

PATENT SPECIFICATION

(11)

1 244 407

DRAWINGS ATTACHED

- (21) Application No. 10688/69 (22) Filed 28 Feb. 1969
 (45) Complete Specification published 2 Sept. 1971
 (51) International Classification B 44 c 3/00
 B 32 b 3/28 31/18 31/20
 B 26 d 1/00

(52) Index at acceptance

B6G 1C 2A 2B 2D

B5N 177 17X 17Y 191 224 227 22X 250 252X 252Y 254Y
 344 348 349 55Y 560 582 587 588 589 591 592 594 595
 598 602 607 620 621 622 624 625 627 62Y 632 63X
 641 648 653 656 657 659 668 669 670 671 679 681
 682 683 68X 690 694 69Y 701 702 713 715 71X 729
 75X 75Y 765 779 781 787 794 795 79Y 806 807

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(54) IMPROVEMENTS RELATING TO APPLIQUE ARTICLES AND METHOD AND APPARATUS FOR MAKING SAME

(71) We, NISHIZAWA SHOI CO. LTD., a Japanese Corporate Body of 21-2 Minamihonmachi, Higashiku, Osaka, Japan, and PILGRIM INDUSTRIES INC., a Corporation organised and existing under the laws of the State of New York, United States of America, of 350 Fifth Avenue, N.Y. 10001, United States of America, do hereby declare the invention for which we pray that a Patent may be granted to us and the method by which it is to be performed to be particularly described in and by the following statement:—

The present invention relates to appliqué articles, to methods of making such articles, and to apparatus for making such articles.

The present invention provides a method of making an appliqué article comprising the steps of superimposing a compressible resilient padding material layer onto a support material layer; superimposing upon said padding material layer a sheet material layer, at least one of said materials being latently adhesive; severing at least the sheet material layer along a contour line of a desired design; and simultaneously pressing the sheet material layer against the support material layer at selected zones inwardly of said contour line so as to compress the padding material layer at said selected zones whereby there is substantially no padding material in said zones, activating the latently adhesive material in said zones whilst effecting the pressing step so that said sheet material layer is adhered to and connected with the support material in said zones so as to define a three-dimensional padded appliqué design on the article.

The invention also resides in an appliqué article comprising a support material layer,

a layer of compressible resilient padding material including air spaces and superimposed on the support material layer, and a sheet material layer which is superimposed on the padding material layer, said article having zones with substantially no padding material including air spaces at which zones the sheet material layer is adhered directly or via padding material having substantially no air spaces to the support material layer, at least one of the materials serving as an adhesive, said zones outlining a padded appliqué design on the article.

The invention also resides in apparatus for making an appliqué article having a three-dimensional appliqué design from a laminar assembly in which a padding layer is sandwiched between a support material layer and a sheet material layer with at least one of the materials being latently adhesive, and wherein the apparatus includes a support for the assembly, a platen having at least one projection facing said support and extending along the contour lines of the desired appliqué design, said platen being movable toward said support for pressing said sheet material layer towards said support material layer across said spacing material layer at least in a zone corresponding to the outline of said projection, and activating means for activating said latently adhesive material to thereby adhere said layers together in said zone, characterized in that said projection has a substantially flat pressing face extending along said contour line inwardly thereof and projecting from said platen by a distance sufficient to compress said layers in said zone, and a cutting face extending along said contour line outwardly of the pressing face and projecting from said

[Price 25p]

platen by a greater distance than the pressing face so as to sever at least said sheet material layer at the same time as said pressing face compresses said layers in said zone, said platen comprising additional projections having substantially flat pressing faces projecting from said platen by a distance sufficient to compress said layers within the outline of said contour line.

The padding material layer may be composed of foam material, and if so, the material is advantageously a thermoplastic foam and the bonding of the selected portions of the sheet and support layers to one another may involve the application of heat which serves to melt the interposed portions of the foam layer whereby said selected portions become bonded to one another by these interposed portions. Of course, the melting of these interposed portions results in simultaneous reduction of their thickness.

However, other materials are also suitable for the padding layer. Thus, natural or synthetic fibrous layers, for instance consisting of Dynel (TM) can be used as long as they are of resiliently deformable nature, or a layer of material consisting of discrete particles which entrap air pockets, or an analogously acting material, may be used.

A great variety of different materials may be used for the support and sheet layers. For instance, both the sheet and the support layers may consist of synthetic plastics material, such as thermoplastic material, or only one of them may consist of such material and the other may consist of a textile material, or again both the sheet layer and the support layer may consist of textile material. Among the synthetic plastics materials particularly suitable for the sheet layer and/or the support layer are vinyl plastics.

The layer of sheet material may be at least in part light-transmissive, for example partially opaque and partially transparent or translucent, or by providing cut-outs. In either case, the surface of the layer of padding material, which in this case may advantageously be foam or fibre and which is visible through the light-transmissive portions of the layer of sheet material, may be either smooth or matt, or it could be sculptured, which is to say that it may be provided with a design in shallow relief. Furthermore, it may have one or more colours and it may be provided with printing or otherwise through fixed portions of a design which are to be visible through the light-transmissive portions of the layer of sheet material and which may complement a design provided on the remaining portions of the sheet material and/or on the light-transmissive portions insofar as these are not constituted by cut-outs.

The appliqué design may be a pictorial representation or may include numerals, let-

ters, symbols or emblems. Also, the "design" on the appliqué article, which term is used herein to designate both the characteristic appearance provided on the article by the raised and/or depressed portions as well as by any printing, colouring or the like provided on the sheet or any other layer, may vary widely.

The invention is particularly described hereafter with reference to the accompanying drawings, wherein:—

FIG. 1 is a diagrammatic plan view of an appliqué article according to the present invention;

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

FIG. 3 is a view similar to FIG. 2 but illustrating a further embodiment of the invention;

FIG. 4 is a fragmentary plan view of a portion of an appliqué article according to another embodiment of the invention;

FIG. 5 is a section taken on the line V-V of FIG. 4;

FIG. 6 is a view similar to FIG. 1 but illustrating an appliqué article according to still another embodiment of the invention;

FIG. 7 is a section on the line VII-VII of FIG. 6;

FIG. 8 is a view similar to FIG. 6 but illustrating still an additional embodiment of the invention;

FIG. 9 is a view similar to FIG. 7 but of yet another embodiment of the invention;

FIG. 10 is a plan view showing the various layers required for producing an adhesive appliqué article in accordance with one embodiment of my invention, the illustration being of the layers prior to adhering of the layers together;

FIG. 11 is a section taken on the line XI-XI of FIG. 10;

FIG. 12 is similar to FIG. 10 but illustrates the layers after they have been adhered together;

FIG. 13 is a plan view of FIG. 12, but with the excess material of the layers removed and only the appliqué article remaining on its release paper;

FIG. 14 is a section taken on the line XIV-XIV of FIG. 13;

FIG. 15 is a view similar to FIG. 14 but illustrating another embodiment of the invention; and

FIG. 16 illustrates in somewhat diagrammatic form an apparatus for producing an appliqué article according to the invention.

FIGS. 1 and 2 illustrate an appliqué article according to one embodiment of my invention and FIG. 1 shows the appliqué article as incorporating a design illustrating a fawn. The article is generally identified with reference numeral 1 and a support of the article is identified with reference numeral 2; as shown in FIG. 2 in cross section, the

support may consist of a textile material although it may alternatively be a synthetic plastics material.

A layer 3 of synthetic plastics foam material is superimposed upon the support 2 and an additional layer 4 of sheet material is superimposed upon the layer 3. In the illustrated embodiment of FIGS. 1 and 2, the layer 4 is shown as consisting of a synthetic plastics material. The layer 4 may, for example, be metallized in well known manner, or stippled by surface texturing to provide light-refracting characteristics and the layer 4 may be translucent or transparent. The layer 4 is adhered to the support 2 across the intravening or interposed portions of the layer 3 along narrow zones 5 and 6. The zones 5, located inwardly of the borderline of the layers 3 and 4, constitute the outline of the design, that is the fawn in FIG. 1, whereas the zones 6 constitute the interior lines of the design, that is those which are located within the outline 5. This is most clearly evident in FIG. 1.

The layer 3 is latently adhesive and will melt along the zones 5 and 6 and thus adhere corresponding portions of the layer 4 to the support 2 when subjected to pressure and heat in these zones 5 and 6. However, it would also be possible for one of the other materials to be latently adhesive, for instance the material of the layer 4, or even both the materials of the layers 3 and 4.

Aside from the outlines 5 and 6 which sketch the design amounting essentially to a line-design or line-drawing, the design may be provided with other features, for example colouring, and these other features may be provided on the exposed surface of the layer 4 or, if the latter is translucent or transparent, they may be provided partly on the exposed surface and partly on the concealed surface facing the layer 3. In fact, a part of the additional design may be provided on the layer 3 itself or the colour or surface texture of the layer 3 may be utilized as a part of the design where the layer 4 is translucent or transparent.

Coming to the embodiment illustrated in FIG. 3 which Figure is a section corresponding to that of FIG. 2 but through a differently constructed appliqué article, it will be seen that identical reference numerals identify identical components. In FIG. 3, however, the layer 4 is metallized. Because of the electrical conductivity imparted to the synthetic plastics material of the layer 4 by the metallizing process, it is frequently not desirable that the layer 4 should be capable of coming into contact with the skin of a wearer. For this reason, an additional layer of synthetic plastics material 7 consisting of transparent material is provided over the metallized layer. As for the remainder of FIG. 3 I emphasize that the appliqué article

is made in the same way as in FIG. 1, that is the layers 4 and 7 are adhered to the support 2 across the intravening portions of the layer 3 along the respective narrow zones 5 and 6.

In the embodiment of FIGS. 4 and 5 the layer 4 consists of so-called "stippled" synthetic plastics sheet, i.e. material, for example a vinyl plastics, one or both of whose opposite surfaces have been suitably embossed so as to make them slightly rough. If this material of the layer 4 is initially transparent or translucent, the stippling provided in this manner by well known processes will impart to the material of the layer 4 a "frosted" appearance which, in conjunction with additional designs on the layer 4 and/or the layer 3, or colours or combinations of colours with additional designs, may provide interesting visual effects. The surface roughness imparted to the layer 4 for the embodiment of FIGS. 4 and 5 has been illustrated in the section of FIG. 5 for a better understanding.

FIGS. 6 and 7 illustrate yet an additional embodiment of the invention. Again, reference numeral 1 identifies the appliqué article in general and reference numeral 2 identifies the support thereof which is composed of a textile material. The same reference numerals apply as in the preceding Figures to identify identical components. In the embodiment of FIGS. 6 and 7, however, the second or cover layer is identified by reference numeral 8 and consists of transparent sheet material. As indicated by reference numerals 9, 10 and 11 an additional design (i.e. additional to that outlined by the zones 5 and 6) is provided on two opposite sides of the layer 8. The portion 10 of the design of a butterfly is provided on the exposed surface of the layer 8, that is the surface which faces away from the layer 3. The design portions 9 and 11 are provided on the reverse or concealed side of the layer 8, that is the side which faces the layer 3. The various design portions can be of various different colours if desired, and they could be provided by printing, painting or embossing. The purpose of providing these different design portions on different sides of the layer 8 is to create visual effects different from those which would be possible where the design portions are all provided on one and the same side of the layer 8. All or some of these additional design portions identified with reference numerals 9, 10 and 11 could alternatively be provided on the layer 3. Even if none of them are provided on the layer 3, the surface texture and colour thereof may be utilized in obtaining the desired visual effects when the cover layer consists of transparent sheet material as is the case with the layer 8 in FIGS. 6 and 7.

In the embodiment of FIG. 8 cut-outs

may also be provided in the cover layer. Identical reference numerals again identify identical components and the cross-section of the embodiment in FIG. 8 is the same as shown in FIG. 3, that is a cover layer overlies the layer 4. Thus, the layer 7 of FIG. 3 overlies the layer 4 which in turn overlies the layer 3 which overlies the support 2. This is indicated by a portion of the layer 7 being broken away to expose the layer 4, and by a part of the exposed portion of the layer 4 being broken away to expose the layer 3 below. In this embodiment, the butterfly perching on the rump of the fawn constituting the raised design of the appliqué article, is identified with reference numeral 13 and within the narrow zone 5 bounding the butterfly 13 the material of the layer 7 is cut out in the shape of the butterfly, thereby exposing the underlying layer 4 as shown. Thus, the colour, texture and/or any design portions provided on the exposed part of the layer 4 will be visible within the part of the narrow zone 5 which outlines and borders the butterfly 13. Reference numeral 12 indicates that within the narrow zone 5 outlining the body of the fawn the non-cut-out portion of the layer 7 may have a colour different from the colour of the exposed portion of the layer 4, and reference numeral 14 indicates that the layer 7 may be provided with a printed, painted, embossed or otherwise provided borderline extending either in registry with or inwardly adjacent to the narrow zone 5 outlying the body of the fawn.

Coming, finally, to FIG. 9, it will be seen that in this cross-sectional view there is provided a construction generally the same as in the embodiment of FIGS. 1 and 2 and the same reference numerals again identify identical components.

Additionally, however, there is provided in FIG. 9 a backing layer 15 which may consist of various different materials, but advantageously may be a flexible vinyl foil. The purpose of providing the backing layer 15 is to reinforce the support 2 if the same consists of a thin material which is not readily resistant to the pairing. During adhering of the layer 4 to the support 2 across the intermediate layer 3, portions of the layer 15 corresponding to the width of the narrow zones 5 and 6 are similarly adhered to the layer 2, thus providing a reinforcement. If desired, the portions of the layer 15 intermediate the thus adhered portions corresponding to the zones 5 and 6 could subsequently be removed because the thus adhered portions of the backing layer 15 provide the necessary reinforcement. However, the backing layer 15 can be retained in total as shown in FIG. 9 and in this case will also serve as a waterproofing, preventing the entry of moisture into the foam

material 3 through the material of the support 2. The borderline or narrow zone 5 outlining the appliqué design will always be circumferentially complete because the layer 4 must always be adhered across the layer 3 across the support 2 at every point along the line of the raised appliqué. This means that the layer 15 will be provided with a correspondingly circumferentially complete borderline corresponding to the narrow zone 5, so that the entire area of the appliqué article located within the confines of the outer narrow zone 5 will be thus protected against the intrusion of moisture by the layer 15.

In FIGS. 10 and 11 I have shown an appliqué article of self-adhesive type. It will be seen to include four different layers superimposed upon one another. To increase the clarity of illustration the layers, identified with reference numerals 1', 2', 3' and 4', are shown as being of different sizes. In actual fact it will, however, usually be advantageous if the layers are coextensive or substantially coextensive although this is a matter of convenience.

Reference numeral 4' in the illustrated embodiment identifies the cover layer of sheet material which, as before, may be synthetic plastics material but could alternatively, for example, be a textile material. In FIGS. 10 and 11 the layer 4' is illustrated as being synthetic plastics material. In the illustrated embodiment the layer 4' has imprinted on its exposed surface a pictorial representation of the appliqué article which it is desired to obtain. It will be seen that this representation is generally identified with reference numeral 5' and comprises the outline of the numeral one located in a triangular patch whose border lines are identified with reference numeral 6'. In other words, the adhesive appliqué article which it is intended to produce is to be of triangular shape and to be provided with the numeral "1".

The outline 6' and the numeral "1" may be embossed into the layer 4', printed, painted or otherwise applied onto the exposed surface of the layer 4' or if the latter should be transparent or translucent, even on its concealed surface, be partly provided on the exposed and partly on the concealed surface if the layer 4' consists of transparent or translucent material, or they may be provided in any other suitable manner.

The layer 4' is superimposed upon the layer 3' of padding material, here shown as consisting of synthetic plastics foam material, advantageously a thermoplastic foam. The layer 3' in turn is superimposed upon the base layer 2' of sheet material which analogously to the layer 4' may consist of different materials but for purposes of the present description is shown to be a syn-

thetic plastics material. The underface of the layer 2' is provided with an adhesive backing 2a, for example, simply in the form of a coating of adhesive material 2a applied onto this underface. It is readily evident that a great variety of adhesives will be suitable for the purposes at hand. Thus, there are latent adhesives which must in some way be activated, and there are active adhesives which are constantly in activated state. A detailed description of these adhesives is not believed necessary because they are very well known to those skilled in the art. It is evident, however, that if the layer or coating 2a consists of an active adhesive, it must be protected until the time of use of the appliqué article. Therefore, FIGS. 10 and 11 show a layer 1' of so-called "release paper" applied over the coating 2a. The term "release paper" is conventional in this field and is not necessarily limited to a layer of paper but rather identifies a material which so adheres to the coating 2a of adhesive material as to protect the coating but can be readily peeled off without damaging the coating 2a, thereby exposing the latter and readying it for application of the appliqué article to a desired surface.

Coming now to FIG. 12, there is illustrated the next following step in the conversion of the multi-layered blank of FIGS. 10 and 11 into an adhesive appliqué article. The same reference numerals as in FIGS. 10 and 11 apply also in FIG. 12. However, in FIG. 12 I have shown that the layers 2', 3' and 4' have been severed along the border line 8' which is inwardly spaced from the edges of the layers 2', 3' and 4' and which, in the illustrated embodiment, extends along the design outline 6' just outwardly adjacent thereto. Evidently, the border line 8', which may also be thought of as the severing line, could be directly coincident with the outline 6' or be located inwardly thereof. In the illustrated embodiment it is assumed that in the finished appliqué article it is desired to have the outline 6' (which may be printed or otherwise applied) visible.

In addition to severing of the layers 2', 3' and 4' along the severing line 8' selected portions of the cover layer 4 have also been bonded to corresponding portions of the base layer 2' across the corresponding interposed portions of the foam layer 3'. In FIG. 12 these selected portions are in form of narrow zones 7' located inwardly and extending along the outline 6', as well as zones 7a located inwardly and extending along the outline of the numeral "1". This bonding is accomplished by pressing the selected portions (zones 7') of the layers 4' and 2' together and thereby reducing the thickness of the interposed foam layer 3', or more particularly of the interposed portions of the foam layer 3', and effecting the re-

quisite bonding. The foam layer 3' may, as pointed out before, consist of thermoplastic foam material and can thus be thought of as a latently adhesive material which will effect bonding of the layers 4' and 2' at the aforementioned zones 7' if subjected to sufficiently elevated temperature for the foam material of the layer 3' to become activated, that is to enter into a bond with the material of the layers 2' and 4'. The pressure and application of elevated temperatures result in melting of the foam of the layer 3' along the zones 7' and the foam thus bonds the layers 2' and 4' together. It will be appreciated that if one or both of the layers 2' and 4' consist of a textile material the melted foam will partly penetrate into the interstices in such material whereas, if one or both of the layers 2' and 4' consist of synthetic plastics material, the material of these layers 2' and 4' may itself partly melt and bond with the material of the layer 3'.

In any case, the resultant appliqué article 5' is surrounded by the severed remaining portions of the layers 2', 3' and 4' and comprises depressed zones 7' and raised zones between these depressed zones, so that the article 5' constitutes a foam-filled resilient three-dimensional appliqué article on which the numeral "1" is outlined by the zone 7a.

In the illustrated embodiment, the release paper has not been severed along the severing line 8' so that the appliqué article remains, as shown in FIG. 13, adhesively attached to its release layer or release paper 1' which latter retains its original dimensions. FIG. 14, a section on the line XIV-XIV of FIG. 13, shows this quite clearly. It will be appreciated, of course, that it is possible to sever the release layer 1' at the same time as the layers 2', 3' and 4' are severed, and also along the severing line 8'. However, it is generally desirable to take the approach shown in FIGS. 13' and 14 because, when the release paper 1' projects laterally beyond the appliqué article 5', it can be more readily peeled off by bending it away from the underside of the appliqué article.

The embodiment illustrated in FIG. 15 is somewhat different from the preceding embodiment. FIG. 15 is a section analogous to the one shown in FIG. 14. The layers are again identified with the same reference numerals. However, in the embodiment of FIG. 15 the numeral "1" appears raised, whereas the remainder of the appliqué article is depressed below the level of the numeral "1". Accordingly, the areas 7' in which selected portions of the layers 2' and 4' are bonded together are considerably larger than the narrow zones identified with reference numeral 7' in FIGS. 10-14 and include the entire surface area of the layer 4' with the exception of the raised surface portion of the layer 4' corresponding to

the configuration of numeral "1". Reference numeral 3a' in FIG. 15 shows how the portions of the layer 3' which are intermediate the thus bonded portions of the layers 2' and 4', have been compressed and melted to provide the desired bonding, whereas the remainder of the foam layer 3', that is the portion thereof which is interposed between the non-bonded portions of the layers 2' and 4', retains its original thickness and thus constitutes padding for the raised three-dimensional numeral "1" which is, accordingly foam filled as visible in FIG. 15.

The wide range of applicability of the embodiments in FIGS. 10-15 is obvious and requires no elaboration. By way of example it need merely be suggested that adhesive appliqué articles may be provided in the form of "stick-on" patches for garments, in the form of adhesive signs or adhesive advertising stickers, in the form of decorative panels to be affixed to furniture or the like, as wallpaper having foam-filled, resilient three-dimensional characteristics, and in any other variety of applications which will offer themselves to those conversant with the art.

The appliqué articles can be provided on any suitable supports, such as garments, yardgoods or wall coverings. As shown in FIGS. 10-15 they can also be provided in the form of an adhesive patches for affixing to virtually any desired surface. The layers in the various embodiments can consist of a variety of different materials, and synthetic plastics materials other than vinyl plastics may be used. Also, the foam material of which the filler layer may consist may be any one of many suitable synthetic plastics foams and can be replaced with a fibrous sliver of natural or synthetic fibers, e.g. Dynel (Registered Trade Mark). The great number of different possibilities concerning the provision of printed, painted, embossed or otherwise provided design portions, the use of different colours on different layers, and the use of surface textures of different layers as well as the use of light-refracting characteristics to create a host of different effects by their provision has been suggested already.

A further advantageous possibility is to use a material defining pockets of entrapped gas for the padding layer. Such material need not be continuous; instead, the layer may be discontinuous and consist of a plurality of individual small particles. Bonding of the top and bottom layers to one another at least along a circumferentially complete zone and in the presence of heat will then result in expansion of the gas during the bonding as a result of the applied heat; if the top layer consists of a thermoplastic material, the expanding gas will blow the softened material of the top layer upwardly into a dome-

shaped or bubble-shaped configuration within the confines of the circumferentially complete zone. Of course, these bubbles can only be small so as to be able to resist subsequent collapse when the gas cools and contracts. If the top layer is transparent, the filler or spacing layer or material may be selected with a view towards its visual effects; its particles, if it consists of such, may be coloured and/or shiny or the like, and the bubble filled or partially filled with and the bubble filled or partially filled with some of these entrapped particles will have the appearance of a sequin.

Coming, finally, to FIG. 16 there is diagrammatically illustrated an apparatus for carrying out the method according to the invention. Reference numeral 60 identifies a mould platen to which a heating platen 61 of known construction is connected by means of screws 73 of analogous elements. The construction of the heating platen 61 may be conventional, as can be the manner of supplying heat thereto, for example the platen 61 may be electrically heated and connected with a source of electrical energy.

The underface or downwardly directed face 62 of the mould platen 60 is provided with a downwardly extending projection 65 having a sharp edge 63 and, located above the edge 63, a flat face 64. A substantially vertical edge face 68 extends upwardly from the sharp edge 63 to the underface 62 of the mould platen 60. An inclined edge face 69 extends from the sharp edge 63 to the flat face 64. The distance between the lowermost point of the sharp edge 63 and the flat face 64 is preferably smaller than the combined thickness of the layers 3 and 4 which are located on the support 2 which in turn rests on a work table or the like 75. The width of the flat face 64 as seen in a plane parallel to the general plane of the underface 62, may advantageously be great enough so as to cover at least a portion of the outer contour line of the appliqué design which it is desired to produce.

Located within the projections 65 are projection 67 having flat edge faces 66 and substantially vertical side faces 70. It will be appreciated that the flat faces 64 provide in operation of the apparatus the narrow circumferential zones of connection between the top and bottom layers, as identified in the preceding Figures, and that the edge faces 66 provide the narrow connected zones which are located inwardly of the circumferential zones of connection. It should be noted that the general plane of the edge faces 66 is located upwardly of the lowermost point of the sharp edges 63, and in the illustrated embodiment is shown to coincide with the general planes of the flat faces 64. The connecting member 72, here illustrated

as being rod-shaped, connects the mold consisting of the joined platens 60 and 61, with a suitable moving means 74, the arrow associated with the member 72 indicating by its double-headed configuration that the moving means is operative for moving the mould downwardly towards the work table 75 as well as upwardly away therefrom so as to permit removal of the completed appliqué article.

When the mould is moved downwardly towards an assembly as illustrated on the work table 75 and here consisting of the support 2, the foam layer 3 and the layer of sheet material 4, the sharp edges 63 will initially sever at least the layers 4 and 3 and may also sever the support 2 if the distance between the lowermost point of the respective sharp edges and the flat faces 64 are such as to permit this. The flat faces 64 and 66 simultaneously press portions of corresponding width of the layer 4 against the layer 3 and thereby against the support 2. The platen 60 and thereby its projections 65 and 67, are heated by the heating platen 61 and contact of the faces 64 and 66 with the layer 4 serves to transmit heat therethrough to the layer 3 which collapses a zone corresponding substantially to the width of the faces 64 and 66 and serves to adhere the layer to the support 2 in these zones.

WHAT WE CLAIM IS:

1. A method of making an appliqué article comprising the steps of superimposing a compressible resilient padding material layer onto a support material layer; superimposing upon said padding material a sheet material layer, at least one of said materials being latently adhesive; severing at least the sheet material layer along a contour line of a desired design; and simultaneously pressing the sheet material layer against the support material layer at selected zones inwardly of said contour line so as to compress the padding material layer at said selected zones whereby there is substantially no padding material in said zones, activating the latently adhesive material in said zones whilst effecting the pressing step so that the said sheet material layer is adhered to and connected with the support material in said zones so as to define a three-dimensional padded appliqué design on said support material layer.

2. A method as defined in Claim 1, the support material and the sheet material being gas impervious and the sheet material being thermoplastic, and the padding material defining air containing pockets intermediate said support material layer and said sheet material layer; and wherein the step of activating said latently adhesive material comprises applying heat to said layer of thermoplastic sheet material in the region of said zones whereby said thermoplastic sheet

material becomes plastically deformable and distended in a direction away from said support material in response to expansion of the air in said pockets resulting from application of said heat to said layer of thermoplastic sheet material.

3. A method as defined in Claim 2, wherein the padding material layer consists of particulate material.

4. A method as defined in Claim 1, wherein said padding material consists of synthetic plastics foam material.

5. A method as defined in Claim 1, wherein said padding material consists of fibrous sliver.

6. A method as defined in any preceding Claim, wherein said layer of sheet material consists of synthetic plastics material.

7. A method as defined in any preceding Claim, said padding material layer being superimposed upon one side of said support material layer; and further comprising the step of providing an adhesive backing on the other side of said support material layer for enabling adhesive affixing of the completed appliqué article to a desired surface.

8. A method as defined in Claim 7, said adhesive backing being actively adhesive; and further comprising the step of applying a peel-off sheet over said backing to thereby protect said adhesive backing until the time of use.

9. A method as defined in Claim 1 or any one of Claims 4 to 8, wherein said latently adhesive material is thermoplastic material; and wherein the step of activating said latently adhesive material comprises subjecting said thermoplastic material to elevated temperature so selected as to effect at least partial melting of said latently adhesive material in said selected zones whereby the thus melted material bonds with the other materials or re-solidifying.

10. A method of making an appliqué article substantially as herein described with reference to the accompanying drawings.

11. An appliqué article comprising a support material layer, a layer of compressible resilient padding material including air spaces and superimposed on the support material layer, and a sheet material layer which is superimposed on the padding material layer, said article having zones with substantially no padding material including air spaces at which zones the sheet material layer is adhered directly or via padding material having substantially no air spaces to the support material layer, at least one of the materials serving as the adhesive, said zones outlining a padded appliqué design on the article.

12. An appliqué article as defined in Claim 11, wherein said padding material defines air containing pockets and wherein said support material and said sheet mate-

as being rod-shaped, connects the mold consisting of the joined platens 60 and 61, with a suitable moving means 74, the arrow associated with the member 72 indicating by its double-headed configuration that the moving means is operative for moving the mould downwardly towards the work table 75 as well as upwardly away therefrom so as to permit removal of the completed appliqué article.

When the mould is moved downwardly towards an assembly as illustrated on the work table 75 and here consisting of the support 2, the foam layer 3 and the layer of sheet material 4, the sharp edges 63 will initially sever at least the layers 4 and 3 and may also sever the support 2 if the distance between the lowermost point of the respective sharp edges and the flat faces 64 are such as to permit this. The flat faces 64 and 66 simultaneously press portions of corresponding width of the layer 4 against the layer 3 and thereby against the support 2. The platens 60 and thereby its projections 65 and 67, are heated by the heating platen 61 and contact of the faces 64 and 66 with the layer 4 serves to transmit heat therethrough to the layer 3 which collapses a zone corresponding substantially to the width of the faces 64 and 66 and serves to adhere the layer to the support 2 in these zones.

WHAT WE CLAIM IS:

1. A method of making an appliqué article comprising the steps of superimposing a compressible resilient padding material layer onto a support material layer; superimposing upon said padding material a sheet material layer, at least one of said materials being latently adhesive; severing at least the sheet material layer along a contour line of a desired design; and simultaneously pressing the sheet material layer against the support material layer at selected zones inwardly of said contour line so as to compress the padding material layer at said selected zones whereby there is substantially no padding material in said zones, activating the latently adhesive material in said zones whilst effecting the pressing step so that the said sheet material layer is adhered to and connected with the support material in said zones so as to define a three-dimensional padded appliqué design on said support material layer.

2. A method as defined in Claim 1, the support material and the sheet material being gas impervious and the sheet material being thermoplastic, and the padding material defining air containing pockets intermediate said support material layer and said sheet material layer; and wherein the step of activating said latently adhesive material comprises applying heat to said layer of thermoplastic sheet material in the region of said zones whereby said thermoplastic sheet

material becomes plastically deformable and distended in a direction away from said support material in response to expansion of the air in said pockets resulting from application of said heat to said layer of thermoplastic sheet material.

3. A method as defined in Claim 2, wherein the padding material layer consists of particulate material.

4. A method as defined in Claim 1, wherein said padding material consists of synthetic plastics foam material.

5. A method as defined in Claim 1, wherein said padding material consists of fibrous sliver.

6. A method as defined in any preceding Claim, wherein said layer of sheet material consists of synthetic plastics material.

7. A method as defined in any preceding Claim, said padding material layer being superimposed upon one side of said support material layer; and further comprising the step of providing an adhesive backing on the other side of said support material layer for enabling adhesive affixing of the completed appliqué article to a desired surface.

8. A method as defined in Claim 7, said adhesive backing being actively adhesive; and further comprising the step of applying a peel-off sheet over said backing to protect said adhesive backing until the time of use.

9. A method as defined in Claim 1 or any one of Claims 4 to 8, wherein said latently adhesive material is thermoplastic material; and wherein the step of activating said latently adhesive material comprises subjecting said thermoplastic material to elevated temperature so selected as to effect at least partial melting of said latently adhesive material in said selected zones whereby the thus melted material bonds with the other materials or re-solidifying.

10. A method of making an appliqué article substantially as herein described with reference to the accompanying drawings.

11. An appliqué article comprising a support material layer, a layer of compressible resilient padding material including air spaces and superimposed on the support material layer, and a sheet material layer which is superimposed on the padding material layer, said article having zones with substantially no padding material including air spaces at which zones the sheet material is adhered directly or via padding material having substantially no air spaces to the support material layer, at least one of the materials serving as the adhesive, said zones outlining a padded appliqué design on the article.

12. An appliqué article as defined in Claim 11, wherein said padding material defines air containing pockets and wherein said support material and said sheet mate-



- rial are air-impervious with the sheet material layer consisting of thermoplastic material which is distended in a direction away from said support material owing to the expansion of the air in said pockets and to the thermoplastic material becoming plastically deformable in response to application of heat during adhering of the sheet material layer to the support layer at said zones.
13. An appliqué article as defined in Claim 12, wherein said padding material layer is particulate.
14. An appliqué article as defined in Claim 11, wherein the sheet material layer is resiliently compressible.
15. An appliqué article as defined in Claim 14, wherein the padding material layer consists of synthetic plastics foam material.
16. An appliqué article as defined in Claim 14, wherein the padding material layer consists of a resiliently compressible fibrous web.
17. An appliqué article as defined in Claim 14, 15, or 16, wherein said sheet material is a synthetic plastics material.
18. An appliqué article as defined in Claim 17, wherein said sheet material is at least in part light transmissive.
19. An appliqué article as defined in Claim 17, wherein said sheet material is at least in part light refractive.
20. An appliqué article as defined in Claim 14, wherein said sheet material is metallized synthetic plastics material.
21. An appliqué article as defined in any one of Claims 11 to 20 and further comprising a layer of transparent latently adhesive synthetic plastics sheet material overlying said sheet material layer and adhered thereto in said selected zones.
22. An appliqué article as defined in Claim 18, wherein at least one of said layers is provided with a pictorial representation.
23. An appliqué article as defined in Claim 18, wherein the sheet material layer and/or the padding material layer is provided with a design coordinated with said three-dimensional appliqué design to present in conjunction therewith a predetermined visual appearance to a viewer.
24. An appliqué article when manufactured according to the method of any one of Claims 1 to 10.
25. An appliqué article constructed substantially as hereinbefore described and illustrated in the accompanying drawings.
26. An apparatus for making an appliqué article having a three-dimensional appliqué design from a laminar assembly in which a padding layer is sandwiched between a support layer and a sheet material layer with at least one of the materials being latently adhesive, and wherein the apparatus includes a support for the assembly, a platen having at least one projection facing said support and extending along the contour lines of the desired appliqué design, said platen being movable toward said support for pressing said sheet material layer towards said support material layer across said spacing material layer at least in a zone corresponding to the outline of said projection, and activating means for activating said latently adhesive material to thereby adhere said layers together in said zone, characterized in that said projection has a substantially flat pressing face extending along said contour line inwardly thereof and projecting from said platen by a distance sufficient to compress said layers in said zone, and a cutting edge extending along said contour line, outwardly of the pressing face and projecting from said platen by a greater distance than the pressing face so as to sever at least said sheet material layer at the same time as said pressing face compresses said layers in said zone, said platen comprising additional projections having substantially flat pressing faces projecting from said platen by a distance sufficient to compress said layers within the outline of said contour line.
27. An apparatus as defined in Claim 26; wherein said activating means comprises heating means for heating at least said pressing faces.
28. An apparatus for making an appliqué article substantially as herein before described and illustrated with reference to the accompanying drawings.

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