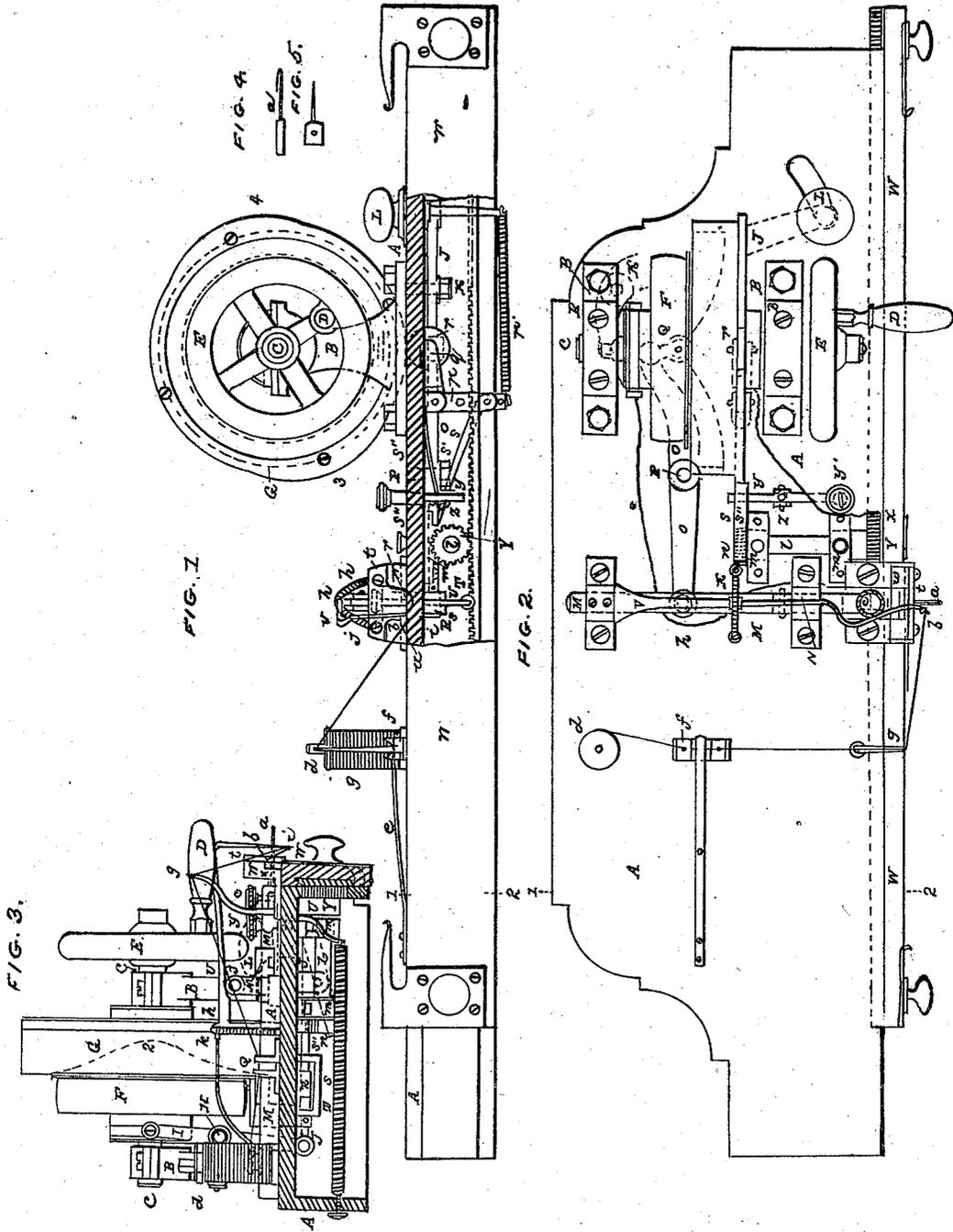


O. L. REYNOLDS.

Sewing Machine.

No. 7,369.

Patented May 14, 1850.



UNITED STATES PATENT OFFICE.

O. L. REYNOLDS, OF DOVER, NEW HAMPSHIRE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 7,369, dated May 14, 1850.

To all whom it may concern:

Be it known that I, O. L. REYNOLDS, of Dover, in the county of Strafford and State of New Hampshire, have invented a new and useful Improvement in a Machine for Sewing Cloth and other Fabrics; and I do declare that the following is a true and exact description, reference being had to the accompanying drawings, forming part of this specification.

Figure 1 is a front elevation of the machine, having part of the cloth-feeder and part of the bed-plate broken away for the purpose of showing the working parts. Fig. 2 is a plan view, having a piece of the bed-plate broken away. Fig. 3 is a transverse vertical section through the line 1 2 of Figs. 1 and 2. Fig. 4 is the needle which draws the thread through the cloth. Fig. 5 is the piercer for perforating the cloth.

The corresponding parts in the several figures are referred to by similar letters.

My invention consists in a new construction, combination, and arrangement of the parts of a sewing-machine, whereby the working parts are caused to perform their duties twice during each revolution of the main shaft or first mover, and thereby form two stitches; also, in the use of a piercer worked by the same motion as the needle, for the purpose of perforating the cloth previous to making the stitch; also, in the use of a guide or leader, through which the thread is passed as it comes from the spool by which it is supplied. This guide has such a motion that each time the needle (which is of the form of the bearded stocking or knitting frame needle) is passed through the cloth the thread is led over its point so as to be caught and drawn back through the cloth at the backward motion of the needle; also, in the manner of holding the cloth to be operated upon.

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

A is the bed-plate.

B B are standards bolted to the bed-plate, carrying the main shaft C, which is mounted in suitable bearings, and receives a rotary motion by means of the crank-handle D on the fly-wheel E, or by a band working on the pulley F.

G is a cam fast on the main shaft C, and per-

forming two distinct offices, each of which it performs twice during its revolution—first, that of working the needle, piercer, and thread leader, and, secondly, that of working the cloth-feeder. The pulley F is loose upon the shaft C, so as to allow of the stoppage or starting of the machine while being worked by a band, motion being transmitted by means of an ordinary clutch from the pulley F to the cam G.

H is a fixed center, attached to the standard B. The lever I works on the center H, and is attached at its upper end (which is forked) to the boss of the pulley F, and at its lower end, which passes through a slot in the bed-plate, to the end of another lever, J, under the bed-plate, working on a center, K, fast to the bed-plate. This lever J has at its opposite end a knob or handle attached to a stud passing through a slot in the bed-plate. By moving this handle to and fro the pulley F is released from or clutched firmly to the cam G.

a is the needle, the form of which is the same as that of the bearded knitting or stocking-frame needle. (Seen at Fig. 4.)

b is the piercer, formed as seen at Fig. 5.

M is a bar sliding in the direction of its length on the face of the bed plate, and working in guides N N, screwed to the bed-plate. The needle is provided with a shank which is fitted into the end of the sliding bar M, which is bored to receive it, and secured by a set-screw, c. The piercer is secured by a screw to the sliding bar M at a distance from the needle equal to the intended length of the stitches. It is shorter than the needle, so that it does not pierce the cloth in its forward motion until the needle has entered the hole made by the last forward motion of the piercer, otherwise it might, in passing through the cloth, close the last hole made.

O is a lever working under the bed-plate on a center, P, fast to the bed-plate. One end of this lever is provided with a fixed stud which passes through a slot in the bed-plate, and carries a friction-roller, Q. The opposite end is formed into an eye, R.

S is a small frame, attached to the under side of the sliding bar M, and working through a slot in the bed-plate of the machine. It carries a friction-roller which works in the eye R.

T is a helical spring, attached by one end to

the side of the bed-plate and by the other to a stud, U, on the lower side of the sliding bar M. This spring has a tendency to keep the sliding bar, and consequently the needle, in its most backward position on the back side of the cam.

G is a groove against the bottom of which works the friction-roller Q. The form of the groove is shown by dotted lines, and it will be seen that as its most prominent parts (marked 1 in Figs. 2 and 3) are in contact with the friction-roller Q, the bar, with the needle and piercer, will be thrust forward to their full extent through the cloth, and as the cam revolves the spring T will draw back the bar, and with it the needle and piercer. When the cam has made one-quarter of a revolution, one of the deepest parts, 2, of the groove will be in contact with the friction-roller Q, and the bar M, with the needle and piercer, will be drawn to their most backward position.

d is a spool revolving easily on a fixed spindle fast to the bed-plate.

e is a spring attached at one end to the bed-plate, and having its other end pressing on the thread as it passes through the notches in the guide f, for keeping the proper tension on the thread, so as to make the stitches tight.

g is a fixed thread-guide.

V is the movable guide-arm or thread-leader. It is formed of spring-steel, and is firmly attached at its back end to one of the guides N. Near the center of its length on its under side is a projection, h, and its front end is bent over the edge of the bed-plate, and is provided with an eye, i, through which the thread passes. A friction-roller, j, is mounted in a bearing attached to the upper side of the sliding bar M. Upon this roller the guide-arm V rests and is held by a helical spring, k, which is bent over it and secured at both ends by screws to the bed-plate. When the needle is in its back position, the projection h is resting on the roller j, and the eye i is raised; but as the bar M moves forward the roller leaves the projection and the spring k draws down the guide-arm.

W is the board which carries the cloth. The cloth is attached at its upper edges to hooks formed of the ends of plates screwed to the board, while its lower edge is drawn over pins, also fixed in the board. The board is grooved on its back side to fit the V-shaped edge of a plate screwed to the front of the bed-plate, and on the lower edge of its back side carries a toothed rack, X. Into the rack a toothed wheel, Y, is geared. This toothed wheel is mounted on a shaft or spindle, l, mounted in bearings m m. Screwed to the under side of the bed-plate, at the opposite end of the spindle l, is a ratchet-wheel, n.

o is a fixed center or bearing.

p and q are two levers, working on the common center, o. At the end of the lever q is a friction-roller, r. A click or pawl, s, is jointed to the lever p, and gears into the ratchet-wheel n. As the cam G revolves the projections 3 and 4 come alternately in contact with the

friction-roller r, thereby depressing the lever q and forcing forward the end of the lever p, and the pawl taking into the teeth of the ratchet-wheel causes the spindle l to revolve. The toothed wheel Y, moving the rack forward, gives the required motion to the cloth-carrier.

s' is a spring secured at one end under the bed-plate and bearing on the pawl s, keeping it to the ratchet-wheel n. s'' is another spring, catching the teeth of the ratchet-wheel, to prevent its being drawn back by the pawl in its backward motion.

p' is a helical spring, fast to a stud in the bed-plate, for the purpose of bringing back the lever p and pawl s, so as to be ready again for action. The feed may be regulated according to the length of the stitch required, by the distance which the pawl is jointed from the center o.

y is a lever working under the bed-plate on a center, z, fast to the bed-plate, and having at one end a stud, y', passing through the plate. If this stud is pressed down, the opposite end of the lever will raise the pawl s from the ratchet-wheel n and allow the cloth-carriage to be moved by hand in either direction along the front of the machine.

t is a plate against which the cloth is held while being pierced and sewed. u is a small hole, to allow the piercer to pass through. v is another hole, through which the needle passes. The plate t is screwed to a carriage, w, which is bolted to the bed-plate. x is a plate forming part of the carriage w, against which the cloth is held by the backward stroke of the needle. This plate has holes corresponding to those in the plate t, to allow the passage of the needle and piercer. The red lines denote the thread and the blue lines represent the edges of the cloth.

The operation of the machine is as follows: The cloth is stretched on the carriage w and the thread is brought from the spool d through the guides f and g, and is passed through the eye i at the end of the guide-arm V. The end of the thread being held by the operator, the cam G is caused to revolve till one of the most prominent parts in the groove (marked 1 on the dotted line in Figs. 2 and 3) is in contact with the friction-roller Q on the lever O. The guide-bar M will be propelled forward to its full extent, and the needle a and piercer b will be pushed through the cloth. The roller j on the bar M will be removed from the projection h on the arm V, and the arm will have descended, and the eye i will have guided the thread over the point or hook of the needle. As the cam proceeds farther in its revolution the needle will be drawn back through the cloth, carrying the thread in the form of a loop, the point of the hook or beard of the needle being closed or pressed into a groove in the back part of the needle in its backward passage by passing through the hole v in the plate t, for the purpose of preventing the said point from catching and tearing the cloth. When it has passed through, it is released and

will spring open. The projection 4 on the outside of the cam G will then act upon the roller *r* on the lever *q* and give the motion to the cloth-carriage, which will cause the loop in the thread to lie along the back of the cloth. The next prominent part 1 of the cam G will come in contact with the roller Q and again force the needle forward through the hole formed by the piercer *b* in its last stroke, and the thread will again be led over the needle as the eye *i* descends. As the cam continues revolving the needle will recede, taking the thread again, in the form of a loop, through the cloth and through the last-formed loop. The projection 3 on the cam G will then act on the roller *r*, and the cloth will be ready for the needle to pass through again for the next stitch, the piercer at every forward stroke of the bar M making a hole in the cloth, through which the needle passes at the next forward stroke of the said bar M. The end of the thread may be left by the operator after

one or two stitches are made, as the action of the cloth-carriage will tighten the thread.

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

1. The adaptation of the bearded needle *a*, such as is used in knitting or stocking frames, in combination with the manner of closing the beard or hook thereof previous to drawing it back with the thread, to prevent the point tearing the cloth, by passing it through the hole *v* in the plate *t*, in the manner substantially as herein described.

2. The combination of the spring thread leader or guide V, the arched spring *k*, and the friction-roller *j*, for the purpose of leading the thread under the point of the beard of the needle.

O. L. REYNOLDS.

Witnesses:

JOHN H. WHEELER,
DANL. OSBORNE.