

[54] PRODUCTION OF WINDOWED FACE PLATES

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[51] Int. Cl. B44d 1/52

[58] Field of Search 117/37 R, 38, 43, 45, 72, 117/102 R, 5.5, 8, 8.5; 161/406, 6, 199; 156/247, 344

[56] References Cited

UNITED STATES PATENTS

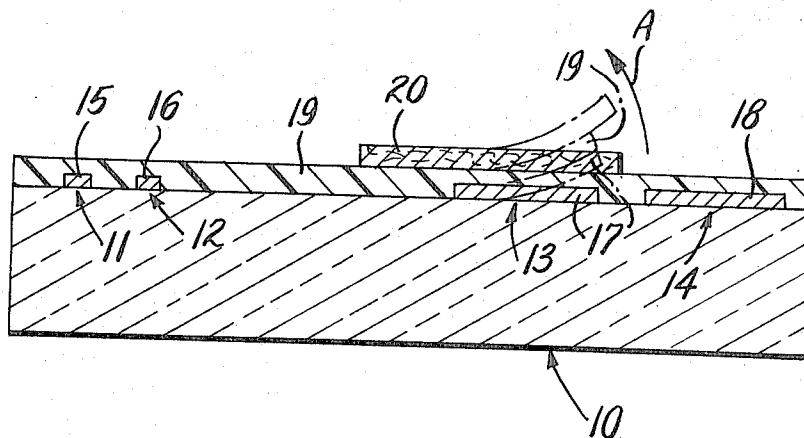
3,554,780 1/1971 Miller et al. 117/5.5

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[57] ABSTRACT

Windowed face plates are provided by applying to selected portions of the surface on one side of a transparent face plate a poorly adherent coating to provide easily strippable film portions lightly adhered to the plate, and then overcoating the same side of the plate with a heavily pigmented organic solvent-based paint to form an opaque brittle film of paint which adheres strongly to the exposed surface of the plate and the strippable film portions to provide an opaque plate. An adhesive tape is then applied over a film portion which it is desired to remove and peeling off the adhesive tape causes the strippable film portion to be pulled off with the overlying paint attached thereto thereby provide one or more windows in an opaque plate.

9 Claims, 2 Drawing Figures



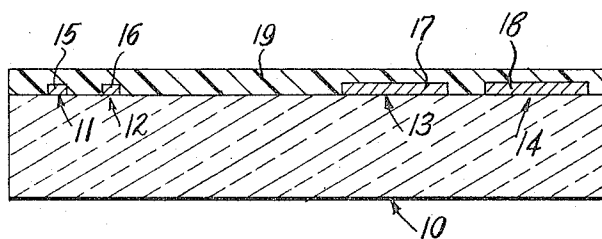


FIG. 1.

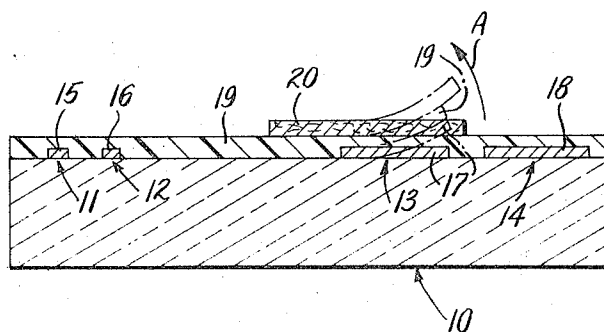


FIG. 2.

PRODUCTION OF WINDOWED FACE PLATES

The present invention relates to the production of face plates or similar structures in which a transparent base is painted with an opaque paint with openings being formed, as desired, in the opaque paint to uncover observation windows or decorative or printed material.

In the production of face plates, a transparent plate is masked, as with masking tape, and the masked surface is then sprayed with a heavily pigmented paint which is then appropriately dried to opacify the surface. The paint adheres tenaciously to the transparent plate and the masking tape is then removed with the paint adhering to the exterior thereof, to bare the window portions previously covered by the tape. The precision application of tape to the desired window areas is time consuming and, if the paint gets under the edge of the tape, then the window is partially obscured and, if this cannot be easily corrected, then the piece must be rejected. Moreover, in some instances, it is desired to vary the number and location of the windows, e.g., there may be three window portions and, from time to time, it is desired to select one or more of the windows for use, leaving the other window areas obscured by the paint and undetectable on casual examination. This cannot be done by leaving the overpainted masking tape, since this is easily seen.

In accordance with this invention, there is applied to selected portions of the surface on one side of a transparent plate, as by silk screening or other printing technique, a poorly adherent coating, preferably deposited from aqueous medium, and this coating is dried to form portions of an easily strippable film lightly adhered to the selected portions of the transparent plate. Then, the transparent plate is overcoated to cover both the strippable film portions and also the uncoated area on the same side of the plate, usually by spraying with a heavily pigmented organic solventbased paint which dries to form an opaque brittle film. This paint, on drying, adheres tenaciously to the plate and it also adheres to the film portions providing a relatively homogeneous painted surface in which the precoated areas are difficult to pick out, especially on casual observation from the opposite side of the plate.

Now, an adhesive tape can be applied over the painted surface in the region of one or more of the precoated areas, there being no need for precise positioning. When the tape is peeled off, it takes with it only those portions of the paint which overlie the precoated areas, leaving a window area exposed. The poorly adherent precoat material delaminates from the plate and is removed with the film of paint.

Since the paint film is relatively thin and highly pigmented, it is brittle and breaks cleanly at the edges of the respective portions of the easily strippable film.

As will now be evident, printing instead of manual placement of adhesive tape is relied upon, and this greatly eases the burden of exact placement. Similarly, the chance that the tape will not be securely adhered along all of its edges is eliminated, reducing rejects. Moreover, the printed film portion may be of any desired shape, indeed, it may spell out a message or provide a design. Most importantly, one may subsequently elect to remove only one or any selected number of film portions, as required for the task at hand. In this way, the windows needed for a particular model can be

selected for exposure and only one face plate manufactured in advance to cover several differently instrumented models. This cannot be done using adhesive tapes to mask preselected areas.

The transparent plate can be made of any desired material such as glass, polycarbonate resin, polymethyl methacrylate resin, polyester resin and the like.

The easily strippable film may be constituted by any film which is easily peeled off, such films being well known per se.

Aqueous coatings, absent elevated temperature baking and special chemistry, are usually poorly adherent to smooth transparent plastic or glass surfaces, and any of these may be used. Appropriate water soluble resins which may be dissolved or dispersed in water are illustrated by casein, gum (such as gum arabic), polyvinyl methyl ether, dextrin, polyvinyl alcohol, starch, polyethyleneimenes, and the like. The concentration of the resin in the strippable film helps determine the thickness of the film which is deposited, but film thickness is not significant and concentrations of 5-60% are fully useful.

The paint overcoat is not a critical feature of this invention so long as it is firmly adherent to the transparent plate. Any organic solvent-based paint will provide the desired adhesion, since all that is needed is that the paint adhere more strongly to the base than does the strippable film which is selected for poor adhesion. Alkyd resins, acrylic resins such as polymethyl methacrylate, and copolymers thereof with ethyl acrylate or butyl methacrylate, are quite useful. The only qualification aside from the adhesion to the base which is characteristic of a solvent-based paint, is that the paint be heavily pigmented, as with titanium dioxide and carbon black, to provide a good opaque coating. This usually requires a pigment to binder ratio of at least about 0.5:1, preferably at least 0.8:1. Aside from opacity, it is desired to minimize the binder contact so as to weaken the film making it brittle wherever it is not firmly adhered to the base.

Solvents are also subject to wide variation, acetone, methyl ethyl ketone, mineral spirits, toluene, and the like, all being suitable. The solvents dissolve the resin to be applied, help to wet the base, and volatilize on drying.

A preferred feature of the invention is to leave the strippable film as undisturbed as possible. In some instances, the solvent in the overcoat attacks the strippable film, and provides less desirable results.

This attack can be avoided or minimized by including some fatty acid soap in the aqueous precoat. On drying, this soap concentrates at the exposed surface of the strippable film to maintain the integrity of the strippable film against attack by the solvent in the sprayed on opaque topcoat.

The invention is illustrated in the accompanying drawings in which:

FIG. 1 illustrates a finished face plate product ready to be stored for use as needed; and

FIG. 2 illustrates the application of adhesive tape and the peeling away of the portion of strippable coating to expose the desired windows.

Referring to FIG. 1, 10 identifies a face plate, formed of transparent polycarbonate resin in a preferred illustration. On the upper face of plate 10 are areas 11, 12, 13 and 14 which represent areas which it may be desired to expose or bare to form windows for diverse

purposes. Atop each of the areas 11-14 there has been deposited, by silk screening, a film of aqueous coating which was dried to form strippable film portions 15, 16, 17 and 18. In a preferred illustration, the aqueous coating is a water solution of polyvinyl alcohol (30%) to which is added a small amount of lanolin and glycerin to improve flow and wetting, and a small amount of sodium stearate to preserve film integrity during over-painting.

After the film portions 15-18 have been applied and dried, the entire upper surface of the face plate 10 is sprayed with a heavily black pigmented acrylic paint to provide the opaque topcoat 19, and it was dried to strongly adhere it to the plate 10.

Viewed from the underside through the plate 10, the entire plate is black and the areas 11-14 are not visible.

Viewed from the top at a shallow angle, the areas 11-14 can be discerned to guide the placement of the tape 20 shown in FIG. 2.

An illustrative pigmented acrylic paint is provided by an acrylic polymer comprising polymerized methyl methacrylate in 50% solids solution in toluol. 50 parts of this solution are pigmented with 25 parts of titanium dioxide rutile to provide a pigment to binder ratio of about 1:1 and carbon black is added to provide the desired black coloration, though any color can be used. This paint is then thinned to spray viscosity using 25 parts of xylol (toluol can also be used) and sprayed to provide a topcoat having a thickness of 1/2 mil (dry) over both the polycarbonate and the dried aqueous coating (also 1/2 mil dry thickness).

After the opaque topcoat has dried, one simply applies a tape 20 over the desired window portion (covered by strippable film portion 17) and the applied tape is pulled off as shown by arrow A. This causes the film portion 17 to pull away from the substrate 10, as pictured, and that portion of the paint 19 which overlies the film portion 17 breaks away from the balance of the paint and is pulled off by the tape 20 with the film portion 17.

Any commercial decal adhesive containing 0.5-10%, preferably 5%, based on solids, of sodium stearate, can be used for the strippable film. Acryloid B-66 (Rohm & Haas Co.) can be used as the resin solution for the production of the paint.

The invention is defined in the claims which follow.

I claim:

1. A method for the production of a windowed face plate comprising applying to selected portions of the surface on one side of a transparent face plate a poorly adherent coating and drying the same to provide easily strippable film portions lightly adhered to said plate, overcoating the same side of said plate with a heavily pigmented organic solvent-based paint and drying the same to form an opaque brittle film of paint which adheres strongly to the exposed surface of said face plate and said strippable film portions to provide an opaque plate, applying an adhesive tape to the portion of said

paint which overlies a film portion which it is desired to remove and then peeling off said adhesive tape to lift off the paint overlying said film portion together with the strippable film portion attached thereto to thereby provide one or more windows in said opaque plate.

2. A method as recited in claim 1 in which an aqueous coating is applied to provide said easily strippable film portions.

3. A method as recited in claim 2 in which said aqueous coating is applied by printing.

4. A method as recited in claim 2 in which said organic solvent-based paint has a pigment to binder ratio of at least about 0.5:1.

5. A method as recited in claim 4 in which the pigment to binder ratio is at least 0.8:1.

6. A method as recited in claim 2 in which said aqueous coating contains a fatty acid soap which concentrates at the exposed surface of said strippable film portions to help maintain the integrity of said film portions against attack by the organic solvent in said solvent-based paint.

7. A method as recited in claim 1 in which a plurality of strippable film portions are adhered to said plate and overcoated by said brittle film of paint, and adhesive tapes are applied to and removed from the paint overlying some, but not all of said film portions, whereby one can bare fewer windows than there are strippable film portions without having the remaining potential window areas easily visible through the transparent face plate.

8. A method for the production of a windowed face plate comprising applying by printing upon selected portions of the surface on one side of a transparent face plate a poorly adherent aqueous coating and drying the same to provide easily strippable film portions lightly adhered to said plate, overcoating the same side of said plate with a heavily pigmented organic solvent-based paint having a pigment to binder ratio of at least about 0.5:1 and drying the same to form an opaque brittle film of paint which adheres strongly to the exposed surface of said face plate and said strippable film portions to provide an opaque plate, applying an adhesive tape to the portion of said paint which overlies a film portion which it is desired to remove and then peeling off said adhesive tape to lift off the paint overlying said film portion together with the strippable film portion attached thereto to thereby provide one or more windows in said opaque plate.

9. A windowed face plate stock material comprising a transparent face plate having selected separated portions of one side thereof lightly adhered to a plurality of easily strippable film portions constituted by dried coatings said one side of said face plate being overcoated with a heavily pigmented opaque film of brittle paint strongly adhered to the exposed surface of said face plate and said strippable film portions, the portions of said film of brittle paint overlying said strippable film portions being easily strippable from said face plate with said strippable film portions.

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