H. W. HARKNESS.

Sewing Machine.

No. 22,143. Patented Nov. 23, 1858.

Fig. 2,

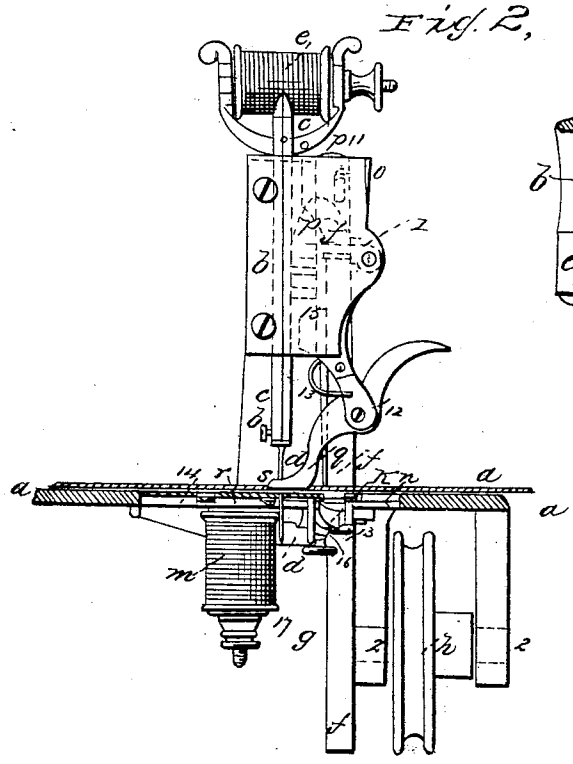


Fig. 3,

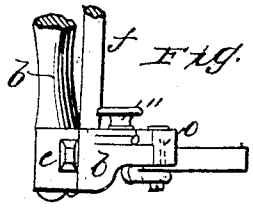
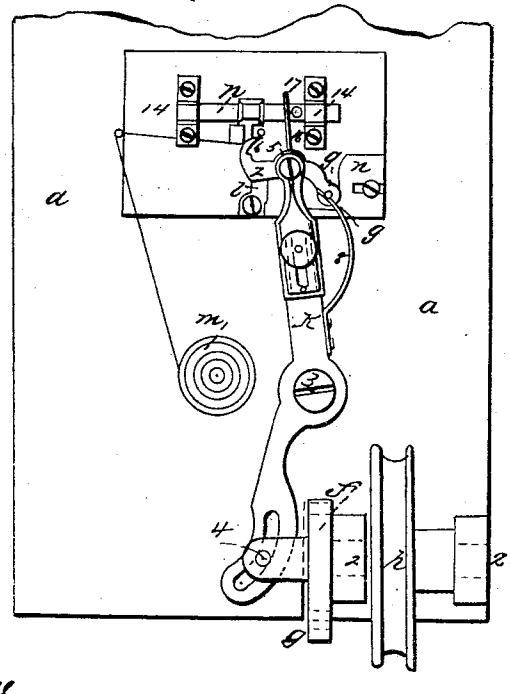


Fig. 1,



Witnesses:
Henry A. Mitchell
Amos Ch. Johnson

Inventor:
Hiram W. Harkness

UNITED STATES PATENT OFFICE.

HIRAM W. HARKNESS, OF BRISTOL, CONNECTICUT, ASSIGNOR TO HIMSELF AND MILLFORD H. NETTLETON, OF SAME PLACE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **22,143**, dated November 23, 1858.

To all whom it may concern:

Be it known that I, HIRAM W. HARKNESS, of Bristol, in the county of Hartford and State of Connecticut, have invented, made, and applied to use certain new and useful Improvements in Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making part of this specification, wherein—

Figure 1 is an inverted plan, and Fig. 2 is a front view, of my machine; and Fig. 3 is a plan of the pressure-foot and needle-arm.

Similar marks of reference denote the same parts.

My said invention applies to the feeding device; and it consists in a vertical clamping and a smooth reciprocating surface, whereby the cloth is fed along by pressure between the end of said reciprocating surface and the vertical clamping-surface which projects through the bed.

In the drawings, *a* is the bed of the machine, sustained on any suitable table or frame, and carrying the arm *b*, that receives at its end the needle-bar *c*.

d is the eye-pointed needle receiving thread (shown in blue lines) from the spool *e*, that is adjusted to the desired tension by a screw or other usual means. The needle and bar receive motion from the bent lever or needle-arm *f* on the fulcrum 1, and this is actuated by a crank-pin or eccentric, *g*, on the shaft 2, which receives motion from competent power at the pulley *h*.

k is a lever on the under side of the bed *a*, set on a fulcrum, 3, and receiving a vibratory motion from the needle-arm *f* by a pin, 4. This lever *k* is connected at the other end to the looper *i* by the screw 5.

6 is the looping-point, and 8 is a spring on the lever *k*, acting against a pin in the end 9 of the looper *i* to turn the same on its center 5 and keep the back of said looper in contact with an adjustable plate, *l*, the object of which is to keep the looping-point 6 as close to the needle as possible as the looper is moved by the lever *k*.

m is the spool, supplying the second thread (shown in red lines) to the looping-point 6, where it passes through the eye in the looper, and the sewing is performed in the well-known manner, the point 6 taking a loop of needle-thread, the needle retiring and taking another stitch, and also a loop of second thread, the looper retiring dropping the first loop, and so on. In order, however, to cause my looping-point 6 to place the second thread, as it passes from the eye of the looper to the cloth, in such a position that the needle on its descent will pass between the thread and the looper, I cause a crosswise turning motion to be imparted to the looper *i* by the end I coming in contact with an adjustable plate *n*, so attached to the bed that it shall not operate on the looper until the needle's point has nearly drawn up the cloth, which plate, turning the looper *i* on its center 5, throws the point 6 toward the front of the machine, carrying the second thread across the path of the descending needle, insuring the proper taking of the loop.

o is a lever or plate attached at the fulcrum-screw 10 to the stock *b'* of the needle-bar, and receiving a reciprocating motion from the needle-arm *f*, taking the edge of an adjustable incline plate, *p*, that is attached to the lever *o* by a screw, 11, and according to the vertical position of this incline plate (see dotted lines, Fig. 2) so the needle-arm *f* will give more or less vibrating motion to the said lever *o* as the needle completes its upward stroke.

q is a smooth pressure-foot keeping the cloth to the bed *a*. This foot is jointed to the lower end of the lever *o* at 12, and has a spring, 13, to keep it to the cloth. The lower surface of this foot, however, being smooth, will not act to feed the cloth. I therefore provide a slide, *r*, moving in bearings 14 below the bed *a*, and formed with a clamping-jaw, *s*, that passes up through the bed *a*, rising slightly above its surface.

The operation of this part is as follows: The needle-arm *f* on its descent pushes the lever *o* back by taking the incline 15, and as the needle rises the lever *k* slides the clamping-jaw *s* toward the foot *q* by a spring, 16, taking a pin, 17, on the bar *v* of said jaw, thus clamping the cloth against the end of the foot *q*, and as the needle rises out of the cloth the needle-arm *f*, coming in contact sooner or later with the adjustable incline *p*, gives a feeding motion of a greater or less extent to the cloth, the spring

16 yielding to this motion, and then, being itself relieved by the vibration of the lever *k*, leaves the jaw *s* quiescent, and the parts operate as before.

I do not claim feeding the cloth in sewing-machines by pressure between two flat smooth surfaces; neither do I claim feeding cloth by a revolving wheel and vibrating clamping-surface; nor between two wheels, with either smooth or roughened surfaces; but I am not aware of any previous instance in which a smooth pressure-foot reciprocating on the surface of the cloth and holding the same down onto the stationary bed has effected the feeding of the cloth by a vertical clamping-surface rising through a slot in the bed and acting against the end of said smooth pressure-foot, forming a bend or angle in the cloth that insures a firm hold with very little pressure of the foot on the bed. Therefore

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

Feeding the cloth to sewing-machines by the combined action of a smooth reciprocating pressure-foot, and a vertical clamp acting at the end of said foot to hold the cloth firmly while being moved, the bend or angle thus formed in the said material enabling the feed to act with but little pressure on the goods from the smooth foot-piece, as specified.

Dated this 25th day of August, 1858.

H. W. HARKNESS.

Witnesses:

HENRY A. MITCHELL,

AMOS M. JOHNSON.