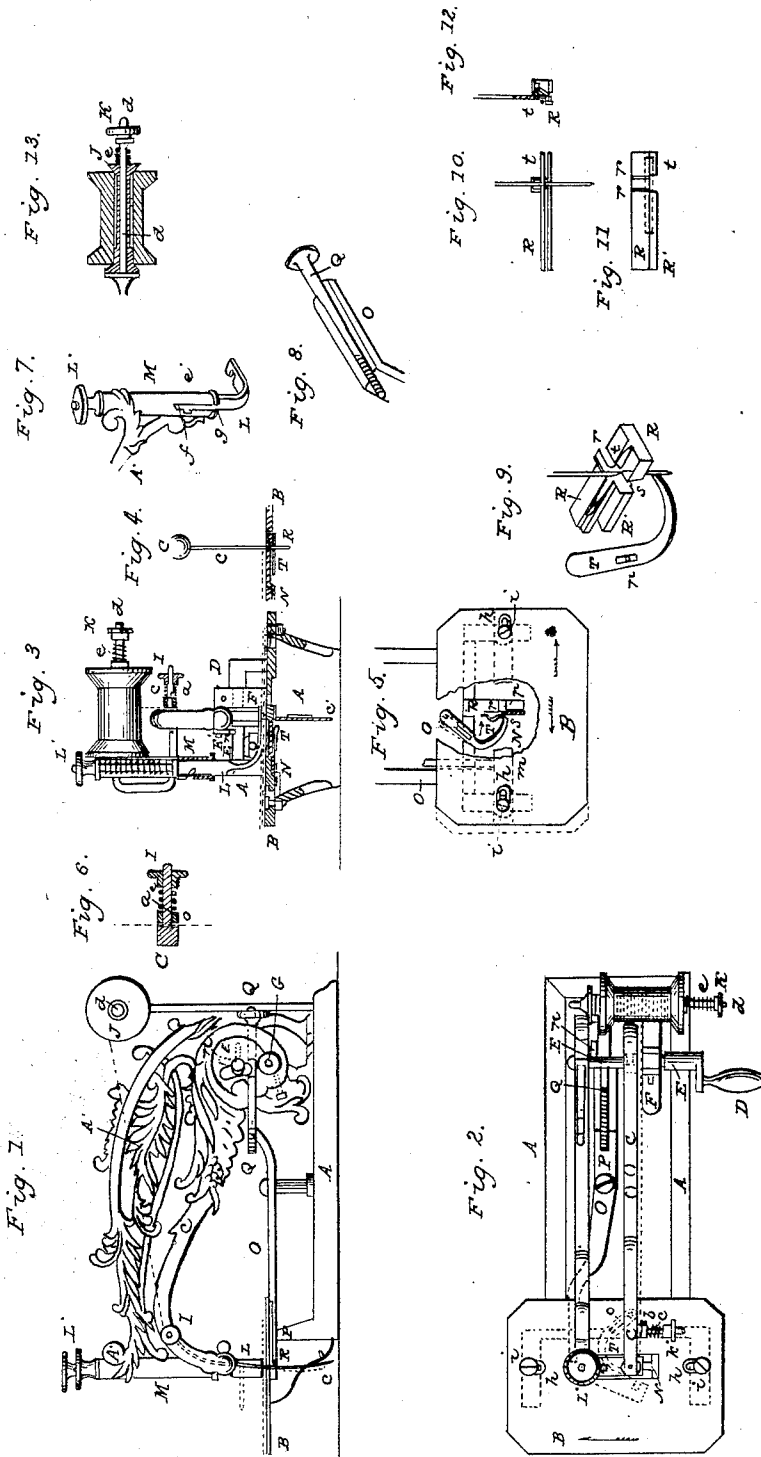


D. W. CLARK.
Sewing Machine.

No. 20,481.

Patented June 8, 1858.



UNITED STATES PATENT OFFICE.

D. W. CLARK, OF BRIDGEPORT, CONNECTICUT.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 20,481, dated June 8, 1858.

To all whom it may concern:

Be it known that I, DAVID W. CLARK, of Bridgeport, Fairfield county, Connecticut, 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, reference being had to the annexed drawings, which will enable any person skilled in the arts to make and use my invention.

Figure 1 is a side sectional elevation of my sewing-machine. Fig. 2 is a plan view thereof. Fig. 3 is a front sectional elevation of the machine, the needle having reached the extent of its thrust. Fig. 4 is a front sectional elevation of the front portion of the machine, showing the needle at its greatest height, with corresponding position of other parts. Fig. 5 is a plan view of a portion of the front part of the machine, the table being broken away to exhibit the parts below; Fig. 6, a sectional elevation of tension contrivance; Fig. 7, a perspective of the foot-pad; Fig. 8, a perspective of the stitch-regulating device; Fig. 9, a perspective of a modification of the looping device; Fig. 10, an elevation of a modification of the looping device; Fig. 11, a plan of same; Fig. 12, an end sectional elevation of same; Fig. 13, a sectional elevation of spool-holder.

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

A A' is the frame of the machine; B, table upon which the fabric rests; C, the needle-carrier; C', the needle. Vibratory motion is communicated to carrier C by means of crank D upon shaft E. This shaft passes horizontally through carrier C, and has one of its bearings in standard F and one in the frame A', Fig. 2. That portion of shaft E which passes through carrier C is made in the shape of a cam, E'. The lower part of carrier C is pivoted upon a horizontal shaft, G, which extends horizontally from the lower part of standard F to frame A'. The cam E', when shaft E is turned by means of crank D, causes the needle-carrier C to rise and fall and carry the needle and its thread through the fabric and through the table B, a needle-aperture being made therein for that purpose, as usual. Needle C' is curved, as shown. The thread (indicated by the red line) passes from the

spool H to the tension-button I. The tension contrivance consists of a pin, *a*, having a hole through it for the passage of the thread. *b*, a washer, is pressed by a spring, *c*, and the latter is tightened or released by turning the button I. When the button I is screwed up, the washer presses the thread against the side of the carrier C and a tension is produced on the thread, which is regulated at will by turning button I. (See Fig. 5.) A tension is also obtained by applying friction to prevent the too free turning of the spool. This is done by the employment of two tubes, J J, which fit the interior of the bore of the spool, uniting, by screw, in the middle of the bore. (See Fig. 12.) The tubes J J, when united, form a hollow axis for the spool, which is slipped upon a supporting-axis, *d*. A spring, *e*, bears against one end of J, and the spring is compressed or relaxed, according to the tension required, by turning the screw-button K.

The cloth is held upon the table by means of a spring-pressure pad, L, its shank passing up through the hollow front part, M, of the frame, and terminating in a button, L'. A spiral spring within M encircles the shank of L and imparts the requisite downward pressure. One side of M is slotted, as at *e*, and has also a side notch, *f*. *g* is a nib on the pad L, and plays in slot *e*'. When it is desired to raise the pad L and retain it in an elevated position, so that it will not press on the cloth, the operator applies his fingers to button L', and raises the pad until the nib *g* is opposite notch *f*. By then turning the button the nib is carried into notch *f* and allowed to rest, thus keeping the pad elevated. By again turning the button the nib will be brought out of notch *f*, and the spring will force the pad L down upon the table or fabric.

The cloth is fed by a horizontal vibration of the table B. For this purpose the central part of the table is provided with a series of teeth, which take hold of and carry the cloth, the latter being compressed between the teeth and the under surface of pad L. The teeth may be directly attached to the table and form a part thereof; or they may be formed upon a separate plate riveted to the bottom of the table, and passing up through the table, (a

suitable aperture being made therein,) so as to bring the teeth even with the upper surface of the table. I have adopted this plate in the present machine, and it is indicated by N. The plate, it will be observed, is made to spring or yield, so as to accommodate itself to different thicknesses of cloth, and also to insure regularity in the feeding thereof. The table is slotted at *h h*, and through the slots screws *i i* pass, which secure the table to the frame A. The slots *h h* are longer than the heads of screws *i i*, and thus the table is allowed to vibrate horizontally.

The vibration of the table is accomplished by means of a lever, O, which extends from a notch, *m*, on the under side of the table back to the shaft E. This shaft is here provided with two wiper-pins, *n n*, which, when shaft E revolves, alternately strike the sides of the rear end of lever E and cause it to vibrate back and forth upon its pivot P, thus vibrating the table B. The length of stitch is regulated by governing the extent of the vibrations of lever E, and this is done by spreading or contracting the rear end of said lever, so that pins *n n* will move the lever more or less, according to the extent of said contraction or expansion. The rear end of the lever is forked or split, and a screw, Q, is introduced into said fork. The button end of said screw is made larger than the other end, and is also beveled. When Q is screwed up, the forked end of lever E will be spread or widened, because the enlarged end of screw Q will enter the fork of the lever. The vibration of lever E is increased by widening the end. By withdrawing screw Q the forks of lever E will collapse by their own elasticity, and the end of the lever being thus rendered narrower the vibration of lever E will be diminished and the feed or stitch shortened.

The stitch formed by this machine is the well-known "chain" or "tambour" stitch. It is done in the following manner: A small plate, R, extends out from the frame A directly below the table, and alongside of R is a spring; S, having an elbow, *n*, just below the needle-aperture. Through the table T is a hook-shaped guide pivoted to the under side of the table, and having a slot, *o*, which is entered by a pin, *p*, on frame A. When the table vibrates, the pin *p* will cause the guide T also to vibrate, and its point will alternately enter and withdraw from the loop of the thread. The needle, as it rises, leaves the slack of its thread or loop behind, and at the same time the table moves in direction of arrow 1, which carries guide T in the opposite direction (arrow 2) and causes it to enter the loop and remain therein until, by the contrary movement of the table and the descent of the needle through the loop, the loop is withdrawn from the end of the guide and deposited against the under side of the cloth in the usual manner. The needle, it will be observed, descends upon the outside of spring

S, just in front of the elbow *n*. Said elbow serves to keep the loop in place and prevent it from falling away on one side. The spring is intended to bear on one side of the loop and assist to keep it in place. Guide T serves to keep the loop open or prevent it from twisting, so that the needle can pass down through the loop to complete the stitch. *r r* are two lips or slight elevations upon the upper side of plate R. They form a sort of box or cavity to guide the loop in its ascent toward the cloth. The bottom of the cavity is sloped. (See Fig. 11.)

Instead of the plate R, as in Fig. 4, said plate may have a lateral extension, R', if preferable, as in Fig. 9. A slot, *s*, is cut through the extension R' for the passage of the loop, and two springs, *t t*, are laid upon the extension close up against the lips *r r*. The springs *t t* are slightly separated at the center or just over the slot, and the needle descends through or between the springs and into the slot. Springs *t t* are separate. They are attached at their rear ends to plate R. These springs *t t* serve to hold and place the loop in proper position, so that when the needle descends it will pass through its loop. Said springs may be used either with or without guide T. On some fabrics the guide may be needed to give certainty to the formation of the stitch; but generally the guide T may be dispensed with. The plate R R' serves as a bed-piece for the springs *t t* to rest upon, and also as a guide for the loop, also as a bearer for the loop to rest against. Said plate also serves as a stop for the spring S, if the latter is pressed too far away from the needle. Plate R R' also carries the lips *r* and slot *s*, which severally assist to guide and hold the loop in place.

Figs. 9, 10, 11, show another form of the plate R, in which the extension R' is grooved upon its lower part and receives one of the springs *t*, while the other spring is placed above, as in Fig. 11. In this modification, Fig. 11, the needle passes between the springs, as before mentioned, and is by them guided and held. This modification may be used either with or without the guide T, as desired. The guide T, it will be observed, is elastic at its point or extremity, and when the loop is pulled or tightened by the descent of the needle the point of guide T yields or flattens and allows the loop to slip off from said point. For some fabrics it is indispensable that the guide T shall yield, as stated; but other fabrics do not require any such yielding. Said guide T may also be used separately or without being employed in conjunction with plate R or springs S *t t*. In such case guide T is employed only in conjunction with the needle and thread, substantially as herein shown. In the use of the springs *t t* it is not indispensable that a plate R R' be employed. The springs may be made of various forms and secured in various ways below the table, so that when

the loop and needle descend they will pass through or between the said springs. The plane of the movement of guide T, it will be seen, is parallel with the table. Great compactness and steadiness is thus obtained.

Having thus described my invention, I claim and desire to secure by Letters Patent—
Regulating the extent of the feed by expand-

ing or contracting the rear end of lever E, substantially as described.

February 11, 1858.

D. W. CLARK.

Witnesses:

L. C. CLARK,
JOSHUA LORD.