

(No Model.)

2 Sheets—Sheet 1.

F. L. ALLEY & E. E. WINKLEY.
SHOE SEWING MACHINE.

No. 587,778.

Patented Aug. 10, 1897.

FIG. 1.

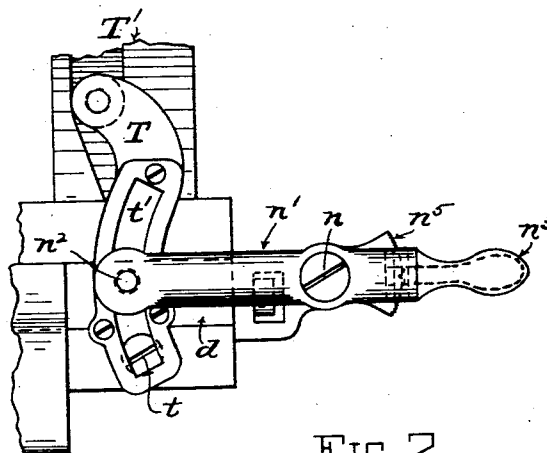
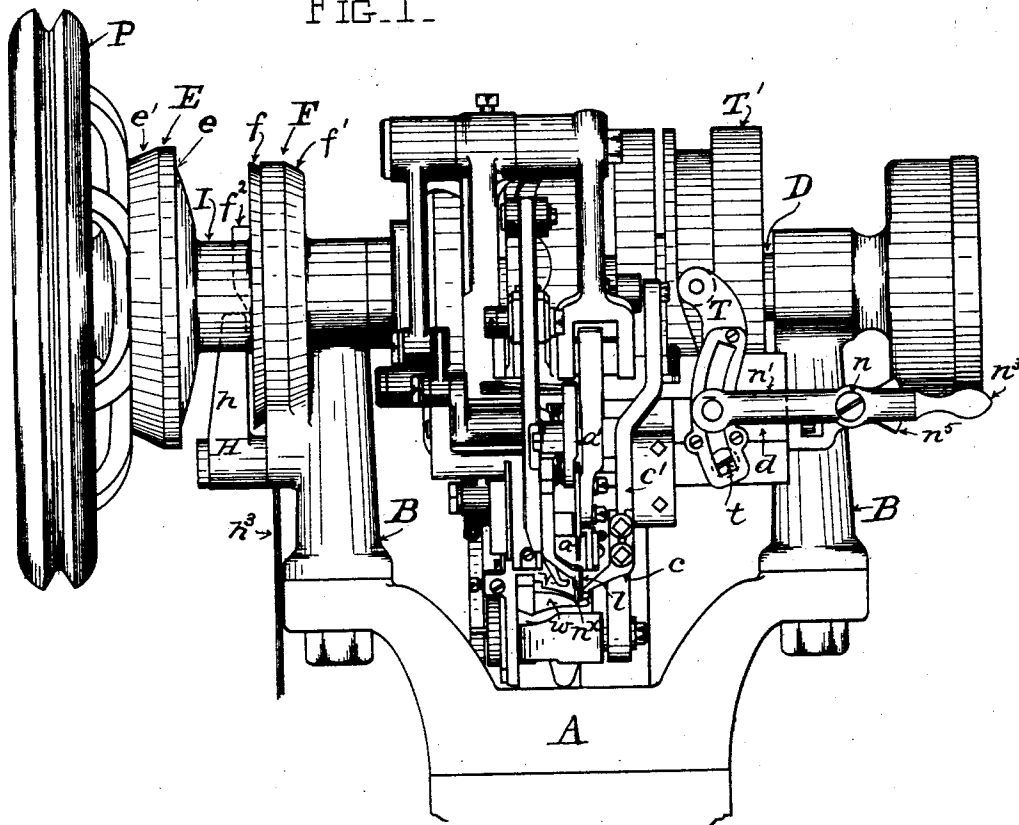


FIG. 2.

WITNESSES.

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Benjamin Phillips

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2 Sheets—Sheet 2.

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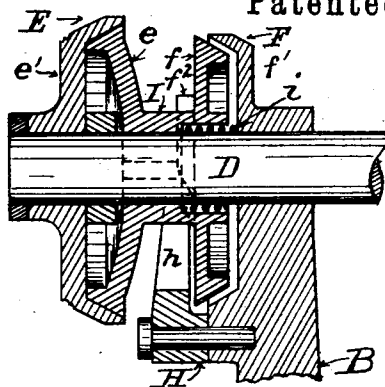


FIG. 3.

FIG. 4.

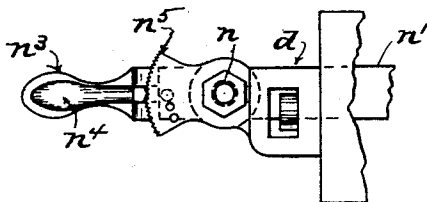
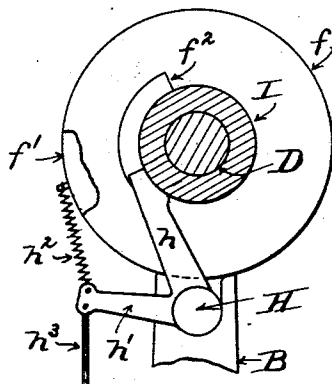


FIG. 5.

WITNESSES.

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UNITED STATES PATENT OFFICE.

FREDERICK L. ALLEY AND ERASTUS E. WINKLEY, OF LYNN, MASSACHUSETTS.

SHOE-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 587,778, dated August 10, 1897.

Application filed June 15, 1896. Serial No. 595,676. (No model.)

To all whom it may concern:

Be it known that we, FREDERICK L. ALLEY and ERASTUS E. WINKLEY, citizens of the United States, residing at Lynn, in the county of Essex and Commonwealth of Massachusetts, have invented a new and useful Improvement in Shoe-Sewing Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

The present invention relates generally to machines of the class above designated, but more particularly to such types of shoe-sewing machines as are adapted to stitch the sole to the lasted upper of a turn shoe or the welt to the lasted upper of a welted shoe.

As welt and turn sewing machines have heretofore been constructed great difficulty has been found in securing a tight seam around the toe portion of pointed-toed shoes, and in the case of many styles of shoes having extremely pointed and narrow toes it has heretofore been the practice in the trade to stitch the toe and immediately adjacent portions of the shoe by hand.

The present invention has for its object to remove the difficulty above noted and generally to improve the operation of machines of this class.

To the above end the present invention consists of means for controlling the rotation of the driving-shaft to secure a stitch-by-stitch operation of the machine and stopping the work-feed during such operation, of means whereby the channel-guide or channel-guide and awl may be locked in substantially their position of closest lateral approximation to the needle and retained in such position during the further operation of the stitch-forming devices to form one or more complete stitches, and, further, of the devices and combination of devices hereinafter set forth and claimed.

A preferred form of the present invention as applied to a welt and turn sewing machine is illustrated in the accompanying drawings, in which—

Figure 1 is a front view of a welt and turn sewing machine, showing the present invention applied thereto. Fig. 2 is a front view of portions of mechanism for actuating the

locking device. Figs. 3 and 4 are respectively a sectional view and side view, partially in section, showing portions of mechanism for controlling the rotation of the driving-shaft; and Fig. 5 is a back view of a portion of mechanism for locking the channel-guide and awl.

Similar letters of reference refer to similar parts throughout the several views.

In the drawings, A represents the head of the machine, to which are secured the standards B B, which support the driving-shaft D.

The reference-letter n^x represents the needle; a , the awl; c , the channel-guide; w , the welt-guide; v , the thread-measurer, and l the looper.

All the above named parts, together with their actuating mechanism, except as hereinafter pointed out, may be and conveniently are the same as corresponding parts of the machine known in the trade as the "Good-year welt and turn machine," and no detail description thereof is regarded as necessary herein.

We will now describe the mechanism shown in the drawings whereby we secure what we have hereinbefore termed a "stitch-by-stitch operation" of the machine, but before doing so we desire to say that by the term "stitch-by-stitch operation," as we have herein used the same, we desire to be understood as meaning an operation of the machine in which the stitch-forming mechanisms are brought to rest after the completion of each stitch and remain at rest until started by an act of the operator.

In the drawings, P represents a suitable driving-pulley mounted and turning loosely upon the shaft D.

I represents a collar or sleeve splined to the shaft D, so as to rotate therewith and free to slide along the same.

E represents a suitable clutch, preferably of the frusto-conical frictional type, one member e' of which is carried by and rotates with the pulley P and the other member e of which is carried by and rotates with the sleeve I.

F represents a suitable brake, also preferably in the form of a frusto-conical friction-clutch, one member f' of which is fixedly se-

cured to some fixed part of the machine, conveniently the standard B, and the other member f of which is carried by and rotates with the sleeve I.

5 The above-described arrangement is such that a movement of the sleeve I along the shaft toward the pulley P opens the clutch F and closes the clutch E, causing the shaft D to rotate with the pulley P, while a reverse
10 movement of the sleeve I opens the clutch E, thereby releasing the shaft D from the pulley P, and closes the clutch F, thereby preventing any further rotation of the shaft D or movement of parts actuated thereby owing to
15 acquired momentum.

The movement of the sleeve I to open the clutch F and close the clutch E is preferably secured by means of a suitably-placed spring, conveniently a coiled spring i , (see Fig. 3,) surrounding the shaft D and bearing against the
20 sleeve I and a fixed part of the machine, which normally acts upon the sleeve I to keep the clutch F open and the clutch E closed.

As shown in the drawings, the reverse movement above referred to is imparted to the sleeve I by the following mechanism:

The reference-letter f^2 represents an inclined dog which is secured to the inner face of the member f of the clutch F.

30 H represents a bell-lever having the arms h and h' and pivoted at its angle to a fixed part of the machine, conveniently the standard B. When the lever H is in its raised position, the arm h rests against the shaft D and
35 projects in the path of the dog f^2 . When the lever H is depressed, the arm h is turned out of the path of the dog f^2 , so the dog f^2 will not come in contact therewith.

The lever H may be conveniently held in its raised position by a suitably-placed spring, preferably the coiled spring h^2 , connecting the arm h' with some fixed part of the machine, conveniently with the fixed member f'
40 of the clutch F. The lever H is depressed by means of a foot-treadle, (not shown,) which is connected with the arm h' by means of a suitable connection h^3 .

The relative position of the clutches E and F and the inclination of the dog f^2 are such that as the dog f^2 is carried around with the shaft D by the rotation the member f when it comes in contact with the arm h of the lever H it moves the sleeve I along the shaft D against the tension of the spring i a sufficient distance to open the clutch E and firmly
55 close the clutch F. In the machine of the drawings the dog f^2 is so formed and arranged that it opens the clutch E and closes the clutch F to stop the rotation of the shaft D and the movement of parts actuated thereby when the stitch-forming mechanisms have completed a stitch and while said mechanisms are in position to commence a new stitch.

To secure a stitch-by-stitch operation of the machine by means of the devices hereinbefore described, the operator, power being applied to the driving-pulley P in the usual

manner, depresses the lever H, moving the arm h away from the shaft D and out of contact with and out of the path of the dog f^2 ,
70 allowing the sleeve I to be moved along the shaft D by the action of spring i to open the clutch F and close the clutch E and start the rotation of the shaft D. When the rotation of the shaft D has commenced and before the
75 dog f^2 has been turned into position to come in contact with the arm h , the lever H is released by releasing the treadle and the arm h is brought against the shaft D and into the path of the dog f^2 in such position that the
80 dog f^2 coming in contact therewith moves the sleeve I a sufficient distance along the shaft D to open the clutch E and close the brake-clutch F, which, as hereinbefore stated, stop the rotation of the shaft D and the movement
85 of the parts actuated thereby when the stitch has been completed and while the stitch-forming mechanisms are in position to commence a new stitch.

It will be noted in construction of the drawings that when the lever H is released the stitch-forming devices are stopped automatically at the completion of a stitch and in position to commence a new stitch.

We will now describe the mechanism shown
95 in the drawings whereby the channel-guide and awl are locked in their position of substantially closest lateral approximation to the needle, while the stitch-forming mechanisms operate to form one or more complete stitches,
100 but before doing so we desire to say that we consider the present invention as of sufficient scope to cover a construction in which the channel-guide alone is locked, as above stated. We desire, further, to say that we are aware
105 that shoe-sewing machines have been provided with means for varying the length of the feed, and hence varying the extent of the lateral movement of the channel-guide, but in so far as we are informed of the state of the
110 art it has not heretofore been proposed to stop the movement of the channel-guide and retain it in its position of closest lateral approximation to the needle while the needle and other stitch-forming devices continue in
115 operation to form one or more complete stitches, and we consider such feature as broadly novel.

In the machine of the drawings the awl-segment a' and the channel-guide lever c' are
120 pivotally supported upon a feed-slide d , which is free to reciprocate in suitable ways on a fixed part of the machine. The slide d is actuated by a lever T, fulcrumed at t on a fixed portion of the machine and oscillated by
125 means of a cam T'.

We do not consider it necessary to give a detail description of the awl and channel-guide and their connections last above noted, for the reason that the same in and of themselves form no part of the present invention,
130 but may be and conveniently are the same in form and arrangement as corresponding parts of said Goodyear machine. In said Goodyear

machine the lever T is connected with the slide *d* by a pivoted link connection. In accordance with the present invention we form in the lever T a segmental slot *t'*, which is extended over the fulcrum or center of motion of the lever T. Pivoted at *n* to the feed-slide *d* is a lever *n'*, carrying the laterally-projecting stud *n*², which is projected into the slot *t'*. By turning the lever *n'* about its center *n* the stud *n*² may be moved along the slot *t'*, and the arrangement is such that when required the stud *n*² may be brought immediately over the center *t* of motion of the lever T. A suitable locking means is provided whereby the lever *n'* and the stud *n*² may be locked in any required position. As shown in the drawings, such locking device is provided by extending the lever *n'* beyond its fulcrum *n* and forming thereon an operating-handle *n*³, along which is extended a pivoted spring-pressed catch *n*⁴, which engages with a toothed segment *n*⁵, fixedly secured to the feed-slide *d*.

In operating our improved shoe-sewing machine the operator first stitches one side of the shoe in the usual manner from the heel to a point toward the toe and as near thereto as he can conveniently reach with the machine operating in the usual manner. When such point is reached, the operator by releasing its controlling-treadle releases the lever H and stops the further operation of the machine at the completion of a stitch and with the parts in position to take the next stitch. The operator then disengages catch *n*⁴ from the segment *n*⁵ and turns the lever *n'* until the stud *n*² is directly over the center of motion *t* of the lever T, when he allows the catch *n*⁴ again to engage the segment *n*⁵ to lock the lever *n'* and stud *n*² in the last-described position. It is evident that when the stud *n*² is on the center of motion *t* of the lever T no motion can be imparted to the slide *d* by the oscillation of the lever T, and the length of the lever *n'* is such that when the stud *n*² is at the center of motion of the lever T the channel-guide *c* and the awl *a* are in their position of closest lateral approximation to the needle *n*, in which position they are locked by the locking of lever *n'*, as before described.

When the awl and channel-guide have been locked in the position above stated, the operator commences the stitch-by-stitch operation of the machine, as before described, and continues the same, feeding the shoe by hand and turning the toe with the stationary channel-guide as a center until a point is reached

at the opposite side of the shoe at which the several mechanisms can conveniently be operated in the usual manner, when the operator releases the lever *n'* and, having moved the stud *n*² to its required position in the slot *t'*, again locks the lever *n'* and by depressing its controlling-treadle depresses the lever H, holding the arm *h* out of the path of the dog *f*², thus permitting the usual operation of the machine.

Having thus described our invention and its mode of operation, we claim as novel and desire to secure by Letters Patent of the United States—

1. In a shoe-sewing machine, the combination, with the stitch-forming devices comprising a needle, of mechanism for controlling the rotation of the driving-shaft to produce a stitch-by-stitch operation of the machine, a work-feeding device comprising a channel-guide movable to and from the plane in which the needle moves, and mechanism for locking the channel-guide in its position of closest approximation to the needle during such stitch-by-stitch operation, substantially as described.

2. In a shoe-sewing machine the combination with the stitch-forming mechanism, of work-feeding mechanism, power-driven mechanism for actuating the stitch-forming and work-feeding mechanisms, means controlled by the operator to cause said stitch-forming mechanism to have a continuous operation, and a stitch-by-stitch operation, in sewing the same seam, and means to stop the operation of the feed mechanism during the stitch-by-stitch operation, substantially as described.

3. In a shoe-sewing machine the combination with stitch-forming mechanism and work-feeding mechanism comprising a movable channel-guide, of power-driven mechanism for actuating the stitch-forming mechanism, means controlled by the operator to cause said stitch-forming mechanism to have a continuous operation and a stitch-by-stitch operation in sewing the same seam, and means for locking the channel-guide in a fixed position, substantially as described.

In testimony whereof we have hereunto set our hands, in the presence of two attesting witnesses, this 8th day of June, 1896.

FREDERICK L. ALLEY.
ERASTUS E. WINKLEY.

Witnesses:

GEO. H. NEWHALL,
WM. E. SALOMONS.