

UNITED STATES PATENT OFFICE.

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METALLIZING ARTICLES.

No Drawing.

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To all whom it may concern:

Be it known that I, QUINTIN MARINO, of 6 Arkwright Road, Hampstead, London, NW. 3, England, a subject of the King of Italy, have invented certain new and useful Improvements in Metallizing Articles, of which the following is a specification.

This invention relates to a process for coating ceramic ware, such as articles made of porcelain, china, pottery, terra cotta, glass and similar electrically non-conductive substances, with a strongly adherent layer of a metal or metallic alloy.

Such an article is usually coated or finished with a glaze or fusible enamel, and, if so coated or finished, it is necessary to remove this coating by a preparatory treatment which consists in submitting the article to the action of hydrofluoric acid vapours, emery, sand blast, etc., so as to render the surface porous and absorbent. It is preferable, however, that the articles to be coated or plated should be left unglazed with a biscuit surface.

According to my invention, I first paint or spray on to the surface of the article to be treated, or dip the article into, a solution of 10% by weight, of nitrate of silver dissolved in alcohol or in a solution of equal parts of alcohol and ether, alcohol alone being preferable, and then allow the alcohol to evaporate. I then brush or spray the surface of the article with, or dip the article into, a 1% by weight aqueous solution of formic acid or formate of sodium, potassium or ammonium, whereupon a white film of pure silver, produced by the reducing action of the formic acid or formate of sodium, potassium or ammonium, will, in a few minutes, appear on the surface of the article. I then brush the article with a brush made of fine wire such as brass, zinc, aluminium, etc., (but preferably brass),

and then dip the article into a warm (about 90° to 100° F.) solution of cyanide of silver (about 3 ozs. of metallic silver per quart of water) for one or two minutes. The surface then exhibits a more pronounced coating of silver. The article is then washed in cold water and is ready to receive by usual plating methods the coating of metal, such as gold, silver, copper, brass, nickel, cobalt, etc., etc., or of a metallic alloy.

When treated as above set forth the article is rendered highly conductive, so that it is only necessary to have one point of contact.

I claim:—

1. A process of metallizing articles composed essentially of non-conductive ceramic ware, which comprises applying to the surface of the article, while such surface is substantially free from glaze, a solution of silver nitrate in an alcoholic solvent, allowing the alcohol to evaporate, applying to the surface a reducing agent containing the formic acid radical, brushing the surface of the article with a metallic brush, applying to the surface of the article a warm solution containing silver cyanide, washing the article, and thereafter electro-depositing a metallic coating upon said article.

2. A process of metallizing articles composed essentially of non-conductive ceramic ware, which comprises removing the glaze from the surface of said article, applying to the surface a solution of silver nitrate in an alcoholic solvent, allowing said solvent to evaporate, applying a reducing agent containing the formic acid radical to said surface, brushing the surface of the article with a metallic brush, applying a solution containing silver cyanide to said surface, and thereafter electro-depositing a metallic coat upon said article.

QUINTIN MARINO.