

UNITED STATES PATENT OFFICE.

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

CHAIN-STITCH SEWING-MACHINE.

No. 875,592.

Specification of Letters Patent.

Patented Dec. 31, 1907.

Application filed March 5, 1904. Serial No. 196,745.

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 Chain-Stitch Sewing-Machines, of which the following is a description, reference being had to the accompanying drawing, and to the letters and figures of reference marked thereon.

My invention relates to an improvement in sewing machines of the chain stitch type, and the object of the invention is to provide a machine making a stitch which is capable of being drawn up closely into the goods.

The invention consists in certain arrangements for imparting movement to the looper, and also to devices for guiding and controlling the looper thread.

Briefly, the operation of the looper is such that its forward movement into the needle loop or toward the center of its movement is a quick one, which is of especial advantage in a looper having a very short throw, for it avoids the liability of skipping stitches; the looper has an inactive period while the needle-avoiding movement is taking place; then a slow backward movement to a certain point, but a very quick movement out of the loop when the needle point has passed into the looper loop, to enable the stitch to be drawn up quickly as the needle moves up.

The main objects of the present invention are the same as set forth in my application filed November 9th, 1901, Serial No. 81,760, and the present invention embodies, as above stated, improvements in the mechanism for imparting the variable movement to the looper, and also to means for guiding and controlling the looper thread.

The invention is illustrated in the accompanying drawings, in which

Figure 1 is a front elevation with the bed plate removed, of a sewing machine embodying the invention; Fig. 2 is a skeletonized view, showing the relation of the parts when the needle is at its lowest point and about to move upward to throw out a loop, the looper being at the extremity of its backward movement and about to start forward; Fig. 3 is a similar view when the parts are at the opposite extremities of their movement; and Fig. 4 is a detached perspective view of the looper-operating mechanism.

In these drawings, A represents the bed of

the machine; B, the goose-neck; C the head thereof; D the needle bar; *a* the needle; *b* the looper; F the looper rod; G the needle lever; H the trimmer; and E the looper rocker. The looper rod F is attached to the stud 14, upon which is a grooved collar 15. This stud is secured on the end of the crank arm *c*, which is sleeved on the short stud *d* on the machine frame. Pivoted on the crank *c* is a link *e*, which has a pivotal connection with the lower end of the needle lever extension *f*. Upon the lower end of the needle lever extension is a guide 11 for the thread, and other thread guides 12 may be provided on the needle lever extension, which act to pull off thread from the spools in the backward oscillation of said needle lever extension. A guiding wire 16 may also be provided under which the thread is led from the grooved collar 15, on its way to the eye of the looper.

I do not herein claim broadly the use of the guiding wire 16, or the pull off guides 12 on the needle lever extension; but what I do claim is the particular mechanism for imparting the variable movement to the looper and the utilization of one of the parts of the looper operating mechanism as a guide and slack controller for the looper thread, viz., the grooved collar on the swinging crank *c*, which, as the needle is moving up and the looper is moving forward, gradually pays off the looper thread, preventing its getting too slack, and as the needle is moving down and the looper is moving back, will act to gradually take up the slack.

It will be noticed in the operation of the machine that the looper has imparted to it a very quick movement as it goes into the loop, and a very quick movement as it backs out of the loop, thereby accomplishing the objects above mentioned.

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

1. In a sewing machine, suitable stitch-forming mechanism including a needle and means for operating the same, a looper cooperating therewith to form stitches, and means for imparting variable movements to the looper, as set forth, said means including a swinging arm supported independently of the needle-operating means, means for guiding the thread thereto, means on said swinging arm for guiding the thread, and means

for swinging said arm to cause it to gradually pay out the looper thread as the looper is moving forward, and to take up the slack as the looper is moving backward; substantially as described.

2. In a sewing machine, suitable stitch-forming mechanism including a needle, a needle lever, pull off thread guides thereon, a stationary guide cooperating therewith, a looper cooperating with said needle to form stitches, and means for imparting variable movement thereto, including a swinging arm supported independently of the needle lever, but operatively connected therewith, means on said swinging arm for guiding the thread, said swinging arm in its movement gradually paying out the looper thread as the looper moves forward and taking up the slack as it moves backward; substantially as described.

3. In a sewing machine, suitable stitch-forming mechanism including a needle and a looper cooperating therewith to form stitches, means for imparting variable movements to the looper as set forth, said means including a swinging arm provided with a grooved collar, over which the thread is guided, and which gradually pays out the looper thread as the looper is moving forward, and takes up the slack as it is moving backward; substantially as described.

4. In a sewing machine, suitable stitch-forming mechanism, including a needle and a looper cooperating therewith to form stitches, slack controlling devices, including a swinging arm, over which the thread is guided, connections between the needle lever and the swinging arm, and between said swinging arm and the looper; substantially as described.

5. A sewing machine having stitch-form-

ing mechanism, including a needle and a looper cooperating therewith to form stitches, means for imparting a variable movement to the looper, including a needle lever extension, a link pivoted thereto, a crank pivoted on the machine frame, to which the link is pivoted, said crank having also pivotal connection with the looper rod; substantially as described.

6. A sewing machine having stitch-forming mechanism, including a needle and a looper cooperating therewith to form stitches, means for imparting a variable movement to the looper, including a needle lever extension, a link pivoted thereto, a crank pivoted on the machine frame, to which the link is pivoted, said crank having also pivotal connection with the looper rod, said crank having means for guiding and controlling the slack of the thread; substantially as described.

7. A sewing machine having stitch-forming mechanism, including a needle and a looper cooperating therewith to form stitches, means for imparting a variable movement to the looper, including a needle lever extension, a link pivoted thereto, a crank pivoted on the machine frame, to which the link is pivoted, said crank having also pivotal connection with the looper rod, said crank having means for guiding and controlling the slack of the thread, and guides for the thread upon opposite sides of the crank; substantially as described.

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

LANSING ONDERDONK.

Witnesses:

F. A. NORTH.

J. H. HOWELL.