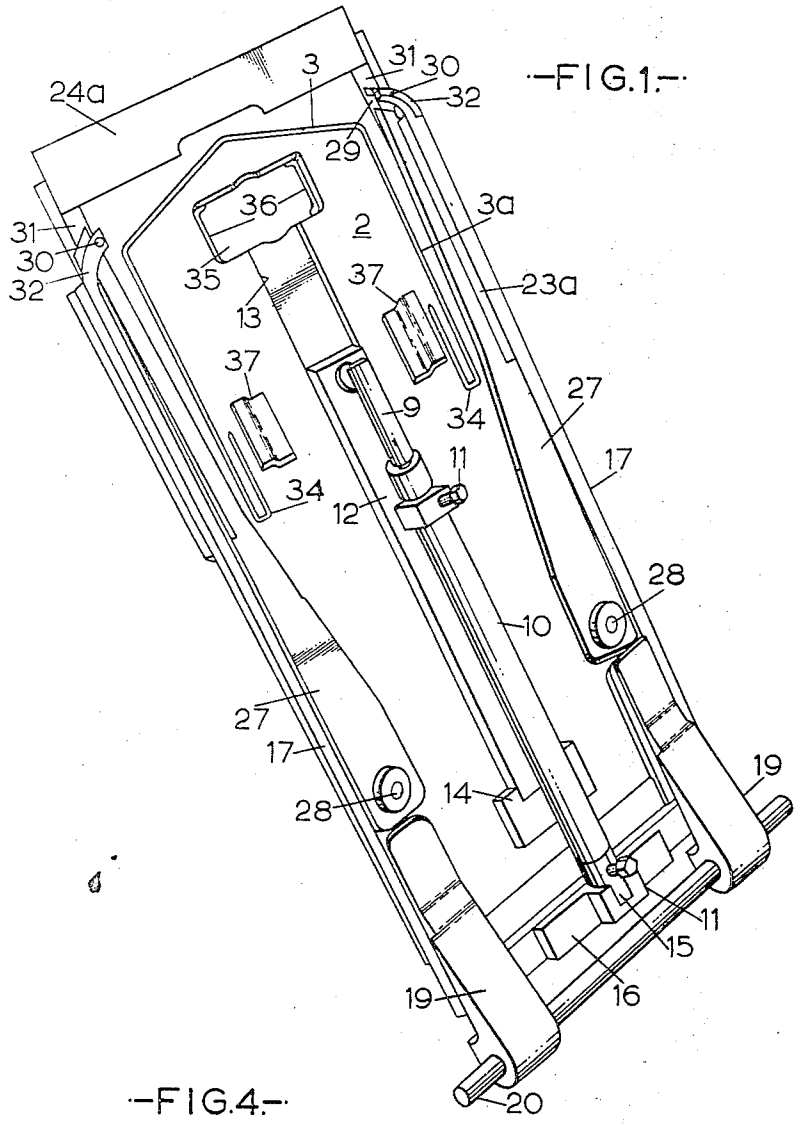
Dec. 16, 1969 M. N. BENNISON 3,483,834

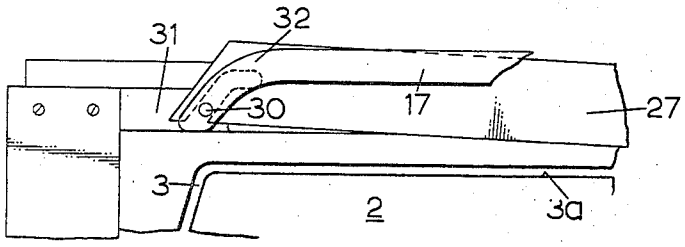
STITCHING OF MATERIALS

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-FIG.1.-



-FIG.4.-



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STITCHING OF MATERIALS

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FIG.2.

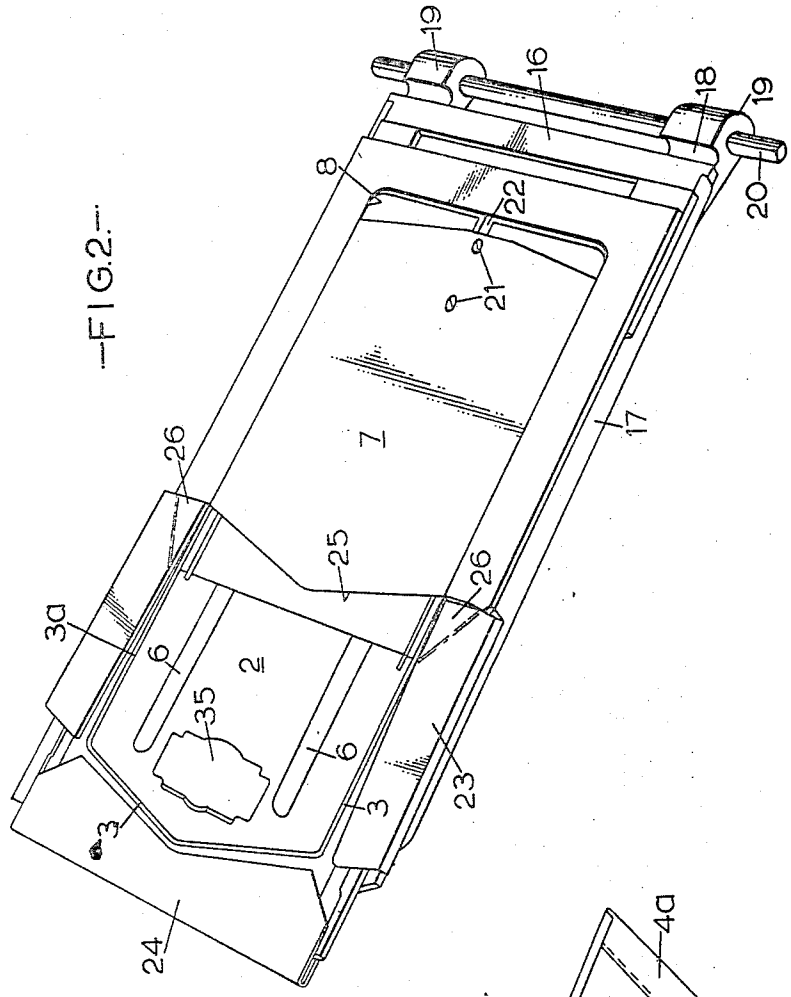
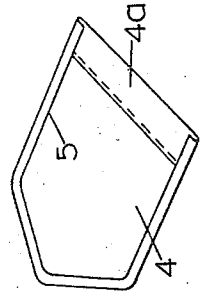


FIG.6.



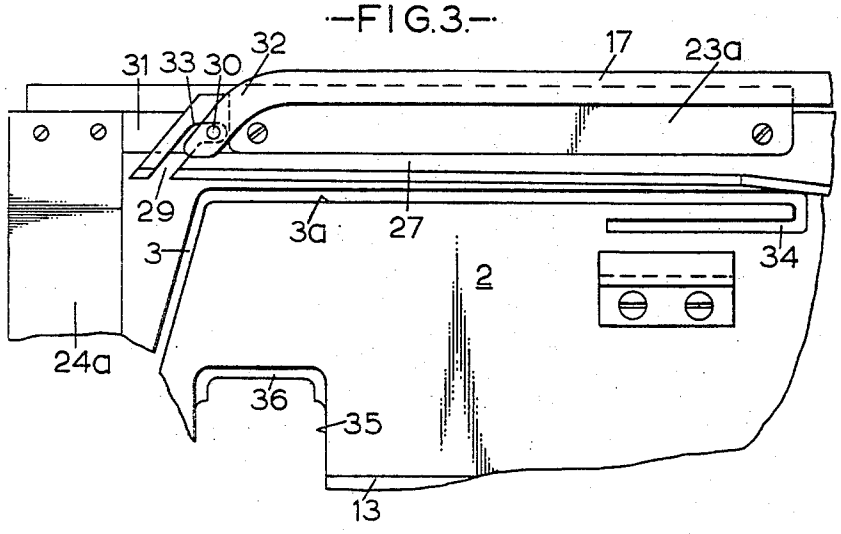
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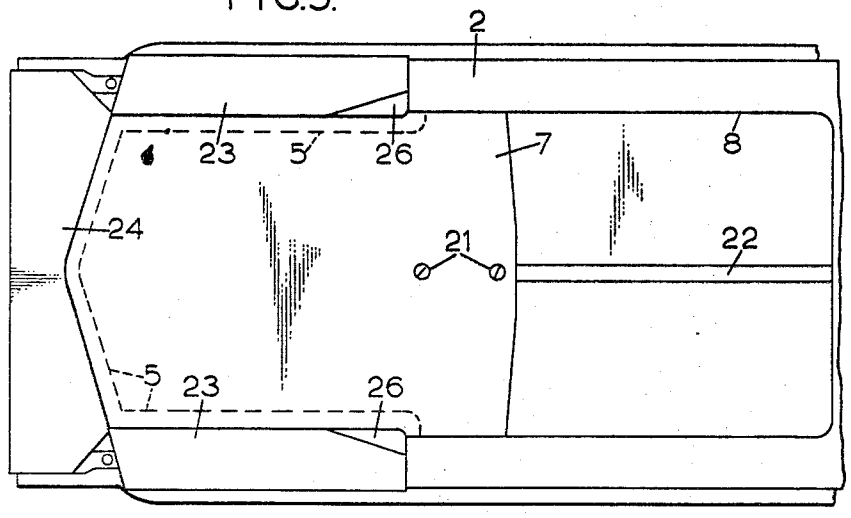
STITCHING OF MATERIALS

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—FIG.3.—



—FIG.5.—



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STITCHING OF MATERIALS

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FIG. 7.

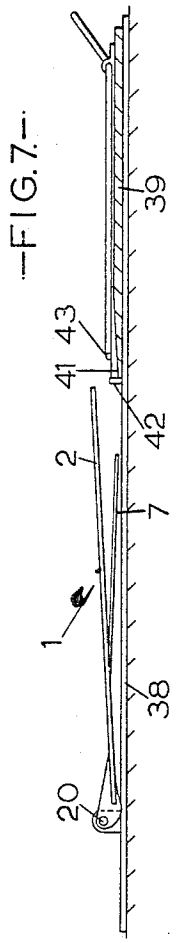
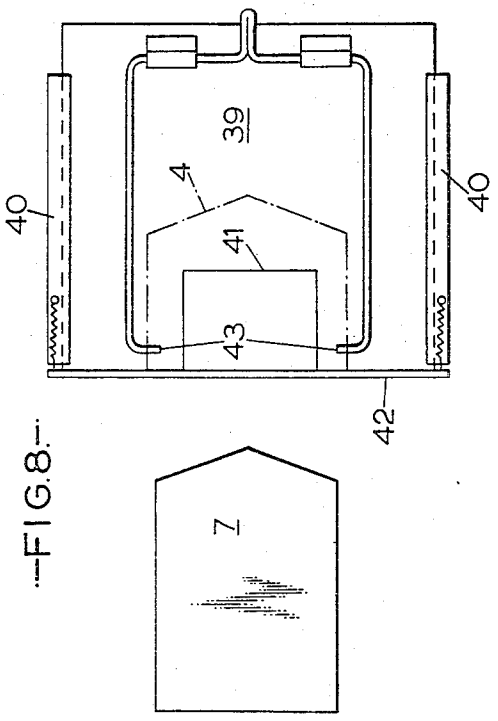


FIG. 8.



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United States Patent Office 3,483,834 Patented Dec. 16, 1969

3,483,834

STITCHING OF MATERIALS

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Int. Cl. D05b 21/00
U.S. Cl. 112—121.15 7 Claims

ABSTRACT OF THE DISCLOSURE

Apparatus for use in the shaping and then the stitching on a sewing machine of a patch pocket to a garment part in which a slidable pocket shaping plate underlies a top retaining plate an is adapted to slide under a pocket, edge folding blades turn the pocket edge under the plate and then withdrawn followed by the shaping plate, the shaped and edge folded pocket is then overlaid on the garment part and retained by said top plate. This apparatus is carried by a controllable work plate movable on a sewing machine in its own plane in a predetermined guided manner to suit the shape of the pocket which is stitched to the garment through the aforesaid top plate. A pocket presentation plate is also described.

This invention relates to methods of, and means for, facilitating the shaping of a material part and then the stitching of such part to another part or a garment.

In the manufacture of some articles, particularly articles of clothing to which patch pockets are to be stitched, the operations of shaping and then stitching require skilled operatives to ensure a correct folding in of the pocket edges and then the stitching to provide a good appearance and correct positioning of the pocket.

According to the present invention there is provided a method of controlling the shaping and then stitching of a first material part to another underlaid part or garment, consisting in locating the first part between an upper profiled retaining plate and a lower profiled shaping means, causing folding blade means to move inwardly to fold the edge of said first part round the edge of and beneath the lower profiled shaping means, withdrawing such profiled shaping and folding means leaving an edge folded shaped first material part with its peripheral fold projecting a profiled edge of said upper retaining plate, and stitching said projecting folded edge to said underlaid part or garment.

The method may include controlling the associated material parts and template by profiled track means to move in their own plane in the required directions for stitching to be carried out around the profile of the retaining plate and through the folded edge of a first material part.

The invention includes apparatus for use in shaping and then stitching a first material part to another underlaid part or garment, including a top retaining plate with a profiled edge, movable profiled first part shaping means beneath said plate, movable folding blade means surrounding the shaping means, means for moving the blade means towards and under the shaping means to fold the edge of a first garment part under the said shaping means to provide a shaped and underlapped edge, and means for withdrawing the shaping and folding means from the edge fold of said first garment part for allowing stitches to be inserted through the folded edge of said garment part projecting beyond the profile of the retaining plate .

The invention will now be more particularly described with reference to the accompanying drawings, in which:

FIG. 1 is a perspective view of a pocket stitching template at rest;

FIG. 2 is a perspective view of the template from below;

FIG. 3 is a part plan view from above of the edge folding means in a closed position;

FIG. 4 is a part plan view from above of said edge folding means in a withdrawn position;

FIG. 5 is a part plan view from below of the template with the pocket shaping and folding means in an operative position;

FIG. 6 is a plan view of a pocket for which the template is made;

FIG. 7 is a sectional elevation of the template and pocket presentation means;

FIG. 8 is a plan view of said presentation means; and

FIG. 9 is a perspective view of a sewing machine with a template and pocket presentation means in position on the machine worktable.

In the illustrated embodiment of this invention a template 1 is constructed including a top garment pocket retaining plate 2 having a stitching slot 3 whose profiled inner edge 3*a* is shaped to suit the shape of a pocket 4 (FIG. 6) which it is desired to form with an underlapped edge 5 ready to be stitched to a garment. This plate 2 has two strips 6 on its underface each coated or otherwise furnished with a material gripping surface. Beneath this plate there is arranged a movable shaping plate 7 having a profile complementary to the profile edges of the slot 3 in the upper plate 2 and which projects slightly beyond or at least covers, the slot 3 when in its shaping position shown in FIG. 5. This shaping plate 7 slides in the recessed area 8 formed in the underface of the plate 2 and is operated by a piston 9 and cylinder 10 which has pressurised fluid connections 11. The piston is connected to a slide 12 which moves in a guide recess 13 in the upper face of the plate 2 and such slide is restricted in its return movement by a stop piece 14. The cylinder 10 is anchored at 15 to a movable bar 16 which is provided with a pair of forwardly extending arms 17 and capable of restricted movement in the underside recesses 18 of the top plate pivot brackets 19 which carry the pivot spindle 20 by means of which the template is pivotally mounted on a machine work table. The slide 12 is secured to the plate 7 by screws 21 which pass up through the guide slot 22 in the top plate 2.

The template is provided with underneath pocket edge folding blades which comprise two oppositely positioned side blades 23, arranged to slightly overlap the edges of the shaping plate 7, and a shaped end blade 24 under which the front V-shaped edge 25 of the plate 7 can pass slightly or at least butt against. This end blade 24 has a complementary V-shaped inner edge to suit the front edge of the plate 7. Also the front corners 26 of the side blades 23 are folded up slightly to facilitate the passage thereunder of the plate 7 when moving into its operative pocket shaping position. The edge and end blades are shown folded over at 23*a* and 24*a* respectively on to the top face of the plate 2 for convenience of attachment to operating means. The edge blades are secured by the parts 23*a* to two pivotal frame members 27 which can swing inwardly and outwardly over the plate 2 about the pivot pins 28. These members have cam slots 29 at their front ends to receive upstanding pillars 30 which are secured to two small slides 31 recessed into the top plate 2 and carrying the end blade 24 by means of the part 24*a* which extends between the two said slides. The pillars pass up into the turned-in ends 32 of the aforesaid arms 17 extending from the rear cross bar 16. The aforesaid cam slots 29 have inner parallel ends 33 so that the end blade 24 has slight extra movement after the side blades 23 have moved in, and slight initial retraction before the blades 23 move out. The slot 3 has U-shaped ends 34. This slot 3 is completely covered on the underface of

plate 2 by the shaping plate 7 when the latter is in its pocket shaping position (FIG. 5) but is completely exposed when such plate is withdrawn and the folding blades 23 and 24 are retracted to their open position (FIGS. 2 and 4).

In operation the template can be lifted up about the axis of its mounting pivot rod 20 and a pocket 4 (top edge 4*a* first) located over the shaping plate 7 which is of thin flexible metal or other material to facilitate the insertion of the pocket between it and the under face of the top plate 2. When the template is so lifted the plate 7 flexes downwardly about its rear end sufficiently to allow the pocket to slide over it. The pocket may be inserted by hand or laid on a presentation plate. Fluid is then admitted to the cylinder 10 for the piston to move outwardly pushing the slide 12 and shaping plate 7. Slide 12 and back cross bar 16 are so constructed that the slide 12 can move more freely than the back cross bar 16 so that the latter remains momentarily stationary in its forward position holding the arms 17 and frame members 27 outwardly so that the shaping blades 23 and 24 remain retracted during the forward movement of the pocket shaping plate 7 over the pocket 4 and between it and a garment forepart which will have been laid on the machine work table before the template is closed down thereonto. When the shaping plate has reached its fully extended position the side and end edges of the pocket will be projecting out from underneath the edges of the plate 7 and overlapping the edges of the retracted edge and end blades 23, 24. Continued pressure in the cylinder 10 then forces the cross bar 16 towards the pivot rod 20 and in so doing moves the edge and end blades 23, 24, inwardly, which movement folds the edges 5 of the pocket 4 inwardly over the shaping plate 7 into their underlap position. Reverse fluid pressure is then admitted to the cylinder 10 to cause a retraction of the plate 7 followed by a withdrawal of the edge and end blades 23, 24, leaving the pocket 4 with underlapped edges 5 in position on the garment forepart with the stitching slot 3 clear for the passage of the machine stitching needle. Stitching will commence at the free end of one U-shaped part 34 and after the needle passes right round into the short leg of the other U-shaped part 34, there may be back stitching at each end of the stitching line, the garment forepart can be withdrawn with the pocket stitched in position and another pocket stitching operation carried out by a repetition of the aforesaid operations.

To facilitate these operations, an opening 35 is formed through the plate 2 and provided with ledges 36 for the mounting of, say, two magnets which are provided to hold the shaping plate 7 firmly up under the top plate 2 when a pocket 4 has been located. Also a pair of guide pieces 37 are mounted on the plate 2 for a projection on a lifting bar (which replaces the usual presser foot) on the sewing machine to pass under such guide piece at each end of the stitching line to hold the template in a slightly raised position for a pocket and garment forepart to be located respectively in and under the template. These gudie pieces and lifter bar are not essential but are considered to be useful in speeding up the use of the template and to facilitate at least semi-automation. The lifter bar may be manually operated, or by a fluid pressure ram or solenoid.

As shown in FIGS. 7 and 8, the template 1 can be pivotally mounted by its rod 20 on the work table of a sewing machine or on a movable carrier work plate 38 capable of movement during stitching operations, over the work table. When the template is raised the flexible shaping plate 7 will flex downwardly to facilitate the introduction of a pocket 4 thereover. The pocket may be introduced by hand or may be located on a presentation plate 39 mounted between guides 40, on the work table or carrier plate 38, to have the work table or carrier plate 39 may be linear movements. The plate 39 may be moved by hand or by, say, fluid pressure operated means.

There is an inclined ramp 41 at the front of the plate 39 with a spring loaded pocket edge setting bar 42 (hinged to the work plate) against which a pocket is positioned overlying the ramp. Spring loaded pivotal fingers 43 lie over the side edges of a pocket to hold it against longitudinal movement by means of small underneath projections so arranged that the pocket can be pulled transversely from under the fingers. With the template raised the pocket loaded plate 39 is presented thereto and automatically rides over and lowers the bar 42 so that the front 25 of the plate 7 can rest on and then ride up the ramp 41 under the pocket 4 when operated by its piston-cylinder unit. The said magnets on the top plate will automatically pull the plate 7 up to the top plate 2 trapping the pocket. The folding blades 23, 24 may be operated immediately or after the presentation plate is withdrawn and a garment part moved into position beneath the raised template which is then lowered. The folding blades 23, 24, and shaping plate are all retracted and a stitching operation carried out.

The aforesaid work plate can be mounted and controlled to have movements in its own plane to suit the profile of the slot 3. For example, the work plate can be supported on a rectangular motion guide mounting and have a guide track slot complementary to the slot 33 with a guide roller follower on the throat plate of a sewing machine located in the said slot. The needle will pass through the follower when stitching and controlled driving means can move the work plate in its own plane.

By using the method and apparatus according to this invention, pockets can be correctly positioned and stitched neatly very closely to the folded edge of the pocket. An even all round distance from the fold, say $\frac{3}{64}$ of an inch, can be achieved.

What I claim is:

1. Apparatus for use in the shaping and then the profile stitching of a first material part to a second underlaid material part, including a top retaining plate to cover said material parts, movable first part shaping means beneath said top plate, said shaping means having its edge profiled to suit the shape the said first part is to assume, said top retaining plate having a needle passage track slot profiled complementary to the shaping means, movable folding blade means carried by the top plate adjacent the profiled track slot, operating means for moving the shaping and folding means relative to one another to shape the first material part and fold its edge under the shaping means to form an underlapped edge, said operating means being arranged to withdraw the shaping and folding means leaving the shaped first part free beneath the top plate for stitches to be inserted through both material parts.

2. Apparatus according to claim 1, wherein the shaping means comprises a thin plate with a profiled edge to shape a patch pocket for a garment, said shaping plate being mounted to slide lengthwise under the top plate and lie under an unfolded patch pocket, and operating means on the top plate for sliding the shaping plate into and out of its pocket shaping position.

3. Apparatus according to claim 2, wherein the shaping plate operating means comprise a piston and cylinder unit operated by pressurised fluid from a valve controlled system.

4. Apparatus according to claim 1, wherein the folding blade means comprise a pair of oppositely located side blades and an end blade, said side blades each being carried by a movable frame member having a cam slot at one end and a pivotal axis at the other end, said cam slots being adapted to move a pair of parallel slides carrying the end blade.

5. Apparatus according to claim 4, wherein said frame members and slides are operated by a pair of side arms, a movable cross bar to which the rear ends of said arms are attached, the front ends of said arms being connected to the slides by pillars which pass up through said cam

slots of the frame members, said cross bar being provided with operating means.

6. Apparatus according to claim 1 in combination with a slidable pocket presentation plate, said plate having a front ramp for the front end of the shaping means to slide there-up under an overlaid pocket when relative movement is created between said plate and said means, and pocket retaining fingers for holding the pocket against lengthwise movement but not transverse movement when the shaping means is picking up the pocket.

7. Apparatus according to claim 6, wherein the presentation plate has an associated front depressible pocket edge stop member, said member being hinged below the plate and spring loaded to its upright operative position

in front of the presentation plate so that said plate can ride thereover.

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