Nov. 1, 1927. 1,647,362

R. S. HUGHES

DECORATED GLASSWARE AND PROCESS

Filed Jan. 21, 1927

Fig. 1.

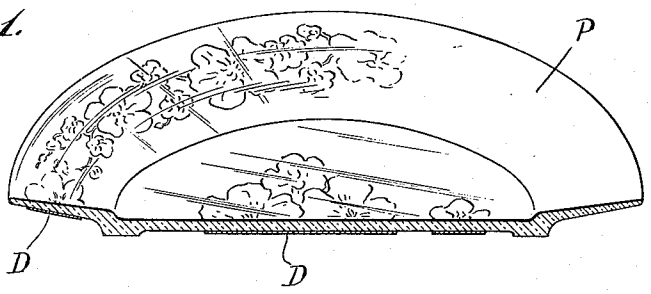


Fig. 2.

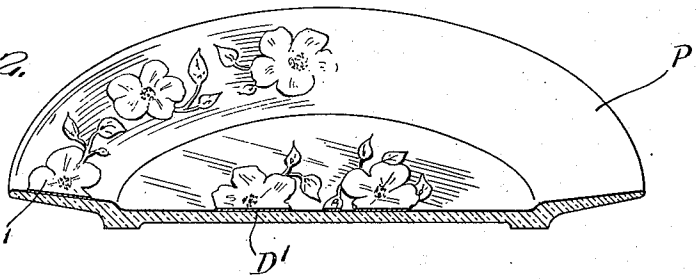


Fig. 3.

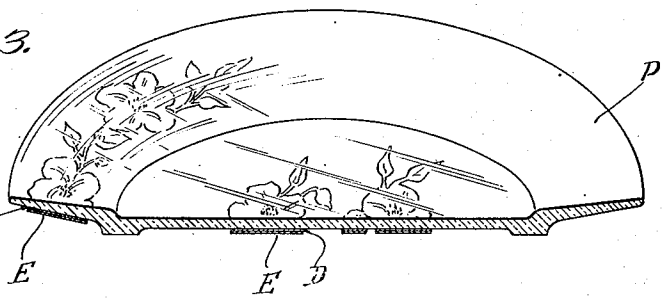
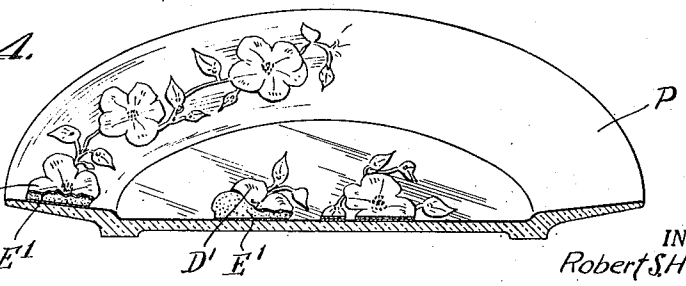


Fig. 4.



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UNITED STATES PATENT OFFICE.

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DECORATED GLASSWARE AND PROCESS.

Application filed January 21, 1927. Serial No. 162,531.

My invention relates to the art of decorated glassware and has for its general object the provision or production of novel and beautiful decorative effects in glass articles, such as plates, bowls, vases and any analogous pieces suitable for table or other uses.

The invention consists essentially in applying designs of fusible material conveniently identified as "metallic color", to a surface of an object of transparent or translucent glass and fusing the color thereon, whereby it is practically integrally united with the surface of the glass and provides a permanent, decorative design thereon. The color design may be applied to either the top or outer surface of the article, or to the bottom or under surface. When applied to the top or outer surface, the color design does not necessarily present a glazed or polished effect, but when applied to the under or inner surface, a glazed or polished effect is produced by the fact that the color design is viewed through the glass body, which itself forms a lustrous surface finish for the applied design.

In preferred case, the invention also includes the application to the glass body of a backing material or composition for the colored design, this material being of the nature of a fusible or vitreous enamel. This enamel after firing is usually and desrably of light tint or white, and serves to optically emphasize or accentuate the color tones of the color design, the tints of which are more or less paled or subdued by their own transparency and the transparency of the glass body when the enamel backing is not provided. Thus, when the color design is located on the upper or outer surface of the glassware, the enamel is applied directly upon the surface of the glass, and the color design is superposed upon the enamel; and when the color design is located on the inner or under surface of the glass article, the enamel is applied to the outward surface of the color design. Usually it is preferred to make the application of the color and enamel by means of proper constructed decalcomanias, and in this way the color design and enamel backing are simultaneously applied to the glassware, and then fused. When applied to the upper or outer surface of the glass, the decalcomania is in reality a negative of the design, and after fusing the color design appears directly to the view of the observer, and the underlying translucent or more or less opaque enamel backing of light or white tone, serves to optically strengthen or emphasize the color effects of the design. When the design is applied to the under or inner surface of the article, the color design is observed through the body or wall of the glass, which in itself provides a glazed or polished appearance, and the color design is underlaid by the enamel coating, which, as in the previous instance, accentuates or emphasizes the color effect of the design. In either case the metallic color and the vitreous enamel are substantially fused together and to the glass article, and especially in the latter case where the metallic color is located between the enamel and the glass, the enamel serves as a permanent protective coating for the color design.

In a companion application I have disclosed decalcomanias suitable for applying color or combined color and enamel designs to glassware, and such decalcomanias will therefore not be described in detail and will be referred to only briefly in explaining their use for decorated glassware production.

The accompanying drawings show certain representative articles embodying the invention. After considering these examples skilled persons will understand that many variations may be made, and I contemplate the employment of any structures or methods that are properly within the scope of the appended claim.

In the drawings:

Fig. 1 is a perspective and sectional view of a glass plate embodying the invention in one form.

Fig. 2 is a similar view of a modified construction.

Fig. 3 shows another modification.

Fig. 4 shows still another modification.

In Fig. 1 the glass plate P, which is desirably of transparent glass (although in some cases it may be tinted or translucent), has the color design D applied to its under or back surface. The design consists of fusible mineral or metallic pigments sufficiently identified as metallic color. After its application by the use of a suitable decalcomania or otherwise, the plate is placed in a furnace and heated to substantially red heat, the heat being sufficient to properly fuse the metallic color and practically unite it with the surface

of the plate. The temperature may vary, a suitable temperature being approximately 1000° F., and is regulated so that the plate or other glass article is not heated sufficiently to injure it by causing loss of shape, or otherwise. In this case the design is naturally viewed from the upper surface of the plate, the glass body of which overlies the design and provides a glazed or polished finish therefor. The design itself in this case is substantially transparent or at least translucent, so that a novel and beautiful decorative effect is obtained, in which the actual tone or tint of the colors is somewhat "weakened" or subdued by transparency of the plate and of the color design itself, irrespective of the enamel backing.

In Fig. 2 the design D^1 is applied to the upper or outer surface of the article and fired as before. When the article is viewed (as in natural, in accordance with its form), from the top, the design in this instance appears upon the top or outer surface of the glass and therefore does not have the completely polished or glazed appearance of the article of Fig. 1. This relatively dull or unpolished appearance of the design is desirable for many purposes.

Fig. 3 shows a variation of the article structure, in which the design D is applied as in Fig. 1, to the under surface of the article, and a coating of vitreous enamel E is applied to the under (outer) surface of the color design, and the two are then simultaneously fused together and upon the plate. Since the design is naturally viewed through the body of the glass, the polished or glazed effect noted in Fig. 1 is also here obtained, and in addition the underlying coat of enamel E of light or white color and translucent, or in some cases approximately opaque, limits or prevents to a great extent the passage of light through the design, and therefore tends to strongly emphasize or maintain the natural tone values of the colors in the design.

In the modification shown in Fig. 4, the enamel backing E^1 is applied to the upper or outer surface of the glass plate and the color design D^1 is applied over the enamel, and the color design and enamel are fused together and to the plate surface, as in the previous example. The design in this case, as also in the case of Fig. 2, presents a relatively unglazed appearance, since it is viewed directly by the observer; but in this instance the color values are reenforced or maintained in their natural tones by the underlying coating of enamel E^1.

Usually the enamel backing or coating is commensurate with the outlines of the design, but this is not necessarily so in all cases, as combinations of the effects of Figs. 1 and 3, or of Figs. 2 and 4 may be obtained by applying the enamel to certain parts of the color design and omitting it from other parts.

It is impossible in a drawing to truly represent the beautiful decorative effects produced in these articles. The drawing is therefore intended only to explain structural features, in connection with the preceding description.

I claim:

As a new article of manufacture, a transparent glass plate or the like, having on the undersurface thereof a design of metallic color, and a backing for the design of vitreous enamel, the design and the enamel being fused together and to the body behind the display surface thereof, so that the design is viewed through a transparent surfacing to receive therefrom a lustrous or polished effect.

Signed at East Liverpool, in the county of Columbiana and State of Ohio, this 14th day of January A. D. 1927.

ROBERT S. HUGHES.