May 9, 1944. J. E. ACKERMAN 2,348,690

WORK-FOLDING ATTACHMENT FOR SEWING MACHINES

Filed Dec. 13, 1941 3 Sheets-Sheet 1

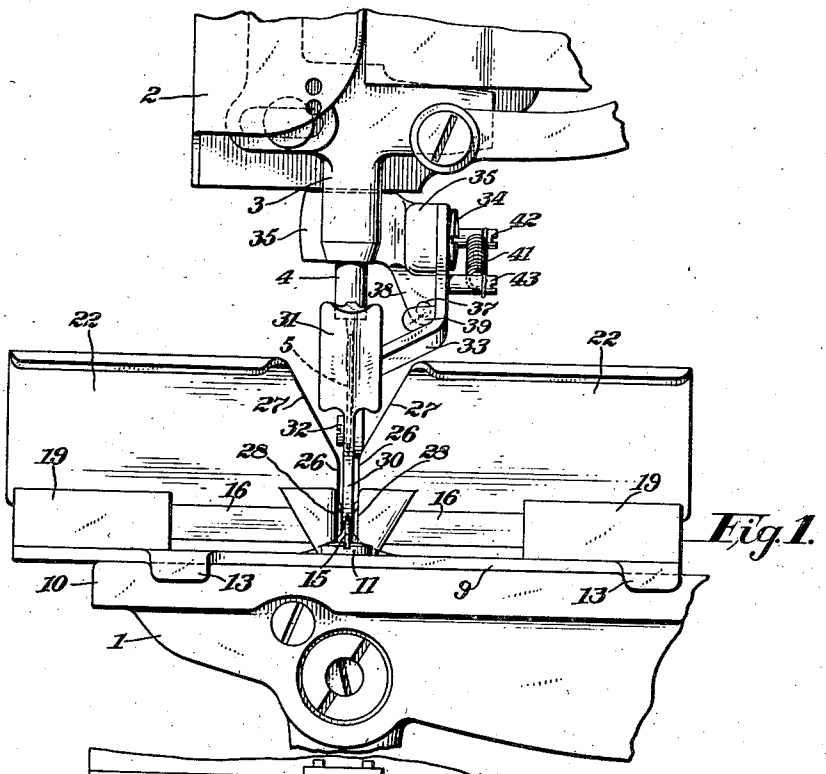


Fig. 1.

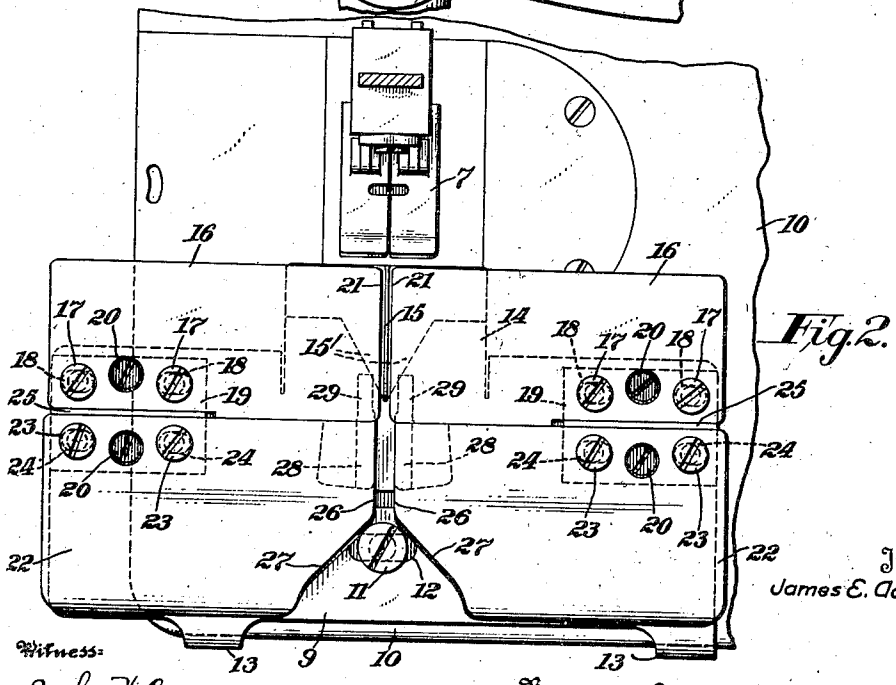


Fig. 2.

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Filed Dec. 13, 1941 3 Sheets-Sheet 2

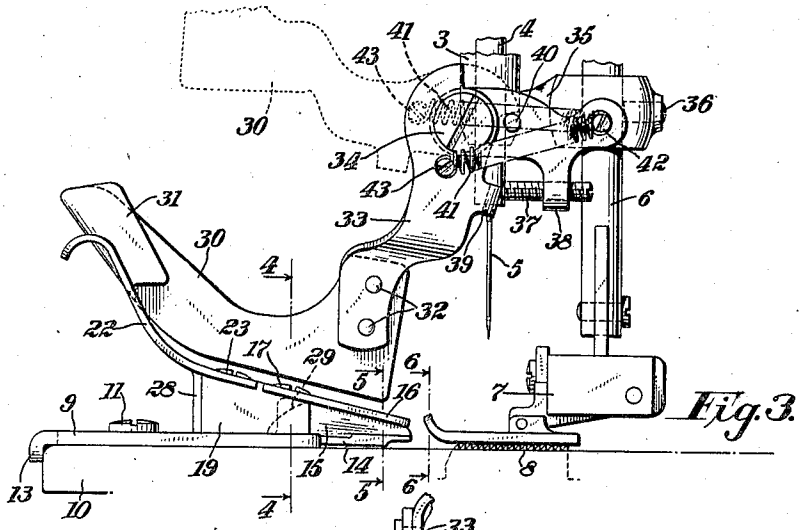



Fig. 3.

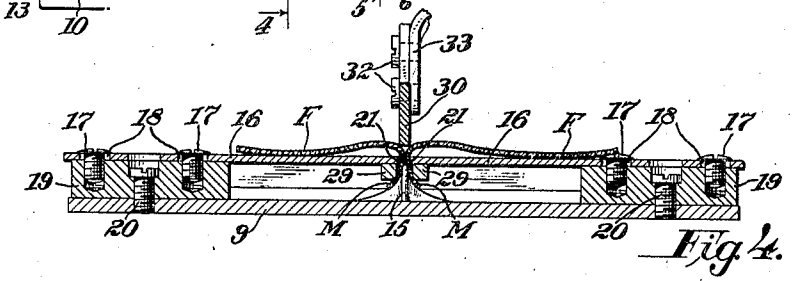



Fig. 4.

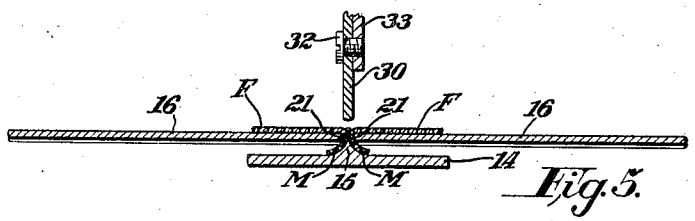



Fig. 5.

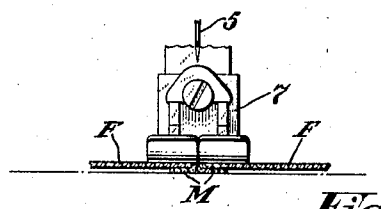



Fig. 6.

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WORK-FOLDING ATTACHMENT FOR SEWING MACHINES

Filed Dec. 13, 1941 3 Sheets-Sheet 3




Fig. 8.

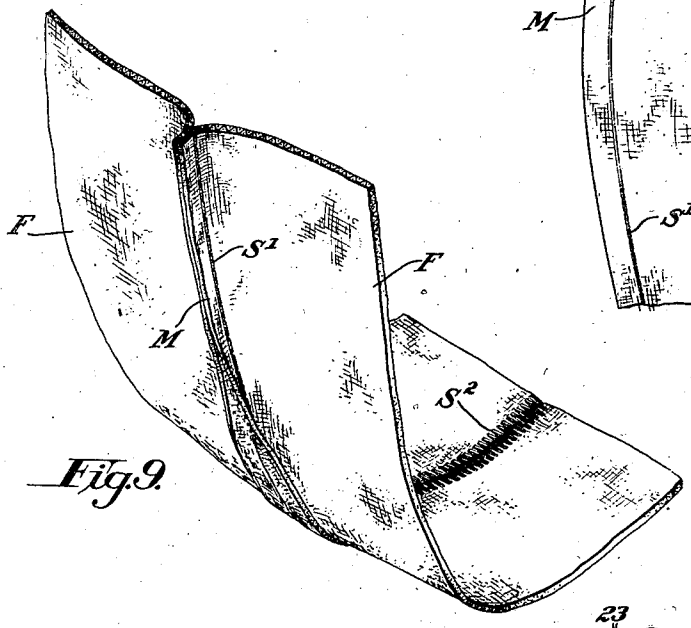



Fig. 9.

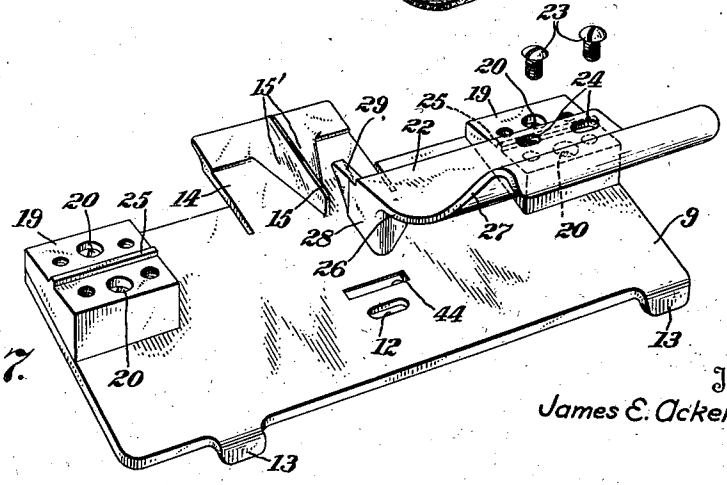



Fig. 7.

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# UNITED STATES PATENT OFFICE

2,348,690

## WORK-FOLDING ATTACHMENT FOR SEWING MACHINES

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Application December 13, 1941, Serial No. 422,835

5 Claims. (Cl. 112—147)

This invention relates to improvements in work-folding attachments for sewing machines and has for its primary object to provide an attachment designed to open out and fold back the marginal portions of two sections of fabric which have been initially united in superposed relation by a single line of stitching, and present the fabric sections thus folded back and flattened to the stitching mechanism of a sewing machine, whereby the folded back marginal portions may be stitched in flattened condition to the body portions of the fabric sections.

A further object of the present invention is the provision of an attachment of the above described type adapted especially to handle fabric sections wherein the edges to be united have a slight curvature.

With the above and other objects in view, the invention will be more fully described as illustrated in the accompanying drawings, which show a preferred embodiment of the device, and particularly pointed out in the appended claims.

In the accompanying drawings,

Fig. 1 is a front elevational view of a sewing machine such as illustrated in the U. S. Patent No. 2,216,096 issued to F. M. Card on September 24, 1940, fitted with a preferred form of the present improvement.

Fig. 2 is a top plan view of the attachment and the left-hand portion of the sewing machine cloth-plate, showing the attachment secured in operative position with its fabric-depressing blade removed to show the position of the seam-opening fin relative to the primary work-supporting plates.

Fig. 3 is a right-side elevational view of the improved attachment showing, in full lines, the operative position of the fabric-depressing blade and the relative position of the attachment and the elements of the sewing machine and, in dotted lines, the inoperative or swing-up position of the fabric-depressing blade.

Fig. 4 represents a sectional view taken along the line 4—4, Fig. 3.

Fig. 5 represents a sectional view taken along the line 5—5, Fig. 3.

Fig. 6 represents a sectional view taken along the line 6—6, Fig. 3.

Fig. 7 is a perspective view of the improved attachment partially assembled, illustrating the constructive features of the attachment.

Fig. 8 is a view showing two superposed plies of fabric which are initially united by a line of stitches disposed adjacent the slightly curved edges thereof.

Fig. 9 is a perspective view clearly showing the manner in which the initially united marginal portions of the fabric sections, shown in Fig. 7, are folded back and stitched in flattened condition.

Referring more in detail to the drawings, the improved attachment is shown applied to a sewing machine comprising a bed 1 having an overhanging head 2. Supported in the head 2 for limited transverse movement is a gate 3 in which is journaled for endwise reciprocation a needle-bar 4 carrying at its lower end a needle 5 cooperating with a suitable loop-taker (not shown) within the bed 1. Journaled in the head 2 rearwardly of the needle-bar 4 is the usual presser-bar 6 carrying at its lower end a presser-foot 7 yieldingly opposing the usual work-advancing feed-dog 8 operating through suitable slots provided in bed 1.

The work-folding attachment, which is disposed in advance of the presser-foot 7, comprises a base-plate 9 attached for limited lateral adjustment upon the cloth-plate 10 by means of a securing screw 11 and slot 12, the base-plate being prevented from turning about the screw 11 preferably by two depending lips 13 which engage the edge of the cloth-plate 10. Projecting from the rear edge of the base-plate 9 is an extension 14 (Fig. 7) which supports an upstanding seam-opening ridge or fin 15 adapted to be disposed in alinement with the stitching mechanism of the sewing machine, as shown in Fig. 2. The top-edge of the fin 15 tapers downwardly toward the discharge end of the attachment and also the sides 15' of the fin curve downwardly and are flared backwardly and outwardly as shown in Fig. 7, thereby to fold back and flatten the marginal portions of the initially united fabric sections.

Cooperating with and disposed slightly above the top edge of the seam-opening fin 15 is a pair of inclined primary work-supporting plates 16, 16 each of which is mounted for limited lateral adjustment by means of securing screws 17 and slots 18 upon a supporting block 19 attached by screws 20 upon the base-plate 9. The primary work-supporting plates 16, 16 are formed with juxtapositioned parallel work-engaging edges 21, 21 which are located on opposite sides of the seam-opening fin 15 and are spaced apart sufficiently to define between them a fabric-receiving passageway paralleling the downwardly sloping top edge of the fin 15.

Positioned forwardly of the primary work-supporting plates 16, 16 and forming a continuation thereof is a pair of secondary work-supporting plates 22, 22 secured for limited lateral adjustment preferably by means of securing screws 23 and slots 24 upon the supporting blocks 19. The primary and secondary work-supporting plates 16 and 22, respectively, are maintained in proper relative position by an upstanding rib 25 provided on each block 19. Similarly to the primary work-supporting plates, the secondary work-supporting plates 22, 22 are formed with juxtapositioned work-engaging edges 26, 26 which, at the receiving end of the attachment, are flared outwardly, as at 27, to provide an open mouth into which the work can be readily introduced.

In order to provide a work-directing channel in advance of the seam-opening fin 15, thereby to properly aline the work with the seam-opening fin, each of the secondary work-supporting plates 22 has soldered, or otherwise fastened thereto, a depending channel-defining member 28 which at its lower edge substantially touches the upper surface of the base-plate 9. The rear end of each of the channel-defining member 28 is extended, as at 29, in the direction of travel of the work through the attachment to underlie and sustain the forward edges of the primary work-supporting plates 16, 16. It will be understood that the two channel-defining members 28, 28 form a vertically disposed fabric-passageway which functions to correctly position the depending marginal portions M of the fabric sections F and aline the same with the seam-opening fin 15 as the initially united fabric sections are being advanced to the stitching mechanism. It is obvious that the capacity of the vertically disposed fabric-passageway can be varied by adjusting the secondary work-supporting plates 22, 22 transversely of the seam line.

As clearly shown in Fig. 3, the secondary work-supporting plates at their forward ends rise abruptly to provide a concave work-supporting surface. This concave work-supporting surface is extremely advantageous in handling fabric sections which have been initially united by a line of stitching (see S', Figs. 8 and 9) having a slight curvature. By having a concave work-supporting surface, the axis of concavity of which is transverse to the plane containing the seam-opening fin 15, the fabric-sections are maintained in a flat unpuckered condition during the seam-opening operation and also during the production of the zigzag stitches, shown as $S^2$ in Fig. 9, which retain the folded back marginal portions M in flattened condition.

To facilitate in maintaining the work in the attachment there is provided a fabric-depressing member or blade 30 having a lower edge which is vertically spaced directly above the seam-opening fin 15 and shaped to conform substantially to the concave surface of the work-supporting plates 22, 22. The fabric-depressing blade 30 at its forward end is formed with a V-shaped toe 31 which initially spreads the two fabric sections F adjacent the seam S'. The rear portion of fabric-depressing blade is spaced from and opposed to the seam-opening fin 15 and functions to maintain the marginal portions M of the fabric sections in the fabric-directing passageway defined by the depending members 28, 28 and the work-engaging edges 21, 21 of the primary work-supporting plates 16, 16, with the initial uniting seam S' in substantial contact with the top edge of the seam-opening fin 15 which is disposed between the marginal portions of the fabric sections so that the folding back of the marginal portions will be effected adjacent the initial uniting seam S'. The provision of the fabric-depressing blade 30 in closely spaced relation with the seam-opening fin 15 minimizes the effort required by the operator in properly holding and guiding the work through the attachment. After the work is initially introduced into the attachment the operator thereafter is only required to make sure that the work is properly delivered to the attachment, the attachment being so designed that attention is not required to guide the work through the same.

To facilitate the introduction of the work into the attachment the fabric-depressing blade 30 is suitably attached, as by screws 32, to the lower end of a swing-up arm 33 pivoted at its upper end on a stud 34 threaded into a horizontal supporting-bracket 35 fixed on the presser-bar 6 by means of a set-screw 36. The lowered or operative position of the fabric-depressing blade 30 is determined by a stop-screw 37 threaded into an extension 38 depending from the supporting-bracket 35, which screw is engaged by a lateral ear 39 integral with the arm 33. The raised or inoperative position of the fabric-depressing blade, as shown in dotted lines in Fig. 3, is determined by a stop-pin 40 provided in the supporting bracket 35. The blade 30 is yieldingly maintained in either its raised or lowered position by a coil-spring 41 connected at one end to a pin 42 on the supporting bracket 35 and at its other end to a pin 43 on the swing-up arm 33.

From the above description, it will be understood that I have provided an improved work-folding attachment adapted for opening and folding back into a flattened condition the marginal portions of fabric sections initially united adjacent the margins thereof. Also I have provided an attachment which will expeditiously open and fold back into flattened condition adjacent portions of fabric sections which have been initially united by a curved line of stitching. It will be understood that by virtue of the adjustable support of the primary and secondary work-supporting plates, the capacity of the work-folding attachment can be varied to accommodate fabrics of various thicknesses. While in the above description the two fabric sections F are described as being initially united by a line of stitches S', it will be readily seen that the two fabric sections need not be initially united and that the work-folding attachment disclosed will satisfactorily handle separate fabric sections. When separate fabric sections are inserted in the attachment more care must be exercised by the operator in handling the work preparatory to stitching.

In Fig. 7 the base-plate 9 is provided with a rectangular slot 44 disposed forwardly of and in line with the seam-opening fin 15. This slot may be used as a tape-guide to direct a covering or reinforcing tape beneath the folded back marginal portions M of the fabric sections F.

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

1. A sewing machine attachment adapted for opening out and folding back the adjacent margins of two superposed pieces of fabric, comprising, a base-plate, a seam-opening fin provided on said base-plate, a pair of plates disposed one on each side of said seam-opening fin and providing a concave work-supporting sur-

face inclined downwardly toward the delivery end of said attachment, the axis of concavity of said work-supporting surface being disposed transverse to the plane containing said seam-opening fin, said plates having juxtapositioned edges disposed on opposite sides of said seam-opening fin and defining between them a fabric-directing passageway in alinement with said seam-opening fin, and means for supporting said plates on said base-plate.

2. A sewing machine attachment adapted for opening out and folding back the adjacent margins of two superposed pieces of fabric, comprising, a base-plate, an upstanding seam-opening fin having backwardly and outwardly flaring sides, a pair of primary plates disposed one on each side of said seam-opening fin, said primary plates having juxtapositioned edges arranged on opposite sides of said seam-opening fin and cooperating with said fin in spreading the margins of said fabric pieces, a pair of secondary plates disposed forwardly of said primary plates and arranged one on each side of said seam-opening fin, said secondary plates providing a curved work-supporting surface and having juxtapositioned edges defining a fabric-passageway in alinement with said seam-opening fin, and means for supporting said primary and secondary plates on said base-plate.

3. A sewing machine attachment adapted for folding back the adjacent margins of two pieces of fabric, comprising, a base-plate, an upstanding fin having backwardly and outwardly flaring sides, a pair of primary plates disposed one on each side of said fin, said primary plates having juxtapositioned edges arranged on opposite sides of said fin and cooperating with said fin in spreading the margins of said fabric pieces, a pair of secondary plates disposed forwardly of said primary plates and arranged one on each side of said fin, said secondary plates providing a curved work-supporting surface and having juxtapositioned edges defining a fabric-margin passageway in alinement with said fin, a supporting block secured to said base-plate on each side of said fin, and means for adjustably securing said primary and secondary plates to said supporting blocks.

4. A work-folding attachment for sewing machines, comprising, a base-plate, a seam-opening fin secured on said base-plate, a pair of primary plates disposed one on each side of said seam-opening fin and providing a work-supporting surface inclined downwardly toward the delivery end of the attachment, said primary plates having juxtapositioned parallel edges disposed on opposite sides of said seam-opening fin and adapted to cooperate therewith in spreading the margins of superposed fabric sections, a pair of secondary plates positioned forwardly of said primary plates to provide a continuation thereof, said secondary plates having juxtapositioned channel-defining members arranged on opposite sides of the longitudinal plane of said seam-opening fin, means supporting said primary and secondary plates on said base-plate, and a fabric-depressing member spaced from and opposed to said seam-opening fin.

5. A sewing machine attachment adapted for folding back the adjacent margins of two pieces of fabric, comprising, a base-plate, an upstanding fin having backwardly and outwardly flaring sides, a pair of plates disposed one on each side of said fin and providing a concaved work-supporting surface having its rearward portion inclined downwardly toward the delivery end of said attachment, said plates having juxtapositioned edges disposed on opposite sides of said fin defining a narrow fabric-margin directing passageway in alinement with said fin, and forwardly of said fin said juxtapositioned edges flaring outwardly to provide a mouth facilitating the introduction of work into the fabric-margin directing passageway, and a fabric-depressing member having a portion thereof spaced from and opposed to said upstanding fin and another portion overlying the outwardly flaring mouth of said fabric-margin directing passageway, whereby the work is maintained in engagement with the concaved work-supporting surface provided by said plates.

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