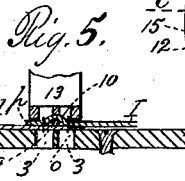
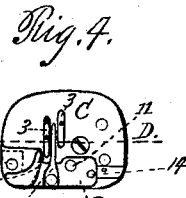
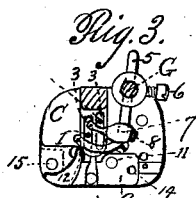
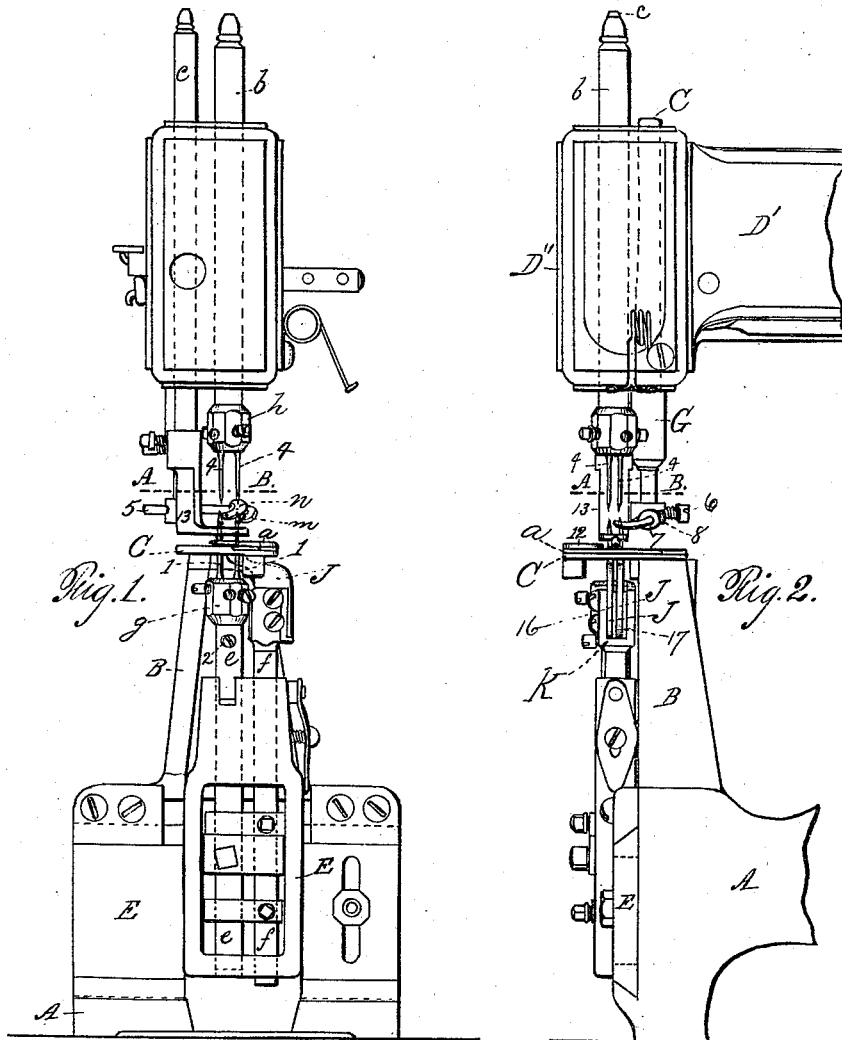


J. M. NICHOLS.

Wax-Thread Sewing-Machine.

No. 168,521.

Patented Oct. 5, 1875.



WITNESSES;

W. E. Hooper  
W. J. Cooper

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# UNITED STATES PATENT OFFICE.

JOHN M. NICHOLS, OF NASHUA, NEW HAMPSHIRE.

## IMPROVEMENT IN WAX-THREAD SEWING-MACHINES.

Specification forming part of Letters Patent No. 168,521, dated October 5, 1875; application filed July 19, 1875.

### *To all whom it may concern:*

Be it known that I, JOHN M. NICHOLS, of Nashua, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Wax-Thread 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 forming a part of this specification, and in which—

Figure 1 represents a front view of so much of a sewing-machine as is necessary to illustrate my improvements. Fig. 2 represents a side view of the parts shown in Fig. 1. Fig. 3 represents a section on line A B, Figs. 1 and 2. Fig. 4 represents a top or plan view of the guide and needle plates attached to the top of the post, as will be hereafter explained, and Fig. 5 represents, upon an enlarged scale, a vertical section on line C D, Fig. 4, of the parts which hold the work, as will be hereafter more fully explained.

To enable those skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it more in detail.

In the drawings, the part marked A' represents the front lower part of the machine known as the "New England Wax-Thread Sewing-Machine," to which my improvements are shown applied in the drawings. From the top part of A' rises the post B, to the top of which is secured the needle and work plates C, while upon the needle-plate C is secured an adjustable guide-plate, *a*, known as the "Springer Guide-Plate," for the reason it was invented by William A. Springer, of Marlborough, Massachusetts. The part marked D' is the projecting neck of the machine, in the head D'' of which is secured the awl-bar *b* and presser-foot bar *c*, but as these bars are constructed, operated, and retained in position in the usual manner, no further description of such construction and operation is necessary. In the front end is fitted a slide feed-piece, E, held in place by suitable devices, and in which slide-piece E is secured in proper position the needle-bar *e* and cast-off bar *f*, both of which may be operated in the usual manner. To the top of the needle-bar *e* is secured a needle head-piece, *g*, in which the

needles 1 1 are secured by set-screws, as indicated in the drawings, said needle head-piece being provided with a stem which enters a socket in the upper end of the needle-bar *e*, whereby, by means of set-screw 2, the needle head-piece and needles can be turned and then held in any desired position for the purpose of adjusting the needles to the thread-guides, or for adjusting them to sew two rows of stitches at a greater or less distance apart.

My invention relates particularly to improvements in that class of sewing-machines in which two rows of stitches are formed at the same time, and as such machines were constructed previous to my invention the needles were arranged opposite each other, but in my invention they are arranged diagonally to each other; and if the needle-slots 3 3 in the plate C are made wider than the diameter of the needles 1 and awls 4, by turning the needle head-piece *g* so as to bring the needles close up against the inner edges of said slots the two rows of stitches will be brought nearer together than when the needles are turned in the opposite direction, and bear against the outer edges of said slots, when the two rows of stitches will be at a greater distance apart than in the former case. By this arrangement slight adjustment can be made for varying the distance between the rows of stitches, and also for bringing the needles into the desired relative positions as respects the thread-guides *m* and *n*, which are supported upon the lower end of a thread-guide bar, G, said bar G being supported and operated in the usual manner in the head D'', for carrying the thread-guides and threads past the barbs of the needles. The stem 5 of the thread-guide *m* passes through a hub on the lower end of bar G. It is held in place by set-screw 6, while thread-guide *n* projects from a hub, 7, having a hole through it, whereby it can be slipped upon the stem 5 before the latter is placed in position, and where it is held in any desired position by means of a set-screw, 8.

From the foregoing description it will be seen that both thread-guides can be adjusted in various ways. By arranging the needles diagonally to each other they can be operated so as to form the two rows of stitches nearer together than it would be possible, and secure

greater certainty of forming the stitches than if the needles were arranged opposite each other, which was the practice previous to my invention. Those skilled in the art will readily understand the practical importance and value of this part of my said improvement, since when the needles stand opposite each other, if the thread-guides are swung around in arcs of circles to carry the thread to the barbs of the needles, unless the thread-guides are made very small and delicate, the needles must stand at considerable distance apart, otherwise the thread-guide which passes between the needles will strike one or both of the needles, and the only way which such difficulty can be, in a measure, obviated, is to raise the thread-guides so that they will work above, or nearly above, the points of the needles; but such an arrangement involves another serious difficulty, namely, the liability of the barbs of the needles skipping the threads, and thus producing imperfect work, while with the most delicately-formed thread-guides it is doubtful if they could be practically operated to sew lap-seams having the rows of stitching sufficiently close together to look well if one of the guides were to be carried or swung between the needles in the arc of a circle. The head-pieces *g* and *h*, which hold the needles and awls, may have two or more sets of holes to receive the needles and awls, whereby the same heads may be used for sewing lap-seams with the rows of stitches at different distances apart when different needle-plates C are employed, the adjustment being too great to be made with the same plate; but neither this feature, nor the separate head-pieces *h* and *g*, nor the adjustable thread-guides, form any part of my invention.

The next feature of my invention relates to an improvement in the "springer-guide," so called; and consists in the combination, with the movable part *a*, of a projecting finger, 9, which is arranged so that when the material passes over the plate, and the parallel-rows of stitches are formed, the material between the rows of stitches will be raised up in the form of a bead or curved projection, as seen at 10, Fig. 5.

In sewing two pieces of material, H and I, together, sections of which are shown in Fig. 5, the edge *o* of the piece H is slipped under the left-hand end of the movable guide-piece *a* until it comes in contact with the edge of the guide-pin 11, which is fast in the movable piece, but passes down through a hole in the stationary needle-plate C. The edge *h* of the piece of material I is placed over the right-hand side of the movable part *a*, and rests against the edge of the shoulder-piece 12, which projects up from the movable part *a*. As said pieces of material H and I are now fed forward over the needle-slots 3 3, and under the presser-foot 13, they are stitched together, as shown in Fig. 5, the center rib of the presser-foot being cut out to allow the finger 9 to raise up the material I before the stitching takes place

to form the rib or projection 10 in the center of the lap-seam. I am thus enabled to form lap-seams the center outer part of which has the appearance of being ribbed or raised, as indicated in Fig. 5, by simply employing the finger 9, thereby saving the twine or cord which, previous to my invention, was run in during the sewing operation to form said elevation or ridge.

As a result of the combination of the diagonally-arranged needles with the thread carriers or guides *m* and *n*, as shown and described, the thread carriers or guides can be partially rotated upon their axis of motion, so as to carry their threads directly under the barbs of the needles, while at the same time there is great uniformity of friction upon both threads, since, under said combination and arrangement of parts, the angle at which the thread passes from the eye of each thread guide or carrier to the barb of its respective needle is very nearly, if not quite, the same.

The movable part *a* is provided with an additional pin, 14, which, in combination with the pin 11, keeps the part *a* from twisting laterally as it rises and falls, to permit material of different thickness to pass under it in the operation of sewing. The needle-plate C is recessed or cut out, so as to allow the main portion of the part *a* to drop down, so that its upper surface will be in the same horizontal plane with the upper surface of the plate C after the material being sewed has passed from under it. The movable part *a* may be made right and left handed, so that a right-handed guide-piece may be substituted for a left-handed piece, as occasion may require, no alteration being required in the needle-plate C for such purpose, excepting to be provided with holes on the other end to receive the pins 11 and 14 of the movable guide-piece *a*, the hole for the guide-pin 11 being shown at 15, Fig. 4. To the upper end of the cast-off bar *f* cast-off fingers J J are secured in a slotted head, blocks 16 and 17, of different thicknesses, being placed between the cast-off fingers and the sides of the slotted head-piece, as indicated in Fig. 2 of the drawings. By the use of such block-pieces of different thicknesses the cast-off fingers can be adjusted so as to stand in different relative positions by simply changing the relative position of the block-pieces, and by making the slotted head of sufficient width any desired number of block-pieces may be interposed between the cast-off fingers and the cast-off fingers and sides of the slotted head in which they are held. The cast-off fingers are held in position by means of suitable screws in the slotted head-piece K.

A description of the general construction and operation of the sewing-machine is not deemed necessary, since the same is well known, the machine having been built and used under patents dated April 19, 1853; July 4, 1854; August 22, 1854; and February 26, 1856.

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

1. In a sewing-machine having two or more needles for parallel stitching, the arrangement and adjustment of said needles diagonally with respect to the line of feed, to determine the distance of the stitching-lines, substantially as herein shown and described.

2. In combination with the diagonally-adjustable needles, the adjustable thread-guides, substantially as shown and described.

3. The combination, with the cast-off fingers J, of adjustable blocks 16 and 17, substantially as and for the purposes set forth.

4. The combination, with the needle-plate C and movable guide-piece *a*, of the rib-forming finger 9, substantially as and for the purposes set forth.

5. In combination with two or more needles arranged for parallel stitching, the intermediate rib-forming finger 9, for the purpose set forth.

JOHN M. NICHOLS.

Witnesses:

WARREN J. COOPER,  
JOHN TILTON.