

Jan. 3, 1956

G. MARKUS ET AL

2,729,010

ORNAMENTAL SHEET MATERIAL AND METHOD OF MAKING THE SAME

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2 Sheets-Sheet 1

Fig. 1.

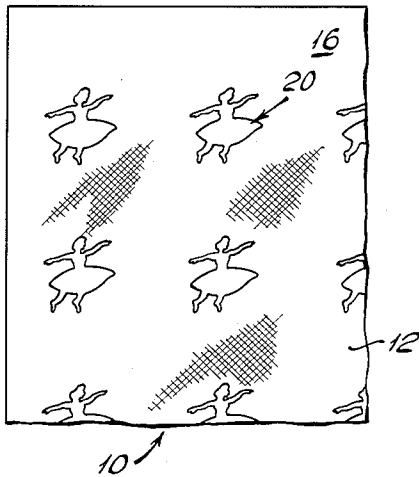


Fig. 2.

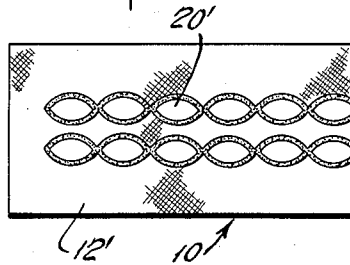


Fig. 3.

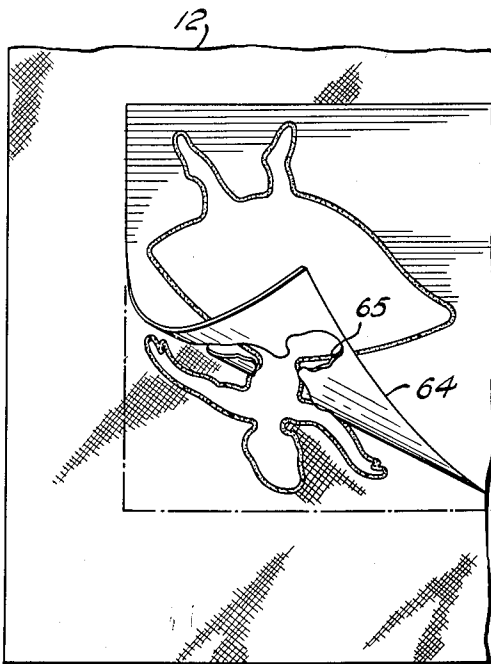
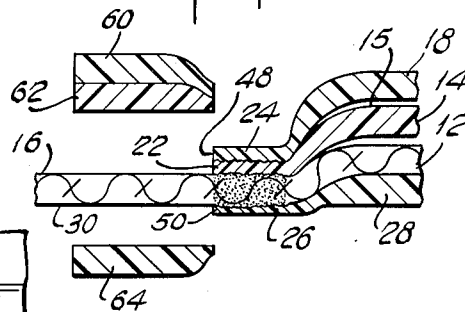


Fig. 10.

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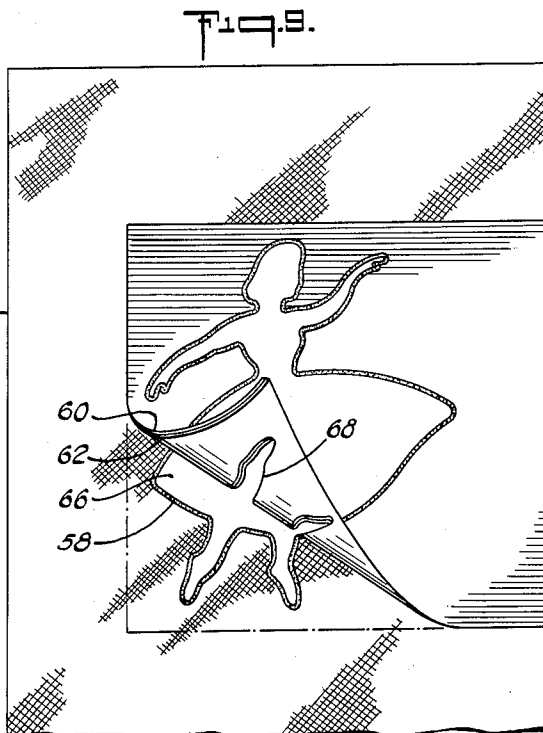
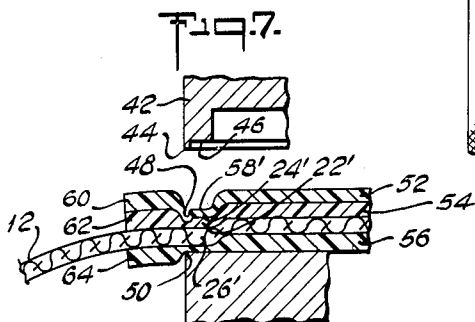
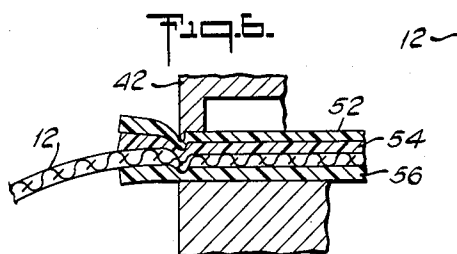
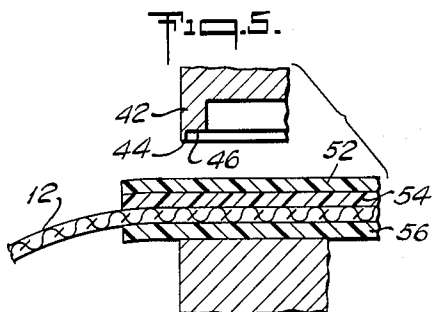
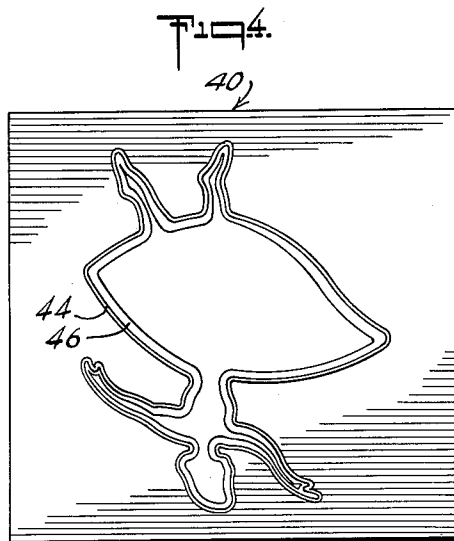
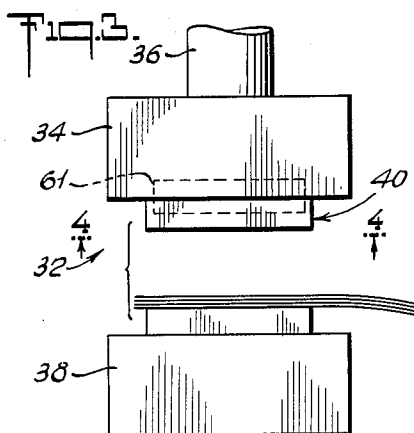
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ORNAMENTAL SHEET MATERIAL AND METHOD OF MAKING THE SAME

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2 Sheets-Sheet 2



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ORNAMENTAL SHEET MATERIAL AND METHOD OF MAKING THE SAME

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7 Claims. (Cl. 41—34)

This invention relates generally to ornamental sheet material and method of making same.

The primary aim and object of the present invention is to simplify the art of securing plastic material to non-plastic material, such as textiles, to ornament the latter. Pursuant to this object of the present invention plastic material is bonded and contoured at the same time and in the same operation in position on the surface of non-plastic intersticed material, such as textiles, whereby to form an ornamental assembly comprising textile material having contoured and bonded ornamental elements secured thereto.

Another object of the present invention is the provision of a method for simultaneously contouring, and bonding in position on the surface of textile material, plastic material, said method utilizing conventional apparatus in the main and being relatively simple and inexpensive.

Another object of the present invention is the provision of a method for securing ornaments and ornamental material to textile material without impairing or damaging the latter to form ornamented textile material which is aesthetically very attractive and which may be utilized in a multitude of decorative and utilitarian applications.

Yet another object of the present invention is the provision of a generally improved method of making sheet assemblies and articles having contoured ornamental elements secured to the surface thereof.

The above and other objects, features and advantages of the present invention will be more fully understood from the following description considered in connection with the accompanying illustrative drawings.

In the drawings which illustrate the best mode now contemplated by us for carrying out our invention:

Fig. 1 is a top plan view of a segment of ornamented textile material formed according to the present invention;

Fig. 2 is a view similar to Fig. 1 illustrating another form of surface ornamentation;

Fig. 3 is a side elevational view of a press showing textile material and plastic sheet material positioned on the bed thereof preparatory to the contouring and bonding operation;

Fig. 4 is a sectional view, on an enlarged scale, taken on the line 4—4 of Fig. 3;

Fig. 5 is a fragmentary sectional view, on a greatly enlarged scale, showing the die of the press in elevated position preparatory to contouring and bonding the plastic sheet material relative to the textile material;

Fig. 6 is a view similar to Fig. 5 showing the die of the press in operative position for the contouring and bonding operation;

Fig. 7 is a view similar to Figs. 5 and 6 showing the die in elevated position subsequent to the contouring and bonding operation;

Fig. 8 is a fragmentary sectional view, on a greatly enlarged scale, of the ornamented textile material as-

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sembly illustrating the operation of removing plastic sheet material along the tear edges thereof;

Fig. 9 is a top plan view of a segment of ornamented textile material illustrating the operation of removing plastic material along the outer or top tear edge; and

Fig. 10 is a bottom plan view thereof illustrating the operation of removing plastic material along the inner or bottom tear edge.

Referring to the drawings in detail, there is shown in Fig. 1 a segment 10 of ornamental textile material which comprises a base 12 formed of textile material, an ornamental element 14 of predetermined contour disposed on the outer surface 16 of said base, and a light permeable element 18 overlying said ornamental element, said elements collectively defining the spaced series of ornaments 20 disposed on the outer face of the textile material base. The elements 14 and 18 have continuous peripheral edge portions 22 and 24, respectively, which are heat sealed to each other in position on the base 12 as shown in Fig. 8, said peripheral edge portion 22 being heat sealed to the continuous peripheral edge portion 26 of the securing element 28 which is disposed on the bottom surface 30 of the base 12. In the illustrated embodiment the elements 14, 18 and 28 are formed of thermoplastic sheet material, for example vinyl plastic material, and the base 12 is formed of a suitable intersticed textile material, the interstices of said textile material providing for the flow of heated plastic material therethrough whereby to heat seal the assembly constituted by the elements 14 and 18 to the securing element 28 and thus to heat seal the ornaments 20 in position on the textile material base. Accordingly while fabric or textile material 12 is utilized as the base material of the illustrated and herein described embodiment, it will be apparent that the present invention may be practiced by utilizing any suitable intersticed base material to provide for the flow of plastic material therethrough. The segment 10 of surface ornamented textile material is formed by the method to be described in detail hereinafter.

The apparatus 32, shown in Fig. 3, utilized for the practice of the present invention, is conventional in the main and includes a head 34 mounted at the end of a vertically reciprocable ram 36, and a stationary bed 38, it being understood that the ram is mounted for vertical reciprocation in any suitable manner whereby to vertically reciprocate the head 34 relative to its companion stationary bed 38. Mounted on the lower end of the head 34 in any suitable manner, is a die 40, which is best shown in Fig. 4, said die having a peripherally continuous raised face 42 of preselected decorative outline, for example the outline of a dancing girl. As will be apparent from the description which follows, the die face 42 may be of any desired outline or contour corresponding to the desired contour of the ornaments 20 of the ornamented textile assembly 10, the specific contours illustrated and described herein being given by way of example only. Thus the embodiment 10' illustrated in Fig. 2 differs from the embodiment 10 of Fig. 1 only in regard to the shape and disposition of the ornaments or ornamental elements 20' disposed on the textile base 12'. It will accordingly be apparent that the ornaments or ornamental elements 20 and 20' may be of any desired shape or configuration and may be arranged on the surface of a textile base in any desired manner to achieve the desired ornamental effect. The die face 42 has a peripherally continuous edge portion 44 of an outline corresponding to the outline of said die face projecting from the outer side edge of the latter, said projecting edge portion 44 being adapted to form the peripheral tear edges 48 and 50 in the manner to be described in detail hereinafter. The peripheral edge 46 of the die face

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42 is adapted to fuse or bond the plastic sheets 52 and 54 to each other and to the plastic sheet 56 along the outline 58 corresponding to the outline of said peripheral edge by an electronic heat sealing operation, there being provided conventional electronic equipment 61 in the head 34 for this purpose. Accordingly the conventional electronic heat sealing equipment 61 is adapted to act through the die face 42 and, more particularly, the peripheral edge 46 thereof to effect an electronic heat sealing operation between the layers 52, 54 and 56 of plastic sheet material. The plastic layers 52, 54 and 56 may be initially of determinate or indeterminate contour and are adapted to be contoured and heat sealed or fused by the apparatus 32 to form the elements 18, 14 and 28, respectively, the latter being initially integral portions of said plastic layers. In the practice of the present method the plastic sheets 52 and 54 are superposed on each other in overlying relation to the outer face 16 of the base 12 and the layer 56 is superposed on the opposite face 30 of said base, it being noted that the layers 52, 54 and 56 are in vertical registry. In the practice of the present method the registry between the layers 52, 54 and 56 is not critical, it being only necessary to provide for registry of the areas thereof which are to be bonded or heat sealed to each other. The base 12 may be of any desired determinate or indeterminate outline and may be formed of any desired threads or yarns. To effect a heat seal or bond between the layers 52, 54 and 56 and to secure the latter to the base 12 the ram 36 is reciprocated in a downward direction so as to reciprocate the die face 42 to the position shown in Fig. 6 in which said die face is effective to bond or fuse the plastic layers 52, 54 and 56 to each other along the peripherally continuous outline 58' corresponding to the outline of said die face. In the heat sealing or bonding operation the peripheral edge portions 22' and 24' of the layers 54 and 52, respectively, will be fused to each other along the outline 58' without the formation of a distinct line of demarcation between said edge portions and plastic material from said layers will flow through or penetrate the interstices of the textile base 12 to bond the layers 52 and 54 to the layer 56 along the peripheral edge portion 26' of the latter. Thus on the activation of the electronic equipment 61 the peripheral edge 46 of the die will sufficiently heat the plastic layers 52, 54 and 56 to cause a fusion thereof along the outline 58', this operation effecting the flow of plastic material through the interstices of the textile base 12 as shown in Fig. 8 whereby to effect a bond between the peripheral edge portions 22', 24' and 26' of the plastic layers. The edge portion 44 of the die face 42 projects beyond the edge 46 thereof to define the tear edges 48 and 50 along the outer edge of the bonded outline 58' of the ornamented textile assembly 10'' simultaneous with the heat sealing of the plastic layers. From the above it will be apparent that the apparatus 32 is effective to bond the plastic layers 52, 54 and 56 to each other along peripherally continuous edge portions to provide a decorative outline 58' corresponding to the outline of the die face 42 and to simultaneously define the tear edges 48 and 50 on the opposite sides or faces of the base 12 of a corresponding configuration.

Subsequent to the above described bonding and contouring operation, the ram 36 is reciprocated upwardly as shown in Fig. 7 away from the work, to leave on the bed 38 the ornamented assembly 10'' which is in an intermediate stage of finish. The semi-finished assembly 10'' is formed into a finished assembly or ornamented segment 10 by removing sheet material 60 and 62 of the layers 52 and 54, respectively, along the tear edge 48 and by removing sheet material 64 of the layer 56 along the tear edge 50, it being understood that the tear edge 48 is defined by plastic material of the layers 52 and 54 which fuse together during the above-described heat sealing and bonding operation. Thus the plastic sheet material 60

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and 62, outside of the bonded and contoured area 66, may be readily removed from the assembly 10'' by grasping a portion of said material 60 and 62 and pulling the latter to separate it from said area 66 along the tear edge 48 (Fig. 9). Accordingly the operation of tearing or separating the material 60 and 62 from the bonded and contoured area 66 will result in the formation of a bonded plastic assembly having an outline corresponding to the outline of the die face 42 with the separated sheet material 60 and 62 having a cut out area 63 of corresponding outline, it being understood that sheet material 60 and 62 having such a cut out area of pre-selected decorative outline may be utilized in any desired manner, for example, for integration with other materials to form a decorative composite assembly. The sheet material 64 is similarly removed from the layer 56 along the tear edge 50 in the manner described above relative to sheet material 60 and 62 (Fig. 10), and this sheet material 64 having a cut out area 65 may be utilized in any desired manner. On the removal of the sheet material 60, 62 and 64 from the layers 52, 54 and 56, respectively, in the manner described above elements 18, 14 and 28, respectively, will be formed and said elements will be of the same contour or outline corresponding to the outline of die face 42. The finished ornamented textile segment 10, having ornaments 20 secured to one face thereof, may be utilized in any desired manner, for example for integration with other materials to form a decorative composite assembly. The element 18 may be formed of any suitable plain or ornamented plastic material and in the illustrated embodiment said element is transparent or translucent to reveal the ornamental element 14 positioned thereunder, said ornamental element being colored if desired and having a plain or ornamented face 15.

It will be apparent that the ornamental assembly or segment 10 comprises segments or elements of plastic material 14 and 18 which are secured to the textile base 12, said base and said segments being free from direct connection to each other except along the bonded peripherally extending portion 23. Thus the segments or elements 14 and 18 are bonded and contoured at the same time in the same operation, said elements being secured to the outer face 16 of the base 12 by means of the securing element 28 disposed on the rear or inner face 30 of the base 12 and bonded to the elements 14 and 18 along the outline thereof. Since all of the constituent portions of the layers 52, 54 and 56 may be utilized it will be apparent that the technique described above is inherently very economical. While the ornaments 20 and 20' of the illustrated embodiments are formed of two layers of plastic sheet material, it will be understood that said ornaments may be formed of any number of layers up to the capacity of the apparatus 32 and it is accordingly within the scope of the present invention to form ornamental elements 20 from one or more sheets of plastic material.

The ornamented fabric assembly 10 and 10' may be utilized in any desired application, for example in the formation of articles such as wallets, vanity articles and the like. It will be understood that the layers 52, 54 and 56 of plastic sheet material may be formed of the same material or may be formed of different compatible materials so that such materials will bond or fuse together in the aforesaid manner.

While we have shown and described the preferred embodiments of our invention, it will be understood that various changes may be made in the idea or principles of the invention within the scope of the appended claims.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. Ornamented material, comprising a plurality of layers including inner and outer layers which comprise thermoplastic material and are disposed in superposed relation, one of said layers at one side thereof being

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fused to another of said layers by said thermoplastic material along a line defining a tear edge on said other layer, said one layer comprising intersticed material impregnated with thermoplastic material in the interstices of said one layer at the portion thereof which is fused to said other layer, and a securing layer comprising thermoplastic material fused to said one layer at the opposite side thereof at said portion of the said one layer.

2. Ornamented sheet material, comprising a plurality of layers disposed in superposed relation, one of said layers being intersticed and disposed between two others of said layers, the latter having thermoplastic surface material contiguous to the opposite surfaces, respectively, of said intersticed layer, said two other layers being heat sealed to each other through the interstices of said intersticed layer along a line of fusion of predetermined contour defining in situ an edge of corresponding contour on at least one of said two other layers.

3. Ornamented sheet material, comprising a plurality of layers disposed in superposed relation, one of said layers being intersticed and disposed between two others of said layers, the latter having thermoplastic surface material contiguous to the opposite surfaces, respectively, of said intersticed layer, said two other layers being heat sealed to each other through the interstices of said intersticed layer along a line of fusion of predetermined contour defining in situ a tear edge of corresponding contour on at least one of said two other layers, said intersticed layer having an area extending laterally beyond said tear edge.

4. Ornamented sheet material, comprising a base layer formed of textile material, an ornamental element of plastic sheet material and of predetermined contour secured on one surface of said base layer along the peripheral outline thereof, and a securing element formed of plastic sheet material secured on the opposite surface of said base layer, said ornamental and securing elements being heat sealed to each other through the interstices of said base layer along a line of fusion corresponding to said peripheral outline and defining in situ a tear edge of corresponding outline on said ornamental element, said base layer extending outwardly beyond said ornamental element.

5. Ornamented sheet material, comprising a base layer formed of textile material, an ornamental element of plastic sheet material and of predetermined contour secured on one surface of said base layer along the peripheral outline thereof, and a securing element formed of plastic sheet material secured on the opposite surface of said base layer, said ornamental and securing elements being heat sealed to each other through the interstices of said base layer along a line of fusion corresponding

to said peripheral outline and defining in situ a tear edge of corresponding outline on said ornamental element, and a light permeable element formed of plastic sheet material overlying and encompassing said ornamental element, said light permeable element having a peripheral outline corresponding to the outline of said ornamental element and being heat sealed in position on the latter along said line of fusion.

6. The method of providing an ornamental assembly, comprising the steps of superposing layers of thermoplastic sheet material on the opposite sides of a layer of textile material, heat fusing the said layers of thermoplastic material through the interstices of said textile layer along a peripherally extending line providing a preselected decorative outline and simultaneously defining a tear edge on one of said layers corresponding to said outline, said heat fusion of said thermoplastic layers thereby securing said textile layer in position between said thermoplastic layers, and thereafter removing from said one layer along said tear edge the portions thereof which extend beyond said tear edge to contour said one layer to said decorative outline.

7. The method of providing an ornamental element on the surface of textile material, said method comprising the steps of superposing on each other two layers of plastic sheet material in overlying relation to one face of said first mentioned sheet material with said layers being of indeterminate contour and with the outer one of said layers being of light permeable material, superposing a layer of plastic sheet material on the opposite face of said first mentioned sheet material, heat fusing said two layers of sheet material and said layer on said opposite face to each other through the interstices of said textile material along peripherally extending edges providing a preselected decorative outline and simultaneously defining a tear edge on said two layers corresponding to said outline, said heat fusion thereby securing said textile material in position between said layers of plastic sheet material, and thereafter removing material of said two layers along said tear edge to contour said layers to said preselected outline and to provide an ornamental element on the surface of said first mentioned sheet material.

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