Jan. 10, 1956 R. R. BUCK 2,729,909

DECORATIVE INLAID ARTICLE AND METHOD

Filed Feb. 24, 1955 2 Sheets-Sheet 1

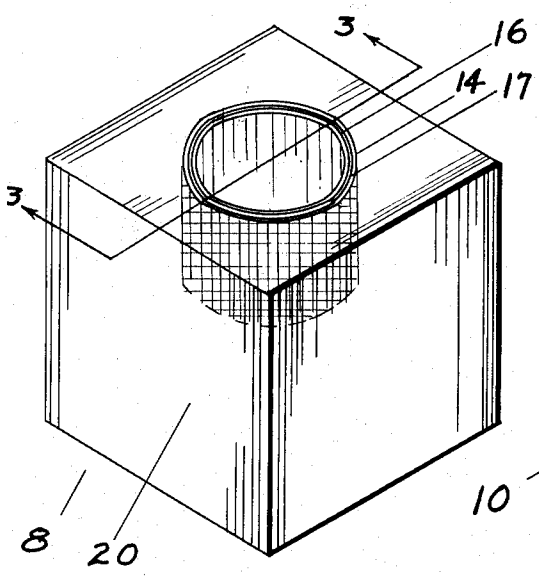


Figure 1

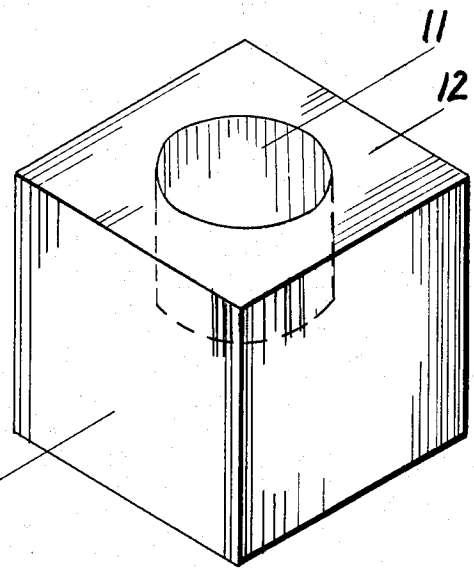


Figure 2

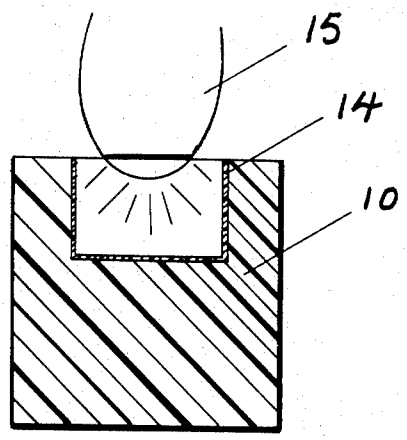


Figure 3

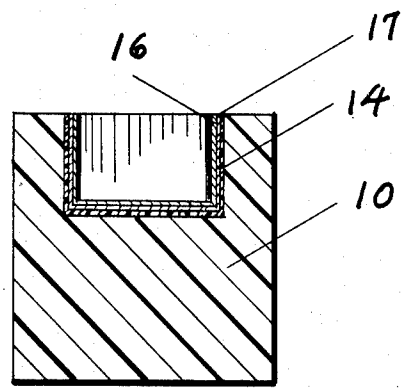


Figure 4

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DECORATIVE INLAID ARTICLE AND METHOD

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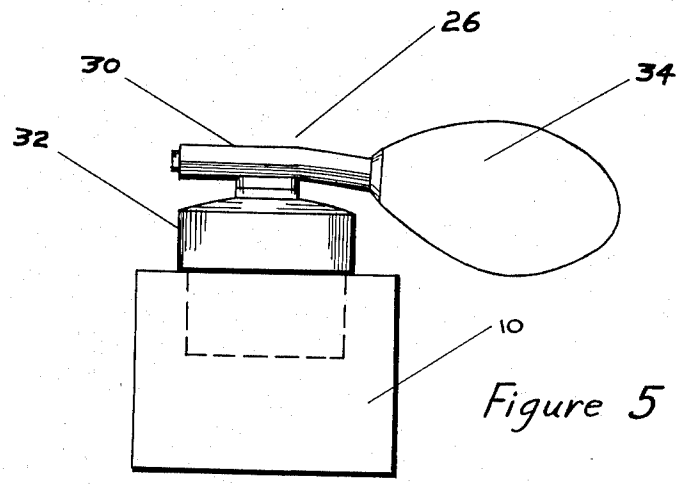


Figure 5

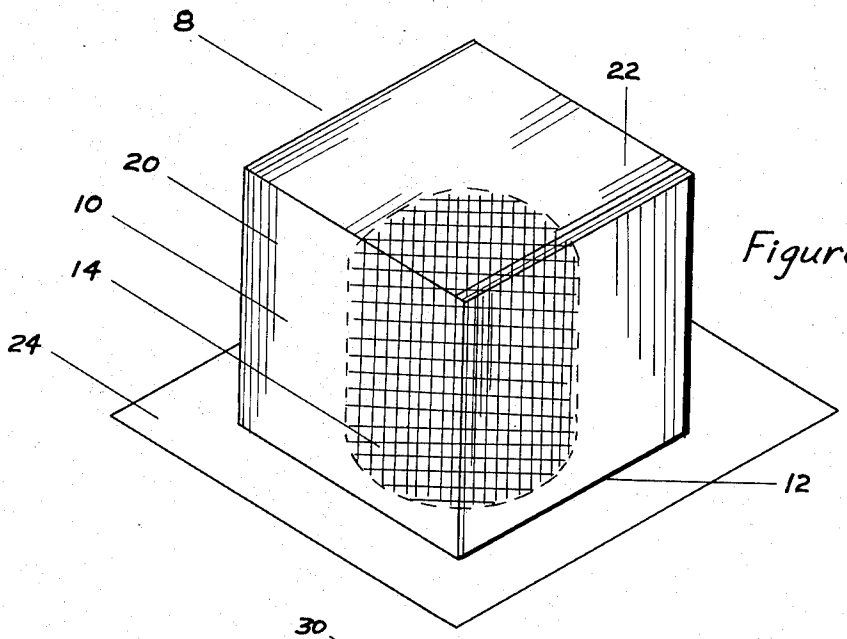


Figure 6

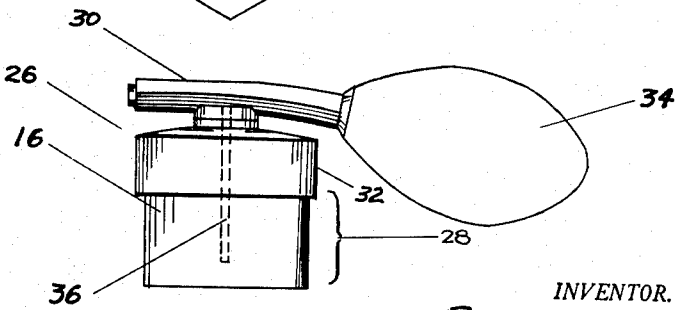


Figure 7

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DECORATIVE INLAID ARTICLE AND METHOD

Robert R. Buck, Boston, Mass.

Application February 24, 1955, Serial No. 490,363

6 Claims. (Cl. 41—35)

This invention relates to a pleasingly appearing decorative inlaid article comprising a transparent plastic body through which can be viewed, at all surfaces thereof, a continuous pleasingly appearing colored coating which is free of cracks or spawls and the method of making same. The invention more particularly pertains to a decorative inlaid article comprising a multi-surfaced transparent plastic body having an inlaid decorating coating on the walls of a bore in one of its surfaces and an open-ended bottomed cup-shaped aluminum member in firm engagement with the coating. The aluminum member acts as a protective backing for said coating and at the same time, should it be so desired, allows the decorative inlaid article to be utilized as a cosmetic appliance such as a perfume atomizer, an atomizer assembly being attached to the aluminum member at the open end thereof. The decorative inlaid article has, in addition to its utility as a mere decorative object and to its utility as a cosmetic appliance, the further utility as a decorative inlaid flower holder, the aluminum cup portion receiving the flowers.

The decorative inlaid article comprises a multi-surfaced transparent plastic body having a uniformly dimensioned bore in at least one of its surfaces, a pigmented adhesive decorating coating on the walls of said bore, and an aluminum member firmly positioned in said bore engaging the coating at all points of said coating and acting as a backing member therefor. The aluminum member prevents marring of the coating during the subsequent use of said decorative inlaid article. The bore is preferably cylindrical and of uniform cross section, and the aluminum member preferably has a cup-shaped configuration conforming with that of the bore and having a cross-sectional area equal to that of the bore, thereby enabling said article to be used also as a cosmetic appliance or as a flower holder. In accordance with the invention, the decorative inlaid article is made by shaping the body, forming a plurality of smooth, polished surfaces thereon, forming the bore in at least one surface thereof, applying the pigmented adhesive decorating coating to all portions of the bore, heating said body at the bore portion only, inserting the aluminum member into said so-heated bore in engagement with the coating, and cooling said heated portion having the inserted aluminum member.

Prior to the present invention decorative inlaid articles having perfect spawl-free or crack-free pigmented inlaid coatings therein have been unsuccessfully made. To divert the viewer's attention from the cracks or spawls appearing in the inlaid pigmented coating, prior art decorative inlaid articles contained not a continuous pigmented coating but rather a pigmented coating having therein an open portion in the shape of an animal or other type figure such as a comic strip character. In other cases, to overcome the difficulties occasioned by the spawling or cracking of a pigmented coating, the aluminum backing member surface carried the design and was inserted in engagement with the depression of the plastic body. In some instances polished steel backing members have been unsuccessfully used in engagement with the pigmented

coating. Also, dip-coated zinc galvanized steel backing members have been unsuccessfully used in engagement with the pigmented coating.

It has been here discovered that by using an aluminum backing member in engagement with the pigmented adhesive decorating coating a spawl-free or crack-free inlaid decorating coating can be obtained in a shaped multi-surfaced plastic member. It has further been here discovered that the said spawl-free or crack-free inlaid decorating coating can be of a cylindrical configuration, thereby enabling its viewing from all surfaces of the so shaped member because of the use of the aluminum member and the pigmented adhesive decorating coating. In addition, because of the utilization of the aluminum backing member in combination with the said coating, it has been discovered that an article of manufacture comprising an aluminum open-ended bottomed cup-shaped member and an atomizer assembly attached to said member at the open-ended portion thereof can be employed in a multi-surfaced plastic body having a pigmented adhesive coated bore in one of its surfaces. Prior hereto, only steel or dip-coated zinc galvanized steel open-ended bottomed cup-shaped members have been used in combination with the atomizer assemblies for insertion into the so-coated bored shaped plastic body with very unsuccessful results as to obtaining of spawl-free or crack-free inlaid coatings.

Further, it is well known that aluminum, and by "aluminum" it is here meant to include the aluminum alloys used in the aluminum fabrication art, will at all times have on its surface, or surfaces, a microscopic film of aluminum oxide. The aluminum here may be further subjected, prior to its use, to an anodizing treatment to form a thicker aluminum oxide coating.

An object of this invention is to provide a decorative inlaid article having an inlay utilizing a pigmented adhesive decorating coating free from spawls or cracks.

Another object of this invention is to provide a decorative inlaid article of a multi-surfaced transparent plastic material having an inlaid pigmented adhesive decorating coating therein free of spawls or cracks capable of being viewed at all surfaces thereof and an aluminum backing member firmly positioned in engagement with said coating.

Another object of this invention is to provide a decorative inlaid article of a multi-surfaced transparent plastic material having an inlaid pigmented adhesive decorating coating therein free of spawls or cracks capable of being viewed at all surfaces thereof and an aluminum backing member having an oxide coating thereon, said backing member being firmly positioned in engagement at its oxide coating with said decorating coating.

Another object of this invention is to provide a decorative inlaid article of a multi-surfaced transparent polymerized methyl methacrylate resin body having an inlaid pigmented adhesive decorating coating therein free of spawls or cracks capable of being viewed at all surfaces thereof and an aluminum backing member firmly positioned in engagement with said coating.

Another object of this invention is to provide a decorative inlaid article of a multi-surfaced transparent polymerized methyl methacrylate resin body having an inlaid pigmented adhesive decorating coating therein free of spawls or cracks capable of being viewed at all surfaces thereof and an aluminum backing member having an oxide coating thereon, said backing member being firmly positioned in engagement at its oxide coating with said decorating coating.

Another object of this invention is to provide an article of manufacture comprising, in combination, a multi-surfaced transparent polymerized methyl methacrylate resin body having an inlaid pigmented adhesive decorating coating therein free of spawls or cracks capable of being viewed at all surfaces thereof and an article

of manufacture comprising an aluminum open-ended bottomed cup-shaped member having an atomizer assembly attached to the open end thereof, said aluminum member being firmly positioned in engagement with said coating.

Another object of this invention is to provide an article of manufacture comprising an aluminum cup and an atomizer assembly attached thereto.

Another object of this invention is to provide a method of making a multi-surfaced decorative inlaid article having pigmented adhesive decorating coating therein capable of being viewed at all surfaces thereof and being free from cracks or spawls.

Other objects and features of this invention will become apparent from the following detailed description.

Figure 1 is a perspective view of the decorative inlaid article.

Figure 2 is a perspective view of the multi-shaped plastic body having the cylindrical bottomed bore in one surface thereof.

Figure 3 is a view showing the method comprising the localized heating of the coated bore portion of the multi-surfaced plastic body.

Figure 4 is a sectional view taken on line 3—3 of Figure 1.

Figure 5 is a side plan view of the decorative inlaid article having the atomizer assembly attached thereto.

Figure 6 is a perspective view of the decorative inlaid article resting on a table.

Figure 7 is a side plan view of the aluminum open-ended bottom cup-shaped member having the atomizer assembly attached thereto.

A transparent multi-surfaced plastic body **10** is cut from a large sheet of the transparent plastic material. An open-ended bottomed cylindrical bore **11** is formed in surface **12**, and said bore **11** is of uniform circular cross-sectional area, as shown in Figure 2. The body **10** is first rough ground to remove the cutting marks therefrom and then smooth-ground and polished throughout to yield a fully transparent body when viewed at all of its surfaces. The shape of the plastic body shown in the drawings does not constitute a limitation but is selected for purpose of explanation only. However, for purposes of this invention it is necessary that the plastic body material be thermoplastic, that the plastic body material soften at approximately 220° F. to 260° F., and that the plastic body material contract on cooling from a temperature within said temperature range. For purposes of this invention, a transparent plastic material selected from one of the various polymerized acrylic resins, preferably a polymerized methyl methacrylate resin, commonly known as Lucite or Plexiglas, is used.

A pigmented adhesive decorating coating is made by dissolving polymerized methacrylate resin shavings in a solvent therefor such as methyl ethyl ketone and then adding thereto a pigment, such as carbon black. The said decorating coating mixture is thoroughly mixed and a thin film **14** thereof is then applied to the bore walls at all portions thereof, as shown in Figure 3. The film thickness can be about .0025 inch depending upon the dimension of the bore diameter and the overall dimensions of the finished decorative inlaid article. The said coating, when applied to the bore walls, will cause that portion of the body **10** forming said bore walls to dissolve in said solvent therefor, and thereby a coextensive bond between the coating film **14** and the body **10** will be formed, thereby causing the coating film to become integral with the body. Immediately after application of said coating film **14**, the so-coated body is allowed to stand for about 1 to 2 minutes and then is subjected to a localized heating action at the bore portion thereof, as shown in Figure 3. A heating means, such as the heating lamp **15**, is positioned so that only the coating film, the portion of the body **10** directly adjacent to the bore walls, and the bore walls receive the heat rays of said heating means. As a result of said heating action, the aforesaid portions only will soften and the solvent will be evaporated leaving a soft and easily formable pigmented adhesive decorating coating on said bore walls. The heating of the said portions is slowly carried out until the temperature to which said portions are heated lies within the temperature range of 220° F. to 260° F., preferably 240° F., and the said portions are then held at that temperature for approximately 2 to 3 minutes, preferably 2½ minutes. The so-heated coated plastic body member is then removed from the presence of the heating lamp **15**, and the aluminum open-ended bottomed cup-shaped member **16** having the always-present film **17** of microscopic thickness is then immediately inserted in the coated bore **11** in direct contact or engagement with the soft and easily formable coating **14** which is now integral with the body **10** at the walls of the bore **11** therein. The so-formed decorative inlaid article **8** which has been locally heated as aforesaid is then allowed to cool. Because of the application of heat to the aforesaid portions of the body **10** and the coating integral therewith, the coating film **14** and that portion of the body **10** directly integral therewith will soften and become easily formable. The outside diameter of said aluminum cup-shaped member is equal to the inside diameter of said bore **11**, without the film **14** on the walls thereof. Because the coating film **14** is made free of the solvent and because the film **14** and the bore walls integral therewith are made soft and easily formable as a result of the localized heating thereof, the member **16** is easily inserted into said so-coated bore in direct contact or engagement with the coating **14** at its oxide coating **17**, at all portions thereof. Upon cooling, the aluminum member **16** is held securely and firmly in position by a shrink-fit as a result of the plastic body material, preferably polymerized methyl methacrylate resin, having contracted or shrunk therearound when cooled. The coating **14** is absolutely free of any cracks or spawls and, when viewed at any surface, for example surface **20** or surface **22**, of the body **10**, a pleasingly appearing continuous crack-free or spawl-free coating is seen. Heretofore, it has not been possible to obtain a cylindrical decorative inlaid coating free of cracks or spawls viewable at all surfaces of the article having said coating therein. Preferably, the thickness of said aluminum member **16** is 0.0125 inch, the diameter of the bore **11** is 1.125 inches, the body member is in the form of a cube 2.0000 inches square on each surface, the outside diameter of the aluminum member **16** is 1.125 inches including the oxide film thickness, the depth of the bore **11** is 1.0000 inch, and the outside depth of the aluminum cylinder **16**, including the oxide film **17**, is 1.0000 inch. These dimensions do not constitute limitations, but are used for purpose of example only. However, the outside diameter of the member **16** and the diameter of the bore **11** are equal as are the depth of the bore **11** and the outside depth of the member **16**.

Because of the new and novel decorative article having the continuous crack-free or spawl-free inlaid coating viewable at all surfaces of the said body, the said article **8** can be used as a decorative plaque object to be used as a decorative article to be placed on a table surface **24**, as shown in Figure 6.

Further, because the backing member **16** is an open cylinder, said member **16** preventing the marring of the coating **14** during handling, the member **16** can be used as a perfume container, and an atomizer assembly **26**, including the bulb **34**, the rod **30**, the tube **36**, shown in dotted lines in Figure 7, and the cover **32**, can be fixedly attached to said member **16**, thereby forming an article of manufacture **28** to be inserted into the said so-coated bore **11**. The bulb **34** is of a flexible material such as rubber. The members **30**, **36**, and **32** are of gold plated brass, the cover **32** being fixedly attached to the aluminum cup-shaped member **16** by conventional joining, soldering, or brazing methods.

The materials of construction of said atomizer assembly and the methods of forming and finishing said assembly do not constitute limitations, but are used for purposes of example only. Heretofore, such atomizer assemblies having an aluminum container have not been known and used in combination with such a body **10**.

The oxide coating can be formed by anodizing the member **16** in a sulfuric acid electrolyte in accordance with well-known methods.

Further, said decorative inlaid article **8** can be used as a flower holder.

Also, instead of carbon black, other pigments such as acetamine black CBS and any other colored pigment are capable of use.

The said decorative inlaid article **8** is capable of easy and economical manufacture on a production basis.

Many alterations and changes can be made without departing from the spirit and scope of this invention which is set forth in the appended claims which are to be construed as broadly as possible in view of the prior art.

I claim:

1. A decorative inlaid article comprising a substantially transparent polymerized acrylic resin plastic body having a plurality of surfaces, at least one of said surfaces having a uniform cylindrical bottomed bore therein, a pigmented adhesive decorating coating, comprising polymerized acrylic resin and a pigment, integral with said body at all portions thereof defined by the walls of said bore, and an aluminum member firmly positioned in said bore engaging said coating at all points thereof, whereby spawling of said coating is prevented thereby presenting a uniformly appearing decorative inlay when viewed through said plastic body at said surfaces.

2. A decorative inlaid article comprising a transparent polymerized methyl methacrylate resin body having a plurality of surfaces, at least one of said surfaces having a uniform cylindrical bottomed bore therein, a pigmented adhesive decorating coating, comprising polymerized methyl methacrylate resin and a pigment, integral with said body at all portions thereof defined by the walls of said bore, and an aluminum member firmly positioned in said bore engaging said coating at all points thereof, whereby spawling of said coating is prevented thereby presenting a uniformly appearing decorative inlay when viewed through said plastic body at said surfaces.

3. A decorative inlaid article comprising a transparent polymerized methyl methacrylate resin body having a plurality of surfaces, at least one of said surfaces having a uniform cylindrical bottomed bore therein, a pigmented adhesive decorating coating, comprising polymerized methyl methacrylate resin and a pigment, integral with said body at all portions thereof defined by the walls of said bore, and an aluminum member having a uniform aluminum oxide film on all portions thereof, said member being firmly positioned in said bore, said aluminum member engaging said pigmented coating at said oxide film at all portions thereof, whereby spawling of said pigmented coating is prevented thereby presenting a uniformly appearing decorative inlay when viewed through said body at said surfaces.

4. A decorative inlaid article comprising a substantially transparent polymerized acrylic resin plastic body having a plurality of surfaces, at least one of said surfaces having a uniform cylindrical bottomed bore therein, a pigmented adhesive decorating coating, comprising polymerized acrylic resin and a pigment, integral with said body at all portions thereof defined by the walls of said bore, and an aluminum open-ended bottomed cup-shaped member conforming to the shape of said bore and firmly positioned in said bore, said member engaging said coating at all points thereof, whereby spawling of said coating is prevented thereby presenting a uniformly appearing decorative inlay when viewed through said plastic body at said surfaces.

5. An article of manufacture comprising, in combination, a decorative inlaid article comprising a substantially transparent polymerized acrylic resin plastic body having a plurality of surfaces, at least one of said surfaces having a uniform cylindrical bottomed bore therein, a pigmented adhesive decorating coating, comprising polymerized acrylic resin and a pigment, integral with said body at all portions thereof defined by the walls of said bore, and an aluminum open-ended bottomed cup-shaped member conforming to the shape of said bore, said member having an aluminum oxide film on all portions thereof, said member being firmly positioned in said bore and engaging said coating at said oxide film at all portions thereof, and an atomizer assembly attached to said cup-shaped member at the open-ended portion of said cup-shaped member, whereby said cup-shaped member is utilized as a liquid container, and whereby spawling of said coating is prevented thereby presenting a uniformly appearing decorative inlay when viewed through said plastic body at said surfaces.

6. The method of making a decorative inlaid article comprising shaping a polymerized acrylic resin plastic body member, forming a plurality of smooth, polished surfaces on said member, forming a bottomed bore of uniform cross-sectional area in at least one surface of said member, applying a pigmented adhesive decorating coating, said coating comprising polymerized acrylic resin, a solvent therefor, and a pigment, to all portions of the walls of said bore, locally heating said member at all portions of said bore, thereby causing the solvent of said coating to evaporate and the portion of said body having said coating thereupon to soften at said bored portion, inserting an aluminum member having an overall cross-sectional area equal to the cross-sectional area of said bore into said heated coated bored portion in engagement with said coating, and cooling said body member at said bored portion, thereby causing the firm positioning of the aluminum member in said so-coated bore without causing a spawling of said coating.

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