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Grazzini

[11] **3,881,264**

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[54] **DEVICE FOR FLATTENING AND IRONING THE SEAM ZONE BETWEEN TWO LAYERS OF FABRIC**

[75] Inventor: **Affortunato Grazzini,** Arezzo, Italy

[73] Assignee: **Cassina & Co. S. R. L.**

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[30] **Foreign Application Priority Data**

Nov. 2, 1972 Italy 9733/72

[52] **U.S. Cl.** ..... **38/1 B**

[51] **Int. Cl.** **D06f 69/00**

[58] **Field of Search** ..... 112/217; 38/1 B, 2, 11, 38/15–17, 135, 7, 10; 223/73

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Primary Examiner—Geo. V. Larkin
Attorney, Agent, or Firm—Toren, McGeady and Stanger

[57] **ABSTRACT**

A device for flattening and ironing a seam zone between two layers of fabric comprises guides for moving the two layers of fabric into coplanar relationship and for moving edge portions of the layers beyond the seam into coplanar relationship. Moisture, for example in the form of steam, is supplied to the seam zone, and the fabric is ironed in the above configuration by, for example, a heated roller.

7 Claims, 10 Drawing Figures

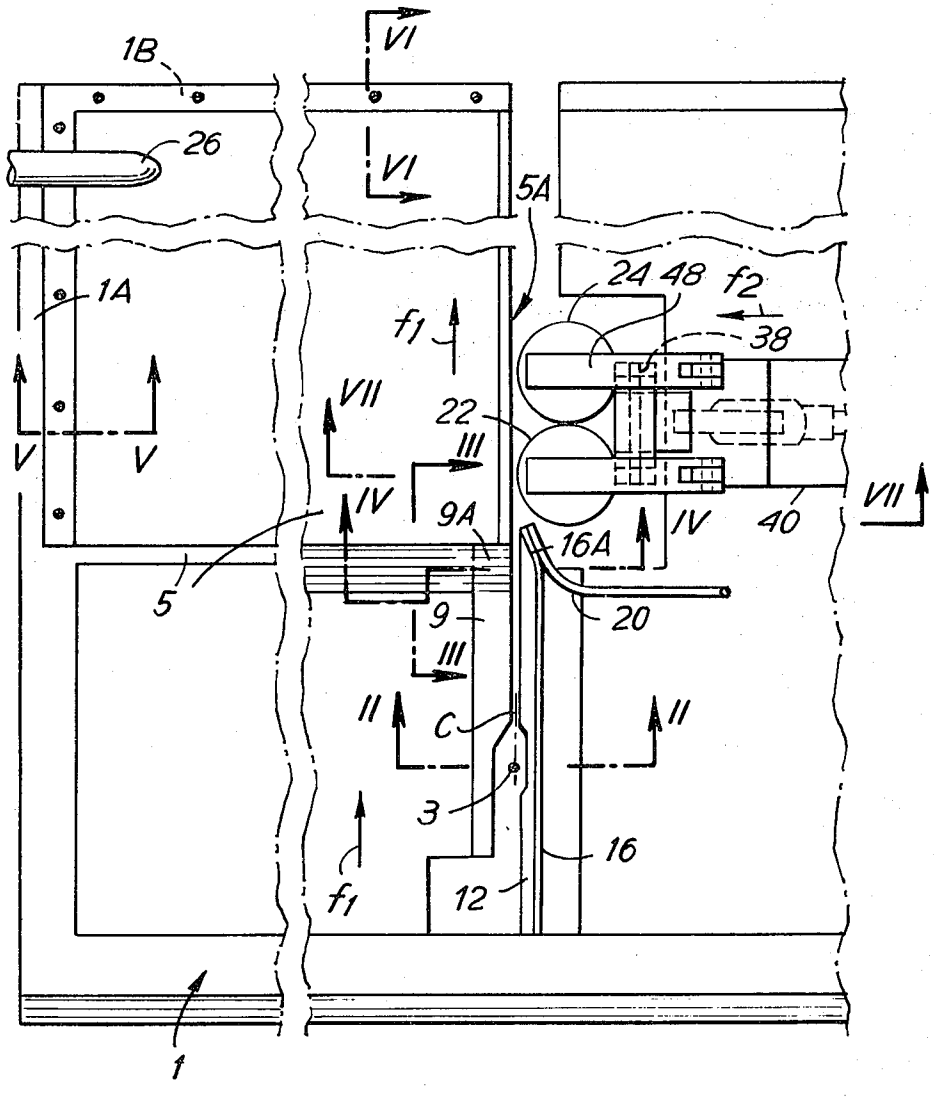


Fig. 1

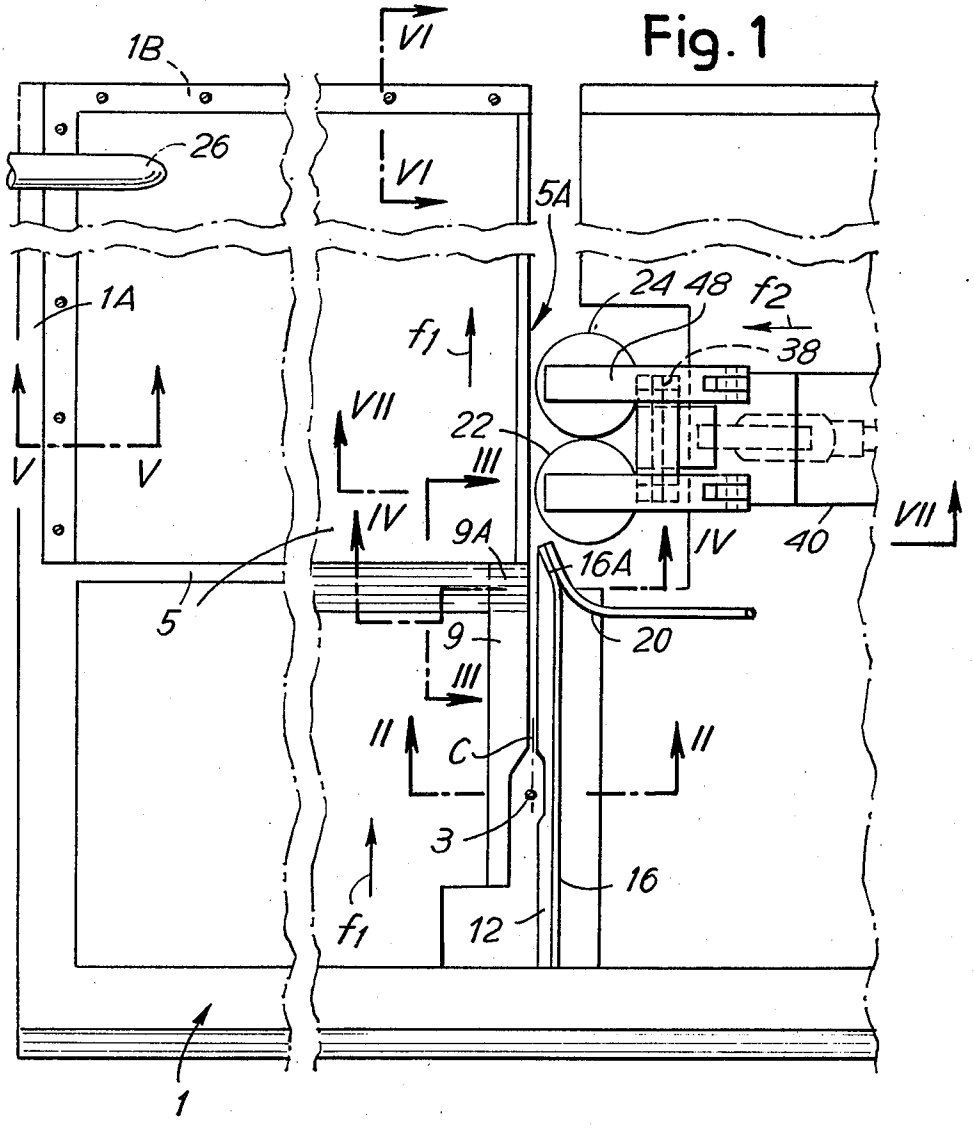
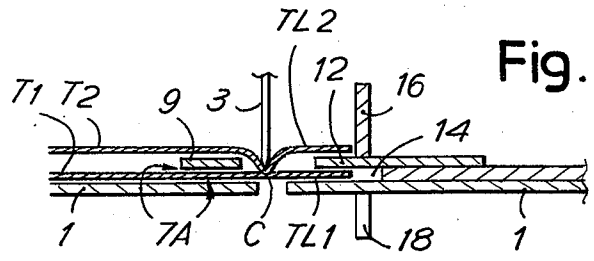

1B
VI
26
VI
5A
1A
24
48
f2
38
f1
VII
22
III
V
V
IV
9A
IV
40
VII
16A
5
9
20
III
II
C
II
3
16
f1
12
1

Fig. 2


TL2
T1
T2
9
3
12
16
14
1
7A
C
TL1
18
1

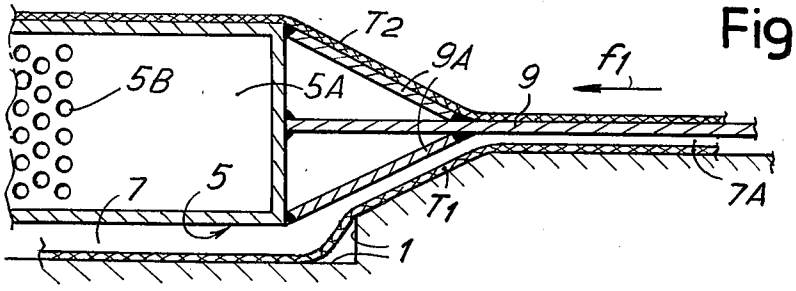


Fig. 3

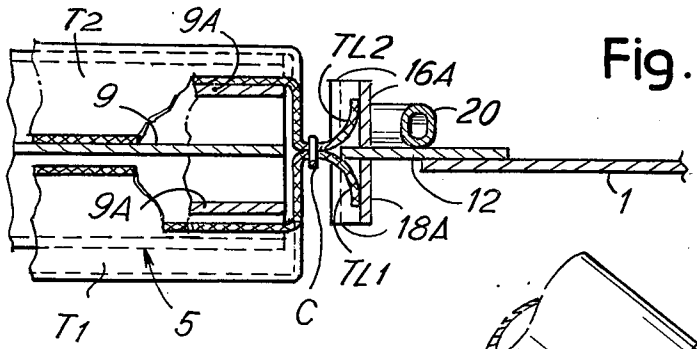


Fig. 4

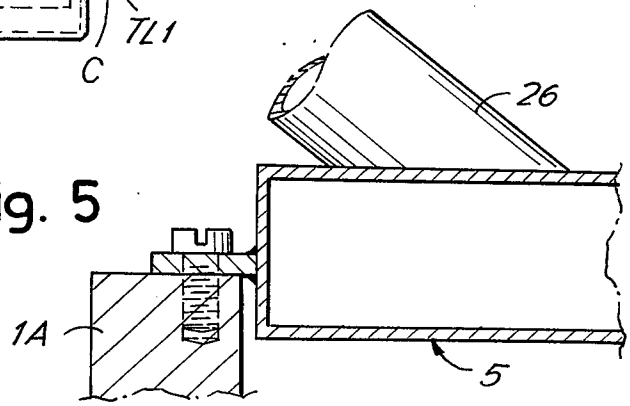


Fig. 5

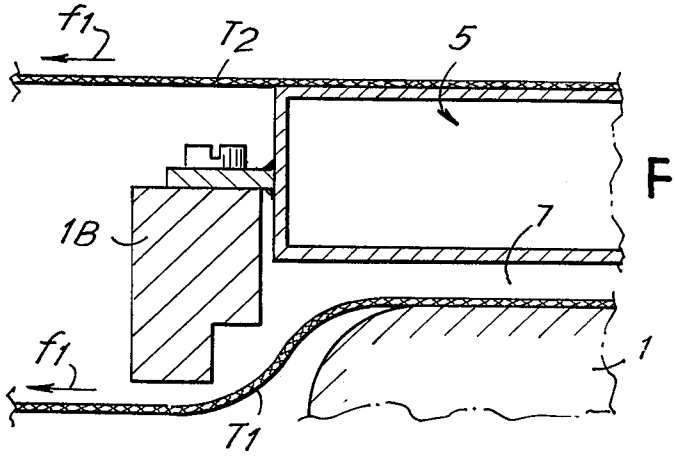


Fig. 6

Fig. 7

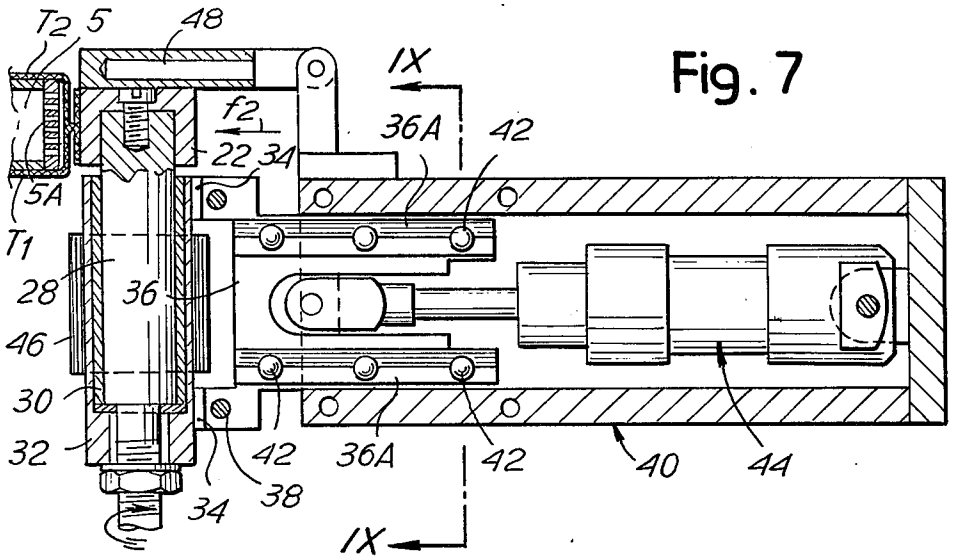


Fig. 9

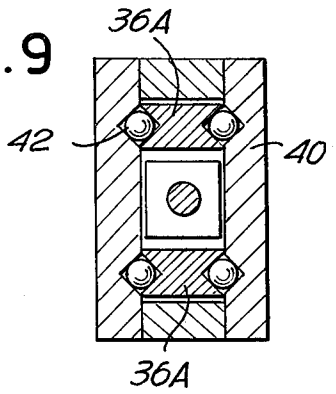


Fig. 8

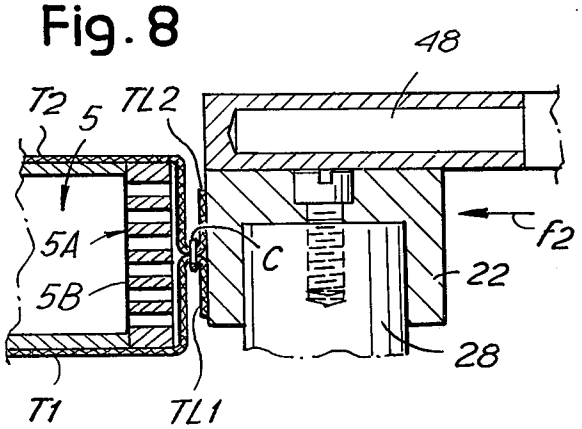
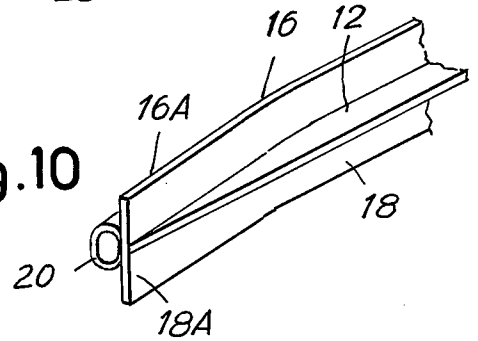


Fig. 10



DEVICE FOR FLATTENING AND IRONING THE SEAM ZONE BETWEEN TWO LAYERS OF FABRIC

FIELD OF THE INVENTION

The present invention relates to a device for flattening and ironing the seam zone between two layers of fabric which have been sewn together on a sewing machine.

SUMMARY OF THE INVENTION

According to the present invention, there is provided a device for flattening and ironing a seam zone between first and second layers of fabric, each said fabric layer comprising a main portion at one side of a stitched seam and an edge portion at the other side of the seam, said device comprising profiled means for diverging the main portions of the first and second layers and for moving the main portions into coplanar relationship, and for diverging the edge portions of the first and second layers and for moving the edge portions into coplanar relationship, means operative to supply moisture to the seam zone and means for ironing and heating the seam zone.

BRIEF DESCRIPTION OF THE DRAWINGS

An embodiment of the invention will now be described, by way of example only, with reference to the accompanying diagrammatic drawings, in which:

FIG. **1** is a plan view of a device in accordance with the invention;

FIGS. **2, 3, 4, 5, 6** and **7** are sections taken on the lines II—II, III—III, IV—IV, V—V, VI—VI and VII—VII, respectively, of FIG. **1**;

FIG. **8** shows a portion of FIG. **7** to an enlarged scale;

FIG. **9** is a section taken on line IX—IX of FIG. **7**; and

FIG. **10** is a perspective view of means for diverging portions of the fabric.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in the drawings, a base structure **1** of the assembly of the present invention forms a surface along which two superposed layers of fabric T1 and T2 are advanced stepwise in the direction of the arrow f1. The assembly may be provided with means including a needle **3** for sewing together the layers of fabric T1 and T2; the needle **3** lies within the sewing zone of the machine.

Downstream in the path of movement of the fabric layers T1 and T2, there is provided a suction box **5** of flattened parallel-epipedic form. The box **5** is raised from the base structure **1** in order to define a gap **7** for the lower layer T1 (see FIGS. **3** and **6**); the box **5** is supported on two sides on portions **1A** and **1B** of the base structure **1** (FIGS. **1, 5** and **6**), the portion **1B** being in the form of a bracket to allow the passage of the lower fabric piece T1, while the portion **1A** is spaced from the sewing zone and thus from the seam by a distance corresponding to the maximum width of fabric that is likely to be used. The front wall **5A** of the box **5** is directed towards the seam line and at least a part of the front wall **5A** is formed by a grid **5B**. At the end wall of the box **5** which faces upstream of the direction of travel of the fabric layers, there is provided part of a first guide means which includes a plate **9**, the plate **9** being perpendicular to the end wall. The plate **9** is positioned generally midway between the upper and lower walls of the box **5** and has a longitudinal edge aligned with the front wall **5A**. Divergent plates **9A** extend between the upper and lower surfaces of the plate **9**, and the upper and lower edges of the end wall of the box **5**. The plate **9** is spaced from the base structure **1** by a gap **7A** which communicates with the gap **7** to permit passage of the lower fabric layer T1, while the upper fabric layer T2 passes above the plate **9** and above the box **5**; the two fabric layers are caused to diverge by the plates **9A** (see FIG. **3**). Thus, it will be seen that the device of the invention includes first guide means which comprise the plate **9** and the plates **9***a* for guiding the fabric layers T1, T2, which may be considered main portions of the fabric.

In front of the plate **9** and spaced by a limited distance therefrom, there is located a second guide means or plate **12** coplanar with the plate **9** and raised from the base structure **1** to form a gap **14** (FIG. **2**) between the plate **12** and the base structure **1**. An edge portion TL1 of the lower fabric layer T1 is accommodated in the gap **14**, and an edge portion TL2 of the upper fabric layer T2 is located above the plate **12**; the edge portions TL1 and TL2 are those portions of the fabric layers which lie on the opposite side of the seam C to the main body of fabric. The plate **12** is combined with an upper longitudinal wall **16** and, beyond the sewing zone, also with a corresponding lower longitudinal wall **18**. The walls **16** and **18** are formed, at a position slightly beyond the leading edge of the plates **9A**, with two end portions **16A**, **18A** (see FIGS. **1, 4** and **10**) which are curved gradually towards the line of the seam. The end portions **16A** and **18A** thus reduce the width of that portion of plate **12** which projects from the walls **16, 18** towards the plate **9** and the box **5**, the width being zero adjacent the front wall **5A** formed by the grid **5B**. The edge portions TL1 and TL2, which initially lie on opposite sides of the plate **12**, are caused to diverge by the end portions **16A** and **18A** of the walls **16** and **18** and move towards the portions of the fabric layers T1 and T2 on the opposite side of the seam C; these portions of the fabric layers T1 and T2 are caused to diverge by the effect of the plates **9A**.

In this manner, the fabric layers T1 and T2, sewn by the needle **3** and advanced according to the arrow f1, are diverged adjacent the seam C to obtain a substantial coplanarity of those portions of the fabric layers T1 and T2 adjacent the seam C, and to cause the edge portions TL1 and TL2 to lie against these coplanar portions as shown in FIG. **8**. This configuration of the edge portions is stabilized by an ironing process.

In order to stabilize the fabric in the aforesaid configuration, moisture, for instance in the form of steam, is introduced by means of a tube **20** which discharges the steam adjacent the trailing edge of the end portions **16A** and **18A** of the walls **16** and **18**. Moistening of the fabric is effected in front of the front wall **5A**. Two heated rollers **22** and **24** are arranged to press the fabric against the grid **5B**. The jet of steam is directed between the roller **22** and the front wall **5A**. The rollers **22** and **24** are urged in the direction of arrows f2 towards the front wall **5A**. In this way, the fabric is ironed.

The rollers **22** and **24** are angularly advanced in steps synchronized with the advance of the fabric layers T1 and T2, the linear length of the advance of the rollers **22** and **24** at their peripheries being equal to the length

of advance of the fabric layers T1 and T2. A vacuum is created in the interior of the box **5**, for example by withdrawing air through a fitting **26** (see FIGS. **1** and **5**). The fabric which is moistened, and is heated and pressed by the rollers **22** and **24**, releases moisture and this moisture is withdrawn by the box **5**. In this manner the fabric is dried in the desired configuration and is thus stabilized. The two fabric layers with the flattened, stabilized, seam setting are discharged from the slot **7** as shown in FIG. **6**.

In order to support and heat the rollers **22** and **24**, the rollers are carried by movable support means including a relatively large diameter shaft, a shaft **28** for the roller **22** being shown in FIG. **7**. The shaft **28** is journalled in an elongate bush **30** which is supported by a cup member **32** mounted on stirrups **34**. The stirrups **34** (and those for the roller **24**) are supported by a plate **36** through suitable connecting pins **38**. The plate **36** has two arms **36A** which extend parallel to the direction of the arrows f**2**. The shafts of the rollers **22** and **24** can be driven by drive means combined with means for advancing the fabric layers. The arms **36A** are provided with longitudinal channels (see FIGS. **7** and **9**) which co-operate with corresponding channels on a supporting structure **40**, roller means in the form of ball bearings **42** being located in the co-operating channels. In this manner, the plate **36** and thus the entire roller-supporting assembly carried thereby is slidably guided in the direction of the arrows *f***2**. The plate **36** is reciprocable by means of a fluid actuated cylinder **44**, which thus effects movement of the rollers **22** and **24** towards and away from the front wall **5A** of the box **5**, and determines the ironing pressure of the rollers against the front wall **5A**.

The rollers **22** and **24** are heated through their bearing systems. More particularly, as shown in FIG. **7** with reference to the roller **22**, there is wound around the cup member **32** a resistance heating element **46** which heats the shaft **28**. A probe accommodated in a head **48** contacting the rollers **22** senses the roller temperature and acts via suitable control means to maintain the temperature substantially constant at the desired value. Transmission of heat generated by the element **46** towards the structure **40** is reduced by the presence of the stirrups **34**, the pins **38**, the balls **42**, and the shape of the plate **36**.

It is possible to omit one of the rollers **22**, **24**, although two rollers are preferred.

I claim:

1. A seam flattener apparatus for directing a pair of fabric layers past an ironing station and for ironing portions of said fabric layers, said fabric layers each including

a longitudinally extending outer edge,

a sewn seam extending generally parallel to said edges of said fabric layers and defining on each of said fabric layers

an edge portion extending between said seam and said outer edge, and

a main portion extending on a side of said seam opposite said edge portion,

said apparatus comprising, in combination,

first guide means configured to dispose said main portions in a coplanar relationship relative to each other, with each of said main portions extending away from said seam in opposite directions, second guide means configured to dispose said edge portions in a coplanar relationship relative to each other, with each of said edge portions extending away from said seam in opposite directions and with the edge portion of each of said fabric layers overlapping the respective main portion of its corresponding fabric layer,

means for supplying moisture to said edge portions and said main portions along said seam, and

means for pressing said edge portions against said main portions along said seam while simultaneously applying heat thereto, said pressing means being located relative to said first and second guide means to press and apply heat thereto after said main portions and said edge portions have been disposed in said coplanar relationships.

2. Apparatus according to claim **1** wherein said pressing and heating means include at least one heated roller rotatable in synchronism with movement of said fabric layers, means defining a surface disposed opposite said roller and adapted to have said fabric layers passed between said defined surface and said roller, with said main portions of said fabric layers being supported in coplanar relationship against said surface, and means for biasing said roller toward said surface to press said coplanar edge portions of said fabric layers against said coplanar main portions thereof.

3. Apparatus according to claim **2** wherein said moisture supplying means includes means for directing a jet of steam onto said fabric layers immediately upstream of said roller, said apparatus further comprising suction box means including walls, said suction box means configured to have said surface formed by one wall thereof, said one wall being perforated, said suction box means including means for drawing moisture containing air from said fabric layers into said suction box means, said suction box means being structured to extend from said one wall whereby said main portions of said pair of fabric layers may extend over opposite sides thereof.

4. Apparatus according to claim **3** wherein said first guide means comprises a plate extending from said suction box means in a direction to have said seam pass generally parallel thereto, said plate being located to have said main portions of said fabric layers pass on opposite sides thereof, and a pair of inclined walls extending between said plate and said suction box means in a generally diverging relationship to separate said main portions and to direct said main portions toward said coplanar relationship.

5. Apparatus according to claim **1** wherein said second guide means comprises plate means located to have said edge portions of said fabric layers extend on opposite sides thereof, and wall means extending along said plate means and disposed relative thereto with a configuration causing divergence of said edge portions from said plate means such that said edge portions are directed into a substantially coplanar relationship immediately before the location of said pressing means.

6. Apparatus according to claim **2** including heat transmitting means having said roller supported thereon, and electrical heat generating means mounted on said heat transmitting means, said heat transmitting means being configured to transmit the heat generated by said heating means to said roller.

7. Apparatus according to claim **6** including movable support means having said roller and said heat transmitting means mounted thereon, said movable support means including elongated arms, a stationary structure having said arms movably guided therein, said elongated arms being movable relative to said stationary structure to control movement of said roller relative to said fabric layers.

* * * * *