

G. S. GATCHELL.  
 WORK HOLDER FOR BUTTON SEWING MACHINES.  
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1,036,603.

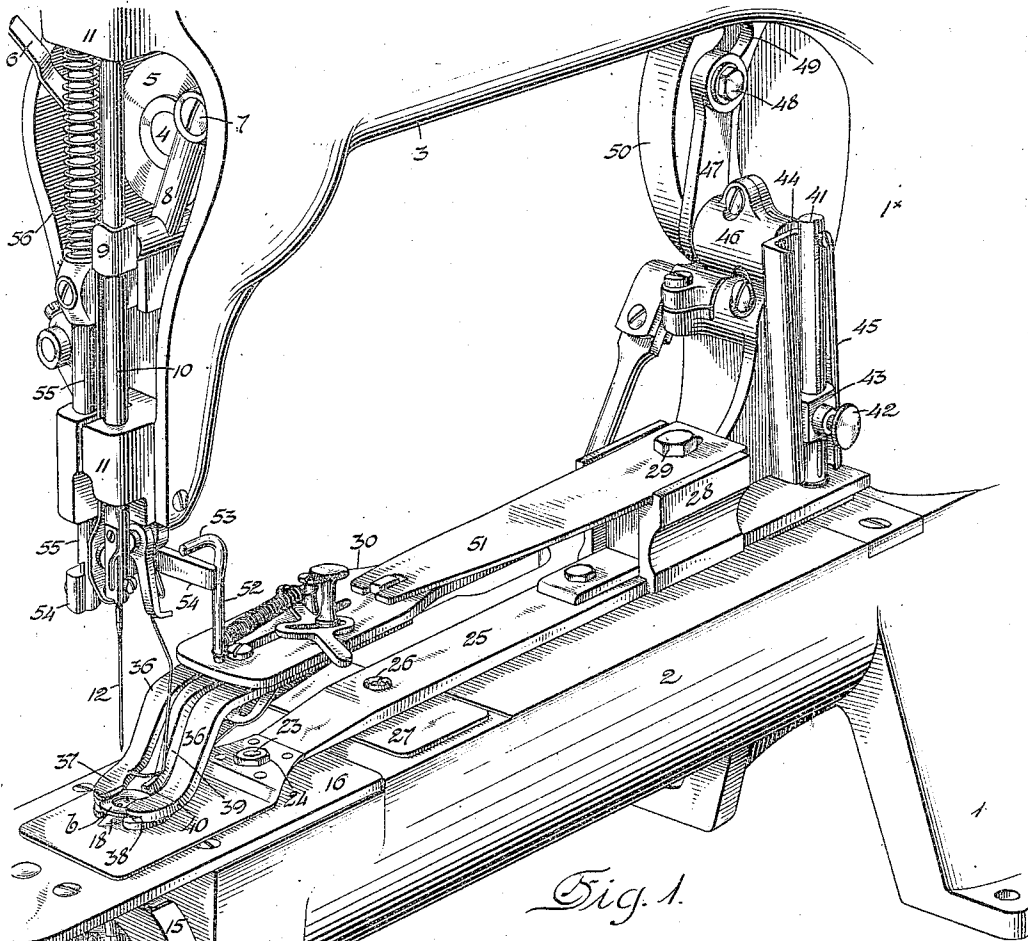


Fig. 1.

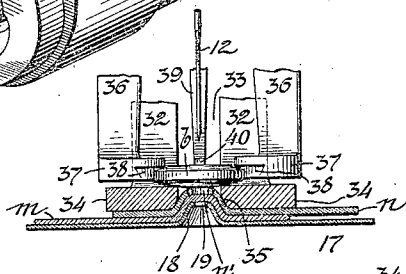


Fig. 2.

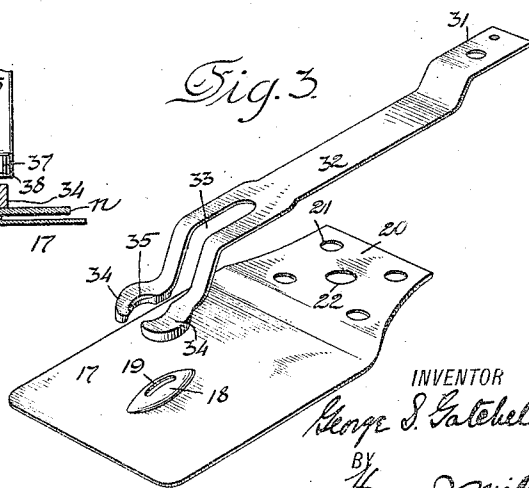


Fig. 3.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## WORK-HOLDER FOR BUTTON-SEWING MACHINES.

1,036,603.

Specification of Letters Patent.

Patented Aug. 27, 1912.

Application filed November 14, 1910. Serial No. 592,173.

*To all whom it may concern:*

Be it known that I, GEORGE S. GATCHELL, a citizen of the United States, residing at Roselle Park, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Work-Holders for Button-Sewing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention has for its object to provide a simple and effective device for opening a stitched buttonhole in the flap of a garment to permit the stitching through the same of a button upon a flap beneath the same; and it consists primarily in a work-holder comprising a button-clamp and a work-support disposed beneath the same and carrying means for opening or spreading the buttonhole.

In its preferred form, the button-clamp is formed with lateral button-gripping jaws and a button-sustaining member formed with an elongated and downwardly flaring recess or aperture in register with the perforations of the button, and the button-support or supporting plate has upon its adjacent face an elongated and upwardly tapering projection conforming in contour with the recess of the button-support and adapted to enter the same, or to crowd into the same the upper buttonholed ply of material to bend it into convex form for spreading the buttonhole. The buttonhole opening or expanding projection is formed with a central needle aperture through which the needle passes in the formation of the button fastening stitches.

The invention will be understood by reference to the accompanying drawings, in which—

Figure 1 is a perspective view of a Singer cylinder-bed button sewing machine constructed in substantial accordance with that represented in the pending application of Charles M. Horton, Serial No. 340,826, filed October 27, 1906. Fig. 2 is a detail sectional view of the work-holder and Fig. 3 a perspective view of the work-supporting plate and the button-sustaining member of the button-clamp in substantially the relative positions which they assume when the work-holder is open.

The machine is constructed with the base 1, horizontal substantially cylindrical work-

supporting arm 2 extending laterally therefrom, and the bracket-arm comprising the standard 1\* and the tubular overhanging portion 3 in which is journaled the main-shaft 4 carrying at its forward end the take-up cam-cylinder 5 having the usual operating connection with the vibratory take-up arm 6, and carrying the crank screw-pin 7 embraced by the upper end of the pitman 8 whose lower end embraces a lateral stud upon the fixed collar 9 of the needle-bar 10 journaled for rectilinear reciprocation in the bearings 11 of the bracket-arm and carrying the needle 12. The oscillating shuttle 13 (a portion only of which is shown in Fig. 1), which is provided with the thread-case 14, moves in the shuttle-race 15 and coöperates with the needle 12 in the production of the button-fastening stitches.

The work-holder in the present instance comprises a work-supporting plate resting upon the cover-plate 15 of the cylinder-bed 2, and a superposed button-clamp. The work-supporting plate 17 is formed in its upper or operative face with an elongated and upwardly tapering projection 18 provided with the central longitudinal needle-aperture 19; and the plate is formed with a shank 20 provided with a series of steady-pin holes 21 and a stud-screw hole 22 for passage of the stud 23 having the nut 24 for securing the same upon the reduced forward end of a bar 25 secured by means of the screw 26 upon the longitudinally sliding plate 27 by which it is guided in its endwise jogging movements.

The slide-bar 25 carries near its rearward end the block 28 in which is loosely mounted the forwardly projecting arm 30 to the under side of which is secured by suitable means the upwardly offset extremity 31 of the button-support shank 32 having the central longitudinal slot 33 in its forward portion and provided with a downwardly offset rounded extremity 34 whose upper face affords a seat upon which the button rests, a central downwardly flaring slot or recess 35 being formed therein for passage of the needle and for assisting the buttonhole expanding projection 18 of the work-supporting plate 17 in spreading a buttonhole. Pivotaly mounted upon the supporting arm 30 are the button-clamping levers 36 conforming in general shape with the button-support shank 32 and overlying the same and

formed at their extremities with opposed clamping jaws 37 having in their adjacent edges the button-receiving notches 38 which embrace the edges of the buttons *b*, as represented in Figs. 1 and 2. The button-clamping levers 36 are provided with any suitable or usual means for imparting their reciprocal opening and closing movements in gripping a button, and have arranged between them an arm 39 whose forward extremity affords a stop 40 for engaging the inner side of the button-edge.

The slide-bar 25, block 28 and arm 30 constitute a sliding frame or carrier for the work-supporting plate and the superposed button-clamp which in the present instance compose the work-holder. The slide-bar 25 has rigidly secured to its rearward end the upwardly projecting rod 41 upon which is adjustably secured by means of the clamp-screw 42 the slide-block 43 fitted within a radial channel-way 44 of a crank-arm 45 fixed upon one end of a rock-shaft mounted within the stationary bearing 46 and carrying an upwardly extending arm 47 provided with a stud 48 which enters a cam-groove 49 in the forward face of the cam-wheel 50, provided with suitable actuating means, whereby the slide-bar 25, and hence the work-holder, receives the requisite jogging movements to enable the needle to enter alternately different holes of the button to receive the fastening stitches.

The button-clamp is normally pressed downward by means of a flat spring 51 secured in position by means of the bolt 29 and having its free end resting upon the arm 30, which latter has upon its forward end a post 52 with a lateral projection 53 beneath which extends a rigid arm 54 carried by the lower end of the rod 55 normally depressed by means of the spring 56.

In the normal operation of the machine, the bar 55 is elevated to engage the arm 54 with the member 53 of the post 52, thereby lifting the button-clamp in which is placed the button *b* to be sewed on. The button-flap *m* is then laid upon the work-supporting plate 17 and the buttonhole flap *n* superposed thereon with its buttonhole *n'* arranged beneath and centrally of the holes in the button through which the stitches are to be formed. The lifting bar 55 is then lowered and the button-clamp permitted to rest upon the superposed layers of fabric which are forced upwardly by the tapering projection 18 of the supporting plate 17 into the flaring aperture 35 of the button-support 34. By this means, both fabrics are clamped firmly between the margin of the aperture 35 in the button-support and the portion of the work-supporting plate 17 around the button-hole expanding projection 18, while the indentation of the intervening fabrics by the projection 18 causes

the stretching of the same, and this action is obviously greater upon the upper buttonhole ply than the lower ply, thereby, not only opening the buttonhole, but spreading the upper edges thereof more than the lower, so as to produce an upward flare in the buttonhole to insure against the catching of the needle point upon the covering stitches.

One of the chief advantages of this device is the provision of means applicable to a well known form of work-holder for flat-button sewing machines, such as that represented in the said patent application of C. M. Horton and in the Patent No. 807,676, of December 19, 1905, which, while effectively performing its function, requires no extra parts, and adds nothing whatever to the mechanism of the machine.

Although the improvement is evidently adapted for application to flat-bed sewing machines, it is specially useful as embodied in the work-holders of cylinder-bed machines, as represented in the accompanying drawings, as the class of work for which it is designed is chiefly previously laundered garments, such as dress-shirts and other hollow articles requiring the entrance of that portion of the machine frame carrying the loop-taking mechanism.

While the embodiment of the present improvement herein shown and described is deemed preferable, it is evident that the device is susceptible of material modification from the present disclosure without departure from the scope of the invention.

Having thus set forth the nature of the invention, what I claim herein is:—

1. A work-holder comprising a button-clamp formed with an aperture beneath the button recess, and a work-supporting plate disposed beneath and sustained in laterally fixed relation with said button-clamp and having upon its adjacent face a projection in register with the aperture of said button-clamp.

2. A work-holder comprising a button-clamp formed with an elongated aperture beneath and centrally of its button recess, and a work-supporting plate disposed beneath said button-clamp and having upon its upper face an elongated projection conforming with the shape of the recess of said button-clamp and adapted to enter the same.

3. A work-holder comprising a button-clamp formed with an elongated and downwardly-flaring aperture beneath and centrally of its button-recess, and a work-supporting plate disposed beneath said button-clamp and having upon its upper face an elongated and upwardly tapering projection conforming in contour with the aperture of said button-clamp.

4. In a button sewing machine, the combination with stitch-forming mechanism, of

a work-holder comprising a work-support and a button-clamp overlying the same, and means carried by and rigidly connected with the work-support for opening the button-hole when the clamp is lowered upon the fabric containing the same.

5. The combination with stitch-forming mechanism, of a work-holder comprising a button-clamp formed with an aperture beneath and centrally of the button-recess, and a work-supporting plate disposed beneath said button-clamp and having upon its adjacent face a projection in register with the aperture of said button-clamp, and means for producing relative jogging movements between said work-holder and the stitch-forming mechanism.

6. A work-holder comprising a carrier, a button-clamp mounted upon said carrier and formed with an aperture beneath and centrally of the button recess, and a work-sup-

porting plate also secured to said carrier and disposed beneath the button-clamp and having upon the face adjacent the latter a projection in register with the aperture of the button-clamp.

7. A work-holder comprising a button-clamp formed with an aperture beneath and centrally of the button recess, and a work-supporting plate disposed beneath said button-clamp and having upon its upper face a projection in register with and the area of whose adjacent extremity does not exceed that of said aperture in the button-clamp.

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

GEORGE S. GATCHELL.

Witnesses:

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W. P. STEWART.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."