

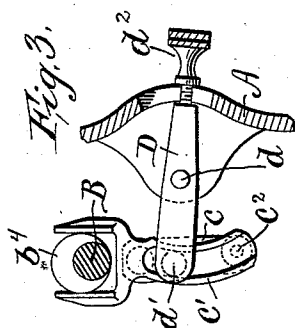
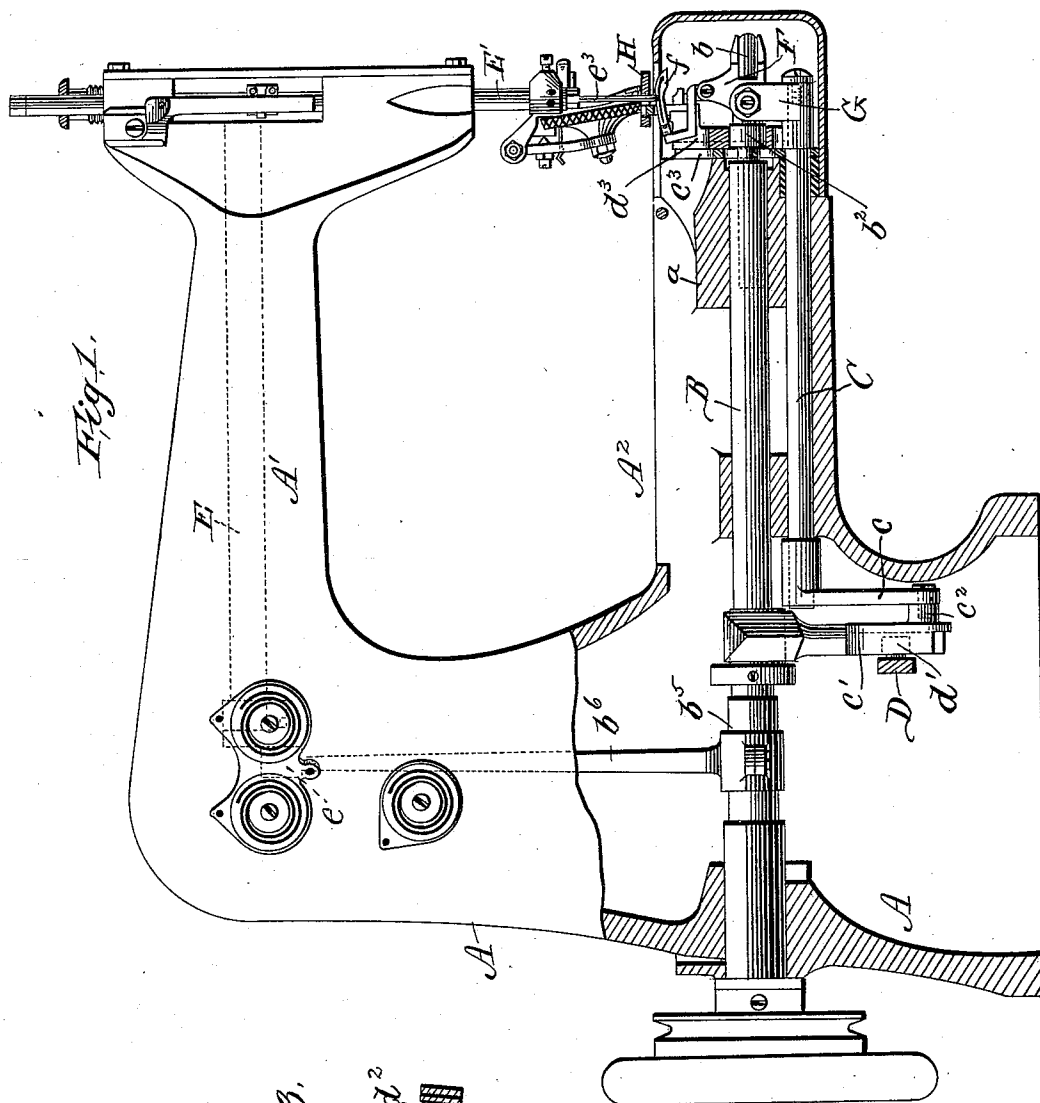
(No Model.)

2 Sheets—Sheet 1.

A. RONTKE.
SEWING MACHINE.

No. 568,702.

Patented Sept. 29, 1896.



WITNESS:

C. W. Benjamin
C. M. Sweeney.

INVENTOR:

INVENTOR:
Albert Routhe
BY *Stuart L. ...*
ATTORNEY

(No Model.)

2 Sheets—Sheet 2.

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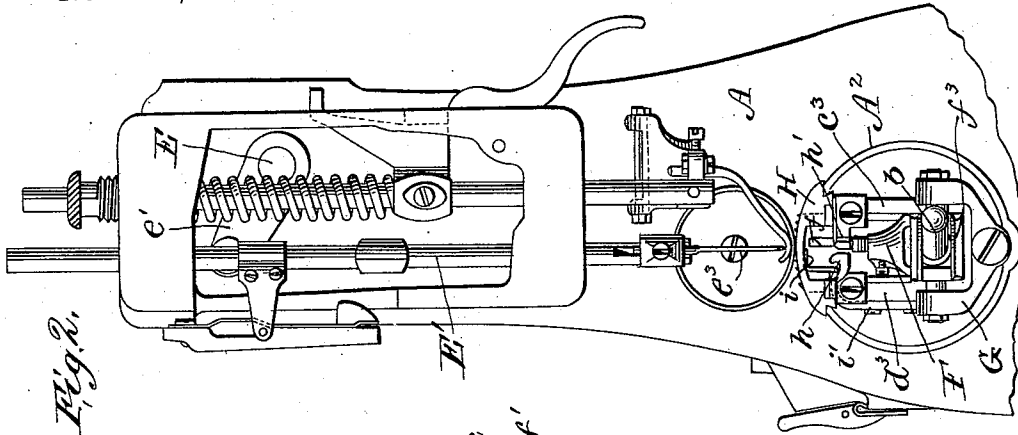


Fig. 2.

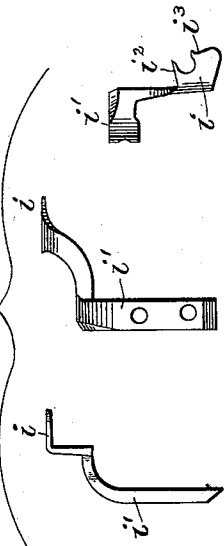


Fig. 6.

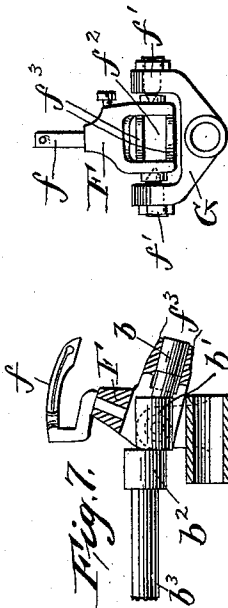


Fig. 7.

Fig. 9.

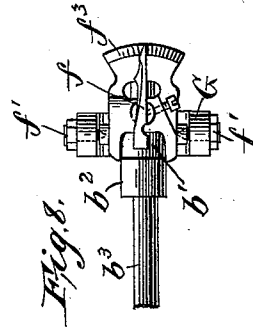


Fig. 8.

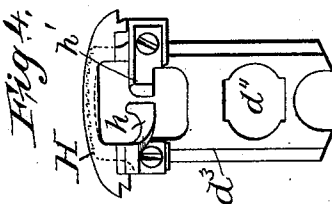


Fig. 4.

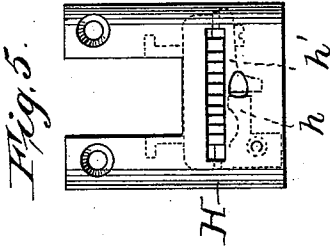


Fig. 5.

WITNESS:

C. W. Barrington
C. M. Sweeney.

INVENTOR:

Albert Rontke
BY Henry Calvert
ATTORNEY.

UNITED STATES PATENT OFFICE.

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

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 568,702, dated September 29, 1896.

Application filed March 31, 1896. Serial No. 585,566. (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 main object to provide a machine of this class in which the looper mechanism will be compact and simple in construction and at the same time strong and positive in operation, so as to be well adapted for the high speed now demanded by the manufacturing trade.

To this end my improved looper-operating mechanism comprises a rocking looper-carrier which is pivotally mounted in a pivoted yoke, the pivot of the yoke being at a right angle to the pivots of the looper-carrier. The looper-driving shaft is provided at its forward end with an eccentric and crank, the said eccentric working in a yoke or opening formed in the looper-carrier, and thereby serving to impart positive lateral movements to the latter, together with its pivoted supporting-yoke, to cause the vibrating looper to advance on one side of the needle or needles, to carry its thread through the loop or loops of needle-thread, and to be retracted on the other side of the needle or needles to spread the loop or looper-thread in such a manner that the needle or needles will enter the same on their next descent. The crank adjacent to said eccentric works between flanges formed on the looper-carrier and serves to impart positive rocking or loop-taking movements to the said carrier and its looper. By thus operating the looper-carrier, both laterally and longitudinally, from an eccentric and crank located at the forward end of the rotating looper-shaft, and which eccentric and crank are in direct connection or contact with said carrier, I am enabled to locate the latter centrally with relation to the vertical plane of the needle or needles, and thus the power will be directly applied to the said looper-carrier and the parts will be evenly balanced, thereby enabling the said carrier to run with a minimum of friction and vibration. Further-

more, this arrangement of parts contributes to compactness and simplicity of construction, so as particularly to adapt my invention to cylinder-machines, or machines constructed with cylindrical work-supporting arms employed for sewing hollow or tubular articles.

In the accompanying drawings, Figure 1 is a front side view of a left-hand cylinder machine embodying my invention. Fig. 2 is a front end view thereof with the face-plate removed. Fig. 3 is a detail view showing a part of the feeding mechanism. Figs. 4 and 5 are detail views of the throat-plate and feed-bar to show the fixed and movable needle-guards. Fig. 6 represents the thread-guard and loop-spreader in three different views; and Figs. 7, 8, and 9 are detail views of the looper-carrier, its supporting-yoke, and operating devices.

The frame of the machine comprises the standard A, the overhanging bracket-arm A', and the work-supporting arm or cylinder A².

B is the main or driving shaft, journaled in the lower part of the standard and in the cylinder A², said shaft carrying at its front end, beyond its front bearing *a*, the inclined crank *b*, the eccentric *b'*, and the feed-lifting eccentric *b''*, said crank and eccentrics being preferably formed on or integral with a stud or spindle *b'''*, secured in the hollow forward end of the driving, looper-operating shaft B.

C is a feed rock-shaft journaled in the arm or cylinder A², preferably centrally beneath the shaft B, and provided at its rear end with an arm *c*, jointed at its lower end at *c''* to a slotted lever *c'*, the upper end of which is forked to embrace an eccentric *b''* on the said shaft B.

D is a feed-regulating lever pivoted at *d* to the frame of the machine, said lever carrying a fulcrum pin or stud *d'*, adjustable in the slot of the feed-lever *c'*. By varying the position of the feed-regulating lever so as to bring the fulcrum-stud nearer to the joint *c''*, connecting the arm *c* with the feed-lever *c'*, the rocking feed movements of the feed-shaft C will be lessened and the feed shortened, and by raising said fulcrum-stud the feed will be lengthened, as will be readily understood. A set nut *d''* at the outer end of the lever D and impinging against a curved bearing portion

on the frame serves to hold the feed-regulating lever in any desired position. The feed-shaft C is provided at its forward end with an arm or block c^3 , in which the feed bar or slide d^3 is vertically movable, said bar or slide having an opening or slot d^4 to receive the feed raising and lowering eccentric b^2 .

The main shaft B is provided near its rear end with a crank b^5 , connected by a pitman b^6 to the arm e on the rear end of the needle-operating rock-shaft E, journaled in the arm A' , and having at its forward end the arm e' , connected by a pitman to the needle-bar E' , carrying one or more eye-pointed needles e^3 .

F is the looper-carrier, provided with the eyed or thread-carrying looper f and pivoted on center screws f' , tapped in the arms of a yoke G, arranged transversely of the machine and loosely pivoted on the extended forward end of the feed rock-shaft C. The looper-carrier is provided with an opening f^2 , forming a yoke embracing the eccentric b' , and is also formed with flanges f^3 , between which the inclined crank b works, the latter vibrating the said looper-carrier on its pivot-screws f' to impart longitudinal movements to the looper, and the eccentric b' rocking the said looper-carrier and its supporting-yoke G laterally to give the necessary sidewise movements to the looper. As the transversely-arranged rocking supporting-yoke G for the looper-carrier is centrally pivoted relative to the vertical plane of the looper-operating shaft and of the needle or needles, so as to rock equally each side of its pivotal support and thus be evenly balanced, and as the loop-taking and lateral movements of the looper-carrier are imparted directly thereto from a centrally-arranged looper-shaft it will be obvious that said looper-carrier will be positively operated in all directions with a minimum of friction and in a smooth and easy manner, thereby adapting the machine for the high rates of speed for which it is intended.

To completely protect the needle or needles and avoid any danger of damage to the same by the looper, I provide a fixed needle-guard, preferably consisting of a block h , attached to the under side of the throat-plate H, this stationary needle-guard being so placed as to be closely adjacent to that side of the needle or needles on which the looper makes its backward or return movement, while on the opposite side of the needle or needles, or on the side thereof on which the looper makes its forward or loop-taking movement, I provide a movable needle-guard h' , which is attached to and thus laterally movable with the feed-bar d^3 , and the movements of the latter are so timed that as the looper is moving forward to take the needle loop or loops when the needle or needles are rising the said movable guard h' will be brought into close proximity to the said needle or needles to guard them, so that they cannot be struck by the looper, the needle or needles being thus at this time protected on both

sides by the two guards, which are now just far enough apart to permit the needles to move vertically freely between them.

To hold the needle thread or threads running from the looper to the work out of the way of the descending needles, so that the latter will not enter their own loops, I provide a needle-thread guard which is laterally movable with the feed and which is formed on a plate i , arranged just above the path of movement of the looper, and which is carried by a shank i' , herein shown as being attached to the arm or block c^3 at the forward end of the feed rock-shaft C, the shoulder or portion i^2 of said plate i assuming such a position, as the feed moves forward, as to hold the needle thread or threads running from the looper to the work out of the path of the descending needle or needles. The portion i^3 of the plate i serves as a spreader for the looper-thread, the said portion of said plate being formed with a slight prong or hook, which, on the backward movement of the looper and the forward movement of the feed, catches the looper-thread running up to the work and holds it out laterally, so that the needle or needles on their next descent will not fail to enter the looper-loop.

The thread-controlling devices for the upper and lower threads are or may be essentially the same as in the machines embraced by my application, Serial No. 529,018, filed November 16, 1894, and need not therefore be herein described.

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

1. In a double-chain-stitch sewing-machine, the combination with a needle and its operating mechanism, of a looper-operating shaft extending longitudinally of the machine, a pivoted yoke arranged transversely of said shaft, a looper-carrier pivoted on its opposite sides in said yoke, a thread-carrying looper arranged to vibrate longitudinally in a plane transverse to said yoke, and devices operated by said shaft and in contact with said looper-carrier to vibrate the latter, to move the said looper back and forth longitudinally, and through said looper-carrier to rock said yoke to move the looper laterally.

2. In a double-chain-stitch sewing-machine, the combination with a needle and its operating mechanism, of a pivoted yoke extending transversely of the machine, a looper-carrier pivoted in said yoke, the axis of said looper-carrier being at a right angle to the axis of said yoke, a thread-carrying looper supported by said carrier and extending longitudinally in a plane transverse to said yoke, and a rotating looper-shaft provided with a crank and eccentric in contact with said looper-carrier and acting through the latter to move the looper longitudinally and to rock said carrier and said yoke, to move the looper laterally.

3. In a double-chain-stitch sewing-machine, the combination with a needle and its operat-

ing mechanism, of a thread-carrying looper, means for moving said looper both longitudinally and laterally, a fixed needle-guard at one side of the path of movement of said needle, a movable needle-guard at the opposite side of the path of movement of said needle, and a feeding device by which said movable needle-guard is carried and which causes it to approach the needle when the said looper is moving forward, thereby avoiding danger of collision between the looper and needle.

4. In a double-chain-stitch sewing-machine, the combination with a needle-bar and its operating mechanism, of the rotating looper-operating shaft B provided with the inclined crank *b* and the eccentric *b'*, the pivoted yoke G, the looper-carrier F provided with the thread-carrying looper *f*, said carrier being pivotally mounted in said yoke and having the flanges *f*³ between which said crank works to vibrate said looper longitudinally, and having also the opening *f*² in which said eccentric works, to rock said looper-carrier and looper laterally.

5. In a double-chain-stitch sewing-machine, the combination with a needle-bar and its operating mechanism, of the rotating looper-operating shaft B provided with the inclined crank *b* and the eccentric *b'*, the pivoted yoke G, the looper-carrier F provided with the

thread-carrying looper *f*, said carrier being pivotally mounted in said yoke and having the flanges *f*³ between which said crank works to vibrate said looper longitudinally and having also the opening *f*² in which said eccentric works, to rock said looper-carrier and looper laterally, and the work-supporting arm or cylinder through which said shaft B extends and at the forward end of which said looper-carrier is mounted.

6. In a double-chain-stitch sewing-machine, the combination with the needle, the thread-carrying looper, and the feeding device and their operating mechanism, of the combined needle-thread guard and looper-loop spreader laterally movable with said feeding device, said guard and spreader consisting of the plate *i* having the portion *i*² which acts as a needle-thread guard, and the portion *i*³ which serves as a loop-spreader, and the said plate having a suitable shank, as *i'* by which it is attached to a laterally-movable part of the feeding device.

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

ALBERT RONTKE.

Witnesses:

HENRY CALVER,

JOSEPH F. JAQUITH.