L. ONDERDONK.

PICOT EDGING MACHINE.

APPLICATION FILED MAY 24, 1916.

1,308,608.

Patented July 1, 1919.

5 SHEETS—SHEET 1.

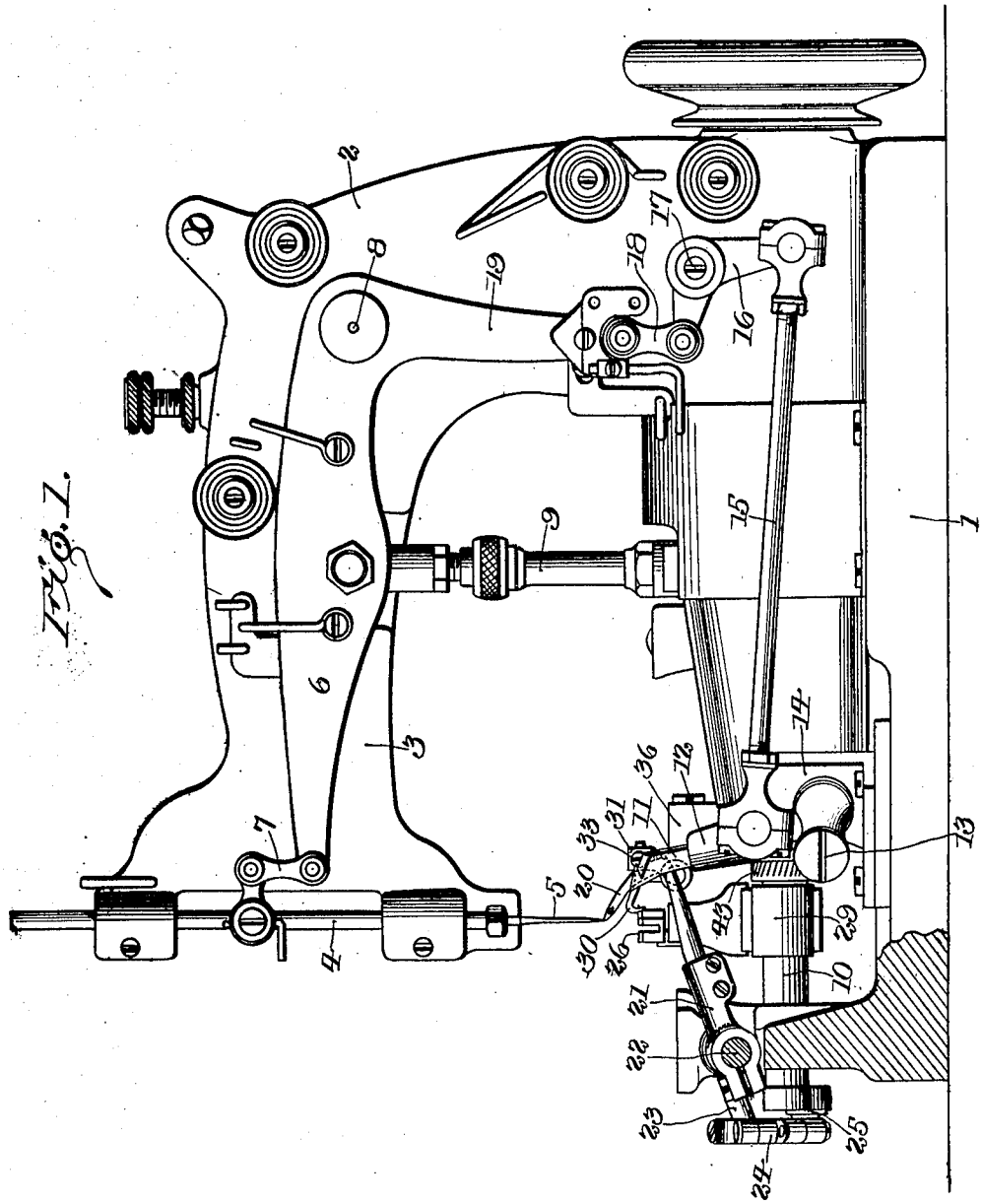


Fig. 1.

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5 SHEETS—SHEET 2.

Fig. 2.

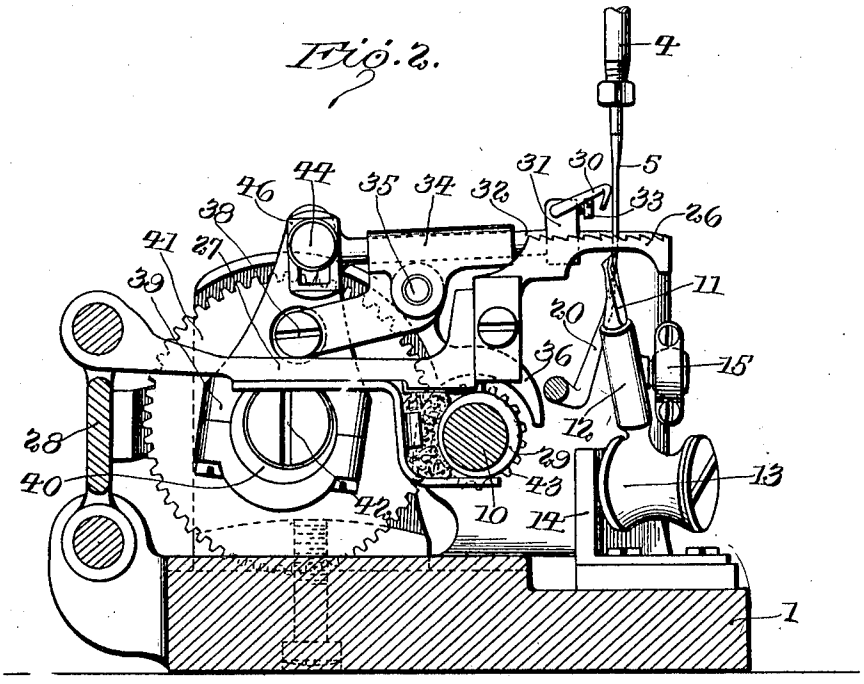
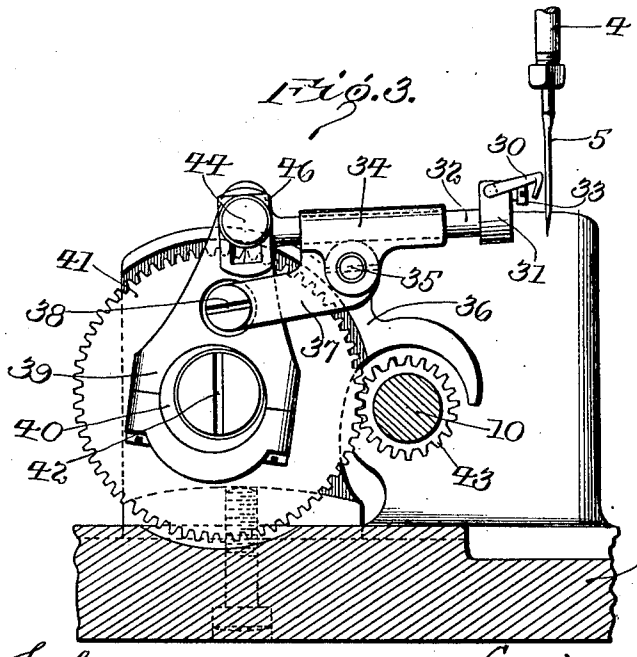


Fig. 3.



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5 SHEETS—SHEET 3.

Fig. 5.

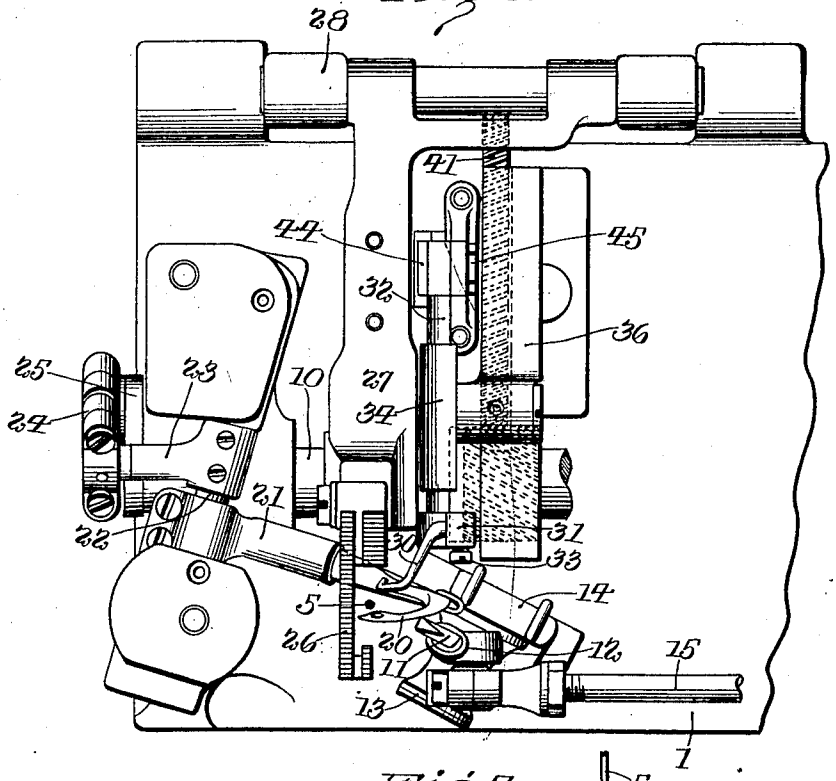
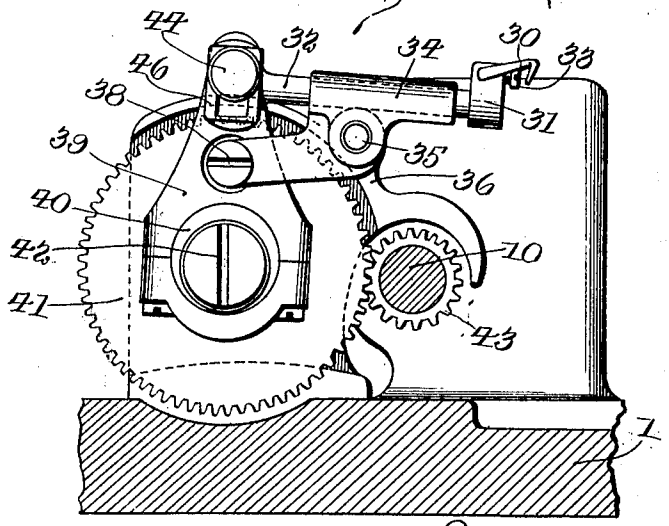


Fig. 4.



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5 SHEETS—SHEET 4.

Fig. 6.

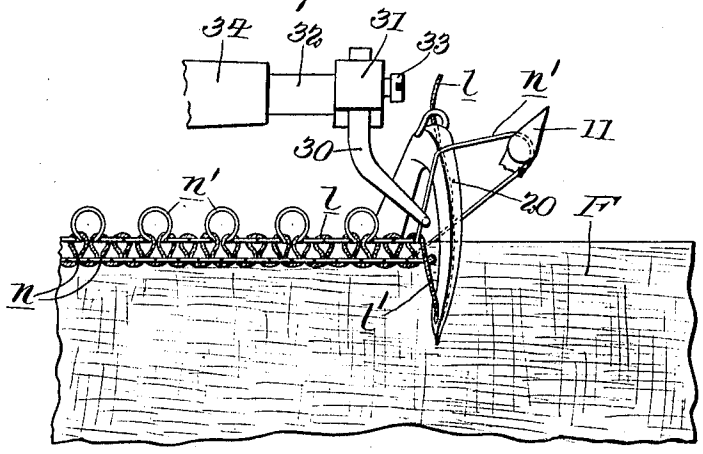
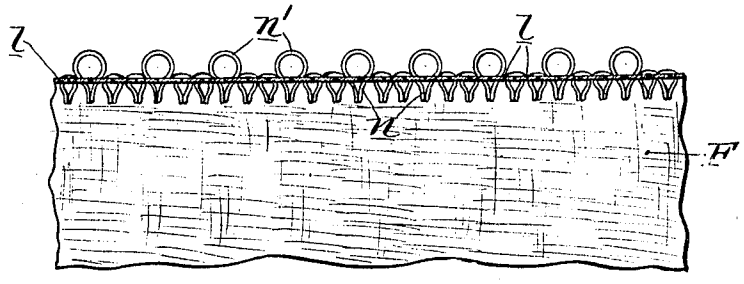


Fig. 8.



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5 SHEETS—SHEET 5.

Fig. 7.

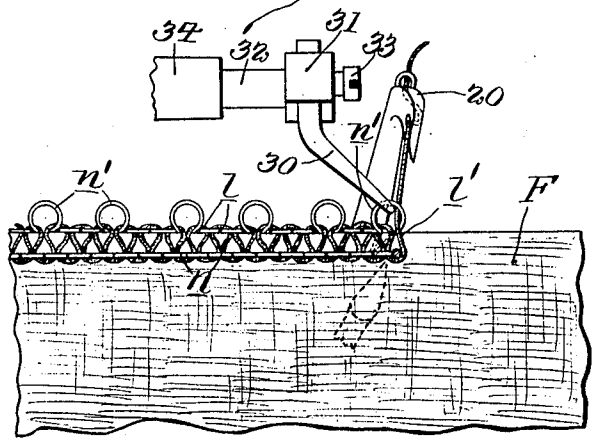


Fig. 9.

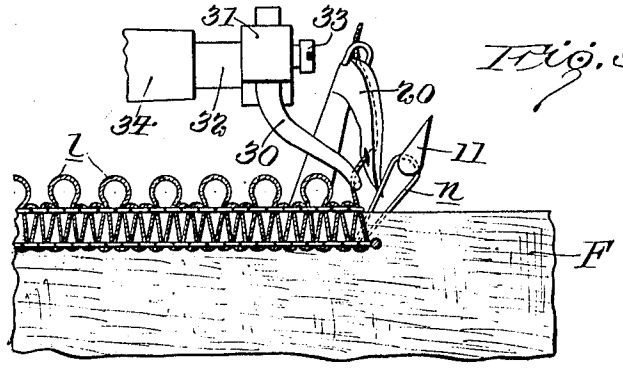
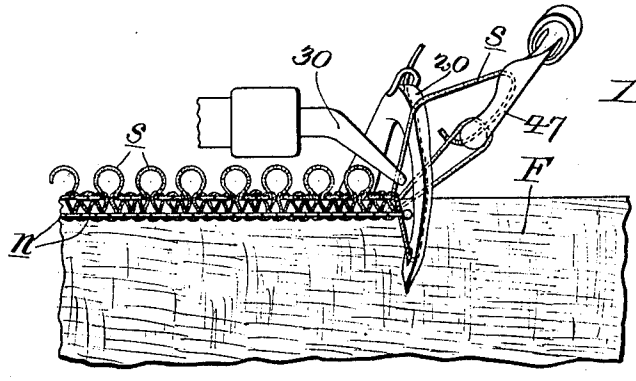


Fig. 10.



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UNITED STATES PATENT OFFICE.

LANSING ONDERDONK, OF NEW YORK, N. Y., ASSIGNOR TO UNION SPECIAL MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

PICOT-EDGING MACHINE.

1,308,608. Specification of Letters Patent. Patented July 1, 1919.

Application filed May 24, 1916. Serial No. 99,621.

To all whom it may concern:

Be it known that I, LANSING ONDERDONK, a citizen of the United States, residing at New York, in the county of New York, State of New York, have invented certain new and useful Improvements in Picot-Edging Machines, of which the following is a description, reference being had to the accompanying drawings and to the figures of reference marked thereon.

The invention relates to new and useful improvements in sewing machines, and more particularly to a sewing machine for forming from the stitching threads an edging for a fabric.

An object of the invention is to provide means coöperating with the stitch forming mechanism for forming at pre-determined intervals "picot loops".

A further object of the invention is to provide a machine of the above character wherein the means for forming the picot loops hold the loop until the stitches are set, thus insuring that each loop shall be of a pre-determined size.

These and other objects will in part be obvious and will in part be hereinafter more fully disclosed.

In the drawings, which show by way of illustration one embodiment of the invention:—

Figure 1 is a view, partly in front elevation and partly in section, showing a portion of a sewing machine having my improvements applied thereto;

Fig. 2 is a transverse sectional view, through the parts beneath the work support; also showing the needle and the needle bar, the section being taken at one side of the feed bar;

Fig. 3 is a transverse sectional view, through the parts beneath the work support; also showing the needle and the needle bar, the view showing the mechanism for forming the picot loops in side elevation;

Fig. 4 is a view similar to Fig. 3, but showing the parts in a different position;

Fig. 5 is a plan view of the parts beneath the work support, and also showing the needle in section;

Fig. 6 is a view showing more or less diagrammatically the needle, the looper, the spreader and the picot loop-forming device at the time when said loop-forming device is entering the needle loop;

Fig. 7 is a view, similar to Fig. 6, but showing the stitches set and the picot loop drawn down against the holding device therefor;

Fig. 8 is a bottom plan view of the fabric;

Fig. 9 is a view, similar to Fig. 6, but showing a slightly modified form of the invention, wherein the picot loops are formed from the looper thread between stitches; and

Fig. 10 is a view, similar to Fig. 9, but showing a further modified form of the invention wherein the picot loops are formed from a looper thread carried by the under looper.

In carrying out my invention, I have provided a sewing machine having stitch-forming mechanism for forming from the stitching threads an edging for a fabric and with a device which intermittently engages one of the stitching threads for holding the same in extended loops, thus forming picot loops. As shown in the drawings, the stitch-forming mechanism and the picot loop-forming device engages the needle loop and holds the same extended. Said picot loop-forming device is timed to operate at every third stitch.

Referring more in detail to the drawings:—

I have shown my invention as applied to a sewing machine having a supporting bed 1 which carries a standard 2 formed with an overhanging arm 3. Reciprocating in the overhanging arm is a needle bar 4 carrying a needle 5. The needle bar is reciprocated by a needle lever 6 which is connected by a link 7 to the needle bar. Said needle lever is pivoted at 8 to the standard 2 and is oscillated by an eccentric strap 9 which coöperates with an eccentric on the main shaft 10. Coöperating with the needle beneath the work support is a spreader 11 which is mounted in a spreader carrier 12 pivoted at 13 to a supporting bracket 14. Said spreader carrier 12 is oscillated by a link 15 which is connected to a rock lever 16 pivoted at 17 to the standard 2. Said rock lever 16 is connected by a link 18 with a needle lever extension 19. Also coöperating with the needle 5 and with the spreader 11 is a threaded looper 20. Said looper 20 is mounted on a looper carrier 21 which is fixed to a shaft 22. The shaft 22 is provided with an arm 23 which is connected to a link

24. This link 24 is also connected to a crank 25 on the main shaft 10.

The material is fed to the stitching mechanism by a feed dog 26 which is carried by a feed bar 27. The feed bar 27 is moved back and forth by a feed rocker 28 and is raised and lowered by an eccentric 29 on the main shaft 10.

The above parts are of the usual construction in the well-known "Union Special" overseaming machine and will not need further description. It will be understood that the needle passes through the fabric adjacent the edge, the spreader 11 moves forward and engages the needle loop and carries it to the edge of the fabric, while the threaded looper 20 moves through the needle loop to a position above the material where the thread loop of said looper is positioned for the entrance of the needle.

Coöperating with the stitch forming mechanism above described is a loop-holding mechanism which consists of a loop-holding hook 30. This loop-holding hook 30 is adjustably mounted in a supporting head 31 carried by a bar 32 (see Figs. 2, 3 and 4). Said hook is clamped to the head 31 by a set-screw 33. The bar 32 is mounted so as to reciprocate freely in a sleeve 34 which is pivoted at 35 to the housing or bracket 36 (see Fig. 5). The sleeve 34 has a rearwardly projecting arm 37 which is pivoted at 38 to an eccentric strap 39. The eccentric strap 39 coöperates with an eccentric 40 attached to a gear wheel 41. The gear wheel 41 is mounted to rotate freely on a supporting bearing 42 which is secured to the housing or bracket 36. Said gear wheel 41 is rotated by a gear wheel 43 mounted on the main shaft 10. At the upper end of the eccentric strap 39 there is a pin 44 which is secured to the eccentric strap so that it may be adjusted longitudinally thereof. Said pin has a shoulder which is clamped against the eccentric strap by a holding nut 45 and the eccentric strap is slotted so as to permit this pin 44 to be adjusted toward and from the eccentric 40. The rod 32 is provided with a cross head 46 which engages the pin 44.

As the main shaft rotates, the eccentric 40 will be rotated, and this will oscillate the eccentric strap about the pivotal connection 38 between the arm 37 and the eccentric strap. As the eccentric strap oscillates, the pin 44 will be moved back and forth, that is, to the right and to the left of the position shown in Fig. 4, and this will move the rod 32 endwise in the sleeve 34. The eccentric 40 will not only oscillate the eccentric strap 39, but will move the same endwise as said eccentric oscillates from the position shown in Figs. 2 and 3 to the position shown in Fig. 4. This endwise movement of the eccentric strap oscillates the sleeve 34 about its pivotal support 35. The cross head 46 slides on the pin 44 and permits this oscillation of the sleeve 34. The combined movements above referred to causes the hook 30 to move forward, thence downward, thence slightly backward, thence upward, and then again forward.

In Fig. 6 of the drawings, I have shown diagrammatically a fabric, indicated at F, in which a series of stitches have been formed consisting of a needle thread n which is concatenated with a looper thread l. The needle passes down through the fabric and the spreader 11 engages the needle loop and carries the same outward beyond the edge of the fabric to a position so that the looper 20 may pass through the needle loop, carrying the looper thread in loop form from the edge of the fabric into a position for the needle 5 to enter. In Fig. 6, the spreader is at the extreme end of its movement and is holding the needle loop which is indicated at n'. The spreader is at the extreme forward end of its stroke and the looper is about to enter into the loop formed by the looper which is indicated at l'. The picot loop-forming hook 30 is so timed that, when at the forward end of its stroke and on its downward movement, it will enter the needle loop n'. The gear wheel 41 is larger than the gear wheel 43 so that, as shown in the drawings, the gear wheel 41 moves one complete rotation to every three complete rotations of the main shaft 10. Therefore, at every third reciprocation of the needle, the picot loop-forming hook 30 will move into the needle loop carried by the spreader, as shown in Fig. 6. When the spreader is retracted to release the loop, it will still be held by this holding hook 30 and will be retained thereon until after the looper and spreader have retracted, drawn on the threads, and set the stitch, after which the hook will move upward and release the picot loop.

When the parts are timed as shown in the drawings, a picot loop, that is, a loop lying in the plane of the fabric and projecting beyond the edge of the fabric and the other loops of the overseaming stitching, will be formed at every third stitch or reciprocation of the needle. It will be apparent that the gear wheels 41 and 43 may be readily removed, and gear wheels of different sizes substituted therefor, so as to change the timing of the picot loop-forming hook and picot loops may be formed at every second stitch, or every fourth stitch or any desired number of stitches.

In Fig. 9 of the drawings, I have shown diagrammatically a stitch forming mechanism of the character above described, but in this instance the holding hook 30 is timed and positioned so as to engage the looper thread between stitches instead of engaging

the needle thread loop. In this form of the invention, the picot loop is formed from the looper thread and may be formed at any desired time.

In Fig. 10 of the drawings, I have shown a slightly modified form of stitching mechanism, wherein the threaded looper is substituted for the spreader. This threaded looper is indicated at 47 and carries a thread *s*. The looper moves through the loop in the thread *s* and presents this loop for the entrance of the needle. The picot loop-forming hook in this instance is timed and positioned so as to engage the looper thread formed by the under looper 47 and the picot loop is formed in the thread *s*.

The eccentric 40 is adjustably connected to the gear wheel 41 so that the throw of the eccentric may be slightly varied for changing the timing of the picot loop-forming hook 30. Also by adjusting the pin 44, the back and forth movement of the hook may be further varied. Through the set-screw 33 the position of the hook on the supporting head may be varied. These adjustments assist in operatively positioning the hook so as to bring about the coöperative action and timing above referred to. It is understood that in order to change the time of making the picot loop from one stitch to another would, however, require the changing of the gears.

It will also be noted that the timing of the small gear 43 on the shaft 10 either forward or backward can be readily accomplished, and this change in the timing of the gear will result in changing the timing of the hook forming the loop so as to properly cause the hook to engage the threads for making the picot loops.

It is obvious that minor changes in the details of construction and the arrangements of parts may be made without departing from the spirit of the invention, as set forth in the appended claims.

Having thus described the invention, what is claimed as new is:—

1. A sewing machine including in combination a work support, a needle, a looper cooperating with the needle beneath the work support, a second looper coöperating with the first named looper and with the needle above the work support, whereby over edge stitches are formed and means coöperating with the stitch forming mechanism for forming from one of the stitching threads picot loops.

2. A sewing machine including in combination a work support, a needle, a looper cooperating with the needle beneath the work support, a second looper coöperating with the first named looper and with the needle above the work support, whereby over edge stitches are formed, a loop holding hook and means for operating the same to engage one of the stitching threads and forming a loop therein which projects beyond the edge of the fabric.

3. A sewing machine including in combination a work support, a needle, a looper coöperating with the needle beneath the work support, a second looper coöperating with the first named looper and with the needle above the work support, whereby over edge stitches are formed, a loop holding hook and means for operating said holding hook to cause the same to engage and form a loop in one of the stitching threads at predetermined intervals of two or more stitches.

4. A sewing machine including in combination, over-edge stitch forming mechanism including a needle, complemental stitch forming devices, a loop-holding hook, and means for operating said loop-holding hook for engaging the needle thread loop and holding the same extended at predetermined intervals to form picot loops.

5. A sewing machine including in combination, over-edge stitch forming mechanism including a needle and complemental stitch forming devices, a holding hook, and means for operating said holding hook to engage the needle loop and hold the same extended beyond the edge of the fabric at predetermined intervals of two or more stitches to form picot loops.

6. A sewing machine including in combination, over-edge stitch forming mechanism, a loop holding hook coöperating therewith to form picot loops, a supporting bar for said hook, means for oscillating said bar and for moving the same endwise for causing the hook to engage one of the stitching threads at predetermined intervals.

7. A sewing machine including in combination, over-edge stitch forming mechanism, a hook coöperating therewith to form picot loops, a bar supporting said hook, a sleeve within which said bar reciprocates, and means for oscillating said sleeve.

8. A sewing machine including in combination, over-edge stitch forming mechanism, a hook coöperating therewith to form picot loops, a bar supporting said hook, a sleeve within which said bar reciprocates, an eccentric, an eccentric strap connected to said sleeve and to said bar to oscillate said sleeve and for reciprocating the bar in said sleeve.

9. A sewing machine including in combination, over-edge stitch forming mechanism, a hook coöperating therewith to form picot loops, a bar supporting said hook, a sleeve within which said bar reciprocates, an eccentric, an eccentric strap, a pin carried by said eccentric strap, a slotted cross head carried by the bar and engaging said pin, an arm carried by the sleeve and pivoted to said eccentric strap between the eccentric and the pin.

10. A sewing machine including in combi-

nation, a main shaft, a needle, means for reciprocating the needle, means coöperating with the needle to form over-edge stitches, a holding hook, a supporting bar for said holding hook, an eccentric, an eccentric strap operated thereby, means operated by the eccentric strap for oscillating the bar and moving the bar endwise, and means operated from the main shaft for rotating the eccentric once for every three rotations of the main shaft.

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

LANSING ONDERDONK.

Witnesses:
JOHN H. HOWELL,
MATTHEW P. RYAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."