United States Patent

Laconich et al.

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[54] **PROCESS FOR DECORATING POTTERY**

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[52] **U.S. Cl.**.....**156/89,** 156/247, 156/322

[51] **Int. Cl.**.....**C03b 29/00**

[58] **Field of Search**.....156/89, 332, 333, 321, 247, 156/280, 283

[56] **References Cited**

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[57] **ABSTRACT**

A process for decorating ceramic bodies, consisting in applying a decalcomania of the desired picture, having a heat-drying or heat-setting adhesive layer, upon a preferably hot, raw and unprepared ceramic body, exerting a mild pressure thereon, applying over the ceramic body and decalcomania an overall glazing mass, and firing the thus decorated ceramic body and glazing mass.

3 Claims, 3 Drawing Figures

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FIG. 1

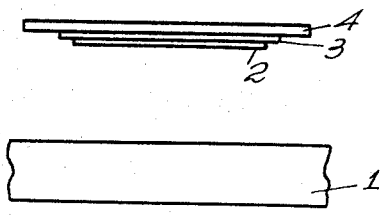


FIG. 2

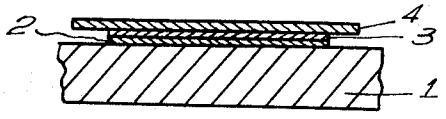
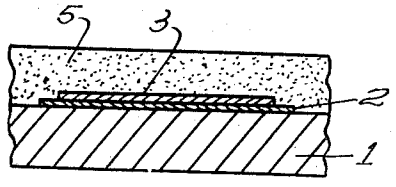


FIG. 3



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PROCESS FOR DECORATING POTTERY

The invention relates generally to processes for decorating pottery, such as earthenware, stoneware, china, and the like; and it refers, particularly, to such processes as make use of decalcomanias for applying a picture and a suitable filmy support upon an unglazed ceramic body, so as to remain there as an underglaze picture, protected against outside mechanical and chemical attacks.

Decoration of pottery is a very ancient art, and it has been the object of a great deal of thought and toil by ceramists; notwithstanding, the technical evolution thereof has not advanced as much as modern industry would allow and require. Mass production, while implying an enormous amount of investment, results in a reduction of costs, but it requires a correspondingly wide market, which in its turn calls for good ware reaching the customer at a bargain. To this purpose the manufacturing processes must be simplified and shortened, so that they may produce more goods at a lesser cost. This is one of the results obtained by the process according to the invention.

KNOWN PROCESSES

Ceramic decoration systems are known, which make use of decalcomanias for applying a picture upon the glaze of a finished and glazed ceramic object. After applying such a picture, the ceramic object is fired anew, so as to fix the picture to the glaze. However, even thus fixed pictures are not insensitive to the action of external agents, such as mechanical abrasives or chemical reagents, and are attacked by today's washing detergents and the like substances of common use. So there is felt a need, in the ceramic industry, of obtaining protected pictures, such as may be, for instance, those applied directly on the pottery cake or biscuit, beneath the overall glazed layer.

OBJECT OF THE INVENTION

It has now been found that it is possible to obtain a good adhesion of a decalcomania to unglazed, uncoated and unprepared, porous, unbaked or baked ceramic bodies, by applying and baking thereupon ceramic pictures by means of decalcomanias provided with an adhesive coating resisting heat and successively glazing and burning the decorated ceramic body in the usual manner.

The new process is free from the drawbacks of the old ones, inasmuch as it does not produce inner carbon deposits which may blur the picture, it does not need any intermediate pore-occluding sheet or layer; nor does it require so much time and manhours, since only five steps are required for carrying out the complete process, as follows:

1. Manufacturing a ceramic, unglazed and uncoated, unbaked or baked supporting body;
2. Manufacturing, with the desired picture, a decalcomania provided with a heat-drying or heat-setting adhesive surface;
3. Applying this desired ceramic picture, by means of this adhesive surface of the decalcomania, to the unglazed and unprepared ceramic supporting body, which may be either cold, or warm, or even quite hot;
4. Applying a coat of glazing mass upon the dry, decorated ceramic body; and
5. Firing the glaze.

It is understood that, in step 3, the adhesive surface of the decalcomania should be applied upon the face of the ceramic supporting body to be decorated, so as to serve as sticking means; whereby, however, the opposite face of the decalcomania, as well as the remaining surface of the supporting body, also could, although they by no means should, be coated with a similar substance. In carrying out the new process according to the invention, the ceramic supporting body employed for decorating may be either an unbaked cake or a prebaked biscuit; and it may be either at room temperature, or more or less warm, or even quite hot, e.g., as the biscuit comes from the furnace. This last condition is especially satisfactory, since it offers a few extra advantages, such as a prompt and strong sticking of the picture to the biscuit; an immediate drying of moist pictures, due to moistening the paper support of the decalcomania for taking same away, in case of there being one; a quicker baking of the applied glazing mass; and a lesser loss of time for cooling the biscuit to picture-applying temperature, in case of this being low, and of fuel consumption for heating it again to baking temperature, in case of this being required.

The decalcomania may be provided with an adhesive surface by any suitable method, such as applying an adhesive layer upon a conventional decalcomania, or instead of the usual gum arabic layer thereof, or by manufacturing a decalcomania over a heat-setting adhesive, such as a thermoplastic, base, whereby the conventional paper support could be dispensed with, or by any other convenient process.

FEATURES OF THE INVENTION

The invention consists, thus, in a process for underglaze decoration of ceramic bodies, such as bricks, tiles, earthenware, stoneware, porcelain, china, and any other ones, comprising the steps of manufacturing a ceramic body having a raw, unprepared and untreated, naturally porous face to be decorated; preparing a decalcomania of the picture to be applied and provided with a heat-drying or heat-setting adhesive surface layer; applying said decalcomania, with said adhesive layer against the raw face to be decorated, to said ceramic body, pressing same thereon; removing the paper support, if there is one; drying, or baking, or providing the applied picture with another overall thermoplastic covering layer; in case of being moist; and finally providing the decorated ceramic body with an overall glazing mass, covering the picture, too, and firing same as usual. The raw ceramic supporting body, to begin with, may be either an unbaked, molded paste or cake, or a baked cake or biscuit. The objects which may be so decorated may be of any kind whatsoever; either china cups or common bricks; either porcelain dishes or kitchen tiles; either earthen pots or hoppers of water closets, or any other ones whatsoever; and they may be decorated on one or more faces; in spots or all over; or in any other manner desired or preferred.

EXAMPLE

The invention will be better understood with reference to the accompanying drawing, in which:

FIG. 1 shows a ceramic body and a ceramic decalcomania;

FIG. 2 is a cross section of the same ceramic body with the same decalcomania applied thereto; and

FIG. 3 is a cross section of the finished, decorated pottery object, provided with a protective glazed cap.

With reference to the FIGS., according to the invention, to a raw ceramic supporting body 1, either unbaked or prebaked, but in any case unprepared and porous, a decalcomania 2, 3 or 4 is applied, consisting of a heat-drying or heat-setting adhesive layer 2, such as gum arabic, and a ceramic picture 3, and which may be reinforced by a paper layer 4, or may be not, if layer 2 has a great enough strength, so as to additionally serve as a support. In carrying out the process according to the invention, this decalcomania is applied to the cold or hot ceramic body 1 by pressing its adhesive layer 2 against same, e.g., by exerting a smooth and even pressure upon paper 4 or picture 3 with a hand, whereby the decalcomania remains at once firmly adhered to body 1, especially in case of this body being hot.

Layer 2 may consist of any adequate heat-drying or heat-setting substance, such as, e.g., gum arabic, a polyvinyl or polyacryl resin, or any other suitable adhesive thermoplastic compound, and it may serve as a support for the whole decalcomania, thereby permitting omission of the paper reinforcement layer 4.

In case there is used a conventional paper support 4, this may be slid or peeled off the decalcomania after having hu-

midified same. Then, after drying the so exposed picture layer **3** and the underlying adhesive layer **2**, which may occur by the inherent heat of ceramic body **1**, in case of this being hot, a coating **5** of a conventional glazing mass is applied onto the decorated ceramic body, brick, or piece of pottery **1**, **2**, or **3**, and the compound is fired, to harden and vitrify the glazing mass **5**.

SCOPE OF THE INVENTION

While a preferred embodiment of the invention has been shown and particularly described as an example, it is to be understood that the invention refers to any method of applying a picture on an unprepared ceramic body by means of a decalcomania comprising a heat-drying or heat-setting adhesive layer, and then covering the picture with a glazing mass, while the details for carrying the invention into practice may be varied over wide limits, and many variations, substitutions and changes, especially of the materials of the thermoadhesive layer and of the manner of carrying out the process, may be made by those skilled in the art, without departing from the spirit of the invention nor the limits of the appended claims.

I claim:

1. A process for decorating ceramic bodies by means of decalcomanias applied thereto, comprising the steps of:

a. manufacturing a ceramic body having a raw, unprepared, uncoated and untreated, naturally porous face;

b. preparing a decalcomania of a desired picture having a heat-setting or heat-drying adhesive layer;

c. applying the decalcomania, by means of a light pressure, upon the naturally porous face of the ceramic body with said adhesive layer in contact with the ceramic body;

d. applying over the ceramic body and decalcomania an overall glazing mass; and

e. firing the glazing mass.

2. A process as defined in claim **1**, wherein the decalcomania further includes a removable paper backing layer on the side thereof opposite the adhesive layer, and further comprising the step of removing the backing layer after applying the decalcomania to the ceramic body and before applying the glazing mass.

3. A process as defined in claim **1**, further comprising the step of baking the ceramic body prior to applying the decalcomania, the decalcomania being applied thereto while the ceramic body is still hot from the baking step.

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