F. CHATEAUNEUF.

SHOE SEWING MACHINE.

APPLICATION FILED OCT. 15, 1907.

900,353.

Patented Oct. 6, 1908.

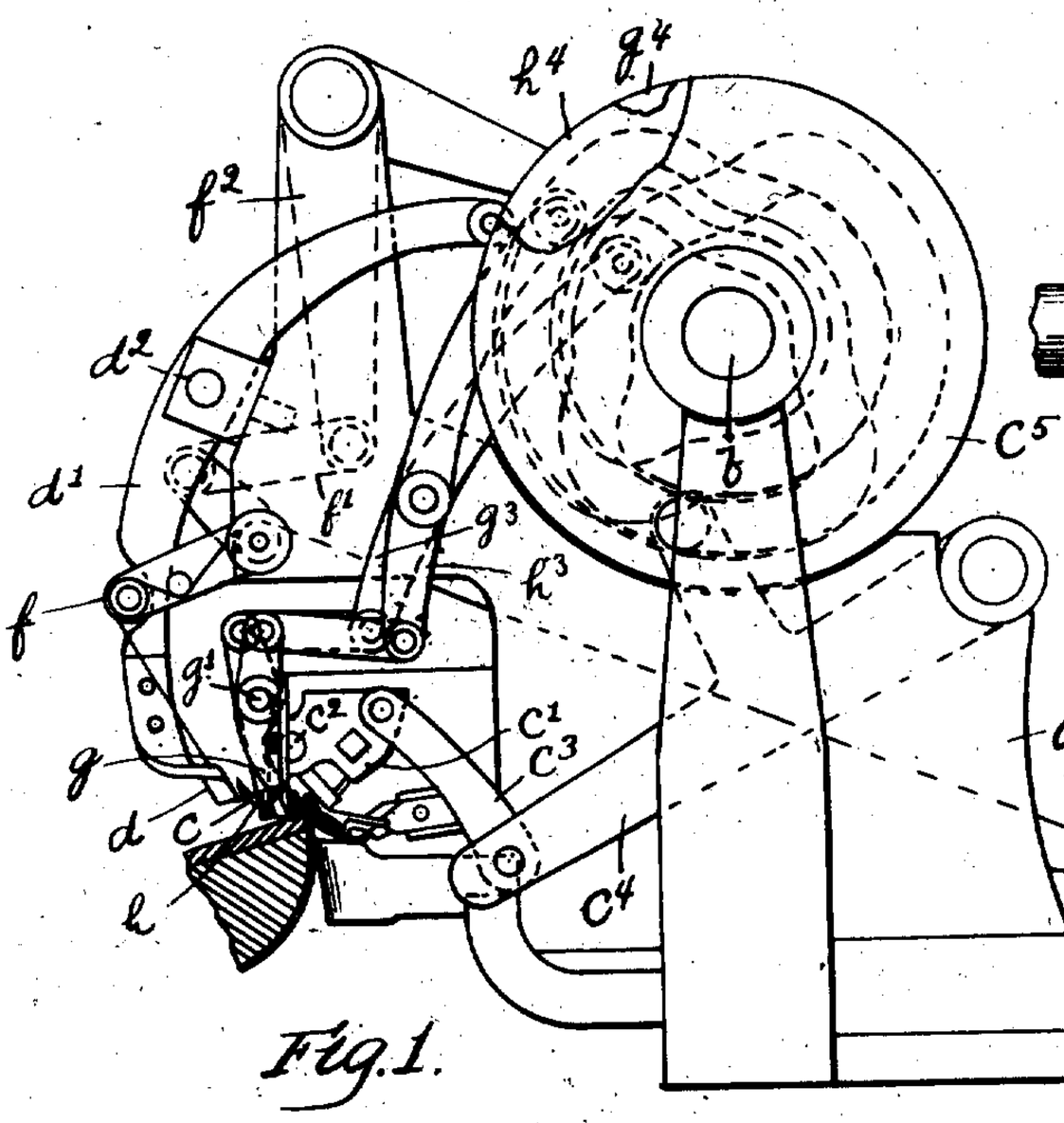

Fig. 1.

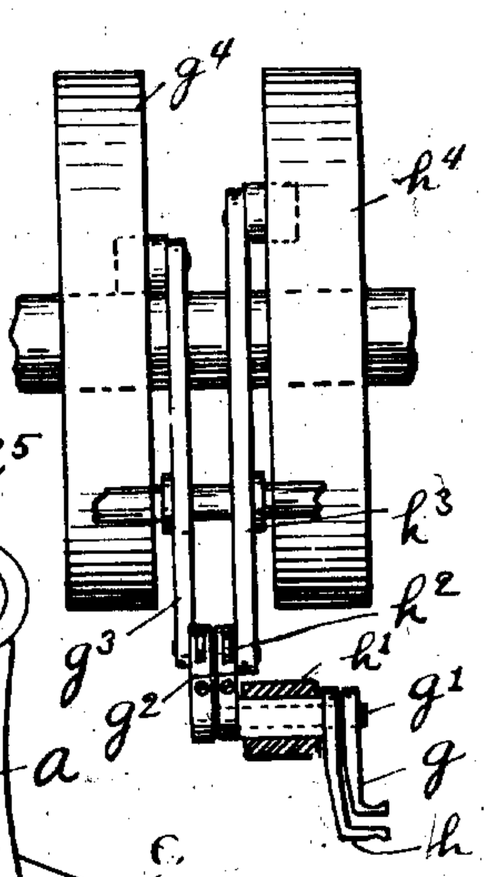

Fig. 2.

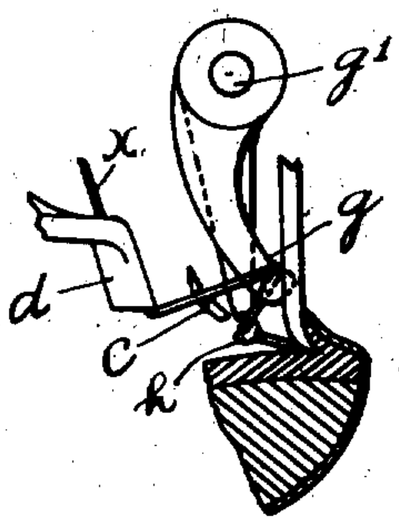

Fig. 3.

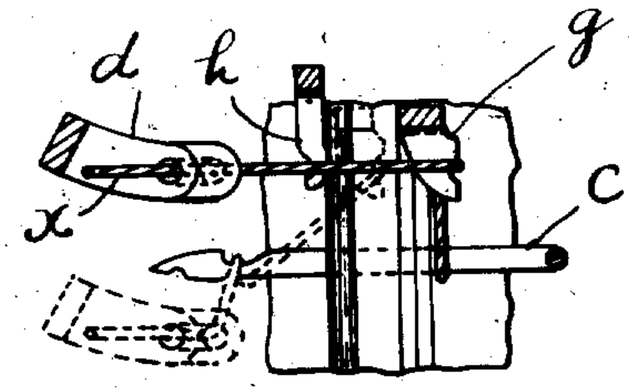

Fig. 4.

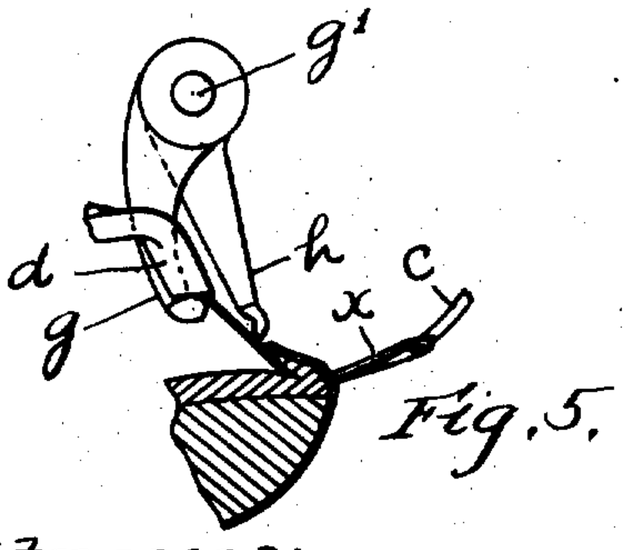

Fig. 5.

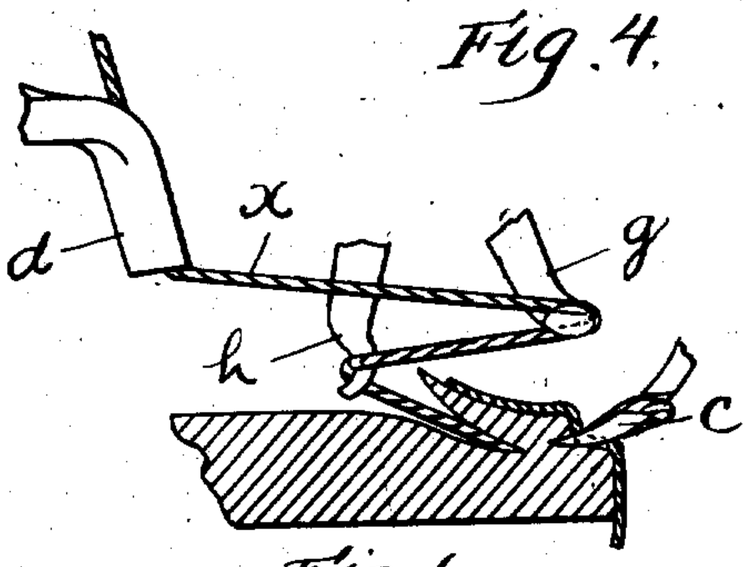

Fig. 6.

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UNITED STATES PATENT OFFICE.

FRANK CHATEAUNEUF, OF HAVERHILL, MASSACHUSETTS.

SHOE-SEWING MACHINE.

No. 900,353. Specification of Letters Patent. Patented Oct. 6, 1908.

Application filed October 15, 1907. Serial No. 397,467.

To all whom it may concern:

Be it known that I, FRANK CHATEAUNEUF, of Haverhill, county of Essex, State of Massachusetts, have invented an Improvement in Shoe-Sewing Machines, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention particularly relates to that class of shoe sewing machines known as chain-stitch machines, in which it is customary to employ a thread finger which draws the thread aside between the looper and stitch which has just been formed for the purpose of later giving off thread directly to the needle, as the latter draws back the loop in forming the next stitch.

The inclination at which the thread is drawn directly from the point at which it is fastened to the work to the looper is usually approximately the same as the inclination of the channel groove, so that the thread finger, in taking up thread therebetween, draws the same against the under side or edge of the channel lip or flap, and turns it up or back. As the thread is necessarily drawn against the lip with some force, it is caused, in numerous instances, to cut the lip or pull a section thereof from the sole. If, however, no damage is done to the sole, the lip is usually turned up to a considerable extent and left in this position, with the result that, in the subsequent operation of inseam-trimming, the edge portion of the lip is frequently trimmed off, so that when the shoe is finished there is a groove around on the inner side of the sole which would otherwise have been completely filled by the lip. As the extent to which the lip will yield under varying conditions also varies, the amount of thread given off by the thread finger will vary correspondingly, thus effecting the uniformity of the work.

The object of my invention is to provide means for so holding the thread, that it will not at any time be drawn against the channel lip by the thread finger, so as to injure or turn up the lip, and will cause the same amount of thread to be given off to the needle at all times.

In this connection, a further object of my invention is to provide means for giving off thread to the needle which may also perform the function of a take-up and stitch-setting device closely adjacent the work, without injury to the sole or channel lip.

I accomplish these objects by the means shown in the accompanying drawing, in which,

Figure 1 is a side elevation of a common form of shoe sewing machine of the above described character, provided with my invention, only such parts thereof being shown as are necessary to describe the same. Fig. 2 is a front elevation partly in section of the thread finger operating mechanism. Figs. 3, 4, 5 and 6 are detail views showing different positions of the stitch forming mechanism.

In the drawing, *a* indicates the frame having the usual cam shaft *b* mounted therein, on which the operating cams are mounted. The needle *c* is mounted on the segment c', pivoted at c^2, said segment being oscillated by means of the link c^3, lever c^4 and cam c^5. The looper *d* is mounted on a lever d', universally pivoted at d^2, said lever being adapted to be operated by a cam in the usual manner. The thread *x* leads from a tension wheel *e* over the pull-off *f* and thence to the looper, said pull-off being operated by the link f' and lever f^2.

The thread finger *g* is mounted on one end of a shaft g', a link g^2 being connected to the opposite end of said shaft and said link being in turn connected to an operating lever g^3 which engages a cam g^4 on the main shaft *b*. A thread finger *h*, the operation and function of which will be hereafter more fully described, is mounted on a sleeve h', which is journaled in the frame and within which the shaft g' is journaled, and a link h^2 is mounted on the sleeve g' and connected to an operating lever h^3, which engages the cam h^4. The thread-fingers *g* and *h* swing side by side and have their thread-engaging end portions extending at right angles therefrom, that of the finger *g* being above that of the other, so that they both swing in approximately the same vertical plane. The thread-engaging end portions are oppositely disposed, and hook-shaped, to enable them to hold the thread securely.

The operation of the above described device is as follows. Assuming the parts to be in the position of Fig. 5, in which the needle has just drawn back the loop to form the next stitch, the needle advances and gives off slack thread, and, as it advances, the finger *g* also advances or moves rearwardly engaging the thread, and taking up the slack thread from the needle. During this operation the

finger *h*, which I will term the supplemental thread-finger, moves forwardly or in the opposite direction from that in which finger *g* is moved, and engages the thread closely adjacent the point where it leads from the stitch which has just been formed and between said point and the point of engagement of the thread by the finger *g*, said supplemental finger *h* being moved forwardly to take up additional thread until it is adjacent the edge of the channel lip and in or adjacent a straight line from the point where the thread leaves the work from the stitch just formed to the looper. This motion is not finished until after the needle has entered the work and laid the loop carried thereby against the same so that in the final movement of the finger the thread is given a final pull sufficient to set the stitch, the parts assuming the position of Fig. 6 just previous to setting the stitch, and the full line position of Fig. 4 as the finger *h* makes its final movement to set the stitch. When the fingers *g* and *h* have been moved to their extreme positions the thread will be drawn between the work and the looper approximately as shown in Fig. 6. That is, the thread will be drawn by finger *h* from the stitch just formed in a direction corresponding to the inclination of the channel, to a point somewhat beyond or adjacent the edge of the lip, then rearwardly about the main thread finger *g* and forwardly to the looper. In this position the thread is held so that it does not engage or bear against the channel lip, as it would if it were drawn directly from the point where it is fastened to the work to the main finger *g*. While the fingers *g* and *h* may also, during this operation, be moved sufficiently to pull off thread from the tension wheel, if the pull-off device is employed, it will be operated during the forward movement of the needle.

As the needle emerges on the upper side of the sole, the looper moves to carry the thread about the needle and lay the same in the hook thereof, and, at the same time the main thread finger *g* moves forwardly for a part of its travel to give off sufficient thread to the looper to permit the latter to perform this function, the finger *g*, and the looper moving from the full line position of Fig. 4 to the dotted line position in the same figure, the latter position being also shown in Fig. 3. As soon as the thread has been laid in the needle hook, the looper moves to a position in front of the needle and the needle is retracted drawing the loop back through the work. As the needle is retracted, the finger *g* is moved back to give off thread to the needle and then the supplemental finger *h* also is moved back to give off the additional thread which it holds. By the time the needle has reached its rearmost position the thread fingers will have both become disengaged from the thread, as shown in Fig. 5.

By preventing the main finger *g* from drawing the thread against the channel lip the supplemental finger *h* enables the main finger *g* to take up more thread than would otherwise be possible, for the same movement, and also it enables said main finger to act to pull off thread from the tension wheel, if desired, a function which it would otherwise be impracticable to have it perform on account of the strain which would be placed on the channel lip. Moreover, it also causes exactly the same amount of thread to be taken up and given off at all times, as it is always held in the same relative position, and is positive and unyielding in its action. The variations due to the unequal yielding of the channel lip are thus obviated.

While the supplemental finger *h* is preferably moved to take up thread and set the stitch and to give off thread directly to the needle, it may be made to perform its function of preventing the thread from being drawn against the lip if it is held stationary. However, I consider its stitch-setting function of great importance, as it engages the thread as closely as possible to the stitch which it is setting, thereby causing the stitch to be set more tightly, for the same strain on the thread, than it would be if the pull were applied at a point so remote as to necessitate intervening guiding devices.

With the above described construction the sewing operation is performed with a minimum strain on the lip and "between substance", so that I am enabled to sew a shoe having a relatively light or shallow channel.

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

1. A shoe-sewing machine comprising a needle, a looper and a pair of oppositely acting thread fingers for taking up thread between the work and the looper, substantially as described.

2. A shoe-sewing machine comprising a looper, a needle, a main and a supplemental thread finger having oppositely disposed thread engaging faces, said supplemental finger being disposed to engage the thread adjacent the path of the needle, and means for moving the main finger to take up thread running from the supplemental finger to the looper, substantially as described.

3. A shoe-sewing machine comprising a looper, a needle, a pair of oppositely disposed thread fingers and means for moving said fingers in opposite directions to take up thread between the looper and the work and thereafter to give it off to the needle, substantially as described.

4. A shoe-sewing machine comprising a looper, a needle, a pair of thread fingers having oppositely disposed thread-engaging faces about which the thread leading from the work to the looper may be successively

passed, means for advancing one of said fingers to take up thread between the other finger and the looper, and subsequently retracting it to give off thread to the needle, substantially as described.

5. A shoe-sewing machine comprising a looper, a needle, movable towards and from the looper, a thread-engaging device disposed at one side of the path of the needle in position to engage the strand, which leads to the looper, of a loop which has been drawn into the work to form a stitch, between the looper and the point where said strand enters the work, and to draw said strand in the direction of said path and towards the looper, a finger, and means for moving the same to engage said strand between the looper and the point of engagement therewith by said thread-engaging device, to take up thread therebetween, and for thereafter moving it to give off the thread, thus taken up, to the needle, as the latter draws the loop through the work, substantially as described.

6. A shoe-sewing machine comprising a looper, a needle, movable toward and from the looper, a thread-engaging device disposed adjacent the path of the needle in position to draw the thread leading from the work towards the looper, a finger and means for moving the same away from the looper to take up thread between said engaging device and the looper, and means for thereafter moving said engaging device towards the looper to set the stitch, substantially as described.

7. A shoe-sewing machine comprising a looper, a needle, movable toward and from the looper, a thread-engaging device, and means for moving the same to engage the thread, as it leads from the work and to draw it towards the looper, and a take-up device movable to take up thread between the looper and said thread engaging device, substantially as described.

8. A chain-stitch shoe-sewing machine comprising a looper, a needle movable towards and from the looper, a finger disposed to engage the strand, which leads to the looper, of a loop which has been drawn through the work to form a stitch, between the looper and the point where said strand enters the work, and a thread engaging device disposed to engage said strand between said point of entrance to the work and the point at which it is engaged by said finger, and means for moving said thread-engaging device to take up thread between said points and set the stitch, substantially as described.

9. A chain-stitch shoe-sewing machine comprising a looper, a needle movable towards and from the looper, a finger disposed to engage the strand, which leads to the looper, of a loop which has been drawn through the work to form a stitch, between the looper and the point where said strand enters the work, a thread engaging device disposed to engage said strand adjacent said point where it leaves the work, and means for moving the same to take up thread between said point and the point at which it is engaged by said finger and to set the stitch, substantially as described.

10. A chain-stitch shoe-sewing machine comprising a looper, a needle movable towards and from the looper, a finger disposed to engage the strand which leads to the looper, of a loop which has been drawn through the work to form a stitch, between the looper and the point where said strand enters the work, a thread engaging device disposed to engage said strand adjacent said point where it leaves the work, and means for moving the same, approximately in the direction of movement of the needle as it advances, to take up thread between said point and the point at which it is engaged by said finger and to set the stitch, substantially as described.

11. A chain-stitch shoe-sewing machine comprising a looper, a needle movable towards and from the looper, a finger, and means for moving the same to engage the strand which leads to the looper, of a loop which has been drawn through the work to form a stitch, between the looper and the point where said strand enters the work, and to take up slack thread given off by the needle as it advances to form a new stitch, a thread engaging device disposed to engage said strand between its said point of entrance to the work and the point at which it is engaged by said finger, and means for moving said device in opposition to the movement of said finger to set the preceding stitch, substantially as described.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

FRANK CHATEAUNEUF.

Witnesses:
L. H. HAMMAN,
H. B. DAVIS.