Oct. 12, 1943. G. H. GRAHAM 2,331,318

SHOE SEWING MACHINE

Filed March 28, 1941

Fig. 1

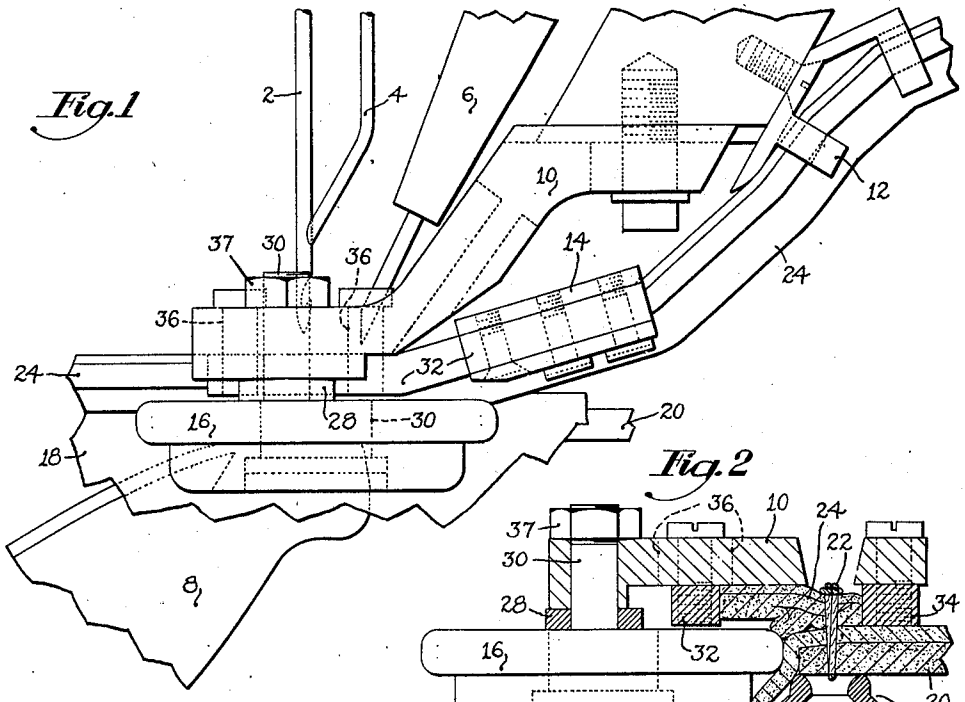


Fig. 2

Fig. 3

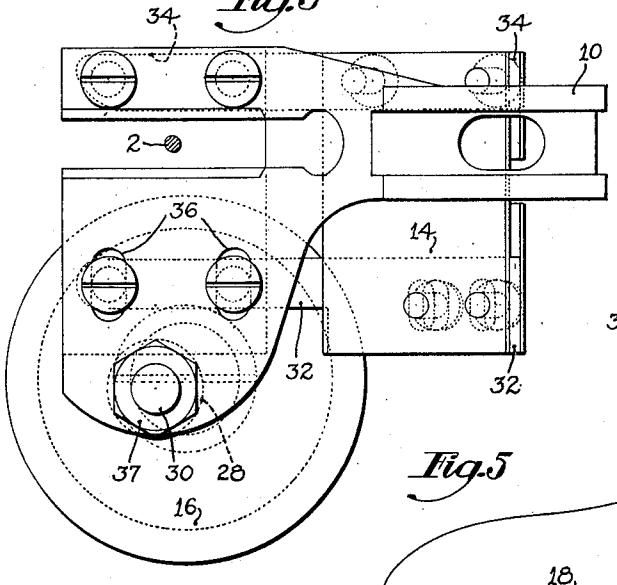


Fig. 4

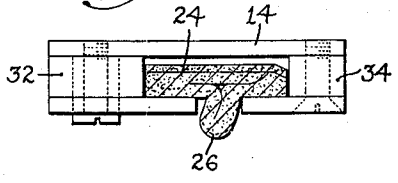
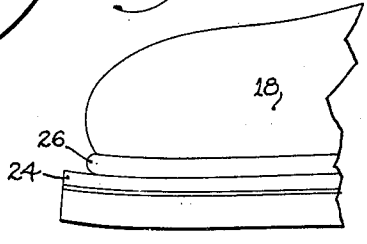


Fig. 5



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Patented Oct. 12, 1943 2,331,318

UNITED STATES PATENT OFFICE

2,331,318

SHOE SEWING MACHINE

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Application March 28, 1941, Serial No. 385,708

2 Claims. (Cl. 112—52)

The present invention relates to shoe sewing machines and more particularly to improvements in welt and shoe guides for a sewing machine of the McKay type having a rotary shoe supporting horn, which machine is employed for sewing the inseam of a so-called "American" or "McKay" welt shoe.

The object of the invention is to provide a sewing machine in which a beaded storm welt may be guided into the seam connecting the overlasted upper and insole of an American or McKay welt shoe with the bead on the welt brought into line with that surface of the upper which is supported by the edge of the insole, regardless of the movements imparted to the shoe as the point of operation is transferred about the shoe. When sewed with the bead in accurate alignment with the surface of the upper, the welt being curved to conform with the shape of the shoe, better results with the machine are obtained in the finished shoe than heretofore considered possible in this class of work.

It is common practice to sew a flat welt strip having no bead to the overlasted marginal portions of a shoe on a McKay type shoe sewing machine, and thereafter to sew an outsole to the projecting marginal portions of the welt, but if an attempt is made to direct a beaded storm welt into the seam, the irregular shape of the welt caused by the bead frequently renders the sewing operation difficult. In order to avoid difficulty in guiding a beaded storm welt into a seam connecting an insole and upper of a McKay type shoe, the welt frequently is sewn to an outsole cut to the proper shape separate from the shoe. The welted outsole is then attached to the overlasted upper and insole with a through-and-through seam on the usual McKay type machine. To insure accurate registry of the sides of the upper and the bead on the welt, the welt and the outsole necessarily must have the same curvatures as the upper and insole, otherwise the bead on the welt will not fill the entire length of the crevice formed by the bulging sides of the upper and the projecting margin of the outsole to provide a tight weather excluding seal and the benefit of the bead on the welt as a protection to the through-and-through seam will be lost.

Another object of the present invention, therefore, is to provide a McKay type shoe sewing machine with welt and shoe guiding devices acting in a manner more effective than usual for this type of machine for sewing a beaded storm welt with the bead on the welt in alignment with the side surfaces of the shoe upper so that after sewing, the stitches will be sealed against the weather throughout the length of the seam.

Accordingly, the principal feature of the present invention resides in a McKay type shoe sewing machine having a welt guide on a presser float overlying the tip of a rotary horn located to act on that portion of a shoe upper supported by the edge of an insole and on the centrally disposed bead of a storm welt strip guided to the point of operation of the stitch forming devices in the machine to press the bead against the insole edge supported upper, the presser foot having a suitable shape to take up the reaction of the bead squeezing force opposite the point of sewing operations and the under side of the welt edge guide being spaced by an amount substantially in excess of welt thickness to insure proper location of the welt bead on the insole supported edge of the upper. In the form illustrated, the edge guide comprises a roll and means are provided for spacing the roll vertically below the presser foot at the proper position.

These and other features of the invention consist in certain novel constructions, combinations and arrangements of parts hereinafter described and claimed, the advantages of which will readily be understood by those skilled in the art from the following description taken in connection with the accompanying drawing, in which Fig. 1 is a view in front elevation of a portion of a shoe sewing machine illustrating the positions of the stitch forming devices of the machine and the work during sewing operations; Fig. 2 is a sectional view taken at right angles to the seam line through the point of operation of the stitch forming devices; Fig. 3 is a plan view of the presser foot, welt guide and edge guide roll shown in Fig. 1; Fig. 4 is a detail view of the welt guide showing a section of the storm welt employed before the bead is bent over; and Fig. 5 is a side view of the toe portion of a shoe after being sewn on the machine.

The machine illustrated in the drawing, in so far as its stitch forming and work feeding devices are concerned, is substantially the same in construction and manner of operation as the machines disclosed by U. S. Letters Patent to Richardson No. 1,412,423, of April 11, 1922, and to Leveque No. 1,738,778, of December 10, 1929. The stitch forming and work supporting devices of the illustrated machine include a straight hook needle 2, a cast-off 4, a feed point 6, a rotatable work supporting horn 8 having a central opening

into which the needle dips and a presser foot 10, all operating in a manner more fully disclosed in the patents referred to. To sew a McKay or American welt shoe, a welt strip is directed into the seam, suitable guides 12 and 14 being connected to the presser foot and the presser foot having rotatably mounted upon it an edge guide roll 16 to assist in locating the shoe properly with relation to the welt strip.

The toe of a shoe sewn on the machine is illustrated in Figs. 2 and 5, in which an upper 18 drawn into lasted relationship with an insole 20 is permanently secured by a seam of through-and-through stitches 22 passing through one edge of the welt indicated at 24 and the overlasted upper and insole. The usual practice in sewing shoes of this construction is to insert the seam closer to the side surface of the upper which is supported by the edge of the insole along certain parts of the shoe than at others. This practice is due in part to the necessity for tipping the shoe at an angle about the point of sewing operations along certain parts of the seam, particularly around the toe of a shoe where there is insufficient space within the upper for full entrance of the work supporting horn close to the edge of the insole.

The illustrated strip 24 is commonly known as storm welt and is assembled from two separate parts, one of which is folded with relation to the other to form a perpendicular weather excluding bead 26 projecting at a central location from one side of the strip. When the welt strip is sewed to the lasted shoe with the bead in accurate alignment along the insole supported portion at the outer surface of the upper, the bead is bent over into the position illustrated in Figs. 2 and 5, providing an ornamental effect, as well as sealing the seam in the crevice between the parts from the weather. In guiding the welt strip towards the point of sewing operations, it is desirable for the strip to move freely through the guides in order not to interfere with the feed of the work or the operations of the stitch forming devices. To bend the bead of the welt into the position illustrated in Fig. 2, however, requires application of substantial force and this force reacting on the welt guides may distort the welt or cause it to bind to such an extent as to interfere with the feeding movements of the work. Also, the height of the bead adds to the thickness of the welt so as to render the usual welt and shoe guiding devices ineffective for bringing the bead into alignment with the insole supported surface of the shoe upper. These difficulties, added to the necessity of tipping the shoe at an angle about the sewing point along certain parts of the seam, have in the past presented a serious obstacle in the way of commercial production for shoes constructed in the manner described.

According to a feature of the present invention, the beaded storm welt strip 24 is guided loosely through guides 12, 14 formed with bead receiving slots along their lower sides and the edge guide roll 16 is located to act opposite the point of sewing operations with a flange about its periphery engaging that outer surface of the upper which is supported by the edge of the insole 20. The edge guide roll is so arranged that it rotates during feeding movements of the shoe and after feeding movements are terminated, the rounded upper edge of the flange on the roll and the lower surface of the presser foot squeeze the bead on the welt into the desired bent over position, the reaction of the squeezing force applied to the bead being taken up by a portion of the lower surface of the presser foot overlying the horn opposite the point of needle operations. The presser foot is constructed and located to act opposite the work supporting surface of the horn and to press the bead on the welt firmly against the shoe without undesirably flattening or distorting the bead. As in the patented machines, the presser foot is raised slightly from engagement with the work during each work feeding movement so that the force exerted by the roll on the bead is somewhat relieved during feeding movements as a result of a slight lateral sliding movement of the welt in the guide 14 which takes place as the presser foot is lifted. The inner edge of the welt strip being fastened by the stitches 22 to the shoe is held more or less stationary as the presser foot is lifted but the roll 16, being connected with the presser foot, is lifted with it. The force exerted by the roll on the bead, therefore, tends to cause the outer edge of the welt to be withdrawn slightly from between the presser foot and the roll in a manner to release the welt for easy feeding movement. When the presser foot is again forced against the work at the end of the feeding movement, the roll again exerts a force to bend over the bead against the main body of the welt and to bring it into proper alignment with the insole supported surface of the upper. The force of the presser foot during its lifting and clamping action, therefore, rather than the feeding movement of the work, causes the bead on the welt to be aligned with the insole supported surface of the upper and to be bent over into proper position for sealing the seam 22.

To space the edge guide roll from the presser foot so that there will be room for the bead on the welt 24, the presser foot has a downwardly extending lug which is supplemented by a spacer 28 surrounding an eccentric shouldered stud 30 on which the guide roll rotates. To guide the edges of the welt along the under surface of the presser foot, edge guiding bars 32 and 34, which form a portion of the welt guide 14, extend along the under surface of and are screwed to the presser foot. The edge guiding bar 34 engages the shoe opposite the work supporting surface of the horn and clamps it beyond the edge of the welt against the horn while leaving the welt free to be drawn against the shoe by stitches inserted by the needle. The edge guiding bar 34 thus limits the pressure applied by the work squeezing portion of the presser foot so as not to distort unduly the bent over bead on the welt while holding the bead firmly in place. When different widths of welt are employed, the distance between the outer edge guide bar 32 and the inner edge guide bar 34 may be adjusted by loosening the screws which secure the bar 32 in place and moving it along slots 36 in the presser foot, similar slots being provided in the portion of the bar forming the welt guide 14. A corresponding adjustment may be made in the position of the edge guide roll 16 by loosening a nut 37 on the eccentric stud 30 and by rotating the stud until the desired position of the roll is reached.

When sewing a beaded welt with through-and-through stitches to an American or McKay welt shoe, it is desirable to insert the stitches closer to the edge of the insole than is the usual practice. To enable the stitches of the seam 22 to be inserted sufficiently close to the edge of the insole, the upper side surface of the work supporting

horn 8 is recessed with a groove 38 extending substantially around the upper end. The lower end of the edge guide roll also is shouldered above the level of the work supporting surface on the horn and provided with a portion of reduced diameter to prevent the downwardly extending shoe upper from becoming squeezed between the horn and the edge guide roll.

Having thus described the invention, what is claimed is:

1. A shoe sewing machine of the McKay type for attaching a welt strip having a central weather excluding bead disposed in alignment with the insole supported outer surface of a shoe upper, the combination with a straight hook needle, a rotary shoe supporting horn, a presser foot movable to clamp and to release the shoe, a welt guide on the presser foot comprising a welt pressing surface extending along the lower portion of the foot overlying the horn and oppositely arranged side bars for guiding and supporting the beaded welt, of an edge guide on the presser foot extending beneath the welt pressing surface of the foot into engagement with the insole supported surface of the shoe upper, said edge guide being spaced from the welt pressing surface of the presser foot by an amount substantially in excess of welt thickness to cause the edge guide to engage the bead portion only of the welt whereby the shoe clamping movement of the presser foot and edge guide mounted thereon is effective to squeeze the bead into a bent-over position between the welt and the adjoining insole supported surface of the shoe upper.

2. A shoe sewing machine of the McKay type for attaching a welt strip having a central weather excluding bead disposed in alignment with the insole supported outer surface of a shoe upper, the combination with a straight hook needle, a rotary shoe supporting horn, a presser foot movable to clamp and to release the shoe, a welt guide on the presser foot comprising a welt pressing surface extending along the lower portion of the foot overlying the horn and oppositely arranged side bars for guiding and supporting the beaded welt, of an edge guide roll having a vertical axis mounted on the presser foot opposite the point of needle operations, the periphery of the roll extending beneath the welt pressing surface of the foot into engagement with the insole supported outer surface of the shoe upper and having its upper edge spaced from the welt pressing surface of the presser foot by an amount substantially in excess of welt thickness to cause the roll to engage the bead portion only of the welt whereby the shoe clamping movement of the presser foot and roll mounted thereon is effective to squeeze the bead into a bent-over position between the welt and the adjoining insole supported surface of the shoe upper.

GUY H. GRAHAM.