

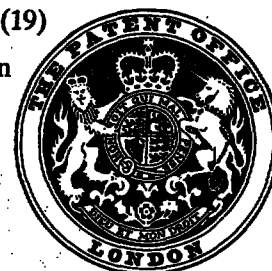
PATENT SPECIFICATION

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(54) DECORATIVE LAMINATE

(71) We, STAUFFER CHEMICAL COMPANY, a corporation organised under the laws of the State of Delaware, United States of America, of Westport, Connecticut 06880, 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:-

This invention relates to a decorative laminate; more particularly, it relates to a decorative laminate construction that may be used, for example, as decorative trim on vehicles, e.g. automobiles, on appliances and on signs.

Single sheets of transparent film carrying markings thereon which are useful as legend sheets are known and are described in U.S. Patent No. 2,200,203. Such products cannot be used to form a composite image of the type formed by the present laminate.

Cellulosic ribbon constructions formed by overlaying portions of a film containing bands of colour are also known and are described in U.S. Patent No. 2,156,501. The use of bands of colour on the films, rather than the use of discrete markings, for example, dots, also precludes the generation of the type of composite visual patterns that are obtainable from the present laminate.

Also known are transparent films containing markings, such as dots or lines, which are used by draftsmen to achieve shading in pictorial illustrations. Films of this type are available under the trademarks "Letraset" and "Letratone". The markings in such a product lie on the surface of the film and may be easily scraped off the film to either create highlight effects or to leave an area of the illustration free so other detail may show through. The markings are therefore not "protected" in the present context. Although such films may be overlapped to

create uniquely interesting patterns, the accessibility of the surface markings to easy removal and the use of low tack adhesives in such films precludes the use thereof as a decorative laminate having the durability desired for most end uses.

The present invention relates to a decorative laminate which contains a plurality of films, at least two of which have a pattern thereon formed by a plurality of protected discrete markings, such as dots, lines, triangles, squares or rectangles. The films overlie one another in the construction with at least one of the films being transparent and containing opaque dot markings and being arranged so that at least some of the markings on the transparent film or films are not completely but partially superimposed upon the markings on at least one other film. Although generally the case, it is not essential that the films are adjacent. For example, a transparent unmarked layer may be interposed. The effect to the viewer is a pleasing composite visual pattern of the markings. The effect generated by a particular laminate may be varied widely depending upon such factors as the shape, size, colour and spacing of the markings on each film and the precise relative positioning of the various films in the laminate. The outer surface of one of the films is coated with pressure-sensitive adhesive, preferably one having high tack, to allow the laminate to be attached to a desired substrate. For the present purposes, the term "protected" means that the discrete markings on the films are not readily accessible from the surface of the laminate so as to be readily removable, for example, by scraping. In a preferred embodiment, for example, the markings on the film in the laminate which will be closest to the ultimate viewer when it is affixed to a substrate are located behind the film and are not on its outer surface. Should the markings be on the surface of the

film closest to the viewer, they could be covered by a suitable transparent protective layer so as to be protected from easy removal.

5 Referring to the accompanying drawings:

Figure 1 is a perspective view showing two films which form a portion of one embodiment of the present laminate. The exploded views show the markings that are contained on such films and the arrow indicates that the films will be placed so that they overlay one another in the laminate;

Figure 2 is a planar view of the laminate formed from the films shown in *Figure 1* with the exploded view giving a greatly enlarged view of the composite visual image. A portion of the composite image is derived from at least a portion of the markings on one of the films and other portions of the composite image are derived from markings on another film or films;

Figure 3 is a cross-sectional view of the laminate shown in *Figure 2* taken along line 3-3'; and

25 *Figure 4* is a cross-sectional view similar to the type of view shown in *Figure 3* of a laminate which forms another embodiment of the present invention.

The laminate construction according to the present invention may contain two or more films, at least one of which is transparent and at least two of which contain protected discrete markings thereon. By placing the respective films over one another in the laminate in such a way that at least some of the markings on a transparent film are partially superimposed upon the markings on at least one other film, a composite decorative pattern of the markings in the laminate is formed.

40 For example, all the films may be transparent and the number thereof may be varied from two upwards, providing the size and spacing of those markings arranged on the film most remote from a viewer's eye still contribute to at least a portion of the final composite image. Alternatively, if desired, the film layer that is present in the laminate at a position furthest from a viewer's eye may be non-transparent and only the film or films placed over it would be transparent. If such an arrangement is used, the non-transparent film may be coloured and may contain discrete markings. In the latter case, 55 one or more transparent films, with either one or more sets of markings, would be placed over such a non-transparent film so as to generate the composite image. If the non-transparent film is merely coloured and does not contain any markings, at least two transparent films would be placed over it and at least two of these transparent films would contain discrete markings thereon.

65 Generally, the presence of two transparent films, each containing a pattern of

protected discrete markings, is all that is needed to form a laminate having a pleasing composite image of the markings. The use of more films in the laminate adds to the cost of the laminate and may not be preferred for this reason.

Figure 1 of the accompanying drawings illustrates two films 11 and 12 which are both transparent and which each contain a plurality of protected discrete markings 13 thereon as shown in the exploded views of both sheets and as will be shown in even greater detail in *Figures 3* and *4*.

The films may be formed of various suitable materials with such plastic films as polyvinyl chloride, polyesters, and polyacetates, being preferred. If the film is to be used as an outdoor decorative film, the selected film should have good weather durability. The films shown in *Figure 1* have printed on the respective surfaces thereof a plurality of discrete protective dot markings which may be widely varied as to size, type, colour and spacing. The same pattern of markings need not appear on each film. The printing of the markings may be done by conventional printing techniques, e.g. rotogravure printing, on either surface of the films although it is preferred to have the markings on the side of the film that will be remote from the viewer in order to protect it from removal, for example, by scraping. Should the markings be placed on the other side of the film, the outer side of the uppermost film may be coated (after application of the markings to the outer side of that film) with a suitable, transparent protective film to protect the markings from easy removal. Normally, this embodiment of the present invention will not be preferred for economic reasons.

A layer of a suitable pressure-sensitive adhesive (not shown in *Figure 1*) is preferably applied to the surface of the film carrying the markings and this film/marking/adhesive sub-combination will then be placed over the other film in the laminate to allow the films to be securely fastened to one another in the laminate. The adhesive that is selected for use in a particular laminate will depend upon the ultimate end use that is desired. If the decorative laminate is to be used in outdoor environments and is to have a long service life, the adhesive that is chosen should have both high tack, as well as good resistance to weathering. The lamination operation, which may be carried out by means of various known techniques, is indicated by the arrow in *Figure 1*.

The laminated product 21 from the operation depicted in *Figure 1* is shown in *Figure 2* and, when viewed, produces a composite image of the protected and discrete markings on both films. This composite image is

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shown in greater detail in the exploded view in Figure 2 wherein portions of the composite image are derived from various markings on various individual film layers used in the laminate. As mentioned above, the size, shape, colour and spacing of the respective markings on the films and the precise position of one film on the other are responsible for the particular composite image that is produced. Varying these parameters will enable those skilled in the art to produce a wide array of differing visual patterns.

Figure 3 is a cross-sectional view of the laminate of Figure 2 showing the two transparent films 31, the protected markings 32 (which may be the same or different) on each film, a layer of suitable pressure-sensitive adhesive 33 and release paper 34 to protect the lowermost adhesive layer shown in the Figure from contamination by dirt or other foreign substances. Removal of the release paper 34 allows the decorative laminate to be applied to a desired substrate.

Figure 4 illustrates another embodiment of the present invention wherein a non-transparent film 42 containing markings 43 thereon forms the lowermost layer of a laminate. Transparent film 41 carrying markings 43 overlies it. Adhesive layers 44 and release paper 45 are also contained in the laminate.

WHAT WE CLAIM IS:-

1. A decorative laminate which comprises a plurality of films, at least two of the films having a pattern thereon formed by a plurality of discrete protected markings, the films overlying one another and being joined in the laminate with at least one of the films being transparent and containing opaque dot markings and at least some of the markings on the transparent film not being completely superimposed upon the markings on at least one other film but being partially superimposed so that a composite visual pattern of the markings in the laminate is formed, and a layer of pressure-sensitive adhesive on the outer surface of one of the films such that the laminate is adapted to be attached to a substrate.

2. A laminate as claimed in claim 1 in which all the films in the laminate are transparent.

3. A laminate as claimed in claim 1 or claim 2 in which the films in the laminate are transparent plastic films.

4. A laminate as claimed in any of claims 1 to 3 in which each of the films has a pattern of markings thereon.

5. A laminate as claimed in any of claims 1 to 4 in which the laminate consists of two films.

6. A laminate as claimed in any of claims 1 to 5 in which the film is polyvinyl

chloride.

7. A laminate as claimed in any of claims 1 to 6 which further comprises a layer of release paper on the surface of the pressure-sensitive adhesive.

8. A laminate as claimed in claim 1 substantially as herein described.

9. A laminate as claimed in claim 1 substantially as herein defined with reference to Figure 3 or Figure 4 of the accompanying drawings.

10. A method of making a laminate as claimed in claim 1 which comprises joining a first film having a pattern thereon formed by a plurality of discrete protected markings with a second film having the characteristics described, at least one of the films being transparent and containing opaque dot markings at least some of which are only partially superimposed in upon the markings of the other film.

11. A method as claimed in claim 10 substantially as herein described.

12. A method as claimed in claim 10 substantially as herein described with reference to Figure 3 or Figure 4 of the accompanying drawings.

13. A laminate when made by a method as claimed in any of claims 10 to 12.

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shown in greater detail in the exploded view in Figure 2 wherein portions of the composite image are derived from various markings on various individual film layers used in the laminate. As mentioned above, the size, shape, colour and spacing of the respective markings on the films and the precise position of one film on the other are responsible for the particular composite image that is produced. Varying these parameters will enable those skilled in the art to produce a wide array of differing visual patterns.

Figure 3 is a cross-sectional view of the laminate of Figure 2 showing the two transparent films 31, the protected markings 32 (which may be the same or different) on each film, a layer of suitable pressure-sensitive adhesive 33 and release paper 34 to protect the lowermost adhesive layer shown in the Figure from contamination by dirt or other foreign substances. Removal of the release paper 34 allows the decorative laminate to be applied to a desired substrate.

Figure 4 illustrates another embodiment of the present invention wherein a non-transparent film 42 containing markings 43 thereon forms the lowermost layer of a laminate. Transparent film 41 carrying markings 43 overlies it. Adhesive layers 44 and release paper 45 are also contained in the laminate.

WHAT WE CLAIM IS:-

1. A decorative laminate which comprises a plurality of films, at least two of the films having a pattern thereon formed by a plurality of discrete protected markings, the films overlying one another and being joined in the laminate with at least one of the films being transparent and containing opaque dot markings and at least some of the markings on the transparent film not being completely superimposed upon the markings on at least one other film but being partially superimposed so that a composite visual pattern of the markings in the laminate is formed, and a layer of pressure-sensitive adhesive on the outer surface of one of the films such that the laminate is adapted to be attached to a substrate.

2. A laminate as claimed in claim 1 in which all the films in the laminate are transparent.

3. A laminate as claimed in claim 1 or claim 2 in which the films in the laminate are transparent plastic films.

4. A laminate as claimed in any of claims 1 to 3 in which each of the films has a pattern of markings thereon.

5. A laminate as claimed in any of claims 1 to 4 in which the laminate consists of two films.

6. A laminate as claimed in any of claims 1 to 5 in which the film is polyvinyl

chloride.

7. A laminate as claimed in any of claims 1 to 6 which further comprises a layer of release paper on the surface of the pressure-sensitive adhesive.

8. A laminate as claimed in claim 1 substantially as herein described.

9. A laminate as claimed in claim 1 substantially as herein defined with reference to Figure 3 or Figure 4 of the accompanying drawings.

10. A method of making a laminate as claimed in claim 1 which comprises joining a first film having a pattern thereon formed by a plurality of discrete protected markings with a second film having the characteristics described, at least one of the films being transparent and containing opaque dot markings at least some of which are only partially superimposed in upon the markings of the other film.

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