

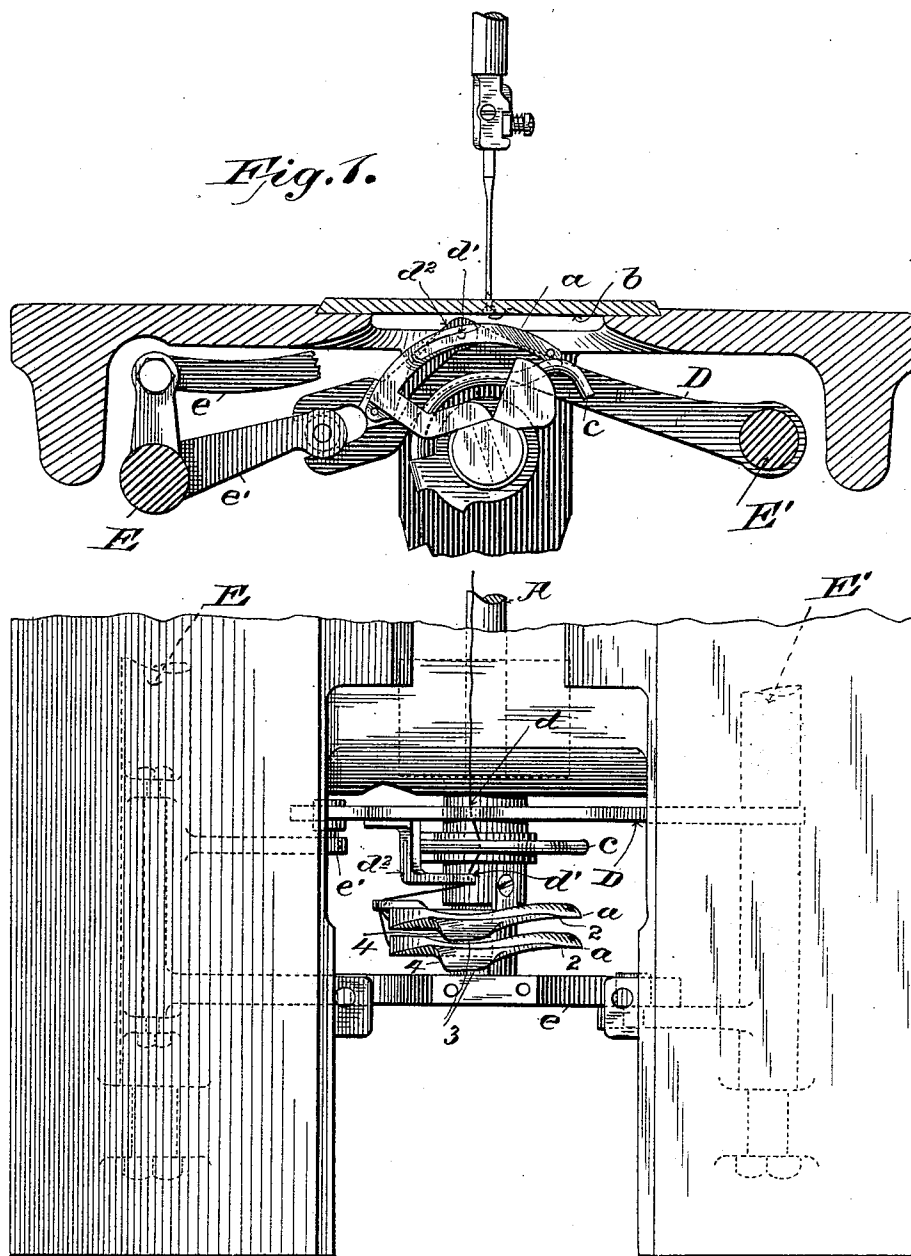
(No Model.)

2 Sheets—Sheet 1.

A. RONTKE.
DOUBLE CHAIN STITCH SEWING MACHINE.

No. 582,692.

Patented May 18, 1897.



WITNESSES
C. W. Benjamin
C. M. Sweeney

Fig. 2.

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Albert Rontke
BY
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ATTORNEY.

(No Model.)

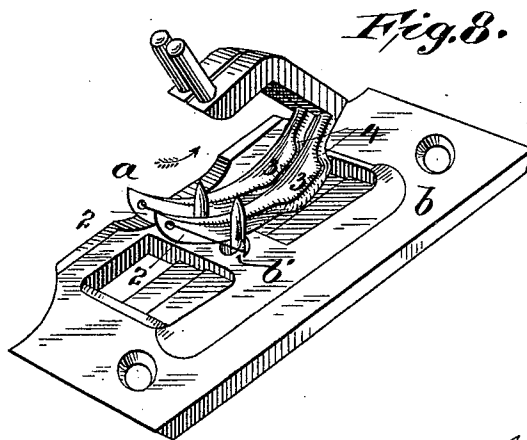
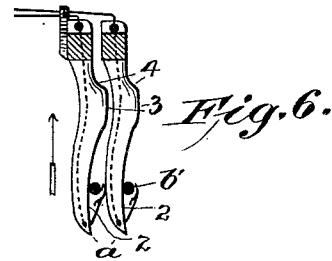
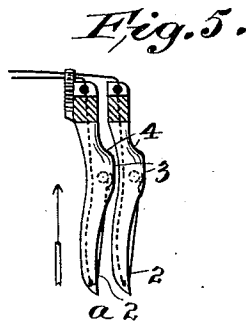
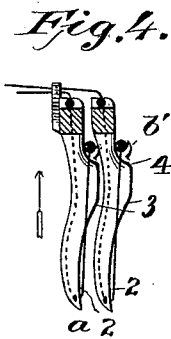
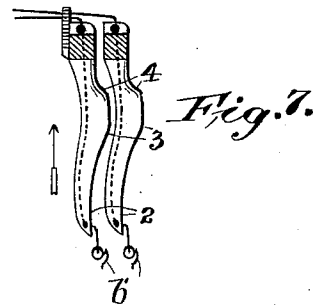
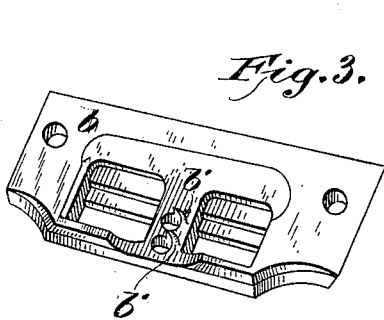
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UNITED STATES PATENT OFFICE.

ALBERT RONTKE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE SINGER
MANUFACTURING COMPANY, OF NEW JERSEY.

DOUBLE-CHAIN-STITCH SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 582,692, dated May 18, 1897.

Application filed November 17, 1896. Serial No. 612,437. (No model.)

To all whom it may concern:

Be it known that I, ALBERT RONTKE, 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, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to double-chain-stitch sewing-machines, and has for its object to provide a machine of this class in which the loops of the looper-thread will be properly spread for the entrance of the needle without requiring the vibrating looper to be moved laterally. To this end my improved looper is provided on its side which comes adjacent to the needle in taking a needle-loop with a curved swell, which terminates near the heel of the looper in an inclined shoulder, behind which shoulder the looper-thread running from the eye of the looper to the work falls and is held taut when the looper is in its extreme forward position, so that on the backward movement of the looper the taut thread will be lifted slightly and pushed laterally by the said swell into engagement with a small loop-detaining hook on the under side of the throat-plate, adjacent to the needle-hole, and which hook holds the looper-thread in its lateral or spread position until the needle on its downward movement has entered the distended loop or bight of thread, when the continued backward movement of the looper will draw the thread from the said hook, so that it will encircle the now rising needle and will thus be drawn up into the work around the needle-thread as the stitch is tightened at the ascent of the needle.

In the accompanying drawings, Figure 1 is a partial front end view of a sewing-machine embodying my invention, and Fig. 2 is a partial plan view of the same. Fig. 3 is a detail perspective under side view of the throat-plate. Figs. 4, 5, 6, 7, and 8 are detail under side views illustrating the operation of the loop-spreaders on the loopers and of the detaining-hooks coöperating therewith.

A denotes a shaft to be rocked or oscillated in any suitable manner and to which are attached any desired number of eyed or thread-carrying loopers *a* corresponding to the num-

ber of needles with which the machine may be furnished. The loopers *a* are each provided on their sides 2, which come adjacent to the needles in taking the needle-loops, with outwardly curved or swelled portions 3, which serve as loop-spreaders and which terminate near the heels of the said loopers in inclined shoulders 4. The throat-plate *b* is provided on its under side, closely adjacent to the needle-holes, with loop-detaining hooks *b'*, which point in a direction opposite that in which the loopers point and on which during the first part of the backward movement of the latter the looper-threads will be caught, as will presently be more fully explained, but from which said threads will be disengaged during the latter part of the backward movement of the loopers after the needles have entered the loops of the looper-threads.

The rock-shaft A is provided with a take-up arm *c*, arranged between and coöperating with two vertically-moving take-up eyes at *d* and *d'*, operated from the rock-shaft E, which imparts horizontal and feeding movements to the feed-bar *e*, as in the well-known Singer oscillating-shuttle machines. This feeding rock-shaft I have provided with a horizontally-extending arm *e'*, engaging a fork in the end of a lever or bar D, pivoted at its other end on the feed-lifting rock-shaft E', said lever or bar having the take-up eye *d*, just referred to, and a branch or fork *d''* of said lever or bar having the other take-up eye *d'*. As the shaft E is rocked to impart horizontal or feeding movements to the feed-bar the horizontal arm *e'* of said shaft will cause vertical movements to be imparted to the take-up bar or lever D, and these take-up movements will always be proportioned to the feeding movements, so that when the feed is varied the take-up action on the looper thread or threads will be correspondingly varied, the movements of said take-up lever being shortened when the feed is shortened and lengthened when the feed is lengthened. For clearness of illustration the feed-dog has been omitted in Fig. 2, and the feed-bar partly broken away in Fig. 1.

The operation of my improved machine is as follows: When the needles have descended to their lowest positions and have risen

slightly and thrown out their loops in the usual manner, the loopers (which vibrate forward and back transversely of the machine or in the direction of the feed) enter and carry their own threads into said loops. When the loopers have reached their extreme forward positions, the inclined shoulders 4 of said loopers will have passed the needle-holes in the throat-plate and the detaining-hooks *b'*, adjacent to said holes, so that the looper-threads running from the eyes near the points of the loopers up through the needle-holes to the work will have fallen behind the said shoulders and be held taut. On the first part of the backward movements of the loopers the inclined shoulders 4 will force the taut looper-threads laterally onto the loop-spreading portions or swells 3 of the loopers, and said thread will also be lifted slightly by said swells or loop-spreaders and caught upon the detaining-hooks *b'*, and the loops thus distended will be held by said hooks until the needles descend and carry their threads into these distended loops of looper-thread, and subsequently to this when the loopers are performing the latter part of their backward movements they draw their threads off from said detaining-hooks, and the looper-loops are then tightened into the stitches.

My improved looper, vibrating transversely of the machine or in the direction of the feed, is well adapted either for a single-needle machine or for a machine employing a plurality of needles in connection with a plurality of loopers for making two or more rows of stitches, and in illustrating my invention herein I have shown it as adapted for a two-needle machine.

It will be obvious, owing to the fact that I am enabled to properly spread the loops of looper-threads without imparting lateral movements to the loopers, that the looper-operating mechanism is just thus far simplified,

so that the machine is capable of the very high speed now demanded for manufacturing machines, and owing to the arrangement of the loopers so that they vibrate transversely of the machine or in the plane of the feed of the work any desired number of loopers coöperating with any desired number of needles for simultaneously making a plurality of seams may readily be employed.

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

In a double-chain-stitch sewing-machine, the combination with a needle, of a rocking or vibrating eyed or thread-carrying looper *a* arranged to vibrate in the plane of the feed of the work, said looper being provided with the laterally-extending loop-spreading portion 3 terminating near the heel of the looper in the inclined shoulder 4, and a throat-plate provided with a thread-detaining hook, as *b'*, adjacent to the needle-hole, and which hook points in a direction opposite to the said looper, or approximately so, said shoulder being located far enough forward of the shank of the looper so that the looper-thread can pass behind the same when the looper moves to its extreme forward position, and so that the looper-thread will be spread laterally and engaged with said detaining-hook by said loop-spreading portion and shoulder; whereby the needle and looper threads may be properly concatenated for the formation of a double-chain-stitch seam without requiring lateral movements of the looper, substantially as described.

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

ALBERT RONTKE.

Witnesses:

PHILIP DIEHL,
J. G. GREENE,