

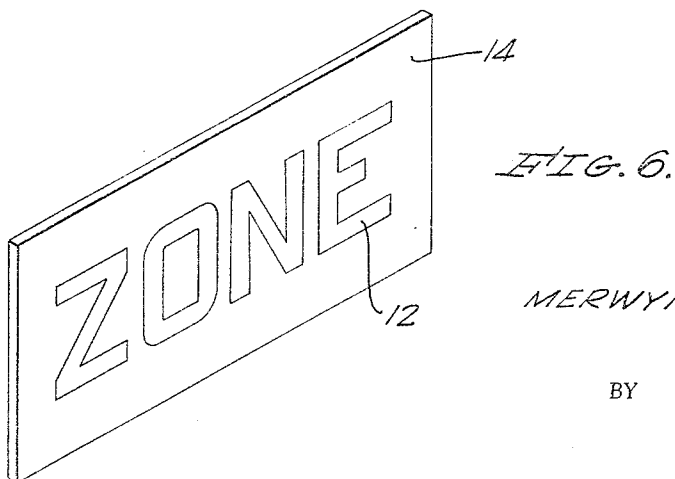
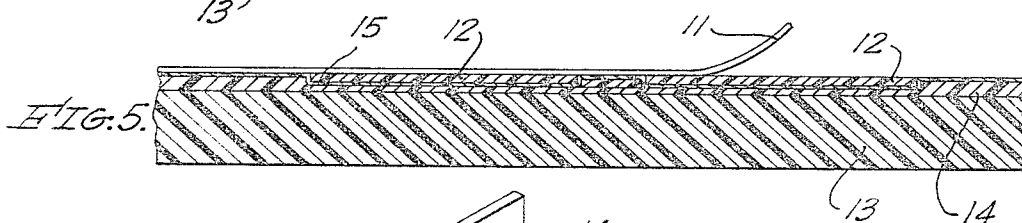
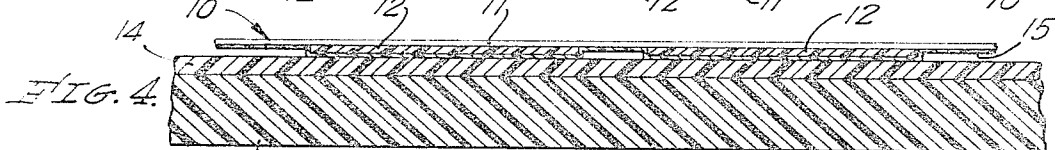
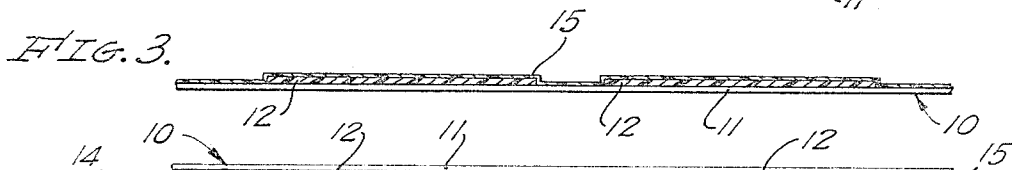
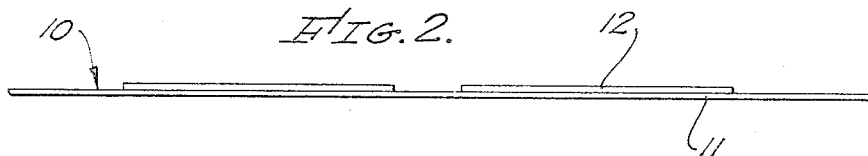
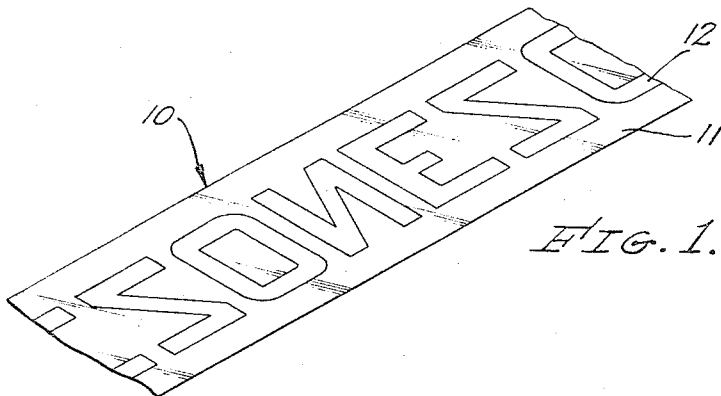
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M. C. GILL

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PRINTED PLASTIC ARTICLE AND METHOD OF MAKING THE SAME

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MERWYN C. GILL
INVENTOR.

BY

Lyon & Lyon
ATTORNEYS.

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3,309,804

PRINTED PLASTIC ARTICLE AND METHOD
OF MAKING THE SAME

Merwyn C. Gill, Pasadena, Calif.

(4076 Easy St., El Monte, Calif. 91731)

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8 Claims. (Cl. 40-2)

The present invention relates to a printed plastic article and a method for printing matter thereon. More specifically, the present invention relates to an article of construction such as may be used for a sign, for example, upon which there is an outer layer of plastic material with a second plastic layer of printed characters.

Whenever it is desired to impose a group of characters or a pattern upon a given surface in order to form a sign or a decorative surface or the like, it has become the accepted practice to merely paint the desired characters upon the surface or to print or transfer them on from another object or to print them on a saturating paper and then embed the paper in resin. A considerably large variety of materials have been used to paint or print a surface. The problem with all such paints is that the paint itself forms merely a coating over the surface and therefore is subject to chipping and peeling away from the surface after it has aged. Considerable effort has been made to create paints which will resist this tendency but it is an inherent tendency of any coating substance which is distinct from the substance to which it is applied. Even improved paints only slow this aging process but cannot eliminate it.

It is an object therefore of the present invention to provide a method of printing on a material to form a decorative or patterned surface having greatly improved resistance to deterioration due to aging as well as from other sources.

It is a more specific object of this invention to provide a printed or patterned surface wherein the surface and the printing substance are formed of the same material. More specifically, it is an object of this invention to transfer printed characters to a given surface whereupon the characters and the surface co-act to form a homogeneous surface.

Further objects and advantages of the present invention will become apparent upon reading the following description in conjunction with the drawings in which:

FIGURE 1 is a perspective view of a releasing strip having printed indicia thereon prior to transfer.

FIGURE 2 is a side view of FIGURE 1 showing the releasing strip and the printed material thereon.

FIGURE 3 shows the next step in the process of coating the article shown in FIGURE 2 with a particular substance.

FIGURE 4 shows the application of the coated releasing strip of FIGURE 3 to the surface to be printed.

FIGURE 5 shows the material after the printing step has been completed with the releasing strip being removed.

FIGURE 6 shows a completed sign made in accordance with this invention.

In FIGURE 1, a transfer strip generally designated 10 consists of a releasing strip 11 which may be cellophane, Mylar, treated paper or the like. To create the transfer strip 10, indicia of the desired type are applied to releasing strip 11, and may be sprayed, silk screened, stenciled, printed or brushed on. The printing medium 12 consists of a thermosetting resin such as polyester resin which may be of any desired color. FIGURE 2 shows the finished transfer consisting of a releasing strip 11 with a layer of printing medium 12 thereon.

The material used herein to form a sign consists of a sheet of fiberglass material 13 to which has been laminated in any suitable manner a layer 14 of thermosetting resin

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such as polyester. Layer 14 may also be of any desired color, and forms a uniform coating over the laminated fiberglass center 13.

After the printing medium 12 has been added to the releasing strip 11, a thin coating of a co-polymerizing material 15 or a protective bondable coating in which the material 12 is insoluble may be applied over strip 11 and medium 12 as shown in FIGURE 3. This coating 15 may be di-allyl-phthalate, vinyl toluene or a mixture thereof, or any similar co-polymerizing material insoluble in the polyester material 12, and will prevent the printing medium 12 from dissolving into the polyester layer 14 or smearing during the printing process. Without the coating 15, the hot styrene or other co-polymerizing agent used to set the polyester will cause considerable loss of printing distinction.

In order to transfer the printing medium to the sign board, the transfer 10 with the characters 12 affixed thereto and protected by agent 15 is placed against the printing surface 14, as shown in FIGURE 5, whereupon the combination is heated and the transfer is pressed into layer 15 whereupon the layers are chemically combined. After the article has cooled, the releasing strip 11 is removed with the resulting formation of a printed surface having the printed material formed integrally with the surface. No surface discontinuity can be found where the sign board and the printing medium are joined. FIGURE 6 shows a view of a completed sign after removal of the releasing strip 11.

A particular advantage of this method of making signs where large quantities may be required at a given time lies in the ability to print a large number of the transfer strips 10 which may be stored until required for completing a certain sign. In addition, this method makes it possible to integrally print a thermoset message upon a thermoset backing in a continuous process. Such a system finds particular application in the field of signs used along streets and highways. The impermeability of polyester to deterioration from weather and the forces of man makes a sign constructed of such material particularly advantageous.

While particular embodiments of the present invention have been shown and described, it will become obvious to those skilled in the art that changes and modifications may be made in the materials and applications of the present method without departing from the invention in its broader aspects and it is the aim in the appended claims to cover all such changes and modifications as fall within the true scope and spirit of this invention.

I claim:

1. A method of making a printed plastic article comprising: applying a quantity of thermosetting resin printing material to a releasing strip to form a transfer strip; placing said transfer strip against the article to be imprinted, said article having an outer layer of the same thermosetting material as said printing material; applying heat and pressure to said transfer strip and said article; and removing said releasing strip after the combined thermosetting resin has reacted and cooled.

2. A printed plastic article comprising a body having an outer layer of plastic material, one or more figures printed upon said outer layer, said figures printed with a material of the same composition as that of said outer layer but of different colors, said figures and said layer formed into a chemically integrated body of thermoset resin without any loss in the distinctiveness of said figures.

3. A method of making a printed plastic article comprising: applying a quantity of polyester resin to a releasing strip to form a transfer strip; coating said transfer strip with a copolymerizing material; placing said transfer strip against the article to be imprinted, said article having an

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outer lamination of polyester resin; applying heat and pressure to said transfer strip and said article; and removing said releasing strip after the combined polyester resin and copolymerizing material has reacted and has cooled.

4. A printed plastic article comprising a body having an outer lamination of polyester resin, one or more figures printed upon said outer layer, said figures printed with a material composed of polyester resin, said figures and said outer layer thereby formed into a chemically integrated body of thermoset resin without any loss in the distinctiveness of said figures.

5. A method of making a printed plastic article comprising applying a quantity of polyester resin to a releasing strip to form a transfer strip; coating said transfer strip with a copolymerizing material in which the polyester resin is insoluble; placing said transfer strip against the outer surface of the article to be printed, said article comprising a fiberglass base having laminated thereon an outer surface of polyester resin; applying heat and pressure to said transfer strip and said article to cause the reaction between the polyester and the copolymerizing material to form a thermoset resin; and removing said releasing strip after the thermoset resin has been formed and cooled.

6. The method of claim 5 wherein the copolymerizing material is selected from the group consisting of diallyl phthalate, vinyl toluene and styrene.

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7. The method of claim 5 wherein the polyester resin on the releasing strip and the polyester resin on said article are of different and distinctive colors.

8. The method of preparing a printed plastic article which comprises printing various indicia on a releasing strip, said printing medium comprising a thermosetting resin; coating the surface of said transfer strip including the indicia printed thereon with a copolymerizing material; placing said transfer strip against the article to be imprinted, said article having an outer layer of the same thermosetting material as said printing material; applying heat and pressure to said transfer strip and said article; and removing said heating strip after the combined thermosetting resin has reacted and cooled.

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EUGENE R. CAPOZIO, *Primary Examiner*.

JEROME SCHNALL, *Examiner*.

W. J. CONTRERAS, *Assistant Examiner*.