

United States Patent Office.

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TO B. W. LACY AND S. C. EATON, OF SAME PLACE.

Letters Patent No. 80,889, dated August 11, 1868.

IMPROVEMENT IN SEWING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, WILLIAM C. WILLMARTH, of Philadelphia, Pennsylvania, have invented an Improvement in Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention consists of certain sewing-mechanism, constructed and operating as fully described hereafter, so as to produce a chain-stitch.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation, reference being had to the accompanying drawing, which forms a part of this specification, and in which—

Figure 1 is a side elevation of my improved sewing-machine.

Figure 2, a front elevation, partly in section.

Figure 3, an inverted plan view; and

Figures 4 and 5 detached views of parts of the machine, showing the said parts in different positions.

To the upper side of the base-plate A is secured the usual stationary arm, B, in which turns a shaft, C; and to the rear end of the latter is secured a grooved pulley, D, at one side of which is a cam, E.

On the lower side of the base-plate is an arm, F, at the front side of which are two projections, *a a'*, and through the latter passes a vertical thumb-screw, G.

On a pin on the arm F turns a grooved driving-pulley, H, round which, and round the pulley D, passes the band *b*.

At one side of the stationary arm B, near the front end of the same, is a projecting rib, *c*, which extends through a slot in an adjustable plate, I, and to the side of the latter is hung a cam-lever, J, which bears on the upper end of the projection *c*, so that the plate may be elevated or depressed by turning the said lever. A spring, *d*, secured to the arm B, and bearing on the plate I, tends to maintain the latter at the limit of its downward motion. The lower end of the plate I is bent to one side, so as to form a presser-foot, *e*, which rests on a work-plate, J', secured to the base-plate A, and in the centre of the presser-foot is a slot, *e'*, which is directly above a slot, *i*, in the work-plate.

To the front end of the shaft C is secured a disk, K, to which is hung loosely an arm, L, and in a socket at the lower end of the latter fits the shank of a detachable eye-pointed needle, *n*, which is secured by a set-screw, *k*.

The lower end of the needle *n* passes through a slot, *m*, in an adjustable plate, I', secured to the plate I, the said plate I' being in such a position that the needle cannot be withdrawn from the opening *m* without first detaching it from the arm L.

To the arm B is secured a tension-device, M, which consists of a tapering pin, *v*, turning in a projection, *w*, there being an opening in the head of the pin for the passage of the needle-thread *x*, which is carried by a spool, X, turning on a rod projecting from the arm B.

In a projection, B', at the front end of the arm B, is an opening, *x'*, and to the arm B, at the rear of the said projection, is secured a rod, N, in the upper end of which is a recess, *x''*, a washer, *p*, resting on a spring, *o*, coiled round the said rod.

To the under side of the plate A is hung a lever, O, into a slot in the rear end of which projects the lower end of a lever, P, hung to the arm B, the upper end of the said lever bearing against the cam E.

To the front end of the lever O is jointed a plate, Q, at one side of which are a pointed projection, *q*, and an arm, *g*; and to the lever O is secured a spring, *r*, one end of which bears against the arm F, and the other against a pin on the plate Q, the spring tending to maintain the lever and plate in the position shown in fig. 3.

To the under side of the work-plate J' is secured an adjustable plate, R, on which are two projections, *t u*, the latter being adjacent and parallel to the slot *i* in the work-plate.

The machine is secured to a table or stand, Y, the edge of which is clamped between the projection *a* and

the screw G, as shown in fig. 1. The fabric to be sewed is placed beneath the presser-foot, on the work-plate; the thread x is passed to the tension-device M, through the slot x^2 in the rod N, through the opening x^1 in the projection B', and through the eye of the needle. The parts are brought to the position shown in figs. 1, 2, and 3, and a rotary motion in the direction of its arrow is imparted to the driving-wheel H.

As the disk K revolves in the direction of its arrow, the needle n will be carried towards the outer end of the slot m , and will enter the fabric near one end of the slot i . As the revolution of the disk K is continued, the needle (bearing against the end of the slot m) will be moved to the position shown in red lines, fig. 2, the lower portion of the needle being thus caused to traverse the slot i , and the fabric being moved by the needle in the direction of the arrow 2, fig. 2.

As the needle begins to ascend, a loop of thread, x , will be formed at the side of the same, opposite the projection u . The lever O will then move in the direction of its arrow, fig. 3, and the projection q will catch and carry the loop of thread to the position shown in fig. 4.

The needle will now rise and take the position shown in fig. 2, prior to again descending, while the lever O will move still further in the direction of its arrow, the arm g of the plate Q will strike the projection t , and the plate will be turned to the position shown in fig. 5, the loop of thread x being thus carried to such a position that it will be penetrated by the needle as it again descends.

The lever now moves back to its first position, (the projection q disengaging itself from the loop,) the needle begins to ascend, and another loop is formed at the side of the same, and is caught by the projection q in the same manner as the first, an ordinary chain-stitch being thus produced.

By raising or lowering the plate I', the extent of the needle's vibration may be increased or diminished, so as to regulate the size of the stitch.

The projection u insures the formation of the loop of thread at the side, where it will be seized by the projection q .

The tension upon the thread (during the downward movement of the needle) is such that the spring o is compressed, the thread sliding towards the lower end of the slot x^2 . When, however, the needle begins to ascend, the spring will rise, and by taking up the thread, prevents the loop from forming too near the point of the needle to be caught by the projection q .

I claim as my invention, and desire to secure by Letters Patent—

The revolving disk K, arm L, carrying a detachable needle, n , and the adjustable slotted plate I', in combination with the vibrating lever O, its plate Q, projection q , and the adjustable stop t , the whole being constructed and operating as and for the purpose described.

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

W. C. WILLMARTH.

Witnesses:

JOHN WHITE,

CHARLES E. FOSTER.