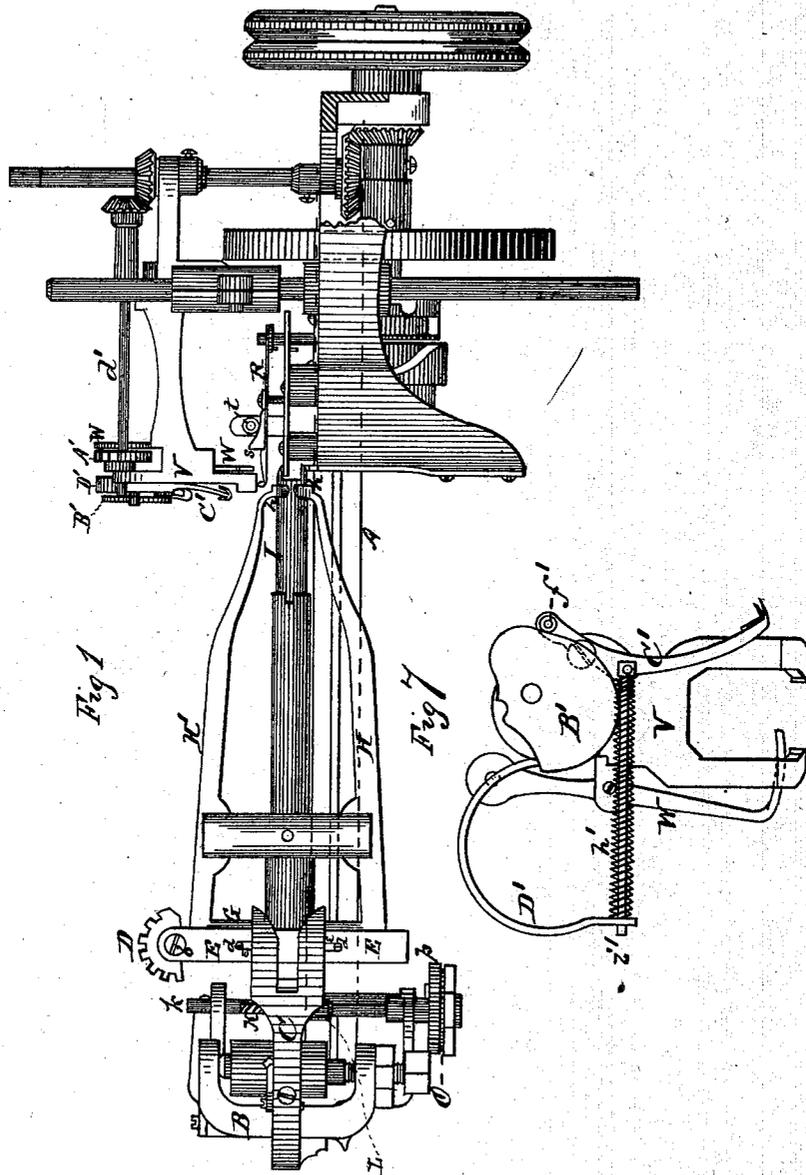


S. CLEMINSHAW.
Button-Hole Sewing-Machines.

No. 139,770.

Patented June 10, 1873.



Witness:
Frank L. Curand
C. L. Ewert.

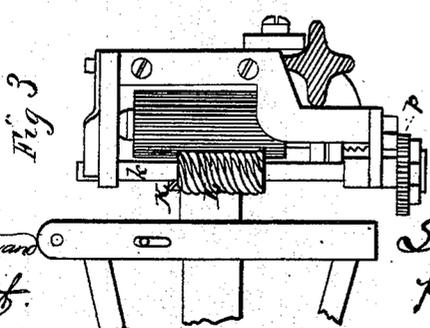
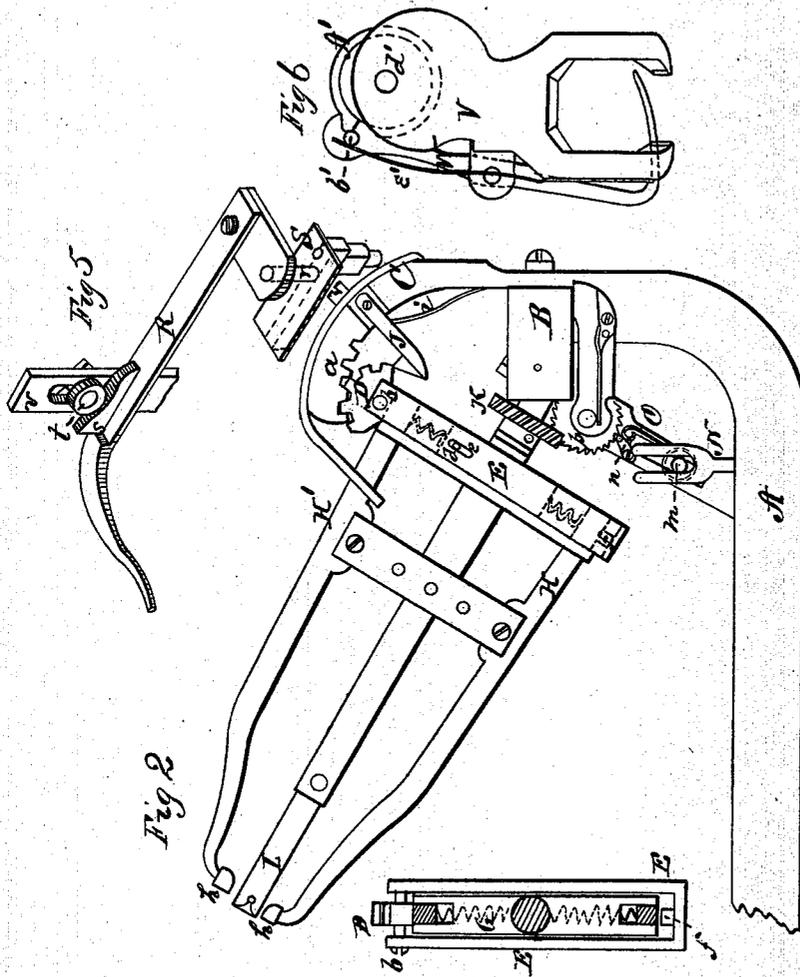
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per *Wm. S. Mason*

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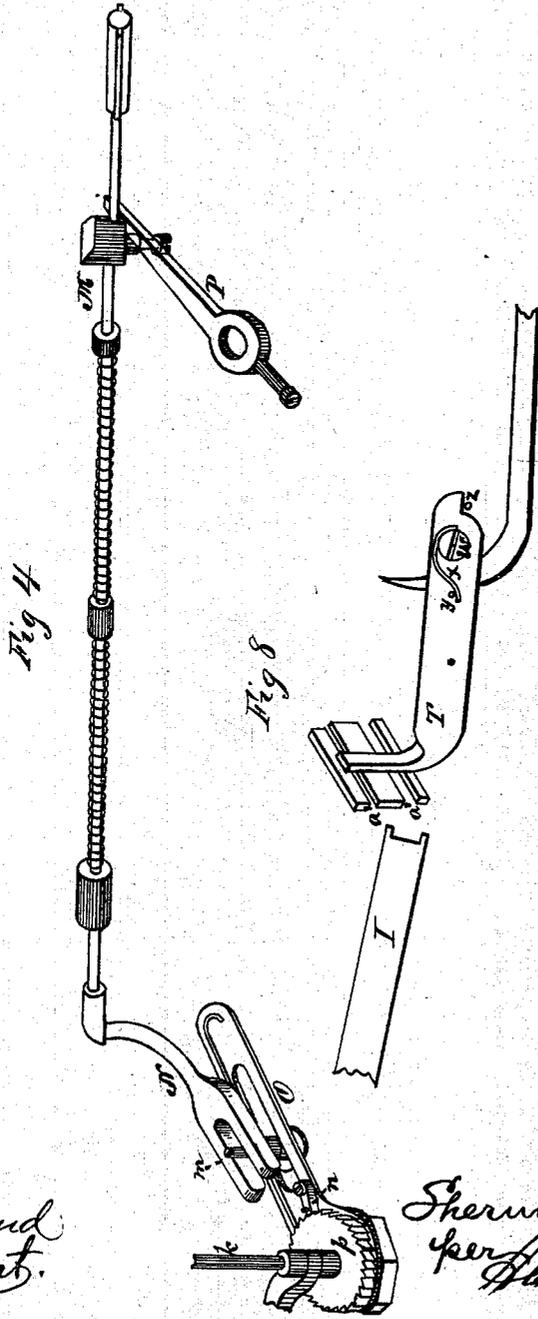
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UNITED STATES PATENT OFFICE.

SHERMAN CLEMINSHAW, OF TROY, NEW YORK.

IMPROVEMENT IN BUTTON-HOLE SEWING-MACHINES.

Specification forming part of Letters Patent No. 139,770, dated June 10, 1873; application filed December 7, 1872.

To all whom it may concern:

Be it known that I, SHERMAN CLEMINSHAW, of Troy, in the county of Rensselaer and in the State of New York, have invented certain new and useful Improvements in Button-Hole Sewing-Machines; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, making a part of this specification.

My present invention is intended as an improvement upon the Button-Hole Sewing-Machine for which Letters Patent were granted to me June 25, 1872, antedated June 15, 1872; and the nature of my invention consists, first, in a device for automatically opening and closing the jaws of the cloth-holder; second, in the mechanism for rotating said cloth-holder; third, in a device for beating the stitch over the edge of the goods; fourth, in a gage for adjusting the cloth on the holder; fifth, in a device for raising the shuttle up far enough to permit the loop to pass freely under and out of the shuttle-case; and sixth, in the take-up device—all of which will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a front view of the machine with my improvements attached. Fig. 2 is an enlarged plan view of the cloth-holder, with the mechanism for opening and closing the jaws of the same. Figs. 3 and 4 show the mechanism for rotating the cloth-holder. Fig. 5 is a perspective view of the beating device. Fig. 6 represents the device for raising the shuttle to allow the loop to pass under the same and out of the shuttle-case. Fig. 7 shows the take-up device; and Fig. 8, the gage for adjusting the cloth on the holder.

A represents the arm of the sewing-machine, at the outer end of which is the head B, where the cloth-holder swings. To the head B is attached a crooked arm, C, provided on the inner

or concave side with a rack, *a*, and having its extreme outer end forked or open, as shown in Fig. 1. D represents a cogged or geared dog, which is pivoted by a pin, *b*, in the open end of a stirrup, E, which surrounds and works freely on the cross-bar G of the cloth-holder, said stirrup being held in position by pins *d* attached to the cross-bar and working through slots *e* on the stirrup. At the opposite end of the stirrup E is another pin, *f*, passing inward onto the lever H. Now, when the work is to be put on, the whole revolving cloth-holder is drawn toward the operator, the geared dog D meshing in and engaging with the rack *a*, and, the said rack being on a proper circle, a continuation of the movement causes the dog D to partly revolve, and pressing on the lever H' and drawing up the sliding-stirrup E. By means of this action the dog D and the pin *f* simultaneously cause both of the levers H H' to open the jaws *h h* and allow the work to be put on at the end of the arm or tip I, the lever H' passing into the opening in the end of the curved arm C, which acts as a guide to bring the dog D in proper position with the rack *a*. The jaws are held open by means of a catch, J, pivoted on the curved arm C and catching on the dog by means of a notch in the dog, and is held up to its position by a spring, *i*. After the work is placed upon the end of the cloth-holder or tip I, then, by pushing the whole cloth-holder back to its original position, the catch J leaves the notch in the dog D and allows the whole arm to swing out of contact with the rack, turning the dog back and allowing the levers H H' to close down upon the work, holding it fast. After the jaws are closed, the dog D and rack *a* being entirely clear of each other, and the lever H' passed out of the guide-opening in the curved arm C, the whole cloth-holding apparatus is moved still further backward until the gear-wheel K upon the inner end of the cloth-holder arm meshes into and engages with the worm L, on an upright shaft, *k*, at the side of the head B. The revolving motion is now imparted to the cloth-holder by means of the

rotating-worm L, thus producing the feed. Motion is given to the worm L by means of the feed-bar M, shown in Fig. 4, and the slotted driver N attached to the end of the feed-bar, this slotted driver working on a pin, *m*, in another slotted bar, O, through the end of which the shaft *k* passes. On the plate or bar O is a spring-pawl, *n*, engaging with a ratchet-wheel, *p*, upon the lower end of the shaft *k*. By this device the worm L is caused to revolve in one direction at every stroke of the feed-bar. Motion is imparted to this feed-bar by means of a cam on the driving-shaft of the machine, together with a lever, P, pivoted to the under side of the bed of the machine.

The pin *m* is made adjustable in the slotted bar O, by which means the length of the stroke of said slotted bar may be regulated, causing the worm to turn more or less as desired, and thus producing greater or less rotation of the cloth-holder, and making a longer or shorter stitch.

111 Fig. 5 I have represented the stitch-beating mechanism. R represents a flat piece of sheet-steel of the construction shown in said figure, which is fastened to a stud, *r*, and sliding-plate S, said plate sliding on the bed of the machine backward and forward, motion being given by means of a suitable stud and roller, worked by a cam on the main driving-shaft underneath. This beater-bar R lies flat with the plate of the machine, and about three-eighths of an inch above it and the cloth-holder, and extends just beyond the place where the needle comes down. To the bar R on the upper side is attached a wedge, *s*, and as the bar is thrown back at each stroke of the cam this wedge, working on a roller, *t*, causes the bar to sink to the level of the bed-plate, and on its return to resume its original position. This movement is to beat the stitch over the edge of the goods, at the same time hauling it down. The roller *t* is fastened to a stud, *v*, on the plate of the machine, and is adjustable up and down in a slot in the same, with a nut on the rear side. T represents a thin steel gage pivoted to the bed-plate and working on a screw, *w*, to which screw is fastened a spring, *x*, pressing against a pin, *y*, on the gage and keeping the inner end of the same against a pin, *z*, on the bed-plate, as shown in Fig. 8. The front of this gage T is provided with slots *a' a'*, to allow the cloth-holder to pass and repass and not interfere with the projecting tips of said holder, of which there are two, the top one having the hole for the needle to pass through, and the bottom one to support the holder when in position ready for work. When the cloth is put upon the holder, (the jaws being open,) and the holder is pushed back, the jaws begin to close as above described. Then when the jaws are nearly closed the holder begins to pass the gage T, and while passing it the cloth is to be drawn

by the fingers of the operator up and against this gage, which makes the edges of the hole even and true; and just as the holder is leaving the further end of the gage the jaws shut tight on the work, and by continuing the motion the holder passes on and away from the gage and into its place under the needle. The object of the spring *x* and pins *y z* is to allow the gage to yield as the operator draws back the cloth-holder, the edge of the goods having been enlarged by the stitching. V represents the head of the machine, in which the shuttle is held as described in my former patent. At the side of the head is pivoted a lever, *w*, as shown in Fig. 6, said lever having at its top end an adjustable pin, *b'*. The lower end of the lever *w* is bent inward and extends down to and near the bottom of the shuttle. A' is a cam attached to and rotated by a horizontal rod, *d'*, running across the top of the machine, and which rod receives its motion by means of suitable gearing from the main driving-shaft of the machine. *e'* is a spring bearing against the pin *b'* on the lever *w*, to hold the same up against the cam A'. As the loop is passing over the shuttle the lever *w*, by the motion of the cam A', passes under the shuttle and raises it up enough to permit the loop to pass freely under and out of the shuttle-case. After the loop is out the cam A' permits the lever *w* to resume its position, which is just clear of the bottom of the shuttle. Upon the rod *d'*, on the face of the head V, is another cam, B', as shown in Fig. 7. C' represents a "take-up," pivoted to the head and provided at its upper end with a roller, *f'*, which is held up against the cam B' by a spring, *h'*, arranged with an interior rod *i'*, placed on a stud on the take-up, and the other end passing through a bent bar, D'. This arrangement acts as a take-up to hold the slack thread, and by the action of the cam B' to deliver it to the needle as required.

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

1. The curved arm C, having its outer end forked or cut open, and provided on the concave side with a rack, *a*, substantially as and for the purposes herein set forth.

2. In combination with the cloth-holder, the loose stirrup E, with pin *f*, and the cogged or geared dog D, constructed and operating substantially as and for the purposes herein set forth.

3. In combination with the geared dog D, arranged and operating as described, the catch J, and spring *i*, substantially as and for the purposes herein set forth.

4. The combination, with the swinging cloth-holder, of the rotating worm L, and the gear-wheel K for the purpose of rotating the same, substantially as herein set forth.

5. The combination of the feed-bar M, slotted

driver N, adjustable pin *m*, slotted bar O, spring-pawl *n*, and the ratchet-wheel *p*, upon the shaft *k*, for rotating the worm L, substantially as and for the purposes herein set forth.

6. The beater-bar R, connected with the sliding plate S, and provided with the wedge *s*, in combination with the adjustable roller *t*, all constructed and arranged substantially as and for the purposes herein set forth.

7. The pivoted gage T, provided with slots *a'*, and operating in combination with the spring *x* and pins *y* and *z*, substantially as and for the purposes herein set forth.

8. The combination of the pivoted lever *w* with pin *b'*, spring *e'* and cam *A'*, all constructed as described, and arranged on the head V of the machine, substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of November, 1872.

SHERMAN CLEMINSHAW.

Witnesses:

C. L. EVERT,

CHARLES A. SEYMOUR.