

961,207.

Patented June 14, 1910.

3 SHEETS—SHEET 1.

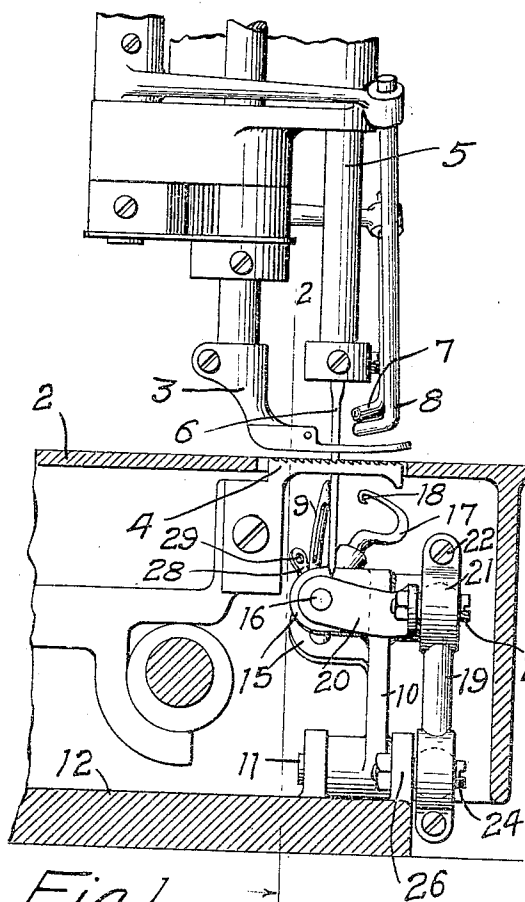


Fig 1

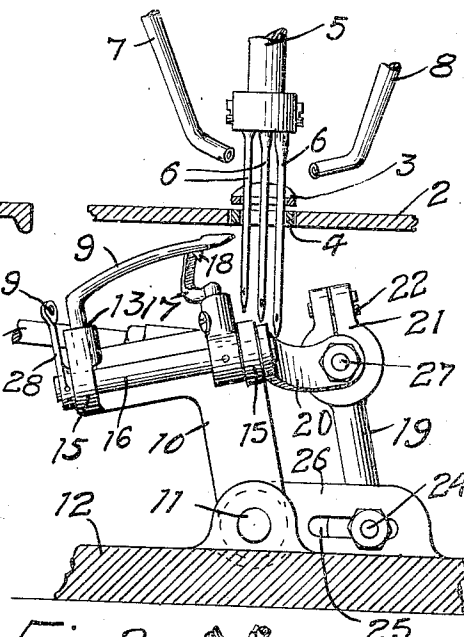


Fig 2

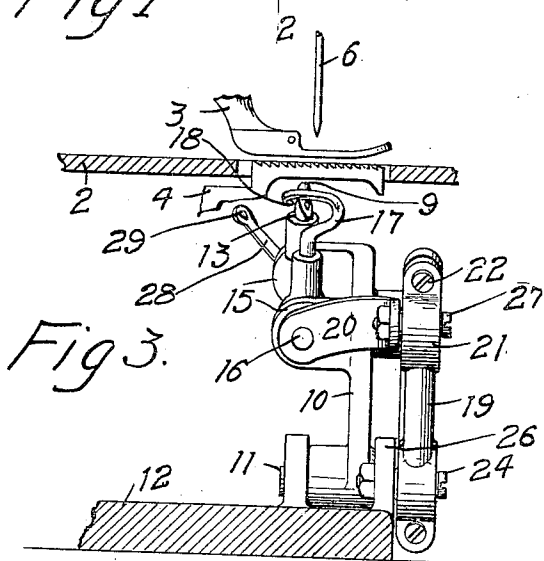


Fig 3.

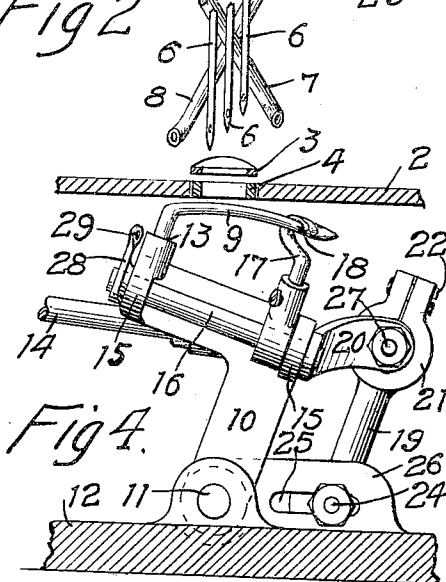


Fig 4.

WITNESSES  
*M. Walstrom*  
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INVENTOR  
FRANKLIN CHATFIELD  
BY *Paul & Paul*  
HIS ATTORNEYS

F. CHATFIELD.  
SEWING MACHINE.  
APPLICATION FILED MAY 25, 1907.

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3 SHEETS—SHEET 2.

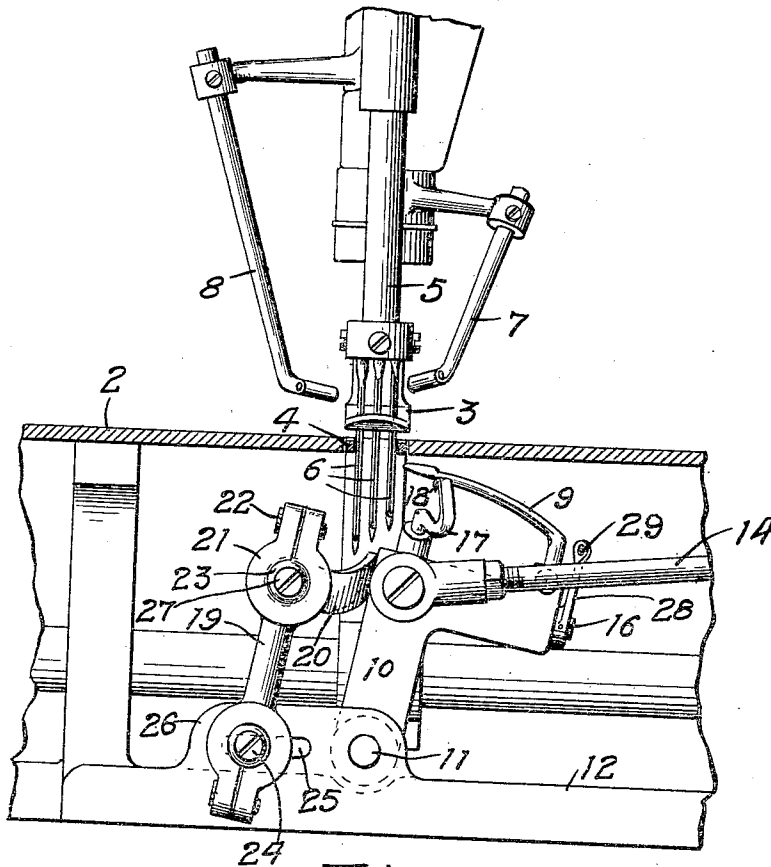


Fig. 5.

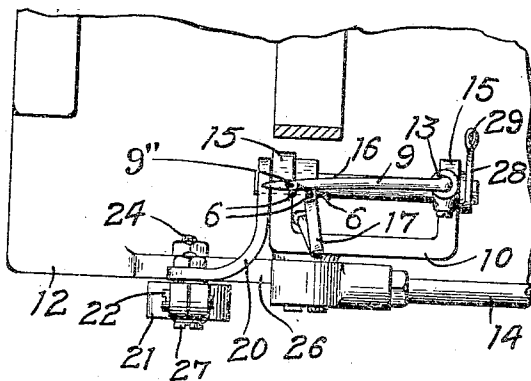


Fig. 6.

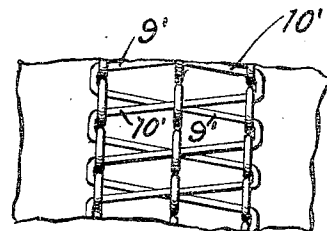


Fig. 7.

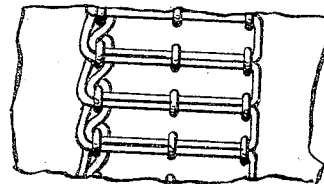


Fig. 8.

WITNESSES  
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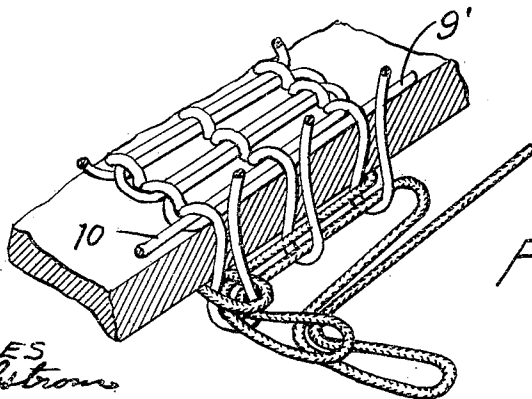
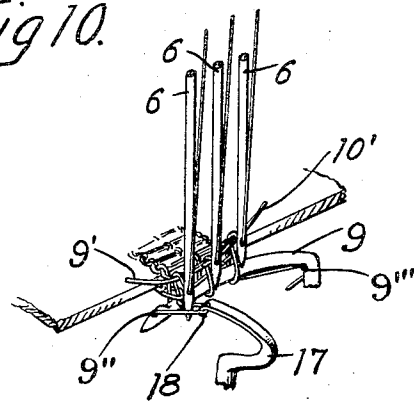
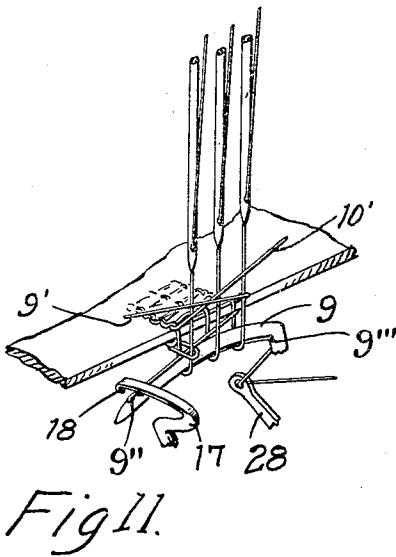
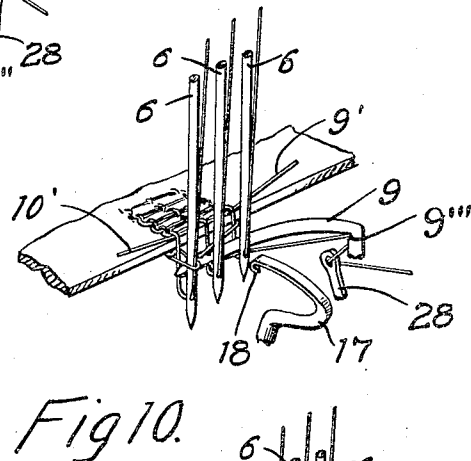
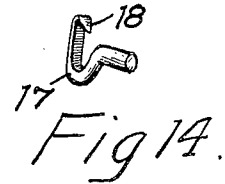
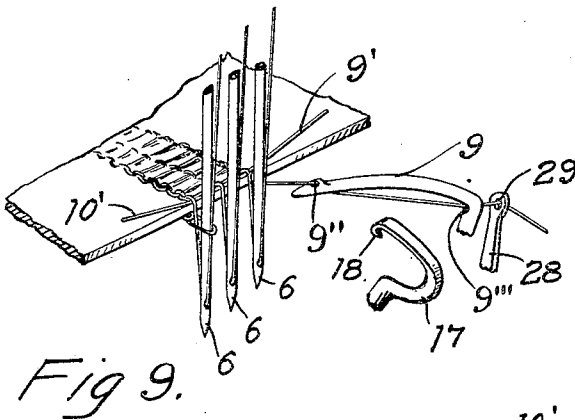
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3 SHEETS—SHEET 3.



WITNESSES  
*M. Walstrom*  
*J. B. Era*

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FRANKLIN CHATFIELD  
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# UNITED STATES PATENT OFFICE.

FRANKLIN CHATFIELD, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO NORTHWESTERN KNITTING CO., OF MINNEAPOLIS, MINNESOTA, A CORPORATION.

## SEWING-MACHINE.

961,207.

Specification of Letters Patent. Patented June 14, 1910.

Application filed May 25, 1907. Serial No. 375,614.

*To all whom it may concern:*

Be it known that I, FRANKLIN CHATFIELD, of Minneapolis, in the county of Hennepin, State of Minnesota, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification.

This invention relates to improvements in single or multiple needle sewing machines, and the objects of the invention are to provide a machine by which a seam may be formed with a single thread or a series of threads extending through the material and with additional threads looped back and forth on both sides of the material through the stitches formed by the thread or series of threads.

The invention consists generally in the constructions and combinations hereinafter described and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification; Figure 1 is a vertical section of a portion of a sewing-machine embodying my invention. Fig. 2 is a transverse section on the line 2—2 of Fig. 1 looking in the direction of the arrow. Fig. 3 is a detail view of a portion of the machine shown in Fig. 1 with the parts in a different position. Fig. 4 is a front view of the parts of the machine shown in Fig. 3, said parts being in the same position that they are in Fig. 3. Fig. 5 is a front sectional view of the machine. Fig. 6 is a detail plan of the same. Fig. 7 is a top view and Fig. 8 an underside view of the seam formed by the machine. Figs. 9, 10, 11 and 12 are respective detail views showing the movements of the parts of the machine. Fig. 13 is a view on an enlarged scale of a portion of the seam formed by the machine and illustrating the manner in which the under thread is looped through the stitches. Fig. 14 is a detail view of the spreader.

In all of the drawings, 2 represents the frame of the machine, 3 the presser foot, 4 the feed-plate, 5 the needle-bar and 6, 6, 6 the needles which are preferably three in number and arranged as shown in Figs. 2, 4, and 5 with the points of the needles at different distances from the needle-bar. This arrangement is usually secured by setting the needles in the base at different depths, as shown in Fig. 2. I prefer to em-

ploy one or more thread carriers arranged above the throat-plate and operating to lay the threads diagonally across the seam so that said threads are engaged by the threads forming the stitches. I may use a single thread carrier in which case but a single thread will be laid across the seam. As shown in the drawings, I provide two thread carriers 7 and 8, each of which carries a thread, and these carriers have their ends moved back and forth across the seam, said movement being secured by suitable cams so that the threads 9' and 10' moved by said carriers are laid diagonally across the seam and engaged by threads forming the stitches, as shown in Fig. 7 of the drawings.

I have shown in the drawings, and prefer to use, a series of needles carrying the threads forming the stitches, but the invention may be employed with a single needle if desired. Each of the needles 6, 6, 6 is provided with a thread, in the usual manner, and said needles are simultaneously reciprocated, passing through the material and causing the threads passing through said material, to form parallel rows of stitches.

For the purpose of passing a thread through the loops of the stitches, as shown particularly in Fig. 13 of the drawings, I provide a reciprocating looper 9 that is arranged below the throat-plate and carries a thread which it passes through the loops of all the stitches formed by the needles 6, 6, 6. This looper 9 is preferably of curved form (see Fig. 5) and is offset and stands at a slight angle to a vertical plane passing through the three needles (see Fig. 6). The looper is secured upon a rocker arm 10 which is pivotally supported at 11 on the base-plate 12. This rocker arm is preferably of inverted L-shape, and is provided with the sockets 13 in which the looper 9 is mounted. A connecting rod or pitman rod 14 is pivotally connected to this rocker arm and is adapted to be operated from any suitable driving part of the machine. The means for operating the pitman are not shown. This rocker arm is also provided with the lugs 15—15 in which are mounted a shaft 16, the axis of this shaft standing at right angles with the axis of the pivot of the rocker arm. The looper 9 is provided with an eye 9'' near its point and with a second eye 9''' in its shank just below its forwardly extending curved part (see Fig. 11)

9). The thread 10' passes through both of these eyes in the looper and extends from the eye 9''' to the eye 9'' under the curved portion of the looper.

5 A spreader 17 is mounted on the shaft 16. This spreader preferably consists of a curved arm having a hook 18 at its free end. The end of the hook is preferably beveled off at one side, as shown in the detailed drawing, 10 Fig. 14. A rocking standard 19 is pivotally mounted in a support on the base-plate. This standard is located at one side and in front of the rocker arm 10.

A curved arm 20 is secured to one end of 15 the short shaft 16, with its opposite end pivotally connected to the upper part of the standard 19. I prefer to provide each end of the standard 19 with a ball-joint, consisting of the two members 21 and 23. The 20 member 21 is provided with a take-up screw 22 by means of which wear between the two members of the ball-joint may be taken up. At its lower end, the standard is supported by a bolt 24 passing through the member 23 25 of the ball-joint and into a slot 25 in a block 26 on the base-plate. This slotted connection permits the lower end of the standard to be adjusted toward or from the pivot of the rocker arm 10. The end of the curved 30 arm 20 is preferably connected to the ball-joint member 23 in the upper end of the standard 19 by a screw 27. The opposite end of the shaft 16 is provided with a crank arm 28 having an eye 29 for the passage of 35 a thread. This arm forms a pull-off for the under thread.

I have not considered it necessary to show the means for operating the needle-bar, or for operating the thread carriers above the 40 throat-plate, as such means are well understood in the art and form no part of my invention, nor have I considered it necessary to show the means for reciprocating the pitman or connecting rod 14.

45 Operation: The multiple needle-bar is vertically reciprocated by any suitable means, and the thread carriers above the throat-plate are swung across the seam so as to 50 cause the threads carried by them to be laid back and forth across the seam and to be engaged by the loops of the stitches, as shown in Fig. 7 of the drawings. A reciprocating motion is given to the pitman 14, 55 which causes the rocker-arm 10 to be rocked forward and back, and this imparts a forward and back movement to the looper 9. At the same time the spreader 17 is moved forward and back in unison with the looper, 60 and as the rocking of the standard 19 through the arm 20 also imparts a rocking motion to the shaft 16, the spreader 17 is caused to move toward and from the looper 9. Four positions of the needles, the looper 65 and the spreader, are shown in Figs. 9, 10, 11 and 12 of the drawings.

I will describe the operation of the mechanism beginning with the parts in the position shown in Fig. 9 of the drawings in which the needles are shown in their lowermost position with the looper and spreader 70 retracted and the threads in the position which they assume when the needles and looper are thus situated. It will be seen that the thread carried by the looper passes through the pull-off 28, and as the looper 75 advances and the needles rise, the looper passes between the needles and the threads carried by them. The intermediate position of the parts is shown in the Fig. 10 of the drawings. The looper passes on until it 80 reaches the position shown in Fig. 11, at which time the needles are at or near the upper end of their movement while the spreader has rocked forward until the hook on the end thereof has passed over the 85 thread on the top of the looper, as shown in Fig. 11. The pull-off has also rocked forward with the spreader into the position shown in Fig. 11. As the looper begins to 90 move backward, the spreader rocks away from it and as the hook on the spreader passes over the top of the looper, it engages the thread on the top of the looper and forms a 95 loop by drawing the thread away from the looper. The slack for this loop is provided by the rocking of the pull-off with the spreader. While this loop is being formed, the looper is continuously moving backward and the 100 spreader is both moving backward simultaneously with the looper and is rocking away from the looper. During this movement of the looper and spreader, the needles are descending to form the next series of stitches and when the parts are in the position shown in Fig. 12 of the drawing, the 105 needle having its point lowermost, passes into the loop thus formed between the looper and the spreader. The thread forming this loop comes in contact with the side of the needle and the loop slips off from the 110 inclined hook on the end of the spreader. The movement of the looper and spreader continues and the parts then assume the position shown in Fig. 9 of the drawings. This operation is continued and each time 115 the needles descend, the looper passes between them and the threads that they carry so that the stitches are locked by the loops passing through them on the under side of the material, as shown in Fig. 13 of the 120 drawing.

I do not limit myself to the details of construction as the same may be varied in many particulars without departing from 125 my invention.

I claim as my invention:

1. The combination, in a machine of the class described, with a series of needles arranged to reciprocate in a common vertical plane, of a looper, means for reciprocating 130

ing said looper in a plane substantially parallel to the plane of said needles, a spreader moving with said looper, and means for moving said spreader toward the looper as the looper reaches the limit of its forward movement, substantially as described and for the purpose set forth.

2. The combination, in a machine of the class described, with a throat-plate, a series of needles arranged in a common vertical plane and means for reciprocating said needles, of a looper arranged below said throat-plate, means for reciprocating said looper in a plane substantially parallel to the plane of said needles, a spreader moving with said looper, and means for moving said spreader toward the looper as the looper reaches the limit of its forward movement, substantially as described and for the purpose set forth.

3. The combination, in a machine of the class described, with a series of needles arranged to reciprocate in a common vertical plane, of a looper, means for reciprocating said looper in a plane substantially parallel to the plane of said needles, a spreader moving with said looper, means for moving said spreader toward the looper as the looper reaches the limit of its forward movement, and a pull-off, and means for moving said pull-off with said spreader, substantially as described and for the purpose set forth.

4. In a machine of the class described, the

combination with a suitable throat-plate, a series of needles and means for vertically reciprocating the same, of a reciprocating looper arranged beneath said throat-plate and provided with means for reciprocating it in a plane substantially parallel to the plane of said needles, a spreader moving with said looper, means for moving said spreader toward or from said looper and a pull-off and means for moving said pull-off with said spreader, substantially as described.

5. The combination, in a machine of the class described, with the series of needles, of the looper 9 arranged at a slight angle to a vertical plane passing through said needles, a rocker arm 10 upon which said looper is secured, means for operating said rocker arm, a shaft 16 mounted in bearings upon said rocker arm with its axis at right angles to the axis of the pivot of the rocker-arm, a spreader 17 mounted on the shaft 16, and means for rocking said shaft 16, in unison with the movement of the said rocker arm, for the purpose set forth.

In witness whereof, I have hereunto set my hand.

FRANKLIN CHATFIELD.

Witnesses:

L. C. CRONEN,  
J. A. BYRNES.