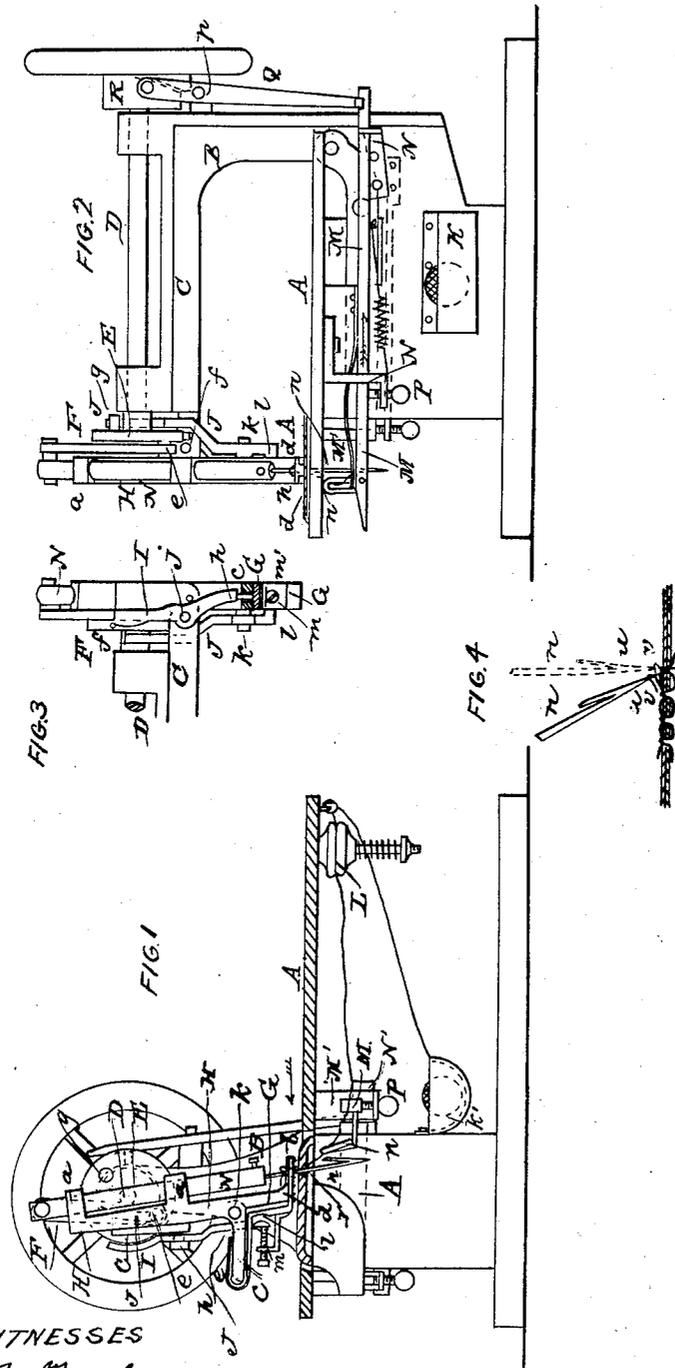


G. L. JENKS.
Sewing Machine.

No. 24,973.

Patented Aug. 2, 1859.



WITNESSES
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GEORGE L. JENCKS, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO HIMSELF,
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IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 24,973, dated August 2, 1859.

To all whom it may concern:

Be it known that I, GEORGE L. JENCKS, of the city of Providence, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement 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, making part of this specification, in which—

Figure 1 represents a front elevation of a machine with my improvements, but exhibits the table on which the cloth is laid in section. Fig. 2 is a vertical section of the same, taken very near the needle in a plane at right angles to Fig. 1 and transversely to the movement of the cloth. Fig. 3 represents part of the opposite side of the machine to that shown in Fig. 2. Fig. 4 represents the cloth, the needle, and the thread, and illustrates the stitch-making operation.

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

This invention relates to those sewing-machines only which employ a single thread and produce therewith a chain-stitch.

The nature of my invention consists, first, in the combination, in a single-thread sewing-machine, of a perforating barbed needle, which is arranged obliquely to the feed movement of the cloth or material being sewed, with a pair of nippers, or other equivalent device, which will, as the inclined needle is operating to assist in forming the stitch, retain and present the thread to the needle in a manner to allow the necessary loop to be formed, shortened, and drawn into or tight on the cloth, substantially as set forth in the body of the specification under the head "operation of making the stitch."

It consists, second, in the combination, with a perforating barbed needle, of the spring-nippers, thread-guide, and adjusting nipper-closing bracket, when constructed, arranged, and operating in the manner substantially as hereinafter described.

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

The machine represented employs a hooked needle.

A is the table, on which the cloth or other material is laid to be sewed.

B is a stationary standard, to which is attached a long rigid arm, C, which projects horizontally over the table A, and which has bolted to it or cast with it an inclined frame, H, which contains guides *a a* for the inclined needle-bar N, and has a foot-piece, *b*, at the bottom, constituting the pressure-pad, and a spur, *c*, which serves as a guide to the feeding-dog G.

On the top of the arm C are the bearings for the shaft D, which may be driven by hand or by a band or treadle, and which carries at its front end a disk, E, on which is an eccentric wrist-pin, *e*, which is connected by the rod F with and drives the needle-bar N. The needle-bar occupies and moves in a plane perpendicular to the plane of motion of the cloth and parallel with the direction of said motion, but is oblique to the latter plane in the former one, the angles formed by it being about seventy-five degrees and one hundred and five degrees; but such angle may be varied. The hooked needle *n*, which has a flexible and elastic barb, works freely through a small hole in the foot-piece *b*. The feeding-dog is forked, and its prongs *d d* are fitted to slide against the horizontal lower surface of the spur *c*, to which it is confined by a spring, *e*, fitted to slide on its parallel upper surface. The feeding-dog has a vertical motion to make it bite and disengage itself from the cloth, and a horizontal motion to move the cloth, the first being produced by a pin, *f*, attached to the periphery of the disk E, and the second by a pin, *g*, attached to the back of said disk. The pin *f* acts against the side of a lever, I, (see Fig. 3,) which works on a fulcrum, *j*, secured in the frame H, and whose lower end acts upon a pin, *h*, which works through the spur *c*, and rests on the upper part of the dog, the said pin, as it passes a projection on the lever, causing said lever to force down the pin *h* and force down the dog, and the spring *e* lifting the dog again as the pin *f* works clear of the lever. The pin *g* acts upon the forked upper end of a lever, J, which works upon a fulcrum-pin, *k*, secured in the frame H, and gives the said lever a vibrating movement, which causes a projection, *l*, on its

lower extremity to work between the heel of the dog and the point of a screw, *m*, which is fitted to a bracket, *m'*, attached to the said heel, and thus to move the dog horizontally.

The length of the horizontal movement of the dog is varied by adjusting the screw *m* so as to give the lever more or less play between it and the heel of the dog. The feed is in the direction of the arrow shown in Fig. 1—viz., toward that side of the needle which forms the greatest angle above the table A or plane of motion of the cloth, and the barb of the needle is on that side. The pressure-pad *b* is unyielding, but an elastic pressure is obtained by making an opening in the table A below the said pad and the dog, and fitting the said opening with a plate, A', which has a strong spring applied to hold it up, the upper surface of the said plate projecting slightly above the surface of the table A.

K is a box placed below the table A to contain a ball or loose spool of thread. The thread passes from the said box through a friction-clamp, L, which is arranged nearly in the vertical plane of the feed on that side of the needle toward which the cloth moves. M M' are the nippers, arranged below the said table, between the said clamp and the line of motion of the needle. The lower jaw of said nippers is formed on a sliding bar, M, which is fitted to work transversely to the direction of the feed motion in guides N N', the latter of which is fitted with a set-screw, P, to permit the adjustment of that end of the said bar which constitutes the jaw higher or lower. The upper jaw is made of spring-steel and secured to the bar M, and its elasticity is such that it will open when permitted to do so. It is curved in such a way that it will be closed by coming in contact with the upper part of the guide N' as it is carried by the bar N through the said guide in the direction of the arrow shown on said bar in Fig. 2. *n'* is the thread-guide for laying the thread across the needle, that it may be caught by the barb thereof, said guide being attached to the bar M. The bar M derives its longitudinal motion to operate the nippers and the thread-guide from a lever, Q, working on a fulcrum, *p*, attached to one side of the standard B, said lever being actuated partly by a cam, R, on the shaft D, and said lever being kept in contact with the cam by a spring, S, applied to the bar M.

The operation of making the stitch is as follows: The greater portion of the descending movement of the needle is made while the nippers M M' and thread-guide *n'* are stationary in the position and condition shown in Fig. 2—that is to say, at the end of their advancing movement, and the nippers being open. As the needle completes its descent the nippers and thread-guide retreat in the direction of the arrow shown on the bar M, and while the nippers close upon the thread the guide *n'* leads it across the path of the needle, so

that as the latter ascends it catches the thread and draws it through the cloth in the form of a loop, the barb of the needle being closed as it rises by passing through the small conical opening *r* (see Fig. 1) in the plate A'.

The nippers and thread-guide remain stationary during the greater part of the ascent of the needle—that is to say, till the point of the barb has passed through the cloth—but they advance again and open during the completion of the said ascent, then again remain stationary, as at first described, till the needle is completing its descent, when they retreat again and the nippers close to carry the thread across the path of the needle, that it may be drawn up again through the cloth in the form of a loop, which is also drawn through the first loop, the nippers in this latter movement gripping the thread and drawing back through the cloth nearly all the slack of the first loop, the tightening of which is completed by the needle in drawing up the second one, while the nippers, still advancing, continue to grip the thread; but before the ascent of the needle has been completed the nippers are permitted to open, so that the needle in completing its ascent will draw through the friction-clamp L the quantity of thread necessary to make a stitch. The production of a seam is but the repetition of this operation.

The effect of the oblique arrangement of the needle, hereinbefore described, is illustrated in Fig. 4, which represents in one view, on a larger scale than the other figures, the cloth, the needle, and two stitches in course of formation, both by the perpendicular and oblique arrangements of the needle, the operation of the loops under the perpendicular arrangement being represented in dotted and that under the oblique arrangement in bold outline, the thread being in both cases shown in red color, and the needle in both cases being supposed to have passed through the center of the thickness of the cloth at the same point. By a comparison of the positions of the loops *u u* (represented on the two needles) and the loops *v v*, through which the first-named loops have passed, it will be seen that the loop *u* on the obliquely-arranged needle allows the loop *v* through which it passes to be drawn up much shorter in the act of drawing the new loop through the cloth than is permitted to the loop *v* through which the perpendicularly-arranged needle has drawn its loop, and it is this that permits the stitch to be drawn tighter, for after the loop has been shortened in this way it is easily drawn down into the cloth as the next succeeding loop is being drawn tight by its successor.

The advantage of this improvement has been demonstrated by the production of a tight seam with thread of such a poor quality as would not permit its use in any other machine.

I do not claim, generally, the arrangement of needles obliquely to the plane of the feeding movement of the cloth, as I am aware that

such an arrangement of two needles has been employed in Avery's and other sewing-machines, and that one of two needles has been so arranged in the machine of T. J. W. Robertson, Patent No. 18,740; but in no case does the so-arranged needle produce such an action upon or in relation with its own thread as that produced by my arrangement of the needle in a single-thread chain-stitch machine.

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

1. The combination, in a single-thread sewing-machine, of a perforating barbed needle which is arranged obliquely to the feed movement of the cloth or material being sewed, with a pair of nippers or other equivalent device,

which will, as the inclined needle is operating to assist in forming the stitch, retain and present the thread to the needle in a manner to allow the necessary loop to be formed, shortened, and drawn into or tight on the cloth, substantially as and for the purposes set forth.

2. The combination, with a barbed needle, of the spring-nippers, thread-guide, and adjusting nipper-closing bracket, when constructed, arranged, and operating substantially as and for the purposes set forth.

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Witnesses:

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W. HAUFF.