(No Model.)

G. S. HILL.

MACHINE FOR FINISHING BUTTON HOLES.

No. 376,245. Patented Jan. 10, 1888.

Fig: 1.

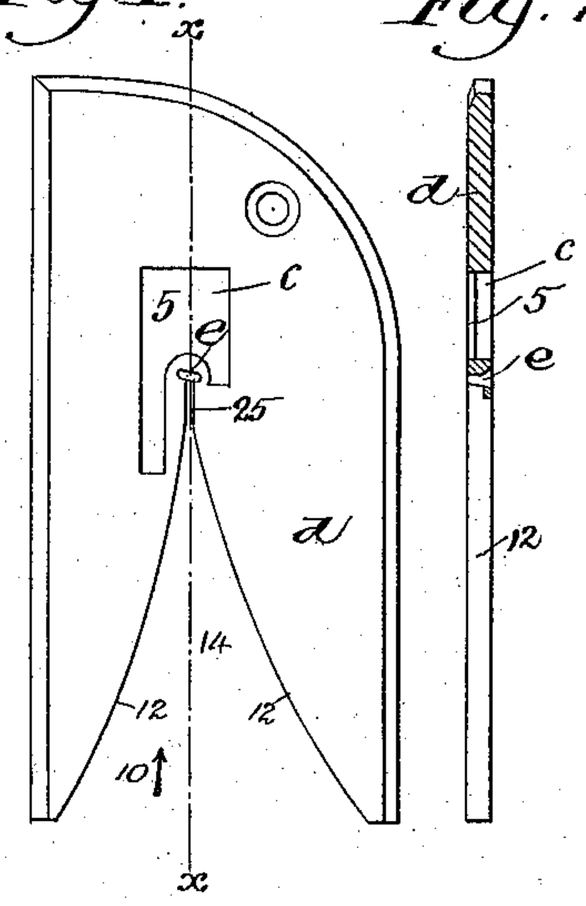
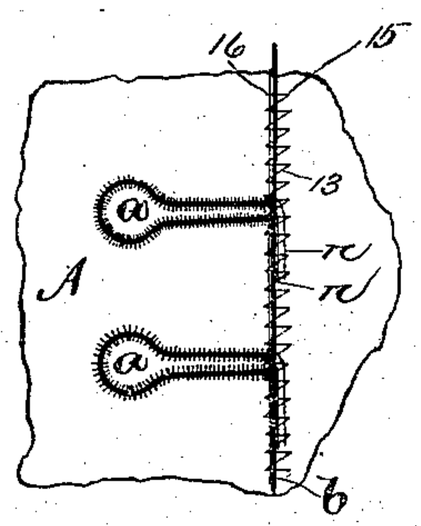


Fig: 2.

Fig: 3.

Fig: 5.



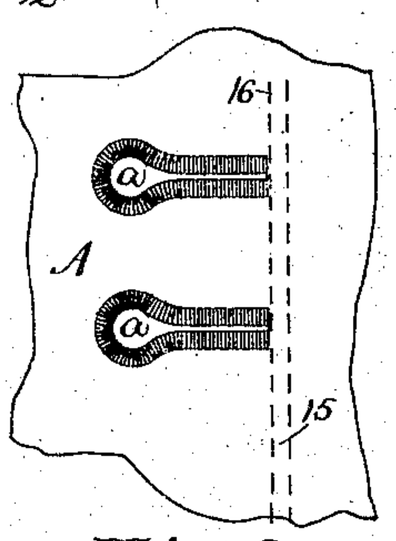
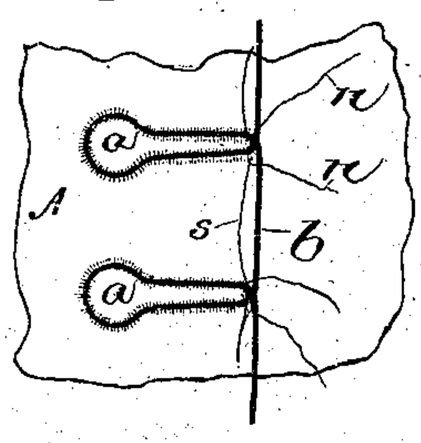


Fig. 6.

Fig: 4.



Witnesses
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MACHINE FOR FINISHING BUTTON-HOLES.

SPECIFICATION forming part of Letters Patent No. 376,245, dated January 10, 1888.

Application filed Febru ry 3, 1887. Serial No. 226,394. (No model.)

To all whom it may concern:

Be it known that I, GEORGE S. HILL, of Lynn, county of Essex, and State of Massachusetts, have invented an Improvement in Sewing-Machines for Stitching Down the Stay-Cord of Button-Holes, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

Overseaming or button-hole stitching machines now commonly employed to stitch button-holes in button-hole pieces of button boots employ an upper thread, a lower or under thread, and a third or bar thread, over which the stitch is made along the edge of the button-hole. In machine-made button-holes of this kind the small end of each button-hole, as its last straight side is stitched, is left with two projecting free ends of thread, both belonging to the needle-thread and being located at the small end of the said hole, one being at the point where the stitching is commenced and the other where the stitching is left off, both the said ends appearing at the under side of the material. The under thread and the bar-thread, by the movement of the material by hand from one to the next hole, are left extended at the under side of the material from the last side of one to the first side of the next button-hole, and frequently the under thread is longer than the bar-thread.

To obviate either the necessity of cutting off or whipping down the projecting ends of the threads referred to, and to cover or inclose the said ends together with the under thread and bar-thread extended from one to the next button-hole, I have provided a throat or cover plate having converging guiding or gathering surfaces, which act to gather into line with the needle of the throat-plate all the projecting ends of thread left at the end of the button-hole and between the small ends of adjacent holes.

The needle-throat is made double to permit the passage through it of two needles carried by one needle-bar, the two needles descending at opposite sides of the bar thread or cord, the two loops of thread taken from the two needles at opposite sides of the bar-thread and gathered ends being entered by a suitable shuttle or looper. (Not shown.)

The invention consists in the mechanism hereinafter particularly set forth and claimed.

Figure 1 in top view shows a throat-plate embodying my invention; Fig. 2, a section of Fig. 1 in the dotted line *x x*. Fig. 3 is an end view of Fig. 1, looking at it in the direction of the arrow 10, the said figure also showing two eye-pointed needles and the needle-bar carrying them. Fig. 4 on a large scale represents the under side of a button-hole piece, showing two button-holes with the threads used in their production. Fig. 5 shows a like view with the addition of the stitching to inclose the free ends and the bar and under thread shown in Fig. 4, three threads being employed to cover the loose ends and the bar and under threads, two of the said threads being carried by two eye-pointed needles, while the third thread comes from a shuttle or bobbin; and Fig. 6 is a view of the opposite side of Fig. 5.

The edge of the button-hole *a* (see Fig. 4) in the button-piece A is supposed to be over-stitched by a needle-thread, *n*, and an under thread, *s*, a bar-thread, *b*, being laid under the over-edge stitching entirely about each button-hole and from one to the next button-hole, as shown in Fig. 4, all as usnal.

In Fig. 4 the button-hole at the under side of the material presents two free ends of needle-thread, as at *n n*, one end projecting from each straight side of the slit at the small end of the hole, as in said Fig. 4, where the ends are shown separated to enable them to be clearly represented, one end being drawn down or through the button-hole slit from above preparatory to whipping the same together by machine-stitching. Sometimes these ends of the needle-thread *n* are cut off, when the end of the button-hole is finished by hand; but preferably, as has been done, these two ends and the bar-thread *b*, and the bight of under thread, *s*, extended from one to the next hole, are whipped over by a thread in a hand-operated needle. To obviate this hand-finishing, and at the same time avoid cutting off projecting ends of thread, and to make the said ends serviceable in the production of a stay for the button-hole piece, I have provided a novel throat or cover plate to gather the projecting ends together, as in Fig. 5. This throat or

cover plate *d* has an opening, *c*, for the usual feed-dog, and a needle passage or throat, as *e*, the latter being made wide enough for the passage of two needles, as *f g*, held side by side in one needle-bar, *h*, actuated in usual manner, each needle having its own thread, the loops of needle-thread passed below the material, and the plate *d* being entered by a shuttle, as in the Singer system of sewing, or by a hook, as in the Wheeler & Wilson system of sewing, and having left in them a third thread carried by a shuttle, or by a bobbin within the said hook, the loops of needle-thread being thus entered by an under thread, as 13, to complete a three-threaded stitch below the material, the thread 13, carried by the shuttle or bobbin, crossing the gathered ends *n* and the bar-thread *b* and under thread, *s*.

To cause the free ends of the thread *n* to form a part of the stay, the under side of the button-hole piece, with its projecting ends *n n*, is laid upon the throat or cover plate *d*, and the material acted upon by the usual feed is moved in the direction of the arrow 10, and during such movement the converging edges 12 12 of the guide act to gather the said ends together, so as to form a bunch of ends in line with the line of stitching, the said ends being gathered together alongside of and to co-operate with the under thread, *s*, and bar-thread *b*, extended from one to the next button-hole, the assembled threads being led between the two side walls of the narrow slot 25 (see Fig. 1) into and across the needle-hole *e*, the two needles *f g* in their descent passing the said assembled threads at opposite sides. (See Fig. 5.)

The needle *f* carries a thread, 15, and the needle *g* a thread, 16, each particularly shown in Fig. 3, the said threads being taken from usual spools. (Not shown.)

A shoe provided with a stay such as herein represented has been made the subject-matter of Letters Patent No. 360,590, granted to me April 5, 1887.

I claim—

The within-described mechanism for use on ordinary sewing-machines for gathering in and confining the needle-thread ends, the under thread, and the bar-thread of machine-made button-holes, the same comprising two needles operated simultaneously in the same direction in conjunction with the usual complemental stitch-forming mechanism and the throat or cover plate *d*, having a longitudinal slot leading to the needle-hole and provided with the sides 12, converging toward such needle hole and meeting in the straight slot 25 immediately in front of the needle-hole, whereby the button-hole piece is fed smoothly upon the flat surface of the throat or cover plate without interruption from the edges of the longitudinal slot, substantially as described.

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

GEORGE S. HILL.

Witnesses:
GEO. W. GREGORY,
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