(No Model.)

L. ONDERDONK.

SEWING MACHINE.

No. 583,389. Patented May 25, 1897.

FIG. 1.

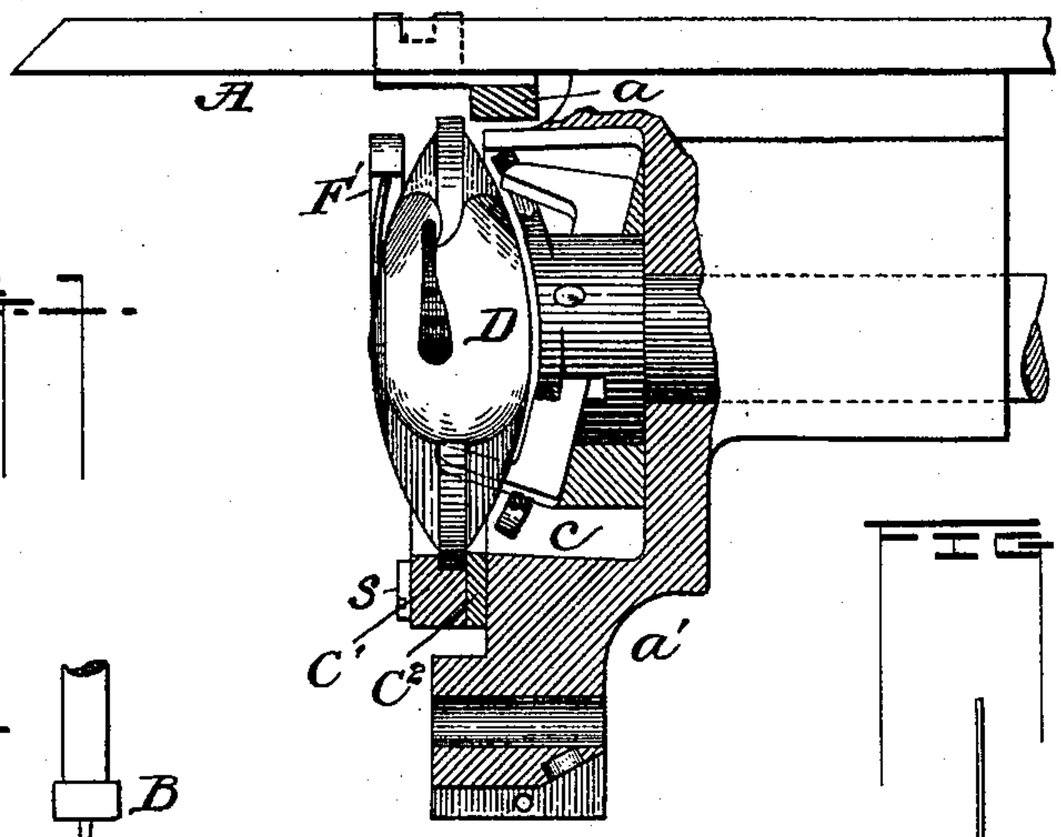


FIG. 2.

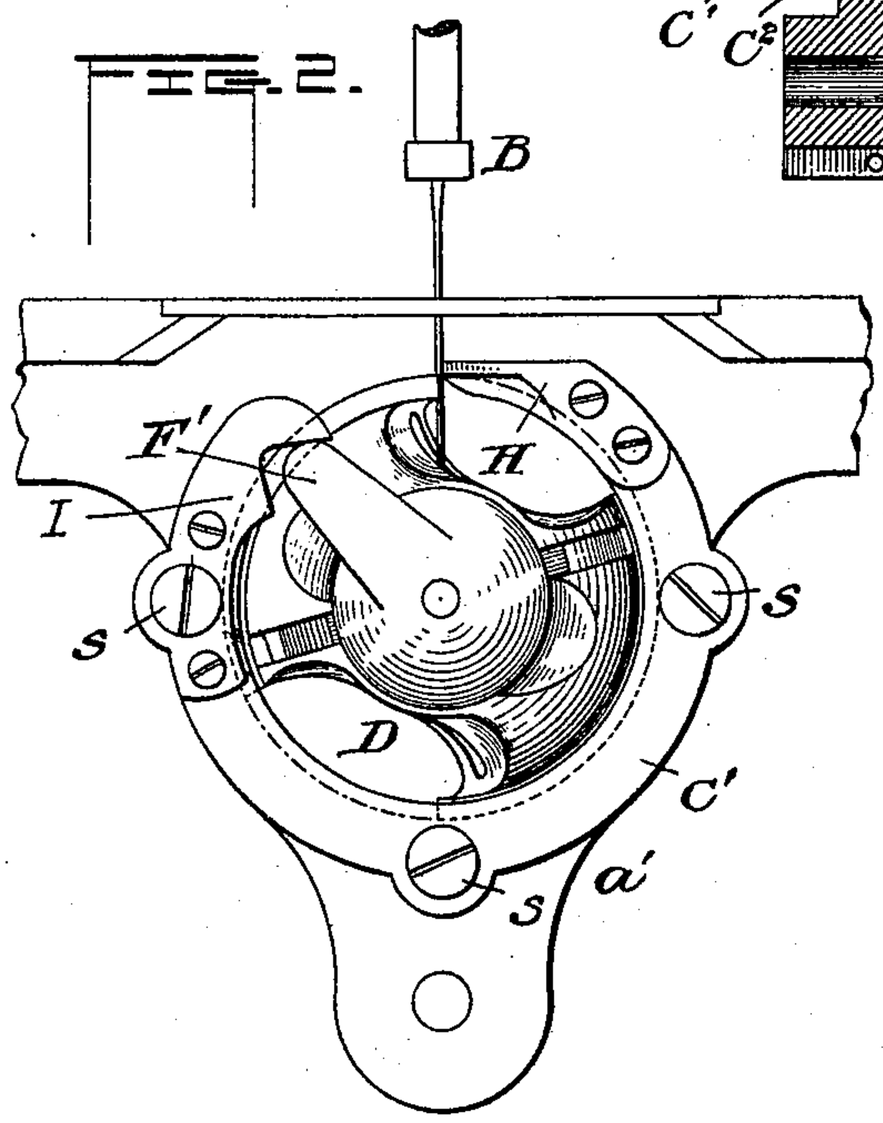


FIG. 3.

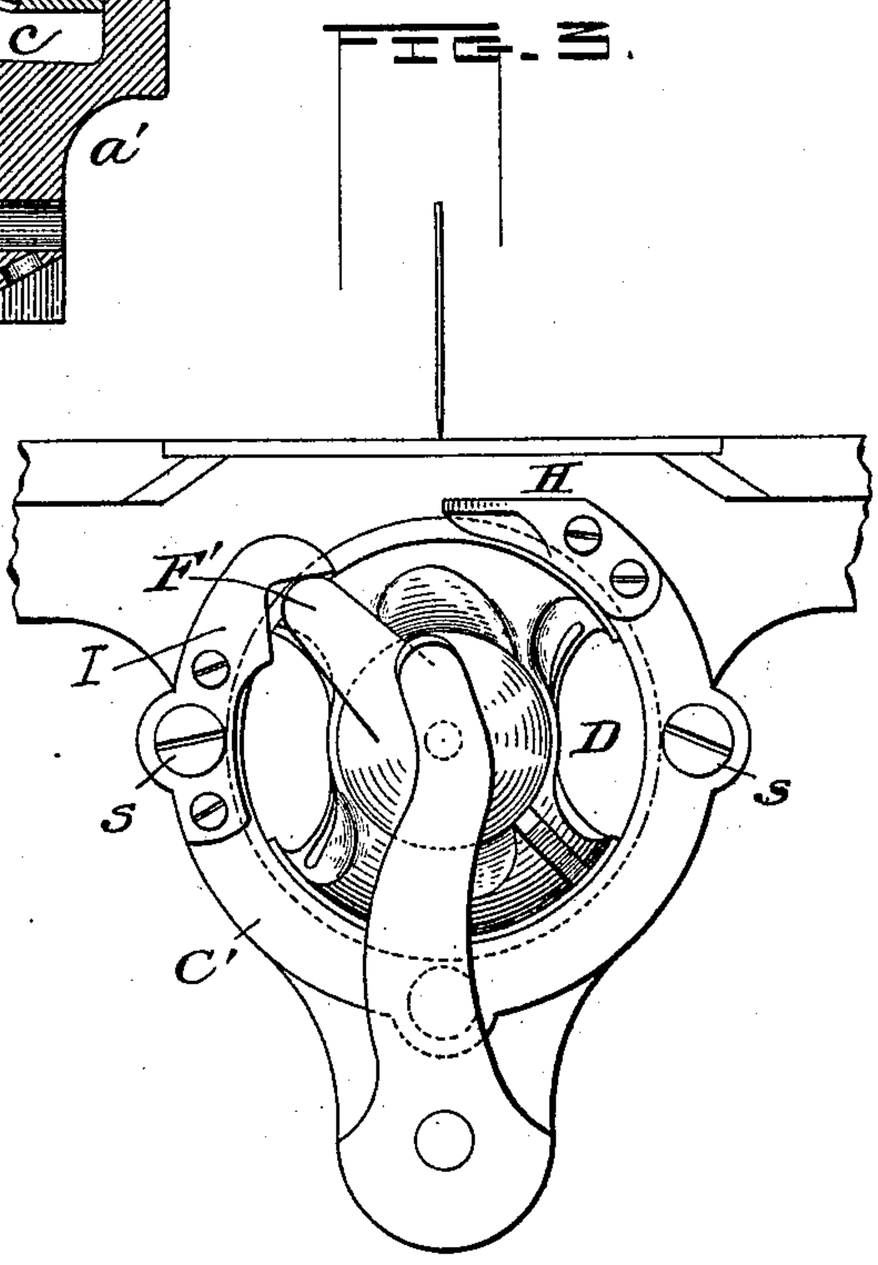


FIG. 4.

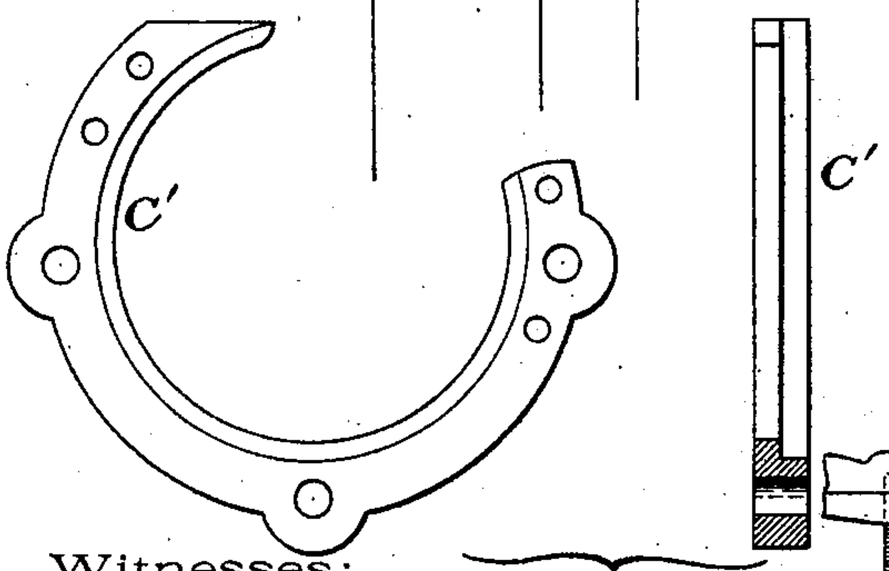


FIG. 5.

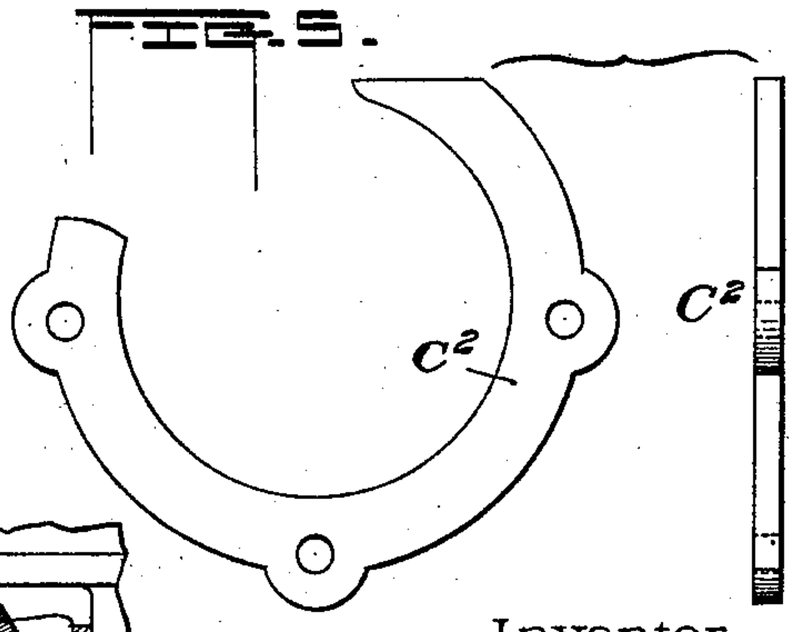
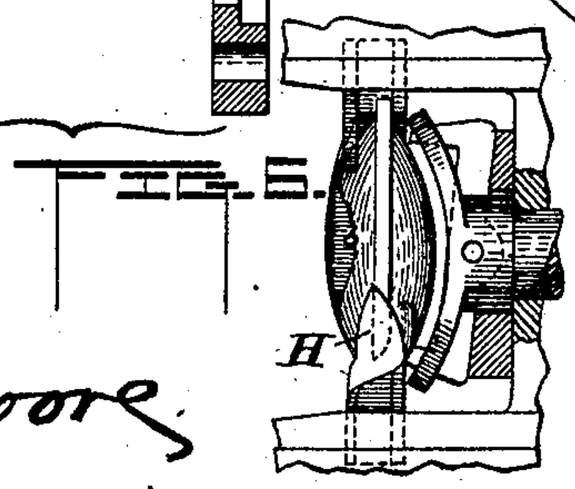


FIG. 6.



Witnesses:

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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. 583,389, dated May 25, 1897.

Original application filed October 6, 1892, Serial No. 448,073. Divided and this application filed January 10, 1894. Renewed February 6, 1897. Serial No. 622,360. (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, State of Illinois, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to an improvement in sewing-machines, and particularly to that class known as "lock-stitch" machines.

In an application filed by me October 6, 1892, Serial No. 448,073, I have illustrated the machine upon which my present invention is to be used, and this application is a division thereof.

The object of this invention is to provide means coöperating with the stitch-forming mechanism whereby the opening, spreading, and drawing in of the needle-loop is facilitated. The invention therefore consists in the mechanism hereinafter described and claimed.

In the accompanying drawings, which illustrate my invention, Figure 1 is a side elevation, partly in section, of so much of a sewing-machine as is necessary to an understanding of my invention. Fig. 2 is an end elevation showing the parts in one position. Fig. 3 is a similar view, certain of the elements being omitted, showing the relation of the parts after the hook has moved from the position shown in Fig. 2. Figs. 4 and 5 are detail views of the hook-race front and rear plates, respectively. Fig. 6 is a plan view showing the looper and illustrating clearly the form of the spreader.

In the drawings, A is the bed-plate of the machine; B, the needle-bar; *a*, the feed-bar, and D the rotating hook. These parts are all constructed and operate in the manner described in connection with the aforesaid application, and as, *per se*, they form no part of the present invention need not be more specifically mentioned.

Secured to the under side of the bed-plate is a hanger *a'*, which, as shown in Fig. 1, is approximately cup-shaped. This hanger has a recess *c*, and to the side thereof is secured, by means of screws *s*, the plates C' C^2, forming the hook-race. The plate C' is provided with a rib, and the plate C^2, which is arranged behind the hook D and against the supporting-hanger, forms one side of a groove in which the hook rotates. It will be seen that by making this plate C^2 of varying thicknesses the distance of the hook from the needle will be regulated, said plate thereby forming a spacing-plate by means of which also the wear may be taken up. Both plates are cut away directly beneath the feed-dogs, being flattened upon the side next the dogs. The cutting off of this portion of the race-plate forms thereby a tapering end portion.

By cutting away the race-plates, as shown in the several figures, a forward end is left which terminates at a point approximating the plane in which the needle reciprocates and a rearward end is provided which terminates slightly above the horizontal diameter of the race. The respective ends afford supports for the spreader and retaining-plate, as hereinafter described, and between said spreader and retaining-plate and in rear of the needle a clearance is afforded for drawing in the needle-loop and setting the stitch. Furthermore, by locating the retaining-plate as described and providing the bobbin-case with a coöperating arm the draft on the thread for setting the stitch is made at a time and at such an angle that little or no friction or drag is created thereon.

Secured upon the flattened portion of the forward end of the race is a loop-spreader H, which is triangular in shape, its apex forming a beak curving close to the path of the needle and in line above and central with the point of the hook, so that when the hook shall have entered the needle-loop and is carrying it forward it will carry it onto the beak of the spreader, or, in other words, as the hook moves forward with the needle-thread spread by the thickness of the hook, owing to the beak of the spreader being pointed and because of its relative position, the hook will carry the needle-thread onto the loop-spreader, and in the movement of the hook the loop of the needle-thread will be opened wider and wider, and thus at the angle at which it is drawn on

and the tension of the thread cause the same to pass back around the hook and bobbin sooner and easier than if left entirely to the time and form of the hook. It also saves breaking of the thread by any strain that might occur if the hook should fail to cast the thread off at the proper time. This loop-spreader is preferably formed of metal and is bent over, so as to lie perfectly flat or on top of the race. I have found that it is of great advantage to arrange this loop-spreader on a race constructed as above mentioned, for the reason that it is more than wide enough to cover the race-plates C′ C², and thus prevent the needle-loop or ends of thread from being drawn between the plates or the hanger *a′* and becoming wedged therein. I may and preferably do make these plates of antifriction material, such as wood or wool-fiber, so that oiling will be unnecessary and at the same time grinding or cutting out being avoided.

Upon the rear end of the race adjacent to the feed-dogs is provided a bobbin-case retainer, consisting of a plate I, provided with a suitable notch. The bobbin-case has an integral projection or arm F′, which is adapted to engage the notch in said stop, and as the latter is stationary the bobbin is kept steady and prevented from revolving with the hook. These features are of value in a machine of the character described in that the relation to the needle and the consequent line of draft upon the needle-thread in passing between I and F′ are such as to afford the least possible resistance and to cause it to take place at a time when the draft on the needle-thread is slow and when resistance the least affects the drawing up of the thread preparatory to setting the stitch in the material. Furthermore, the point of contact between I and F′ is as far as possible from the center of the bobbin-case, whereby the resistance to the passage of the thread between the plate and the arm caused by the friction between the bobbin-case and the hook at the point of contact is lessened materially, for the greater the distance between the resistance and its source the lesser the friction on the thread. I have found that by placing this part I upon the shuttle-race itself I accomplish this result in a simple and inexpensive manner.

The construction of the hook is not material to the present invention, said hook being claimed in an application, Serial No. 496,364, filed of even date herewith.

Having thus described my invention, what I claim is—

1. In a sewing-machine the combination with a reciprocating needle, and a rotary looper carrying a bobbin-case provided with a retaining-arm, of a race for the looper consisting of a segmental plate provided with a groove within which the looper travels, and having its forward end extended to approximately the plane of movement of the needle, and its rear end terminating at a point slightly above the horizontal diameter of the race, and a retaining-plate secured to said rear end and coöperating with the arm of the bobbin-case to hold the latter from rotation; substantially as described.

2. In a sewing-machine the combination with a reciprocating needle, a rotary looper and a segmental race therefor, of a bobbin-case carried by said looper and provided with a retaining-arm, means coöperating with said arm for holding the case stationary relative to the looper, said means being carried by a plate secured to the race, curved to conform thereto, and located in rear of the needle, in a plane parallel with and adjacent the orbit of the looper, and above the horizontal diameter of the race, whereby as the loop is drawn to set the stitch it meets with little resistance; substantially as described.

3. In a sewing-machine the combination with a reciprocating needle and a rotating looper, of a race for the latter consisting of a segmental plate provided with a groove within which the looper travels, and having its forward end extended to approximately the plane of movement of the needle and its rear end terminating at a point slightly above the horizontal diameter of the race, and a triangular spreader carried by the forward end of the plate having its beak located centrally of the groove and in the vertical plane of movement of the looper, whereby the loop of needle-thread is properly opened and equally spread on both sides of the looper and clearance for the thread afforded in rear of the needle; substantially as described.

4. A shuttle-race composed of two plates in combination with a horizontally-disposed triangular loop-spreader, its laterally-extending portions covering the space between said plates and its beak arranged to receive and spread the needle-loop and prevent the same from being drawn between the plates and becoming wedged therein; substantially as described.

5. A sewing-machine comprising a shuttle-race formed of two plates secured together and a loop-spreader secured to one of said plates of triangular form with its apex forming a beak curving close to the path of the needle of the sewing-machine and in line above and central with the point of the hook, and having a lateral extended portion to cover the space between the shuttle-race plates; substantially as described.

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

LANSING ONDERDONK.

Witnesses:
EDGAR S. HILL,
JOHN D. ALLEN.