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WELT GUIDE FOR SHOE SEWING MACHINES

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Fig. 1

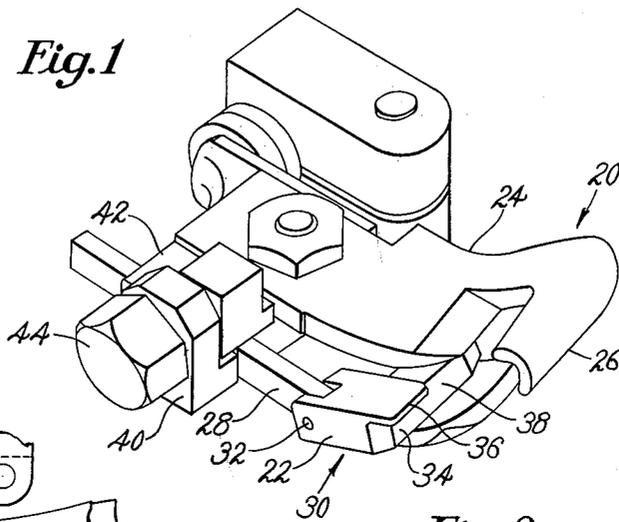


Fig. 3

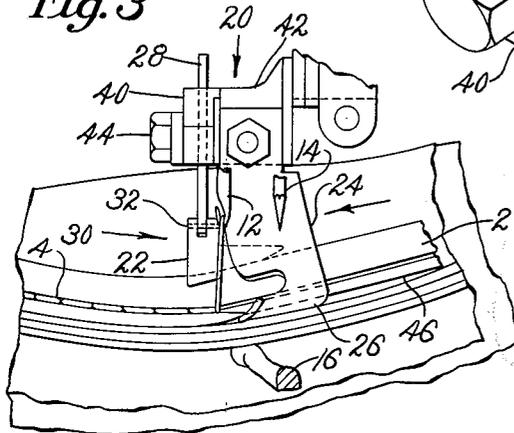


Fig. 2

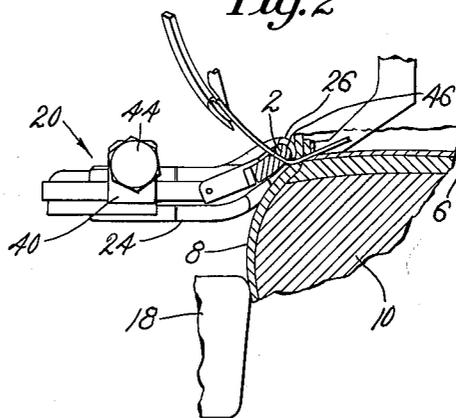
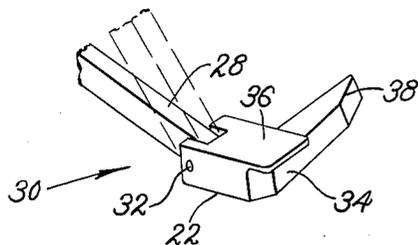


Fig. 4



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WELT GUIDE FOR SHOE SEWING MACHINES

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The present invention relates to improvements in welt guides for use in Goodyear welt in-seam sewing machines similar to those disclosed in United States Letters Patent No. 2,972,969, granted February 28, 1961, upon application of Lloyd G. Miller.

The welt guide of the machine disclosed in the prior patent is inexpensive and effective in operation and is readily adjustable for different widths and thicknesses of welt according to a wide range of requirements. Accordingly, the prior welt guide comprises a shoe engaging shield formed of a doubled over strip of sheet material with a connecting base, between spaced doubled over portions of which the welt is directed and an edge gage within the space between the doubled over portions of the shield mounted for movement toward and from the base according to the width of the welt, so that the welt may be directed accurately into engagement with a shoe in advance of the point of operation of the machine. To secure the shield and edge gage in adjusted position an I-shaped channel block is provided within the channels of which the ends of the doubled over shield strip are secured and to one end surface of which a shank of the edge gage is clamped. The prior edge gage comprises an elongated leaf spring of uniform width to fit loosely within the space between the doubled over portions of the shield strip, the spring being bent to form a wedge-shaped opening for the welt as it passes through the guide, decreasing in width at the exit of the guide.

Under some conditions it has been found that as the edge gage is adjusted toward and from the base of the doubled over shield strip it may not assume a central position within the space of the doubled over strip portions. When an extremely thin narrow welt is employed it may become jammed between the shield strip and the edge gage so as to interfere with the feeding movement of the shoe in the machine. When this occurs the operator of the machine may attempt to correct the difficulty by bending the edge gage into a proper central position, so as to avoid jamming of the welt between it and the shield strip. After bending the prior edge gage several times following an adjustment the edge gage may be broken or bent into a shape which fails to guide the welt properly.

An object of the present invention is to provide a welt guide for a Goodyear welt in-seam sewing machine, in which the difficulties above referred to are avoided, the welt being directed through the guide without retarding in any way its passage into engagement with the shoe.

Another object is to provide a welt guide in which an edge gage may readily be adjusted and regardless of adjustment may accommodate itself automatically to the thickness of the welt, so that there is no opportunity for the welt to become jammed between the edge gage and the welt guide shield.

The principal features of the present invention include the use of a welt guide formed from a doubled over strip of sheet material secured to an I-shaped channel mounting block, both doubled over portions being bent in the same direction between their ends into parallel relationship with each other, and the mounting block being provided with a clamp outside the space between the doubled over portions of the strip and formed in part by a gripping surface on the block extending transversely to the doubled over portions of the strip and in part by a clamp plate acting against the gripping surface of the block, in which

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welt guide an edge gage is provided comprising a straight shank secured in the clamp for adjustment toward and from the base of the doubled over strip portions, an abutment having a welt guiding fin along its upper welt engaging edge and a pivot mounting for the abutment on the shank to enable the abutment to hinge on the pivot mounting when the fin is lifted by a welt passing through the space between the doubled over strip portions. Thus, the position of the block may be shifted to a limited extent by the welt itself to prevent the welt from being jammed between the abutment and the doubled over strip portions of the guide. Preferably the abutment also is provided with a finger extending into the space between the doubled over portions of the guide to limit the lifting movements of the abutment, the area of the abutment containing the fin being thicker than the finger to provide less opportunity for jamming the welt.

These and other features of the invention as herein-after described and claimed will become apparent from the following detailed specification, taken in connection with the accompanying drawings, in which:

FIG. 1 is a perspective view of a welt guide and its mounting, with a preferred form of the improved edge gage;

FIG. 2 is a side view, partly in section, of the guide and new gage as they appear in the sewing operation, with the guided welt being sewn with a curved hook needle to the lasted upper and insole;

FIG. 3 is a plan view of the guide and new edge gage as they appear in the sewing operation; and

FIG. 4 is a perspective view of the edge gage.

The machine illustrated is a shoe in-seam sewing machine arranged to direct a welt 2 into line with an in-seam 4 connecting an insole 6 with the overlapped margin of a shoe upper 8 mounted on a last 10, the inner edge of the welt being secured by the in-seam and the outer edge being free and projecting beyond the seam line and the upper uniformly. The machine has a curved hook needle 12, a curved awl 14, a channel guide 16, a back rest 18, various stitch-forming and work-engaging devices, and a welt guide 20.

The needle, awl, and channel guide are actuated toward and from engagement with the work and are moved in the direction of work feed alternately to produce a continuous feeding movement of the work, the awl forming a perforation in the work and feeding the work to a position where the needle enters the perforation formed by the awl to continue the feeding movement of the work. Before the needle enters the work, the awl retracts leaving a brief interval in which the needle and awl are disengaged from the work. During the interval between the retraction of the awl and the engagement of the work by the needle, the work is fed with the channel guide, the thread tension being such and the operator normally exerting a force in a direction that insures frictional engagement of the shoe with the channel guide. Because the shoe is fed continuously by the stitch-forming and work-engaging devices, it is more important for the welt to move freely through the welt guide than in a machine in which the shoe is fed intermittently, and in which there is an interval between feeding movements, enabling the position of the welt in the welt guide to become readjusted.

The welt guide 20 illustrated comprises a strip of sheet metal 24 doubled over into spaced parallel relation to form a generally U-shape shield with a connecting base 26 resulting from a reverse bend between the doubled over sides, the doubled over portions both being bent also in the same direction between their ends. The welt passes through the space at the base end of the guide which provides an abutment against which the inner edge of the welt is directed during the sewing operations.

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An edge gage 22 associated with the welt guide contacts the outer edge of the welt during the sewing operation. The gage comprises a shank 28, an abutment or guiding element 30, and a mounting pivot 32. The pivot permits the abutment 30 to rotate and lift relatively to the shank and thus to enable the welt to slide freely up and down the shield without binding or jamming during operation of the machine. Thus this novel edge gage provides a degree of adjustability greater than heretofore obtained, making it possible for welts of a broader range of thicknesses to pass through the same welt guide.

The abutment 30 comprises a welt engaging surface 34, a welt guiding fin 36 along the upper welt engaging edge of the abutment overhanging the welt engaging surface, and a finger 38. The welt guiding fin 36 rides on top of the welt, to cause the abutment to lift and to prevent the welt from escaping and being pinched in the space between the top of the edge gage and the top surface of the shield. The pivotal mounting for the abutment 30 permits sufficient rotation or lifting movement of the abutment to accommodate various thicknesses of welt passing under the fin 36. To permit movement of the abutment 30 with the fin 36 about the pivot 32 only that portion of the abutment comprising the finger 38 extends into the space in the guide, the thickness of the finger being less than that of the space in the guide and less than that portion of the abutment outside the guide which carries the fin 36, thus making it readily conformable to the curved surfaces in the shield and enabling limited freedom for movement between the doubled over portions of the guide strip.

To secure the edge gage in adjusted position a clamp plate 40 grips it against a transverse surface on an I-shaped channel welt guide base block 42 by the action of a removable screw 44. To adjust the edge gage 22 to a new width of welt, the screw 44 is loosened and the shank 28 is shifted to that new position that will enable the abutment 30 to keep the inner edge 46 of the welt snug against the base 26 of the welt guide 20.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A welt guide for an inseam sewing machine provided with an I-shaped channel mounting block, said guide being in the form of a doubled over strip of sheet material, both double over portions being bent in the same direction between their ends into parallel relationship with each other and secured in opposite channels of the I-shaped block and a clamp outside the space between the doubled over portions of the strip and formed in part by a gripping surface on the block extending transversely to the doubled over portions of the strip and in part by a clamp plate acting against the gripping surface of the block, in combination with an edge gage comprising a straight shank secured in the clamp for adjustment toward and from the base of the doubled over strip portions, an abutment having a welt guiding fin along its upper welt engaging edge, and a pivot mounting for the abutment on the shank to enable the abutment to hinge on its pivot mounting when the fin is lifted by a welt passing through the space between the doubled over strip portions.

2. A welt guide for an inseam sewing machine provided with an I-shaped channel mounting block, said guide being in the form of a doubled over strip of sheet material, both doubled over portions being bent in the same direction between their ends into parallel relationship with each other and secured in opposite channels of the I-shaped block and a clamp outside the space between the doubled over portions of the strip and formed in part by a gripping surface on the block extending transversely to the doubled over portions of the strip and in part by a clamp plate acting against the gripping surface of the block, in combination with an edge gage comprising a straight shank secured in the clamp for adjustment toward and from the base of the doubled over strip portions, an

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abutment having a welt guiding fin along its upper welt engaging edge, a pivot mounting for the abutment on the shank to enable the abutment to hinge on its pivot mounting when the fin is lifted by a welt passing through the space between the doubled over strip portions, and a finger extending from the abutment into the space between the doubled over strip portions to limit the lifting movements of the abutment.

3. A welt guide for an inseam sewing machine provided with an I-shaped channel mounting block, said guide being in the form of a doubled over strip of sheet material, both doubled over portions being bent in the same direction between their ends into parallel relationship with each other and secured in opposite channels of the I-shaped block and a clamp outside the space between the doubled over portions of the strip and formed in part by a gripping surface on the block extending transversely to the doubled over portions of the strip and in part by a clamp plate acting against the gripping surface of the block, in combination with an edge gage comprising a straight shank secured in the clamp for adjustment toward and from the base of the doubled over portions, an abutment having a welt guiding fin along its upper welt engaging edge, a pivot mounting for the abutment on the shank to enable the abutment to hinge on its pivot mounting when the fin is lifted by a welt passing through the space between the doubled over strip portions, and a finger extending from the abutment into the space between the doubled over strip portions to limit the lifting movements of the abutment, the fin on the plate having outside the space between the doubled over strip portions a thicker area on the abutment than the finger to prevent jamming of the welt between the abutment and the inner surfaces of the doubled over strip portions forming the welt guide.

4. An inseam sewing machine welt guide comprising generally parallel spaced upper and lower guide walls connected at one end and having a bent portion between said one end and the other end, an edge gage, co-operating with said guide walls to guide a welt therebetween, said edge gage comprising an abutment having a welt engaging edge face, a guiding fin projecting from the upper portion of said edge face, a shank on which the abutment is carried, means mounting said shank adjacent to said guide walls for lengthwise adjustment to move the abutment toward and away from said one end to vary the effective width of the guide, and means pivoting the abutment to said shank for free up and down movement relative to said guide walls.

5. An inseam sewing machine welt guide comprising generally parallel spaced upper and lower guide walls connected at one end and having a bent portion between said one end and the other end, an edge gage co-operating with said guide walls to guide a welt therebetween, said edge gage comprising an abutment having a welt engaging edge face, a guiding fin projecting from the upper portion of said edge face, a shank on which the abutment is carried, means mounting said shank adjacent to said guide walls for lengthwise adjustment to move the abutment toward and away from said one end to vary the effective width of the guide, means pivoting the abutment to said shank for free up and down movement relative to said guide walls, and means co-operating with said walls to limit the up and down movements of the abutment.

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