May 2, 1950 J. E. ACKERMAN 2,506,325

WORK-GUIDING ATTACHMENT FOR SEWING MACHINES

Filed Feb. 12, 1947 2 Sheets-Sheet 1

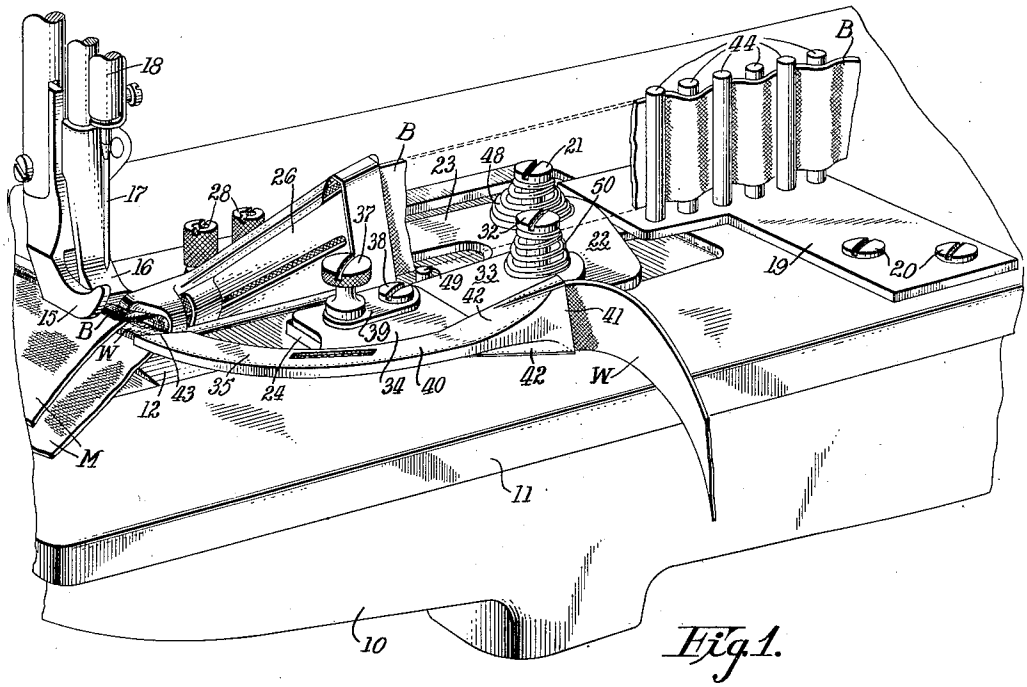


Fig. 1.

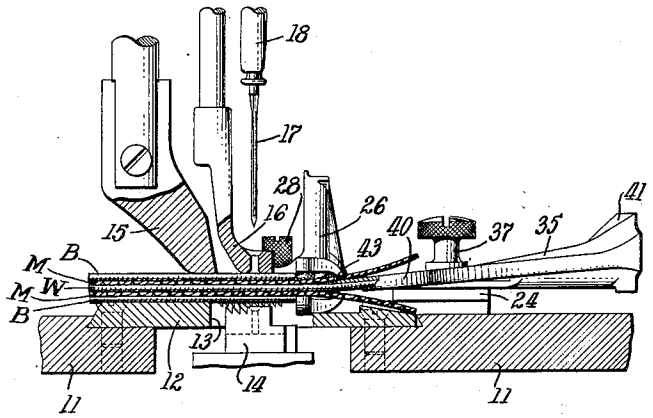


Fig. 3.

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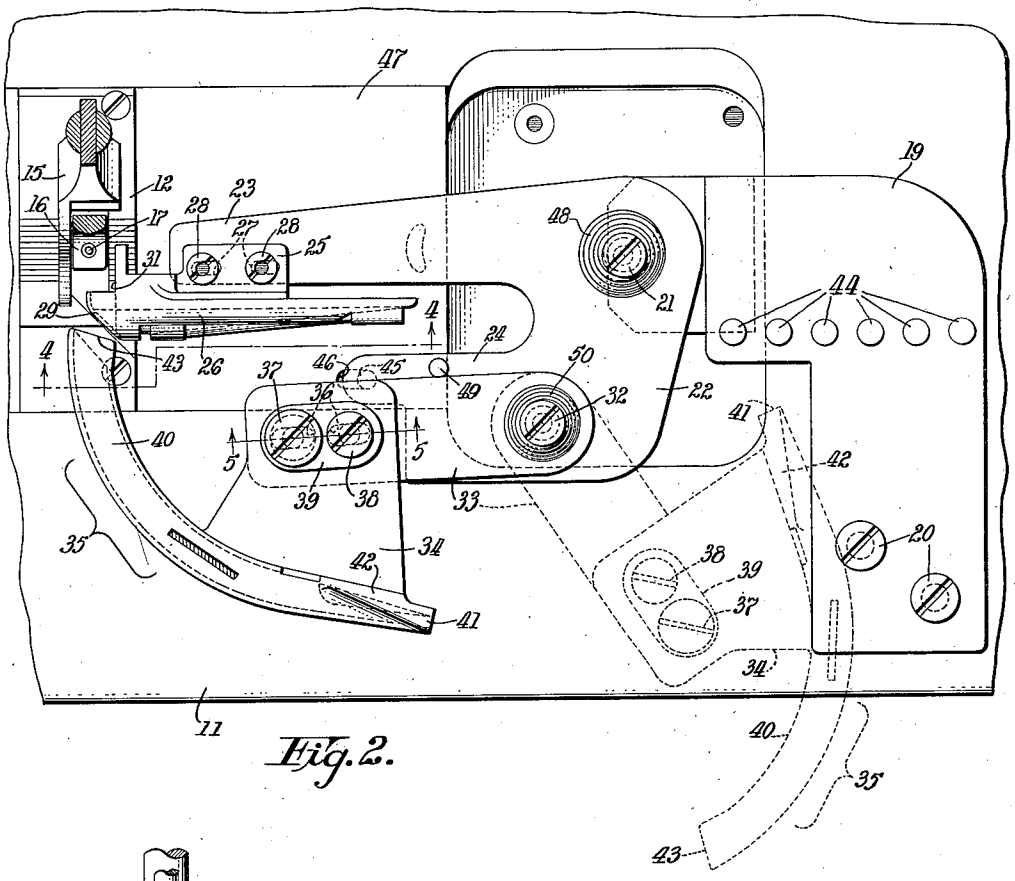


Fig. 2.

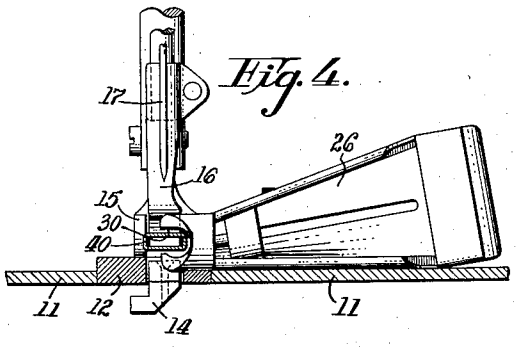


Fig. 4.

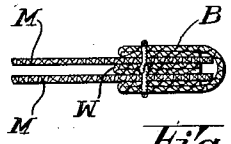


Fig. 6.

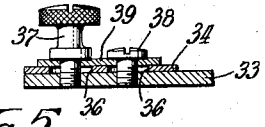


Fig. 5.

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WORK-GUIDING ATTACHMENT FOR SEWING MACHINES

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6 Claims. (Cl. 112—138)

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This invention relates to improvements in work-guiding attachments for use with sewing machines, and more particularly to attachments of the type for binding and welting the marginal edges of superimposed plies of body materials.

The invention has for its primary object to facilitate the production of sharply curved, bound and welted seams used, for example, in the production of seats covers and the like, and to this end the attachment is made so that the welt guide is disposed relative to the binding guide as not to interfere with the manual manipulation of the work adjacent the stitching mechanism of the sewing machine in turning a sharp corner.

Another object of the present invention is to provide a combination binder and welt-guide in which the latter is designed to control the welt-strip accurately from a point at one side of the normal line of feed of the sewing machine to a point immediately in advance of the stitching mechanism, the welt-guide being supported in a manner to interpose no obstacle to the free passage of the plies of the body material to the stitching mechanism.

The foregoing and other objects and advantages in view, together with means whereby the same may be carried into effect, will best be understood from the following description of a preferred embodiment thereof illustrated in the accompanying drawings, in which:

Fig. 1 is a fragmentary perspective view of a sewing machine and of the present attachment in its operating position as applied to a sewing machine.

Fig. 2 is a top-plan view, partly in section, of the sewing machine bed, showing the attachment in operative position in full line and the welt-guide in inoperative or retracted position in dotted lines.

Fig. 3 represents a vertical sectional view taken substantially along the line of seam-formation.

Fig. 4 represents a vertical sectional view, taken substantially along the line 4—4, Fig. 2.

Fig. 5 represents a vertical sectional view, taken substantially along the line 5—5, Fig. 2.

Fig. 6 represents a vertical sectional view taken transversely of the finished seam as the fabric sections emerge from the sewing machine.

Referring to the drawings, the sewing machine illustrated comprises a bed 10 having a flat work-support 11. Secured to the work-support 11 is a conventional throat-plate 12 slotted as at 13 to accommodate the usual feed-dog 14 of the feeding mechanism. Opposing the feed-dog 14 in

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advancing the work through the machine are the usual presser-foot 15 and walking-foot 16. The stitch-forming mechanism of the sewing machine includes the eye-pointed needle 17 carried in the lower end of an endwise reciprocatory needle-bar 18.

The work-guiding attachment with which the machine is fitted comprises, in its preferred form, an L-shaped base-plate 19 detachably secured to the work-support 11 by two screws 20. To the free end of the base-plate 19 is pivoted, as at 21, a C-shaped horizontally disposed supporting plate 22, the limbs 23 and 24 of which are of unequal length and extend longitudinally of the work-support 11 toward the stitching instrumentalities. Fastened on the longer limb 23 of the supporting plate 22, is a shank 25 of a "transverse" binder-head 26. To provide for limited adjustment of the binder-head 25 relative to the supporting plate 22, the shank 25 of the binder-head 26 is slotted, as at 27, through which slots extend the clamping screws 28. The binder-head 26 is of the common strip-reversing type and is adapted to lead a binding strip B in from one side, initially fold the binding strip into U-shape with the marginal edges of the strip folded back upon the strip and then reversely fold or invert the binding strip about the inclined strip-inverting edges 29 of the binder-head 26 to conceal the folded back marginal edges of the binding strip, as shown in Fig. 6. The strip-inverting edges 29 merge into a U-shaped fabric-passageway 30 terminating in a rearwardly extending vertical edge-guide 31 (Fig. 2) which functions to properly position the assembled fabric sections with respect to the needle 17.

Mounted on the shorter limb 24 of the supporting plate 22, for swinging movement about the screw 32, is a horizontal swing-out arm 33 carrying at its free end the shank 34 of a welt-guide 35. The shank 34 is slotted, as at 36, and the screws 37 and 38 adjustably clamp the welt-guide shank 34 on the swing-out arm 33 beneath a clamp-plate 39. As shown in Figs. 1 and 2, the welt-guide 35 has a closed tubular body 40 flattened horizontally and curved about a vertical axis through substantially 90 degrees. At one end, the flattened body 40 is provided with a flaring mouth 41 preferably in the form of a vertically disposed rectangular welt-receiving opening, the top and bottom edges of which merge into convergent welt-folding walls 42 terminating at their other ends in the flattened body 40 of the welt-guide. At its other end, the body 40 of the welt-guide terminates in a delivery end 43

which, when the welt-guide is in its normal operating position (Figs. 1 and 2), is disposed in tandem relation to and closely adjacent the delivery end of the transverse binder-head 26 with the bottom and top surfaces of the delivery end arranged vertically midway of the strip-inverting edges 29 of the binder-head 26. When the welt-guide 35 is in its normal operating position, a flat welt-strip W is introduced into the vertical mouth 41 of the welt-guide 35 and the converging walls 42 longitudinally fold the welt-strip into substantially U-shape, the folded welt-strip being confined and accurately directed in its folded condition by the flattened curved or arcuate body 40 of the welt-guide between the upper and lower plies M of a body material, which plies are directed between the strip-inverting edges 29 and against the edge-guiding wall 31 of the binder-head 26. The binder-strip B with its margins inturned is folded about the superimposed plies M of body material and the folded welt-strip W, the entire assembly being fed beneath the needle 17 by the cooperating feed-dog 14, presser-foot 15 and walking-foot 16. Proper tension is applied on the binding-strip B by the usual tension-pins 44, these pins also serving as means to iron out the strip B and present it in smooth condition to the binder-head 26.

To provide for locking both the binder-head 26 and the welt-guide 35 as a unit in operative position, the limb 24 of the supporting plate 22 is provided with a depending pin 45 (Fig. 2) which is adapted to project into a slot 46 formed in the usual bed-slide 47. Assisting the locking pin 45 in maintaining the attachment in operative position is the bee-hive spring 48 surrounding the pivot-screw 21 and bearing on the supporting-plate 22. When it is desired to swing the attachment out of its normal operating position, it is necessary merely to grasp the binder-head 26 and raise the attachment sufficiently to clear the pin 45 of the slot 46, when the attachment may be turned about the pivot-screw 21. It may be desirable to perform a stitching operation in which no welt-strip is used, and to this end the welt-guide 35 may be separately swung to an inoperative position about the pivot-screw 32, as shown in dotted lines in Fig. 2. The normal operative position of the welt-guide 35 is determined by a stop-pin 49 (Fig. 2) against which the swing-out arm 33 abuts, the swing-out arm 33 being frictionally retained in its operative or inoperative position by the bee-hive spring 50 coiled about the pivot-screw 32.

From the above description, it will be understood that I have devised an improved work-guiding attachment in which the welt-guide 35 is sharply curved from a point in the line of feed and immediately in advance of the stitching mechanism to a point to one side of the line of feed, thus to provide a relatively clear space in advance of and to the left of the stitching point, facilitating the manual manipulation of the plies of body material to be stitched. The arcuate shape or sharp curve of the welt-guide permits the introduction of the welt-strip W from a point removed from the normal line of feed, and the specific flattened tubular shape of the welt-guide serves continuously to control the folded welt-strip accurately and positively up to a point adjacent the stitching area. The sharply curved welt-guide further permits the easy introduction of the plies of body material in proper alinement with the normal direction of feed. In addition to the curved or arcuate welt-guide 35, I employ a transverse binder 26 which also allows for a directional change in the travel of the binding strip B. It will be obvious that, as a result of the directional change in the travel of the binding strip and the welt-strip, the supply reels for these strips can be located remote from the vicinity of the stitching mechanism, thus giving considerable clearance for the handling of the plies of body material M preparatory to the introduction of these plies to the stitching mechanism.

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

1. A work-guiding attachment for sewing machines, comprising a binder adapted to fold and direct a binding strip about the marginal portions of superimposed plies of body-material, and a welt-guide having a flattened closed tubular body disposed in a substantially horizontal plane and terminating in a delivery end disposed adjacent said binder for directing a welt-strip within the bound marginal portions of said body-material, said tubular body being curved about an axis substantially normal to the plane of said body to receive said welt-strip in a direction transversely of said marginal portions of said body-material.

2. A work-guiding attachment for sewing machines, comprising a binder-guide for folding a binding strip, inverting the strip and folding the same about the marginal portions of superimposed plies of body-material, and a welt-guide having a flattened tubular body defining a closed welt-strip passageway terminating in a delivery end disposed adjacent said binder-guide for directing said welt-strip within the bound marginal portions of said body-material, said welt-guide being curved about a substantially vertical axis for leading said welt-strip about an angle in its passage through the welt-guide.

3. A work-guiding attachment for sewing machines, comprising a supporting plate having front and rear spaced limbs, a binder-head carried by said rear limb and having strip-inverting edges about which a fabric strip is inverted and folded into substantially U-shape, a swing-out arm pivotally supported on said front limb, and a welt-guide secured to said swing-out arm with the delivery end of said welt-guide arranged in tandem relation with the strip-inverting edges of said binder.

4. A work-guiding attachment for sewing machines, comprising a supporting plate having projecting front and rear spaced limbs, a transverse binder-head carried on said rear limb and having strip-inverting edges about which a fabric strip is inverted and folded so that said strip enters and emerges from said binder in directions substantially normal to each other, and a welt-guide carried on said front limb with the delivery end of said welt-guide arranged in tandem with the delivery end of said transverse binder, said welt-guide having an arcuate body disposed so that a fabric strip guided thereby enters and emerges from said welt-guide in directions also substantially normal to each other.

5. A work-guiding attachment for sewing machines, comprising a base-plate, a supporting plate pivotally carried on said base-plate and having projecting front and rear spaced limbs, a transverse binder-guide carried on said rear limb and having strip-inverting edges about which a fabric strip is inverted and folded, a swing-out arm pivotally supported on said front limb, a welt-guide carried on said swing-out

arm and disposed so that a fabric strip guided thereby is directed within the folded binding strip, means pivotally mounting said supporting plate on said base-plate permitting the swinging of both of said guides as a unit out of operative position, and means pivotally mounting said swing-out arm on said supporting plate permitting the swinging out of said welt-guide relative to said binder-guide.

6. A welt-guide for a sewing machine, having a closed flattened tubular body-portion disposed substantially horizontally and curved about an axis normal to the horizontal plane of said flattened body-portion, said body-portion having at one end a vertically disposed rectangular receiving end of which the top and bottom edges merge into converging strip-folding side-walls terminating at their other ends in the top and bottom walls of said tubular body-portion, and said body-portion terminating in a delivery end having the same cross-sectional area as said body-portion.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
665,483	Steward	Jan. 8, 1901
1,994,965	Seaman	Mar. 19, 1935
2,319,191	Sailer	May 11, 1943