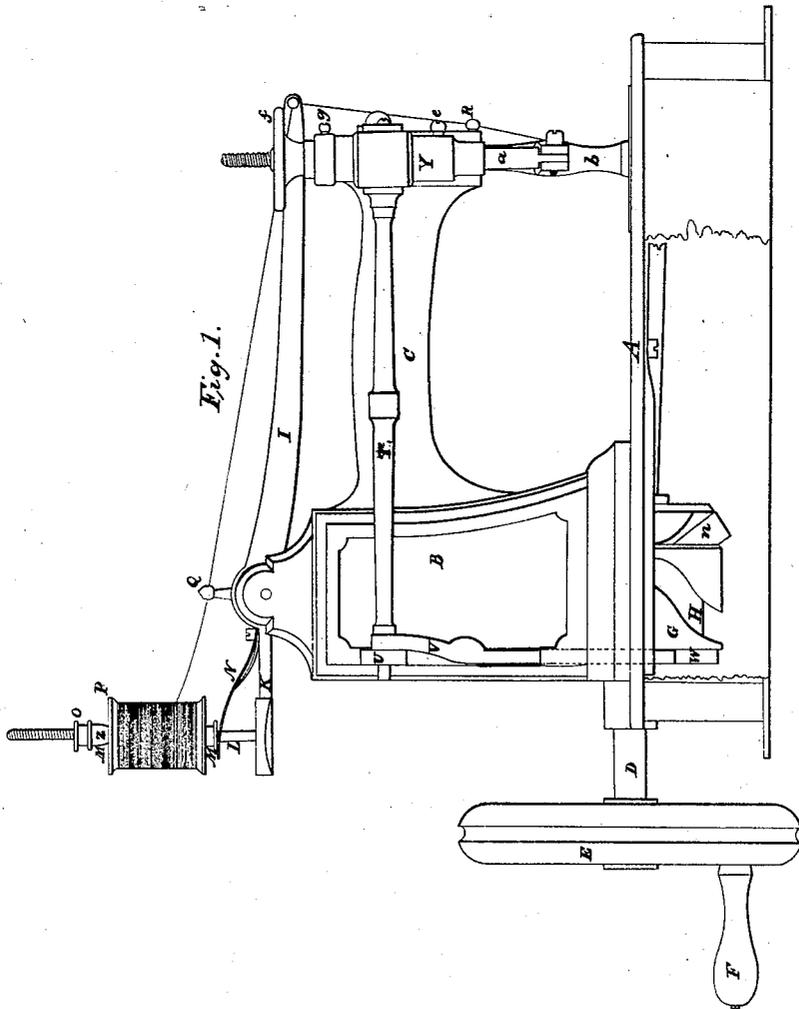
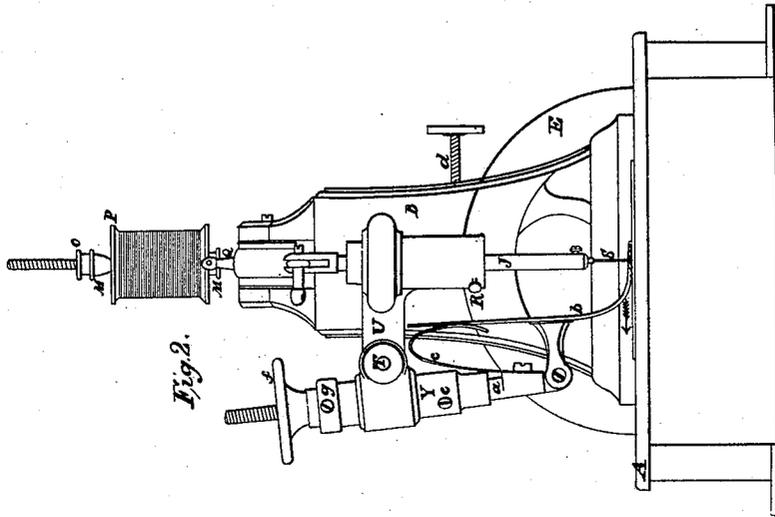


A. C. HERRON.
SEWING MACHINE.

No. 17,930.

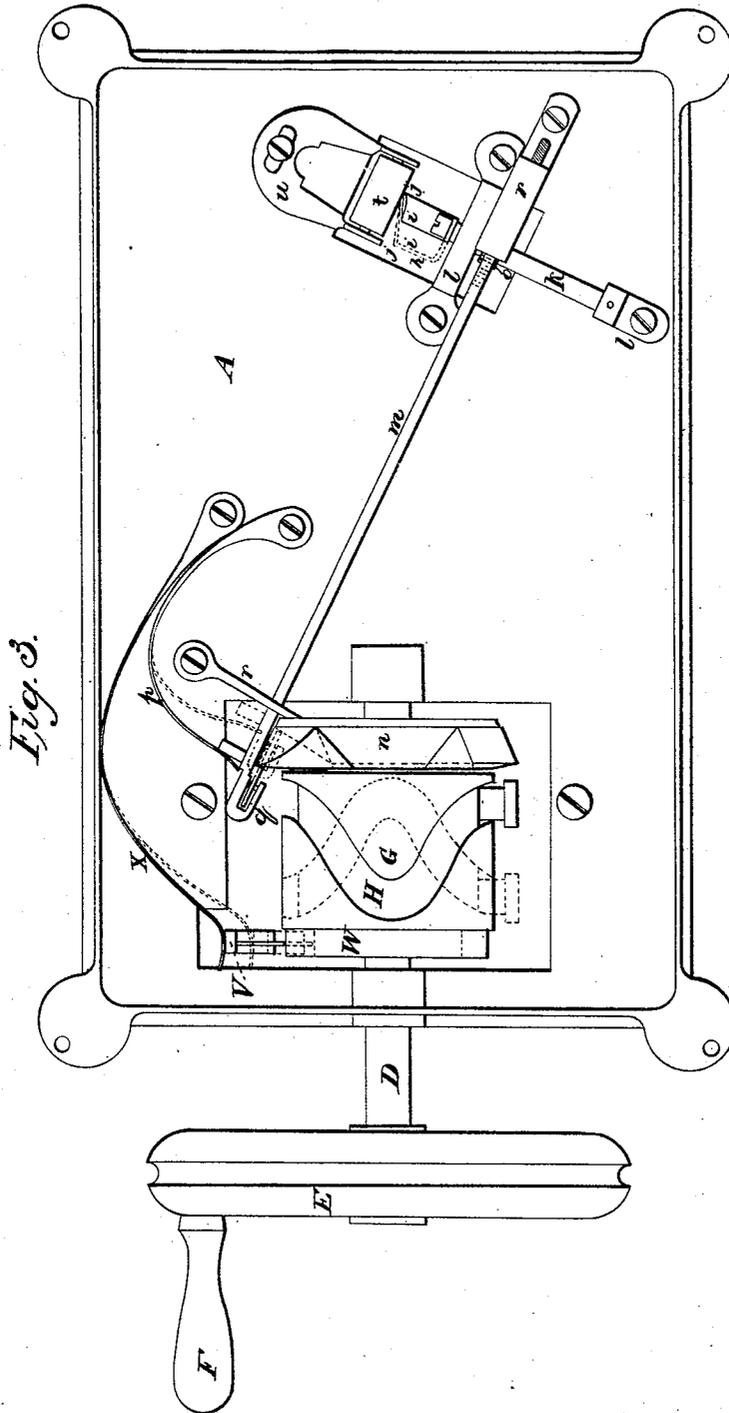
Patented Aug. 4, 1857.



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UNITED STATES PATENT OFFICE.

ABIAL C. HERRON, OF REMSEN, NEW YORK.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 17,930, dated August 4, 1857.

To all whom it may concern:

Be it known that I, ABIAL C. HERRON, of Remsen, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare that the same are described and represented in the following specification and drawings.

To enable others skilled in the art to make and use my improvements, I will proceed to describe their construction and operation, referring to the drawings, in which the same letters indicate like parts in each of the figures.

Figure 1 is an elevation of one side. Fig. 2 is an elevation of one end. Fig. 3 is a plan of the bottom of the machine.

My invention consists in the arrangement of a hook or looper, of the form hereinafter described, having a reciprocating movement through an arc of about a quarter of a circle to catch the loop formed by the needle and carry it toward the cloth, the hook or looper operating in combination with the needle and an elastic roll, which roll revolves on its axis and presses the needle into the proper relative position with the hook, and also aids in opening the loop for the reception of the looper.

In the accompanying drawings, A is the base of the machine, having the stand B fastened to it, which stand B is provided with an arm, C, extending out over the base, as shown in the drawings, Fig. 1.

The shaft D is fitted to turn in proper perforations in the base A, right under the stand B, which is made hollow to accommodate the parts working in it, as will be hereinafter described.

The shaft D is provided with a crank-wheel, E, and pin F, to turn it and operate the machine by hand; or a band may be applied to the wheel E, so as to operate it by other power.

The cam G is fastened to the shaft D, and provided with a groove, H, to vibrate the lever I on a pin in the top of the stand B. One arm of this lever projects down into the groove H, and the other projects over the arm C, to operate the transverse rod J, which is connected to it, as shown in Fig. 1. The arm K of the lever I has the spool-stud L in it, which is provided with two conical tubes, M M, to accommodate bobbins with holes of different sizes, the lower tube resting on the spring N, and the friction of the spring may be gradu-

ated to suit the thread by turning the nuts O and M on the stud above the upper tube, Z. The bobbin P supplies the thread, which runs through the guide Q and a hole in the lever I, and through the guide R in the end of the arm C, and through the eye of the needle S, fastened in the end of the transverse rod J, which traverses in the end of the arm C.

The rock-shaft T turns in the projections U U from the stand B and arm C, and is operated by the arm V, moved by the cam W on the shaft D, being pressed against the cam by the spring X, fastened to the base A, and shown in Fig. 3.

The tube Y of the feeding apparatus is fastened to the end of the rock-shaft T, and vibrated by it, carrying the rod *a* and feeding shoe or lever *b*, hinged to its lower end and pressed against the cloth by the spring *c*, fastened to the rod *a*. The shoe *b* is made in the form shown in the drawings, its sole or bottom being fluted, so as to push the cloth, when it is moved in the direction of the arrow, and so as to slip on the cloth when moved in the opposite direction. The motion of this shoe may be graduated by turning the screw *d* in the stand B, which graduates the vibration of the lever or arm V on the opposite end of the rock-shaft. This shoe may be raised to put the cloth under it by pressing its upper end towards the rod *a*, which rod is prevented from turning by the point of the screw *e*, which fits into a groove in the rod *a*, and it is traversed in the tube by the nut *f*, fitted to the upper end of the rod and into the end of the tube, the screw *g* entering a score in the nut, so as to hold it in the tube and allow it to turn.

The needle S carries the thread through the cloth and through a hole in the base A, and as the needle is drawn back it forms a loop, which is caught by the hook *h*, Fig. 3, under the base A, and held while the needle is drawn up and put down again through the cloth and through the loop on the hook, which is then swung out of the loop or swung back, so that the loop slips off of the hook and is drawn out of the way by the needle S, and when the needle begins to draw back it forms another loop, which is caught by the hook *h* as it swings forward, as before. The point of the hook, when it is vibrated, describes the arc of a small circle, while its base *i* describes the arc of a larger one, and swings toward the cloth as it catches

the loop in an opposite or partly opposite direction to that in which the cloth is moved, so as to hold the loop very near the cloth and make it very short, so as to wear the thread but little, and draw it tight in the cloth to make a close seam, the loop being drawn flat and without twist, so as to make a flat stitch, precisely as the common loop-stitch is made when the needle is operated by hand. The hook *h* is made in the form shown in the drawings, Fig. 3, and is scored out or depressed a little at *j* on each edge where the point joins the base, and where the thread lies when the base of the hook is swung nearest the cloth. These scores insure the hook to carry the loop up and hold it nearly at right angles to the needle, so as to insure the needle to pass through the loop with certainty when the machine is operated with a quick motion.

The hook *h* is fastened to the shaft *k*, which operates it and turns in the stands *ll*, fastened to the base *A*, being provided with a segment of teeth, which are acted upon by the rack *m*, which is traversed by the cam *n* and spring *p*, which presses the friction-roller *q* in the end of the rack against the cam. The rack *m* traverses in the stands *r r*, fastened to the base *A*, and the cam *n* is fastened to the cam *G* and turns with it. The spring *p* is fastened to the base *A*.

The shaft *k* may be turned by an arm hinged to the rack or rod *m*, or by making a spiral groove in the shaft and vibrating a lever with one end in the groove, should either of those ways be preferred.

The roller *t*, I prefer made of india-rubber;

but it may be made of such other material as will answer the purpose. It has a metal bushing, and turns freely on a pin in the stand *u*, fastened to the base *A* by a screw through a slot in the stand *u*, so arranged that the stand may be moved to adjust such part of the roller to the needle as may be desired. The roller *t* should have its axis at a right angle to the shaft *k*, and should be placed so as to hold the needle in a proper relative position to the hook *h*, and so as to press the thread against the needle, or into a groove in it, so as to press the thread through the eye and aid in throwing it from the needle on the side opposite to the roller, to facilitate the hook in catching the loop, and make it more certain to do so, and insure it not to drop a stitch.

I believe I have described and represented my improvements so as to enable any person skilled in the art to make and use them. I will now state what I desire to secure by Letters Patent, to wit:

I do not claim a rotating hook which has a longitudinal or traverse motion in the direction of its axis in addition to its rotary motion; but

What I do claim, and desire to secure by Letters Patent, is—

The hook *h* and roll *t*, arranged and operating in combination with the needle, in the manner substantially as described, for the purpose specified.

ABIAL C. HERRON.

Witnesses:

J. DENNIS, Jr.,

JOHN S. HOLLINGSHEAD.