

UNITED STATES PATENT OFFICE.

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METHOD OF PLATING.

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To all whom it may concern:

Be it known that I, JOSEPH A. SMITH, a citizen of the United States, residing at Attleboro, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Methods of Plating; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to an improved method of plating.

The object of the invention is to produce an improved method of plating by which the plating is united securely to the base metal.

To the above end the present invention consists in the method of plating hereinafter described and particularly defined in the claims.

Following is a description of the specific method which has been practised:—The article to be plated, herein called the base metal article, is cleaned and polished in the usual manner to prepare it for the electro-deposition of the plating. The first step in the process consists in depositing on the base metal a solder layer, which is accomplished by an electro-plating bath of the following compositions

Chlorid of gold	6 dwts.
Chlorid of silver	5 dwts.
Chlorid of copper	3 dwts.
Cyanid of potassium	8 oz.
Water	3 gals.

A sufficient deposit of solder layer with an appropriate current may be secured in 30 seconds, and thereafter the solder-plated article is plated with a gold solution. A suitable electro-plating solution for this purpose is:

Chlorid of gold	12 dwts.
Cyanid of potassium	6 oz.
Phosphate of soda	8 oz.
Water	3 gals.

This plating of gold is continued until the solder coating becomes covered with a heavy deposit of gold, which is indicated by a

smutted condition. The article is then dipped in a flux solution which may conveniently be—

Borax (or boracic acid)	1 lb.
Water	1 qt.

The article is then heated in a furnace or in a gas flame until the solder plating layer and the gold plating layer are fused into an integral layer. A temperature of about 1100° Fahrenheit is suitable for this step.

The process is applicable with appropriate soldering compositions to the plating of articles with various metals, as zinc, copper, gold, silver, and others. In the specific process described it is to be observed that the shell, after the process is completed, is not 24 carat gold, but of lower carat, as a result of which it is much more durable than ordinary gold plating. With the above-described process the plate will have a carat of about 16.

Various other gold solders may be used, if desired, of which one is made by the use of chlorids of gold, silver, copper and zinc, and cyanid of potassium. In plating with silver, a solder solution may be made from chlorids of silver, copper and zinc, and cyanid of potassium, or chlorids of silver and zinc, and cyanid of potassium. A brass solder may be used, if desired, consisting of chlorids of copper and zinc.

The present method produces a durable plating. In the specific process described, the outer layer of gold is united into an integral layer which is evidenced by the fact that if the article be placed in an acid which will dissolve the base metal, the plating of gold will be left as a continuous shell, whereas subjecting an article electroplated with gold to the action of an acid bath will result in the destruction of the article, the base metal being dissolved and the gold coming down as a powder.

The invention is not limited to the specific details of the process hereinabove described, as it contemplates broadly the plating of metal articles with a solder layer and an external covering layer, and a fusing of the two outer layers in order to unite them securely to the article plated.

Having thus described the invention, what is claimed is:—

1. The method of plating which consists in coating the base metal with a gold solder, in gold plating the article and in heating the article, substantially as described.

2. The method of plating which consists in electro-plating the article with a solder layer having as a constituent some of the plating metal, in electro-depositing on the solder layer a layer of plating metal, and in heating the article in a furnace to unite the article and the solder and plating layers, substantially as described.

3. The method of plating which consists in electro-depositing on the base metal a

gold solder layer, in electro-depositing on the solder layer a gold layer, and in heating the article in a furnace at a temperature of about 1100° Fahrenheit, substantially as described.

4. The method of plating which consists in coating the article with a solder layer having as a constituent some of the plating metal, in coating the solder layer with a layer of plating metal, and in heating the article to unite the solder and plating layers, substantially as described.

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Witnesses:

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