

No. 774,976.

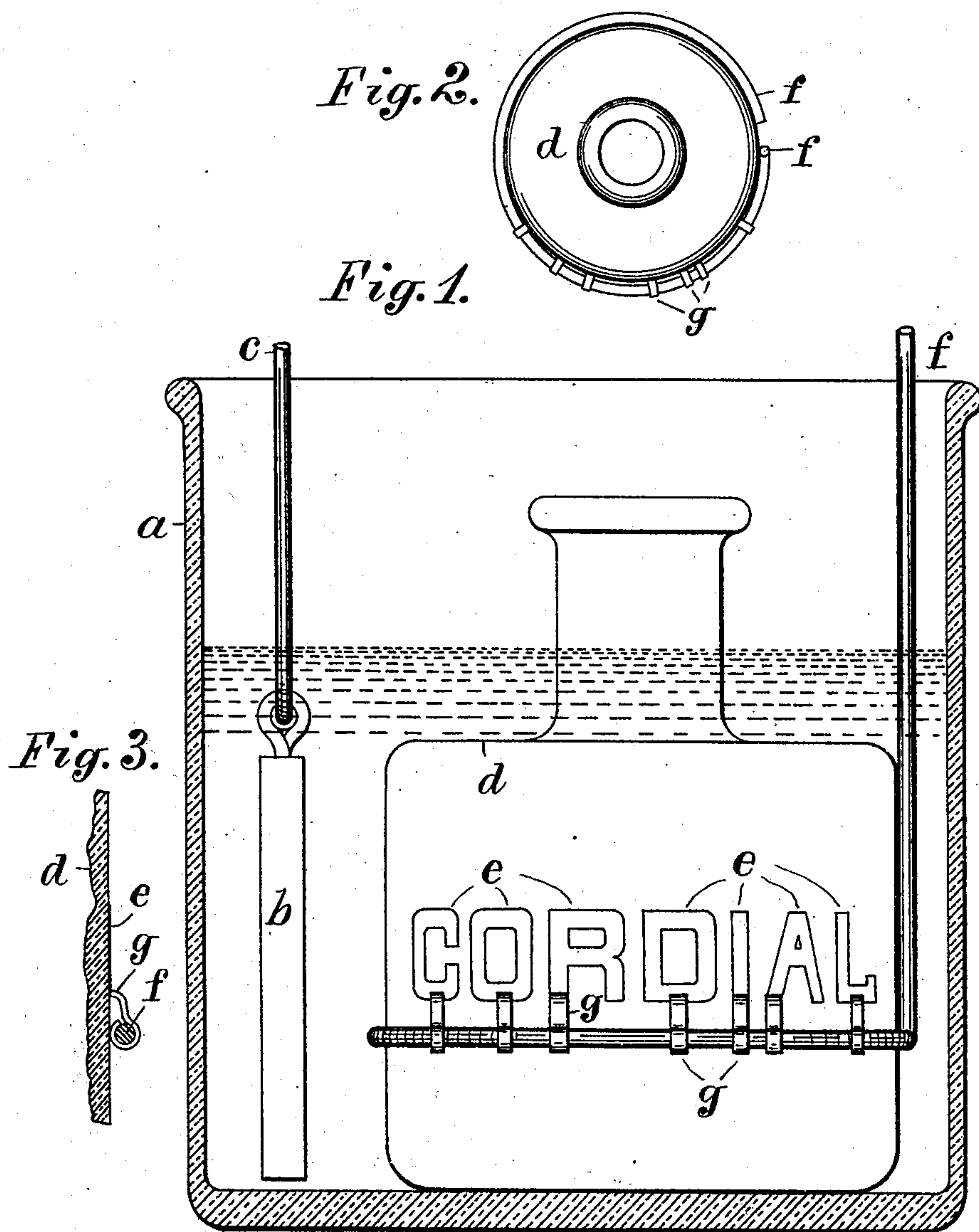
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L. BLOWER.

ELECTROPLATING ISOLATED DESIGNS ON VITREOUS SURFACES.

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NO MODEL.



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# UNITED STATES PATENT OFFICE.

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## ELECTROPLATING ISOLATED DESIGNS ON VITREOUS SURFACES.

SPECIFICATION forming part of Letters Patent No. 774,976, dated November 15, 1904.

Application filed March 23, 1904. Serial No. 199,614. (No model.)

*To all whom it may concern:*

Be it known that I, LEON BLOWER, a citizen of the United States, whose residence and post-office address is 333 East Sixteenth street, New York, county of New York, and State of New York, have invented certain new and useful Improvements in Electroplating Isolated Designs on Vitreous Surfaces, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The present invention relates to a particular means of rendering electrodeposited metal adhesive to an object formed of glass or porcelain having vitreous surface; and it also embraces the formation of a series of isolated designs upon a common surface and the means for connecting such designs temporarily to make an electrodeposit upon them all simultaneously.

The process consists in fusing a mixture of pulverized metal and flux in the desired design upon the vitreous surface and then increasing the thickness of the fused metal by electrodeposition. This process permits the use of a base metal disposed upon the vitreous surface in cases where a more costly metal, as gold or silver, is to be deposited electrically.

The means for connecting a series of isolated designs consists of a negative conductor secured about or insulated upon the article whereon the designs are formed and having feeders extended independently to each of the separate designs.

In practicing the invention metal of suitable character to form a basis for electrodeposition is reduced to a powder and mixed with a silicious or other suitable flux which will adhere to the vitreous surface when fused, and such mixture of metal and flux is mingled with a suitable medium, as silicate of potash, and applied in the desired design to the vitreous surface. The article having such vitreous surface is then fired to fuse the composition in the said design. During the firing the metal and flux are melted and the flux unites with the vitreous surface and the flux is separated from the fused metal in such a degree that a metallic surface is exposed suitable to form an electric conductor in an electroplat-

ing process. The article is then immersed in a suitable bath of metallic salts and the surface of the design connected with the negative pole of a battery or dynamo, the positive pole being connected with an anode in the cell, and a coating of electrodeposited metal is thus added to the fused metal in a layer of any desired thickness. For depositing silver a silver anode is necessarily used, and the same is true for each metal that is to be deposited.

The layer of fused metal may be made the same as the metal to be electrodeposited, or a baser metal may be fused upon the vitreous surface when a metal like gold or silver is intended to be electrodeposited.

In the annexed drawings, Figure 1 is a section of an electrolytic cell and bottle arranged to practice the process. Fig. 2 is a plan of the bottle and the connections to the negative conductor, and Fig. 3 shows a small portion of the bottle in edge view with the connections to the negative conductor.

*a* designates the electrolytic cell, *b* the anode connected to the positive conductor *c*, and *d* a glass bottle represented with an inscription thereon formed of letters *e*.

*f* designates the negative conductor bent to clasp the body of the bottle and having movable spring clips or feeders *g* thereon, adapted to contact with each of the letters *e* to carry the electric current therefrom.

The present invention is adapted for the formation of a series of isolated designs upon a glass bottle or to form thereon single isolated designs, such as monograms, crests, flags, or other ornaments, and also to form inscriptions consisting of isolated letters. Where the different designs are isolated upon the same article, like the letters in the inscription shown upon the bottle, they may be connected with the negative conductor in any suitable manner in place of the clips *g*, which are shown in the drawings. It is obvious that where the design consists of isolated portions they must all be connected together or to the negative conductor in the plating operation to secure the deposition of the metallic coating upon all the isolated portions.

The feeders *g* would be cut from the different portions of the design when the electro-



deposition is finished, and the surface of the electroplated metal upon each design may then be polished, burnished, frosted, or finished in any desired manner.

5 This invention furnishes a cheap and effective means of decorating or applying labels to articles of glass, porcelain, china, &c., which have a vitreous surface which can be fused with the composition of flux and powdered  
10 metal.

By the process described an article is formed having a layer of fused metal and flux adherent to the vitreous surface and the outer surface of such layer having conductivity sufficient to  
15 deposit metal thereon in an electrolytic cell.

To hold the feeders from the negative conductor in contact with the series of isolated designs, it is evident that the negative conductor must be secured about or insulated  
20 upon the article bearing the designs, so as to hold the feeders securely in contact with the separate designs during the plating operation. With an article of vitreous character the negative conductor is insulated, whereby it touches  
25 such article, and it may therefore be clamped upon the article and held securely thereon during the printing operation by bending it to embrace the article elastically, as shown in Fig. 2. Such elastic grip of the conductor  
30 upon the article holds the conductor in a fixed relation to the separate designs and enables it to hold the feeders in contact therewith during the plating operation. My invention dif-

fers from those previously known in using pulverized metal instead of metal in solution 35 or salts.

Having thus set forth the nature of the invention, what is claimed herein is—

1. The process of forming an isolated metallic design upon an article having a vitreous 40 surface, which consists in pulverizing the desired metal and mixing it with a suitable flux, applying the said mixture in a paste to the vitreous surface in the desired design, fusing the mixture of pulverized metal and flux upon 45 such vitreous surface, and then increasing the thickness of the fused metal in such design by electrodeposition.

2. The process of forming a series of isolated metallic designs upon a single article 50 having a vitreous surface, which consists in applying to such surface a mixture of pulverized metal and flux in the required designs, firing the article to fuse the metal and flux, connecting the isolated designs with a nega- 55 tive conductor, and finally depositing additional metal upon such designs by electrodeposition.

In testimony whereof I have hereunto set my hand in the presence of two subscribing 60 witnesses.

LEON BLOWER.

Witnesses:

L. LEE,

THOMAS S. CRANE.