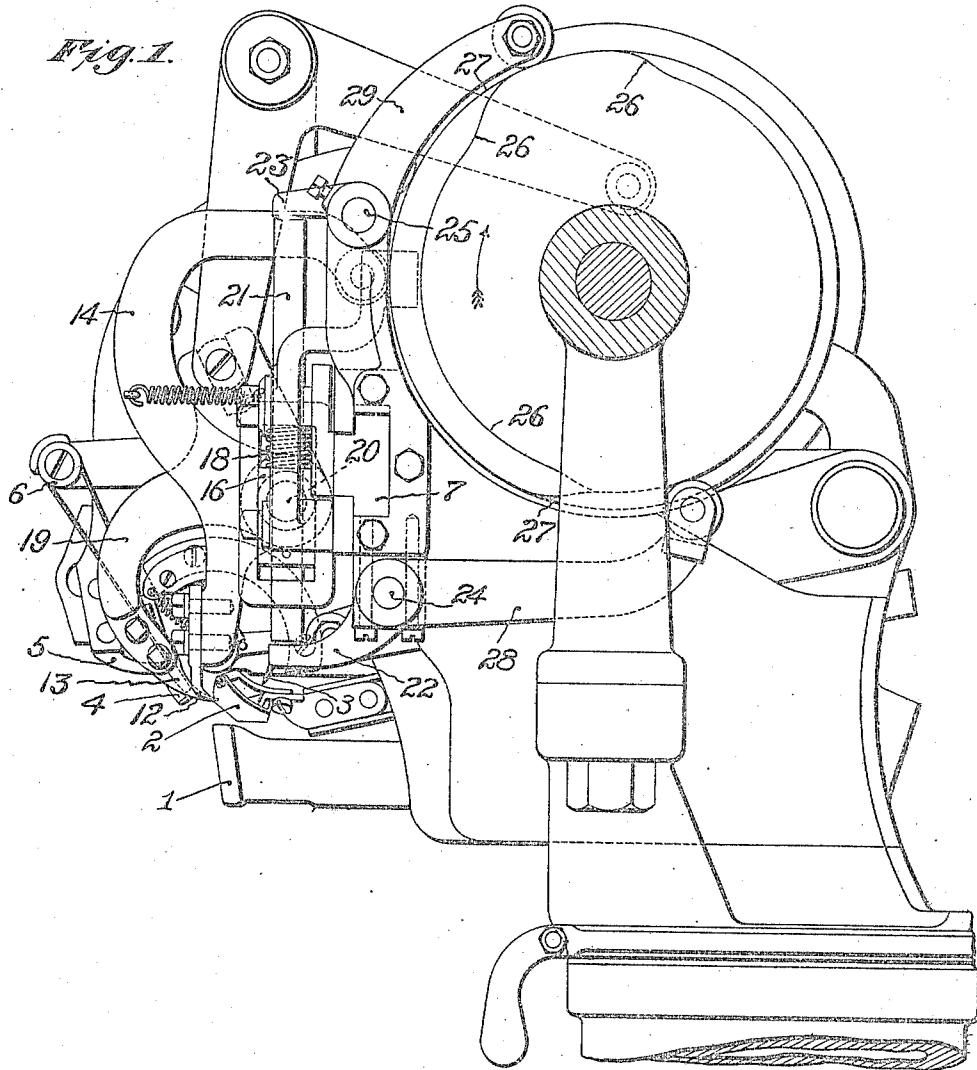


E. E. WINKLEY.
INSEAM SEWING MACHINE.
APPLICATION FILED MAR. 28, 1910.

1,030,043.

Patented June 18, 1912.

2 SHEETS—SHEET 1.



Witnesses:

E. Wurdeman
H. D. McPhail

Inventor

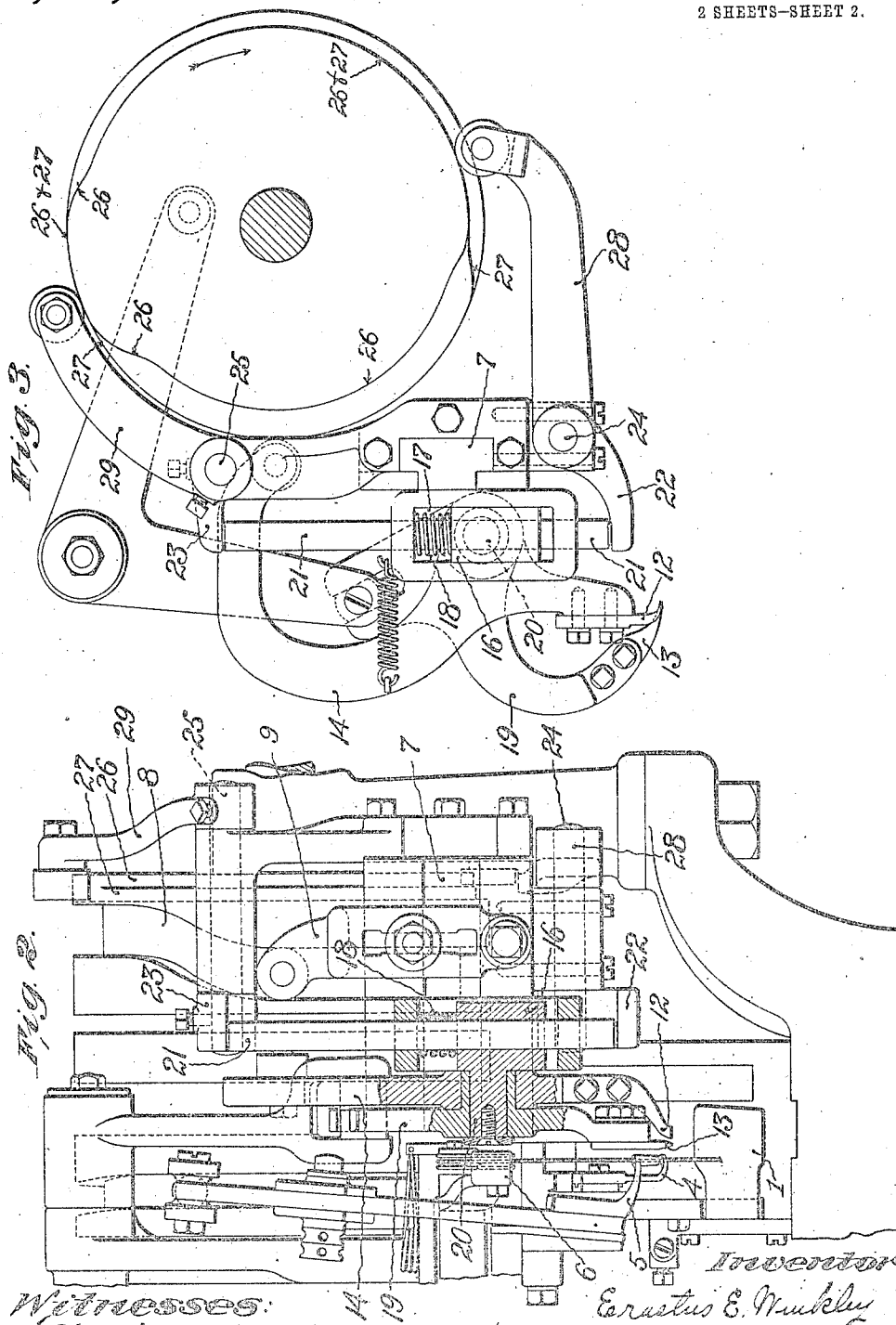
Ernest E. Winkley
by Phillips Van Eeren & Fisher
Attys

E. E. WINKLEY.
INSEAM SEWING MACHINE.
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1,030,043.

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2 SHEETS—SHEET 2.



Witnesses:

E. E. Winkley
K. D. McFarland

Inventor:
Erastus E. Winkley
by *Phillips Van Emmon & Fish*
attys

UNITED STATES PATENT OFFICE.

ERASTUS E. WINKLEY, OF LYNN, MASSACHUSETTS.

INSEAM SEWING-MACHINE.

1,030,043.

Specification of Letters Patent.

Patented June 18, 1912.

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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 Inseam Sewing-Machines; 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 invention relates to sewing machines, and more particularly to sewing machines such as are used in the manufacture of boots and shoes for sewing together the upper and sole of a turn shoe, or the upper, welt and insole of a welt shoe. Inseam sewing machines of this character are usually provided with a channel guide against which the shoe is held by the operator as he guides and manipulates it to properly position the seam. In order that the shoe may be properly presented to the stitch forming devices, the operator should, as the sewing progresses, tip the shoe longitudinally in accordance with the longitudinal curvature of the shoe sole at the point of operation, so that the channel guide may invariably engage the bottom of the channel or base of the rib on the shoe throughout the sewing of the shoe. This requires a high degree of skill and extreme care on the part of the operator.

In certain automatic machines it has been proposed to support the shoe upon a jack, and to provide mechanism for automatically varying the relative position of the jack and sewing mechanism to properly position the seam as the point of operation of the sewing mechanism is transferred around the shoe. It has been difficult, if not impracticable, in these automatic machines, to secure the relative longitudinal tipping movements of the shoe and sewing mechanism requisite for properly positioning the seam, owing to the variations in the longitudinal curvature of the soles of different shoes even of the same style and size.

It is accordingly the object of the present invention to provide means for correctly positioning the base of the channel or rib on the sole with relation to the stitch forming mechanism during the sewing operation, without requiring an accurate longitudinal tipping of the shoe by the operator, or an accurate relative longitudinal tipping of the

shoe and sewing mechanism in the case of an automatic machine.

To this end a feature of the invention contemplates the provision in an inseam sewing machine of means operating to engage the shoe sole and correct the position of the channel or rib on the sole with relation to the needle during the sewing of the shoe. By the operation of the correcting means the channel or rib is brought into correct relation to the needle without requiring accurate and skilful manipulation of the shoe by the operator, or accurate longitudinal tipping movements of the jack or sewing mechanism in an automatic machine. The invention in its broader aspects contemplates the use of any suitable form and construction of correcting means which by engagement with the sole will correct any inaccuracy in the position of the base of the channel or rib on the insole with relation to the needle prior to the engagement of the needle with the work, and thus secure the proper positioning of the inseam. I prefer, however, to employ as the correcting means a device which operates during the sewing operation to find the bottom of the channel or base of the rib on the insole even if the shoe is inaccurately held, and bring it into uniform relation to the needle as the sewing progresses around the shoe. This device may be one of the devices which are usually embodied in an inseam sewing machine, or may be an additional device incorporated therein. In the simplest and most efficient form of the invention which I have yet devised, the channel guide is also utilized as the device for finding the base of the channel or rib on the insole and uniformly positioning it with relation to the needle at the point of operation. In this preferred construction the channel guide is given this function by so mounting it that it may move or yield vertically, *i. e.* in a direction substantially at right angles to the surface of the sole of the shoe, and providing means for uniformly positioning the channel guide prior to the formation of each stitch. With this construction, when the channel gage is operated to engage the base of the channel or rib, it accommodates itself to the vertical position of the shoe sole, and uniformly engages the sole at the bottom of the channel or base of the rib on the sole. Before the needle makes its forward stroke to pierce the work, the

channel guide is centered or brought into a fixed position with relation to the needle, thus bringing the base of the channel or rib at the point of operation into proper position with relation to the needle, in case it was incorrectly positioned when engaged by the channel guide.

It is usual to so mount the channel guide that it moves with the awl or feed point during its feeding and return strokes. In operating upon poor grades of insoles, and especially in operating upon insoles which are reinforced with canvas or other strengthening fabric, the channel guide is liable to catch in the sole during its return stroke, and thus interfere with the proper operation of the machine, or injure the insole.

A further feature of the invention accordingly contemplates the provision of means for lifting the channel gage vertically or away from the surface of the sole during its return stroke. This feature of the invention is of especial importance in case the invention is embodied in an automatic machine in which the surface of the sole is pressed continuously against the channel gage.

The invention also contemplates the lifting of any device which may be employed for finding the base of the channel or rib and positioning it, in case such device is constructed to reciprocate in the line of the feed.

The various features of the invention will be understood from an inspection of the accompanying drawings and the following detailed description of the mechanism shown therein.

In the drawings Figure 1 is a side elevation of a turn and welt sewing machine embodying the invention in its preferred form; Fig. 2 is a front elevation, partly in section, of the machine shown in Fig. 1; and Fig. 3 is a view similar to Fig. 1, but showing only the feed awl, channel guide, and the devices for actuating them.

In the drawings the invention is shown embodied in the well-known Goodyear welt and turn machine. This machine is provided with a back rest 1, a back gage or welt guide 2, a curved hook needle 3, a thread finger 4, a looper 5, and a takeup 6, all of which are constructed and operated as in the Goodyear machine referred to. The machine is also provided with a feed slide 7 which is reciprocated by a cam 8 connected with the slide through a lever 9 and connections similar to the connections between the operating lever and feed slide of the Goodyear machine referred to. The machine shown is also provided with a channel guide 12 and a feed point or awl 13 which are pivotally mounted upon the feed slide, and are moved toward and from the base of the channel in substantially the same

manner as the channel guide and feed point of the Goodyear machine. In the present construction the channel guide not only performs the functions of the channel guide in the Goodyear machine, but also acts as a means for correcting the position of the base of the channel or rib on the sole with relation to the needle previous to the passage of the needle through the work. To this end the channel guide is so mounted that it may move vertically, *i. e.* in a direction substantially at right angles to the surface of the shoe sole, to accommodate itself to the vertical position of the sole at the point where it is engaged by the channel guide, and means is provided for uniformly centering or bringing the channel guide into a fixed position with relation to the needle previous to the advance of the needle through the work. In the specific construction shown the lever 14 which carries the channel guide is pivoted upon a slide 16 guided in a vertical slot 17 formed in the feed slide. The slide is forced yieldingly in a direction to press the channel guide against the surface of the shoe sole by a spring 18. The lever 19 which carries the feed awl 13 is also pivoted on the block 16 concentrically with the channel guide, the arms 14 and 19 being journaled on a stud 20 projecting from the side of the slide 16. The devices for centering the channel guide comprise two arms 22 and 23 arranged to engage the upper and lower ends respectively of a rod 21 to which the slide 16 is secured. The arms 22 and 23 are secured upon rock shafts 24 and 25 and are operated at proper intervals to determine the vertical position of the channel guide, by cams 26 and 27 arranged to engage rolls carried by arms 28 and 29 secured to the rock shafts.

In the drawings the parts are shown in the positions which they occupy at the end of the forward or feeding movement of the feed slide, and just as the needle is about to start forward. At this time the awl and channel guide are in engagement with the base of the channel or rib on the insole, and are held in fixed vertical position by the rock arms 22 and 23. While the parts are in this position the awl is retracted and the needle advanced through the work, the base of the channel or rib being held in proper relation to the needle by the channel guide. After the needle has completed its forward stroke the channel guide is rocked to relieve the pressure upon the base of the channel, and the feed slide is retracted. As the channel guide is rocked, the rock arms 22 and 23 are actuated to raise the channel guide vertically away from the surface of the shoe sole during the return stroke of the feed slide. The channel guide does not therefore drag on the surface of the sole during its return stroke, and there is no danger that it will

catch in and injure the sole, or put an undue strain upon the needle. At the end of the return stroke of the feed slide the rock arm 22 is swung downward, so that the channel guide is free to move vertically under the influence of the spring 18. The channel guide will now engage the surface of the shoe sole, the vertical position of the guide depending upon the position in which the shoe happens to be held. The channel guide thus automatically accommodates itself to the vertical position of the surface of the shoe sole, and will find and engage the base of the channel or rib on the sole when it is swung forward. The accurate engagement of the channel guide with the base of the channel or rib does not therefore require that the surface of the sole be accurately held or positioned at the point where the channel guide engages it. When the channel guide is rocked or moved forward to engage the base of the channel, the awl is also actuated to engage the work. The feed slide is now advanced to feed the work, and as the feed is completed the rock arms 22 and 23 are actuated to center or move the channel guide into accurate and proper position with relation to the needle, and to bring the awl into alinement with the needle. This completes the cycle of operations which is performed during the formation of each stitch. Thus previous to each advance stroke of the needle, the channel guide finds and engages the base of the channel or rib on the insole at a point in advance of the needle, and then accurately and uniformly positions the base of the channel or rib with relation to the needle, so that the seam will be accurately and uniformly positioned without requiring longitudinal tipping movements of the shoe by the operator, or relative longitudinal tipping movements of the shoe and sewing mechanism by automatic devices.

While it is preferred to employ the specific construction and arrangement of the parts shown and described, it will be understood that this construction and arrangement is not essential, and may be varied and modified without departing from the invention. It will also be understood that it is not essential that the channel guide or other device for engaging and positioning the base of the channel or rib on the insole should be raised clear of the surface of the sole during its travel along the surface of the sole, although this construction is of advantage, especially in embodying the invention in an automatic machine.

Having explained the nature and object of the invention, and specifically described one form of mechanism in which it may be embodied, what I claim is:—

1. An in-seam sewing machine, having, in combination, stitch forming mechanism, and

means operating during the sewing of the shoe to automatically find the base of the channel or rib if inaccurately positioned and to correctly position it with relation to the needle, substantially as described.

2. An in-seam sewing machine, having, in combination, stitch forming mechanism including a needle, and means operating to engage the shoe sole and correct inaccuracies in the position of the channel or rib with relation to the needle during the sewing of the shoe, substantially as described.

3. An in-seam sewing machine, having, in combination, stitch forming mechanism and a sole positioning device arranged to engage the shoe sole mounted for movement in a direction substantially at right angles to the surface of the sole, and means operating to uniformly position said device previous to each work piercing stroke of the needle, substantially as described.

4. An in-seam sewing machine, having, in combination, stitch forming mechanism and a sole engaging device mounted for movement to accommodate itself to variations in the plane of the sole, and means for uniformly positioning said device during the formation of each stitch to determine the position of the seam, substantially as described.

5. An in-seam sewing machine, having, in combination, stitch forming mechanism, a sole engaging device mounted for movement to accommodate itself to the position of the surface of the sole, means for uniformly positioning the said device during the formation of each stitch, and means for holding said device clear of the surface of the sole during its relative travel along the sole, substantially as described.

6. An in-seam sewing machine, having, in combination, stitch forming mechanism, a channel guide mounted to yield in a direction substantially at right angles to the surface of the sole, and means for centering the channel guide previous to the passage of the needle through the work, substantially as described.

7. An in-seam sewing machine, having, in combination, stitch forming mechanism, a channel guide mounted for movement toward and from the base of the channel and to yield in a direction substantially at right angles to the surface of the shoe sole, and means for centering the channel guide previous to the passage of the needle through the work, substantially as described.

8. An in-seam sewing machine, having, in combination, stitch forming mechanism, a feed slide, a channel guide mounted thereon for movement to accommodate itself to the position of the shoe sole, and means for centering the guide previous to the passage of the needle through the work, substantially as described.

9. An inseam sewing machine, having, in combination, stitch forming mechanism, a channel guide and feed awl mounted for movement to accommodate themselves to the position of the shoe sole, and mechanism for centering the guide and awl previous to the passage of the needle through the work, substantially as described.

10. An inseam sewing machine, having, in combination, stitch forming mechanism, a channel guide, mechanism for moving the guide toward and from the base of the channel, and mechanism for lifting the guide clear of the surface of the sole during its relative travel along the sole, substantially as described.

11. An inseam sewing machine, having, in combination, stitch forming mechanism, a channel guide mounted for movement toward and from the surface of the sole and for movement toward and from the base of the channel, and mechanism for centering the guide previous to the passage of the needle through the work, and for raising

the guide clear of the surface of the sole during its relative travel along the shoe, substantially as described.

12. An inseam sewing machine, having, in combination, stitch forming mechanism including a needle, a sole engaging device, and mechanism for actuating said device during each stitch forming cycle to correct inaccuracies in the position of the base of the channel or rib with relation to the needle previous to the passage of the needle through the work, substantially as described.

13. An inseam sewing machine, having, in combination, stitch forming mechanism, and means operating during the sewing of the shoe to automatically find the base of the rib or channel when out of the line of feed and to correctly position it with relation to the needle at the sewing point, substantially as described.

ERASTUS E. WINKLEY.

Witnesses:

N. D. McPHAIL,
WARREN G. OGDEN.