

L. W. LANGDON.
SEWING MACHINE.

No. 39,256.

Patented July 14, 1863.

Fig. 1.

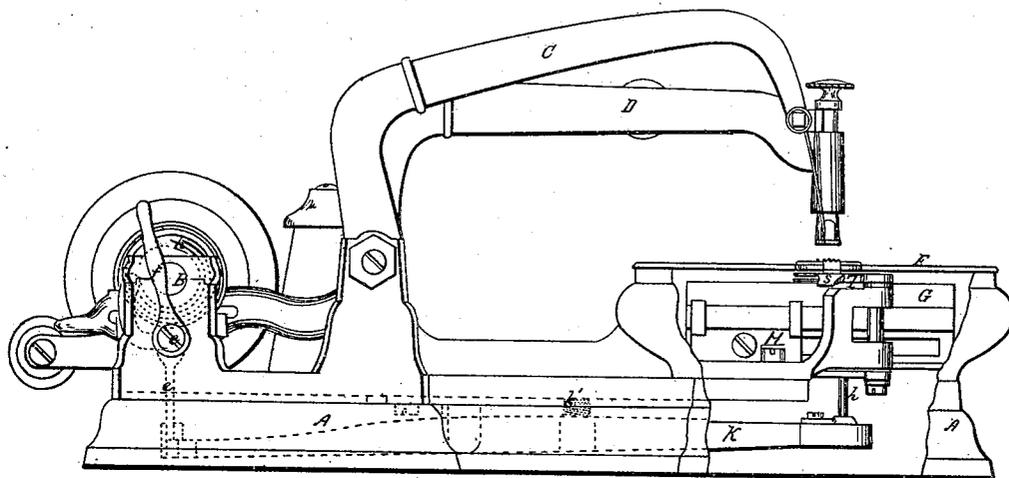
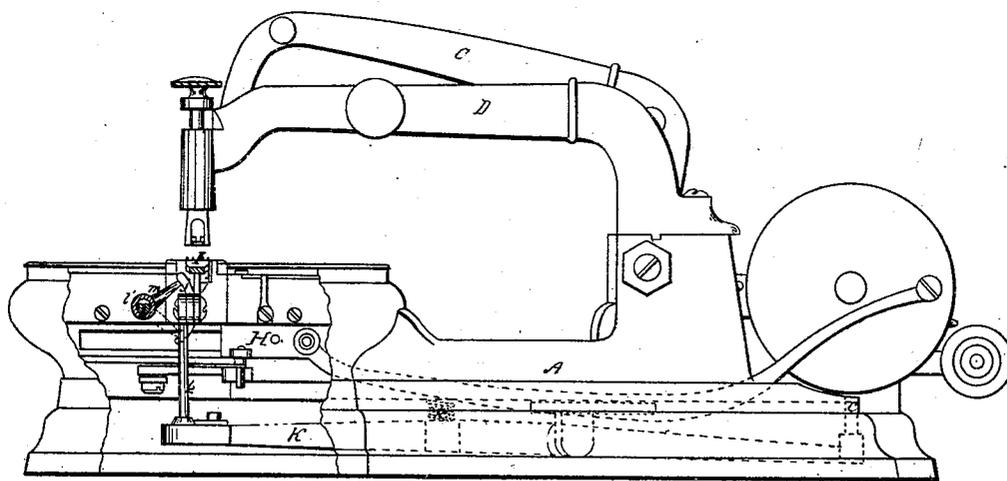


Fig. 2.



Witnesses.

J. W. Strong
Charles Strong

Inventor.

L. W. Langdon

L. W. LANGDON.
SEWING MACHINE.

No. 39,256.

Patented July 14, 1863.

Fig. 3.

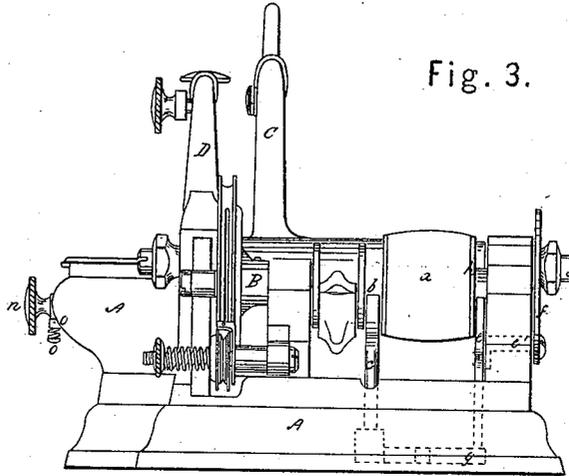


Fig. 5.

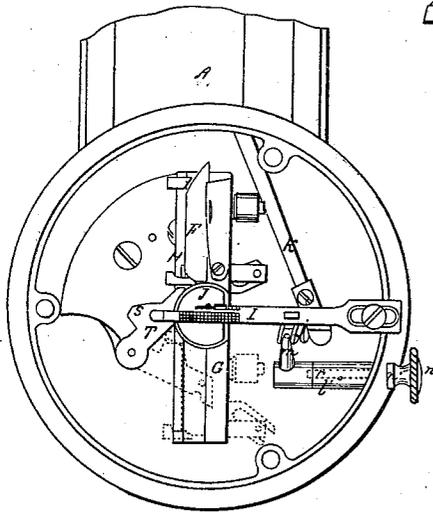


Fig. 6.

Fig. 7.

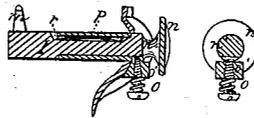
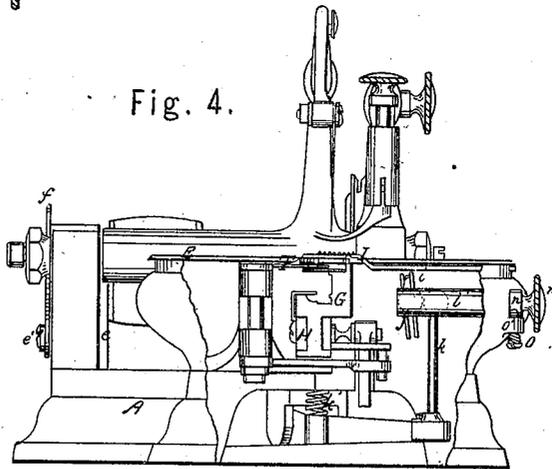


Fig. 4.



Witnesses

J. W. Strong
Charles Strong

Inventor.

L. W. Langdon

UNITED STATES PATENT OFFICE.

LEANDER W. LANGDON, OF NORTHAMPTON, MASSACHUSETTS, ASSIGNOR
TO HIMSELF AND DANIEL G. LITTLEFIELD, OF SAME PLACE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 39,256, dated July 14, 1863.

To all whom it may concern:

Be it known that I, LEANDER W. LANGDON, of Northampton, in the county of Hampshire and State of Massachusetts, 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 construction and operation of the same, taken in connection with the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation with a part of the bed removed to show the mechanism beneath the table. Fig. 2 is a like elevation of the opposite side. Fig. 3 is an elevation of the back end. Fig. 4 is an elevation of the front end with a part of the bed removed to show the mechanism within, and Fig. 5 is a plan of the machine beneath the table. Figs. 6 and 7 are details.

The subject-matter of my invention relates to the mechanism in sewing-machines for feeding the material along through the machine, which invention is represented as applied to what is known as the "four-motion" feed.

The first part of my invention consists in combining with the reciprocating-feeder such suitable devices as will enable the direction of its feeding motion to be reversed, so that the material may be fed in an opposite direction at will without reversing its position or removing it from the machine, by which means the end of the seam may be securely fastened or a second seam may be sewed alongside of the first, and other useful results may be produced in sewing.

The second part of my invention consists in the employment, in combination with the mechanism that gives the feeding movement to the feeder, of a device for arresting its operation upon the feeder at each alternate stitch, which may be brought into action when required so as to cause the needle to be inserted twice in the same place for the purpose of duplicating the interlocking of the threads at each operation of the needle.

The third part of my invention consists in imparting the vertical or engaging and disengaging movement to the feeder from the hook which co-operates with the shuttle.

In the drawings the letters indicate like parts in all the figures.

A is the bed-piece or frame of the machine, upon which the operative parts are arranged. B is the main shaft, with its cranks and cams, which impart the requisite movements to the operative parts of the machine.

C is the needle-arm; D, the goose neck; E, the table; F, the shuttle; G, the shuttle-race, and H the shuttle-driver.

The machine shown is in its general arrangement similar to that represented in Letters Patent granted to myself and Wells and Littlefield March, 20, 1860, No. 27,594, excepting in the mechanism for feeding, to which this invention relates, and to which parts I shall more particularly confine my description.

I represents the feeder, which is simply a bent bar sliding in a groove in the bed J, as shown, the upper surface of which is provided with sharp teeth, by which to engage with the material and carry it forward when the bar is raised, in this respect operating like what is known as the "four-motion" feed, excepting that the teeth are made upright, so that they will move the material in either direction, as desired. Upon the under side of the bar I is a short arm, *i*, projecting downward, upon which the balance-lever *j* hangs. This lever is of a T form and has its joint at the intersection of the two parts, at which point it is connected to the arm *i*, just mentioned. The horizontal arm of the lever is connected by the rod *k* with the long lever K under the bed of the machine, which extends back under the main shaft and receives a vertical vibrating motion from it by means of the eccentric *b* and rod *c*, and transmits a corresponding movement to the lever *j*. The vertical arms of the lever *j* are bent laterally to the form of a curve, as is shown in Fig. 2, and has a groove in its face, which extends from end to end. Concentric with this curvature the small rocking shaft *l* is placed, which has upon its inner end an arm, *m*, the extremity of which enters the groove in the face of the lever *j* and forms a fulcrum for it. The shaft *l* works in the boss *l'* on the bed, and at its outer end is provided with a milled head, *n*, by which the arm *m* is placed in any required position in the groove. The collar *n'* of the head *n* that comes next to the bed is cut away upon the lower side, and below it is the set-screw O, which works through the boss O' on the bed, the point of

which reaches within the circle of the collar *n'* and forms a stop to determine the extent of the oscillations of the shaft *l*, as is shown more clearly in Figs. 6 and 7. The purpose of this is to control the extent to which the rocking shaft may be moved in either direction and the position that the fulcrum *m* shall occupy in the groove of the lever *j*. It is so adjusted that when the head *n* is in the position shown in Fig. 7 the arm *m* shall be opposite to the joint of the lever *j*, in which position the vibrations of the lever would not impart any motion to the bar *I*; but if the arm *m* is moved toward the extremities of the lever *j* it gives a motion corresponding in extent to the distance it is from the center and in one direction or the other, as it is placed above or below the center. The distance to which the arm *m* may be moved to one side or the other of the center of the lever is regulated by screwing up or down the screw *O*, which thus acts as a variable stop, and also determines the distance to which the shaft *l* shall be turned in the opposite direction to give the feeder the same extent of movement in the opposite direction, thus regulating both the length of the stitches and the direction of feeding. The shaft *l* is held from turning freely by the small leaf-spring *p*, which lies in the groove *r* in the shaft, as is shown in Fig. 6. The vertical movement of the feed-bar is given by the inclined cam *S* on the hook *T*, which manipulates the shuttle-thread, as is described in our aforesaid patent, No. 27,594, which as it swings to the position shown in full lines in Fig. 5 passes beneath the outer end of the bar and raises it, and when it swings to the position shown in dotted lines passes out from beneath it and permits it to fall.

The end of the lever *K* beneath the main shaft has an arm, *g*, which extends back under the latch or catch lever *e*, which, when the lever *K* is depressed by the eccentric *b*, swings over the lever and holds it so that it cannot rise to follow the eccentric *b*, as it otherwise would do, being forced upward by the spring *K'*, by which means the feeding movement of the feeder *I* is arrested. The catch-lever *e* hangs upon a fulcrum at *e'*, and is made to vibrate so as to catch the lever *K* at each alternate revolution of the shaft by means of a cross-grooved cam, *h*, which is formed in the back end of the pulley *a*, which drives the machine, in which groove a shoe traverses, which is attached to the top end of the catch-lever *e* and causes it to make a single vibration at each revolution, so that it swings over the arm *g* at each alternate revolution. The fulcrum of the catch-lever is a small cranked shaft, *e'*, which passes through the standard

below the main shaft and has upon its outer end the small lever *f*, by which it may be oscillated a short distance, which oscillation moves the fulcrum horizontally as the lever *f* is inclined one way or the other. When the lever *f* is in the position shown the catch-lever *e* will swing over the arm *g* and hold it at each alternate revolution of the main shaft; but when the lever *f* is inclined in the opposite direction the catch-lever is thrown out of action and the feeding proceeds uninterruptedly. The object of the catch-lever is to enable the needle to be inserted twice in the same place, so as to duplicate the interlocking of the threads at each stitch, as has already been invented by me, and is a part of the subject of Letters Patent granted to me October 30, 1855, No. 13,727, which is there done by different devices, but upon the same principle. Whenever it is desired to make the double stitch the lever *f* is placed in the position shown in the drawings, and by inclining the lever in the opposite direction the single stitch is made without any other modification or removing the work from the machine; and so in changing the direction of the feeding when the end of the seam is reached by reversing the position of the rocking shaft *l* by means of the milled head until its motion is arrested by the stop-screw *o* the machine sews in the opposite direction in the same seam with the same length of stitch, by which means the end of the seam is thoroughly secured; or a second seam can be sewed parallel with the first without removing the material from the machine or reversing its position.

Having thus described my invention, what I claim is—

1. Combining with the mechanism which gives the feeding motion to the feeder *I* a reversing-lever, *j*, or its equivalent, by means of which the direction of the feeding motion of the feeder may be reversed or the length of the stitches adjusted, substantially as described.

2. Combining with the mechanism which gives the feeding motion to the feeder the catch-lever *e*, or its equivalent, operating substantially as described, by which the feeding motion is arrested at each alternate operation of the needle.

3. Imparting the vertical or engaging and disengaging motion to the feeder by means of the hook *T*, substantially as described.

Executed at Northampton this 19th day of March, A. D. 1863.

L. W. LANGDON.

Witnesses:

J. W. STRONG,
CHARLES STRONG.