

L. C. MUMFORD.
Sewing and Embroidering Machine.
No. 212,862. Patented Mar. 4, 1879.

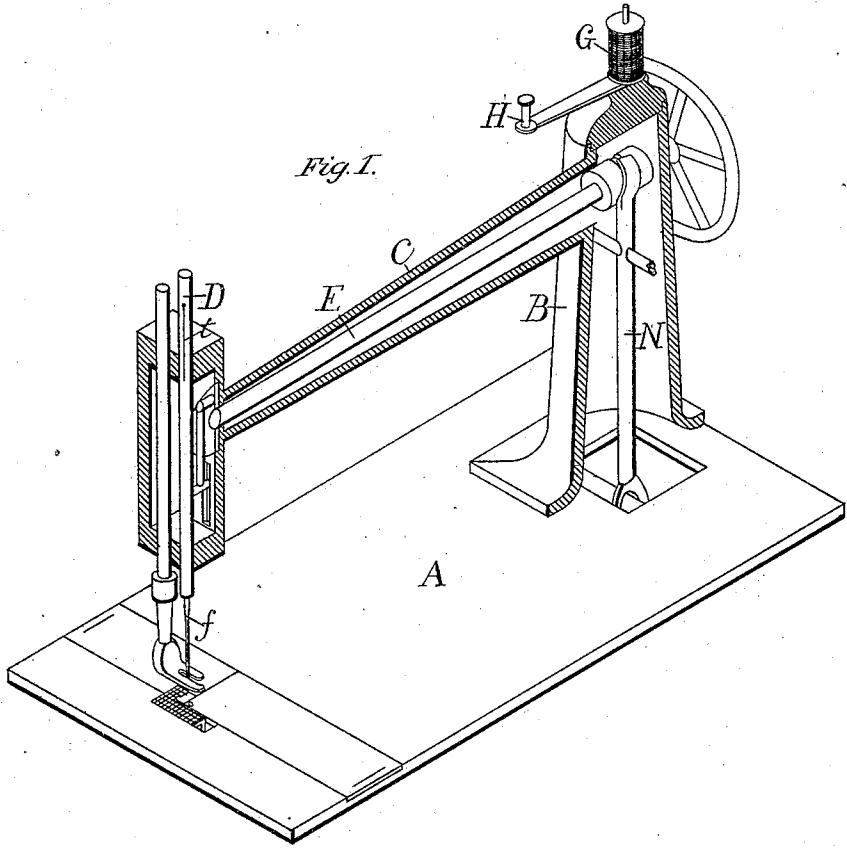


Fig. 1.

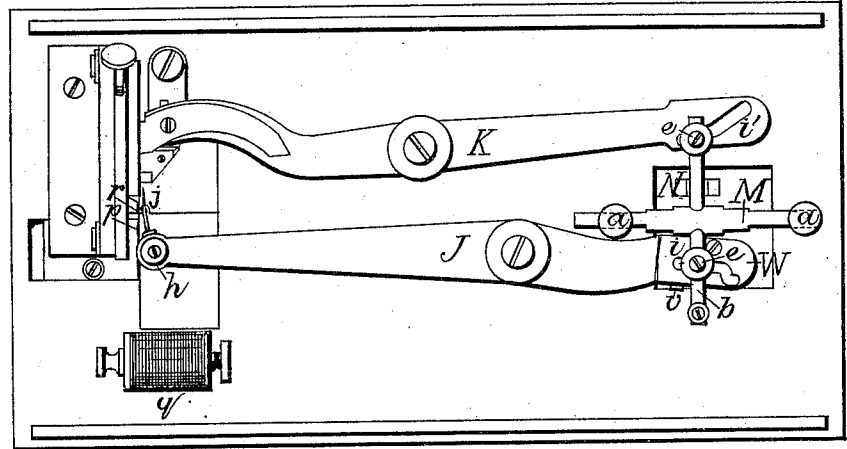


Fig. 2.

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Fig. 3.

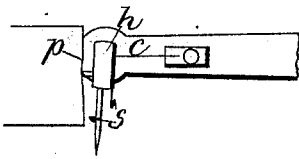


Fig. 4.

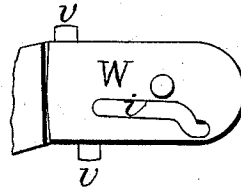


Fig. 5.

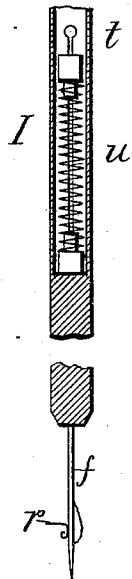
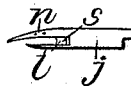


Fig. 6.



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UNITED STATES PATENT OFFICE.

LUCIAN C. MUMFORD, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN SEWING AND EMBROIDERING MACHINES.

Specification forming part of Letters Patent No. **212,862**, dated March 4, 1879; application filed August 26, 1878.

To all whom it may concern:

Be it known that I, LUCIAN C. MUMFORD, of the city and county of San Francisco and State of California, have invented an Improved Sewing and Embroidering Machine; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention has reference to a machine which is more especially intended for making stitches through fabrics with one thread, and at the same time interweaving one or more threads with the stitch-thread on the under side of the fabric, so as to make a cord, braid, or embroidery bead or rib, which forms an integral part of the sewing-stitch.

My machine can also be used as an ordinary single-thread sewing-machine, when desired.

Referring to the accompanying drawings, Figure 1 is an isometric view, partly in section, of a sewing-machine constructed according to my invention. Fig. 2 is an inverted plan of the same. Fig. 3 shows the lower needle, attached to the needle-carrier. Fig. 4 shows the adjusting-plate. Fig. 5 is a longitudinal section of the needle-bar. Fig. 6 is a plan of the lower needle.

A represents the bed-plate of the machine; B, the rear hollow standard, which supports the bracket-arm C in the same manner that those parts are usually arranged in a straight-needle sewing-machine. D is the needle-bar, which is operated by a cam on the driving-shaft E, and *f* is the needle. G is the spool, from which the thread for the needle *f* is taken.

The thread first passes from the spool around a tension device, H; thence forward through an opening in the upper end of the needle-bar, which is arranged to form a take-up for the thread, as hereinafter described.

Underneath the bed-plate I arrange a horizontally-vibrating lever, J, by pivoting it at or near its middle, so that its forward end will be directly opposite the needle *f* when it passes through the cloth or bed-plate, while its rear end is directly below the hollow standard B. Another lever, K, is pivoted in a similar manner to the under side of the bed plate, and serves to operate the feeding mechanism.

Any proper feeding device in general use in sewing-machines can be used with this machine.

M is a sliding rod, which bears at each end in and moves through guide-holes in two short stands or projections, *a a*, so as to extend across the opening in the bed-plate at the bottom of the hollow standard. This rod passes across between the rear ends of the levers J and K, and has an arm, *b*, projecting at right angles from the middle on each side. This arm *b* is provided at its ends with pins *e e*, one of which enters an inclined slot, *i*, in the rear of lever J, while the other enters an inclined slot, *i'*, in the rear end of the lever K. The rod M has a reciprocating longitudinal motion imparted to it by a vertical lever, N, which extends up into the hollow standard B, and is pivoted at or near its middle, while its upper end is moved back and forth by a cam-groove on the driving-shaft E. This reciprocating motion of the sliding rod and its arms causes the pins which traverse the inclined slot on the rear ends of the levers J and K to move them back and forth, so that the forward ends of the levers are also caused to move back and forth.

An opening is cut in the bed-plate, just above the forward end of the lever J, and a needle-carrier, *h*, is pivoted to the said lever at its extremity, so that it moves in the recess or opening in the bed-plate. This device carries the under needle, *j*. This needle *j* is made short and stout, and has two prongs, *l n*, at its extremity, the prong *l* being shorter than the prong *n*, while the point of the prong *n* is slightly curved, as shown.

The needle *j* is so adjusted that when the forward end of the lever J moves toward the descending straight needle *f* it will pass close to the needle *f* on its rear side.

The front side of the needle-carrier *h*, which moves against the edge of the opening in the bed-plate, is flattened, and a spring, C, is arranged on its opposite side to press the front side of the carrier against the edge of the bed-plate.

The edge of the bed-plate has a curved indentation, *p*, on it, close to the track of the straight needle, so that after the points of the

prongs *l n* have passed the needle *f* the carrier *h* will come opposite the indentation *p*, and the pressure of the spring *c* will cause it to turn axially on its stud and follow the indentation, thus throwing the needle *j* around toward and against the needle *f*. As the end of the lever *J* moves back, the needle *j* resumes its position in the reverse order.

One or more eyes are made in the prong *n* of the under needle, *j*, through each of which a thread is passed from the lower spool or spools, *g*, which are conveniently placed. The straight upper needle, *f*, being properly threaded, passes down through the fabric and cloth-plate, and strikes against a small spring, *r*, which is attached to the edge of the bed-plate, adjacent to the path of the needle *f*. As this needle starts to ascend, the pressure of this spring against the thread will cause it to form a loop, at which instant the prongs of the needle *j* are projected by the lever *J* through the loop, so that as the needle *f* rises it leaves a loop on the needle *j* back of the two prongs. To enlarge this loop somewhat, I have pivoted a small latch, *s*, on the needle *j* at the bases of the two prongs *l n*. This latch has a shoulder on the side next to the needle *f*, so that as the prongs pass through the loop the pressure of the needle *f* against the shoulder on the latch will cause it to partially rotate and spread the loop.

When the point of the upper needle on its downward stroke reaches the lower needle, the lower needle is in such a position that the point of the upper needle commences to cross it just back of the bases of the prongs. As the upper needle continues its downward movement the lower needle is drawn back by the lever *J*, and as the upper needle begins to ascend it leaves a loop, through which the lower needle is projected so as to catch the loop over the lower needle. As the upper needle continues its upward motion the lower needle is drawn back, so that the loop moves forward over the latch and drops from the end of the prong *l* and is caught by the prong *n*. This completes the first stroke of the upper needle. The next and every succeeding stroke of said needle not only leaves a loop over the lower needle, but also takes off the previous loop from the prong *n*. By these means the upper thread is intertwined, plaited, or interwoven with the under threads, so that a cord or bead in imitation of cording, braiding, or embroidery is formed and made an integral part of the stitch.

By using a number of threads I can increase the size of the cord, braid, or bead, as desired. This arrangement requires that a sufficient amount of upper thread be left off at each downward stroke of the needle *f* to provide a loop for the under needle, and that at each upward movement of the upper needle the loop dropped by the prong *n* of the under needle be taken up.

To provide for this a portion of the upper

end of the needle-bar *D* is made tubular, and a narrow slot, *t*, is made on opposite sides of the chamber, as shown, extending from the top to the bottom of the chamber. Inside of this chamber I place a spring, *u*, which rests upon the bottom of the chamber and extends up to near its upper end. The upper thread is passed through this slot, above the spring, and thence down through the upper needle in the ordinary way. The location of this chamber in the needle-bar is such that, when the said bar is depressed so as to carry the needle down to its lowest point, the upper end of the spring is a short distance below the top of the head on which it moves, and the thread is carried to the upper end of the slot *t* free from the spring. As the needle-bar starts up the spring does not commence to lift or tighten the thread until a short upward movement is accomplished, so that the thread is not drawn taut until after the loop is made.

The spring *u* simply serves to prevent too great a strain upon the thread.

In order to adjust the stroke of the lower needle, *j*, to lengthen and to shorten the stitch, I make the slot at the rear end of the lever *J* in a separate plate or piece of metal, *W*, and this plate I attach to the rear end of the lever, so that one end will be on a pivot, while the opposite end can be adjusted to either side by screws *v v*. I can thus increase or diminish the throw of the front end of the lever according to the required length of stitch.

The needle *j* might be fixed to the forward end of the lever *J* without the rotary carrier; but I prefer to use the said carrier.

I thus provide a machine for manufacturing cording or embroidery, and sewing it upon fabrics, so that the sewing-stitch and the cording or raised work will be interwoven, so as to form a part of each other. Several different colors of thread can be used in the under needle, so as to form variegated patterns which are of great beauty.

By using only the upper thread, the machine will sew the ordinary chain-stitch, so that it will also serve for all the ordinary purposes of sewing. In this case the needle must be raised, so that the loop will be caught only upon the longer prong of the under needle.

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

1. The vibrating lever *J*, in combination with the needle *j*, provided with prongs *l n*, latch *s*, and one or more eyes, the vertically-reciprocating needle *f*, and mechanism, substantially as described, for actuating said lever and said needle *f*, as and for the purpose set forth.

2. The combination, with the lever *J*, of the needle-carrier *h*, loosely attached to such lever, the spring *c*, the bed-plate having guiding-edge *p*, and the needle *j*, having prongs *l*

n, secured to said needle-carrier, substantially as described and shown.

3. The combination, with the pivoted lever J, of the slotted plate W, pivoted at one end and capable of adjustment at the other end, substantially as and for the purposes set forth.

In witness whereof I have hereunto set my hand and seal.

LUCIAN C. MUMFORD. [L. S.]

Witnesses:

JAS. A. WAYMIRE,
D. B. LAWLER.