T. J. W. ROBERTSON.

Sewing Machine.

No. 16,609. Patented Feb. 10, 1857.

FIG. 1

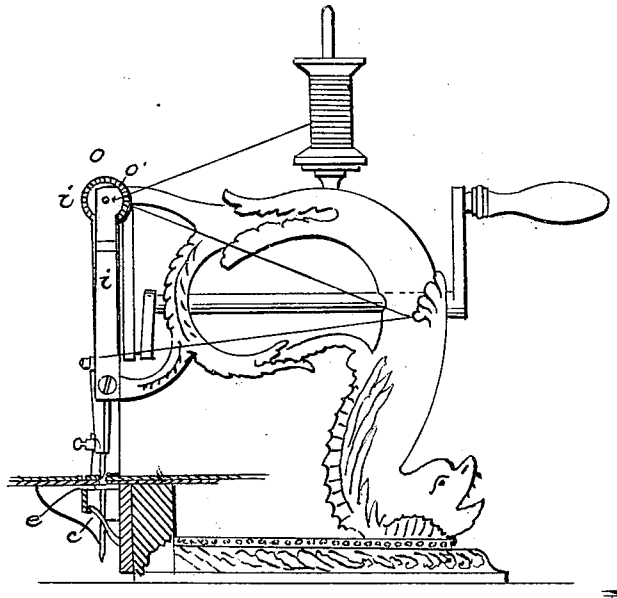


FIG. 2.

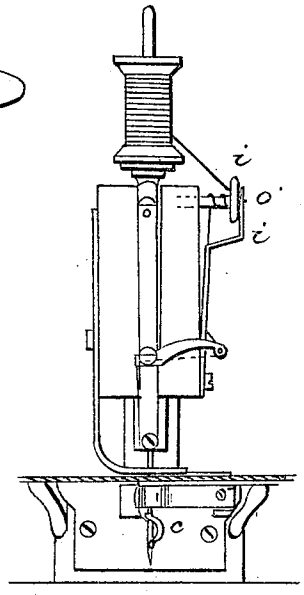


FIG. 3.

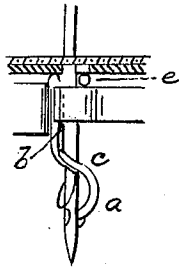


FIG. 5.

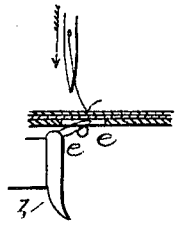
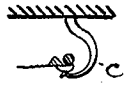


FIG. 4



UNITED STATES PATENT OFFICE.

THOS. J. W. ROBERTSON, OF NEW YORK, N. Y.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **16,609**, dated February 10, 1857.

To all whom it may concern:

Be it known that I, THOMAS J. W. ROBERTSON, 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 made to the annexed drawings, making a part of this specification, in which—

Figures I and II are elevations. Figs. III, IV, and V are views of parts in detail; and similar letters indicate similar parts throughout the figures.

My invention consists, principally, in the following particulars:

First, in the cutting of a spiral groove from the eye of the needle, (which is located near the point, as usual,) in an upward direction, and so as to extend from one-fourth to one-half of the circumference thereof. The use of this groove is to insure that the looper shall always take into the loop by reason of the angular direction in which the thread lies in the said groove. It must therefore always cross the point of the looper and be taken up, as will be described.

Secondly, in the adaptation of a piece which I call a "loop-guide," the object of which is to turn over the loop and cause it to lie in a good position for passing easily over the looper, as will be made to appear.

Thirdly, in a safety loop-guard, the use of which is to keep the loop under the table and in position either in case of its slipping over the top of the looper before the succeeding stitch is taken, or if the looper should miss taking into it at all.

The machine is constructed substantially after the same plan as described in certain Letters Patent granted to me, being No. 12,577. The needle has a spiral groove starting from the eye on the outer side and winding upward for a distance about equal to the stroke of the needle, and in that space winds nearly half round the same, and as seen at *a*, Fig. III. The needle is set so that the eye shall point diagonally with reference to the sewing-table, and so that the spiral groove will face outward. The thread lies in this groove, and as the point of the looper *b*, curving round, is so placed as to lie about centrally to the path of the needle and close to it, that point must during the vibrations of the needle necessarily cross the groove, whereby the moment the needle commences its upward stroke and the loop puffs out the point of *b* will, as the needle rises, go through the loop by reason of crossing the path of the thread, as will be clearly seen by the duplicate or blue lines in Fig. III. After the point has entered, the loop-guide will come into play. This is a piece of wire curved into a peculiar shape, and projecting from the front plate under the table, so that the point will come around the needle and terminate just in front of the looper *b*, as seen at *c* in the several figures. The curve of this wire is such that it has an inclined upward slant over the looper, and the use of it is to prevent the loop from puffing directly out, and to cause it to lie well over the looper *b*, whereby the loop can slip easily onto the straight part of the same. But for this the loop would in its rapid motion upward be apt to draw hard upon the point of *b*, where the angle is somewhat abrupt, and bind there. At this part of the machine is also situated the loop-guard, being a pin or bar projecting out from the end plate just beneath the table, and so placed as to cross the hole where the needle passes through, leaving just clearance for the latter to pass by, as shown more clearly in the detached view at *e*, Fig. V, wherein also is shown the position of a loop which may have either slipped off the top of the looper before it ought, or which was not taken upon it at all. The pin *e* therefore, keeping the loop horizontal, as the feed goes on, prevents the loop from being carried along to the opposite side of the needle-hole, so that the loop is still kept horizontal and close in the path of the needle on its downstroke, and the stitch is not therefore dropped.

An improvement in the tension apparatus is seen in Figs. I and II. It consists of a spring, *i*, pressing against the flat head of the friction-pin *i'*, and covering the hole *o* through that where the thread passes in. Through the spring-plate there is also a hole, *o'*, situated on one side, and so as to lie near the edge of the head of the pin. Through this the thread is first rove on its way from the spool to the friction-pin, passing thence underneath the spring to the hole *o* in said pin. Thus it lies along the face of the head a short distance, af-

fording space for the spring to bind or pinch the same. The use of this is to prevent the slack between the spool and the friction-pin from loosening on the said pin, and thereby destroying the proper tension required to be always maintained thereon.

The operation is as follows: As the needle descends the thread which lies in the spiral groove is carried past the point of the looper, the latter riding over it and standing at the end of the stroke above the groove and at a plain part of the needle; but it will be seen that the red line representing the thread in position while the needle is descending lies across the point of the looper. Thus the moment that the upward stroke commences, whereby the thread is slackened and puffs out of its groove, that thread will be in position to insure the entrance of the looper, and as shown by the duplicate line in blue. At this point the loop-guide comes into play to throw the loop over to one side and flatten it, so that the body of the looper will pass easily through without straining upon the angular or rounded part near the point. If in its upward ascent through an unusual speed, jerk, or other deranging cause, the loop should pass entirely over and get clear of *b* before the next downstroke of the needle the guard-pin *e* comes into play. This, as seen in Fig. V, represents the loop *e'* either as having escaped the looper entirely or as having slipped off it, and being held open just in range of the needle, so that the latter will go through the same, as it would were the loop retained upon *b*, and the stitch will not therefore be dropped. The tension arrangement is such that the precise strain required may be had during the operation, as the pin may be turned and more or less thread wound round its shank without interfering with the spring-clamp at its head, so that the slack between the spool and spring will never affect the tension beyond, and it cannot kink between that point and the needle.

I claim—

1. The spiral groove in the needle, leading upward from the eye on one side, in combination with the looper, in the manner and for the purpose described.

2. The loop-guide *c*, in combination with the looper, for laying the loop, as described.

3. The guard-pin *e*, or its equivalent, for the purpose set forth.

T. J. W. ROBERTSON.

Witnesses:
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S. H. MAYNARD.