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GARMENT CUTTING TABLE ASSEMBLY

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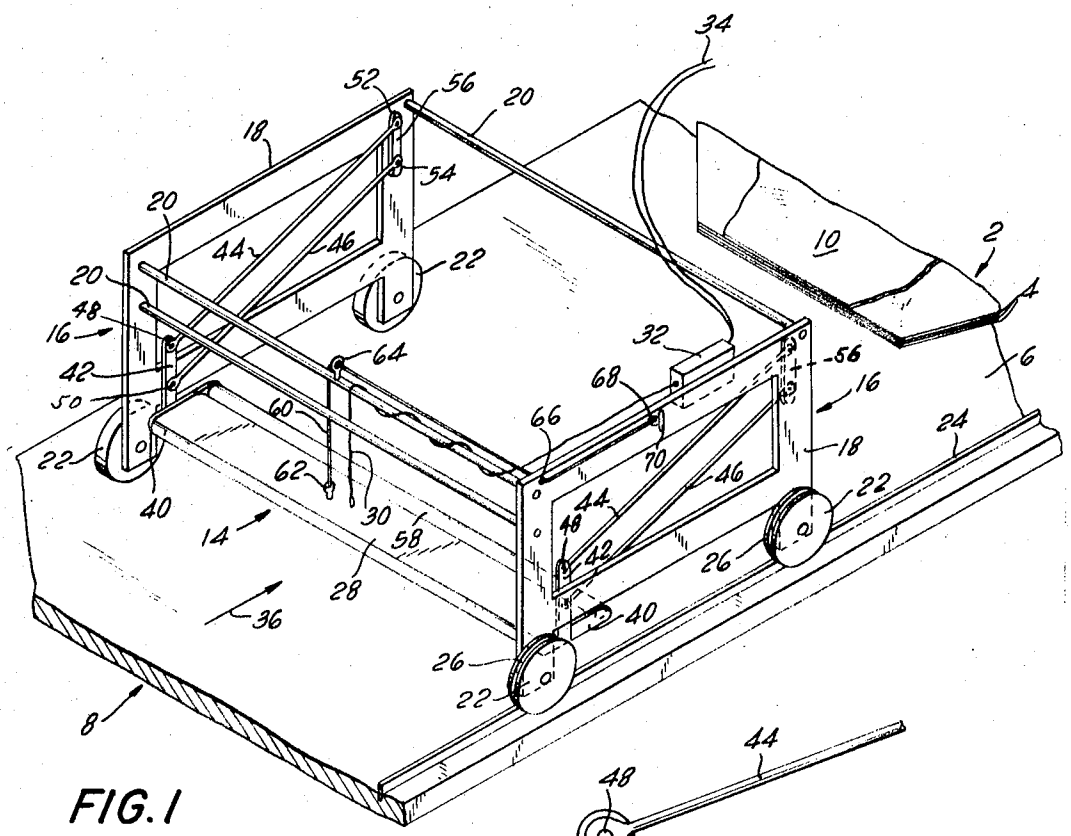


FIG. 1

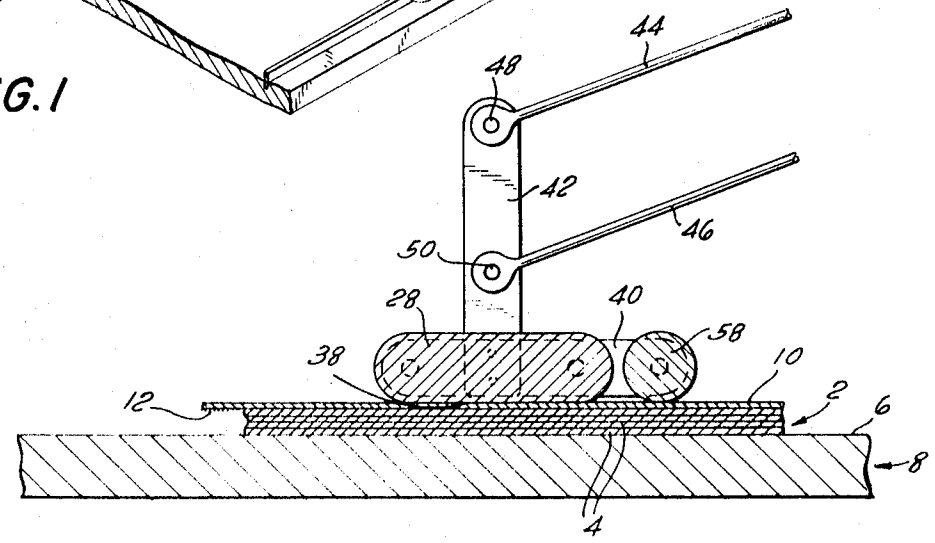


FIG. 2

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GARMENT CUTTING TABLE ASSEMBLY

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ABSTRACT OF THE DISCLOSURE

A pattern having a heat sensitive adhesive on its underside is secured to a pile of cloth spread on a table surface under action of a heating and pressing member suspended from a carriage traveling on the table surface.

The present invention relates to a garment cutting table assembly, and in particular to apparatus designed to facilitate the attachment of pattern paper to a pile or "lay" of spread cloth.

In garment manufacture a plurality of sheets of fabric are placed one upon the other on a table where they are to be cut to desired shape, thereafter to be incorporated into a garment. In order to control the shape to which a particular group of sheets is to be cut a pattern is employed which is generally formed from paper and shaped to correspond to the desired fabric shape. It is placed upon the fabric lay and there secured, after which an operator provided with a knife cuts the fabric sheets along the periphery of the pattern.

The pattern, or "mark" as it is generally known in the trade, in the past has been secured to the lay either by placing weights upon the pattern or by stapling the pattern to the lay. Weights tend to distort the pattern and are somewhat less than positive in fixing the position of the pattern relative to the lay. (It will be appreciated, of course, that if the pattern should shift while the lay is being cut an entire group of fabric sheets may be ruined.) While stapling is an effective fastening means, the stapling operation involves an appreciable time and hence is quite costly. It is less than satisfactory when the fabric sheets are formed of certain synthetic materials, since the stapling leaves holes in those portions of those fabric sheets which are subsequently to be used, and stapling is virtually ineffective when used with certain other types of fabrics, such as woolens.

It is the prime object of the present invention to provide means for securing the pattern or mark to the lay which avoids the above-enumerated disadvantages, and which instead provides for quick, accurate and reliable securement of the mark in position. It is a further prime object of the present invention to devise apparatus for accomplishing the above result which can be used with existing cutting tables or which will require only minor modification thereof, thus enabling the pattern-attaching apparatus to be sold as an accessory and used with existing cutting tables as well as to be sold as an integral part of a cutting table-pattern fastening assembly.

In accordance with the above, the pattern paper or mark is provided on its undersurface with one or more areas of heat-sensitive adhesive. A heated element is operatively mounted on the cutting table so as to be movable over the supporting surface of that table from one end of the lay and superposed pattern to the other. The heated element is yieldably urged downwardly so that it engages, presses down upon and slides over the pattern, thereby activating the heat-sensitive adhesive on the lower surface of the pattern and causing the pattern to adhere to the uppermost fabric layer in the lay. The heated element is so mounted as to function with lays of different thicknesses, and means are provided for lifting it from

the lay when the heated element is to be moved back to its original position. A pattern-smoothing element is movable with the heated element and is located somewhat in advance of the heated element as the latter moves through its operative stroke, thereby to ensure that the pattern is accurately smoothed out over the lay when it is secured thereto by the heated element. For best results the heated element is provided with a pattern-engaging surface of appreciable areal extent, and that heated element is so mounted with respect to the table that its pattern-engaging surface remains in a predetermined operative orientation, usually horizontal, as the heated element is differently vertically positioned, thereby to effectively and uniformly engage patterns overlying lays of different thicknesses.

In the preferred form here specifically disclosed the heated element is mounted on a carriage which is movable over the supporting surface of the cutting table and which is guided for movement thereover by engagement with appropriate means carried by the table. The heated element is mounted on this carriage by means of a parallelogram linkage which permits it to be raised and lowered in order to engage lays of different thicknesses while at the same time maintaining its lower operative pattern-engaging surface at a uniform orientation.

To the accomplishment of the above, and to such other objects as may hereinafter appear, the present invention relates to the construction and arrangement of a garment cutting assembly as defined in the appended claims and as described in this specification, taken together with the accompanying drawings, in which:

FIG. 1 is a three-quarter perspective view of a portion of a garment cutting table assembly embodying the present invention; and

FIG. 2 is a cross-sectional view, on an enlarged scale, showing the heated element and pattern-smoothing means in engagement with an adhesive-bearing mark positioned atop a lay supported on the upper surface of the cutting table.

As is shown fragmentarily at the right hand end of FIG. 1 and in cross section in FIG. 2, the lay, generally designated **2**, comprises a plurality of sheets **4** which are placed one upon the other on the upper surface **6** of a cutting table generally designated **8**, the legs or other supports for the table **8** being conventional and therefore not being shown in the drawings. On top of the lay **2** is a mark or pattern **10**, shaped to correspond to a particular fabric section, and provided on its undersurface (see FIG. 2) with a layer of adhesive **12** of heat-sensitive character. It is preferred, but it is not essential, that the adhesive **12** be provided over all or substantially all of the undersurface of the pattern **10**.

The mechanism employed to secure the adhesived pattern **10** to the lay **2** is generally designated **14**. It comprises a carriage-like support generally designated **16** comprising a pair of side frames **18** rigidly connected together by cross bars **20**, the latter being so located as not to interfere with the proper functioning of the device **14**. The carriage **16** is mounted on the table **8** for movement therealong over the table surface **6** in any appropriate manner. As here disclosed each of the side pieces **18** is provided with a pair of wheels or rollers **22** which engage and roll over the table surface **6**. The side pieces **18**, with their wheels **22**, are sufficiently widely spaced so as to accommodate between them lays **2** of the maximum width to be expected. In order to guide the device **14** for movement over the table surface **6** along a predetermined pattern, a guiding means such as a rail **24** may be provided on the table **8**, that guiding means **24** cooperating with guiding means **26** on the device **14**, the latter being here shown as grooves formed in the wheels **22** within

which the rail **24** is received. This type of cooperation between the pattern securing device **14** and the table **8** is particularly advantageous, since most cutting tables **8** are provided with a rail-like track **24** with which a standard fabric spreading machine cooperates, and the embodiment here disclosed, utilizing the wheels **22** with grooves **26** within which the rail **24** is received, thereby enables the pattern-securing device **14** to be used with pre-existing cutting tables **8**.

Mounted on the carriage or support **16** for vertical movement is a heating element or plate **28**. The precise form and construction of this element **28** may vary widely, but it is preferred, as here specifically disclosed, that it comprise a heat-transmissive body containing electrical heating elements which are connected, by wire **30** and control apparatus housed within casing **32** mounted on one of the side frames **18**, to any suitable source of electrical power as by means of the flexible electrical cable **34**. A thermostat is desirably incorporated into the heating system so that the temperature to which the element **28** is heated can be controlled. The technology here involved is well known and need not be further described. The heated element **28** extends substantially completely between the side frames **18**, its length thereby corresponding to the maximum expected width of the lays **2** and patterns **10** with which it is to be used. Its width, in the direction of travel of the device **14** (which direction is indicated by the arrow **36** in FIG. 1) preferably is appreciable, such as on the order of several inches. Its lower surface **38** is substantially flat and is of appreciable areal extent, and is adapted to engage, press down upon, and slide over the pattern **10** as the device **14** is moved in the direction of the arrow **36**. It is therefore yieldingly urged downwardly toward the table surface **6**, but is also movable upwardly away therefrom at least to a limited degree, thereby to accommodate lays of different thicknesses.

As here specifically disclosed each end of the heated element **28** has secured thereto a bracket **40** having an upstanding arm **42**. A pair of vertically spaced linkage rods **44** and **46** are pivotally secured to each of the upstanding arms **42**, the arm **44** at point **48** and the arm **46** at point **50**. The two arms **44** and **46** are pivotally secured, at vertically spaced points **52** and **54** respectively, to a bracket **56** fixed to the inner surface of the side piece **16**. There is thus defined a parallelogram-type linkage which permits the heated element **28** to move vertically while always maintaining substantially the same angular orientation, thereby maintaining its lower surface **38** substantially horizontal. The weight of the heated element **28** will itself usually suffice to constitute the means for urging it downwardly but permitting it to yield upwardly in order to compensate for different lay thicknesses. However, if the weight of the element **28** is too great counter-balancing weights or springs could be employed, and if the weight of the element **28** is insufficient other weight- or spring-biasing in a downward direction could be employed.

The brackets **40** extend out forwardly (in the direction of the arrow **36**) from the heated element **28**, and a roller **58** is rotatively mounted between them substantially in line with the heated element **28**.

A cord or wire **60** is secured, at **62**, to the heated element **28** and extends through eyelet **64**, hole **66** in the right hand side piece **16**, and eyelet **68** carried by the right hand side piece **16**, there terminating in handle **70**. When the handle **70** is pulled the heated element **28** will be lifted, and when the handle **70** is released the heated element **28** will be released for downwardly-urged movement and positioning.

In operation, the lay **2** is placed on the table surface **6** between the paths to be traveled by the wheels **22** of the device **14**. The pattern or mark **10**, with its heat-sensitive adhesive surface **12** facing downwardly, is placed in position on the lay **2**. The device **14** is at this point in its left hand position illustrated in FIG. 1, that being its "ready" position. The heated element **28** has been electrically energized and is up to proper temperature. The operator then anually grasps the device **14** at any appropriate point and pulls it along the rail **24** through its operative stroke in the direction of the arrow **36**. As the device **14** thus moves the roller **58** will engage and ride up over the pattern **10**, smoothing it down against the fabric sheets **4** of the lay **2** therebelow. Immediately after the smoothing roller **58** has passed over a given area of the pattern **10**, the heated element **28** will pass thereover and will be pressed down thereagainst with a predetermined amount of force. The heat generated by the element **28** will pass through the body of the pattern **10** and activate the heat-sensitive adhesive **12**. Because of the width of the element **28** and the fact that the device **14** is not moved too rapidly, sufficient heat is developed for a sufficient period of time so as to cause the adhesive **12** to grip the uppermost fabric layer **4** in the lay **2**, thereby bonding the pattern **10** thereto. The nature of the particular adhesive **12** employed and the temperature and dimensions of the element **28** will all interact in determining how rapidly the device **14** should be moved; one or two trials at different speeds will be sufficient in order to demonstrate the proper speed of movement.

After the device **14** has been moved from one end of the pattern-lay combination to the other, thereby securing the pattern **10** to the lay **2** over its entire area, the device **14** is returned to its stand-by position by moving it over the table top **6** through an inoperative stroke in a direction opposite to that indicated by the arrow **36**. During this movement of the device **14** the handle **70** is pulled, thereby lifting the heated element **28** and the smoothing roller **58** free of the pattern-lay combination, in that way preventing any disarrangement of the fabric sheets and pattern.

Thus, by but a single back and forth movement of the device **14** over the table top **6**, the pattern **10** will be reliably secured to the lay **2** therebelow, and this will be done in a virtually foolproof manner and by means of sturdy and simple mechanism which need not be manufactured to any particularity high degree of precision. The device can be used with lays and patterns of widely different shapes and thicknesses, and will result in a securement of the pattern to the lay which is superior in character to that which has previously been attainable, despite the fact that the pattern attachment has been accomplished much more rapidly and at much lower cost than heretofore been thought possible.

I claim:

1. Apparatus for securing a pattern to a lay of spread cloth comprising a carriage adapted to travel over said pattern and said lay, a table surface having a lay location for supporting a lay in flat horizontal orientation, guide means in operative association with said table surface for directing said carriage for reciprocal movement over said lay location, a heating and pressing member extending substantially from side to side of said lay location and movable up and down with respect thereto, and means for raising said heating and pressing member away from the surface of a lay at said lay location while maintaining said heating and pressing member in constant substantially parallel orientation with respect to said table surface.

2. Apparatus as defined in claim **1** wherein said heating and pressing member comprises a generally flat heating element having an associated source of heat, and a pattern smoothing element operatively connected forward of said heating element in the direction of operative movement of said carriage for movement with said heating element.

3. Apparatus as defined in claim **2** wherein said carriage includes a support frame having a plurality of rollers for movement with respect to said lay location, wherein said guide means comprises a guide rail associated with said table surface and adapted to be engaged by said rollers, and wherein said means for raising said

heating and pressing member comprises a multi-member linkage having a first substantially vertical member secured to said carriage, a second substantially vertical member secured to said heating and pressing member, and a plurality of parallel support arms of equal length, said arms being pivotally secured at one end thereof to a first plurality of selected points on said first substantially vertical member and at the other end thereof to a second plurality of selected points on said second substantially vertical member, the distance between said first plurality of points being equal to the corresponding distance between said second plurality of points so that said heating and pressing member is always retained in substantially parallel relation with said table surface.

4. Apparatus for marking a lay of fabric sheets comprising means for supporting said lay in generally flat horizontal orientation, a pattern having at least one area of heat sensitive adhesive on the underside thereof, said pattern being adapted to be positioned upon said lay to provide indicia for cutting said fabric, a carriage

in operative association with said support means and adapted for reciprocal movement with respect thereto, and a heating and pressing member supported by said carriage and movable up and down with respect to said support means, said heating and pressing member being slidable over said pattern for bonding said pattern to said lay of fabric sheets.

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PETER FELDMAN, Primary Examiner

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33—12; 100—210; 270—30