

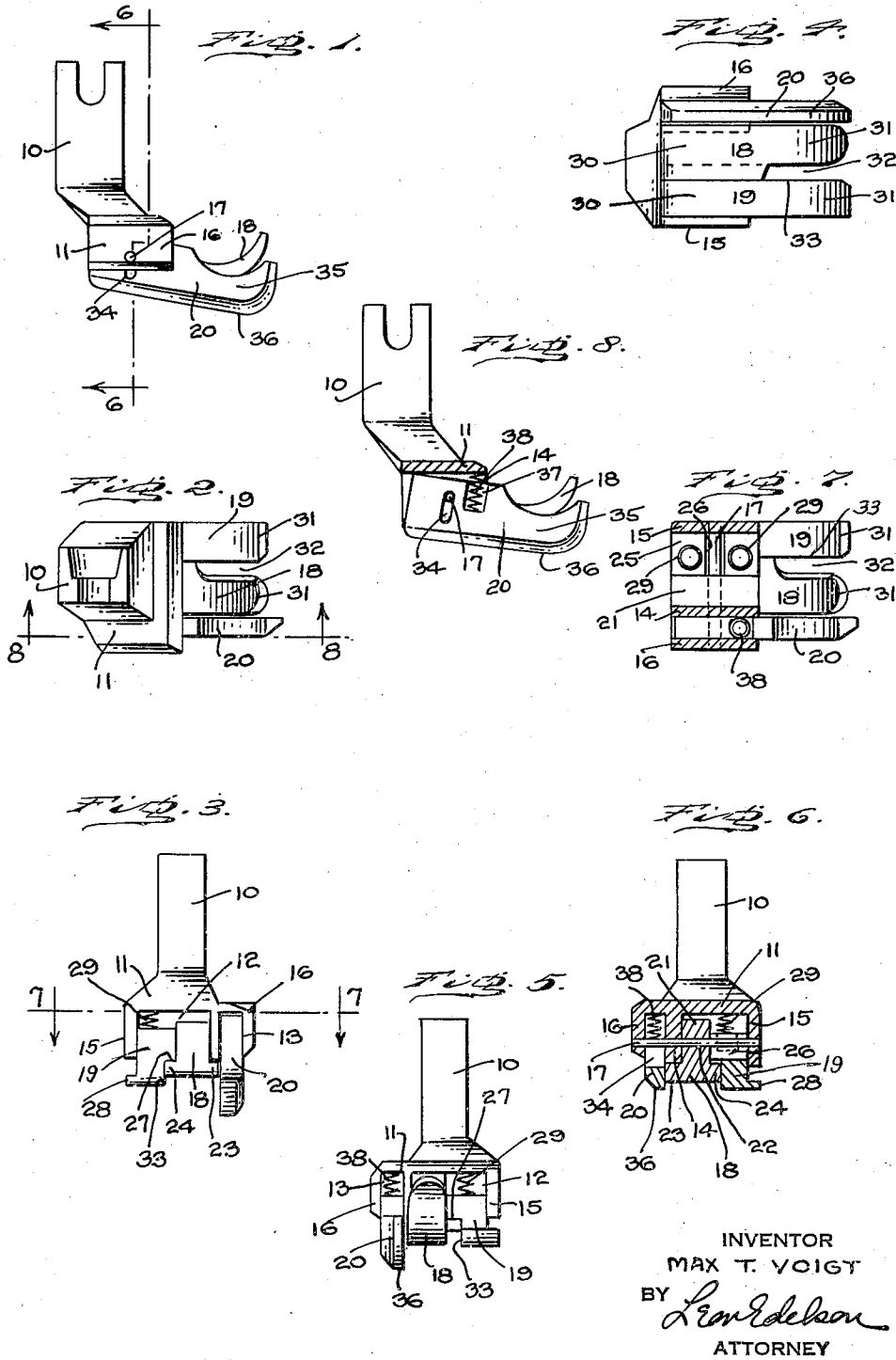
Nov. 8, 1949

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2,487,285

PRESSER FOOT FOR STITCHING MACHINES

Filed Aug. 11, 1948



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2,487,285

PRESSER FOOT FOR STITCHING MACHINES

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Application August 11, 1948, Serial No. 43,707

7 Claims. (Cl. 112—235)

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This invention relates to an improved construction of a compensating presser foot for sewing machines which is especially adapted for use in the sewing of the edge of an overlying strip or panel to a main body of fabric, it being among the principal objects of the present invention to provide the presser foot with an auxiliary spring-pressed lateral guide which serves the function of guiding the work along a preliminarily sewed edge of the overlying strip or panel to insure the provision of a second line of stitching which is spaced inwardly from and is at all times parallel to the initial sewed edge.

Basically the compensating presser foot of the present invention is of the type shown and described in my prior United States Letters Patent No. 2,288,051, granted June 30, 1942, and includes a pair of relatively movable spring-pressed presser shoes operative to facilitate sewing a strip or panel to an underlying body of fabric along a stitching line which is closely adjacent a free edge of the strip or panel. While this patented construction of presser foot is eminently satisfactory to produce a single line of stitches closely paralleling the edge of the overlying strip or panel, where a second and more remote line of reinforcing or decorative stitching is desired, some considerable care must be taken by the operator in feeding the work relatively to the presser foot to insure that the second line of stitching runs parallel to the first line of stitching and so to the edge of the strip which is to be sewn to the underlying or main body fabric. In some instances it becomes necessary to replace the presser foot employed to produce the first line of stitching by another foot designed especially for use in producing the laterally spaced second line of stitching.

By providing the compensating presser foot with an auxiliary lateral guide in accordance with the present invention, both of the aforesaid lines of stitching may be produced with the same presser foot, while the work is more readily and accurately guided along a prescribed line. Consequently, with minimum effort and attention on the part of the operator, through use of the presser foot of the present invention as hereinafter described, an edging or decorative strip or panel may be sewn upon the main body of a fabric by lines of stitching which are both uniformly parallel to the edge of the applied strip, the auxiliary lateral guide of the presser foot being so maintained in contact with the initially stitched edge of the applied strip during the sewing operation as to effectually reduce the possibility of

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the work being displaced from the prescribed inwardly spaced second line of stitching.

Other advantages and objects of the invention will appear more fully hereinafter, it being understood that the present invention consists substantially in the combination, construction, location and relative arrangement of parts, all as described in detail hereinafter, as shown in the accompanying drawings, and as finally pointed out in the appended claims.

In the accompanying drawings, which are illustrative of a preferred embodiment of the present invention, Figure 1 is a side elevational view of a presser foot constructed in accordance with the principles of the present invention;

Figure 2 is a top plan view thereof;

Figure 3 is a rear elevational view thereof;

Figure 4 is a bottom plan view thereof;

Figure 5 is a front elevational view thereof;

Figure 6 is a vertical transverse sectional view as taken on the line 6—6 of Figure 1;

Figure 7 is a horizontal sectional view as taken on the line 7—7 of Figure 3; and

Figure 8 is a sectional view as taken on the line 8—8 of Figure 2.

Referring now more particularly to the drawings, it will be observed that the presser foot as constructed in accordance with the present invention includes a vertically extending shank 10 adapted to interfit with the conventional supporting parts of any one of the various types of sewing machines now commercially available. Formed upon the lower end of the supporting shank 10, preferably as an integral part thereof, is a relatively broad yoke 11 having a pair of downwardly presenting channels 12 and 13 each extending from front to rear of the yoke for the full length thereof. The channel 12 is of considerably greater width than the channel 13 and is separated from the latter by a central web 14 extending in parallel relation to the outer side walls 15 and 16 of the yoke. Thus, the larger channel 12 is embraced by the web 14 and the side wall 15, while the smaller channel 13 is embraced by the web 14 and the side wall 16.

Extending transversely through the outer side walls 15 and 16 and the central web 14 of the yoke is a fixed pivot pin 17 upon which are mounted a pair of presser shoes 18 and 19 and a lateral guide member 20. The presser shoes 18 and 19 are disposed side by side relation within the larger channel 12, while the lateral guide member 20 is disposed within the smaller channel 13. As most clearly appears in Figures 3 and 6, the presser shoe 18 is provided with an upstanding

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body portion 21 having a transverse hole 22 through which projects the pivot pin 17 for supporting said shoe 18 within the channel 12 of the yoke, opposite sides of the shoe 18 being longitudinally shouldered to provide oppositely projecting side flanges 23 and 24, of which the flange 23 underlies the bottom edge of the central web 14 of the yoke.

The presser shoe 19 is also provided with an upstanding body portion 25 which is transversely notched, as at 26, to permit projection there-through of the pivot pin 17. The inner side of the notched portion 25 of the shoe is undercut to provide a lateral projection 27 which overlies and so interengages the side flange 24 of the shoe 18 as to constitute the latter a relatively fixed support for the shoe. The notch 26 of the shoe 19 is of such vertical depth as to permit vertical movement of the shoe 19 relatively to the transverse pivot pin 17 and the interengaging shoe 18. Inasmuch as both of the shoes 18 and 19 are closely related and confined between the side walls of the channel 12 of the presser foot yoke 11, the presser shoe 19 is shiftable in a vertical plane paralleling the side walls of said channel. A laterally extending flange 28 on the outer side of the shoe 19 is engageable with the bottom edge of the outer side wall 15 of the channel 12 to limit upward movement of the shoe 19 within the presser foot yoke, while downward movement of this shoe is limited by interengagement of its lateral projection 27 with the side flange 24 of the relatively fixed shoe 18.

The body portion 25 of the vertically shiftable shoe 19 is recessed in its upper surface at points located forwardly and rearwardly of the pivot pin 17, each such recess accommodating a coiled compression spring 29 the upper end of which abuts against the base wall of inverted channel 12. These coiled springs 29—29 subject the shoe 19 to a normal bias tending to urge it into its extreme downward position, as most clearly shown in Figures 3 and 6.

The presser shoes 18 and 19 are each provided with a flat sole portion 30 and with an upturned toe portion 31 (see Figure 4), the toe portions of these shoes being somewhat spaced apart, as at 32, to provide clearance for the reciprocating needle (not shown) of the sewing machine. The presser shoe 18 is capable of a slight rocking movement about its supporting pivot pin 17, thus enabling its toe portion 31 to rise somewhat as the work to be sewed is fed into the machine beneath the presser foot. The presser shoe 19, by virtue of its mounting within the presser foot yoke, is capable of much greater movement than the shoe 18, the shoe 19 having a capacity for vertical shift upwardly against both of the springs 29—29 as well as a capacity for substantial rocking movement about the pivot pin 17. Thus, depending upon variations in the thicknesses of the overlapped material of the work to be stitched together, the sole portions 30—30 of the shoe 18 and 19 may be relatively vertically offset a distance equal to the thickness of the uppermost layer of the work as it is fed between the presser shoe and the work feeding element (not shown) of the sewing machine.

Inasmuch as the presser shoe 19 is normally biased into a position wherein its bottom surface or sole 30 is offset downwardly with respect to the corresponding surface of the presser foot 18, a freely disposed longitudinally extending edge 33 is provided on the shoe 19 which serves as a side-limiting guide along which the work may be

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shifted during the sewing operation to insure producing an initial line of stitches which closely adjoins and is parallel to the edge of the strip or panel to be sewed to the main body of the work. To produce this initial line of stitching the work would be fed toward the front of the presser foot as viewed in Figure 5 with the edge of the top strip or panel bearing against the guide edge 33 of the shoe 19. The needle would then produce a line of stitches closely adjoining the guided edge of the strip or panel for securement thereof to the underlying main body of the work.

Disposed within the smaller channel 13 is the lateral guide element 20 the channel-embraced portion of which is vertically slotted, as at 34, or transversely bored to permit the transverse projection therethrough of the supporting pivot pin 17. The frontally extending portion 35 of this guide element 20 is disposed in closely adjoining relation to the pressure shoe 18 and is resiliently depressed so that its bottom edge 36 normally lies well below the horizontal planes of the sole portions 30 of the presser shoes 18 and 19. As in the case of the presser shoe 19, the channel-embraced frontal portion of the element 20 is recessed, as at 37, for accommodation of a coiled compression spring 38 which exerts a normal bias on the element in advance of the pivot pin 17 tending to maintain the forwardly extending portion of the guide element depressed as best shown in Figure 1, in which depressed position the inner flat side of the element serves as an auxiliary guide for producing a second line of stitching spaced inwardly from the initially sewed edge of the top strip or panel. To produce this second line of stitching, the initially stitched work is reversed end for end and then again fed through the presser foot, this time with the sewed edge of the top strip bearing against the auxiliary guide 20. Inasmuch as during this second pass of the work under the presser foot, the needle is spaced a greater distance from the guide 20 than from the guide edge of the shoe 19, the second line of stitching is spaced inwardly of the first or initially produced line of stitching, the spacing between the two lines being somewhat less than the width across the toe portion 31 of the shoe 18.

It will be apparent that in operation of the presser foot of the present invention, the spring-pressed auxiliary guide element 20 will serve as a lateral guide against which an edge of the work to be stitched may be held as it is fed through the sewing machine head. Since the guide element 20, like the presser shoe 19, is capable of both a vertical reciprocating movement and a limited rocking movement, its sole or bottom edge is readily adapted to accommodate itself to surface variations in the work. The coil springs operative upon the guide element 20 and upon the presser shoe 19 tend to maintain them in contact with the work throughout their full extents at the same time permitting each of these members to automatically adjust itself into operative surface contact with the work regardless of thickness variations therein. In producing the initial line of stitching, i. e., that one which immediately adjoins the edge of the top strip or panel to be sewed to the main body of the work, the bottom edge 36 of the auxiliary guide element 20 is normally disposed in the plane of the bottom surface or sole 30 of the inner presser shoe 18 and so rides with the latter upon the work as it is fed through the sewing head of the machine. On the other hand, where the auxiliary guide element 20 is employed

to produce the second inwardly spaced line of stitching, the bottom surfaces or soles 30—30 of the presser shoes 18 and 19 assume a co-planar relation and so commonly ride upon the top surface of work as it is fed through the machine.

It will be understood, of course, that the present invention is susceptible of various changes and modifications which may be made from time to time without departing from the real spirit or general principles thereof, and it is accordingly intended to claim the same broadly, as well as specifically, as indicated by the appended claims.

What is claimed as new and useful is:

1. A sewing machine presser foot comprising a shank adapted to interfit with the supporting parts of a sewing machine, a yoke depending from said shank, a pivot pin extending transversely of said yoke, and a pair of relatively movable presser shoes disposed in side by side relation within said yoke, one of said shoes being traversed by said pivot pin for support thereby and both of said shoes having interengaging flanges operative to limit relative displacement of said shoes vertically in one direction.

2. A sewing machine presser foot comprising a shank adapted to interfit with the supporting parts of a sewing machine, a yoke depending from said shank, and a pair of relatively movable presser shoes disposed in side by side relation within said yoke, one of said shoes having a through hole extending transversely there-through and the other of said shoes having a transverse notch of greater depth than the diameter of said through hole, a pivot pin extending transversely of said yoke and through said hole and notch of said presser shoes, and coacting means on said presser shoes operative to limit relative displacement thereof in one direction.

3. A sewing machine presser foot comprising a supporting shank terminating in a downwardly presenting channel shaped yoke, a pair of relatively movable presser shoes disposed in side by side relation within said yoke, a pivot pin extending transversely of said yoke and through the yoke-embraced portions of said presser shoes, one of said shoes having a transverse notch of greater depth than the diameter of said pivot pin and through which the latter projects whereby to provide said notched shoe with a capacity for vertical movement measurably exceeding that of the other shoe, and a pair of compression springs interposed between the notched shoe and said yoke and disposed to either side of said pivot pin to yieldingly oppose pivotal movement of the notched shoe in opposite directions about said pivot pin.

4. In a presser foot of the character defined in claim 3 wherein said presser shoes are respectively provided along their adjoining faces with overlapping flanges operative to limit relative displacement of said shoes vertically in one direction and wherein said compression springs yieldingly oppose such relative displacement vertically in the opposite direction.

5. A sewing machine presser foot comprising a supporting shank terminating in a depending channel-shaped yoke, an intermediate web disposed between the outer side walls of said yoke to provide a pair of downwardly presenting channels, a pair of relatively movable presser shoes disposed in side by side relation within one of said channels, a lateral guide element disposed within the other of said channels, a pivot pin extending transversely of said yoke and through the channel-embraced portions of said presser shoes and lateral guide elements, and spring means operative upon said guide element to impart a normal bias thereto tending to maintain its bottom edge inclined in a position intersecting the plane of contact of said presser shoes with the surface of the material being sewed.

6. In a sewing machine presser foot of the character defined in claim 5 wherein said lateral guide element is provided with a forwardly extending portion having a flat inner face in contact with the side edge of an adjoining one of said presser shoes and wherein the bottom edge of said forwardly extending portion of the guide element is capable of assuming a position substantially co-planar with respect to the sole of said adjoining pressure shoe against the resilient thrust of said spring means.

7. A sewing machine presser foot having a supporting shank therefor, a pressure shoe pivotally supported upon said shank and guided for limited movement in a vertical plane, a lateral guide element also pivotally supported upon said shank for limited movement in a vertical plane, said guide element having a flat inner face and said presser foot having a side edge in flatwise engagement with said inner face of the guide element, a transversely extending pivot pin upon which said presser shoe and guide element are supported, and a spring interposed between said guide element and said shank in advance of said pivot pin to yieldingly urge the forward portion of said guide element downwardly about said pivot pin into a position below the horizontally disposed sole of said presser foot.

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No references cited.