United States Patent [19]

Dodsworth

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[54] **MATERIAL FOLDING AND STITCHING AID**

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[30] **Foreign Application Priority Data**

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[52] **U.S. Cl.** **112/121.15,** 112/136

[51] **Int. Cl.** **D05b 21/00**

[58] **Field of Search** 112/120, 121.11, 112/121.12, 121.15, 136, 147; 223/38

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Attorney—Richard K. Stevens, Davidson C. Miller et al.

[57] **ABSTRACT**

A device for use in the folding and stitching of a piece of material to other material comprises a plate with a shaped shallow well in one face thereof, a pair of pivoted blades to swing from an open position to a closed position, a cover plate to fold over onto the plate when material has been positioned in the device shaped slots through said plate and cover plate to receive a guide member and for the stitching passage of a sewing machine needle, and a separate forming plate to enter said well for a material shaping purpose.

7 Claims, 7 Drawing Figures

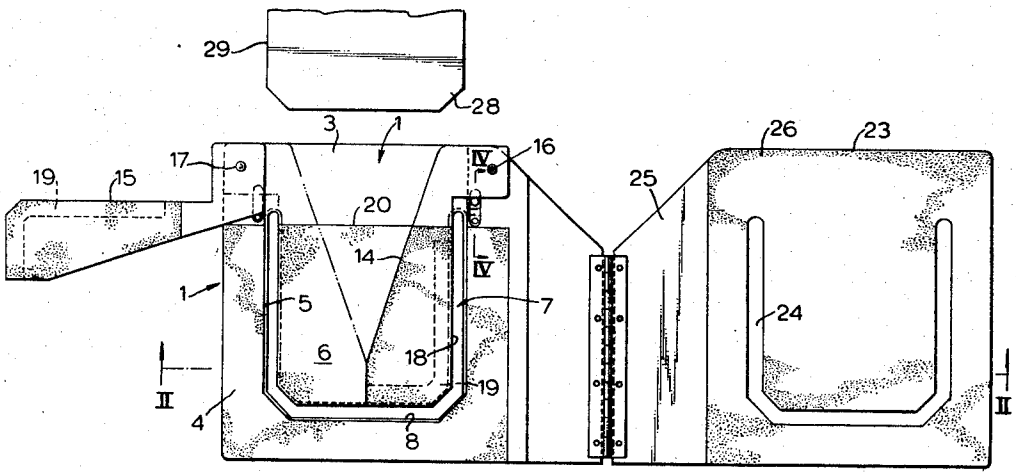


FIG. 1

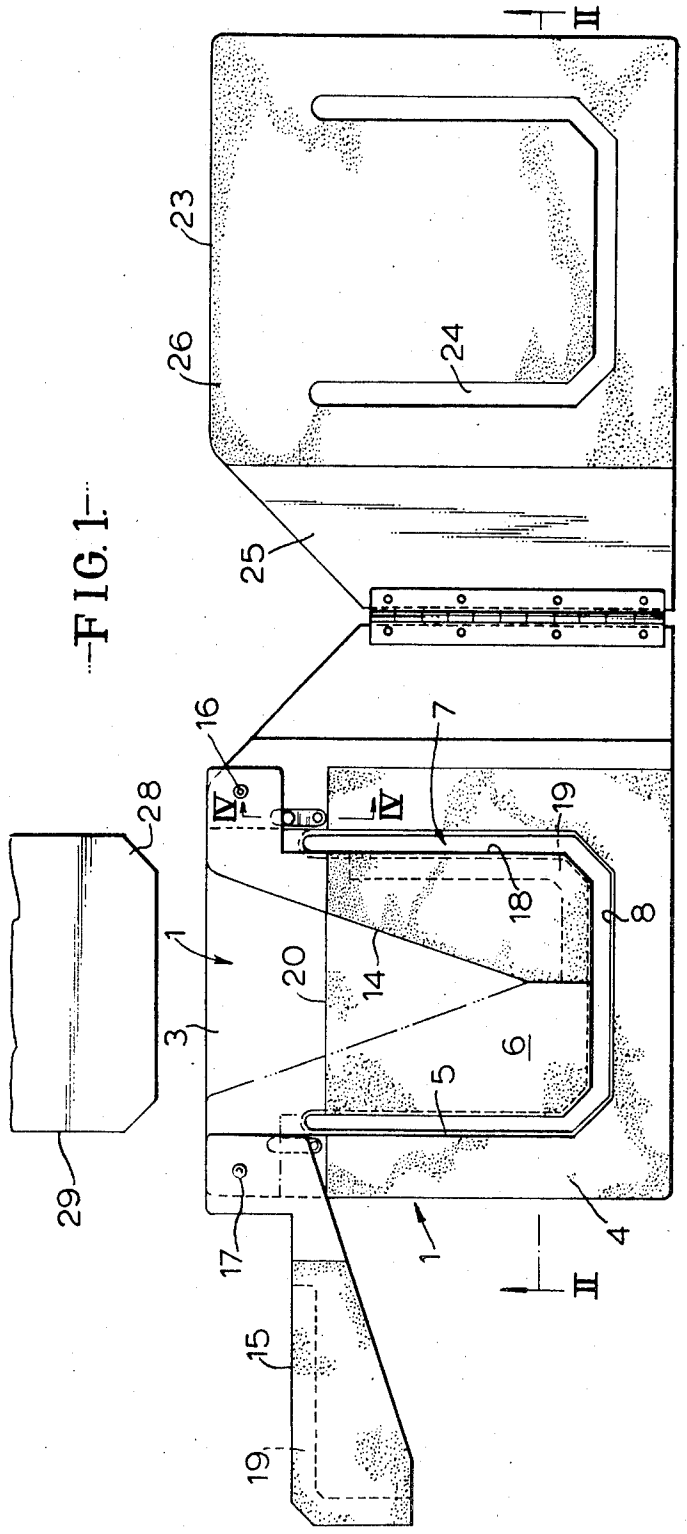

II
23
26
24
25
16
7
28
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IV
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1
II
15
19

FIG. 2

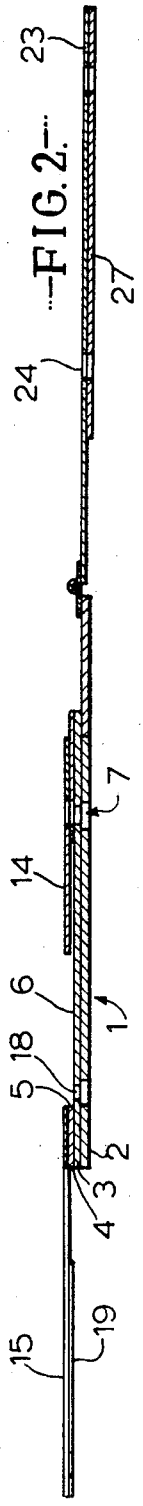
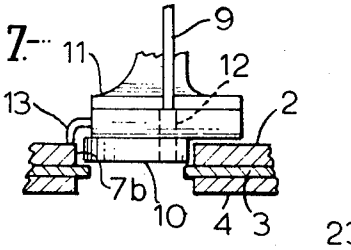

23
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14
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19

FIG. 7



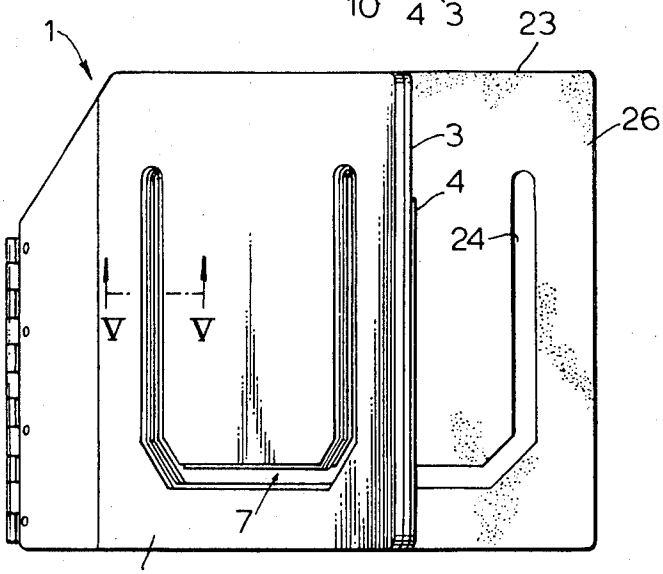
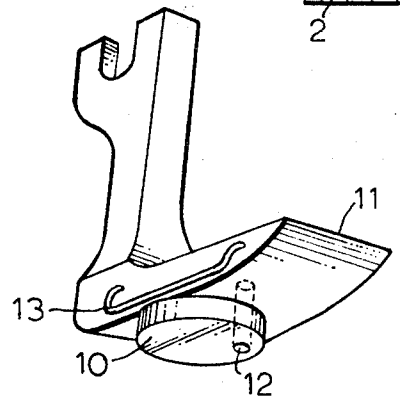


FIG. 3

FIG. 5



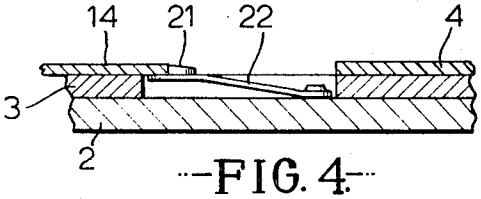
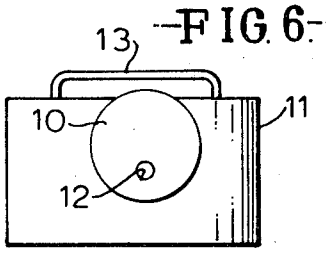


FIG. 4

FIG. 6



MATERIAL FOLDING AND STITCHING AID

This invention relates to methods of, and means for, facilitating the shaping of a material part for subsequent stitching of this part to another piece of material.

In the manufacture of some articles, particularly articles of clothing to which patch pockets are to be stitched, skilled operators are required to ensure correct folding and stitching of the pocket.

According to the present invention a device for use in the folding and stitching of a piece of material comprises a plate having a shaped well in one surface thereof, the well having an edge running parallel to and alongside the outside edge of a slot formed through the plate and shaped to the required stitching line, and two blades each pivoted to the plate near a respective end of the slot for movement between a first position lying to the outside of the outside edge of the slot and a second position lying over the well within the inside edge of the slot.

In use the plate is placed with the well side facing upwards, and the blades in their first positions. A piece of material, which has preferably been cut roughly to the finally desired shape, is then laid over the well. A separate forming plate, shaped to fit closely within the well is then placed over the piece of material to depress this into the well and press it against the whole length of the edge of the well. Each blade is then pivoted in turn from the first position to the second position. During this pivotal movement each blade contacts the area of material projecting upwardly from the edge of the well and turns it over to trap it to lie between the forming plate and the blade, so folding the material accurately around the edge of the forming plate. The two blades should be dimensioned and shaped so that between them they overlie the whole of the free edge of the material when in their second positions, so that the whole of the desired edge of the material is positively folded and gripped in the folded position. The forming plate is then withdrawn, the blades holding the material in the folded position even during withdrawal.

It will be seen that the plate is then holding an accurately shaped part of material ready for stitching to another piece of material.

Preferably a cover plate is hinged to the said plate along one edge thereof to be movable between open and closed positions respectively exposing and covering the well and the blades, and the cover plate is formed with a further slot which corresponds to the slot in said plate and overlies the slot when the cover plate is moved to the closed position.

In this form of the apparatus, after the material part has been folded and the forming plate withdrawn the piece of material to which the folded part is to be stiched is laid over the blades and the cover plate is closed to trap the piece of material between the two plates. The two pieces of material are thus firmly held in their respective positions and the assembly can be placed in a sewing machine with a guide surrounding the sewing machine needle engaged in the slot. Sewing is then carried out with the needle working through the slot to stitch together the pieces of material and the assembly being guided relative to the needle by the guide engaged in the slot so that stitching is effected along the required line. When sewing is complete the assembly is removed from the sewing machine, the cover plate is opened and the finished work is removed from the

plate by easing the folded part of material from under the blades.

In an alternative form of the apparatus no cover plate is provided. After folding of the part of material by the blades and withdrawal of the forming plate the plate can be inverted, and placed over a further piece of material to which the shaped first part is to be sewn. The assembly is then placed in a sewing machine with a guide surrounding the needle of the sewing machine engaged in the slot, and sewing is carried out with the assembly being guided relative to the needle by the guide engaged in the slot. The pieces of material are thus stitched together along the desired line, and after stitching is completed the material may be removed as already described.

In either form, the invention provides a simple, effective and inexpensive aid to the accurate folding and stitching of material.

Preferably the surfaces of the blades facing away from the plate are roughened so that they will grip the further piece of material which is laid on to the plate or over which the plate is placed when inverted, to minimise the possibility of slipping between the plate and the further material during stitching. Conveniently at least part of the surface of each blade facing towards the plate is also roughened so that it may better grip and hold the edge parts of the material being folded. These roughened surfaces may suitably be constituted by a layer of baize or of emery paper adhered to the respective surfaces of the blades.

That part of the plate forming the base of the well may also have a roughened surface, for which emery paper or baize has again been found suitable. Once more this gives positive holding of the material being folded and also mitigates the effect of distortion when working with a stretchable material.

The separate forming plate should be smooth surfaced so that it may easily be withdrawn from the folded material, and this plate may conveniently be of metal or of low-friction plastics material, and have a handle for easy manipulation.

A specific embodiment of a folding and stiching aid according to the invention will now be described in more detail, by way of example only, with reference to the accompanying drawings in which:

FIG. 1 is a plan view of the device in an open inverted position;

FIG. 2 is a cross-section on the line II—II of FIG. 1;

FIG. 3 is a partly closed plan of the device from above;

FIG. 4 is a sectional detail on line IV — IV of FIG. 1;

FIG. 5 is an enlarged perspective view from below of the presser foot of a sewing machine;

FIG. 6 is a plan from below of the foot; and

FIG. 7 is a sectional detail V — V of FIG. 3.

As shown in the drawings the device comprises a plate shown generally as 1, made up of three layers 2, 3 and 4 secured together by suitable adhesive. The third layer is cut away along an edge 5 to form a shallow well 6 in one surface of the plate. Formed through the plates 2 and 3 is a top slot 7 shaped to the stitching line required for the piece of material. The edge 5 of the well runs parallel to and alongside the outer edge 8 of the slot 7 in the plate 3. The slot 7, through which the sewing machine needle 9 passes, comprises a part 7*a* in plate 3 and a part 7*b* in plate 2 to receive a guide

10 pendant from the underside of the sewing machine presser foot 11. There is a hole 12 through the guide and foot through which the needle 9 passes. The slot part 7*b* is made of a width to suit stitching requirements. For example a wide slot as shown receives a relatively large diameter guide 10 which is off-set in relation to the axis of the needle passage hole 12 which is laterally central of the foot 11. A presser bar 13 projects from the side of the foot and is provided to prevent the top plate 2 lifting during stitching operations. With this arrangement the needle 9 can stitch close to one edge of the slot part 7*a* and then by turning the device 1 round in its own plane a second line of stitching can be formed close to the other edge of slot part 7*a* spaced from the first line of stitching.

It will be understood the device 1 can be made for single line stitching in which case the width of the slot part 7*a* in plate 3 is made just sufficient to receive the needle 9 of a sewing machine, while the slot part 7*b* in the plate 2 is made wide enough to receive a hollow pendant guide 10 on the sewing machine, co-axial with the needle passage hole 12 in the foot 11, through which the needle 9 passes.

Blades 14 and 15 are pivoted to the plate 1, one each near to each end of the slot 7, the blades being pivotable about studs 16 and 17 respectively. Each blade is movable between a first open position, blade 15 is shown projecting to the lefthand in full lines in FIG. 1, wherein the blade lies wholly outside the slot 7, and a second closed position, blade 15 is shown in chain lines and blade 14 is shown in full lines, FIG. 1, wherein the blades 14 and 15 lie over the well 6 and within the inner edge 18 of the slot part 7*a*. The upper surfaces of the blades 14 and 15 as seen in FIG. 1 are each covered with baize or emery paper. The part 19 of the opposite surface of each blade is also covered with baize or emery paper. The blades themselves may be made of thin sheet metal. The elements 2 and 3 of the plate 1 may conveniently be made of resin impregnated laminated linen, known as "Tufnol," while the element 4 may conveniently be of polyvinylchloride. A part 20 of the surface of plate 3 exposed in the well 6 is conveniently covered with baize or with emery cloth. It will be understood that other materials may be used equally well for the various parts.

The blades 14 and 15 are held in their closed position by studs 21 carried by leaf springs 22 secured at one end to the plate 2. This arrangement stops the blades being vibrated out of their closed positions during stitching operations.

The above device is conveniently provided with a cover plate 23 hinged about one edge to the plate 2 and having a slot 24 therethrough of the same shape and size as slot part 7*b* in plate 2. The inner face 25 of this cover plate is furnished with a facing 26 of baize or emery cloth. The outer face (which is the under face in use of the device 1) of the cover plate has a rubber or plastics material facing 27 adhered thereto and this can be dimpled or patterned to facilitate the grip thereon of the sewing machine feed dogs.

The device is used in association with a separate forming plate 28 having a thickness slightly less than the depth of the well 6. The forming plate may have a handle (not shown) and be made of a low friction material such as metal or certain plastics materials.

In use, with the blades 14 and 15 in their first open positions a piece of material roughly cut to shape is placed over the well, and the forming plate 28 is placed over the material and fitted into the well so that edges of the material project upwardly between the edge 29 of the forming plate and the edge 5 of the well. The blades 14 is then pivoted to its closed second position and during such movement it contacts the upstanding edges of the material to smooth these over on to the upper surface of the forming plate 28 and thus fold the material around the edge 29 of the forming plate. Some manipulation of the material may be necessary, particularly in the angled (it may be curved) region of the track. The blade 15 is then similarly moved to its closed second position and the forming plate withdrawn, whereupon the blades will hold the material in its folded form, the baize or emery cloth 19 and baize or emery cloth 20 gripping the material to prevent slippage thereof.

A further piece of material is then placed over the plate 4 and blades, the cover plate 23 is closed and the whole device holding the folded material is then inverted, placed in a sewing machine, the guide 10 is engaged with the slot part 7*b* and the machine is started, the plate 1 being moved beneath the needle either manually or automatically so that a double or single line of stitching is effected along the line of the slot. When stitching is complete the plate 1 is removed from the material with the blades 14 and 15 in the closed position.

It will be understood that the device may be designed according to any desired form of stitching line, the shape and size of the slot, of the edge of the well, and of the blades being formed to give the required effect.

What I claim is:

1. A device for use in the folding and stitching of a piece of material, said device comprising a plate, a shaped well in one surface of the plate, the shape of said well being that required for the finished folded shape of the material, said well having its peripheral edge running parallel to and alongside the outside edge of a slot formed through the plate, said slot being shaped to suit at least one required stitching line, two blades each pivoted to said plate near a respective end of said slot for movement between a first open position lying to the outside of the said outside edge of the slot and a second closed position lying over the well within the inside edge of the slot and a flat forming plate complementary in shape to said well, said forming plate being used to press a piece of material into said well for the material edges to be folded over the edge of the forming plate and held by the two blades when moved into their closed position when the forming plate is withdrawn.

2. A device as claimed in claim 1, wherein a cover plate is hinged to the said plate along one edge thereof to be movable between open and closed positions respectively exposing and covering the well and the blades, said cover plate being formed with a further slot which corresponds to the slot in said plate and overlies the slot when the cover plate is moved to the closed position.

3. A device as claimed in claim 1, wherein the surfaces of the blades facing away from said plate are roughened.

4. A device as claimed in claim 1, wherein at least part of the surface of each blade facing towards said plate is roughened.

5. A device as claimed in claim 1, wherein that part of the plate forming the base of the well has a roughened surface.

6. A device as claimed in claim 1, wherein surfaces to be in contact with material during stitching have non-slip facings constituted by a layer of baize adhered to the underlying surface.

7. A device as claimed in claim 1, wherein releasable catches are provided on said plate for locking the two blades in their closed positions.

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