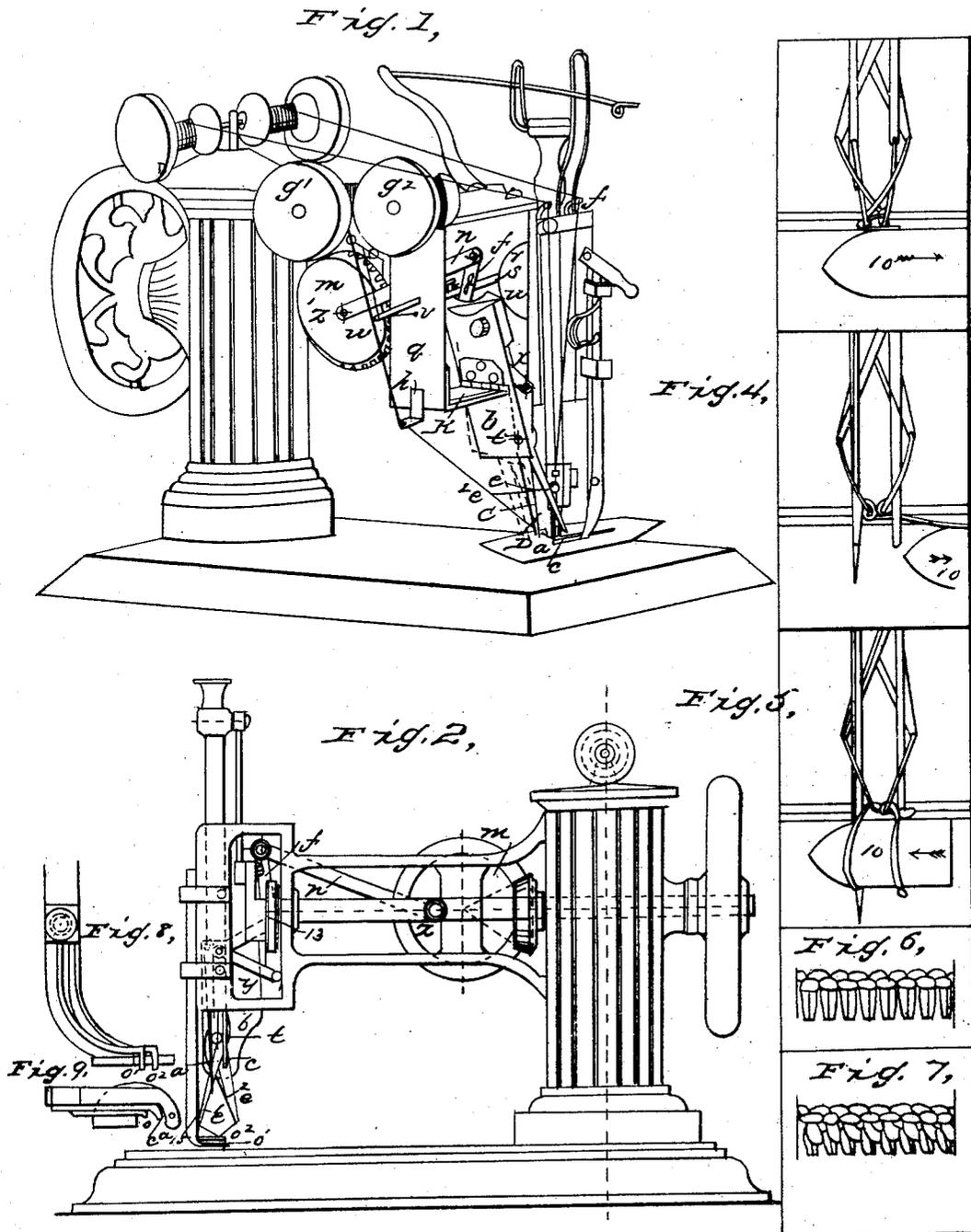


W. WEITLING.  
Sewing Machine.

No. 37,931.

Patented March 17, 1863.



WITNESSES:

*Philip Martin*

INVENTOR:

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# UNITED STATES PATENT OFFICE.

WILLIAM WEITLING, OF NEW YORK, N. Y.

## IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 37,931, dated March 17, 1863.

To all whom it may concern:

Be it known that I, WILLIAM WEITLING, of New York, in the county of New York and State of New York, have invented a new and useful Improvement in Sewing-Machines for Making Button-Holes; and I do hereby declare that the following is a clear, full, and exact description of the same, reference being had to the specification of another improvement in it, bearing originally the same date as this, (December 20, 1862,) and to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a perspective view of my invention. Fig. 2 represents a longitudinal vertical view of the same. Figs. 3, 4, and 5 represent different positions of the threads. Figs. 6 and 7 represent plan or top views of the button-hole stitch.

Similar letters of reference indicate corresponding parts in the seven figures.

The thread of the needle is marked red, that of the thread-carrier blue, those of the thread-holder green, and that of the shuttle black.

My invention consists in the application to sewing-machines of a double-thread holder, which operates, in conjunction with the needle, a thread-carrier, and shuttle, to form the button-hole stitching, the double-thread holder crossing its two threads under the needle and vertical thread-carrier, the threads of which interloop with the crossed threads, and which are secured by the shuttle-thread passing through the loops of the needle and vertical thread-carrier, the operation resulting in a substantial button-hole stitch, which may also be applied advantageously to the edging of cloth.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

I use a sewing mechanism in which the operating-line of the shuttle or of its equivalent traverses the feeding-line, and which mechanism is provided with a thread-carrier consisting of a needle having no piercing-point, as described in my patent dated October 29, 1862. I use a shifting double-thread holder consisting of a pair of levers (the thread-holder levers) whose arms  $e'$  and  $e''$  act as thread-holders, moving on a common fulcrum, 4, fixed upon the thread-holder plate  $b$  so as to cross each other alternately in a direction parallel to

the plane of that plate, and in such a position as to project with their ends down below the edge of that suspended plate and in a slight curve toward the position of the needle  $a$  and the thread-carrier  $c$ . The ends of these arms are each provided with an eye for the passage of a thread. The thread of the thread-holder  $e''$ , passing through leaders  $t u v w$ , is supplied from spool  $g''$ . That of the thread-holder  $e'$ , passing through leader  $h$ , is supplied from spool  $g'$ . Lever  $f$  moves on another fulcrum, 12, fixed also upon the thread-holder plate  $b$ . The arms of lever  $f$  are connected to the upper arms of the thread-holder levers by means of the rods  $x y$ . By connecting the upper end of lever  $f$  with connecting-rod  $n$  and imparting to this rod a reciprocating motion a reciprocating crossing motion is imparted to the two thread-holders by the action of a beveled gear,  $m$ , attached to the main shaft of the sewing-machine, acting by crank-pin  $z$  on connecting-rod  $n$ , and being so regulated by the adjusting of the gear as to effect the crossing motion of the thread-holders at the time when the needle  $a$  and the thread-carrier  $c$  descend under and before they ascend over the bed-plate. Thread-holder plate  $b$ , serving thus as a base to the crossing operation of the thread-holder levers  $e'$  and  $e''$ , which traverse the feeding-line, acts also as a lever for imparting to the thus-crossed thread-holders a reciprocal motion along that line and traversing the line of the crossing operation, moving thus alternately from position C to position D and back, as shown by Fig. 1. By this arrangement the crossing thread-holders are alternately held forward under the needle  $a$  and thread-carrier  $c$ , and are withdrawn therefrom at the proper time.

Thread-holder plate  $b$  in its quality of a lever has its fulcrum in an axis passing through hinge  $i'$  in a direction parallel to the plane of that plate. Hinge  $i'$  is attached to lifting-plate  $k$ , which plate, supporting the thread-holder plate  $b$ , moves with it in hinge  $i''$ , fastened to the upright part of angular supporter  $q$ . Upon the base part of this supporter lifting-plate  $k$  reposes, holding the thread-holder plate in a vertical position, or nearly so, suspended by its hinge  $i'$ , which position is alternately changed, and that change controlled by the revolution of eccentric  $r$ , with which eccentric the upper part of thread-holder plate  $b$  is con-

needed by arm *s* of a sliding ring moving on eccentric *r*. The motion of this eccentric thus imparted to plate *b* causes this plate alternately to incline obliquely from and move back to its vertical position, moving thus the thread-holders *e'* and *e''* reciprocally forward toward and back from the needle *a* and the thread-carrier *c*. Thus when the needle-bar rises the lower part of the plate *b*, acted on by eccentric *r*, inclines forward, and the thread holders hold their crossed threads forward under the needle *a* and the thread-carrier *c*, in a position represented by Fig. 3, until both descend under the bed-plate, when the lower part of the thread-holder plate moves back from the needle *a* and the thread-carrier *c*, which then in descending to their lowest point pass to a position, as represented by Fig. 4. They then take up and interloop with their threads the threads of the thread-holders *e'* and *e''* on the upper side of the button hole or edge, forming a stitch on the upper side of the button hole or edge, as represented by Fig. 6. In ascending again the threads of the needle *a* and the thread-carrier *c* form loops below the bed-plate, through which the shuttle 10 passes, as represented by Fig. 5, which loops are thus checked by the thread of the shuttle or its equivalent passing through them, forming thus a stitch on the lower side of the button hole or edge, as represented by Fig. 7. Meanwhile the thread-holders while receding from the needle *a* have crossed each other and are moved forward again, when the needle *a* and the thread-carrier *c* ascend over the bed-plate, and the operation begins anew. When thus the button-hole is stitched thread-holder plate *b* is lifted up by hand with lifting-plate *k* and the fabric shifted to another button-hole opening.

The button-hole guide consists of two short pins, *o'* and *o''*, passing vertically through the opening of the button-hole to the edges of the opening in the bed-plate for the passage of the needle and the thread-carrier. These pins may be fixed either in the bridge of the bed-plate or may be fastened to wires to the lower part of the cloth-presser, as shown by Figs. 2, 8, and 9. The position of these pins is in the opening of the button-hole parallel to the edges thereof, so that the needle *a* and the thread-carrier *c* are working automatically between these pins, which thus serve as guides to the passage of the round as well as to the passage of the straight portion of the button-hole.

The foot of the cloth-presser is provided near its point with an eye or leader, 15, for the passage of a cord. This eye is placed so as to lead the cord in a straight line over the edge

of the fabric along the opening of the button-hole and along the guide-pins standing in that opening, running thus along the button-hole between the needle *a* and the thread-carrier *c*, the needle working on one side of it and the thread-carrier on the other side between the two pins.

The stitch made by this machine may be equally well applied for edging cloth or other fabric, and in that case two needles may be used instead of one needle and vertical thread-carrier.

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

1. A double-thread holder operating in such a manner as to cross its two threads alternately to the right and to the left, and having a reciprocating motion to and from the needle or needles of a sewing-machine, substantially in the manner and for the purpose herein described.

2. In combination with a sewing mechanism provided with a thread-carrier operating through the opening of the button-hole, a double-thread holder operated in such a manner as to cross its two threads alternately to the right and left, and having a reciprocating motion to carry the crossed threads to and under the needle and vertical thread-carrier *c*, substantially in the manner and for the purpose described.

3. A thread-holder consisting of a pair of levers moving on a common fulcrum toward and from the needle or needles, and having also a crossing motion of its arms, whose ends *e'* and *e''* are provided each with an eye or thread-leader for the passage of thread, as herein described, and for the purpose set forth.

4. The combination of a shifting double-thread holder and a thread-carrier with a sewing mechanism, substantially as herein described, and for the purpose set forth.

5. Securing the thread-holder plate *b* to angular supporter *q* by means of double hinges *v'* and *v''*, so as to raise or lower the double-thread holders *e'* and *e''* at pleasure, substantially in the manner and for the purpose described.

6. The button-hole guide consisting of the two pins *o'* and *o''*, whether attached to the bed-plate or to cloth-presser, when the same are constructed and operated substantially in the manner and for the purpose described.

WILLIAM WEITLING.

Witnesses:

PHILIPP ECKSTEIN,  
JOHN NESS.