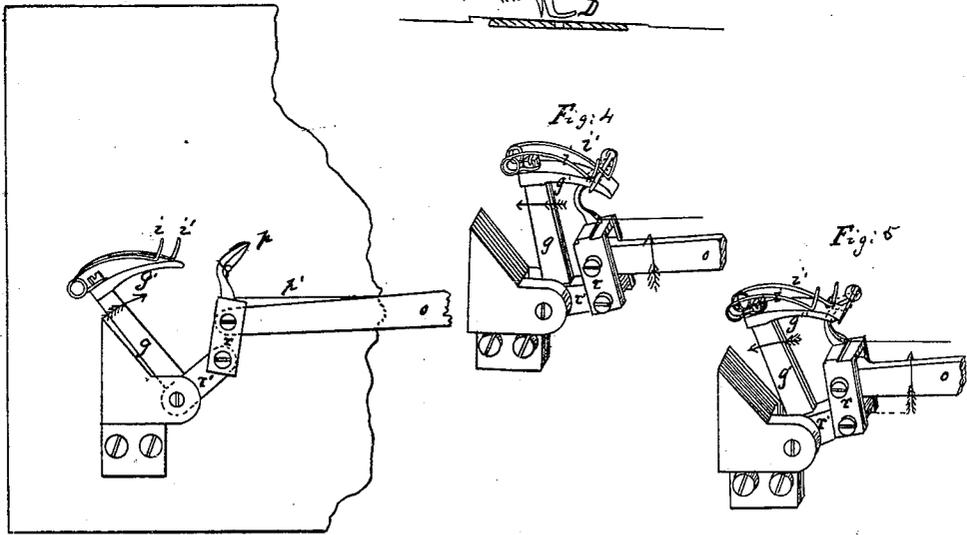
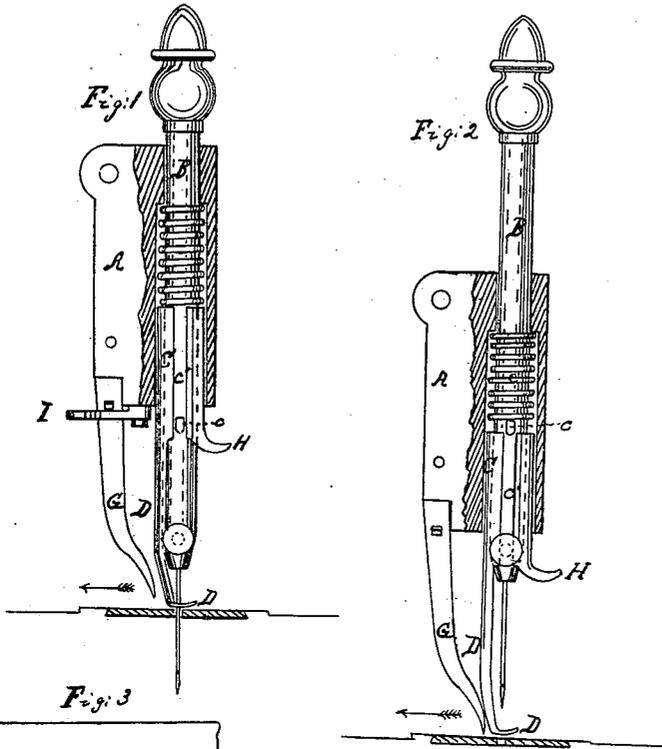


W. A. FOSKET & E. SAVAGE.
SEWING MACHINE.

No. 25,963.

Patented Nov. 1, 1859.



Witnesses.

S. H. Hayward
George H. Mott

Inventors.

Wm. A. Fosket
Eliot Savage
by their Attorneys
J. P. Pinson

UNITED STATES PATENT OFFICE.

WM. A. FOSKET AND ELLIOT SAVAGE, OF MERIDEN, CONNECTICUT.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 25,963, dated November 1, 1859.

To all whom it may concern:

Be it known that we, WILLIAM A. FOSKET and ELLIOT SAVAGE, of Meriden, in the county of New Haven 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 made to the annexed drawings, making a part of this specification, which are fully described and referred to by letters herein, and similar letters indicate similar parts throughout the figures.

The nature of the first part of our improvement in sewing-machines consists in the application of a needle-stripper and a cloth-holder combined in one instrument, and made to operate in connection with the feed-foot and needles, in such manner as to be made to rest upon the cloth with differing degrees of pressure at different times, so that while the feeding-foot is lifted off the cloth to take a new feed and the needle is being withdrawn the pressure shall be greatest, and shall be least at the moment of the feed being given. Thus, although the cloth at the time of feeding is allowed to be moved with least resistance, it is still pressed sufficiently to keep it smooth in the path of the needle and feed.

The second part consists in an improved combined needle-guard and looper for effecting the support of the needle against the pull of the second thread, and also for insuring the spreading of the loop.

In Figs. I and II is exhibited the first-named improvement, only so much of the sewing-machine being represented as is necessary to exemplify the improved parts, all omitted being of known construction, A representing the head or end of the bracket overhanging the table. The needle-stock is seen at B, and works in a guide-hole in A, as usual. This hole is enlarged in the under part sufficiently to allow of the introduction of a tubular piece, C, to which the presser-foot is attached, and which piece also surrounds the needle-stock and forms the guide-hole in continuation of the bore at the top, so as to fit the stock. The presser-foot is attached by a rod to the tube C, as seen at D. This foot is made to press hard upon the table by a spiral spring above the tube C, as shown at the letter e. The tube

C has a slot, C', cut throughout its whole length, for the purpose of allowing a pin, c', on the needle-stock to play. This pin is so placed that when the stock is at its up-stroke it will strike the coiled spring e and compress it, thus taking its pressure at that moment off from the pressure-foot, as shown in Fig. II, but without raising said foot from the table, upon which it will then rest by its weight only. This is the position of the parts when the feed of cloth is to take place, and the feeding-foot G is seen to be also on the bed or table, in position for gripping the cloth before giving the feed. As the next movement of G will be for that purpose, the cloth, not being then held down by any greater pressure than the mere weight of D resting upon it, is easily drawn along, while at the same time it is kept smooth, and also prevented from shifting its position before the needle enters. The shape of the cams which drive the needle-arm and the feeding-foot is such as to cause the needle to be held up until the feed is given; hence there is no necessity for any greater pressure upon the cloth than the weight of the presser-foot, as above named; but when the needle has entered and is about to be withdrawn, the pressure of the spring comes into play for the double purpose of a stripper and to keep the cloth in place while the feed-foot is lifted for returning to give the next feed. This pressure is applied by the spring being allowed to come upon the head of C as the needle-stock B descends.

The operation of this part of our invention is as follows: First turn the driving-wheel until the needle-stock B is raised to its full height. This lifts the spring from the presser D, which can then be raised by the finger-piece H, so that the foot will stand clear of the table. It will remain up by the friction of the tube part in the bracket-head. The feeding-foot must also be held up. This is done by turning the arm I round, so as to come under a pin on G, as seen in Fig. I. The cloth can then be run under these pieces and be placed in proper position for sewing. The thread being in the eye of the needle, and all other parts in order, as usual, the sewing will go on by setting the machine in motion. The needle, as it is forced down by B, enters the cloth through a split in the foot D, so that the latter embraces it on

both sides and close to the hole in the table, the spring *e* forcing the foot down hard upon the cloth as the pin *c* retreats from under it. The feeding-foot may be constructed and operated either as described in our Letters Patent of January 25, 1859, No. 22,719, or it may be the usual spring-pressure foot, which feeds by drawing the cloth along, and is lifted to return for a new feed, as well known. Turning the arm *I* will release the feed-foot, which is driven down by the force of its spring-pressure or by a positive force, as the case may be, upon the cloth, and so soon as the needle-stock has risen to such height as to again compress the spring *e* the feed-foot gives its lateral movement and takes the cloth along the distance for spacing the stitch. This order of movements goes on continuously, effecting the sewing as usual. When the cloth is to be removed, the presser and the feed-foot are to be raised, as already described, and the cloth thereby released.

The second part of our improvements is exhibited in Figs. III, IV, and V; and it consists of a needle-guard in combination with a device for spreading the loop in the path of the looper or second thread-carrier in case two threads are to be used in forming the stitch.

At *g* is a vibrating arm, which carries on its end a curved plate, *g'*. In vibrating it is intended that the outer surface of the curved plate shall sweep past the needle when the latter is below the table, so as just to graze it, as may be seen in Fig. IV. This guard-plate comes in play to support the needle when the lower thread-carrier or looper, as the case may be, is on the retreat, and pulling the thread off in a direction at a right angle to the needle, tending to bend the same, and when running the machine at high speed this support becomes important. Another valuable use of this guard is to direct the loop thrown off as the needle retreats, for both needle and guide retreat together. Thus, as the latter is slipping past while the former is rising, the loop of thread will rest upon the curved plate, being naturally drawn along with it by its friction, thus tending to open the loop out for the ready passage of the point of the thread-carrier and prevent kinking. In combination with this device we employ a double gripper—that is, a gripper intended to successfully catch the loop of thread and distend it.

At *i* and *i'* are two delicate springs, secured to *g'*. They are separated from each other by a slight space, and are also parallel. The springs are of different lengths, *i* being shortest. Their ends press upon the curved guard-plate *g'*, the longer spring being on the inner side and terminating near its edge. The employment of the additional nipper, so arranged as to pass over the needle, catch the thread, and draw it away from the needle, in order that the proper nipper may afterward seize and keep the loop spread for the thread-carrier to enter, greatly reduces the chance of missing a loop, for it is scarcely possible that

both nippers, passing as they do at different times, should fail to catch it.

The operation of this part is as follows: In Fig. III the arm *g* (moved by means of a link connecting it with the lever *o*, having the thread-carrier upon it) is about to move toward the needle, which will have come down through the table by the time the advancing end of said carrier arrives opposite the needle-hole. That arm will pass onto the pull end of its stroke, carrying the nipper-springs *i i'* over. The needle commences its ascent at the same time that the curve *g'* also returns, carrying the nipper *i* first over said needle before its eye has got past, thus enabling the nipper to catch the thread on the opposite side (which it is shown in the act of doing in Fig. IV) and pull it away from the needle, but will drop it again at the moment the second nipper goes over, which will then be sure to spring into the opened-out loop. The point of the thread-carrier then enters and secures it, as shown in Fig. V.

The third part of our improvement consists in the mode of operating the thread-carrier or second needle. It is necessary, in order that the needle in its descent shall pass between the previous loop held upon the shank of the thread-carrier and the thread which itself carries, that the eye of the carrier stand in such position with reference to the place where the needle comes through the table and the place where the last loop is held as to form a triangle, into which the needle will enter, as seen in Fig. III, and thus cause the second thread to take a turn about the needle on the retreat of the carrier, in a manner well known. This we accomplish partly by reason of the curved form of said carrier and by giving it a peculiar motion while operating.

At *p* is seen the carrier for the second thread, bent as in the figures, and having an eye near its point. This carrier is fitted into a stock, *r*, which can vibrate, and which is pivoted to the end of its driving-lever *o*, as shown. The opposite end of this stock forms a link to connect with a lever, *r'*, attached to and set at a right angle to the guard-arm *g*, and by which *g* is driven. This lever being comparatively short, as is also the link or stock *r*, an oscillatory motion is thus given to the latter at the same time that it is also made to vibrate back and forth by its driving-lever *o*. This causes the point of the thread-carrier to curve partly round the needle, thereby bringing the threads in the position requisite, as in Fig. III, and as above described, in order that said needle may pass between the two threads in its descent.

The operation is as follows: In Fig. III is shown the position of the thread-carrier *p* and guard *g'* when the needle is about to come through the table. These will remain stationary until the point of the needle has passed down sufficiently to enter the triangular space formed by the line of thread from the eye of *p* across the bent parts, as seen in said figure.

The thread-carrier now begins to retreat, while the needle still continues to descend. The guard *g'* reaches the needle just as the point of *p* is passing it and is beginning to draw off the thread *p'*. This thread then takes a turn about the needle, and the pull of the retreating carrier must be sustained by said needle according to the degree of tension there is on that thread. The guard *g* therefore supports the needle at this time and saves it from danger of being broken. Fig. IV exhibits the needle retreating and the short gripper-spring *i* just engaged in the loop, its point resting upon the surface of the guard. This gripper pulls the loop open, and its motion is so timed that before it rides over the thread the long gripper *i'* will have crossed the needle and engaged the loop, as seen in Fig. V, wherein the point of the thread-carrier is about to enter. Here the point of the carrier is required to move in a curve, so as partly to encircle the needle. When the lever *o* commences moving its thread-carrier toward the needle, the short arm *r'* and the link *r* will stand at about a right angle to each other. In consequence of this the point of the thread-carrier will advance almost in a straight line at first; but as the lever *o* and arm *r'* change their positions the two centers or pivots by which the link *r* is held rapidly diverge, thereby producing the curve which the point of the thread-carrier traces about the needle, bringing it finally into the position seen in Fig. III and which places the seam-thread

in the proper position to allow the needle to pass between, as described.

We claim—

1. The presser-foot, in combination with its spring and with the needle-stock, when so arranged that by the operation of the latter the force of the spring will be taken from the presser-foot at the time the feed of cloth is to be given—that is, when the needle is out of the cloth—but without raising the said presser-foot from the cloth, in the manner and for the purpose substantially as described.

2. The needle-guard, constructed and operating substantially as set forth, in combination with the needle and with the thread-carrier or looper.

3. So combining and arranging the double-jointed stock of the thread-carrier with the two levers *o* and *r'* as that the said parts shall vibrate in the same plane, and also that the said stock shall form a link between the two levers, which are operated to have their arcs of vibration opposite to each other, whereby with the least throw of the said levers the greatest vibration of the thread-carrier is produced.

In witness whereof we have hereunto subscribed our names.

WM. A. FOSKET.
ELLIOT SAVAGE.

Witnesses:

JOHN W. MILES,
GEO. E. LEONARD.