

(Model.)

E. P. & E. F. ARNOLD.
WELT GUIDING DEVICE FOR SHOE SEWING MACHINES.

No. 510,150.

Patented Dec. 5, 1893.

Fig. 1.

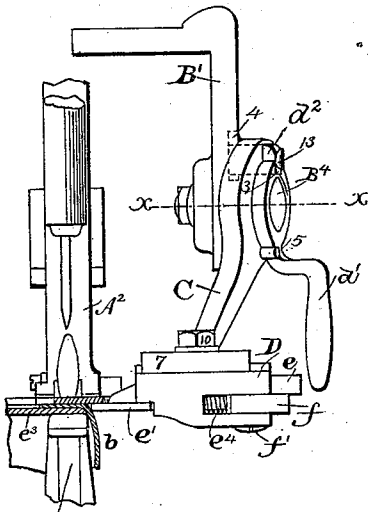


Fig. 2.

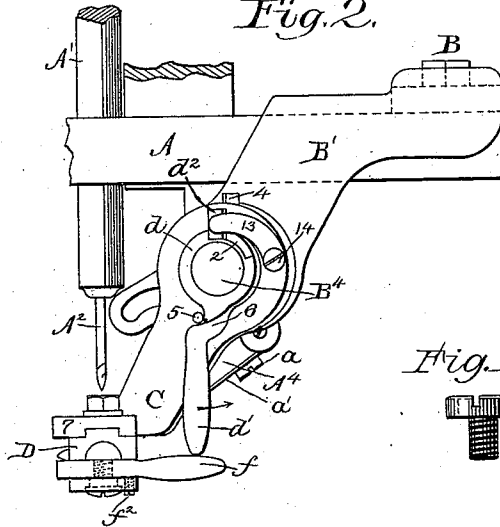


Fig. 10.



Fig. 4.

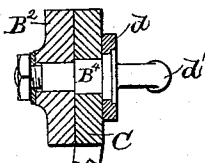


Fig. 5.

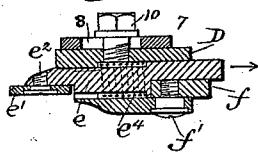


Fig. 6.

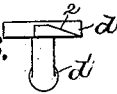


Fig. 3.

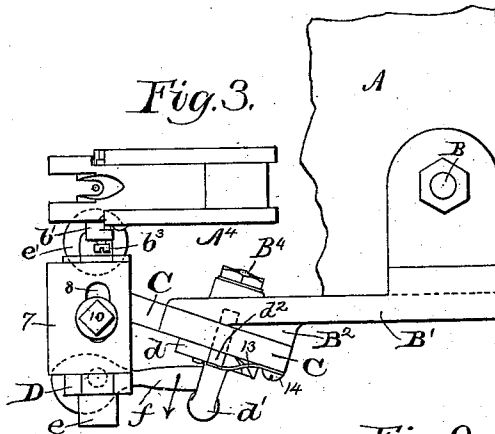
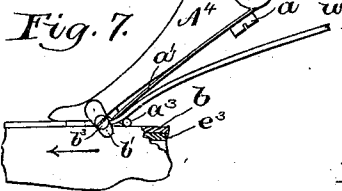
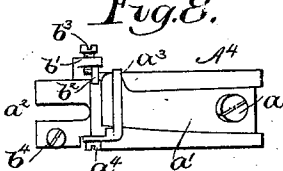


Fig. 9.



Fig. 8.



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UNITED STATES PATENT OFFICE.

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WELT-GUIDING DEVICE FOR SHOE-SEWING MACHINES.

SPECIFICATION forming part of Letters Patent No. 510,150, dated December 5, 1893.

Application filed March 22, 1887. Serial No. 232,001. (Model.)

To all whom it may concern:

Be it known that we, EZRA PRESCOTT ARNOLD, of Rockland, and EDWARD FRANCIS ARNOLD, of North Abington, Massachusetts, have invented an Improvement in Welt-Guides, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention has for its object to improve and simplify that class of devices employed to present and guide a welt in position to be stitched to a lasted-shoe while the upper and inner-sole are upon the horn.

In accordance with this invention the head of the machine has attached to it a bracket which supports an arm provided at or near its lower end with a guide-block in which is adjustably mounted an edge-gage provided

preferably with a roll the periphery of which bears against the upper immediately outside of the edge of the inner-sole, the latter resting upon a horn, the said edge-gage being provided with mechanism whereby while the machine is in operation the said edge-gage may

be readily adjusted to determine the distance of the stitches or fastenings from the edge of the inner sole not only along the ball of the foot and about the toe, but also in the shank, the stitches or fastenings in the shank being

at a different distance from the edge of the innersole than along the ball of the foot. The arm referred to is provided with a locking-device to hold it in operative position, the said

locking-device being controlled by a cam-lever which is also made effectual to not only release the locking-device but also to turn the arm back away from the point where the sole and upper are being attached especially when

welting is not being done. The presser-foot is provided with a separating finger, a welt holding-spring, or tension device, a welt-guide, and a welt holding lip. The welt to be attached to the upper is passed beneath the spring or

tension device referred to and the presser-foot and above the separating finger and the welt-holder, the said welt holder and finger being in contact with the upper of the boot or shoe

at the point where the upper lies on the inner sole, the spring acting upon the welt immediately above the separating finger serving to stretch or smooth the welt. The welt-guide attached to the bottom of the presser-foot at a point opposite the needle serves as a guide for the inner edge of the welt as the shoe is being turned upon the horn to enable the welt to be secured to a curved part of the shoe, as about the toe or in the shank, where the shoe is considerably curved, or where the welt has to be bent into a curve more or less sharp.

Figure 1 shows a sufficient portion of a sole sewing machine which taken in connection with the ordinary so-called McKay machine represented in United States Patent No. 36,163, dated August 12, 1862, will enable one conversant with the art to understand our invention. Fig. 2 is a side elevation of Fig. 1, part of the frame-work or head of the usual machine being added, the horn partially shown in Fig. 1, being omitted. Fig. 3 is a partial top view of Fig. 2. Fig. 4 is a section in the line x Fig. 1. Fig. 5 is a longitudinal section of the guide-block and edge-gage to act upon the upper. Fig. 6 is a top view of the cam-shaped ring d and lever d' . Fig. 7 is a detail showing the presser-foot and its attached devices together with a portion of the upper and a piece of the welt, the latter being in position to be stitched to the upper. Fig. 8 is an under side view of the presser and its attached parts, shown in Fig. 7, the welt being omitted, and Fig. 9 is a detail showing the separating finger detached. Fig. 10 illustrates the welt edge gage detached, the same being a screw, having an eccentric head.

The plate A forming part of the frame-work, the bar A' , the hooked needle A^2 , the horn A^3 and the presser-foot A^4 are and may be all substantially as in the patent referred to, and as in the McKay sole sewing machine commonly in use. In accordance with our invention this presser-foot has attached to it at its under side by a screw a a spring a' or tension device, the lower end of which extends nearly to the needle passage a^2 and near the lower end of said foot, the normal tendency of the

spring a' being to press the welt w upon which it rests toward and against the separating finger a^3 , pivoted at a^4 upon the presser-foot, the lower side of the said finger resting upon the edge of the upper b laid over upon the inner sole supported upon the horn A^3 , the upper and inner-sole having been properly lasted together before applying them to the horn.

The presser-foot has attached to it a welt holder b' having a pin or projection b^2 extended therefrom in the direction of the width of the presser-foot, the said pin or projection partially crossing the welt at its under side and acting to retain it in contact with the presser-foot, notwithstanding the movement of the latter and of the horn. The ear b' receives in it a gage surface shown as a screw b^3 , the end of which serves as a stop for that edge of the welt nearest the operator, the under side of the presser-foot at the side thereof farthest from the operator being provided with a welt gage b^4 , preferably of annular shape, the gage, as herein shown, see Fig. 8 consisting essentially of a screw-threaded shank having an eccentric head, the rotation of the shank permitting a portion of the said head of greater or less radius to be brought into position to receive against it the inner edge of the welt or that edge most remote from the operator.

In practice, assuming the upper to be fed over the horn in the direction of the arrow in Fig. 7, the spring a' and the welt supporting finger will act to hold and stretch the said welt so that it may be laid upon or presented to the upper under proper tension as the welt is being secured to the upper.

The plate A has attached to it by suitable bolt B a bracket B' , the lower end of which, as herein shown, is beveled, as shown best in Fig. 3, and is provided with a partial hub or face B^2 . This bevel surface so formed receives against it, the inner side of the upper end of an arm C , the arm and bracket being secured together by means of a bolt B^4 , see Fig. 4, which is extended through a hole in the upper end of the said arm and also through a hole in the said bracket. The head of this bolt B^4 , as at the right of Fig. 4 and in Figs. 2 and 3, is shown as surrounded by a cam-shaped ring d having a handle, as d' , the face of the said ring being provided with a cam or incline, as 2, which in the rotation of the ring acts upon the overhanging or bent end 3 of a locking device d^2 which is extended transversely through a hole in the hub of the arm C , and into a notch as 4 in the bracket B' , the said locking device being acted upon by a spring 13 held in place by a screw 14, said surface normally acting to keep the said locking device with its end pressed into the notch 4.

The arm C is provided with a pin 5 against which rests a part of the arm d' when the devices are in operative position, as in Figs. 1, 2 and 3, but when it is desired to turn the arm C and its attached parts back away from

the horn, the lever d' is turned in the direction of the arrow thereon in Fig. 2, until the part 6 of the lever meets the head of the screw 14, at which time the cam surface 2 has withdrawn the locking device d^2 from the notch 4, so that as soon as the portion 6 of the lever strikes a screw 14 the arm C is thereafter moved in unison with the lever d' until the said arm has been turned out of its working position.

The arm C at its lower end has a flattened portion 7, which is grooved at its under side for the reception of an inwardly projecting portion of a guide-block D , the said flattened portion being also slotted, as at 8, Fig. 5, for the passage through it of a clamping screw 10, the adjustment of the said screw in the said slot enabling the guide block D to be adjusted toward or from the path of movement of the hooked needle according to the width of the welt w being used. This guide-block receives in it the shank e of an edge gage made preferably as a roller, as represented at e' , the said roller to reduce friction upon the upper being shown as mounted upon a screw e^2 so as to rotate by the pressure of the shoe against it, the acting edge of the said gage presenting a vertical face of nearly the thickness of the inner-sole and bearing against the upper outside of the edge of the inner-sole at a point above the top of the horn. The shank e of the edge gage is reduced in diameter for part of its length, see Fig. 5, where the reduced part of the shank is shown as surrounded by a spiral spring e^4 which normally acts to retain the shank in the guide block or to compress the shank in the direction of the arrow in Fig. 5. The shank is retained in position Fig. 5, while the welt w is being stitched to the upper and inner sole about the ball of the foot, but when the welt is to be stitched to the shoe at or along the shank the operator seizes the gage lever f having its fulcrum at f' upon a screw in the guide-block D and moves the said gage lever in the direction of the arrow on it in Fig. 3, thus moving the edge-gage toward the horn and nearer to the path of movement of the usual hooked needle A^2 . This provision for adjusting the position of the edge gage for the maximum and minimum distance of the edge of the welt from the line of stitching is a matter of very considerable importance.

The gage lever f has co-operating with it a friction device f^2 , made as a screw, which acting against the said lever serves to hold it in position where it is left by the operator.

Herein it will be noticed that the edge of the roll of the edge-gage is vertical and is arranged to meet the upper at a point directly opposite the edge of the inner sole on the horn so that the edge of the inner sole is partially used as a gage to determine the contour of the line of stitching thus insuring the correct placing of the inner sole for the insertion of the stitches or fastenings.

Prior to our invention we are aware that a

conical roller employed to support one edge of and guide a welt has been made to act against the upper outside the edge of the inner-sole as in United States Patent No. 250,647, but we are not aware prior to our invention that a sewing machine has been provided with a welt gage or guide to hold and present it to the lasted shoe upon the horn, the position of the shoe being determined by or through the action of an independent edge gage acting on the upper about and outside of the inner-sole, the edge of the inner-sole and the edge of the gage being parallel or substantially so.

The spring and finger attached to the presser-foot constitute tension mechanism for regulating the tension upon the welt being applied to the lasted boot or shoe.

We claim—

1. The horn to enter and support a shoe, and a presser foot having welt guiding devices to hold and present the welt to the shoe, combined with an independent sliding and laterally adjustable edge gage to act against the upper directly opposite the edge of the inner-sole, substantially as described.

2. The presser-foot, and the adjustable welt gage at its under side for that edge of the welt farthest from the front side of the machine combined with the horn and with the stud or projection b^2 for the opposite edge of the welt, substantially as described.

3. The presser-foot, and guiding devices for the edge of the welt, attached to and carried by said presser foot and a welt-holder extended across the path of, and at the underside of the welt between it and the presser-foot at a point back from the needle-receiving slot in the presser-foot, combined with a horn to operate, substantially as described.

4. The presser-foot, the gage b^4 made as a screw having an eccentric shank, and the welt-holder having an adjustable screw or device to gage the edge of the welt nearest the front side of the machine, combined with the horn to operate, substantially as described.

5. The presser-foot, the gage b^4 , the welt-holder, the spring a and finger, combined with the horn, substantially as described.

6. The horn, the presser-foot, and attached devices to guide and present the welt, combined with the independent sliding edge gage to bear against the upper outside the edge of the inner-sole and with a cam lever and a spring to quickly adjust the position of the said gage with relation to the horn whereby the position of the welt being stitched to the lasted shoe may be varied, substantially as described.

7. The horn, the presser-foot, and its attached welt guiding devices, combined with the edge gage, the guide block in which it is free to be adjusted horizontally toward and

from the horn, and means to support the said guide-block, substantially as described.

8. The horn, the presser-foot, and its attached welt guiding devices, combined with the edge gage, guide block in which it is reciprocated, the arm c to support the guide-block, a bracket, as B' , and a stud to connect the arm and bracket, the meeting ends of the said arm and bracket having bevel surfaces, to operate substantially as described.

9. The horn, the presser-foot and its attached welt-guiding devices, combined with the edge gage, guide block in which it is reciprocated, the arm c to support the guide-block, a bracket, as B' , and a stud to connect the arm and bracket, the meeting ends of the said arm and bracket having bevel surfaces and having a locking device to hold the arm in operative position, substantially as described.

10. The horn, the presser-foot and its attached welt guiding devices, the edge gage and guide block in which it is made movable horizontally, combined with the arm C , the bracket B' , and stud to connect them, the meeting ends of the said arm and bracket having bevel surfaces, and a locking device and a lever having a cam surface to actuate the said locking device, to operate substantially as described.

11. The horn, the presser-foot having attached welt guiding devices, and a tension device to subject the welt to tension on its passage to the welt guiding devices, and an independent edge gage to act upon the upper immediately outside the edge of the inner-sole, a block or guide in which the said edge gage may be adjusted horizontally, combined with a cam or lever by which to readily adjust the edge gage into one or the other of its two positions to thereby enable the edge of the welt to extend more or less beyond the outer edge of the inner-sole, as and for the purpose set forth.

12. In a sole sewing machine, a horn, and stitch forming devices, a presser-foot having welt-guiding devices to guide and present the welt to the stitching point, and devices to subject the welt to tension on its way to the welt guiding devices, combined with an independent edge gage controlled by a hand lever for variably engaging with the upper outside the edge of the inner sole, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

EZRA PRESCOTT ARNOLD.
EDWARD FRANCIS ARNOLD.

Witnesses:

MED E. ARNOLD,
LIZZIE J. ORCUTT.