

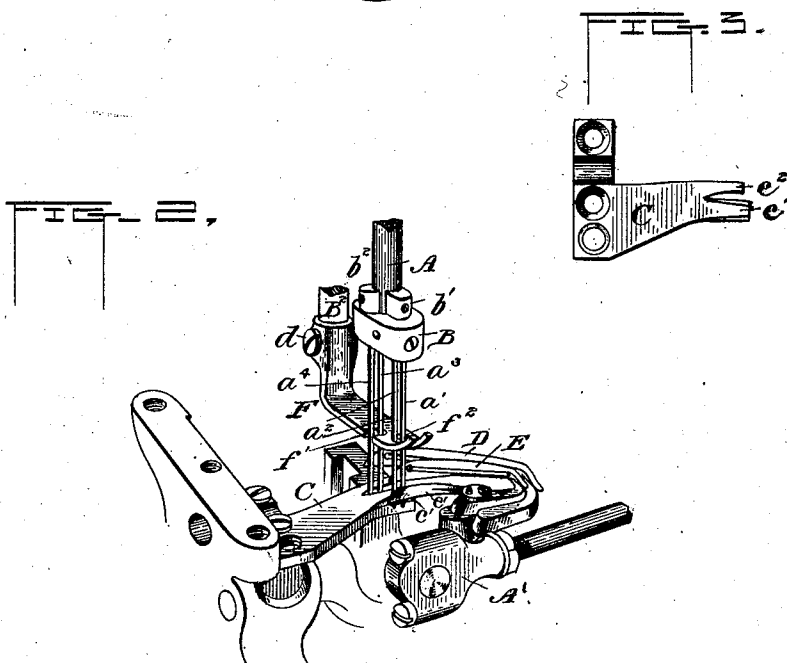
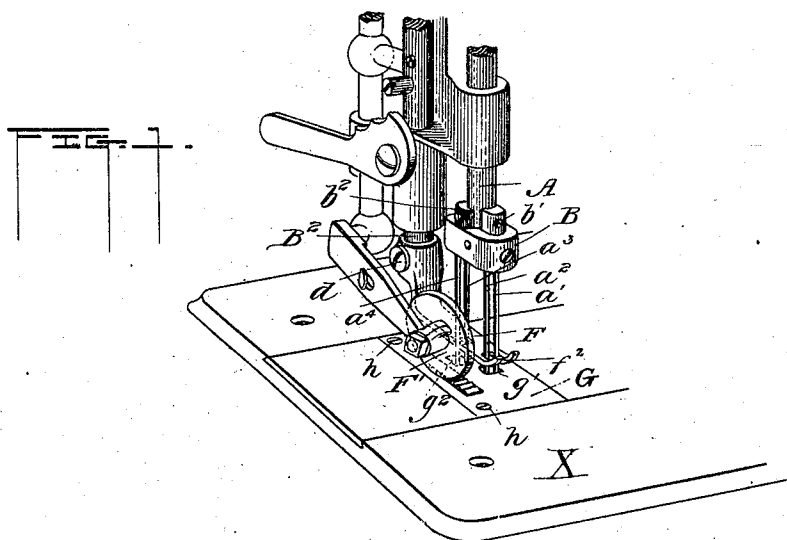
(No Model.)

2 Sheets—Sheet 1.

L. ONDERDONK.
SEWING MACHINE.

No. 506,538.

Patented Oct. 10, 1893.



Witnesses

L. A. Comer Jr.
Jas H. Benson

Inventor
Lansing Onderdonk
By Chas. S. Sturtevant
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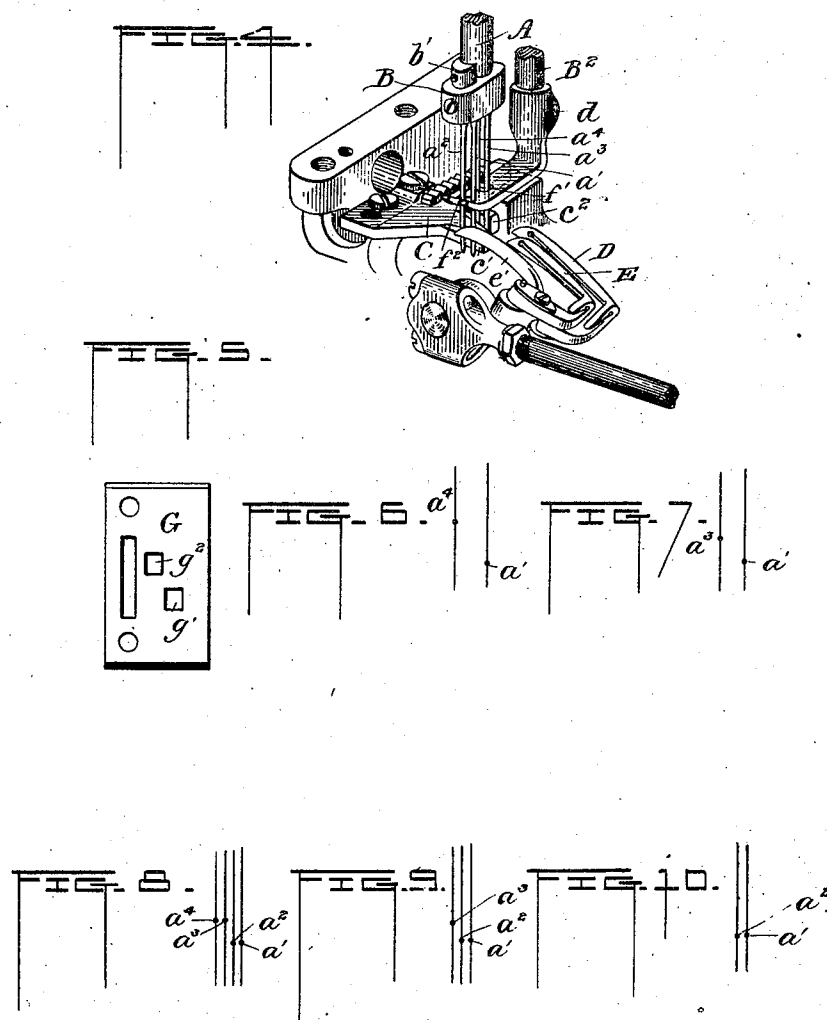
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UNITED STATES PATENT OFFICE.

LANSING ONDERDONK, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE UNION
SPECIAL SEWING MACHINE COMPANY, OF SAME PLACE.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 506,538, dated October 10, 1893.

Application filed July 24, 1891. Serial No. 400,607. (No model.)

To all whom it may concern:

Be it known that I, LANSING ONDERDONK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to sewing machines of that class having a plurality of needles arranged to sew simultaneously several parallel rows of stitches.

The present invention relates particularly to a machine when the needles are arranged in sets, one at least of said sets having a plurality of needles, the sets being arranged diagonally to each other respecting the line of feed.

The object of the invention is to provide a machine capable of sewing at one operation a number of parallel rows of stitches and at the same time provide means for securing the needles in proper relation to each other upon the needle bar, to prevent the points being deflected laterally to spoil or render uneven the line of stitching, and to prevent the needles after passing down through the material, from getting into the path of the loopers.

My invention, therefore, consists in the matters hereinafter described and referred to in the appended claims.

My invention is illustrated in the accompanying drawings in which—

Figure 1 is a perspective view of my invention showing the arrangement of needles, the guide foot, and throat plate. Fig. 2 is a perspective looking from the left hand of the operator the work plate being removed. Fig. 3 is a detail view of the needle guard. Fig. 4 is a view similar to Fig. 2 but taken from the opposite side. Fig. 5 is a detail of the throat plate. Figs. 6, 7, 8, 9 and 10, show different forms of stitching which my machine is capable of making.

In the drawings I have only shown those parts of a sewing machine essential to prop-

erly illustrate my invention, the main actuating mechanism and other parts not herein shown being the same as existing in the machines known in the trade as Union Special sewing machines, a type of which may be seen in Patent No. 344,493 of June 29, 1886.

In the drawings A represents the needle bar, A' the connecting rod through which motion is transmitted to the loopers D E, and X a portion of the bed plate.

a^1 , a^2 , a^3 , a^4 are the needles, shown in Figs. 1, 2, 4 and 8 as arranged in two sets of two each, the needles of each set being arranged so that a line connecting the needles of each set would be exactly at right angles to the line of feed, but a line connecting the two sets of needles would be oblique to the line of feed. These needles are preferably secured to the needle bar by means of a double needle clamp B, two needles being secured to the needle bar at the right of the center or front of the bar, by the piece b^1 , and the other two at the left or rear of the bar by the piece b^2 .

The particular means for securing each set of needles in place is substantially the same as shown in Patent No. 418,049, granted December 24, 1889, to L. Muther. Furthermore, I do not wish to restrict myself to the number of needles in each set.

In the use of two or more sets of diagonally arranged needles it is necessary to provide means for guiding the points of the needles down to the material, that is to prevent their deflection before they reach the material. For this purpose I have devised the form of needle guide foot shown in Figs. 2 and 4 and marked F. This guide foot F is used in conjunction with the ordinary roller presser foot F', though other than a roller foot may be used. It is so arranged with respect to the foot F' that it moves up or down in unison therewith but in its lowest position either does not bear at all on the material beneath it, or, but very lightly. The shank of this foot F is removably attached to the main presser foot bar B² by a set screw d .

In order to properly guide the needles to the material and prevent their deflection said

foot is constructed in the following manner: At its outer end it is bifurcated, and in the space f^2 between the two prongs passes the forward set of needles $a' a^2$. A slot is formed in the foot in rear of the forward slot, and on the side, as at f' , to accommodate the rear set of needles and guide them in their downward movement, this slot being herein shown as arranged toward the rear of the foot and cut out of the side thereof. It will be seen by this construction of foot, proper guiding means are provided for the diagonally arranged sets of needles, there being a solid mass between the sets of needles.

In Fig. 5 in detail and in Fig. 1 in operative connection with the other parts is shown the throat plate G. This is attached in the usual way to the work plate, has the longitudinal opening for the feed and is provided with two openings $g' g^2$ set diagonally to each other respecting the line of feed to receive the needles arranged in the manner hereinbefore described.

As a further and special improvement in sewing machines of this character, I have devised a form of needle guard secured to the bed of the machine beneath the throat plate in such position as to prevent the needles springing into the way of the loopers D and E, when the latter are moving forward to take the threads from the needles. This is shown at C in Figs. 2, 3 and 4. It is secured to the bed of the machine below the throat plate by two screws h, h , and extends into the direction of the length of the machine into the path of the needles being provided at its outer end with two prongs c', c^2 . In the space between these prongs c' and c^2 passes one set of needles a^2, a^1 and upon the outside of prong c' passes the other set. These prongs extending across the line of feed and at right angles thereto, or in the same direction as the loopers guide the needles below the throat plate, preventing their springing into the way of the loopers D, E.

In order to more accurately guide the needles I have chamfered the inner side of the prong c^2 and both sides of the prong c' and in connection with the latter I provide a movable guard finger e' moving in unison with the loopers; the needles $a' a^2$ passing on the outside of the prong c' and between it and the finger e' ; the latter acting to contact with the needles at their opposite side just before the looper is to enter the loop of the needle thread the said finger acting not only to deflect the needle into the proper position with relation to the point of the advancing looper, but also to aid in throwing out the loop of thread from the eye of the needle so as to be entered by the point of the looper, being the same as shown in Patent No. 434,996 to A. H. Sawtell, dated August 26, 1890.

I am aware that stationary needle guards are old as are also needle guide feet and

clamps *per se*, but never so far as I know has a machine been constructed adapted to perform the work accomplished by mine, nor have the same combinations and construction of parts herein described ever been used, since by my arrangement not only is it possible to vary in many ways the appearance of the stitching as regards number and distance apart of the rows but by having the needle guide foot arranged as shown bending of the needles transversely to the line of feed is prevented, and by the arrangement of the needle guard, bending in the direction of the feed and consequent danger of springing into the path of the loopers are prevented.

Various other advantages attend the use of my invention which will be readily apparent.

It will be seen that by my construction the needles may be arranged in sets, two in one set and one in the other, or in any other desired way for varying the number and appearance of the rows of stitching. See for example Figs. 6 to 10 inclusive.

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

1. In a sewing machine and in combination with the sets of needles arranged diagonally to the line of feed, and means for operating the same, a presser foot, an independent needle guide foot having a slot in its forward end through which one set of needles passes and having a slot in the rear and to one side of the forward slot, and a needle guard arranged below the throat plate; substantially as described.

2. In a sewing machine and in combination with a plurality of sets of needles and means for operating them, a needle guard arranged below the throat plate having a double pronged end and having a longitudinal slot between the prongs through which one set of needles passes and a guard located adjacent to and beyond the outer prong between which and the outer prong the second set of needles passes; substantially as described.

3. In a sewing machine in combination with the diagonally arranged sets of needles and means for operating them, a needle guide foot, a throat plate and a needle guard secured at one end to the bed of the machine and extending transversely across the line of feed having a longitudinal slot in its end thereby forming two prongs between which one set of needles passes, suitable loopers D, E, and a guard finger moving therewith adjacent to one of the prongs of the needle guard, the second set of needles passing down through the space between the guard finger and the latter prong, both said prongs being chamfered; substantially as described.

4. In a sewing machine, the combination with the diagonally arranged sets of needles, means for operating said needles, the throat plate and loopers, of a needle guard arranged

below the throat plate and having a double
pronged end, between which prongs one set
of needles passes, and a finger moving in uni-
son with the loopers between which and the
5 outer prong the second set of needles passes,
whereby the needles are prevented from
springing into the path of the loopers; sub-
stantially as described.

In testimony whereof I affix my signature in
presence of two witnesses.

LANSING ONDERDONK.

Witnesses:

W. S. NORTH,
CHESTER McNEIL.