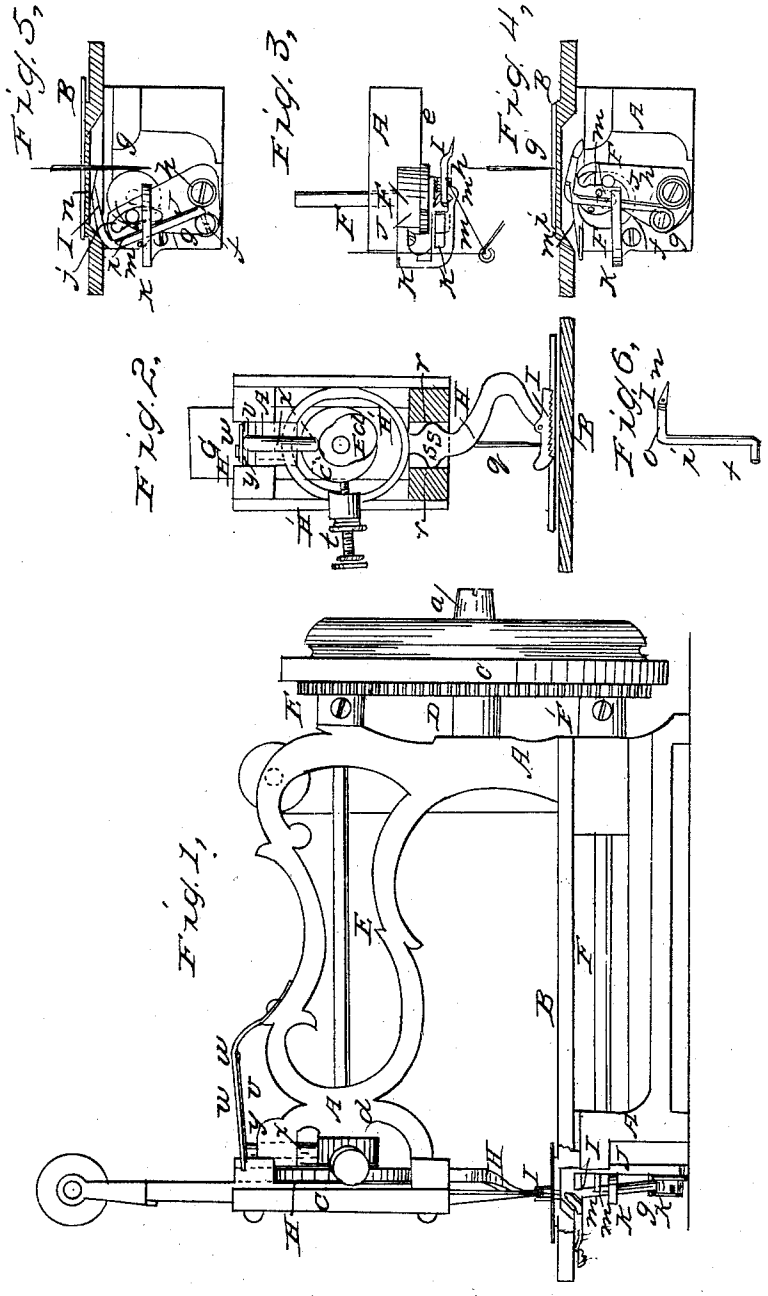
A. B. SHAW.

Sewing Machine.

No. 37,202. Patented Dec. 16, 1862.



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UNITED STATES PATENT OFFICE.

A. B. SHAW, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND N. H. SHAW, OF SAME PLACE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **37,202**, dated December 16, 1862.

To all whom it may concern:

Be it known that I, A. B. SHAW, of the city of Worcester, in the county of Worcester and State of Massschusetts, have invented 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 same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front view of a machine with my improvements. Fig. 2 is a vertical section at right angles to Fig. 1, exhibiting the mechanism for holding down and feeding the cloth or other material to be sewed. Fig. 3 is a top view of the looper and its operating mechanism. Fig. 4 is a side view corresponding with Fig. 1. Fig. 5 is a view similar to Fig. 1, but showing the parts in a different position. Fig. 6 is a side view of the looper.

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

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

A is the stand or frame of the machine, and B the work-bed, bolted to the lower part of the stand A.

C is the driving-wheel, arranged to rotate upon a fixed stud, *a*, at the opposite end of the machine to where the needle is situated, and carrying a spur-gear, D, which gears with a spur-gear, E′, on the needle-operating and feed-operating shaft E, and with a spur-gear, F′, on the looper-operating shaft F, the said shafts being arranged parallel with each other, the latter in bearings under the work-plate and at the back of the machine and the former in bearings in the upper part of the framing. The shaft E carries a crank or eccentric wrist, *b*, for operating the needle-bar G, a cam, C, for operating the feed-lever H, and a cam, *d*, for taking the pressure off the feeding and pressing foot pieces. The shaft F carries a crank or eccentric wrist, *e*, for producing the operation of the looper I.

The looper I is attached to or made in the same piece with an arm, *i*, at the bottom of which is formed a pivot, *f*, which is received in a bearing in a stud, *g*, which is firmly secured in a slotted rocker, J, which rocks on a fixed horizontal pin, *h*, secured in the lower part of that end of the stand A next the needle. The said looper has two movements—viz., a longitudinal one, produced by the movement of the rocker J, above mentioned, and a lateral one, produced by the vibration of the arm *i* from the pivot *f*.

The above-mentioned lateral vibration of the arm *i* is produced by its being carried, in its movement with the rocker, back and forth through the curved slot *k*, provided in a stationary plate K, (shown best in Fig. 3,) secured to the stand A. The vibrating movement of the rocker J is produced by the revolution of the crank or eccentric-wrist pin *e*, before mentioned, in the slot *j*, provided in the said rocker for its reception, the slot being so formed and the wrist *e* so arranged as to properly time the movements of the looper relatively to those of the needle, as will be presently described.

To prevent any strain of the pivot *f* or stud *g* being produced in the working of the looper, two steady-pins, *m m*, are provided in the rocker J for the arm *i* to work between. The looper is curved vertically in a form approximating to that of an arc concentric with the axis of the pin *h*. It also has a short lateral curvature, as shown at *p* in Fig. 3, the hollow side being toward the needle, and has an eye, *n*, in front of and an eye, *o*, behind the said curvature, and a groove between these eyes on the side farthest from the needle.

The operation of the looper relatively to the needle *q* in making the stitch is produced as follows: When the needle has descended through the cloth to its lowest position the looper is in the position shown in Fig. 5. As the needle rises the looper advances, the arm *i* working in the straight part of the slot and the looper passing between the needle and its thread and retaining upon itself a loop of the needle-thread. Just as the curve *p* of the looper arrives at the needle the arm *i* arrives at a bend in the slot *k*, and the looper, in its continued advance, is caused by the form of the said slot to receive a lateral movement toward the path of the needle, the point of which has now risen above it, and as the needle descends again through the cloth it is caused to pass within the curve *p* of the looper,

between the latter and the portion of the locking-thread, which is extended straight across the said curve from the eye *n*. As the looper retires it moves laterally in the opposite direction to that above mentioned, and its point is thereby drawn out of the way of the needle. The lateral movement and lateral curvature of the looper combine to insure the passage of the needle into the loops of the looper-thread.

The feed-lever H, carrying the jointed feeding and pressing foot L, is fitted into a vertical slot, *r r*, in the stand A, the part received in the said slot having rounded protuberances *s s* on each side to bear against the sides of the said slot in such a manner as to permit the free vibration of the lever, as well as a free upward and downward movement thereof. The said lever is made with a yoke, H′, for the reception of the cam *c*, and fitted with a set-screw, *t*, to regulate the feed, as in many other sewing-machines. The downward pressure upon the said lever is produced by a spring, *u v*, made in two leaves, of which the upper leaf, *u*, is secured firmly to the top of the stand, and the lower leaf, *v*, is attached to the upper one, *u*, by a rivet, *w*, or other means, in such a manner as to permit it to have an independent upward and downward movement. The upper leaf, *u*, does not touch the lever H, but the end of the lower one, *v*, enters a transverse notch in the said lever.

Between the spring and the cam *d* there is arranged a pin, *x*, which is fitted to slide vertically in a guide in the standard A, and a hole, *y*, is provided in the lower leaf of the spring for the said pin to pass freely through. While the needle is in the cloth and the lever is returning with the foot L, preparatory to a new feed-movement, the cam, by its action through the pin *x* on the upper leaf of the spring, raises the said leaf, and so removes the pressure of the spring from the lever and foot, allowing the latter to slide freely over the cloth, the lower leaf of the spring then hanging loose below the upper one; but before the needle is drawn out of the cloth the cam passes round far enough to let the upper leaf of the spring descend, and the two leaves of the spring then combine to press upon the lever and foot, and continue to do so until the needle has again entered the cloth, when the cam again raises the upper leaf.

I do not claim broadly giving the looper a lateral as well as a longitudinal movement; nor do I claim broadly taking the pressure off the foot or pressure pad of a sewing-machine while the needle is in the cloth; but

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

The combination of the lifting-cam and pin *x* with the lever H and springs *u v*, in the manner and for the purpose herein shown and described.

A. B. SHAW.

Witnesses:
HERBERT A. SHAW,
NATHL. M. SHAW.