

W. GROUT.
Sewing Machine.

No. 24,629.

Patented July 5, 1859.

Fig. 2.

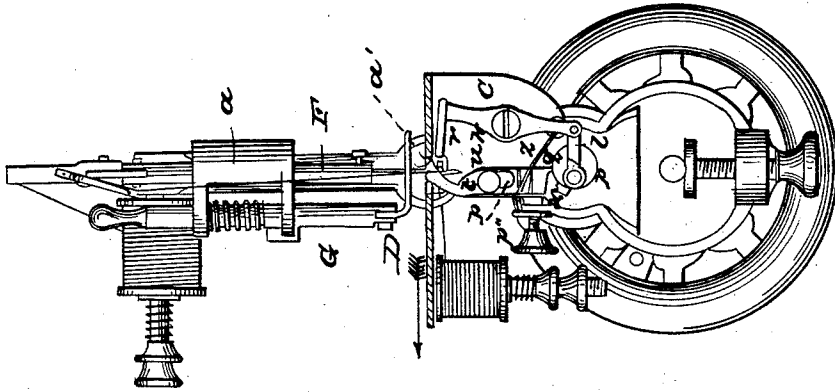
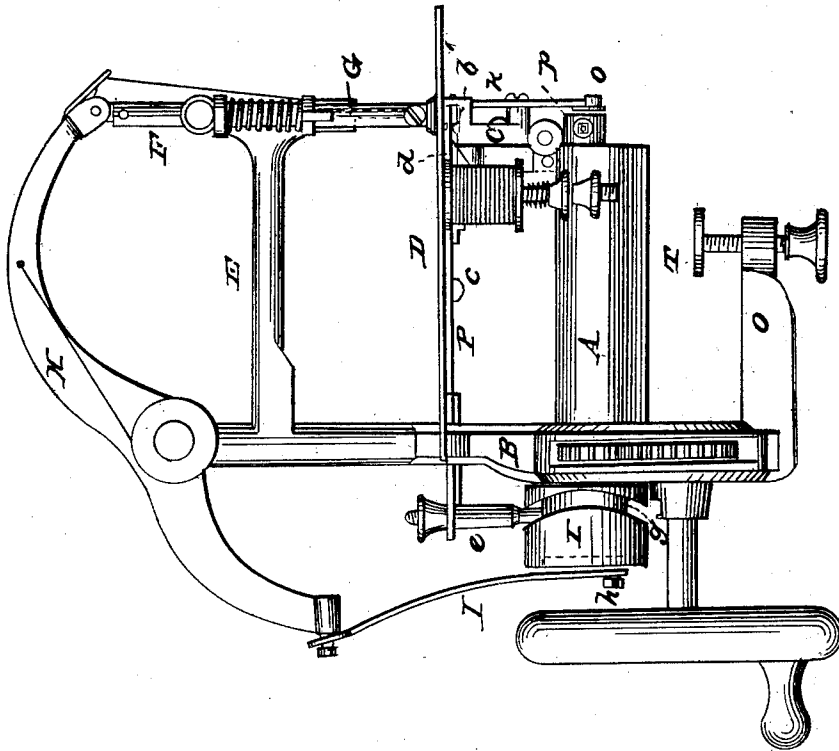


Fig. 1.



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Inventor:
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Fig. 4.

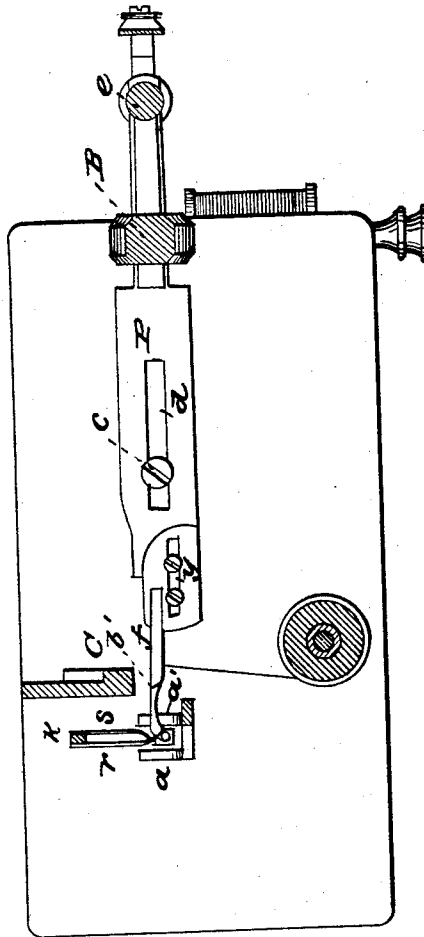
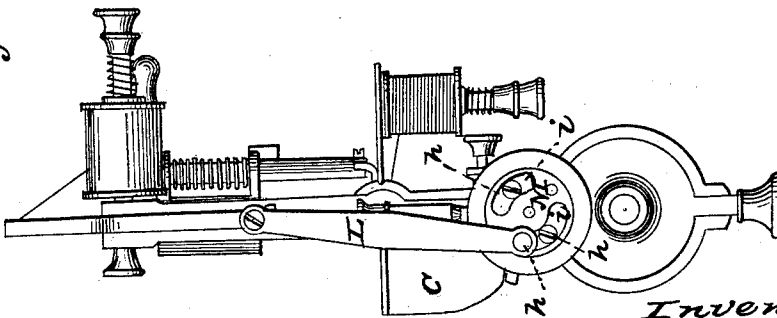


Fig. 3.



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WILLIAM GROUT, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 24,629, dated July 5, 1859.

To all whom it may concern:

Be it known that I, WILLIAM GROUT, of the city and county of Worcester, State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a side elevation of a sewing-machine embracing my improvements. Fig. 2 represents a front elevation. Fig. 3 represents a rear elevation of the same; and Fig. 4 represents the under side of the machine, the bed-plate being removed.

The object of my improvements in sewing-machines is to give increased certainty to the formation of the loops and to the interlocking of threads to form the stitches, to simplify the adjustment of the movements of the needles in relation to each other, and to adapt the machine by a slight change in the position of the lower needle for sewing either the single or the double loop stitch.

My invention for effecting these objects consists, first, in arranging the feed-bar, the needle, and the looper in such relation to each other that by the movement of the feed-bar the cloth is carried forward, so as to draw out the looper-thread and tighten the loop of the needle-thread around the looper, thus increasing the certainty of the needle passing through the loop of the looper-thread, and diminishing the liability of the needle passing through and being entangled in the loop of its own thread when sewing with two threads.

The second part of my invention consists in combining with the needle and looper a pair of forceps so arranged as to draw the loop of the needle-thread in line with the seam in the cloth and directly across the path of the looper, by which means the action of the forceps assists in keeping the cloth in a straight line, instead of drawing it to one side, as is the case when the loop is drawn by the forceps at right angles to the line of motion of the cloth.

The third part of my invention consists in constructing and arranging a straight adjustable looper so that in one position, and using two threads, a double-loop stitch is made, and in another position, using one thread, (the thread being withdrawn from the looper,) a single-loop stitch is formed, without changing

the arrangement of the adjustments of other parts of the machine.

In the accompanying drawings is represented a sewing-machine embracing my improvements, which consists of a hollow curved bed-plate, A, with a projecting arm, O, below, through which passes a clamp-screw, T, by which the machine may be clamped to a stand; and from either end of the bed-plate rise standards B and C, which support a table, D, as well as other parts of the machine. The rear standard, B, continues above the table, and near its top is an arm, E, extending forward over the table, and carrying at its outer end guides *a* for a needle-bar, F, and stripper G. A curved needle-arm, H, pivoted to the top of the rear standard, extends forward over the table, and carries at its outer end the needle-bar F and at its inner end a link, L, which is connected by means of a crank-pin, *b*, with an adjustable face-plate, M.

On the under side of the table is a slotted looper-bar, P, which is confined to the table and guided by a broad headed screw, *c*, passing through the slot *d*, and the inner end of the bar extends through the rear standard and carries a stud, *e*, while to the outer end is attached an adjustable looper, *f*, of peculiar form. The looper has a long slot, *y*, through its shank, and is confined to the looper-bar by set-screws, which allow it to be adjusted to sew either the single or the double loop stitch. On the under side of the looper is a shoulder, *b'*, to hold the thread to pass through its own loop in forming the single-loop stitch. Both looper and needle-bar are driven by a cam-pulley, I, on the inner end of a driving-shaft, which passes through the hollow in the bed-plate, and has its bearing in the opposite ends of the plate. The stud *e*, attached to the end of the looper-bar, enters the cam-groove *g* in the face of the pulley I, and the adjustable face-plate M is held in a circular recess in the end of the same pulley by set-screws *n*, which, passing through two concentric curved slots, *i*, in the face-plate, admit of the face-plate being turned, and thus change the position of the crank-pin *b*, driving the needle in relation to the cam-groove *g*, driving the looper-bar, by which means the movement of the needle can be adjusted with great precision to the movement and position of the looper. A pair of forceps, to draw the thread from the

needle across the path of the looper, is pivoted to the front standard, the pivot passing through the shank *k*. The jaws stand about at right angles to the shank, the outer one, *r*, of which is rigid, and the inner one, *s*, is a light steel spring, touching the outer one only at the point. The lower end of the shank is connected by a link, *l*, with a crank-pin, *o*, in the end of a small pulley, *p'*, on the main shaft, by which means a vibratory movement is given to the forceps in line with the movement of the cloth.

The feed-bar consists of a forked feeding-hand, *a'*, the upper face of which is notched, and a shank, *t*, standing about at right angles to the hand, with a long slotted opening, *p*, through it. The bar is confined to the front plate by a broad-headed pivot, *u*, passing through the slot *p*, which not only allows the bar to vibrate back and forward on the pivot as a center, but also to be raised and lowered, and the range of the vertical movement to be changed when required. Motion is given to the feeding-bar by means of an adjustable wiper, *x*, in the face of the pulley *p'*. As this wiper comes in contact with the end of the shank the hand is raised against the cloth, and on leaving the bar it strikes a small projecting point, *q*, on the edge, by which the lower end of the bar is moved in one direction and the feeding-hand in the opposite direction, carrying with it the cloth.

A retracting-spring, *z*, holds the feed-bar pressed against the wiper, and withdraws the bar to its first position when the wiper passes the point of the bar. The distance the feeding-hand projects through the table and its pressure against the cloth are regulated by means of the adjustable wiper. The length of the stitch is determined by means of an adjusting-screw, *v'*, which varies the lateral range of motion of the feed-bar in the usual manner in sewing-machines.

It will be seen from the arrangement of the feeding-bar, the direction in which it carries the cloth, as indicated by the arrows, and also from the arrangement of the needle and the looper, that by the movement of the cloth the thread of the looper is drawn out by the time the looper is at the end of its forward movement, so that on the retrograde movement of the looper, the thread becoming slackened, an enlarged loop is thrown out by the looper across the path of the needle, by which means certainty is given to the needles passing through the loop of the lower needle-thread. Not only is the thread of the looper extended by this

movement of the feeding-bar, but the loop of the needle-thread is drawn close around the small part of the looper, so that on the retrograde movement of the looper the needle-loop is drawn back and out of the path of the needle, so that when the needle descends to pass through the loop of the lower needle there will be no liability of its passing through its own loop. The needle, on its downward movement, passes between the jaws of the forceps, and as the needle commences to ascend the forceps also commences its retrograde movement, the flexible jaws catching the thread as it recedes, draws it out in the form of a loop, and carries it directly across the path of the looper. Thus the certainty of the looper entering the loop of the needle-thread is attained.

In adjusting the looper to form a double-loop stitch the looper is slid back on the bar far enough to allow the needle on its downward movement to pass in front of its own loop around the looper. To adjust the looper to form the single-loop stitch the thread is withdrawn and the looper set forward on its bar, so that the loop of the needle-thread around the looper is held by the shoulder in such position that the needle on its descent will pass through its own loop and form the single-loop stitch. Thus, by a mere change in the position of the looper, the machine forms both the single and double loop stitch.

Having thus described my improvements in sewing-machines, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The arrangement of the feeding-bar needle and looper, in the manner described, so that the movement of the cloth shall aid in extending the looper-thread and in tightening the needle-thread, and this when the needle is out of the cloth.

2. The arrangement of the looper and forceps, as described, so that the forceps shall draw the loop of the needle-thread across the path of the looper and in line with the movement of the cloth.

3. The combination of the needle and looper, when arranged as described, so that both shall reciprocate in straight lines, and also so that by merely changing the length of the looper a single or a double stitch may be formed, in the manner described.

In testimony whereof I have subscribed my name.

WILLIAM GROUT.

Witnesses:

W. W. RICE,
T. L. NELSON.