

E. E. WINKLEY.
PRESSER FOOT MECHANISM.
APPLICATION FILED JAN. 14, 1905.

971,014.

Patented Sept. 20, 1910.

Fig. 1.

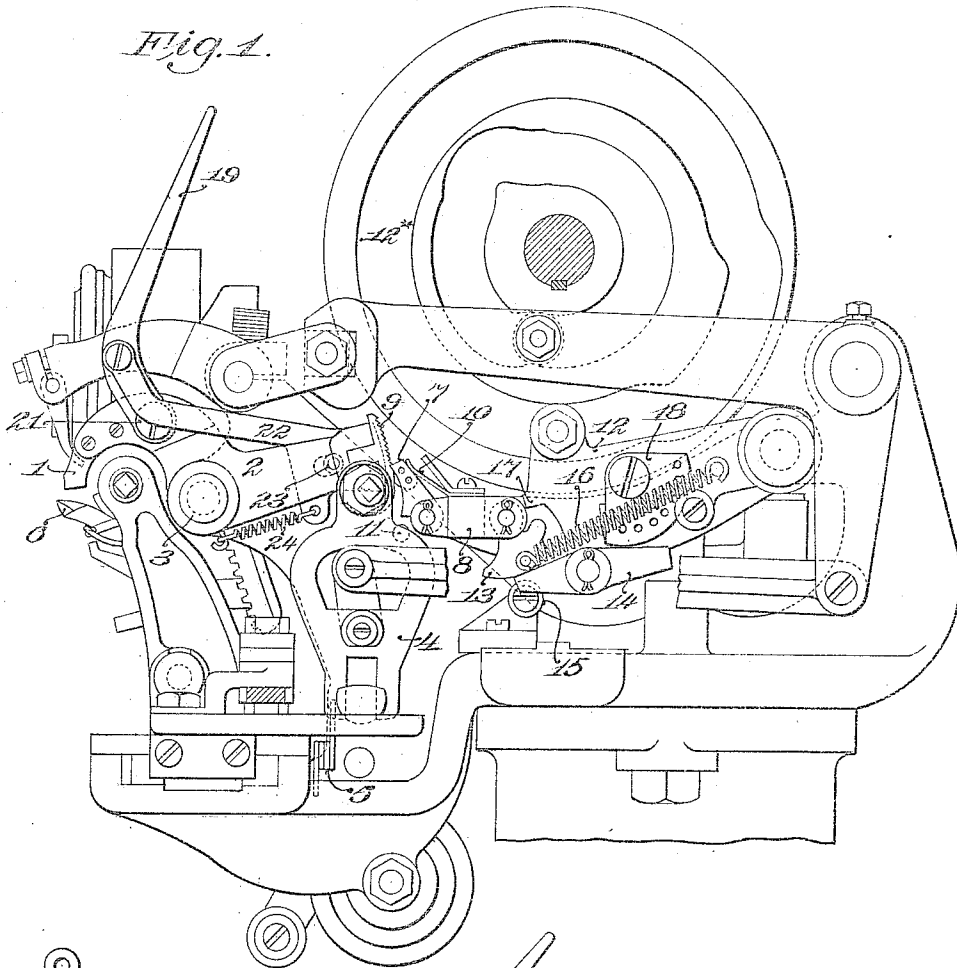


Fig. 3.

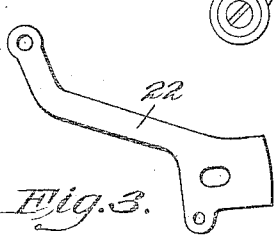


Fig. 4.

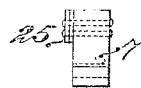
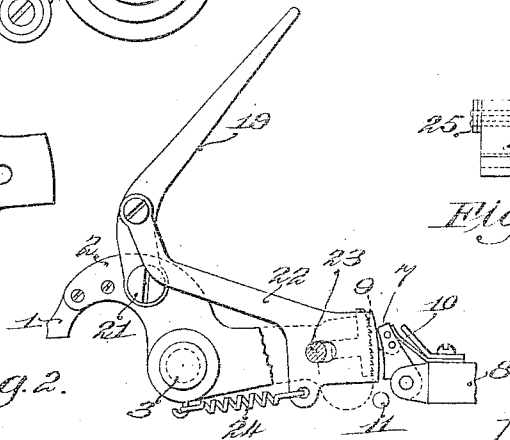


Fig. 2.



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UNITED STATES PATENT OFFICE.

ERASTUS E. WINKLEY, OF LYNN, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

PRESSER-FOOT MECHANISM.

971,011.

Specification of Letters Patent. Patented Sept. 20, 1910.

Application filed January 14, 1905. Serial No. 240,985.

To all whom it may concern:

Be it known that I, ERASTUS E. WINKLEY, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Presser-Foot Mechanisms; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to presser foot mechanism for shoe sewing machines, and particularly to presser foot mechanism for sole sewing machines which are adapted to sew the outseam of a welted boot or shoe.

The object of the present invention is to provide an improved and simplified means by which the operator can unlock and raise the presser foot whenever it is desired to insert work into the machine or to adjust work being operated upon.

The invention is intended primarily for application to the lock stitch sole sewing machine disclosed in the patent to Z. T. French and W. C. Meyer, No. 473,870, dated April 26, 1892, but it is not limited to use in this machine as it is equally applicable to other forms of sole sewing machines employing a presser foot and a pawl and ratchet mechanism for locking the presser foot in contact with the work.

The present invention consists in certain constructions, combinations and arrangements of parts hereinafter described and claimed, the advantages of which will be obvious to those skilled in the art.

The present invention will be clearly understood from an inspection of the accompanying drawings in which—

Figure 1 is a view in side elevation of a lock stitch sole sewing machine with the preferred form of the present invention applied thereto, a portion of the frame being broken away and the cam shaft being shown in section. Fig. 2 is a detail view in side elevation of the mechanism illustrated in Fig. 1 for unlocking and raising the presser foot, the parts being shown in the position which they assume while the presser foot is being raised, and a portion of the rear end of the presser foot lever being broken away and shown in dotted lines. Fig. 3 is a de-

tail view in side elevation of the link connected with the hand-operated lever by which the presser foot is unlocked, and Fig. 4 is a detail view in front elevation of the pawl which forms a part of the mechanism for actuating and locking the presser foot.

With the exception of the presser foot mechanism the various parts of the machine illustrated in Fig. 1 are constructed and arranged to operate in substantially the same manner as the corresponding parts of the machine disclosed in the patent to French and Meyer hereinbefore referred to, reference to which may be had for a disclosure of the construction and mode of operation of the parts not hereinafter specifically described.

The mechanism disclosed in the drawings for actuating and locking the presser foot is the same as that disclosed in the application to Erastus E. Winkley for a presser foot mechanism filed of even date herewith. Since, however, this mechanism is clearly illustrated in the drawings, its construction and mode of operation will be briefly described herein.

Referring to the drawings, 1 indicates the presser foot which is secured on the forward end of the presser foot lever 2 pivotally mounted upon a stud 3 secured in the frame of the machine. To the rear end of the presser foot lever 2 is pivotally connected the upper end of a frame 4 which forms a portion of the mechanism for adjusting the pull-off mechanism as the thickness of the stock beneath the presser foot varies. The construction and mode of operation of this mechanism is fully disclosed in the patent to French and Meyer hereinbefore referred to. The frame 4 is acted upon by a light spring 5 which when the presser foot is automatically disconnected from its actuating mechanism during the operation of the machine, holds the presser foot lightly in contact with the work, the presser foot at this time accommodating itself to variations in the thickness of the stock.

The mechanism illustrated in the drawing for actuating the presser foot lever to move the presser foot toward the stationary work support 6 and for locking the presser foot after the work is securely clamped, comprises a pawl 7 pivotally mounted upon a

movable fulcrum formed by the forward end of a lever 8 and arranged to engage the teeth of a ratchet 9 secured to or formed upon the rear end of the presser foot lever 2.

5 The pawl 7 is forced toward the ratchet 9 by means of a leaf spring 10 so that during the upward movement of the lever 8 the pawl 7 engages a tooth of the ratchet and actuates the presser foot to clamp the work.

10 A stationary pin 11 is located beneath a projection on the pawl 7 so that as the lever 8 reaches the limit of its downward movement the pawl engages the pin and is thereby automatically swung out of engagement

15 with the ratchet. While the pawl 7 is out of engagement with the ratchet 9 the presser foot lever moves with relation to the pawl 7 in accommodating itself to variations in the thickness of the stock, and in order that the

20 lost motion which would otherwise occur when the pawl 7 again engages the ratchet may be taken up, the lever 8, instead of being actuated directly from a cam, is actuated through connections from a cam actuated

25 lever 12. This lever is pivotally mounted at its rear end upon the hub of the lever 8 and is provided with a roll engaging a cam groove 12* in a cam disk secured to the main shaft of the machine. The connections

30 between the levers 8 and 12 comprise a cam 13 pivotally mounted upon the lever 8 near its forward end, and an arm 14 projecting from the lever 12 beneath the cam. When the lever 12 is in its lowest position

35 the arm 14 is out of engagement with the cam 13 and the cam rests upon a roll 15 mounted in a bracket secured to the frame of the machine. A coiled spring 16 is connected at one end to the cam 13 and at the

40 other end to the lever 12, and tends to rotate the cam in a direction to raise the lever 8. The cam is rotated in the opposite direction against the force of the spring 16 during

45 the downward movement of the lever 12 by means of a projection 17 on the forward end of the lever 12 which is arranged to engage a projection from the cam.

As shown in Fig. 1, the levers 8 and 12 are in their highest position, the lever 8 being

50 held raised by the engagement of the arm 14 with the cam 13. When the parts are in this position it will be seen that the cam 13 is held from rotation by the engagement therewith of the arm 14 and thus the pawl 7 is

55 held rigidly in its raised position and the presser foot is securely locked. During the downward movement of the lever 12 the arm 14 is separated from the cam 13 and the cam is brought into engagement with the

60 roll 15 and is then rotated against the force of the spring 16 by the engagement of the projection 17 therewith. The forward rotation of the cam 13 allows the lever 8 to

35 bring the pawl 7 into engagement with the

stud 11 and to disengage the pawl from the ratchet. During the first portion of the upward movement of the lever 12 the cam 13 is rotated by the spring 16 until the lever 8 is raised a sufficient distance to bring the

70 pawl 7 into contact with one of the teeth of the ratchet 9. This movement of the lever varies with the position of the presser foot so that all lost motion between the presser foot and its actuating mechanism is

75 taken up. After the pawl is seated against the tooth of the ratchet the arm 14 engages the cam 13 and raises the lever 8 to impart a positive clamping movement to the presser foot. The extent of this final clamping

80 movement can be regulated by means of the adjustable stop cam 18 mounted on the lever 12 and arranged to engage the rear end of the pivotally mounted arm 14. If desired,

85 the cam 18 can be adjusted to cause the arm 14 to merely engage the cam 13 without raising it to any appreciable extent from the roll 15 so that no final positive clamping movement is imparted to the presser foot,

90 but the presser foot is simply locked against backward movement.

The presser foot mechanism above described is that disclosed in the application of Erastus E. Winkley hereinbefore referred to, and has been illustrated and described in

95 this application merely for the purpose of showing one form of presser foot mechanism to which the present invention can be applied. In applying the present invention to the presser foot mechanism above described

100 a hand operated lever 19 is pivotally mounted at 21 upon the forward end of the presser foot lever, and to this lever is pivotally connected the front end of a link 22. The link

105 22 is provided near its rear end with a slot through which a pin 23 projects from the rear end of the presser foot lever. The lever 19 thus has a limited movement independent of the presser foot lever, the independent movement of the lever being limited in

110 each direction by the engagement of the ends of the slot in the link 22 with the pin 23. The lever 19 and the link 22 are normally held in the position illustrated in Fig. 1, by means of a spring 24 connected at one

115 end to the link and at the other end to the presser foot lever. When the lever 19 is actuated by the operator it moves independently of the presser foot lever and the link slides rearwardly until the end of the slot

120 in the link strikes the pin 23, when the continued movement of the lever 19 raises the presser foot lever. The rear end of the link 22 is curved in the arc of a circle the center of which, when the end of the link is projected beyond the presser foot lever, is concentric with the pivot pin 3 about which

125 the presser foot lever turns. Upon the side of the pawl 7 is secured a plate 25 and this plate is arranged to be engaged by the rear

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edge of the link 22 when the link is actuated by moving the lever 19 independently of the lever 2. A single actuation of the lever 19 thus acts both to unlock and raise the presser foot, the first portion of the movement of the lever 19 being independent of the presser foot and serving to move the pawl 7 out of engagement with the ratchet 9, and the continued movement of the lever 19 after the end of the slot in the link 22 has been brought into engagement with the pin 23 serving to actuate the presser foot lever to raise the presser foot.

The nature and scope of the present invention having been indicated and a preferred form of the invention having been specifically described, what is claimed is:—

1. A sole sewing machine, having, in combination, a presser foot lever provided at one end with a presser-foot, a ratchet connected with the other end of the lever, a pawl to engage the ratchet, a hand-operated lever mounted to move independently of the presser foot, and connections operating when the lever is actuated to move the pawl out of engagement with the ratchet and raise the presser foot, substantially as described.

2. A sole sewing machine, having, in combination, a presser foot lever provided at one end with a presser-foot and at the other end with a ratchet, a pawl to engage the ratchet, a hand-operated lever for raising the presser foot lever, having a limited movement independently thereof, and means actuated by the hand-operated lever during its independent movement for moving the pawl out of engagement with the ratchet, substantially as described.

3. A sole sewing machine, having in combination a presser foot, a ratchet movable therewith, a pawl to engage the ratchet, a hand-operated lever mounted on the presser foot and acting when actuated to raise the presser foot, and means operated by the

hand-operated lever for moving the pawl out of engagement with the ratchet, substantially as described.

4. A sole sewing machine, having in combination a presser foot lever provided at one end with a presser foot and at the other end with a ratchet, a pawl to engage the ratchet, a hand-operated lever for raising the presser foot lever mounted upon the presser foot lever and having a limited movement independently thereof, and means actuated by the hand-operated lever during this independent movement for moving the pawl out of engagement with the ratchet, substantially as described.

5. A sole sewing machine, having in combination a presser foot lever provided at one end with a presser foot and at the other end with a ratchet, a pawl to engage the ratchet, a hand-operated lever for raising the presser foot lever pivotally mounted thereon and having a limited movement independently thereof, and a link mounted on the presser foot lever and arranged to be actuated by the hand-operated lever to move the pawl out of engagement with the ratchet, substantially as described.

6. A sole sewing machine, having, in combination, a presser-foot lever, a ratchet connected with the lever, a pawl coöperating with the ratchet pivotally mounted upon a movable fulcrum, a hand-operated lever for raising the presser-foot lever having a limited movement independent thereof, and means actuated by the hand-operated lever during its independent movement to move the pawl about its pivot out of engagement with the ratchet.

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

ERASTUS E. WINKLEY.

Witnesses:

GRACE C. MOONEY,
FARNUM F. DORSEY.