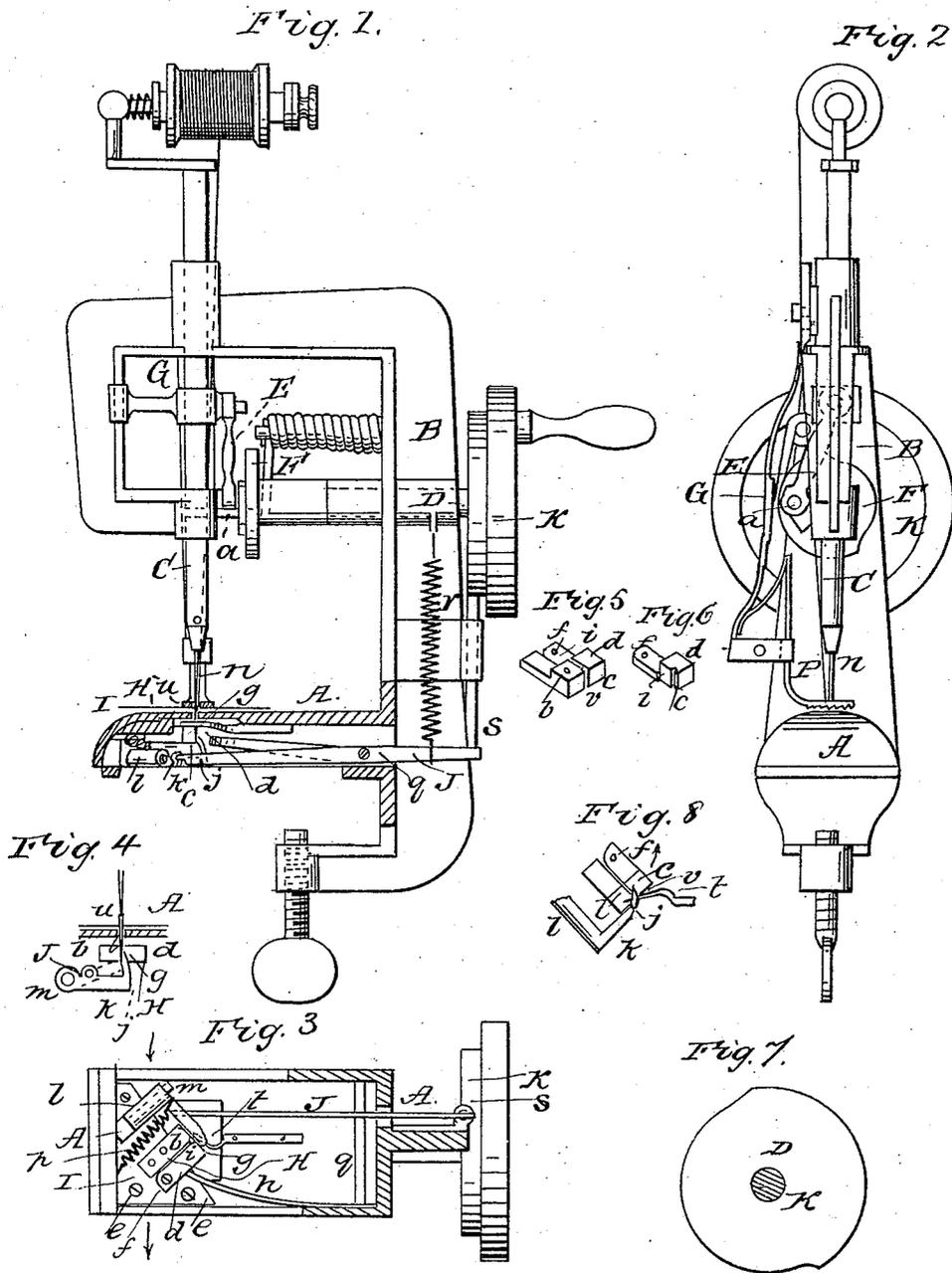


J. E., J. C. & O. ATWOOD.

Sewing Machine.

No. 19,903.

Patented April 13, 1858.



UNITED STATES PATENT OFFICE.

J. E. ATWOOD, J. C. ATWOOD, AND O. ATWOOD, OF MANSFIELD CENTRE, CONNECTICUT.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 19,903, dated April 13, 1853.

To all whom it may concern:

Be it known that we, J. E. ATWOOD, J. C. ATWOOD, and O. ATWOOD, of Mansfield Centre, in the county of Tolland and State of Connecticut, have invented certain new and useful Improvements in Sewing-Machines; and we 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 side view of a machine with our improvements, representing part of the table cut away to expose the mechanism which makes the stitch. Fig. 2 is a front view of the machine. Fig. 3 is an inverted plan of the same. Fig. 4 shows a face view of the needle-die, and also exhibits the looper and needle. Fig. 5 is a perspective view of the needle-die complete. Fig. 6 is a perspective view of the movable portion of the same. Fig. 7 is a front view of the cam by which the looper is operated. Fig. 8 is a top view of the needle-die, the looper, and the finger which confines the loop to the looper, while the looper holds it open for the needle to pass through.

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

Our invention consists in a novel arrangement of a needle-die, looper, and stationary finger, in combination with an eye-pointed needle to sew the chain-stitch with a single thread without missing any stitches.

To enable others to make and use our invention, we will proceed to describe its construction and operation.

A is the bed-piece of the machine, on which the cloth or other material is placed to be sewed, and B is a goose-neck standard cast with said bed-piece to contain the needle-bar and driving-shaft.

C is the needle-bar, working vertically and carrying the needle *n*.

D is the driving-shaft, arranged horizontally.

E is a connecting-rod connecting the needle-bar with a wrist, *a*, attached to the driving-shaft, and serving to drive the needle-bar. The wrist-plate F, to which the wrist *a* is attached, has its periphery formed to serve as a cam to operate the feed-lever G and its at-

tached dog P, the latter of which takes hold of the upper surface of the cloth.

H is the needle-die, shown separately in Fig. 5, and also shown in Figs. 1, 3, 4, and 8. The cavity *c* in the said die, through which the needle passes, is made partly in the stationary portion *b* of said die H and partly in the movable portion *d* thereof. The division of the die is at right angles to its face *g*. Both parts *b* and *d* of the die are secured to a plate, I, which is bolted by screw-bolts *e* to the under side of the bed-piece, the part *b* being secured immovably to the said plate, and the movable part *d* being pivoted by a screw or pin at *f*, near its back. The face *g* of the said die, against which the looper works, is parallel with the needle, and the cavity *c*, in which the needle works, is so close to this face that though the horizontal section of said cavity is a sufficient portion of a circle to confine the needle the said cavity unites with the face *g*, so as to leave the side of the needle which is next the face *g* in passing through the die flush with said face or projecting slightly beyond it, so that the looper in working close to the face of the die cannot fail to pass between the needle and its thread. A spring, *h*, is applied to the movable portion *d* of the die to press it toward the portion *b* or close it, so that it may always fit the needle tightly and adapt itself to needles of various sizes. Behind the cavity *c*, which receives the needle, there is a narrow cavity, *i*, in the part *d*, to receive any thread that may get slack in the grooved side of the needle, which side is arranged the farthest from the face of the die. This needle-die, with the exception of being made in two parts, does not differ very materially from the needle-die heretofore used in some machines. The face *g* of the die is set at an angle of about forty-five degrees to the direction of the feed movement, as shown in Figs. 3 and 8, where the direction of the feed movement is indicated by arrows. The said movement is toward the said face.

j is the looper, consisting of a curved tongue-like piece of steel attached to or formed in a piece with a small arm, *k*, which is attached to a sleeve, *l*, that is fitted to turn loosely on a fixed horizontal pin, *m*, secured in the bed-piece A at one side of the die, the said pin

being arranged at a right angle to the face of the needle-die, and the looper being nearly in the form of an arc described from the pin *m*, and arranged so that its point will work in contact with the face *g* of the die. The looper *j* is held in contact with the face *g* by means of a spring, *p*, applied to its arm *k*. It derives the necessary vibrating movement on the pin *m* to cause it to pass between the needle and thread from a lever, *J*, which works on a fulcrum, *q*, under the bed-piece *A*, one end of the said lever entering a hole in the arm *k*, and the other being connected with the standard *B* by a spring, *r*, and having resting upon it a sliding rod, *s*, which is operated upon by a cam, *K*, (of which Fig. 7 is the front view,) in such a manner as to cause a vibratory motion of the lever, which is kept to a bearing on the cam by means of the spring *r*, which exerts its force in an upward direction. *t* is the stationary finger, arranged under the bed-piece *A* close to the needle-hole *u*, for the purpose of confining the loop to the point of the looper while the needle passes through it.

The operation of the machine is as follows: As the needle descends through the cloth its point will not fail to enter the die, and it will force itself through the die without difficulty, as the spring *h* is not necessarily very strong, for the pressure of the looper against the needle pushes it toward the back of the die and toward the part *b*. The principal pressure is toward the back of the die, and though this is met by both parts *b* and *d* of the die it has little tendency to force the movable part *d* away from *b*. The looper is stationary in the position shown in Figs. 1 and 4 till after the needle has completed its descent and has commenced to rise and leave the thread slack on that side which is exposed

at the slit *v*, (see Fig. 5,) which is formed by the junction of the cavity *c* with the face *g* of the die; but as soon as the needle has risen a little way the looper begins to move on the pin *m* and crosses the slit *v*, thus passing between the needle and the slack thread. The position of the looper does not enable it of itself to retain a loop, as will be seen by reference to Fig. 4, in which it is shown in dotted outline in its highest or most advanced position; but in moving to the last-named position its point passes the finger *t*, and hence as the needle continues to rise and draw up the thread the thread is prevented from slipping over the point of the looper by the said finger and retained thereon in the form of a loop, which, owing to the inclined position of the face of the die relatively to the direction of the feed motion, and to the looper working parallel to the said face, it holds open in such a position (illustrated in Fig. 8) that the needle in its next descent passes through it with certainty, and thus completes the stitch.

We do not claim the use of a die to guide the needle and hold it steady against the action of the looper; but

What we claim as our invention, and desire to secure by Letters Patent, is—

The arrangement of the needle-die, the looper, and the stationary finger in such relation to each other as herein described, for the purpose of extending the loops in a position for the needle to enter them without failure.

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Witnesses:

EVANS PARISH,
EUGENE ATWOOD.