

Feb. 2, 1971

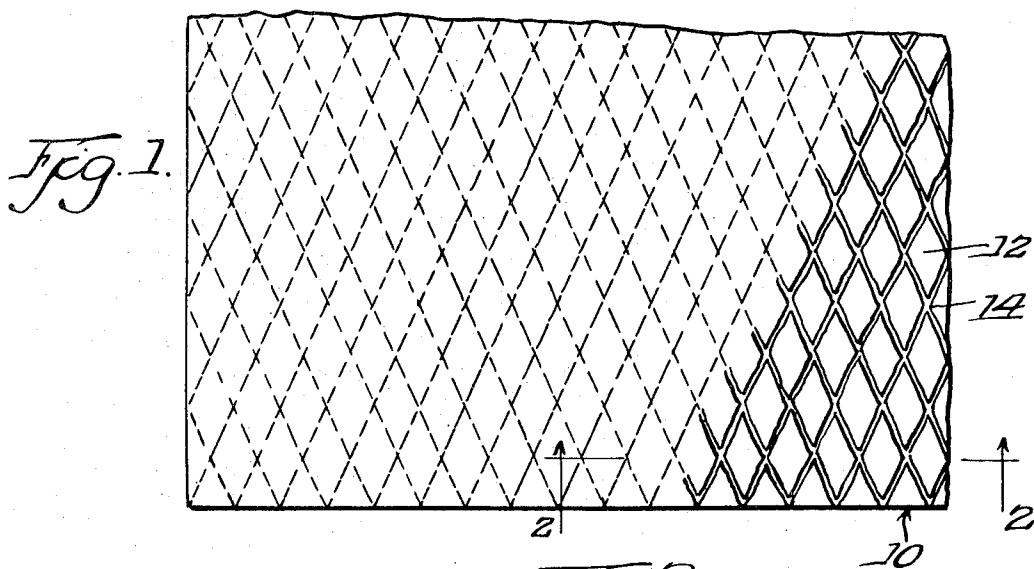
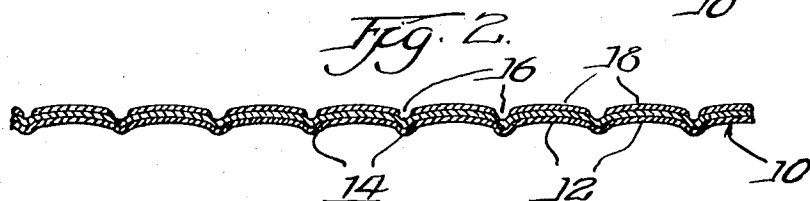
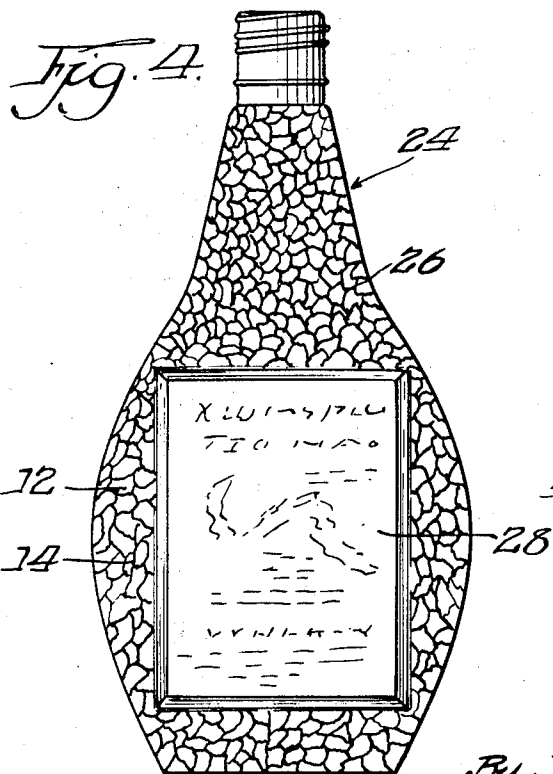
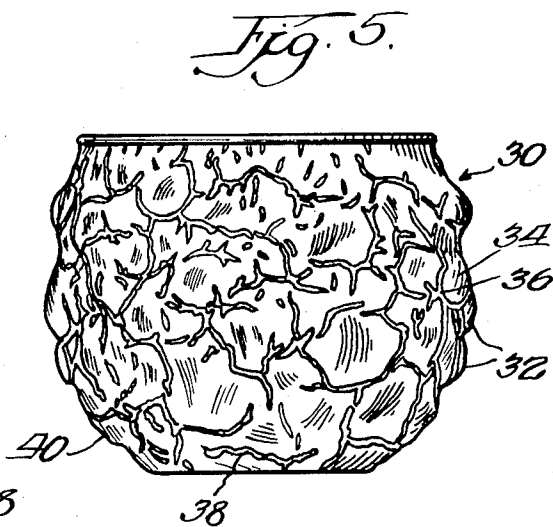
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3,560,240

CRACKLING COAT PROCESS AND APPARATUS

Filed Sept. 10, 1969

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 3.

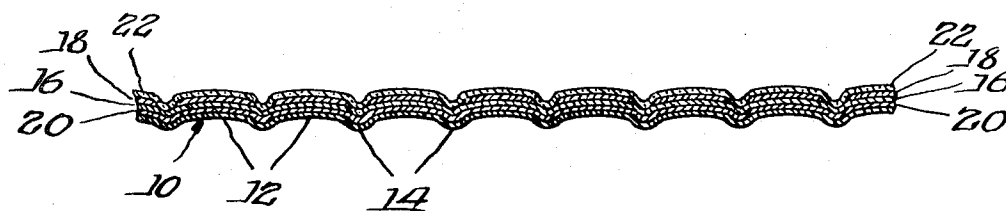
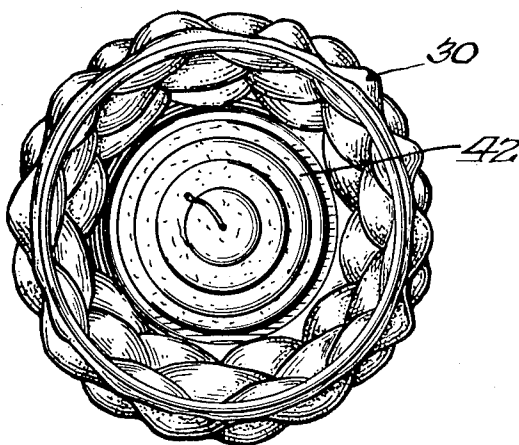


Fig. 6.



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CRACKLING COAT PROCESS AND APPARATUS
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11 Claims

ABSTRACT OF THE DISCLOSURE

A method of obtaining a predetermined pattern or design in a crackle coating applied to a surface by texturing said surface with said pattern or design prior to application of said crackle coating. Upon drying, the crackle coat separates at points of indentation in the textured surface, forming a crackle design in a predetermined or predictable pattern as distinguished from a random crackle pattern. The color of the surface, or a base coat, shows through the separations in the crackle coat.

The present invention relates to a method of forming ornamental designs on a surface, and more particularly pertains to a method of forming a design on a textured or indented surface to which a crackle coating is applied. Upon drying, fissures occur in the crackle coat in a predetermined or predictable manner along points of indentation in the surface.

A crackle coating is characterized by its propensity towards contraction or shrinkage upon drying. The coating's relatively weak surface strength causes fissures or separation to occur in the film, so that the color of a surface or base coat over which the crackle coat has been applied shows through the fissures. Such fissures or separations occur at points of highest stress in the film surface. When applied to a flat, non-porous surface, a crackle coat will randomly separate first at wet or thicker portions where high stress occurs, while dry, thinner portions may resist separation due to lower inherent stress.

The use of crackle coats for obtaining ornamental designs on surfaces is not by itself new. Simon, U.S. Pat. No. 1,547,453, dated July 28, 1925, discloses the application of a crackling enamel coat to the surface of a feather to provide a decorative ornament.

Crackle coatings have previously been applied to smooth surfaces over a base coating to form ornamental and artistic designs on said surfaces. Upon drying, the crackle coat separates at points of maximum stress in the film in a random fashion, resulting in an unpredictable and random design pattern wherein the base coat appears through the fissures caused in the crackle coat. This phenomenon is described by Hookway, U.S. Pat. No. 2,714,560, dated Aug. 2, 1955; Jeff, U.S. Pat. No. 2,982,670, dated May 2, 1961; and by Egelhoff, U.S. Reissue Pat. No. 16,760, dated Oct. 4, 1927.

There exist several known methods of obtaining a predetermined design pattern in a textured or embossed surface but none of these utilize crackle coating materials. One such method is the "wiping" process which consists initially of applying a base coat to a textured or indented surface. Next, a second coat of a different color is applied to the surface over the base coat. Before allowing the second coat to dry, a rag or other soft material is used to wipe off the second coat, leaving portions thereof in the crevices of the textured surface. As is readily apparent, the wiping process includes the manual step of wiping off the second coat. In the process which is the subject of the present invention, the design in the textured surface occurs "automatically" when the inherent character of the crackle finish causes separation of the second coat upon drying.

Another previously known method of applying contrasting colors to a textured or embossed surface involves applying finish coats to raised portions in the surface by means of roller application which contacts the raised portions without touching the "dwell" portions of the surface. This latter method is disclosed by Meehan in U.S. Pat. No. 1,899,971, dated Mar. 7, 1933.

An object of the present invention is to provide a method of forming an ornamental and pleasing design on a textured surface by applying a crackle coat to such surface whereby, upon drying, fissures or separations in the crackle coat occur at predetermined or predictable locations which correspond to the points of irregularity in the underlying surface. In this manner, the design ultimately produced upon the surface can be controlled.

Another object of the present invention is to provide a method of forming an ornamental design on a surface by texturing said surface to cause indentations thereon in a selected pattern, and subsequently applying a crackle coating material to said surface which, upon drying, will separate at points of indentation.

A further object of the present invention is to provide a method of obtaining an ornamental design on a textured or indented surface covered by a base coat by applying a crackle coating material to said surface which will, upon drying, separate at the points of indentation in said surface allowing said base coat to appear through said separations in the crackle coat.

An additional object of the present invention is to provide a method of forming an ornamental and pleasing design on a surface composed of a pattern of predetermined irregularities by applying a crackle coating material to said surface which, upon drying, separates in a predictable pattern at points of irregularity.

Another object of the present invention is to provide a method of forming a decorative and pleasing design on a translucent textured surface by applying a translucent base coat to said surface over which an opaque crackle coat is applied. Upon drying, the crackle coat separates at points of irregularity in the textured surface, permitting light to pass through said translucent surface and said base coat at the points of separation in the opaque crackle coat.

With these and incidental objects in view, the invention includes several novel features, the essential elements of which are set forth in appended claims and the preferred forms or embodiments such as described herein with reference to the accompanying drawings.

In the drawings:

FIG. 1 is a plan view of a textured surface to which a base coat and a crackle coat have been applied.

FIG. 2 is an elevation view taken along lines 2-2 in FIG. 1 showing the layers of surface material, base coat, and crackle coat.

FIG. 3 is an elevation view similar to FIG. 2 illustrating an embodiment of the present invention whereby a primer coat has been applied between the base coat and surface material, and a transparent protective coating has been applied over the crackle coat and base coat.

FIG. 4 shows a typical surface to which the present invention may be applied, such as a textured glass bottle.

FIG. 5 shows an embodiment of the present invention wherein an opaque or translucent crackle coat is applied over a translucent, predetermined, irregular, contoured surface and a translucent base coat in an internally lighted ornamental container.

FIG. 6 shows a top elevation view of the internally lighted ornamental container of FIG. 5.

Referring first to FIGS. 1 and 2, a textured surface 10 is shown comprising raised portions 12 and indented portions 14. The textured surface may be produced in any known manner; for example, etching or printing a

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raised designed on a flat sheet of metal or other suitable material. A metal or other malleable surface which has been stamped into shaped is also suitable for application of the present invention. In addition to metal, the surface can be made of any type of material, such as glass, stainless steel, brass, aluminum, plastic, plaster, leather, etc.

The indentations 14 in surface 10 are formed in a predetermined pattern conforming to the ultimate ornamental design pattern desired. Having thus formed or otherwise obtained a surface 10 comprising irregularities or indentations 14, a base coat 16 (FIG. 2) is applied to surface 10 covering raised portions 12 and indented portions 14. Any suitable type of enamel, organosol, plastisol, acrylic, or other coating material may be used for the base coat 16, which may also be of any selected color. If desired, a multicolored base coat may be applied.

After base coat 16 has been applied to surface 10, a crackle coat 18 preferably of a color different from base coat 16 is applied over the entirety of surface 10, including raised portions 12 and indented portions 14. A typical crackle coating material which may be used in accordance with the present invention has the following composition:

	Lb.
Lucent reel (scrap film) or H.M. 20 cotton -----	20
Neosil (colloidal silica) -----	50
Carbon black (Superba or Lako) -----	50
Ester gum -----	10
Ethyl acetate -----	100
Butyl acetate -----	100
Acetone -----	25
Butyl alcohol -----	10
Toluol -----	100

Other available types of crackle coat materials which may be used in accordance with the method of the present invention include, for example, those described by Thacker in U.S. Pat. No. 2,612,456, dated Sept. 30, 1952.

Crackle coat 18 is next subjected to drying, whereupon cracks or fissures appear in the film surface due to the weak surface strength of the film. Unlike the random, uncontrolled crackling processes which occurs on a flat surface, crackle coat 18 cracks or separates at points corresponding to indentations 14. As explained above, separation of the surface film in the crackle coat occurs at points of high stress. When applied to a textured surface, such as surface 10 comprising indentations 14, highest stress occurs where the contour of the surface abruptly changes, such as indentations 14. As a result, separation of crackle coat 18 follows the pattern of indentations 14 in surface 10, allowing the color of base coat 16 to appear through crackle coat 18 at such points of separation, or indentation 14. In this manner, the base coat color pattern corresponds to the predetermined pattern in surface 10 established by the textured design, and random or unpredictable cracking is avoided.

The degree of depth of indentations 14 is not critical; such indentations need only be of an extent to slightly break the contour of surface 10. If an insoluble base coat material is used, it may be desirable to apply the crackle coat while the base coat is soft.

In applying the coating process of the present invention to a surface which may be subject to abrasion or other hostile conditions, it may be advisable to provide certain protective coatings to aid or enhance the beauty of the decorated surface. The embodiment illustrated in FIG. 4 includes a primer coat 20 covering the surface 10 under the base coat 16. Primer coat 20 prevents oxidation of surface 10 beneath base coat 16, and prevents peeling. As a further step to prevent crackle coat 18 and base coat 16 from fading or being chipped away due to adverse elements, a protective, transparent top coating 22 may be applied over crackle coat 18 and the portions of base coat 16 appearing through the fissures occurring at indentations 14. Top coating 22 may be of any desired transparent material having the necessary strength and

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resistive qualities, such as a wrinkle coating material or finish. Depending upon the environment in which the ornamental surface is to be used, primer coat 20 and top coat 22 may be individually or collectively omitted.

The method comprising the present invention may be used to apply a decorative and pleasing design to any suitable textured surface. FIG. 4 illustrates the application of a controlled crackle pattern to a textured glass bottle 24 which contains irregularities 26 in its surface. Crackle coat 18 adheres to the raised portions 12 of bottle 24, while the color of base coat 16 appears in the crevices or indentations 14 defining the irregular surface. A portion 28 of bottle 24 remains smooth for the application of a label or other identifying or decorative symbol. If crackle coat 18 is applied to flat portion 28, it will crack in a random pattern due to the absence of any irregularities to control said cracking.

FIGS. 5 and 6 disclose a further application of the method comprising the present invention whereby a decorative finish is applied to a translucent, internally illuminated container 30. Translucent container 30 comprises an outer contoured surface 32 including raised portions 34 and indented portions 36. A translucent base coat 38 is applied to contoured surface 32, after which an opaque crackle coat 40 is applied and subjected to drying. As explained previously with reference to FIGS. 1 and 2, fissures or cracks will appear in the crackle coat corresponding to indented portions 36 due to the contraction and shrinkage of crackle coat 40. A light source 42, for example the candle shown in FIG. 6, is placed inside container 30. Light emanating from source 42 will pass through translucent container 30 and translucent base coat 38, but will be prevented from passing through opaque crackle coating 40. The result is a decorative and pleasing illumination effect at the indented portions 36 of container 30 according to the predetermined pattern defined by contoured surface 32.

In each of the various embodiments of the invention disclosed above, the various coatings may be applied to the textured surfaces in any known manner, such as by roller, spray, or electro-coating process. As an example of the latter, an electrostatic loop and disc device such as disclosed by Simmons in U.S. Reissue Pat. (No. 24,602, dated Sept. 29, 1958, may be used with two loops; one containing the base coat and the other loop containing the crackle coat.

Having thus described the invention, what is claimed is:

1. A method of forming a design finish on a surface including indentations in a predetermined pattern which method comprises:

applying a crackle coating material to said surface; subjecting said crackle coating material to drying to separate said crackle coating material at points corresponding to said indentations.

2. A method of forming a design on a base-coated surface including indentations in a predetermined pattern which method comprises:

applying a crackle coating material to said surface over said base coat material;

subjecting said crackle coating material to drying to separate said crackle coating at points corresponding to said indentations, whereby portions of said base coat material show through said separations.

3. A method of coating a surface including indentations in a predetermined pattern which method comprises:

applying a base coat material to said surface; applying a crackle coating material to said surface over said base coat material;

subjecting said crackle coating material to drying to separate said crackle coating material at points corresponding to said indentations, whereby portions of said base coat material show through said separations.

4. A method of coating a textured surface including a predetermined pattern of indentations in said surface, which method comprises:

applying a primer coat material to said surface;

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applying a base coat material to said surface over said primer coat material;
 applying a crackle coating material to said surface over said base coat material;

subjecting said crackle coating material to drying to cause said crackle coating material to separate in a predetermined pattern at points corresponding to said indentations;

applying a protective transparent material to said surface over said crackle coating material and said base coat material.

5. A method of applying a decorative coating to a surface which method comprises:

texturing said surface to form a predetermined pattern of indentations in said surface;

applying a base coat material to said surface;

applying a crackle coating material to said surface over said base coat material;

subjecting said crackle coating material to drying to cause said crackle coating material to separate in a predetermined pattern at points corresponding to said indentations;

applying a protective transparent coating material to said surface over said crackle coating material and said base coat material.

6. The method according to claim 2, wherein said base coating material is opaque and said crackle coating material is opaque.

7. The method according to claim 2, wherein said base coating material is translucent and said crackle coating material is opaque.

8. A method of coating a translucent surface including indentations in a predetermined pattern which method comprises:

applying a translucent base coating material to said surface;

applying an opaque crackle coating material to said surface over said base coating material;

subjecting said crackle coating material to drying to cause separation of said crackle coating at points corresponding to said indentations;

applying a source of light adjacent said translucent surface said light appearing when viewed through points corresponding to said indentations in said surface.

9. A new article of manufacture having a decorative surface comprising:

a textured base composed of raised portions and indented portions;

a first coating material of selected color overlying and adhered to said base in conformance with the texture of said base;

a second crackle coating material of another selected

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color overlying and adhered to said first coating material and dried thereon whereby cracking of said crackle coating material occurs at said indented portions of said base to expose said first coating in a preselected manner.

10. A new article of manufacture having a decorative surface comprising:

a textured base composed of raised portions and indented portions;

a first primer coat material overlying and adhered to said base in conformance with the texture of said base;

a second base material of selected color overlying and adhered to said first primer coating material in conformance with the texture of said base;

a third crackle coating material of another selected color overlying and adhered to said second base coating material and dried thereon whereby cracking of said crackle coating occurs at said indented portions of said base to expose said second coating in a preselected manner;

a fourth transparent protective coating material overlying and adhered to said second base coating material and said third crackle coating material.

11. A new article of manufacture having a decorative surface comprising:

a translucent textured base composed of raised portions and indented portions;

a first translucent coat material of selected color overlying and adhered to said base;

a second opaque crackle coating material of another selected color overlying and adhered to said first translucent coat material and dried thereon whereby cracking of said crackle coating material occurs at said indented portions of said base to expose said first coating in a preselected manner;

a source of light adjacent said translucent base to cause said light to appear when viewed through points corresponding to said indented portions.

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