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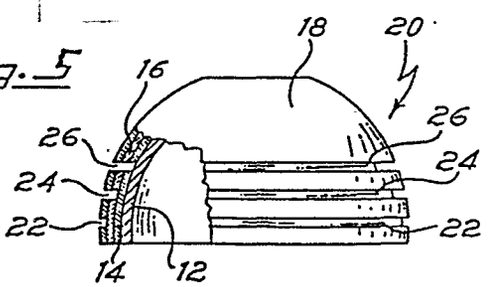
(54) Plastic cupolas, or domes for chandeliers and other illumination means and the procedure for their production.

(57) Plastic cupolas, or domes for chandeliers and other lighting means and procedure for their production. Plastic cupola, or dome (20), in particular polymetacrylate, consisting of stratified material (10) including at least one transparent layer (12) associated with at least two coloured layers (14), (16), (18) of differentiated colour and having chromatic effects obtained by the partial, selective and differentiated removal of a part (22), (24) and (26) of at least one of the coloured layers (14), (16) and (18).

Fig. 5



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TITLE: " PLASTIC CUPOLAS, OR DOMES FOR CHANDELIERS AND OTHER ILLUMINATION MEANS AND THE PROCEDURE FOR THEIR PRODUCTION"

This invention refers to plastic cupolas, or domes for chandeliers and other illumination means and to the procedure for their production.

As is known, in table, ceiling, arm type and similar lighting fittings, or equivalent illumination means, the dome, or cupola encloses, or at least protects the source, or the sources of light , generally one, or more electric incandescent, or gas discharge bulbs.

The production of lighting fittings where the cupolas or domes are of plastic, such as polymetacrylate is known to the sectorial art. Such known cupolas, or domes are only made of two layers, where the internal layer is transparent, while the external layer is coloured.

The selective mechanical removal of at least part of the coloured layer exclusively allows a chromatic effect to be obtained resulting from the transparency of the internal layer. This effect is due to the resulting optics of only the two overlying layers, only one of which is transparent as mentioned. The procedure for the production of such domes, or cupolas includes: the formation of multiple sheet material, made up of two layers, as specified above; the selective, mechanical removal of a part of the coloured

layer: the heat-forming of the double sheet, generally by heating and around suitable moulds, to obtain the desired three-dimensional shape and the polishing of the dome, or cupola obtained. Thus, a suitable dome, or cupola is obtained as a lighting means having one, or more stripes, or equivalent markings which give the lighting fixture a chromatic " pattern " defined exclusively by a single colour.

The purpose of this invention is to produce cupolas, or domes suitable as lighting means, having numerous patterns with different colourings and chromatic effects are combined and integrated in various ways.

According to this invention, this purpose is achieved by using a multiple stratified sheet material , including at least one transparent layer and at least two layers of different colours, so that the selective removal of the overlying coloured layers gives the product a varyingly shaped geometric pattern, formed by the spaces between the removed areas and through which coherent areas, coloured differently, in relation to the colouring of the respective overlying layers, appear visible.

The cupola, or dome obtained with the said multiple sheet material is characterised by being made up of at least three adjacent layers of polymeric material, such as polymetacrylate, of which at least one is transparent and

at least two are coloured with differentiated colours and having a pattern of variously shaped geometry obtained by the partial and differentiated removal of a part of at least one of the coloured layers.

In particular, the product obtained according to this invention is characterised by being made up of a stratified layer, preferably of metacrylate, including at least three adjacent layers, of which at least one is transparent and at least two are coloured, made to adhere to one another using known systems and/or means, such as adhesives, heat treatments and so forth. The said sheet may be formed, using known systems, such as by heat and on coherent moulds and/or counter-moulds to realise a " cupola", or " dome" of three-dimensional geometry, corresponding to the various architectonic and environmental requirements and conveniences.

The coloured layers are produced using coloured materials according to known techniques, in the plastic mass, or by surface application of colourants, an application that may be preceeded by mordanting, or other known treatment that guarantees the stability of the colouring.

These layers have different thicknesses, and the said thickness is greatest in correspondence to the innermost layer of the hollow body, which materialises the said cupola, or dome, a layer which is preferably transparent.

All the coloured layers, except for the innermost layer

are processed at least by partial removal, preferably using a mechanical process.

Hence in the multiple structure resulting from the combination of the various layers it is possible to observe the colour, or the colours of the other adjacent layer, or layers through the innermost layer, which, as already mentioned, is completely transparent, as well as the chromatic effect resulting from their combination.

The chromatic effect is further integrated by the pattern and/or by the geometry of the outlines of at least part of the adjacent layers.

The structure in itself is prevailently formed by the layer of transparent material, which constitutes the main load bearing and stress resistant element.

The dome, or cupola obtained according to this invention may be associated with load bearing parts, such as a rod, an arm, one, or more small columns or other means.

The characteristics of the procedure according to the invention and of the relative products may be understood better from the following detailed description, where reference is made to the drawings whichrepresent an embodiment example and where:

figure 1 represents the schematic, front view of a multiple, four layer sheet with different colourings;

figure 2 represents the schematic side view of the sheet

of figure 1;

figure 3 represents the schematic front view of the multiple sheet of figure 1 with a pattern simplified by concentric rings obtained by the selective removal of part of the overlying layers;

figure 4 represents the schematic side view of figure 3 and figure 5 represents the perspective view and part section of a cupola, or dome obtained using the multiple sheet of figure 3.

With special reference to the figures, the starting sheet material is a multiple sheet (10) of polymeric material as for example polymetacrylate, produced by stratification. This said multiple sheet 10 includes a transparent sheet 12 associated with several sheets 14, 16 and 18 each one of which is coloured differently from the others. The transparent sheet 12, which in practice is destined to become the load bearing structure of the final product, has a thickness that is significantly greater than that of the other sheets 14, 16 and 18. The other said sheets 14, 16 and 18 are processed mechanically so as to selectively remove portions of them according to a predetermined pattern which for the sake of simplicity is illustrated with concentric circles in the figures.

Hence, this pattern could have a different geometry, straight line, curved line, or otherwise for example with dashed lines,

or another mixtilinear pattern.

The above mentioned sheet 10, illustrated in the figure with four layers may be used for the production of a dome, or cupola indicated overall by 20 in figure 5.

By removal of annular areas 22, 24 and 26 from the respective coloured sheets 18, 16, 14 a product 20 is obtained having a pattern of virtually coaxial rings. In fact, the said removal operations characteristically reveal the colours and chromatic shades due to the different mass and/or surface colourings of the adjacent sheets 14,16 and 18.

Naturally, patterns of a different geometry can be obtained by varying the parts removed from each coloured sheet, as well as the number of overlaid coloured sheets.

The product 20 may be obtained by any known technique as, for example, by heat and on coherent moulds and/or countermoulds. The three dimensional shape of the product 20 obviously may be different from the example, depending on the various architectonic and environmental requirements and conveniences.

The product 20 may be supported by any known means, such as for example, a central rod, an arm, or a crown of small load bearing columns or another arrangement. The selective removal of the material, necessary to obtain the desired architectonic pattern may be made using any known means,

for example mechanically.

Changes, modifications and variations may be made in the practical realisation of this invention without leaving its protective sphere.

CLAIMS

1. Plastic cupolas, or domes for chandeliers and other lighting means made up of stratified material and having a chromatic effect, wherein the said stratified material consists of at least three adjacent layers of which at least one is transparent and at least two are coloured with differentiated colours and the chromatic effect is obtained by partial, selective and differentiated removal of a part of at least one of the coloured layers.

2. Cupolas, or domes according to claim 1, wherein the adjacent layers are four, one of which is transparent and the other three are coloured with different colours.

3. Cupolas, or domes according to claim 1 or 2, wherein the layers are of polymetacrylate.

4. Cupolas, or domes, according to one of the previous claims, wherein the transparent layer has a significantly greater thickness compared to that of the adjacent coloured layers.

5. Cupolas, or domes, according to one of the previous claims, wherein the transparent layer is arranged inside the product and constitutes the main load bearing and stress resistant element.

6. Cupolas, or domes, according to one of the previous claims, wherein the colours of the overlaid and adjacent coloured layers are selectively chosen so that combined

chromatic effects are obtained from the transparency of the colour itself in contrast with the colouring resulting from the removed areas.

7. Procedure for the production of cupolas, or domes, according to one of the previous claims, by the shaping of a stratified plastic sheet made up of a transparent layer and the selective removal of a part of the coloured layer, wherein at least two layers of differentiated colours are associated with the said transparent layer, so that the selective removal of the overlying coloured layers gives the product at least a pattern having a variously shaped geometry formed by the interspaces between the removed areas and through which coherent areas of different colour are visible in relation to the colouring of the respective overlaid layers.

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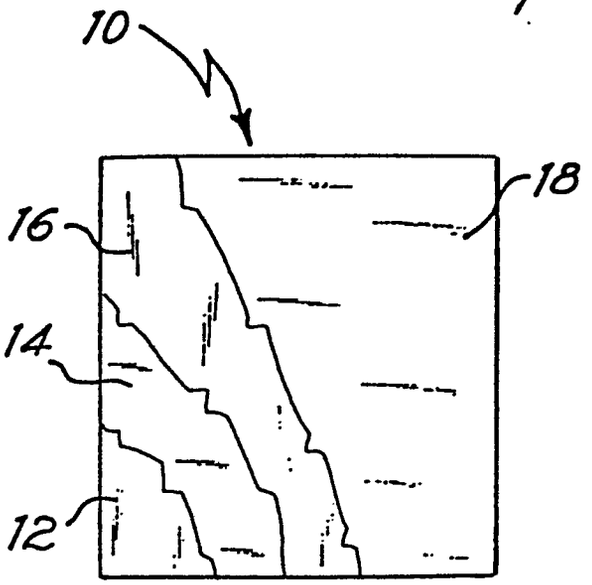


Fig. 1

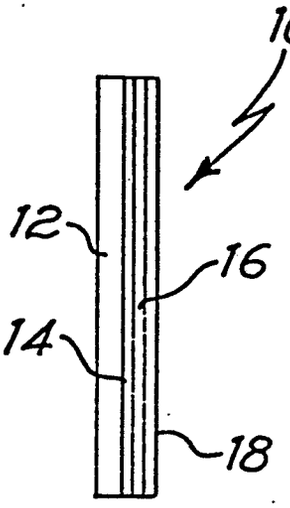


Fig. 2

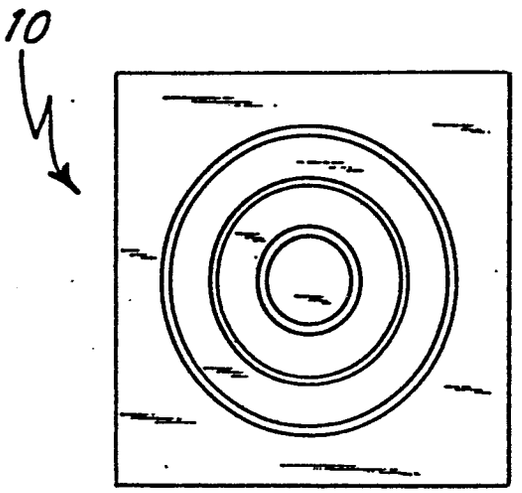


Fig. 3

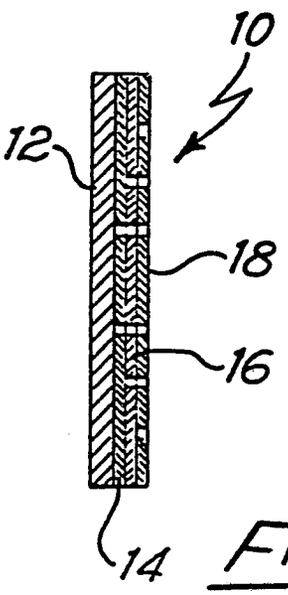
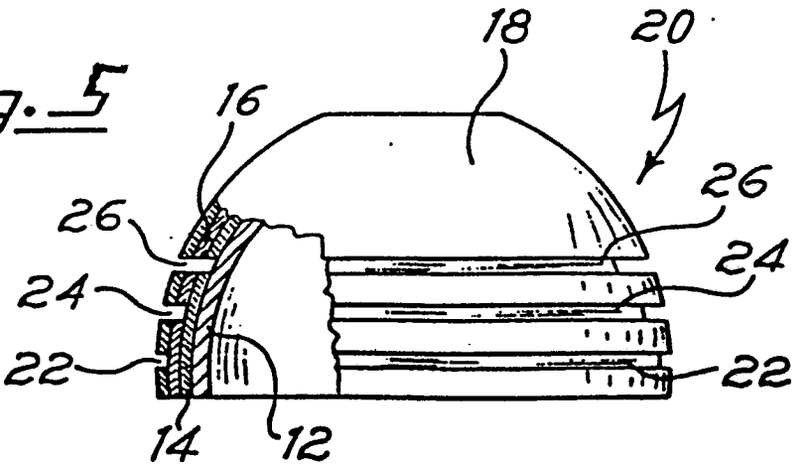


Fig. 4

Fig. 5



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EUROPEAN SEARCH REPORT

0158818
Application number

EP 85 10 2731

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl 4)
X	DE-A-2 505 183 (BARTH) * Whole document *	1,2,4-7	F 21 V 3/04
A	GB-A-1 390 462 (BERCHER) * Page 1, lines 50-62 *	1-7	

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

F 21 V
B 44 F
F 21 P
G 09 F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	05-07-1985	FOUCRAY R.B.F.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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