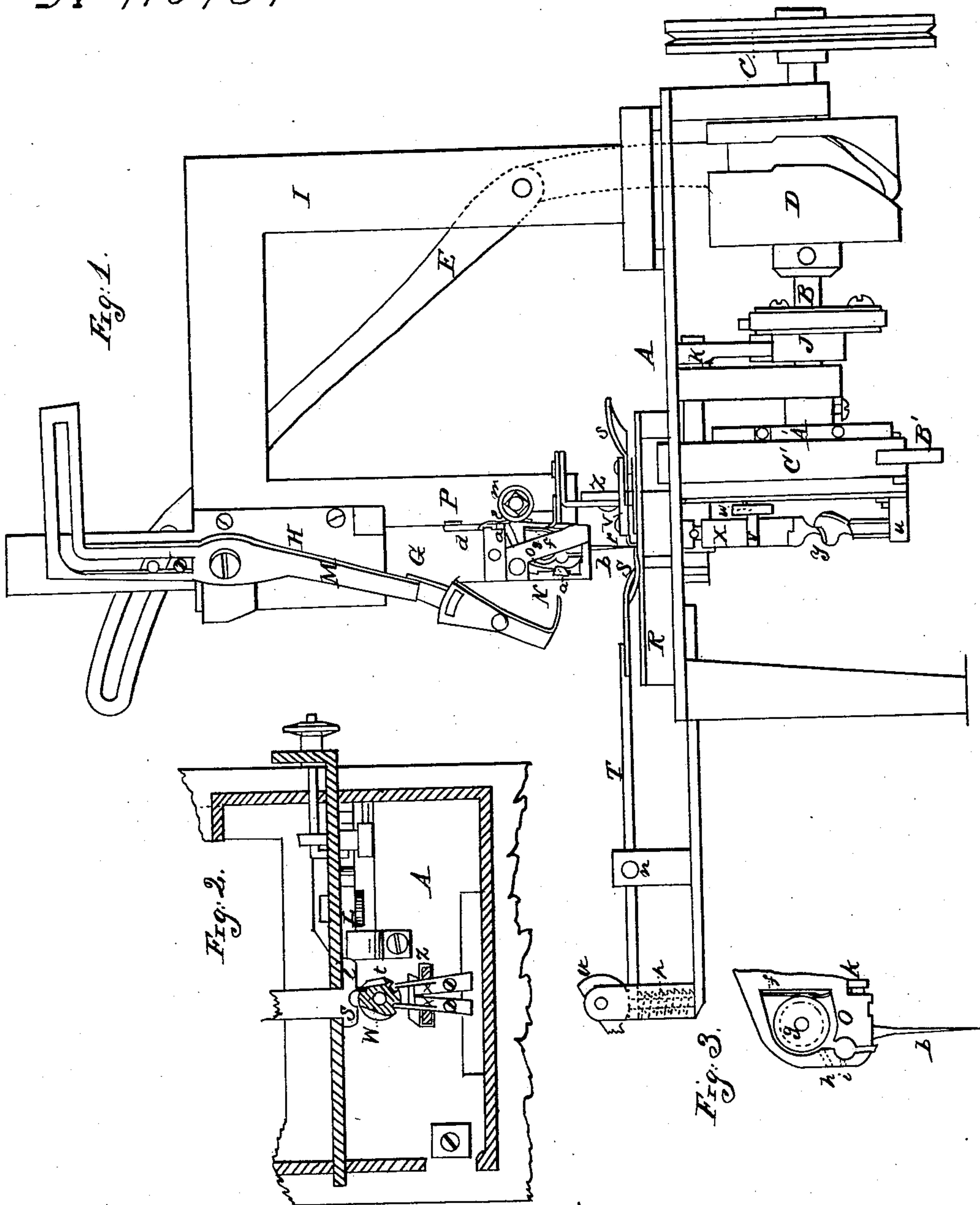


S. Cleminshaw.

Sewing Machine.

N^o 110739

Patented Jan. 3, 1871.



Witnesses:

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SHERMAN CLEMINSHAW, OF TROY, NEW YORK.

IMPROVEMENT IN SEWING-MACHINES FOR WORKING BUTTON-HOLES.

Specification forming part of Letters Patent No. 110,739, dated January 3, 1871.

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 Sewing-Machines; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon, making a part of this specification.

My invention relates to that class of sewing-machines which is used to make button-holes, and more particularly on linen goods, such as collars, cuffs, &c.; and its nature consists, first, in a needle so arranged that while it moves through the goods it is rigid, but when above the goods, or while standing still in the same, it is loose; second, in the construction of a combined shuttle and needle; third, in the mode of securing the combined shuttle and needle to the needle-arm; fourth, in the construction and arrangement of the twister, for forming the loop below the goods after the needle has passed through the same; fifth, in the mode of operating the twister; sixth, in the construction and arrangement of a carrier, which takes the loop from the twister and passes it over the shuttle; and seventh, in the construction and arrangement of an elongated presser-foot, with lever attached, 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 drawing, in which—

Figure 1 is a side elevation of the entire machine. Fig. 2 is a plan view of a part of the machine, showing the twister and carrier; and Fig. 3 is an enlarged side view of the combined needle and shuttle.

A represents the sewing-machine table resting upon suitable legs, and having the driving-shaft B arranged underneath, with the driving-wheel C at its outer end. Upon the shaft B the eccentrically-grooved wheel D, in which works a pin upon the lower end of the pivoted lever E, which operates the needle-arm G vertically up and down in the guide H, upon the inner end of the L-shaped standard I. Upon the driving-shaft B is also an eccen-

tric, J, which, by means of the crank-connection K, operates the feed-bar L.

I do not deem it necessary to further describe the above parts, as they, with the take-up arrangement M, operate by a pin on the needle-bar G, are all old and well known, and I lay no claim to these various devices.

At the lower end of the needle-arm G is formed a box, N, open at the rear side and slotted in the bottom from the rear forward, in which box is placed the shuttle O, with needle *b* attached.

The shuttle O is formed in the peculiar manner shown in Fig. 3, and bears only at the two points *a*, in the box N.

It is held by the spring *e*, which is attached to the lever *d*, pivoted on the rear side of the needle-arm, so that the spring can readily be thrown away from the shuttle and the shuttle removed when desired.

Within the shuttle O is placed the bobbin *g*, and suitable tension of the thread is produced by the spring *f* bearing against the edge of said bobbin.

The thread passes from the bobbin *g*, through a hole, *h*, in the front side of the shuttle, then back into the shuttle through a lower hole, *i*, and then through a groove in the shuttle down to the needle *b*, which is secured in the under side of the shuttle by a set-screw, *k*, as shown in Fig. 3.

It will be seen that the spring *e*, which confines the shuttle in the box N, does not hold it rigid, but the shuttle, with the needle, is loose for a purpose that will be hereinafter described.

When, however, the needle passes through the cloth, it is made rigid, by means of a roller, *m*, surrounded by rubber and placed upon an adjustable pin or journal on the side of a bar, P, which extends downward from the standard I, as shown.

This roller is so placed that the spring *e* will bear against the outside of the roller and press the shuttle against the bearings *a*, whereby the needle becomes perfectly rigid.

The roller *m* is so adjusted in a slot on the bar P, that after the needle-point has passed through the cloth the spring *e* goes down below the roller, making the shuttle loose again, while the needle is stationary and the loop is formed and carried over the shuttle.

R represents the plate upon which the cloth is laid; and S is the presser-foot, which is elongated or attached to a bar, T.

This bar is pivoted at *n*, as shown, and under its outer end is placed a spiral spring, *p*, which presses the presser-foot *s* down on the goods on the plate R.

By a cam-lever, U, operating on the upper side of the bar T, directly above the spiral or other spring *p*, the presser-foot may be held up for putting in or taking out the work.

On the presser-foot S is a steel point, *l*, which acts as a guide for the work.

The work is doubled around the presser-foot S, so that one side of the button-hole is above and the other below the presser-foot.

The part above the presser-foot is held out of the way for the needle by means of a guide-wire, *r*, attached to a bar, *s*, which slides in a box, V, pivoted on the plate R.

When the needle *b* descends it becomes rigid, by the means above described, just as it is to penetrate the goods. It then goes down through the goods the necessary length, becoming loose as soon as the eye has passed through the goods. It then rises a short distance, so as to allow the thread to form the loop below the cloth, the needle and shuttle remaining loose.

The loop thus formed by the thread is caught by a small hook, *t*, on the twister W, which turns around, letting the thread fall into a horizontal circumferential groove on the twister.

The twister W consists of a round head, placed on the upper end of a vertical flat bar, X, which is below the plate or table A of the sewing-machine, while the head or twister is between the table A and the plate R.

The lower end of the flat bar X is formed in the shape of an auger, Y, and turns on a pivot in its bearing at *u*.

The twister is operated by means of two pins, *v v*, projecting one on each side of the bar X from a head, *w*, which is adjusted upon a vertically-sliding bar, Z.

This sliding bar is moved up and down by means of an eccentrically-grooved cam-wheel, A', upon the driving-shaft B, a pin upon the outer forked end of a lever, B', working in said groove, and the forked end of said lever surrounding a pin on the rear side of the sliding bar Z.

The other end of the lever B' is pivoted at the lower end of a post, C', which projects downward from the lower side of the table A.

It will be noticed that the sliding-bar Z may move up and down without turning the twister W, as long as the pins *v v* only move at the side of the bar X; but when these pins descend to the auger Y the twister W is turned, as above mentioned, so as to allow the hook *t* to catch the loop and deposit the thread in the circumferential groove on the twister.

Below the auger Y is a continuation of the flat-bar X, so that when the pins *v v* pass below the auger, the twister will be held in the

position to which it has been turned, until the pins ascend again, when it is returned to its original position by the reverse motion of the auger.

Upon the upper end of the sliding bar Z is attached a horizontal plate, upon which are adjusted the carriers *x x*, which are made each of metal plate, with a wire at the front end, the outer end of said wire being turned upward as a hook.

As the bar Z descends and turns the twister W and the thread is deposited in the circumferential groove on the same, and the twister held stationary, the hook ends of the carriers *x x* pass down in vertical grooves on the outside of the twister, as shown in Fig. 2, until the ends of the hooks come below the thread, when the carriers at once rise again, catching the thread and lifting it up above the twister.

As soon as the thread has been cleared from the twister, the twister resumes its original position, the carriers in the meantime rising with the thread, and as soon as the twister has been brought back to its first position, the needle descends to its lowest point, the carriers continuing to rise until they are above the rear end of the shuttle. During this motion the thread is brought, as a loop, under the spring *e* and over the upper curved side of the shuttle. As the needle now ascends, the take-up M operates to tighten the stitch.

It will be seen that when the carriers deposit the thread on the upper edge of the shuttle, the shuttle and needle are loose, to allow the thread passage around the shuttle within the box N. If the needle and shuttle were rigid the thread could not pass. Then, as the needle-arm moves upward the shuttle is made rigid for a short time, to draw the thread, and it then becomes loose again, to allow the loop to pass through and be drawn tight by the take up.

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

1. In combination with the needle-bar and its shuttle and eye-pointed needle, mechanism substantially as described, for holding the shuttle and needle firmly while it passes through the goods, but leaves it free to move when above the goods, to allow the thread to pass around it, as herein set forth.

2. The shuttle O, constructed as described, and provided with bobbin *g*, spring *f*, holes *h i*, and needle *b*, all substantially as and for the purposes herein set forth.

3. The box N, constructed as described, and provided with bearings *a a*, spring *e*, and lever *d*, for securing the combined needle and shuttle, substantially as and for the purposes herein set forth.

4. In combination with the spring *e*, the roller *m*, made adjustable, and arranged to make the needle and shuttle rigid at the proper time, substantially as and for the purposes herein set forth.

5. The twister W, provided with circumferential and vertical grooves, and the hook *t*, all substantially as and for the purposes herein set forth.

6. The combination of the twister W, bar X, auger Y, and pins *v v*, all constructed and arranged to operate substantially as and for the purposes herein set forth.

7. The adjustable carriers *x x*, constructed and arranged to operate, in combination with the twister W, substantially as and for the purposes herein set forth.

8. The arrangement of the presser-foot S, with point *l*, bar T, spring *p*, and cam-lever U,

all substantially as and for the purposes herein set forth.

9. In combination with the presser-foot S, guide-wire *r*, bar *s*, and pivoted box V, all substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 21st day of June, 1870.

SHERMAN CLEMINSHAW.

Witnesses:

EDM. F. BROWN,
C. L. EVERT.