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(54) **A phosphorescent article**

(57) A phosphorescent article is disclosed as being made at least of a synthetic resin, such as polypropylene, incorporated with a phosphorescent pigment, and

the article having a backing, e.g. a white paint, which reflects at least part of the phosphorescent light falling thereon.

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Description

Field of the Invention

This invention relates to a phosphorescent article and, in particular, such an article for decoration purposes.

Background of the Invention

There are existing phosphorescent decoration items/articles which may be stuck onto a surface, e.g. wall, by adhesive materials. Such items include phosphorescent pigments which can absorb and store natural or artificial light, and emit it in the form of visible light in the dark.

Such decoration items may be in the shape of star or other celestial bodies. When they are stuck onto a wall and when night time comes, they will emit visible light and glow in darkness.

Such decoration items are usually stuck onto a surface by an adhesive material under the commercial product name "WHITE TACK-IT" (Trade Mark) traded and manufactured by A.W. Faber-Castell (M) Sdn. Rhd. This adhesive material is made of polyisobutylene polymer mixed with inert filler, petroleum distillate and pigment, and is white in colour.

A problem associated with such an arrangement is that as the adhesive material is attached to the back of the item for adhering it onto the wall, and when it glows in darkness, a shadow or darker region corresponding to the shape of the adhesive material will appear. This will adversely affect the aesthetic appearance and decorating effect of the items. At least part of the reason for this phenomenon is that some of the phosphorescent light falling onto the adhesive material is absorbed by it, thus resulting in that immediate area being perceived as being relatively darker than the surrounding region.

It is therefore an object of the present invention to provide an improved phosphorescent article in which the above shortcoming is mitigated, and at least to provide a useful choice to the public.

Summary of the Invention

According to the present invention, there is provided a phosphorescent article made at least of a synthetic resin incorporated with a phosphorescent pigment, wherein the article comprises a permanent backing that reflects at least part of the phosphorescent light falling thereon.

Advantageously, the synthetic resin may be polypropylene.

Conveniently, the backing may be paint.

Suitably, the paint may be provided on a back side of the article.

The paint may advantageously cover substantially the whole of the back side of the article.

The back side of article may conveniently be releasably attachable to fixing means made at least of polyisobutylene polymer mixed with inert filler, petroleum distillate and pigment.

The phosphorescent pigment may suitably be composed mainly of phosphorous zinc sulfide (ZnS:Cu).

Advantageously, the backing may be white in colour.

Conveniently, the paint may be composed at least of 25 % - 55% of an aromatic petroleum distillate, up to 40% of a pigment, 2% - 3% of a polyethylene wax, 25% to 35% of resins (chlorinated polypropylene) and 3% - 5% of ethylene-vinyl acetate copolymer.

Suitably, the article may be in star shape.

Brief Description of the Drawings

Fig. 1 is a front view of a phosphorescent article according to the present invention; and

Fig. 2 is a back view of the phosphorescent article shown in Fig. 1.

Description of the Preferred Embodiment

As shown in Fig. 1, a phosphorescent decoration item/article according to the present invention is generally designated as 10, and is generally in a star-like shape. The item 10 includes substantially planar front side 12 and back side 14. To the whole of the back side 14 is painted a paint 16 to be discussed below. Adhesive material in the form of a piece of white deformable adhesive 18 is attached to the back side 14 of the article 10. The article 10 may then be attached onto a surface, e.g. a wall or a picture-frame, for decoration purposes.

The article 10 is made at least of polypropylene incorporated with a phosphorescent pigment composed mainly of phosphorous zinc sulfide (ZnS:Cu). Phosphorescence/After-glow of the phosphorescent pigment may remain visible in the dark for about 2 to 4 hours, but is dependent on a number of factors, including the source and intensity of the excitation energy. Suitable phosphorescent pigments suitable for use in the present invention may be sourced from Nemoto & Co., Ltd. of Japan. Alternatively, suitable phosphorescent pigments may be ones traded by Ridel-de Haën AG, of Germany, under and by reference to "LUMILUX N-pigments" (Trade Mark).

Turning to the deformable adhesive 18, such may be one traded by A.W. Faber-Castell (M) Sdn. Bhd, of Malaysia, under and by reference to "WHITE TACK-IT" (Trade Mark). This adhesive is composed mainly of polyisobutylene polymer mixed with inert filler, petroleum distillate and pigment.

As discussed above, a disadvantage associated with the existing arrangement is that a shadow corresponding to the shape of the adhesive 18 will appear when the article 10 emits light in the darkness. It is found

that this problem can be solved by providing a backing, e.g. a paint 16, to the back side 14 of the article 10. However, most paints do not stick permanently to the article 10, which is made of polypropylene, and it is possible to remove such paints from the article 10 by scratching it by finger-nail

It is however found that a paint traded by Teikoku Printing Inks Mfg Co., Ltd. under and by reference to "PPE Ink Series" (Trade Mark) is suitable for use in the present invention. This paint is composed at least of 25% to 55% of an aromatic petroleum distillate, up to 40% of a pigment, 2% to 3% of a polyethylene wax, 25% to 35% of resins (chlorinated polypropylene), and 3% to 5% of ethylene-vinyl acetate copolymer.

The paint 16 may be applied on to the back side 14 of the article 10 by silk-screen printing.

It should be noted that the above only describes the preferred embodiment of the present invention, and various alterations may be made thereto without departing from the spirit of the invention.

roleum distillate, up to 40% of a pigment, 2% - 3% of a polyethylene wax, 25% to 35% of resins (chlorinated polypropylene) and 3% - 5% of ethylene-vinyl acetate copolymer.

10. An article according to any of the preceding claims wherein the article is in star shape.

Claims

1. A phosphorescent article made at least of a synthetic resin incorporated with a phosphorescent pigment, wherein the article comprises a permanent backing that reflects at least part of the phosphorescent light falling thereon.
2. An article according to Claim 1 wherein the synthetic resin is polypropylene.
3. An article according to Claim 1 wherein the backing is paint.
4. An article according to Claim 3 wherein the paint is provided on a back side of the article.
5. An article according to Claim 4 wherein the paint covers substantially the whole of the back side of the article.
6. An article according to Claim 4 or 5 wherein the back side of article is releasably attachable to fixing means made at least of polyisobutylene polymer mixed with inert filler, petroleum distillate and pigment.
7. An article according to Claim 1 wherein the phosphorescent pigment is composed mainly of phosphorous zinc sulfide (ZnS:Cu).
8. An article according to Claim 1 wherein the backing is white in colour.
9. An article according to Claim 6 wherein the paint is composed at least of 25% - 55% of an aromatic pe-

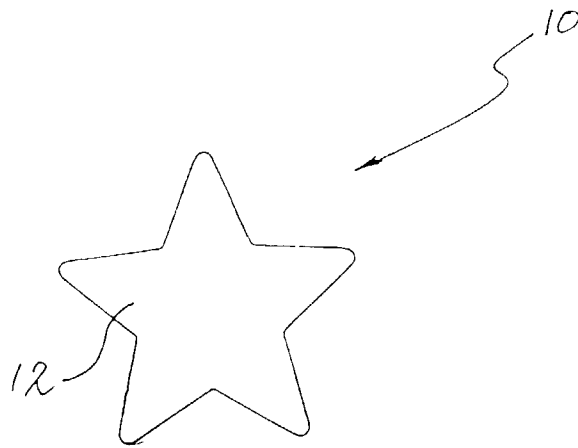


Fig. 1

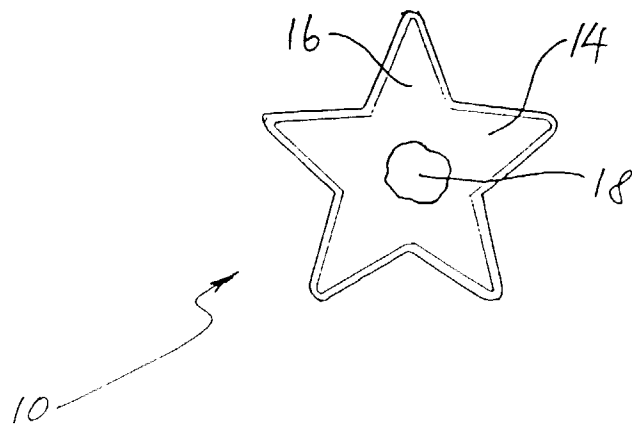


Fig. 2