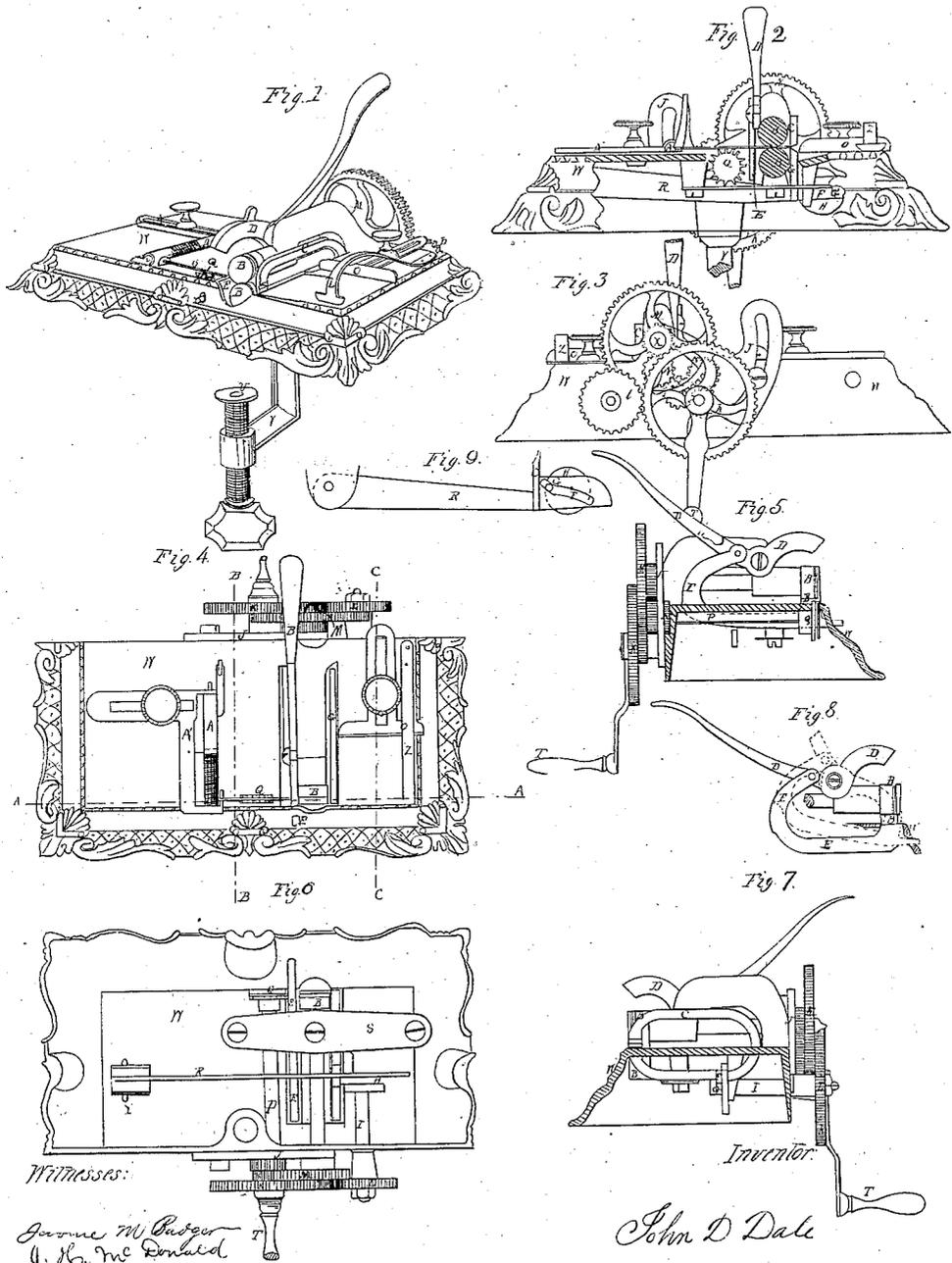


J. D. Dale.
Sewing Machine.

N^o 44686

Patented Oct. 11, 1864.



Witnesses:
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IMPROVEMENT IN RUNNING-STITCH SEWING-MACHINES.

Specification forming part of Letters Patent No. 44,686, dated October 11, 1864.

To all whom it may concern:

Be it known that I, JOHN D. DALE, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Running-Stitch Sewing-Machines; and I do hereby declare the following to be a full and accurate description of the same, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon, same letters referring to like parts in all the figures of said drawings.

Figure 1 is a perspective view of my running-stitch sewing-machine. Fig. 2 is a longitudinal section at the line A A, Fig. 4. Fig. 3 is a back elevation. Fig. 4 is a plan. Fig. 5 is a cross-section at the line B B, Fig. 4. Fig. 6 is an inverted view. Fig. 7 is a cross-section at the line C C, Fig. 4. Fig. 8 is a combination needle-clamp. Fig. 9 is a reciprocating lever.

The nature of my invention will be better understood from a description of the construction and mode of operation of the machine.

In the drawings, Fig. 1, W is the bed of the machine. V is the clamp to attach it to a table or stand when in use. Z is a tension-spring for the purpose of keeping an even tension on the fabric being sewed, and also for guiding it straight to the feed-rollers B B. O is an adjustable gage to govern the width of seam to be sewed. C is a cloth-guide for the purpose of raising and depressing the cloth above and below the point of the needle. It is firmly secured to the lever R, at the end of which lever is a slot, F, as shown in Fig. 2, the back end of the lever R being jointed to the bed W by a pin passing through it at Y, Fig. 6, the other end having a slot, as shown in Fig. 9, so formed as to cause the cloth-guide C to remain perfectly still at the extreme upper and lower points of its travel, so as to give time for the feed-rollers B B to draw the fabric being sewed square on the needle and to quicken the upward and downward motion past the point of the needle.

The lever R receives its motion from the crank-pin G, Fig. 2, attached to the face-plate H and working in the slot F. The face-plate H is attached to one end of shaft I, Fig. 6, and on the other end of shaft I is affixed the pin-

ion L, for which, as occasion may require, different-sized pinions may be substituted, so as to increase or diminish the number of revolutions of the shaft I. The pinion L is driven by the gear-wheel K.

B B are two feed-rollers, geared together at one end by two equal gears and at the other end terminating in two rollers, which thus run together. Each of these rollers has a groove turned in it near the end, the grooves accurately corresponding, so as to admit the sharp end or point of the needle. The upper roller revolves in stationary bearings. The lower one revolves in stationary bearings at one end, and at the other end it runs in a yielding bearing, which is attached to the center of a spring, S, Fig. 6, which is secured at each end by screws, which are adjustable in such a manner that while the rollers are kept constantly forced toward each other they are capable of adjustment to or from each other, in accordance with the thickness of fabric to be passed through, the cloth being thus pinched tight enough to pull it onto the point of the needle, and at the same time push the needle full of the fabric to be sewed. The upper feed-roller, B, Fig. 1, has at one end the driving gear-wheel M.

In Fig. 3 is shown the quadrant J, for the purpose of keeping the driving-wheel K always in its relative position to the gear M and the shaft I with either a large or small pinion.

J is a plate, of suitable metal, made in the shape and form desired, one end having a hole in it to slip onto the shaft X. From that hole is a slot curved in the arc of a circle and of a size to admit a screw which is screwed into bed W, and when tightened up will hold the quadrant J firm to the bed W at any point desired.

At a suitable distance between shaft X and slot J is secured a stud-pin, on which the gear K revolves, and when the crank T, which is secured thereto, is turned (gear K having a pinion attached to its inner side about one-fourth its size, which gears into gear M) the gear M will perform one revolution for every four revolutions of the crank T, thus making one turn of feed-rollers B B. Pinion L being geared into the driver K, which has twice as many teeth as gear L, one turn of gear K

moves gear L twice around, which causes the cloth-guide C to make two upward and two downward motions to every turn of crank T, and as crank T makes four turns for every one of gear M the machine will make sixteen stitches to every revolution of feed-roller B B.

By substituting smaller pinions on shaft I the number of stitches for a revolution of the feed-roller would be increased, and by putting on a larger pinion the number would be reduced. Thus it will be seen that by moving the quadrant J up or down it will accommodate either large or small gear, enabling the machine to perform various classes of work by varying the length of the stitch—a valuable result which has been much sought after in the running-stitch sewing-machine. Indeed, by reason of its incapacity to make either a long or a short stitch, as might be desired, this class of machines has hitherto been proportionately defective.

Q is a revolving relief-tooth wheel, secured to one end of shaft P, whose other end has a gear-wheel, N, attached, receiving its motion from gear N, attached to lower roller, B, an intermediate gear giving its motion in the same direction as roller B, and its diameter being larger than that of the roller, it draws from the rollers the material that has been pushed on the needle and pushes it back so as to tighten it on the needle, and thus preventing any accumulation of gathering directly under the clamping-lever, allowing these parts to perform their operation with more certainty, and at the same time relieving the needle of its liability to bend, as is it well known that most goods, except a very light fabric, will stick on the needle after a few stitches are pressed on it. By this arrangement the sewing-machine will sew heavy muslin and the closest kind of fabric and force the needle entirely full without sticking. It is therefore enabled to do a class of work that cannot be done, so far as I am aware, on other running-stitch sewing-machines, and with much more speed. C is a common sewing-needle, pointed at one end and having an eye at the other.

E, Fig. 8, is a curved lever, one end working in a hole made for that purpose in bed W. The other end is attached to lever D, near its fulcrum—say three-eighths of an inch, more or less, to suit the required lift—so as to drop the point of E directly under the needle below the surface of the bed W during the operation of filling the needle. Then by turning lever D, throwing its short end down until it comes in contact with the needle, a complete lever-clamp is made, which grasps the needle tight enough to prevent its sliding from its place while the cloth is drawn off.

A A' is an adjustable needle-stop.

A' is a right-angled piece, being held to bed W by a thumb-screw, it having a slot in one side to allow its being moved backward and

forward to suit the length of needle required. The part A' has two projections or ears that support roller A, and in which it can rock. A peculiar-shaped countersunk hole at one side of this roller, and near one end, receives the head of the needle, and there is a thumb-piece at the other end to turn it by. Around it is wrapped or wound a piece of spring-wire, making a spiral spring, so that when it is relieved it will fly back to its place and form a stop to prevent the needle from pushing back as the feed-rollers B B push the fabric on the needle. Then by turning roller A—say one-quarter way around—it relieves the eye of the needle and allows the cloth to be easily stripped off, and when released it will fly back and secure the eye end of the needle.

Having endeavored to describe fully the construction of the machine, I will proceed to describe its operation.

The material to be sewed is passed under the spring Z, thence through the cloth-guide C and between the feed-rollers B B. The needle G, after being threaded, has its point introduced between the rollers B B and projecting beyond them until it reaches to within a short distance of the cloth-guide C. Then the needle-stop A A' is moved up until it bears against the eye of the needle. The crank T is then turned until the needle is filled with the fabric being sewed. The thumb of the right hand is then placed against the lever D, and the needle is thus held firm in its place. Then with a finger of the same hand the roller A is turned a quarter-way around in order to liberate the eye of the needle, and with the left hand the cloth is stripped off the needle. That being done, the operator lets go the thumb-piece of A and allows it to fly back and catch the eye of the needle. The lever D is then turned back, and the machine is then ready to perform the same operation over again. Turn the crank, as before, and so on until the needle has been passed through and through the article to be sewed.

Having thus fully described my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The combination of the clamping-levers E and D with the rolling needle-stop A A', operating substantially in the manner and for the purpose set forth.

2. The relief-tooth wheel, in combination with yielding feed-rollers B B and reciprocating cloth-guide C, substantially in the manner and for the purpose set forth.

3. The manner described, or its equivalent, for clamping and holding a common sewing-needle firm enough to prevent its slipping while the cloth is being pulled off.

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Witnesses:

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