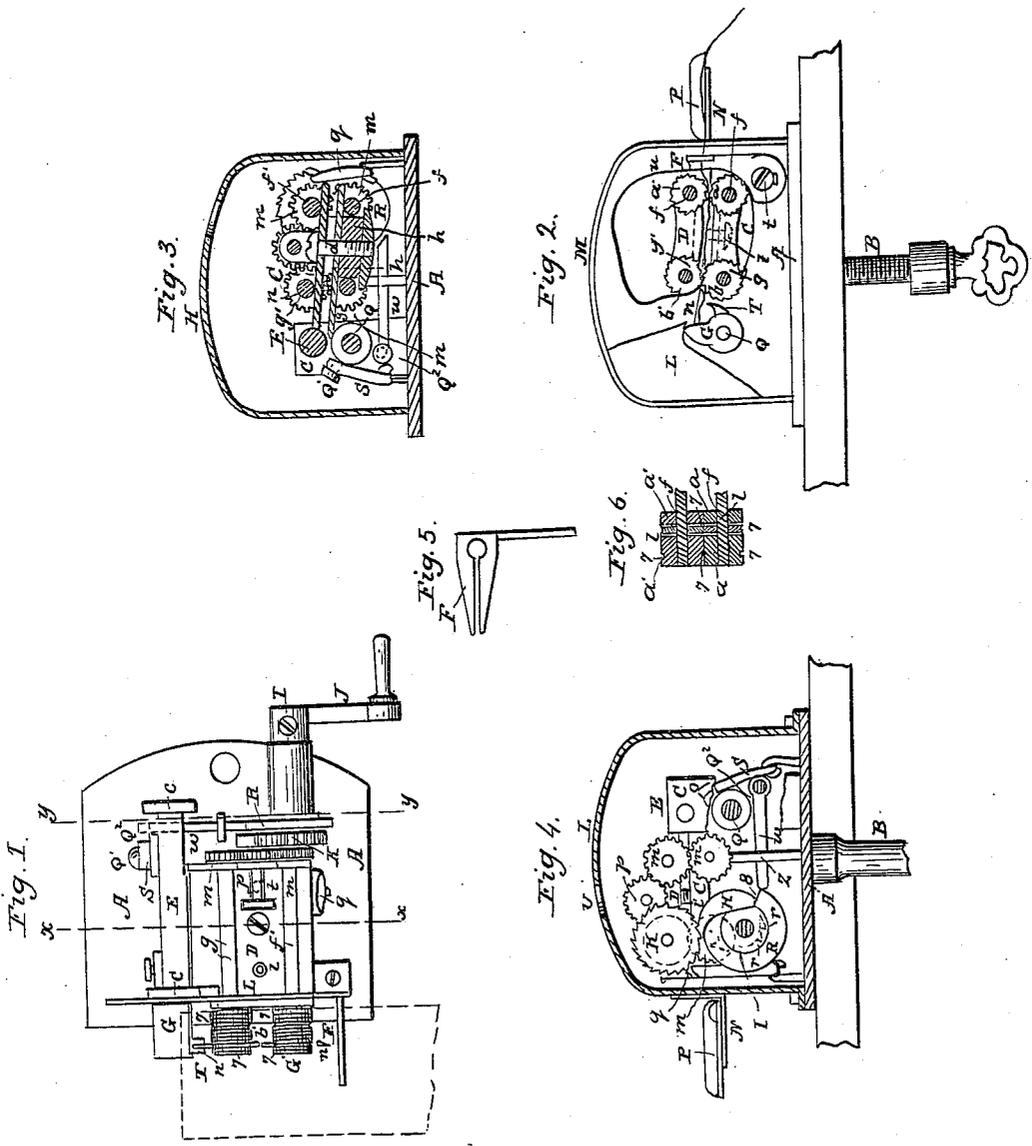


W. G. COOK.
Sewing Machine.

No. 38,927.

Patented June 16, 1863.



Witnesses:
W. J. Partridge
E. W. Reed

Inventor:
W. G. Cook

UNITED STATES PATENT OFFICE.

WILLIAM G. COOK, OF NEW YORK, N. Y., ASSIGNOR TO ELLEN L. DEMOREST,
OF SAME PLACE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 38,927, dated June 16, 1863.

To all whom it may concern:

Be it known that I, WILLIAM G. COOK, of the city, county, and State of New York, 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 same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a plan of a machine with my improvements, having the cover removed to expose the working parts to view. Fig. 2 is a left-hand-side view of the same. Fig. 3 is a vertical section of the same in the plane indicated by the line *x x* in Fig. 1, looking from the left of that figure. Fig. 4 is a vertical section of the same in the plane indicated by the line *y y* in Fig. 1, looking from the right of that figure. Fig. 5 is a front view of the throat which conducts the cloth to the feed-rolls and needle. Fig. 6 is an axial section of a pair of feed-rollers.

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

This invention relates to sewing-machines for making a running stitch with a needle of the kind used for hand-sewing, such needle being placed between feed-rollers, which gather up the cloth and feed it along in such manner that the said needle passes through and through it, first from one side and then from the other. Its object is to avoid the necessity of stopping the machine and taking out the work when a certain length has been performed, which is so great an objection to other machines of this class, and render continuous the stitching of a piece of cloth of any length.

It consists principally in the arrangement of the rollers which hold the needle and feed the cloth in a frame which vibrates in such manner that the point of the needle will be caused by its vibrating movement to enter the cloth from opposite sides alternately; also, in the employment of a reciprocating thimble which serves as a bearing for the head of the needle at the time of the operation of the feed-rolls, but which by its reciprocating movement allows the cloth to pass over and off the head of the needle; also, in the employment, in combination with such reciprocating thimble, of a tooth or catch which takes hold of the cloth and

pulls it over the head of the needle as the said thimble moves back therefrom.

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

A is a small flat bed-plate, to which all the working parts are attached, furnished with a screw-clamp, B, by which to secure it to the edge of a table.

C D is the vibrating frame which carries the two pairs of needle-holding and cloth-feeding rollers, *a a'* and *b b'*. This frame is composed of two plates, the lower, C, of which is rigidly attached to a horizontal rock-shaft, E, working in bearings in standards *c c*, erected on the bed-plate A, and the upper, D, is attached to C by means of a screw-bolt, *d*, and nut *e*, but kept a suitable distance from it to prevent the binding of the rollers by means of two set-screws, *i i*, which screw through either one. The shafts *f g* of the two lower feed-rollers are fitted to bearings provided on the lower plate, C, and the shafts *f' g'* of the upper rollers to bearings provided on the upper plate, D. A spring, *h*, of india-rubber or other material, is placed between the nut *e* and the plate C to make the pressure of the screw yielding and produce a yielding pressure between the rollers upon the cloth and needle. The peripheries of the rollers are toothed or roughened in any manner best calculated to bite and hold the cloth, but not fluted to flute or crimp it, and they are severally provided with one or more grooves, *7 7*, one groove being sufficient if only one size of needle is intended to be used, and two or more of different sizes being provided when the machine is intended to sew with needles of different sizes, the needle requiring to fit snugly, though not tightly, to the series of grooves. In the example represented there are two grooves in the rollers, and the needle *n* (see Figs. 1 and 2) is in the smaller series of grooves. The grooves may be in the bodies of the several rollers or in rings *ll*, Fig. 6, which are fitted to turn loosely upon the roller-shafts, the rollers, which are firmly secured to their shafts, being in such case made in sections to enable the said rings *ll* to be put on the shafts. These rings *ll* will prevent any rubbing friction between the rollers and the needle. The roller-shafts are severally fur-

nished at the opposite ends to the rollers with spur-gears *m m* of equal size, those belonging to each pair of rollers being geared together and the two upper ones of each pair being geared together by an intermediate gear, *p*, so that the two pairs of rollers may rotate to feed in the same direction, as indicated by arrows in Fig. 1—that is to say, in a direction from the stationary throat *F* and toward the thimble *G*.

The vibrating movement of the roller-frame *C D*, which takes place in an upward and downward direction to bring the entrance to the front rollers, *a a'*, (which are next the throat *F* and farthest from the rock-shaft *E*,) alternately above and below the throat *F*, is produced by a cam, *H*, on the main shaft *I* of the machine, and a spring, *g*, of india-rubber or other material, which connects the said frame with the bed-plate *A*. The shaft *I* may have the necessary rotary motion imparted to it through a crank, *J*, turned by hand or by any other suitable means. This cam is also made to produce the necessary rotary movement of the feed-rollers by being provided with teeth *r r* at opposite points on its periphery to operate upon a toothed wheel, *K*, on the shaft *f* of the upper roller of the first pair. The said cam operates upon the toothed wheel *K* in producing the upward and downward vibrating movement of the roller frame; but the said wheel is prevented from being turned by the cam except while the teeth *r r* of the latter are passing the said wheel by the points of two teeth of the said wheel resting in contact with the periphery of the said cam, and as the teeth *r r* are on those parts of the periphery which are nearest to and farthest from the axis the feed movements of the rollers take place as the frame arrives at its highest and lowest position and while the frame is stationary, or nearly so, and hence the vibrating movements of the frame and the feeding movements of the rollers alternate with each other. There are two teeth, *r r*, on the cam at the point nearest its axis and only one at the point farthest therefrom; but owing to the difference of radius at the two points the one tooth at the point first mentioned produces the same amount of movement of the wheel *K* as the two teeth at the first-mentioned point.

The stationary throat *F* is arranged on the left-hand side of the machine in front of the rollers *a a'*, where it is attached by a screw, *t*, to an upright plate, *L*, which forms part of a casing, *L M*, for inclosing all of the moving parts of the machine with the exception of the rollers, the thimble, and the crank or other device for turning the main shaft, the said plate having provided in it a hole, *u u*, through which the rollers pass. The opening in this throat consists of a slot parallel with the axis of the rollers *a a' b b'*, open at the outer end, as shown in Fig. 5, and only just wide enough vertically for the cloth to pass freely through. It is arranged at such a height that the feed-rollers *a a'* in the vibrating movement of the

frame move an equal distance above and below it. The other part of the casing *L M* consists of a cover, *M*, which covers the top, sides, and back of the shafts and gearing, and which is secured to the bed-plate by screws, but can be removed when necessary, and the said cover has a hole, *v*, in the top for the insertion of a screw-driver to turn the screw *d* for the adjustment of the pressure of feed-rollers. The said cover *M* has attached to it a plate, *N*, which supports the cloth on its way to the throat *F*, and on this plate there is secured an adjustable guide, *P*, of a similar character to what is used in other sewing-machines to guide the edge of the cloth or of a fold therein to the needle, that the sewing may be performed at a proper distance from such edge.

The "reciprocating thimble" *G*, so called on account of its function resembling that of the thimble used in hand-sewing, consists of a short finger attached to a rock-shaft, *Q*, arranged parallel with and below the rock-shaft *E* in fixed bearings in the standards *c c*, and the said thimble is situated a short distance behind the rollers *b b'*. The rock-shaft *Q* is operated by means of a cam, *R*, on the main shaft and a spring, *S*, of india-rubber or other material, one end of which is connected with an arm, *Q'*, of the said rock-shaft and the other with the bed-plate *A*. The cam acts upon the rock-shaft through a slide, *w*, which works in a guide in a standard, *z*, and which is connected with an arm, *Q''*, of the rock-shaft. The operation of the cam is such that it holds the cam forward in the position shown in Fig. 2 to support the head of the needle during the feeding movement of the rollers, and after the feeding movement has taken place, while the roller-frame is in its highest position, the step *8* of the cam passes the slide *w* and allows the spring *S* by its action on the rock-shaft to throw back the thimble from the head of the needle to allow the cloth to pass over it and onto the thread, which is supplied to the eye of the needle from a suitably-arranged spool. The thread is shown in Fig. 2 in blue and the cloth in red color. This movement of the cam taking place while the roller-frame is descending and while there is no rotary movement of the rollers, allows the needle to remain between the rollers without any longitudinal movement. The thimble is moved forward again by the cam into contact with the head of the needle before the next feed movement of the rollers, and remains so until the roller-frame has made another upward movement. *T* is the tooth or catch by which the cloth after having passed the back feed-rollers, *b b'*, is drawn over and off the head of the needle. This tooth or catch is attached to the lower part of the front of the thimble in such manner and position that as the thimble moves back the said tooth or catch rises and comes in contact with the cloth which is gathered on the needle and draws it back over the head thereof. The cloth as it is drawn off passes over the top of the thimble.

Having now described the construction and

individual operations of the several parts of the machine, I will briefly describe the operation of sewing by it.

The needle *n* having been placed between the rollers *a a' b b'*, with its point projecting forward a little beyond the center of *a a'*, and its eye having been threaded, the cloth is introduced through the throat *F* and between the first pair of rollers *a a'*, and as the roller-frame vibrates upward and downward the portion of the cloth between the throat and the rollers *a a'* is bent alternately upward and downward over the point of the needle, so that the feed movements which take place while the cloth is so bent and which carry the cloth onto and over the point of and along the needle cause the latter to pass through the cloth from one and the other side alternately. After the cloth has passed the second pair of rolls it is drawn off the needle by the hook *T*, as before described, every time the thimble is moved back to allow the cloth to pass over it, and so delivered onto the thread which is thus deposited within it in the form of a running

stitch. The sewing in this way may be continued for any length of time, limited only by the length of the cloth or of the thread, without stopping the machine.

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

1. The arrangement of the feeding and needle-holding rollers *a a' b b'* in a vibrating frame, *C D*, substantially as and for the purpose herein specified.

2. The reciprocating thimble *G*, applied, in combination with the feeding and needle-holding rollers *a a' b b'*, to operate substantially as and for the purpose herein described.

3. The tooth *T*, applied to operate, in combination with the reciprocating thimble *G* and feeding and needle-holding rollers *a a' b b'*, substantially as and for the purpose herein specified.

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Witnesses:

M. S. PARTRIDGE,

G. W. REED.