

1

3,377,968

MATERIAL HOLDING AND GUIDE ATTACHMENT FOR SEWING MACHINES

Wayne G. Story, 790 W. Chicago St.,
Algonquin, Ill. 60102
Filed Mar. 17, 1967, Ser. No. 623,891
11 Claims. (Cl. 112—2)

ABSTRACT OF THE DISCLOSURE

An arrangement for sewing a pair of elongated panels of material at corresponding side edges thereof along a straight line of stitching, including: a sewing machine, a table movable linearly past the sewing machine, a shelf disposed adjacent the table, means for aligning the panels with each other with edge portions overlying the shelf in line with the sewing machine, means for clamping the panels in position on the table, means for driving the table toward the sewing machine, and means for guiding said panel edge portions into the sewing machine.

This invention relates to sewing machines and more particularly to an arrangement for holding material and guiding it through a sewing machine.

This invention comprehends an improvement in a means for aligning two pieces of material with each other and holding them in aligned position while guiding them through the sewing machine. This invention is particularly concerned with sewing operations which include the stitching of long panels of material, such as drapery panels, at corresponding side edges thereof.

Stitching long panels of cloth material together at corresponding side edges has always presented several problems, one of which has been the problem of maintaining the panels in alignment with each other so that, where there are patterns, the patterns are matched.

Another problem has been that of preventing gathering or puckering which is normally caused by a conventional feeding mechanism on the sewing machine when long pieces of material are drawn through the machine.

It is therefore an object of this invention to provide an arrangement for simplifying the aligning of panels of material, maintaining them in position after they have been aligned, and guiding them through the sewing machine.

A more specific object of the invention is the provision, in an invention of the type described, of an arrangement which includes a movable table for holding the material, means associated with the table for aligning the material thereon, means for clamping it in position after it has been aligned, and means for transporting and guiding the material while clamped on the table through the sewing machine in synchronization therewith.

These and other objects of the invention will be apparent from an examination of the following description and drawings, wherein:

FIGURE 1 is a perspective view of a sewing machine and material holding table embodying features of the invention as seen from the rear;

FIGURE 2 is a plan view taken on line 2—2 of FIGURE 1;

FIGURE 3 is a transverse, vertical section taken on line 3—3 of FIGURE 1;

FIGURE 4 is a fragmentary, longitudinal, vertical section taken on line 4—4 of FIGURE 3;

FIGURE 5 is a perspective view of the novel material aligning means which is shown in the other views;

FIGURE 6 is a perspective view illustrating a pair of panels of material after they have been stitched together

2

at their side edges on a machine embodying features of the invention;

FIGURE 7 is an end elevational view of the structure illustrated in FIGURE 1 as seen from the right side;

FIGURE 8 is an enlarged view of a portion of the structure illustrated in FIGURE 7; and

FIGURE 9 is a longitudinal, vertical section taken on line 9—9 of FIGURE 8.

It will be understood that, for purposes of clarity, certain elements have been intentionally omitted from certain views where they are believed to be illustrated to better advantage in other views.

Referring now to the drawings for a better understanding of the invention, and particularly to FIGURES 1 and 7, it will be seen that the novel sewing arrangement includes a movable table, indicated generally at T, on which a pair of drapery panels P may be positioned in face-to-face relation in a manner hereinafter described. Table T is disposed adjacent a sewing machine, indicated generally at S, which is mounted on a stationary bench, indicated generally at B.

Also mounted on bench B are a motor M and a gear box G. Motor M is connected to sewing machine S by a pulley belt L, and sewing machine S is, in turn, connected to gear box G by a second pulley belt L'.

The sewing machine may be of any conventional type and so the details of its construction and operation will not be described in the specification as they are not an essential feature of this invention.

Turning now to FIGURE 3 of the drawings, it will be seen that table T includes a relatively thin, flat, elongated, rectangular top or bed 10 of sufficient dimensions to accommodate a pair of drapery panels P or other long panels of cloth to be stitched together at corresponding side edges.

Table top 10 may be supported by a plurality of vertical legs 12. Additional support and rigidity may be obtained by the provision of upper and lower cross members or braces 14 and 16, respectively.

At their lower ends, the legs may be provided with spring mechanisms 18 to keep the table level as it rolls over uneven areas of a floor F. The front and rear sets of legs 12 are rotatably mounted on front and rear sets of wheels 20 and 22, respectively. As best seen in FIGURE 3, rear wheels 22 are arranged to ride on a rail or track 24 fixed to floor F to insure that the table will move back and forth in a perfectly straight line. Thus, the material to be sewed, when positioned on the table, will always be aligned properly with the sewing machine head 26 and the trimming mechanism (not shown) on the sewing machine, which serves to trim the edge of the material outboardly adjacent the line of stitches in a manner hereinafter described.

As best seen in FIGURE 3, the front marginal portion of the table may be formed of relatively thin cross section or provided with a relatively thin integral plate 30 which extends horizontally forward beyond a vertical shoulder or abutment 32 to which is secured a vertical plate 34. Plate 34 is disposed to extend downwardly below the lower surface of the table top so as to ride between a pair of guide rollers 38 mounted on sewing machine bench B. Thus, the engagement between plate 34 and rollers 38 serves as an additional means, to the engagement between table rear wheels 22 and rail 24, to insure that the movement of table T is always in a perfectly straight line.

Table T is propelled longitudinally along sewing machine S by a drive mechanism indicated generally at 40, which includes a drive shaft 42, extending from gear box G and which may be connected to a shaft 44, carrying a table drive gear or sprocket 46, by means of a universal joint arrangement 48.

Drive gear wheel 46 is disposed, when in operative position, to engage a gear track 50 carried on the underside of table bed 10.

Although the motor may be used to drive the table in either direction, in the present invention it is arranged so that the motor will only drive the table forwardly. The table will be moved manually to the rearward or starting position. The reason for universal arrangement 48 is to permit the gear 46 to be moved into and out of operative engagement with gear track 50.

As best seen in FIGURES 2 and 7, gear wheel shaft 44 may be mounted on a yoke or clevis 54 which, in turn, is pivotally connected to one end of a lever 56, which is pivoted intermediate its ends at 57 to bench B.

Thus, it will be seen that when the opposite end of lever 56 is lifted, the clevis and attached gearwheel will be lowered out of operative position to permit the table to be moved rearwardly to starting position. A tension spring 58 may be used to connect lever 56 adjacent its opposite end to a lower portion of bench B in order to normally bias the lever and drive gear into operative position.

In order to detachably lock the drive gear wheel shaft in operative or track engaging position, yoke 54 may be provided with a projection or boss 60 arranged to fit within a slot 62 of a bracket 64 mounted on the side of bench B.

As best seen in FIGURE 3, after the material has been properly positioned on the upper surface of table bed 10, in a manner hereinafter described, it may be secured in place by an elongated holding bar 66 disposed to extend the length of the table adjacent its front edge. Bar 66 may be provided on its underside with a pad or cushion 68 to enable it to engage the material and prevent slipping movement of the material relative to the table top 10.

Holding bar 66 may be carried by a plurality of arms 70 having their lower ends secured to the bar and being pivoted adjacent their upper ends at 71 to brackets 72 which are carried by table T. Brackets 72 may be provided with stops 74 to permit arms 70 to be held in an open or non-operative position.

Now turning to FIGURES 3 and 5, it will be seen that there is provided a novel means for aligning the material to be stitched. The essential feature of the invention resides in this aligning means, indicated generally at 80, which includes a relatively narrow, elongated shelf 82 preferably carried by a plurality of arms 84, pivotally mounted on the table legs at 85, for movement between an operative position, co-planar with the top of table top 10, and an inoperative position below the top of the table top, as shown in phantom lines in FIGURE 3.

As best seen in FIGURE 5, the top of shelf 82 is provided with a pair of laterally spaced, longitudinal extending, parallel, stitch and trim lines 86 and 88, respectively, the purpose of which will be explained later in the specification.

At the ends of shelf 82, there are mounted a pair of upwardly extending fingers 90, which may be pivotally secured at their lower ends by pivots 92 to the end of shelf 82 to permit them to be folded forwardly and downwardly below the plane of the surface of shelf 82. Stretched between the fingers 90 is a preferably elastic indicating band or line 94 which is disposed directly above the stitch line marking 86 on the surface of shelf 82.

In order to control the positioning of the shelf 82 and move it between its uppermost position, as shown in solid lines in FIGURE 3 and its inoperative or lowermost position, as shown in phantom lines in FIGURE 3, there may be provided a guide bar 96, having its upper end secured to a portion of the shelf and being mounted a short distance above its lower end in a pivot block 98, which is pivotally secured to one leg of the table. Attached to the bar 96 at a location below the pivot block is a stop member 100 which may be bell-shaped and which is engaged with or disposed to rest on a horizontal rod 102, which is

also carried by the table leg at one end and which has its other end attached to another horizontal pin 104 by means of a spring 106. Bar 102 is also secured to the lower end of a cord or chain 108, the upper end of which is secured under the top of the table. Thus, when the cord or chain is released, bar 102 is moved downwardly by spring 106 to permit the stop 100 on bar 96 to clear bar 102 and move in the inoperative position, as shown in phantom line on FIGURE 3, so that the shelf 82 can be moved downwardly to the inoperative position. This arrangement is merely one example and other arrangements may be employed for supporting the shelf and accommodating it when it is moved into an out of operative position.

Although in the preferred embodiment of the invention shelf 82 is carried by table 10 and is mounted for movement between operative and inoperative positions, it is possible to provide a shelf as part of a separate table or ledge which is stationary and free from attachment to the table 10. In such an arrangement (not shown) the shelf may be positioned in such a location as to be adjacent the front side of the table top when the table is in its rearwardmost position, away from the sewing machine, so that as the table is moved forward toward the sewing machine the separate shelf is left behind in its fixed location.

Now referring to FIGURE 9, it will be seen that there is provided a pair of preferably curved upper and lower guide plates 110 and 112, respectively, which converge toward the sewing machine stitching mechanism and the material feed mechanism (hereinafter described).

As the panel edge portions pass from between the guide plates their movement into the stitching mechanism may be positively controlled by a material feed mechanism, indicated generally at 120, which is attached to the sewing machine, but which is actuated by the movement of the table in a manner hereinafter described.

The material feed mechanism includes a pair of upper and lower feed rollers 122 and 124, respectively, either or both of which may be formed of rubber. Rollers 122 and 124 may be mounted on upper and lower shafts 126 and 128, respectively, for engagement with the upper and lower surfaces of the material panel edge portions.

Mounted on the outboard or opposite end of lower shaft 128 from roller 124 is a drive roller 130 which is preferably knurled or otherwise roughened for non-slipping engagement with the underside of table top extension or horizontal plate 30, which is preferably formed of a relatively soft metal. If desired a gear wheel and track arrangement may be provided in a manner similar to the arrangement provided for driving the table, but that is generally not necessary. Thus, as table T moves forward toward the sewing machine drive roller 130 is rotated causing lower feed roller 124, which is of the same diameter, to rotate at the same rate of speed and thereby cooperate with upper feed roller 122 to pull the material into and/or through the stitching mechanism. If desired, a similar set of feed rollers may be provided immediately beyond the stitching mechanism, but this is generally not necessary.

As the table is driven in synchronization with the sewing machine and the material feed mechanism is operated in synchronization with the table movement, the material is moved through the stitching mechanism of the sewing machine without any undesirable puckering or gathering of the material at the seams, as often happens when conventional material feed means using a feed foot is employed on a sewing machine.

Now to describe the operation of the arrangement. The two panels of material are placed on the table top in face-to-face relation with each other with their corresponding side edges to be stitched overhanging the table top and overlying the shelf. At this time the table is in its rearwardmost position, as shown in FIGURE 1. The panels are then matched with each other and aligned with the stitch line in a position where the stitch line of

the material is directly under the elastic stitch line indicating band 94.

After the panels have been matched and aligned, material holding bar 66 is lowered into its operative position on top of the panels inboardly adjacent the stitch line, as shown in FIGURES 3 and 8, to clamp the material against the table top so that the material cannot be moved with respect to the top of the table.

At this time shelf 82 is lowered out of the way to its inoperative position, and table T is manually moved forward a distance sufficient to allow gear drive wheel 46 to engage track 50. Drive mechanism 40 and the stitching mechanism of the sewing machine are then actuated by a clutch mechanism (not shown).

As the motor drives the sewing machine, it also drives the table, through the gear box and drive mechanism previously described, and the table is moved toward the sewing machine, thereby causing the actuation of the material feed mechanism, as previously described. As the table approaches the sewing machine the edge portions of the panel to be stitched, which at this time are overhanging the front side edge of the table top, pass between upper and lower guide plates 110 and 112, respectively, and are guided thereby into the material feed mechanism which carries them into the stitching mechanism of the sewing machine.

Inasmuch as the material panel edge portions have been aligned with the stitching mechanism and clamped in position, and because the movement of the table is limited to a straight line, the side edges will be stitched in a perfectly straight line.

In the event it is desired to sew panels of plain or unpatterned material together at corresponding side edges, shelf fingers 90 and indicating band 94 may be moved forwardly and out of the way, so that the free edges of the panels may be aligned with each other and directly with the trim line 88 printed on the upper surface of shelf outboardly of stitch line 86. The panels may then be clamped in place and stitched in the same manner as previously described.

I claim:

1. In an aligning, holding, and guiding arrangement for sewing a pair of elongated panels of material together at corresponding side edges thereof along a straight line of stitching, the combination of:

(a) a sewing machine having a stitching mechanism;
 (b) a table with a top positioned adjacent said sewing machine for linear movement in a direction parallel to the line of stitching;

(c) means for aligning the panels with each other and with said stitching mechanism, including:

(i) a shelf disposed adjacent said table and said sewing machine;

(ii) means above said shelf for aligning the line of stitching;

(d) clamping means for holding the panels in aligned position on the table top with edge portion of the panels to be stitched overhanging said table top;

(e) means for driving said table in synchronization with said sewing machine to move said panels through said stitching mechanism;

(f) means for guiding said overhanging panel edge portions into said stitching mechanism.

2. An arrangement according to claim 1, wherein said

shelf is disposed for movement between an operative position, immediately adjacent one side of said table top and coplaner therewith in line with said stitching mechanism, and an inoperative position.

3. An arrangement according to claim 1, wherein said shelf is attached to said table for movement between operative and inoperative positions.

4. An arrangement according to claim 1, wherein said indicating means includes a horizontally disposed, longitudinally extending line carried by said shelf and spaced thereabove in line with said stitching mechanism.

5. An arrangement according to claim 1, wherein said guide means includes a pair of cooperating guide elements spaced from each other and converging toward said sewing mechanism for receiving and guiding said overhanging panel edge portions into said sewing mechanism.

6. An arrangement according to claim 1, including a plurality of spring mounted legs supporting said table and means exerting a downward pressure on said table to maintain said table top in a fixed horizontal plane at all times during linear movement of said table.

7. An arrangement according to claim 1, wherein said clamping means includes a longitudinally extending bar carried by said table and disposed on said panels and a stationary pressure roller engageable with said bar to urge it against said panels during linear movement of said table.

8. An arrangement according to claim 1, and including material feed means positioned on said sewing machine and actuated by the linear movement of said table in synchronization therewith.

9. An arrangement according to claim 8, wherein said material feed means includes a pair of opposed, cooperating feed rollers engageable with opposite sides of said panel edge portions.

10. An arrangement according to claim 9, wherein one of said feed rollers is mounted on a rotatable shaft on which is mounted another roller engageable with said table so that linear movement of the latter causes rotative movement of the former.

11. An arrangement for sewing a pair of elongated panels of material together at corresponding side edges thereof along a straight line of stitching, including: a sewing machine, a table movable linearly past the sewing machine, a shelf disposed adjacent the table, means for aligning the panels with each other with edge portions overlying the shelf in line with the sewing machine, means above said shelf for aligning the line of stitching, means for clamping the panels in position on the table, means for driving the table toward the sewing machine, and means for guiding said panel edge portions into the sewing machine.

References Cited

UNITED STATES PATENTS

2,387,185	10/1945	Runquist et al.	112—2
2,444,335	6/1948	Coppock	112—2
2,848,960	8/1958	Cetrulo	112—2
3,001,489	9/1961	Bond et al.	112—2
3,204,590	9/1965	Rockerath et al.	112—2

FOREIGN PATENTS

1,086,980	8/1960	Germany.
-----------	--------	----------

HERBERT F. ROSS, *Primary Examiner.*