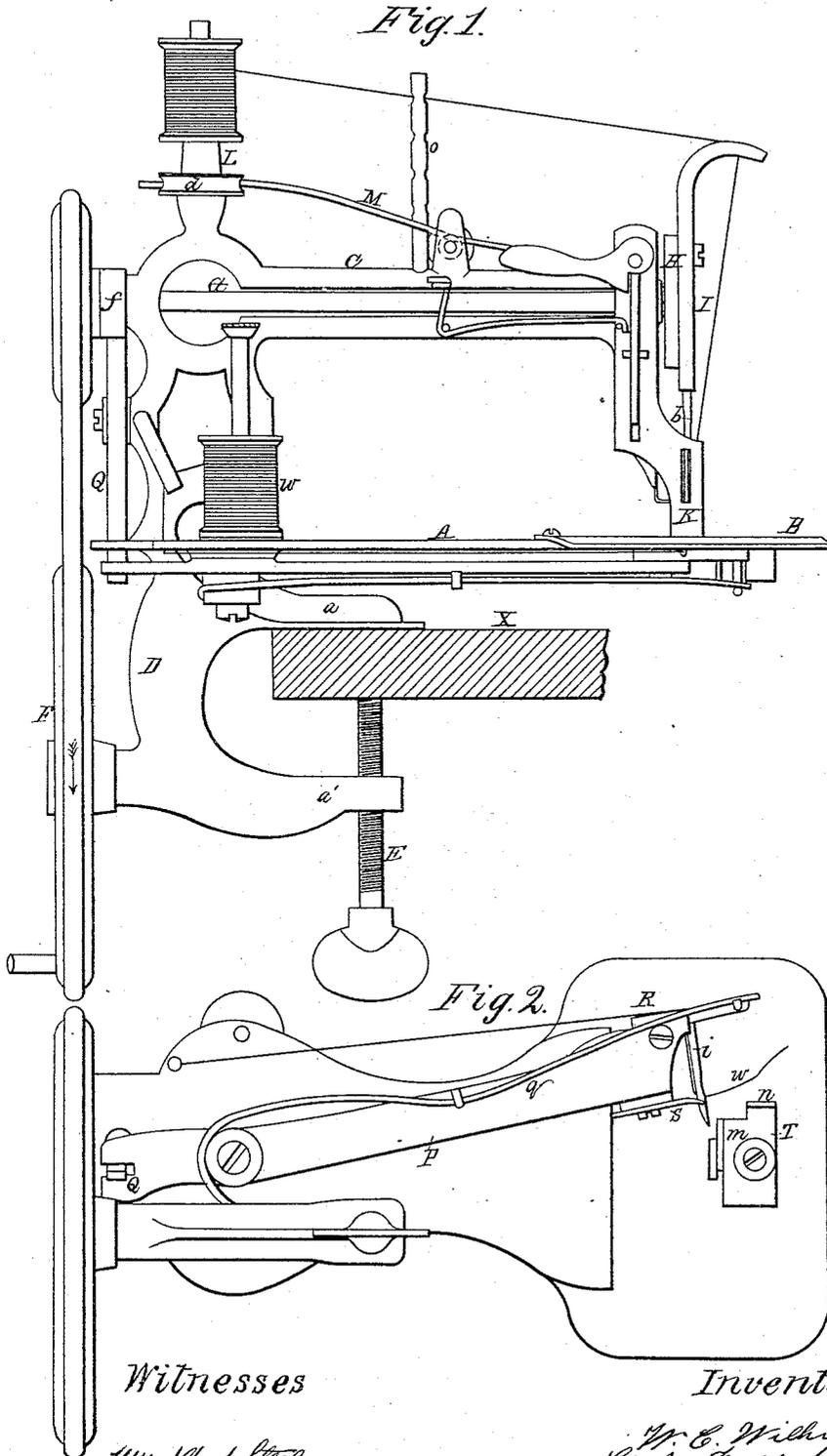


W. C. WILLMARTH & C. N. FARR.

Sewing Machine.

No. 83,750.

Patented Nov. 3, 1868.



Witnesses

Wm. Abbot Steel
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Inventors

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United States Patent Office.

WILLIAM C. WILLMARTH AND C. N. FARR, OF PHILADELPHIA, PENNSYLVANIA,
ASSIGNORS TO B. W. LACY, OF SAME PLACE.

Letters Patent No. 83,750, dated November 3, 1868.

IMPROVEMENT IN SEWING-MACHINES.

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

To all whom it may concern:

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

Our invention consists of certain sewing-mechanism, constructed as fully described hereafter, so that either a chain-stitch or a lock-stitch may be produced by it.

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

Figure 1, Sheet No. 1, is a side elevation of our improved sewing-machine;

Figure 2, an inverted plan view;

Figure 3, Sheet No. 2, a front elevation; and

Figures 4, 5 and 6, detached views of part of the machine.

A is the base-plate, B, the work-plate, and C, the overhanging arm of the machine; and at the under side of the base-plate is a bracket, D, having two arms *a a'* arranged to receive between them the edge X of a stand or table, to which the machine is secured by a set-screw, E, passing through the lower arm *a'*.

On a pin, projecting from the bracket D, turns a grooved driving-pulley, F, a band from which passes round a grooved pulley on one end of a shaft, G, which turns in the arm C, and on the opposite end of this shaft is a crank-wheel, H, to the crank-pin of which is hung a needle-arm, I, the latter projecting above the pin *y*, and being bent outward at its upper end, near which is an opening, *x*, fig. 3.

To the lower end of the arm I is secured a detachable needle, *c*, which passes through an opening in the projecting end of a plate, J, so secured to the front end of the stationary arm C, as to be adjustable diagonally on the latter, for a purpose described hereafter.

To the front end of the arm C is secured an adjustable plate, to which is connected a presser-foot, K, and on a pin, projecting from the base-plate A, turns a suitable spool containing the lower needle-thread *w*.

On a pin, projecting from the arm C, turns a disk, *d*, secured to a tapering sleeve, L, and against the edge of the disk bears a pad, on the end of an elastic wire or spring, M, which is coiled around a set-screw, N, turning in a projection on the arm C, and is secured at its opposite end to the front end of the arm C.

Between the head of the set-screw N, and the spring M, intervenes a washer, *e*, and on the arm C is a rod, O, having openings for the passage of the upper needle-thread *y*, which is conducted from a spool on the sleeve L, through the rod O and opening *x* in the arm I, to the eye of the needle *b*.

To the under side of the plate A is hung an arm or lever, P, to which a vibrating motion is imparted by a lever, Q, hung to the vertical portion of the arm C, and bearing at its upper end against a cam, *f*, on the shaft G.

A spring, *g*, which is connected to the lever P, and one end of which bears against the bracket D, tends to maintain the lever P in the position shown in fig. 2, and the lever Q in contact with the cam.

The front end of the spring *g* bears against a lug on one arm of a plate, R, hung to the outer end of the lever P, and from the said arm projects a needle or thread-carrier, *i*, in which are two openings, one for the passage of the thread, *w*, which is conducted from the spool through an opening in the base-plate, and the other for the reception of a lug on an adjustable plate, S, hung to the inner arm of the plate R.

To the under side of the work-plate is secured an adjustable plate, T, on which are two lugs *m n*, arranged as shown in figs. 2, 4, and 5.

The fabric to be sewed is placed beneath the presser-foot on the work-plate of the machine, and the driving-wheel F is turned in the direction of its arrow, fig. 1, when the needle, after taking a diagonal position coinciding with the line 1-2, fig. 3, will penetrate the fabric, passing also through a loop of the thread *w* at the side of the thread-carrier *i*, and then, as the revolution of the crank-wheel is continued, will be carried to a position coinciding with the line 3-4, fig. 3, (the edge of the opening in the plate J serving as a fulcrum on which the needle vibrates,) and the needle, as it moves, carries the fabric with it the length of a stitch in the direction of its arrow, fig. 3.

As the needle rises, a loop of the thread *y* is formed at the side of the needle, and this loop is penetrated by the thread-carrier *i* with its loop of thread, *w*, the outer arm of the plate R, as the needle *b* ascends, being brought against the lug *n*, while the movement of the lever P is continued until the thread-carrier *i* is brought to such a position that its loop of thread *w* will be penetrated by the needle at its next descent. As these operations continue, the loops formed from the two threads are interlocked at the under side of the fabric. When, however, a chain-stitch is desired, the pointed end of the plate S is introduced into the adjacent opening in the thread-carrier, from which the thread *w* is withdrawn, and the machine is operated as before. The loop of thread *y* being now caught by the point of the carrier *i*, into the shank of which it cannot pass in consequence of the position of the plate S, the loop of thread will therefore be held in such a position as to be penetrated by the needle on its descent, the carrier being then withdrawn from the loop already on the same, and then, before the needle ascends, passing into the loop at the side of the needle.

The tension upon the upper thread may be regulated by adjusting the set-screw N, so as to increase or dimin-

is the pressure of the spring on the disk *d*, and it will be seen, that, owing to the tapering form of the sleeve *L*, spools of any size may be quickly secured to the disk without the use of screws or fastening-devices, and may be readily detached, when required.

That portion of the needle-lever *I* projecting above the fulcrum-pin *y'*, and through which the thread *y* passes, acts as a thread-controller, which, owing to the peculiar motion imparted to the needle-bar, draws off the thread from the spool, when required to form the loop, and afterwards, as the needle ascends, takes up the slack thread and draws the loop close to the cloth.

By adjusting the plate *J* so as to move the fulcrum of the needle *b* to or from the fabric, the movement of the needle and length of the stitch may be regulated as desired, while, as the plate *J* moves diagonally when being adjusted, (and therefore parallel to the needle after it has penetrated the cloth,) the alteration in the size of the stitch is effected without imparting any move-

ment to the needle which would tend to prevent the carrier from catching the succeeding loop.

We claim as our invention, and desire to secure by Letters Patent—

1. The combination of the plate *R*, its thread-carrier *i*, lever *P*, needle *b*, and an adjustable plate *S*, the whole being arranged and operating substantially as and for the purpose specified.

2. The vibrating-needle arm *I*, with its needle *b*, in combination with the plate *J*, and its projection and opening for the passage of the needle, when the said plate is adjustable diagonally on the arm *C*, as and for the purpose described.

In testimony whereof, we have signed our names to this specification, in the presence of two subscribing witnesses.

Witnesses: WM. C. WILLMARTH.
JOHN WHITE, C. N. FARR.
W. J. R. DELANY.