Aug. 10, 1948. R. J. SAILER 2,446,852

PRESSER FEET FOR SEWING MACHINES

Filed July 19, 1946 2 Sheets-Sheet 1

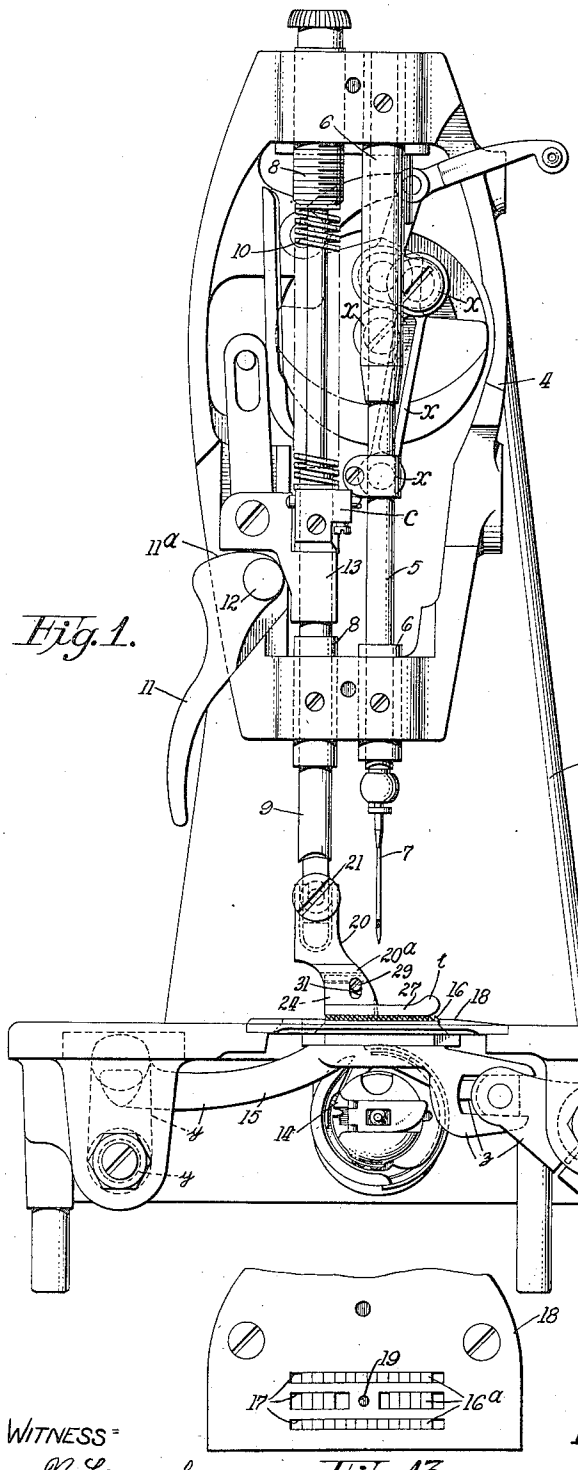


Fig. 1.

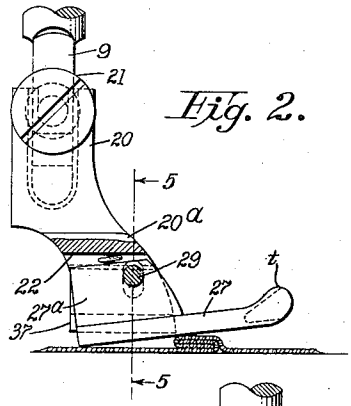


Fig. 2.

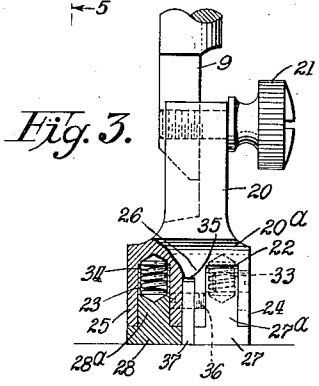


Fig. 3.

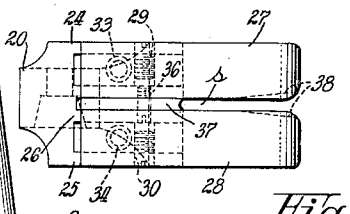


Fig. 4.

Fig. 13.

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PRESSER FEET FOR SEWING MACHINES

Filed July 19, 1946 2 Sheets-Sheet 2

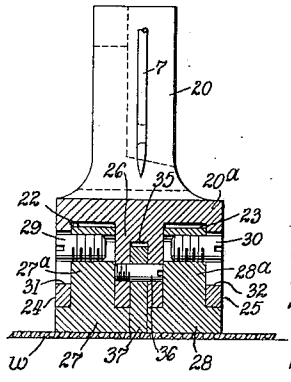


Fig. 5.

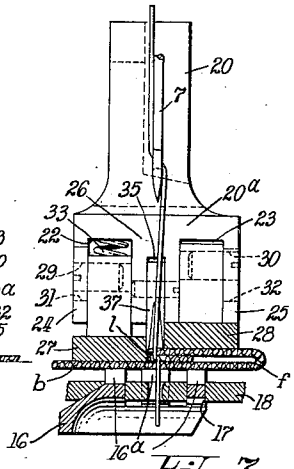


Fig. 7.

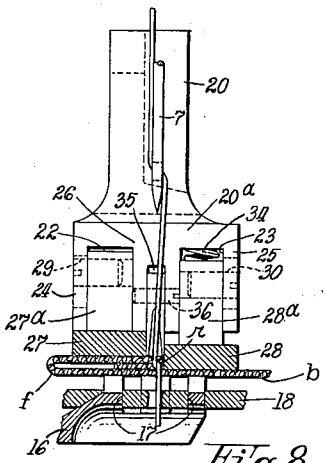


Fig. 8.

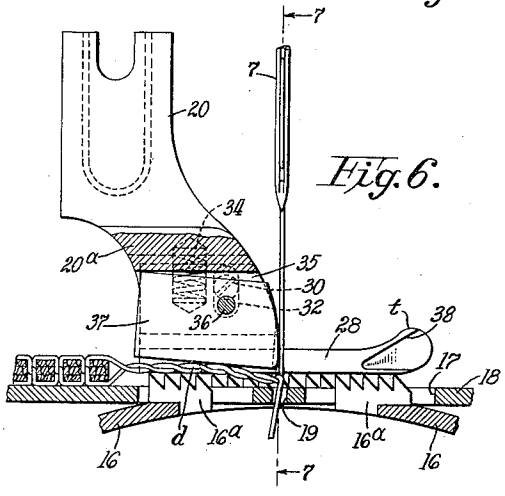


Fig. 6.

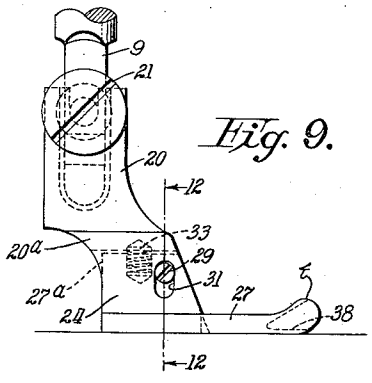


Fig. 9.

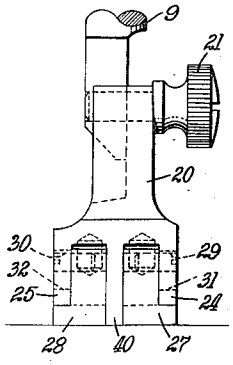


Fig. 10

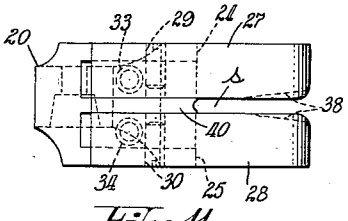


Fig. 11

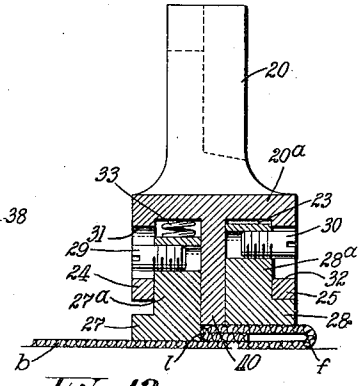


Fig. 12.

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UNITED STATES PATENT OFFICE

2,446,852

PRESSER FOOT FOR SEWING MACHINES

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Application July 19, 1946, Serial No. 684,852

10 Claims. (Cl. 112—235)

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This invention relates to presser-feet for sewing machines and it has as an object to provide an improved presser-foot which is equally well adapted for use on work which is of uniform thickness and on work of uneven thickness at the opposite sides of the line of seam formation, as for example, when sewing lengthwise through a hem-fold and adjacent the edge thereof.

Another object of the invention is to provide an improved presser-foot which affords, at opposite sides of the line of seam formation and adjacent thereto, right and left edge guides for the work. A construction of this nature is particularly useful when sewing alternately through opposite edges of hem-folds.

Another object of the invention is to provide an improved presser-foot which will have a work-engaging portion thereof overlying the line of seam formation and bearing thereupon, whether the work is of uniform thickness or whether it has a thickened portion located mainly to one side or the other of the line of seam formation, and which work-engaging portion, in the absence of work, will hold the thread chain in position for engagement by a portion of the feed-dog to effect a "chaining off" operation.

A further object of the invention is to provide a presser-foot having a shank and a plurality of spaced sole-plates which are independently pivoted and mounted for bodily vertical movement on said shank and which affords between said sole-plates a presser-member adapted to engage the work in the line of seam formation; the work-engaging face of said presser-member being so arranged as to be substantially in the plane of the work-engaging face of said sole-plates when they are at their upper limit of vertical movement.

With the above and other objects in view, as will hereinafter appear, the invention comprises the construction, combinations, and arrangements of parts hereinafter set forth and illustrated in the accompanying drawings of a preferred form and a modified form of the invention, from which the several features of the invention and the advantages attained thereby will be readily understood by those skilled in the art.

In the drawings,

Fig. 1 is a left end elevation of a sewing machine embodying the present invention.

Fig. 2 is an enlarged side elevation, partly in section, of a preferred form of the improved presser-foot showing the position to which the sole-plates are moved by the passage of a cross seam.

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Fig. 3 is a rear elevation, partly in section, of the preferred form of presser-foot.

Fig. 4 is a bottom view thereof.

Fig. 5 is an enlarged transverse vertical section on the line 5—5 of Fig. 2.

Fig. 6 is a side elevation, partly in section, of the preferred form of presser-foot in conjunction with a portion of the sewing machine on which it is used, and showing a portion of the presser-foot holding a thread chain in engagement with a portion of the feed-dog to effect a "chaining-off" operation.

Fig. 7 is a transverse vertical sectional view on the line 7—7 of Fig. 6 showing the left sole-plate depressed and serving as an edge guide for a thickened portion of the work and the right sole-plate elevated and bearing upon said thickened portion.

Fig. 8 is a view similar to Fig. 7 but showing the reverse condition i. e., with the right sole-plate serving as an edge-guide and the left sole-plate bearing upon the thickened portion of the work.

Fig. 9 is a left side elevation of a modified form of presser-foot embodying the present invention.

Fig. 10 is a rear view of the presser-foot shown in Fig. 9.

Fig. 11 is a bottom view thereof.

Fig. 12 is an enlarged transverse vertical section on the line 12—12 of Fig. 9.

Fig. 13 is a plan view of a portion of a throat-plate and feed-dog with which the two forms of presser-feet shown in the drawings are adapted to be used.

Referring more specifically to the drawings, and first to Fig. 1 thereof, one of the improved presser-feet is shown as applied to a sewing machine comprising a bed 1, a cloth-plate 2, a standard 3 and a bracket-arm head 4. A needle-bar 5 is mounted for reciprocation in bearing bushings 6 in the head 4 and carries, at its lower end, an eye-pointed needle 7 which constitutes one element of a stitch-forming mechanism. The needle-bar 5 is reciprocated in the bushings 6, from a rotary arm-shaft by conventional mechanism designated generally as x. Also reciprocably mounted in bushings 8 in the head 4, is a presser-bar 9 which is normally pressed downwardly by a coil spring 10 interposed between the upper bushing 8 and a collar c secured upon the presser-bar. A hand lever 11, journaled on a stud 12 in the head 4, has a cam portion 11a adapted to engage a portion of a slide-block 13 on the needle-bar beneath the collar c, and

serves as means to lift the presser-bar in opposition to the spring **10**.

Beneath the cloth-plate **2**, the machine is provided with a rotary loop-taker **14** which cooperates with the needle **7** in the formation of stitches.

Work is fed through the machine by a four-motioned work-feeding mechanism comprising a feed-bar **15** carrying a feed-dog **16**, the serrated portions **16a** of which operate through slots **17** in a throat-plate **18** carried by the cloth-plate. The throat-plate is also provided with a needle-hole **19** through which the needle is reciprocated for cooperation with the loop-taker.

The feed-bar and the feed-dog carried thereby are given feed and return movements and up and down movements by conventional mechanism designated generally as *y* and *z*, respectively.

The preferred form of presser-foot, disclosed in detail in Figs. 2 to 8, inclusive, comprises a slotted shank **20** adapted to be secured upon the lower end of the presser-bar **9** by a clamp screw **21**. The shank has a widened lower portion **20a** slotted at **22** and **23** to provide two laterally spaced depending side flanges **24** and **25**, and a depending intermediate flange **26**. Located beneath the portion **20a** of the shank **20** are two work-engaging sole-plates **27** and **28** having upstanding lugs **27a** and **28a**, respectively, mounted for vertically sliding movement between the side-walls of the slots **22** and **23**. The lugs **27a** and **28a** carry screw studs **29**, **30**, the outer free ends of which are slidingly and pivotally mounted in vertical slots **31**, **32**, respectively, in the side flanges **24** and **25** of the shank member. Coil springs **33** and **34** interposed, respectively, between the lugs **27a** and **28a** and the upper walls of the slots **22** and **23**, rearwardly of the pivot studs **29** and **30**, normally tend to depress the heel portions of the sole-plates and to elevate the toe portions *t* thereof.

From the foregoing it will be understood that the sole-plates **27** and **28** are mounted for pivotal and limited bodily movements vertically independently of each other. Downward movements of the sole-plates are limited by contact of the studs **29** and **30** with the walls at the lower ends of the slots **31**, **32**, while upward movement thereof is limited by engagement of the upper surfaces of the sole-plates with the lower edges of the flanges **24** and **25**.

The depending intermediate flange **26** of the shank portion **20***a* is provided with a vertically disposed longitudinal slot **35** arranged parallel with the slots **22**, **23**. Pivotally supported in the slot **35**, as by a screw **36** threaded into one wall of the flange **26**, is a relatively narrow presser member **37** which is arranged in the line of seam formation and which extends from immediately behind the needle **7** to the rear ends of the sole-plates **27**, **28**. Forwardly of the member **37** the sole-plates are spaced apart, as at *s*, to provide a slot for the needle and a clearance aperture for the work. The inner faces of the toe portions of the sole-plates are grooved at **38** to facilitate guiding of the edge of the work and directing it downwardly and beneath the presser member **37**.

As shown by Fig. 5, when the improved presser-foot is operating upon work *w* of uniform thickness both of the sole-plates **27** and **28** and the intermediate presser-member **37** bear evenly upon the upper surface of the work. When, however, as shown in Figs. 7 and 8, the presser-foot is used in connection with the sewing of work which is of uneven thickness at the opposite sides

of the line of seam formation, as when sewing on the left and right sides of a hem fold, one sole-plate bears upon the body portion *b* of the work and affords an edge-guide for one side of the hem while the other sole-plate bears upon the upper face of the hem fold. In Fig. 7 the presser-foot is shown as used in connection with the sewing of the left side *l* of a hem fold *f*. It will be noted that the sole-plate **27** bears upon the body portion *b* of the work and the right side thereof affords a guide for the left edge of the hem fold. The sole-plate **28** is shifted bodily upwardly, in opposition to the spring **34**, and bears upon the upper surface of the hem fold under the pressure of the spring **10**.

In Fig. 8 the improved presser-foot is shown as used in connection with the sewing of the right side *r* of the hem fold *f*. In this use the sole-plate **28** bears upon the body portion *b* of the work and affords a guide for the right edge of the hem fold while the sole-plate **27** bears upon the upper surface of the hem fold.

It will be noted that in all three illustrated uses of the presser-foot, the presser-member **37** bears upon the work in the line of seam formation and that the lower or work-engaging surface of that member is substantially flush with the work-engaging faces of the sole-plates when those plates are at their limits of upward movement. Inasmuch as the presser-member **37** is pivoted on the screw **36**, it is free to be tipped either upwardly or downwardly by pressure of the work thereon. In Fig. 6 it is shown as having its forward end tipped downwardly and holding the thread-chain *d* in engagement with a portion of the feed-dog to effect a "chaining-off" operation. The member **37** may also be tipped upwardly at its forward end as, for example, to facilitate the riding over seams and the like.

The modified form of the invention, disclosed in Figs. 9 to 12 inclusive, is generally similar to that hereinbefore described and insofar as the parts thereof are the same, the same reference characters have been applied thereto. In the modified form, however, the intermediate presser-member, which is located in the line of seam formation, consists of a flange **40** integral with the enlarged lower portion **20***a* of the shank **20**. Except for the fact that the presser-member **40** does not have any pivotal movement, it functions, in all respects, as does the presser-member **37** above described.

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

1. A sewing machine presser-foot having a shank, laterally spaced work-engaging sole-plates supported by said shank for pivotal and bodily yielding movements of the sole-plates relatively to each other, said sole-plates having substantially parallel proximate side edges, a presser-member depending from said shank and having its lower face disposed between said sole-plates and substantially in the plane containing the work-engaging faces of said sole-plates at the upper limits of bodily movement thereof, said presser-member having its forward end disposed a substantial distance rearwardly of the forward ends of said sole-plates.

2. A sewing machine presser-foot having a shank, laterally spaced work-engaging sole-plates supported by said shank for pivotal and bodily yielding movements of the sole-plates relatively to each other, said sole-plates having substantially parallel proximate side edges, a relatively narrow presser-member pivotally sup-

ported by said shank and disposed between said sole-plates with the lower face of the presser-member in one position thereof substantially flush with the work-engaging faces of said sole-plates at the upper limits of bodily movement of the sole-plates, said presser-member having its forward end disposed a substantial distance rearwardly of the forward ends of said sole-plates.

3. A sewing machine presser-foot having a shank provided with laterally spaced depending side-flanges, laterally spaced sole-plates having their proximate side edges formed to provide substantially parallel and opposed work-guides, said sole-plates being supported by said side-flanges for relative pivotal and limited bodily yielding vertical movements of the sole-plates, a relatively narrow presser-member depending from said shank intermediate said sole-plates and having its lower face disposed substantially in the plane containing the lower faces of said sole-plates at the limits of upward movement of the sole-plates, said presser-member having its forward end disposed a substantial distance rearwardly of the forward ends of said sole-plates, thereby providing a work-clearance space of substantial length between the forward portions of said sole-plates.

4. A sewing machine presser-foot having a shank provided with laterally spaced depending side-flanges, work-engaging sole-plates disposed in adjacent relation to each other and having their proximate side edges separated in substantially parallel relation to provide an open space therebetween, said sole-plates having upstanding lugs supported by said side-flanges for pivotal and limited bodily yielding movements of said sole-plates relatively to each other, and a lug-separating presser-member depending from said shank and having its lower face disposed substantially in the plane containing the work-engaging faces of said sole-plates at the upper limits of bodily movement thereof, said presser-member having its forward end disposed a substantial distance rearwardly of the forward ends of said sole-plates.

5. A sewing machine presser-foot having a shank provided with laterally spaced depending side-flanges and a depending intermediate-flange, work-engaging sole-plates disposed in adjacent relation to each other and having spaced substantially parallel proximate side edges, said sole-plates having upstanding lugs separated by said intermediate-flange and slidingly confined by said side-flanges, means supporting said lugs upon said shank for pivotal and limited bodily movements of the sole-plates relatively to each other and to said flanges, said intermediate flange having its lower face disposed substantially flush with the work-engaging faces of said sole-plates at the limits of upward movement of the sole-plates, and said intermediate flange having its forward end disposed a substantial distance rearwardly of the forward ends of said sole-plates.

6. In a sewing machine having stitch-forming mechanism including a vertically reciprocatory needle, a presser-foot having a pair of work-engaging sole-plates supported for pivotal and bodily yielding vertical movements relatively to each other, said sole-plates having laterally spaced proximate edges providing therebetween a needle-clearance opening continuing into an unobstructed work-clearance opening forwardly of the path of needle-reciprocation, and a presser-member disposed between said sole-plates

entirely rearwardly of the path of needle-reciprocation and in alinement with the line of seam formation, said presser-member having its bottom face disposed substantially flush with the work-engaging face of either one of said sole-plates in raised positions of the respective sole-plates.

7. A sewing machine presser-foot having a shank provided with laterally spaced depending side-flanges, work-engaging sole-plates disposed in adjacent relation to each other and having their proximate side edges separated in substantially parallel relation to provide an open space therebetween, said sole-plates having upstanding lugs supported by said side flanges for pivotal and limited bodily yielding movements of said sole-plates relatively to each other, a presser-member depending from said shank and having its lower face disposed substantially in the plane containing the work-engaging faces of said sole-plates at the upper limits of bodily movement thereof, said presser-member having its forward end disposed a substantial distance rearwardly of the forward ends of said sole-plates, and a spring interposed between the lug of each of said sole-plates and said shank, said springs normally tending to tip the forward ends of said sole-plates upwardly.

8. A sewing machine presser-foot comprising a shank provided with laterally spaced depending side-flanges, each having a vertically-disposed slot, and a depending intermediate flange, work-engaging sole-plates disposed in adjacent relation to each other and having spaced substantially parallel proximate side edges, said sole-plates having upstanding lugs separated by said intermediate flange and slidingly confined by said side-flanges, pivot-pins carried by said lugs and slidingly fitted within the slots in said side-flanges to support said sole-plates for pivotal and vertically sliding movements, springs interposed between said shank and said lugs rearwardly of said pivot pins and normally tending to tip the forward ends of said sole-plates upwardly, said intermediate flange having its lower face disposed substantially flush with the work-engaging faces of said sole-plates at the limits of upward movement of the sole-plates.

9. A presser-foot for a single-needle sewing machine, comprising, a shank provided with laterally spaced depending side flanges and a depending and slotted intermediate flange, work-engaging sole-plates disposed in adjacent relation to each other and having spaced substantially parallel proximate side edges affording therebetween clearance for a reciprocating needle, each of said sole-plates having an upstanding lug pivotally and slidingly supported directly on one of said side flanges, each of said sole-plates being thereby pivotally and slidingly supported independently of the other sole-plate, individual springs for separately depressing said sole-plates, and a relatively narrow presser-member pivotally supported within the slot in said intermediate flange and disposed between said sole-plates with the lower edge thereof normally substantially flush with the work-engaging faces of said sole-plates at the upper limits of bodily movement of the sole-plates.

10. A presser-foot for a single-needle sewing machine, comprising, a shank provided with laterally spaced relatively narrow depending side flanges and a relatively wide depending intermediate flange provided with a longitudinal slot, work-engaging sole-plates disposed in adjacent relation to each other and having spaced sub-

stantially parallel proximate side edges affording therebetween clearance for a reciprocating needle, each of said sole-plates having an upstanding lug pivotally and slidingly supported directly on one of said side flanges independently of the other sole-plate, and a relatively narrow presser-member fitted within the slot in said intermediate flange and pivotally mounted on said intermediate flange substantially in the vertical plane of the pivots of said sole plates, said presser-member being disposed between said sole-plates in line with the needle and entirely rearwardly thereof with the lower edge of said presser member normally substantially flush with the work-engaging faces of said sole-plates when the sole plates are at their upper limit of bodily movement.

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