct continuation of the stitching, the movement of the needle and the formation of the loops or stitches being simply interrupted while the plate is being swung into position (after the sides and eye of the button-hole are stitched) to commence the bar and give the plate the proper feed movements to properly locate the bar. While the sides and eye of the button-hole are being worked the guide-plate *p* and work-plate are locked relatively to each other by any suitable mechanism. At A this is effected by the lever-incline, which, in forcing and holding up the pin *i*, pushes the arm *x* down into a groove or slot in the guide-plate, and locks the guide-plate and work-plate together.

At F, D, and E, I show a modification of the bar-forming mechanism, the work-plate being kept in position relatively to the guide-plate, while the work-plate is being fed for working the sides and eye of the button-hole by a locking slide or bolt, *u*, which projects into the guide-plate, as seen at D, held there by a spring, *v*. As the end of the slit approaches the boss *c* the boss strikes a tongue, *w*, projecting from the bolt-slide, and the bolt is thereby thrown back against its spring (or the guide moves upon it) until the guide is released from the bolt, enabling the work-plate to be then moved laterally on the guide-plate to bring the work into position to commence the bar.

In the view D there is also shown another device forming part of this invention, and having reference to the quick location of the work upon the work-plate, and with reference to the clamp-jaw and the center of the slit, at the sides of which the needle works. This device consists of a locating-pin, *y*, and straight-edge *z*, fixed on the end of an arm, *a*², which is hinged at *b*². When the arm is thrown over to bring the pin and straight-edge down toward the work-plate the pin comes into the exact position to be occupied by the eye of the button-hole slit, and the straight-edge into the central position to be occupied by the slit; and when the work is placed under the clamp-jaw it will readily be seen that the eye can instantly be located by the end of the pin *y*, and the slit centered by the straight-edge *z*, the clamp-jaw being then thrown down upon the work and fastening it in position, and the locating-gage being then swung over out of the way, as seen by the full lines at D, the dotted lines showing it in position for locating the slit and eye. This device not only enables the slit to be very quickly and accurately located, but insures the proper relation of the stitches to the edges of the eye and of the slit.

In barring the button-hole, if the bar is at the extreme point of the slit, or any beyond said point, the cloth will be more or less liable to tear in the space between the slit and the bar; and to obviate this I make the bar at a slight distance up the slit from the point, so as to cross and cover the last side stitches of

the slit; to effect which I move the work-plate over, after it has been turned around on the button, into or almost to position to commence the barring. For this purpose I make in the plate a straight slot, e^2 , and, when in swinging the work-plate around the main cam-pin comes over the end of this slot I force the pin down into it, and as the pin moves from the end of the slot up toward the center of the slot it, of course, forces over the work-plate, so that the bar begins at such distance up the slit as to stitch directly over the last stitches of the slit, thereby effectually preventing any possibility of tear of the cloth. Before the barring commences the pin is lifted from the straight slot and the bar-pin is let down into the cam-slot.

Claims.

1. In combination with the work-supporting plate a and its cam-operated pin d , the auxiliary cam-operated pin i , for enabling the plate to be fed laterally to form the bar, substantially as described.

2. The guide-plate p , in combination with

and for guiding the work-plate laterally, substantially as described.

3. In combination with work-plate a and guide-plate p , devices, substantially as described, for locking plates a and p together while the sides and eye of the hole are being stitched, and for permitting relative movement thereof during the barring.

4. The combination, with the work-supporting plate a , of the sliding or movable cam-pin d and the movable cam-pin i , each provided with means to be thrown into and out of engagement with the cam-groove, substantially as described.

5. The eye and slit-locator y , in combination with the work-plate, substantially as described.

6. The bed-plate, provided with the pin-slot c^2 and the pin-operating cam-slot t , substantially as described.

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