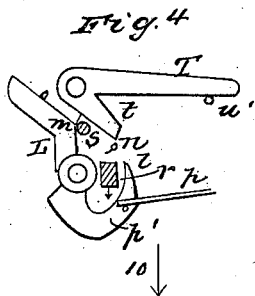
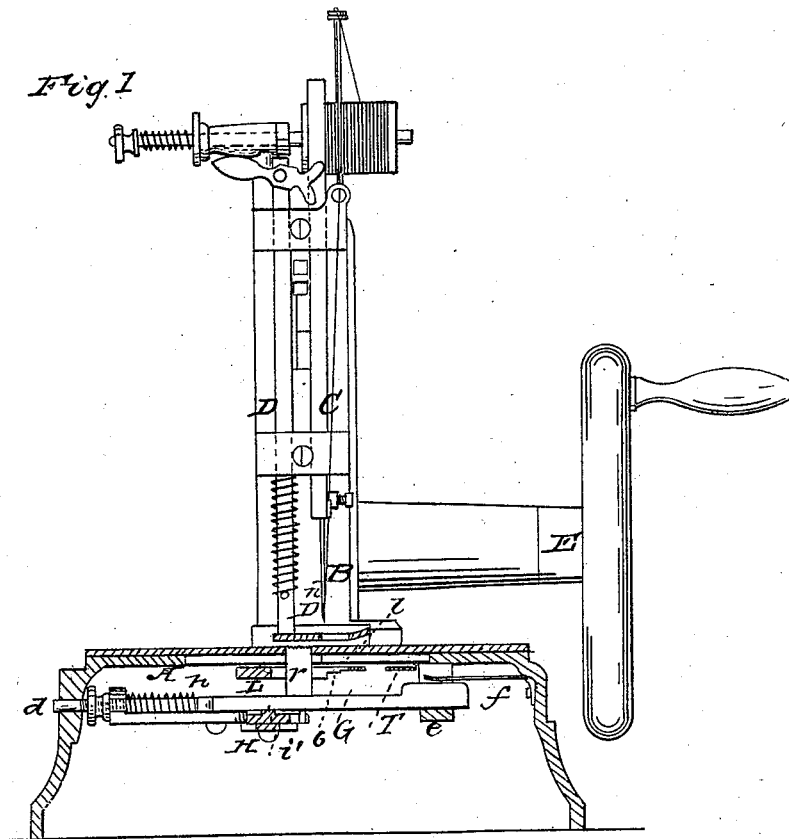


O. L. REYNOLDS.
Sewing Machine.

No. 19,793.

Patented March 30, 1858.



UNITED STATES PATENT OFFICE.

O. L. REYNOLDS, OF DOVER, NEW HAMPSHIRE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 19,793, dated March 30, 1858.

To all whom it may concern:

Be it known that I, O. L. REYNOLDS, of Dover, in the county of Strafford and State of New Hampshire, have invented a new and useful Improvement 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, making a part of this specification, in which—

Figure 1 is a vertical section of a machine with my improvement, taken in a plane passing close to the needle in a direction parallel to the feed movement or line of sewing. Fig. 2 is a vertical section of the machine, taken in a plane passing close to the needle at right angles to Fig. 1. Fig. 3 is an inverted plan of the same. Fig. 4 is an inverted plan of the looper and the loop-distender, which constitutes the principal feature of my invention. Fig. 5 is a perspective view of the points of the looper and loop-distender, showing their combined operation.

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

This invention relates to that description of sewing-machines in which a needle and looper are employed with a single thread to make the chain-stitch.

It consists, principally, in a device hereinafter termed the "loop-distender," operating in connection with a looper of suitable construction for the purpose of distending the loop in a proper manner and to a proper extent to insure the entrance of the needle.

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

A is the bed-plate of the machine, on the upper flat surface of which the cloth or other material being sewed is supported.

B is the standard, in which work the needle-bar C and the leg D' of the pressure-pad D.

E is the main shaft, driving the needle-bar by means of an eccentric wrist, *a*, which works in a slot, *b*, in an elbow-lever, F, which works on a fulcrum, *c*, and connects with the needle-bar.

G is the feed-bar, (best shown in Fig. 1,) carrying the serrated feeding-dog *r*, and having a horizontal longitudinal motion in guides *d e*, in the latter of which it is permitted a slight vertical motion, though it has a spring, *f*, ap-

plied to force it toward the bottom of the guide. The feed-bar G derives its longitudinal motion, and also a vertical motion to lift up the dog for the purpose of making it bite the material, from another bar, H, which works longitudinally and horizontally below it in a guide, *j*, but in a direction at right angles to it. This bar H receives its motion from the elbow-lever F by a connection with the lower extremity thereof. It produces the longitudinal motion of the feed-bar G by the action of a wedge-shaped portion, *g'*, of one of its sides on a pin, *g*, on the feed-bar, combined with the action of a spring, *h*, and it produces the vertical motion by the action on the under side of the feed-bar of an inclined projection, *i*, on its upper face.

l is the looper, the operative part of which does not differ materially in its form and construction from that employed in some other sewing-machines, it having a point which passes close to the needle *n* after the latter has been protruded and has carried the thread through the material, and having a shoulder, *6*, on its under side at a short distance from the point, as shown in Figs. 1, 2, 4, and 5. This looper *l* forms part of a horizontal lever, L, which works on a fulcrum, *k*, close to the under side of the bed-plate. It is driven in between the needle and thread to effect the formation of the loop by the action on the elbow *m* of its lever of a pin, *s*, attached to the bar H, the said bar moving in the direction of the arrow 7, Fig. 3, and after it has moved far enough past the needle *n*, which commences to rise while it (the looper) advances, the bar is held stationary during the latter portion of the ascent and the greater portion of the following descent of the needle by the pin *s* passing along the straight-edged portion *o* of the lever and back again as far as the elbow *m*, after which it is drawn out of the loop by the action of a spring, *p*, upon a small pin or projection, *p'*, on its under side.

In order to provide for the adjustment of the pin *s* to give the looper the proper movement, the said pin is not attached directly to the bar H, but to an elbow-piece, H', which is secured to said bar by screws *q q'*; the latter of which passes through a slot, *q''*, which permits the elbow-piece to move and be adjusted on the screw *q*.

t is the loop-distender, constituting one arm

of an elbow-lever, T, which works on a fulcrum, *t'*, under the bed-plate A. This lever is made of a thin piece of plate-steel, and is formed with a blunt point, as is best shown in Fig. 4. The other arm of the lever T has applied to it a spring, *u*, which, when the looper is retracted, holds the said arm against a fixed pin, *u'*, secured in the bed-plate, and holds the point of the loop-distender at a short distance from the needle and in such a position relatively thereto (shown in Fig. 4) that the looper, after its point has passed the needle a short distance, will pass in contact with it, and in so doing will pass between it and the needle in the manner shown in Figs. 3 and 5, where the looper is shown as having completed its advance through the loop. The side of the looper which works next the needle is in the form of an arc described from the center of *k*; but as it is taper the opposite side acts like a wedge upon the loop-distender and gradually forces the latter away from the needle. The spring *u*, however, keeps the point of the loop-distender in close contact with the looper after the latter comes in contact with the said point. The side of the looper toward the loop-distender has a slight groove, *v*, formed in it for the point of the loop-distender to work in.

The distension of the loop by means of the loop-distender and looper is effected in the following manner: As soon as the looper has passed a very short distance between the needle and thread, in the usual manner, and commenced the formation of the loop, the rise of the needle, which commences at about the same time as the advance of the looper, brings the bottom of the loop so high that the shoulder *6* of the looper comes in contact with the loop and carries it along until it brings one side of it into contact with the point of the loop-distender, which stops that side, while

the continued motion of the looper carries on the other side. At the same time that the looper carries along the one side of loop, it, by its taper form and wedge-like action on the loop-distender, causes the point of the latter to carry that side of the loop which it has arrested in the opposite direction to that in which the looper carries the other side; and hence as the movement of the looper is transverse to the direction of the feed movement (which is indicated in Figs. 4 and 5 by the arrow 10) the loop is distended in both directions laterally to the seam. The feed movement takes place after the looper has completed its advance, and while it still remains stationary in the loop, and this movement, distending the loop in a longitudinal direction, completes its distension in all directions, bringing it to the condition represented in red outline in Figs. 2, 3, and 5, which position affords ample room for the needle to enter it without any probability of failure.

The operation of the loop-distender and looper is best represented in Fig. 5. The groove *v* in the looper serves the purpose of insuring the catching of the thread by the point of the loop-distender and preventing the cutting of the thread by the said point by leaving a space between the thread and the looper where the loop-distender operates.

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

The loop-distender *t*, operated by and operating in combination with the shouldered looper *l*, substantially as and for the purpose set forth.

O. L. REYNOLDS.

Witnesses:

BENJA. G. ORGAN,
EDWARD M. CHRISTIE.