United States Patent

Huron

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[54] PROCESS FOR FORMING A DECORATIVE STRUCTURE

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[51] **Int. Cl.**.....**B31f 1/08,** B32b 31/20, B44c 1/20

[58] **Field of Search**.....156/63, 76, 84, 85, 86, 183, 156/188, 336

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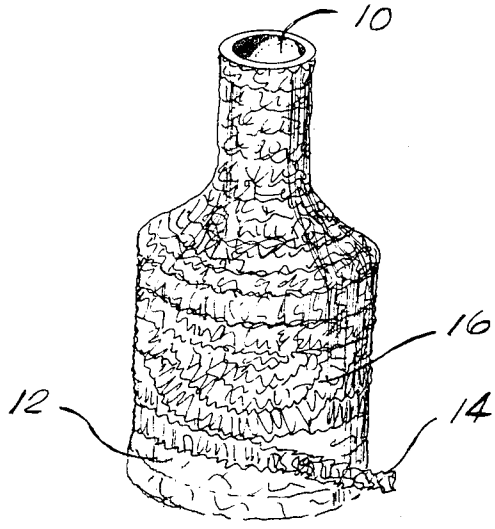
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Attorney—Nilsson, Robbins, Wills & Berliner

[57] **ABSTRACT**

A process for forming a decorative structure wherein crimped elongate strips of thin papery material are wet with a water-based paste and applied to a base to form a coating thereon. The coated base is heated at an elevated temperature below a bake temperature for a time sufficient to cause shrinkage of applied material but insufficient to dry the applied material, and is then heated at a bake temperature for a time to substantially dry the applied material, whereupon a lacquer coating is applied.

14 Claims, 8 Drawing Figures



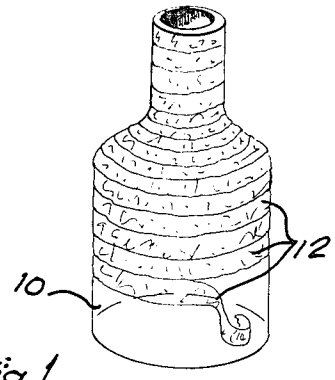


Fig 1

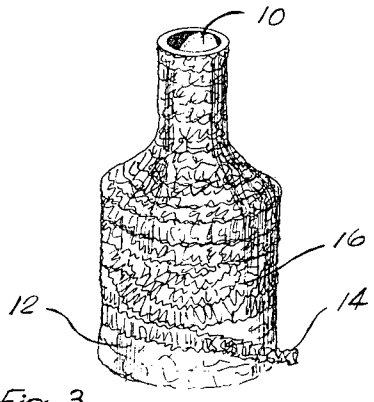


Fig 3

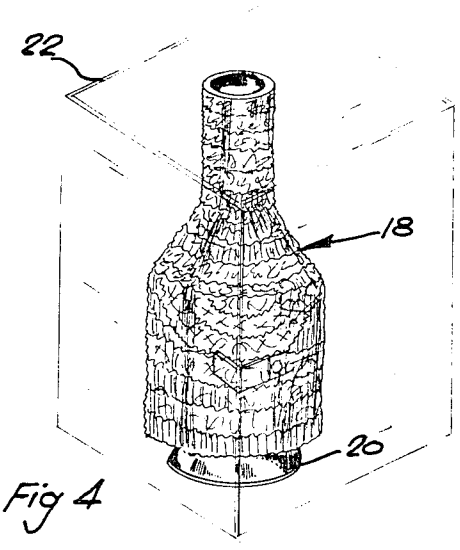


Fig 4

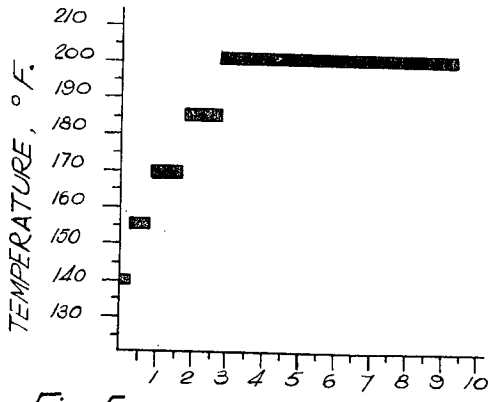


Fig 5

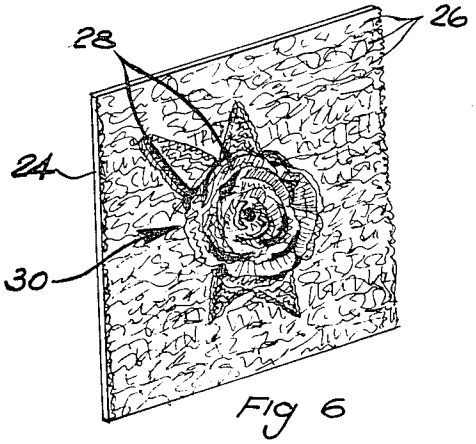


Fig 6

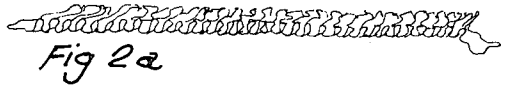


Fig 2a

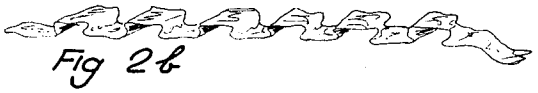


Fig 2b



Fig 2c

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PROCESS FOR FORMING A DECORATIVE STRUCTURE

FIELD OF THE INVENTION

The field of art to which the invention pertains includes the field of paper coating.

BACKGROUND AND SUMMARY OF THE INVENTION

The present invention provides a process for applying a decorative coating on a base, which base may be in the form of a bottle, a vase, a flat sheet or any other shape to effect a deeply textured or sculptured structure. The coating is hard and durable and the process allows for free artistic expression in terms of overall shape and variational dimensional qualities and color. Only common readily available materials are required to produce striking objet d'arts.

In particular, the process involves crimping elongate strips of thin papery material, applying a water-based paste to the crimped strips, applying the crimped strips to a base to form a coating thereon, heating the coated base at an elevated temperature, but below a bake temperature, for a time sufficient to cause shrinkage of the applied material but insufficient to dry the applied material, then heating the coated base at a bake temperature for a time sufficient to substantially dry the applied material, and then applying a lacquer coating thereto.

The temperature at which the article is heated is progressively increased in a time-based, stepwise manner to achieve the bake temperature and during this process the shrinking material can be pressed to a desired shape. Subsequent to baking, but prior to lacquering, the article can be subjected to even higher temperatures to scorch the surface of the decorative coating to thereby achieve an antiqued effect.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a bottle being decorated in accordance with this invention, during an early stage of the process;

FIGS. **2A,2B** and **2C** are perspective views of elongate strips of papery material utilized herein in a variety of crimp patterns;

FIG. **3** is a perspective view of the bottle of FIG. **1** during a later stage of the process;

FIG. **4** is a perspective view of the bottle of FIG. **1**, completely coated and during baking thereof;

FIG. **5** is a plot of heat treatment temperature versus heat treatment time; and

FIG. **6** is a perspective view of a flat sheet decorated with a sculptured pattern in accordance with the process herein.

DETAILED DESCRIPTION

FIGS. **1**, **3** and **4** depict a bottle **10** being decorated in accordance with this invention in various stages thereof. Referring specifically to FIG. **1**, the bottle **10** is initially washed in detergent to remove all traces of oil (but glue or firmly adhered labels need not be removed). A starch solution is prepared by mixing about 36 parts of deionized water with about one part of common laundry starch, such as sold under the trade name "Argo". The starch is dissolved in about two parts of the water as cold water, and the remaining water is boiled and then incrementally stirred into the starch mixture. The mixture is then boiled gently for about 5 minutes with continued stirring, strained through a fine strainer and then refrigerated until use.

Thin papery material, such as tissue paper, is cut into elongate strips about three-quarter inch wide. Utilizing an artist's brush, the starch solution is brushed onto the bottle **10** and strips **12** of the tissue paper are applied to the bottle **10** so as to be wrapped thereabout in overlapping fashion. Starch solution is brushed onto the applied tissue paper as wrapping proceeds. The tissue paper **12** utilized in this step of the procedure is to form a background for subsequent layers of crimped tissue paper and generally a more decorous effect is achieved by utilizing the lightest shade of color at this stage of decoration.

After the bottle **10** is completely covered with the untextured tissue paper **12**, textured tissue paper can then be applied. Referring to FIGS. **2A**, B and C, a variety of crimped textures are shown. In FIG. **2A**, a ¾ inch strip of tissue paper is crushed to form the randomly folded strip shown and such crushed paper can be utilized to impart a textured "ceramic" look to the bottle. FIG. **2B** depicts an elongate strip of tissue paper which has been randomly folded but not to the extent of FIG. **2A**, and this can be utilized to achieve particular desirable effects. FIG. **2C** depicts a finely folded strip of tissue paper which when applied as herein described imparts a "wheat" pattern.

In any case, and referring to FIG. **3**, an elongate, crimped strip of tissue paper **14** is applied to the bottle **10** over the coating of uncrimped strips **12**. The manner of application of the textured tissue paper depends upon the particular fold utilized and the effect desired. For example, when utilizing the "ceramic" texture of FIG. **2A**, after crushing, the strip is dipped into the starch solution by holding the crushed strip firmly together with the fingers of both hands and then applied to the undercoat **12**. When utilizing an elongate strip of **2B** or a "wheat" patterned strip of FIG. **2C**, after crimping to achieve the fold, the strip is held in the palm of the hand and starch solution is brushed gently but generously onto the strip. The strip is carefully applied to the undercoat **12**, or to other layers of paper material that have previously been applied, and the sharp point of the brush is used to obtain desirable texture and to tuck-in exposed ends. Extensive pressing and molding with the fingers is not desirable with these textures. When utilizing the heavy textured paper of FIG. **2A**, the crimped strips can be placed one adjacent the other without substantial overlap, relying on pressing and molding with the fingers to achieve a compact design. However, with the textures of FIGS. **2B** and **2C**, it is generally desirable to slightly lap the strips for approximately one eighth inch and where the rows are lapped to carefully press the lapped area against the bottle in order to smooth those areas, taking care not to disturb the fine vertical lines of the "wheat" pattern. One can utilize any combination of patterns and textures as desired, and generally it is advantageous to tuck the edges of the lighter textured strips under the heavier textured strips. When applying the textured tissue **14**, tearing of the underlying coating tissue **12** occasionally occurs and this should be patched.

To begin the application of the textured tissue it will generally be advantageous to apply the first row to the very top of the bottle, working the first row completely around, pressing and molding the tissue to the shape of the bottle with the fingers where appropriate. With the heavier textured tissue the second row would be pressed upwardly and firmly against the top row, molding the rows together; lighter textured tissues are more gently applied. Since the tissue shrinks as it dries, the textured strips should be compacted at this stage in order to avoid bare spots.

While the tissues are wet, any part thereof may be removed and replaced in order to improve the color or design and to repair any damage occasioned by manipulation of the bottle during application of the tissue. If the tissue has been dried, the damaged area can be saturated with solution and then repaired.

Tissue paper of any color can, of course, be utilized, and the color can be fast or can be the type that runs when wet to achieve special effects. As illustrated at **16** in FIG. **3**, the textured strips can be molded and shaped to provide any desired design. When the bottle is completely covered, it may be desirable to further press and mold the surface thereof. With the heavier tissue textures, this will enhance the resultant textured ceramic appearance.

Referring to FIG. **4**, the completely covered bottle **18** can be placed on a stand, such as a metal jar cover **20** and then placed in an oven, shown in shadow at **22**. The coated bottle **18** is then heated in accordance with a schedule as hereinafter set forth so as to dry the coating. The heating schedule involves initially heating the coated article at an elevated temperature, but below a bake temperature, for a time sufficient

to cause shrinkage of the applied material, but insufficient to dry the applied material. Thereafter the coated article is heated at a bake temperature for a time sufficient to substantially dry the applied material. This heat treatment is advantageously conducted in a time-based, stepwise manner wherein progressively increasing elevated temperatures are utilized to dry the coated article. The heat treatment herein assures that excessive spattering and scorching will not occur and that the coated article is sufficiently dry so that on subsequent lacquering, discoloring wet spots do not appear.

As noted, the heat treatment allows a progressive increasing of the temperature at which the article is being heated in a time-based, stepwise manner. It will be appreciated that the exact temperatures and time for such heat treatment cannot be accurately set forth as these factors depend not only upon mutual adjustment, but also upon the amount of moisture initially present, the quality of the paper utilized, the nature of the underlying material being coated, the thickness and number of layers of textured tissue, the extent of air circulation in the oven, etc. On the other hand, it is found that satisfactory results are generally obtained when the coated article is heated initially at about 100°–170° L F. **but below a scorching temperature until dry. It has further been found advantageous to heat the coated article in accordance with, or to approximate the schedule depicted in FIG. 5, as follows:**

15 minutes at 140° F.
30 minutes at 155° F.
60 minutes at 170° F.
60 minutes at 185° F.
7 hours at 200° F.

The foregoing treatment results in a baked coating that can be lacquered without discoloration and which has sufficient texture to yield a textured ceramic appearance. During the early stages of the heat treatment, the article should be removed from the oven and pressed and/or molded to maintain or achieve the desired final structure. In the event that damage occurs during treatment, repair can be made by wetting the surface that was damaged and thereupon making repairs as above; however, heat treatment should then be completely restarted.

If desired, subsequent to the foregoing procedure, the coated article can be heated at a higher, scorch temperature, e.g., about 325° F., until a desired scorching effect is obtained on the surface to thereby achieve an antiqued appearance.

During the above process, if it is desired to lay the work aside for an extended period of time wherein the materials become dry, coating can be restarted by applying starch solution to the last row of the textured tissue, allowing 15 or 20 minutes for absorption of the starch solution.

After the article is completely dried by means of the foregoing heat treatment, it is sprayed with several thin coats of lacquer and, if desired, a glaze may be brushed or sprayed over the surface when the lacquer is dry. Any commercial lacquer and glaze may be utilized and these terms are intended to include any of various clear or colored synthetic organic coatings, which may be polymerizable, and which dries to form a film with or without evaporation of a volatile constituent. It is important merely that the lacquer and/or glaze impart some moisture proofing to the surface and to enable a shiny appearance to be obtained. Thus, any adherent organic film coating can be utilized.

Referring to FIG. **6**, another embodiment of this invention is depicted wherein a flat sheet **24** is coated as above with a variety of textured tissue strips **26** and **28**. A plurality of differently crimped strips **26** and **28** are applied to the flat sheet **24** to obtain a structure of varied texture and the strips are layered to effect a sculptured design, as at **30**. In this embodiment, if the flat sheet **24** is of cardboard, pre-wrapping is generally not required. Heat treatment of the article depicted in FIG. **6** is conducted in the manner identical to that described with respect to the bottle depicted in FIGS. **1, 3** and **4**. Note that particularly pleasant visual effects are obtained by building up the crimped strips **28** into three dimensional form in extension from the base sheet **24**.

In another embodiment, the baked coating can be painted with water-colors, oils, tempera, etc., prior to applying lacquer, to achieve further decorative effects.

Vatiations in the above procedure and components can be made without departing from the scope of this invention. For example, in place of the starch solution, one could utilize a solution of any carbohydrate or derivative thereof. One could utilize a paste made from wheat flour or other flour. In place of tissue paper, one could utilize cloth, but the material should be papery in its qualities. By following the foregoing procedure, a similar decorative method can be utilized to form jewelry, pictures, etc., or the coating can be applied to any base material to achieve a three-dimensional textured effect.

What is claimed is:

1. A process for forming a decorative structure, comprising:
providing elongate strips of dry, thin, flat tissue paper;
crimping said strips when dry;
applying a water-based paste to said crimped strips to thereby wet said tissue paper;
coating a base with uncrimped paper to form an uncrimped surface;
applying said wet crimped strips to said uncrimped surface to form a coating thereon;
heating said coated base surface at an elevated temperature, but below a bake temperature for a time sufficient to cause shrinkage of said applied paper, but insufficient to dry said applied paper; then
heating said coated base surface at a bake temperature for a time sufficient to substantially dry said applied paper; and then
applying an adherent organic film coating thereto.

2. The process of claim **1** wherein said paste comprises a mixture of a carbohydrate or derivative thereof, and water.

3. The process of claim **1** wherein said paste comprises a mixture of starch and water.

4. The process of claim **1** including the step of pressing said applied paper to a desired shape subsequent to said shrinkage but prior to completion of said baking.

5. The process of claim **1** including progressively increasing said elevated temperature in a time-based, stepwise manner to said bake temperature.

6. The process of claim **1** wherein said coated base is heated initially at about 100°–175° F. for from a few minutes to several hours, then heated above 175° F., but below a scorching temperature, until substantially dry.

7. The process of claim **1** wherein said coated base is heated in accordance with, or to approximate, the following schedule:
15 minutes at 140° F.
30 minutes at 155° F.
60 minutes at 170° F.
60 minutes at 185° F.
7 hours at 200° F.

8. The process of claim **1** including the step, subsequent to said baking, but prior to the application of said organic film, of heating said coated base surface to a temperature and for a time sufficient to scorch the surface of said applied paper.

9. The process of claim **1** wherein said base is of glass coated with uncrimped strips of paper to define said surface.

10. The process of claim **1** wherein said base is a flat sheet.

11. The process of claim **1** wherein a plurality of differently crimped strips are applied to said base surface to effect structure of varied texture.

12. The process of claim **1** wherein a plurality of layers of said crimped tissue paper are applied to thereby obtain a sculptured form.

13. The process of claim **1** including the step of building up said crimped strips into three dimensional form in extension from said base.

14. The process of claim **1** wherein said coating is painted prior to the application of said organic film coat.

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