Aug. 25, 1959 O. B. REID 2,900,936

FITTINGS FOR SEWING MACHINES

Filed Dec. 5, 1955 3 Sheets-Sheet 1

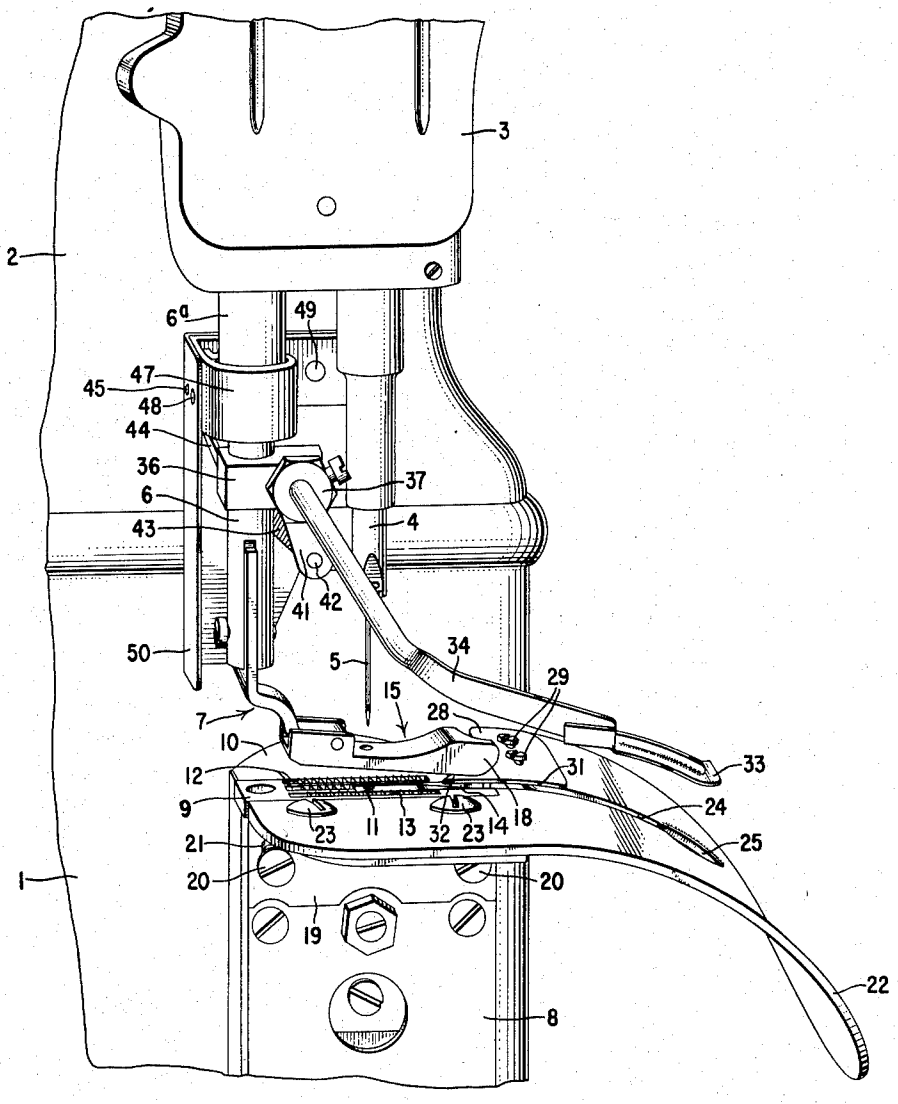


Fig. 1

WITNESS

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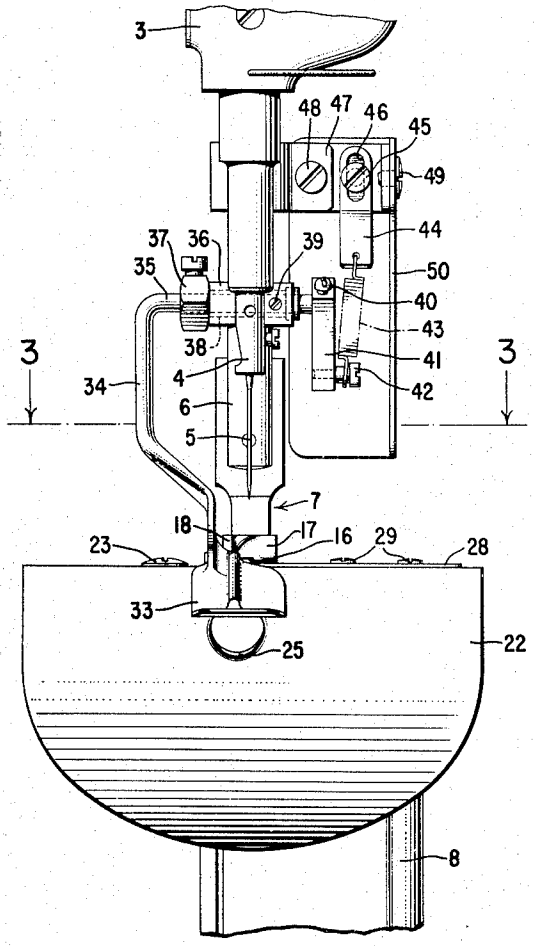


Fig.2

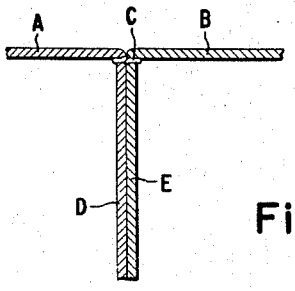


Fig.6

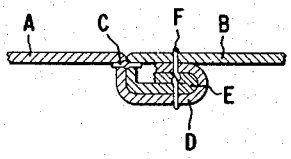


Fig. 7

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FITTINGS FOR SEWING MACHINES

Filed Dec. 5, 1955 3 Sheets-Sheet 3

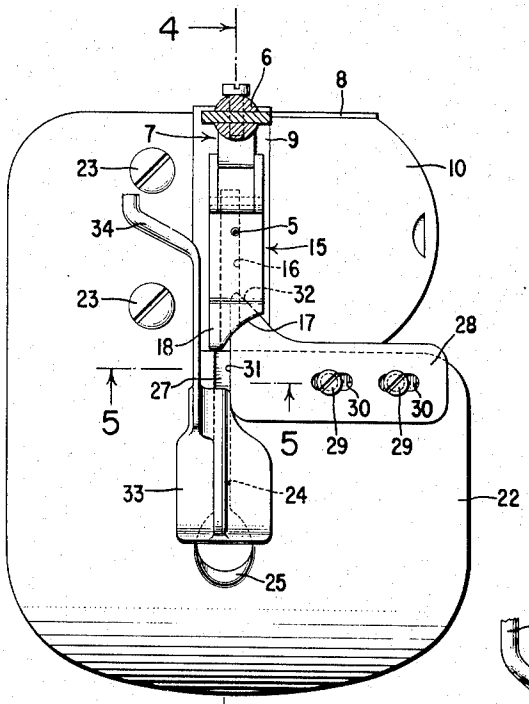


Fig. 3

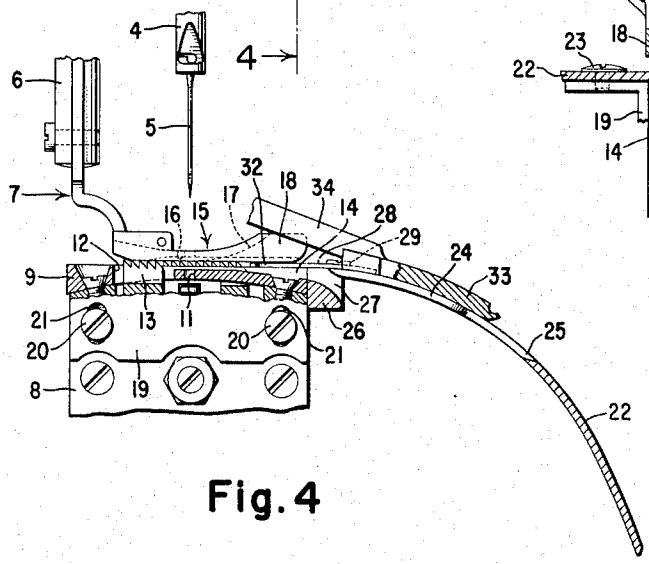


Fig. 4

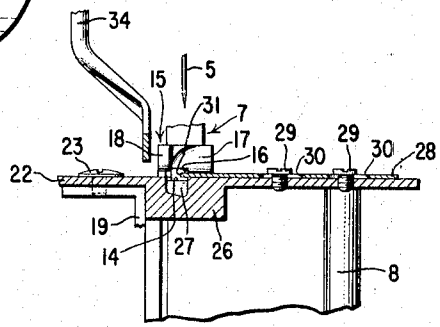


Fig. 5

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FITTINGS FOR SEWING MACHINES

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Application December 5, 1955, Serial No. 550,953

3 Claims. (Cl. 112—147)

The present invention relates to fittings for sewing machines and more particularly to fittings for performing the final stitching operation in the formation of a so-called single-needle seam used in the manufacture of men's shirts and the like.

In a "single-needle" seam of the type in question there are two lines of stitching made in successive sewing operations on machines having a single needle. In the first stitching operation, the two superimposed pieces of work are stitched together by a seam spaced from the aligned edges. The work pieces are then separated into a coplanar condition and the edge portions of the work pieces beyond the first line of stitching are folded toward one of the work pieces and the free edges thereof are infolded. In the second or final stitching operation, the infolded edge-portions are stitched to one of the work pieces by a line of stitching parallel to the first line of stitching and passing through the infolded edge portions and the work piece. Heretofore, this second stitching operation has been performed with the edge portions of the work pieces extending upwardly, and it was folded by the operator as the work was fed to the sewing machine. Being manual, this operation was slow and expensive and the quality of the resultant work depended upon the skill of the operator and, even with a highly skilled operator, was not uniform.

The object of the present invention is to provide a set of fittings for use in performing the final stitching operation in the formation of a single-needle seam, thus not only speeding up this sewing operation, but also improving the quality of the resultant seam and reducing the skill required of the operator.

In accordance with this invention the final stitching operation in a single-needle seam is performed in a novel manner by a set of fittings that guide the work to the stitching mechanism of the sewing machine.

Having in mind the above and other objects that will be evident from an understanding of this disclosure, the invention comprises the devices, combinations and arrangements of parts as illustrated in the presently preferred embodiment of the invention which is hereinafter set forth in such detail as to enable those skilled in the art readily to understand the function, operation, construction and advantages of it when read in conjunction with the accompanying drawings in which:

Fig. 1 is a fragmentary perspective view of a sewing machine on which the fittings in accordance with this invention have been mounted.

Fig. 2 is an end elevational view of the fittings illustrated in Fig. 1 and the adjacent portions of the sewing machine.

Fig. 3 is a perspective view taken substantially on the line 3—3 of Fig. 2.

Figs. 4 and 5 are sectional views taken substantially on the lines 4—4 and 5—5, respectively, of Fig. 3.

Figs. 6 and 7 are detail sectional views of the opening and folding of the work performed by the present

fittings, illustrating the seam before and after the final stitching operation.

The seam, in the production of which the present fittings are designed to be used, is illustrated in Figs. 6 and 7. The work consists of two plies of material or work pieces A and B which are initially superimposed with the marginal edges aligned. The first line of stitching C is then sewed along a line parallel to and spaced from the aligned edges. The work pieces A and B are thereafter opened or separated against the line of stitching C into a coplanar position, as illustrated in Fig. 6, with the marginal edge portions D and E of the work pieces arranged normal to the plane of the work pieces. The free edges of the edge portions D and E are then infolded against the face of the work piece B, as illustrated in Fig. 7, and secured to the work piece B by a second line of stitching F that passes through the work piece and the infolded edge portions D and E. The finished side of the work is the top as seen in Fig. 7.

The fittings constructed in accordance with the present invention are illustrated in the drawings as used on a post-type sewing machine having a pedestal **1** that supports a standard **2**, the standard **2** in turn supports the bracket arm (not shown) which carries the head **3**. A needle bar **4** carrying a needle **5** is mounted in the head for endwise reciprocation. A presser bar **6** carrying a presser foot **7** is mounted in a bushing **6a** in the head **3** for endwise reciprocation and in the usual manner is spring biased downwardly. A work supporting post **8** rises from the bed (not shown) of the machine parallel to the standard **2**. At its upper or free end, the post **8** has a throat plate **9** and a slide plate **10**. The slide plate **10** is adapted to be moved to the right in Fig. 3 to expose the hook mechanism (not shown) for the purpose of replenishing the bobbin. The throat plate **9** is provided with a needle aperture **11** through which the needle **5** passes to cooperate with the hook mechanism in the formation of stitches. The throat plate **9** also is provided with feed-dog slots **12** through which the feed-dogs **13** operate to advance the work past the stitching mechanism. A rectangular groove **14** (Figs. 4 and 5) is formed centrally in the upper face of the throat plate **9** from the forward edge rearwardly past the needle aperture **11** and to the feed-dog slot **12** that is arranged directly behind the aperture **11**. The groove **14** has a decreasing depth as it progresses rearwardly from the forward edge, thus defining a smooth intake for the groove.

The presser foot **7** has a sole plate **15** that in the usual fashion is designed to hold the work down against the throat plate **9** and feed-dogs **13**. The under side of the sole plate **15** has a groove **16** therein that is arranged opposite to the groove **14** in the throat plate, as seen in Figs. 2 and 5. The groove **16** at its forward edge flares outwardly toward the right and upwardly to define a receiving throat **17** and an edge guide **18**.

A bracket **19** is secured to the post **8** for vertical adjustment by screws **20** passing through slots **21** in the vertical leg of the bracket. A work-supporting member comprising an apron **22** is secured to the horizontal leg of the bracket **19** by screws **23**. The upper surface of the apron **22** is substantially in the plane of the throat plate **9**, and it is curved downwardly toward its free front edge. Formed in the apron **22** is a slot **24** that leads toward the grooves **14** and **16** and has an enlarged edge **25** at its front end to facilitate insertion of the work. As best seen in Figs. 4 and 5, on the under side of the apron **22** at the rear or discharge end of the slot **24** is a depending boss **26** having a thread guiding and folding groove **27** in the upper surface that is aligned with the slot **24**. The groove **27** is flared outwardly to define a receiving throat which converges toward the

rear of the groove and the bottom of the groove is angled as seen in Fig. 5.

A plate **28** is secured to the apron **22** by screws **29** that pass through slots **30** in the plate **28** to provide for lateral adjustment of the same. The plate **28** has a guide edge **31** that is arranged parallel to the edges of the grooves **14**, **16** and **27** and the slot **24**, and it is disposed substantially in the center of the space defined by the grooves **14** and **16**. The plate **28** has a finger **32**, Fig. 3, that serves to extend the guide edge **31**, the finger **32** extending under the forward edge of the presser foot sole plate **15** into the space defined by the grooves **14** and **16**, the throat **17** providing clearance for the finger **32**.

An auxiliary presser mechanism is provided to hold the work as it enters the slot **24**. This mechanism consists of a presser foot **33**, the sole plate of which conforms to the curvature of the apron **22**. The presser foot **33** is carried by a presser lever **34** having a laterally bent arm **35** that is journaled on a horizontal axis in a block **36** secured on the presser bar **6**. Lateral sliding motion of the arm **35** in the block **36** is prevented by a collar **37** which is on the end of a sleeve **38** journaled in the block **36** for rotation but held against axial sliding by a set screw **39**. Secured by a screw **40** upon the end of the arm **35** is a crank **41** which at its end carries a stud screw **42** to which is secured one end of a coil tension spring **43**. The other end of the spring **43** is connected to a bar **44** adjustably secured to a bracket **47** by a screw **45** passing through a slot **46** in the bar. The bracket **47** encircles the stationary bushing **6a** for the presser bar and is clamped thereto by a screw **48**. Secured to the bracket **47** by screws **49** is a guard plate **50** which is arranged on two sides of the operating mechanism for the auxiliary presser mechanism.

In operation, when the presser bar **6** is down and the presser foot **7** is in operative relation with the throat plate **9** and feed-dogs **13**, the auxiliary presser foot **33** is biased into engagement with the apron **22** by the spring **43** which is exerting a force through the crank **41** tending to rotate the arm **35** of the presser lever **34**. When the presser foot **7** is raised in the usual manner by the presser lifter mechanism (not shown), the block **36** is carried upwardly by the presser bar **6**. The spring **43** is first collapsed and thereafter serves as a connecting link between the bar **44** and the end of the crank **41** so that further raising of the presser bar **6** rotates the crank **41** and thereby rotates the presser lever **34** to raise the auxiliary presser foot **33**, as illustrated in Fig. 1.

In the use of the present fittings, the work is arranged as illustrated in Fig. 6 and inserted into the machine with the edge portions D and E extending downwardly through the slot **24** and the work pieces A and B lying flat on the apron **22**, the eye **25** facilitating insertion of the edge portions D and E into the slot **24**. As the work is advanced the edge portions D and E first enter the throat of the groove **27** in the boss **26** which starts to fold them upwardly toward the work piece B. At the same time, the free edges of the edge portions D and E are rolled inwardly or infolded by the groove **27** to conceal the raw edges.

The folded edge portions D and E are below the plate **28** with the edge of the plate disposed between them and the work piece B. Thus, the guide edge of the plate **28** is adapted to be engaged against the fold line along the line of stitching C to guide the work.

When leaving the groove **27**, the edge portions D and E are folded into substantially the position illustrated in Fig. 7. Upon leaving the groove **27**, the folded edge portions D and E enter the groove **14** in the throat plate **9**. The folded edge portions D and E are compressed against the under side of the portion of the plate **28** over the groove **14** by the decreasing depth of the groove **14** and finally enter into the space between the groove **14** in the throat plate and the groove **16** in the sole plate **15** of the presser foot **7** and is fed past the stitching mechanism. By virtue of the finger **32**, the portion of the plate **28** over the groove **14** controls the work until it passes under the presser foot **7**.

A further advantage derived by the use of the present fittings is that, since the work is stitched with the folded ends D and E on the underside, the feed-dogs **13** act on the under side rather than the finished side of the work. In the manual methods heretofore used, the folded ends must be up so that the feed-dogs of the machine operate on the finished side of the work and leave unsightly marks that will appear in the completed garment. In addition, when the work is sewed in accordance with present methods, the bobbin thread rather than the needle thread appears on the finished side of the work, whereas in accordance with the method of the present invention, the needle thread appears on the finished side of the work.

The presently disclosed fittings may be conveniently used with existing post-type sewing machines since it is necessary only to provide tapped openings for receiving the screws **20** which secure the supporting bracket **19** to the post **8**, and with slight modifications, may be adapted to be conveniently used with other types of machines.

Numerous alterations of the structure herein disclosed will suggest themselves to those skilled in the art. However, it is to be understood that the present disclosure relates to a preferred embodiment of my invention which is for purposes of illustration only and not to be construed as a limitation of the invention. All such modifications which do not depart from the spirit of the invention are intended to be included within the scope of the appended claims.

Having thus set forth the nature of the invention, what I claim herein is:

1. In a sewing machine having a work support including a throat plate and an apron having a work supporting surface in the plane of said throat plate, stitching mechanism defining a point of stitch formation on said throat plate, feeding mechanism having a work engaging element operating through said throat plate to advance work past said stitching mechanism, presser mechanism including a presser foot engaging said throat plate and the work engaging element of said feeding mechanism, said apron having a slot directed toward said point of stitch formation and open at the end adjacent the point of stitch formation, said slot being adapted to receive a side portion of a work piece disposed upon said apron, folding guide means comprising an element arranged astride of the slot on the side of said apron opposite to said work supporting surface and having a work folding groove for folding the side portion of a work piece disposed in said slot into a position parallel to said work support and for infolding the free edge of the side portion, a plate secured to the work supporting surface of said apron and having a guide edge overhanging said slot, and means for guiding the work piece from said groove to the point of stitch formation.

2. In a sewing machine having a work support including a throat plate and an apron having a work supporting surface in the plane of said throat plate, stitching mechanism defining a point of stitch formation on said throat plate, presser mechanism in engagement with said throat plate about said point of stitch formation, said apron having a slot directed toward said point of stitch formation and open at the end adjacent said point of stitch formation, said slot being designed to receive a side portion of a work piece disposed upon said apron, folding guide means comprising an element arranged astride of the slot on the side of said apron opposite to said work supporting surface and having a work folding groove for folding the side portion of a work piece disposed in said slot into a position parallel to said work support and for infolding the free edge of the side portion, means for guiding the work piece from said folding guide means to the point of stitch formation, and an auxiliary presser mechanism having a spring-biased

presser foot arranged to engage resiliently the work supporting surface of said apron over said slot for holding the work on said apron with the side portion in said slot.

3. In a sewing machine having a frame including a head and a bed with a work supporting surface, cooperating stitching instrumentalities carried by said head and bed and defining a point of stitch formation on said work supporting surface, presser mechanism including a bushing mounted in said head and a presser bar mounted in said bushing and carrying a presser foot engaging said work support about the point of stitch formation, said work supporting surface having a slot directed toward said point of stitch formation and open at the end adjacent said point of stitch formation, said slot being designed to receive a side portion of a work piece disposed upon said work supporting surface, folding guide means comprising an element arranged astride of the slot on the side of said apron opposite to said work supporting surface and having a work folding groove for folding the side portion of a work piece disposed in said slot into a position parallel to said work supporting surface and for infolding the free edge of the side portion, means for guiding the work piece from said folding guide means

to the point of stitch formation, and an auxiliary presser mechanism comprising a block secured to said presser-bar, a presser lever carried by said block for rotation relative thereto, an auxiliary presser foot carried by said lever and designed to engage said work supporting surface over said slot for holding the work on said work supporting surface with the side portion in said slot, a bracket carried by said bushing, and means including a spring for operatively connecting said presser lever to said bracket for biasing said lever with the auxiliary presser foot urged toward said work supporting surface and for lifting said auxiliary presser foot from the work supporting surface when said presser foot is lifted.

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