UNITED STATES PATENT OFFICE.

SHERARD OSBORN COWPER-COLES, OF LONDON, ENGLAND, ASSIGNOR OF ONE-HALF TO THE LONDON METALLURGICAL COMPANY, LIMITED, OF SAME PLACE.

PROCESS OF ELECTRO-DEPOSITING ALLOYS.

SPECIFICATION forming part of Letters Patent No. 487,176, dated November 29, 1892.

Application filed November 18, 1891. Serial No. 412,313. (No specimens.)

To all whom it may concern:

Be it known that I, SHERARD OSBORN COWPER-COLES, engineer, a subject of the Queen of Great Britain, and a resident of London, England, have invented certain new and useful Improvements in Electro-Depositing Alloys, of which the following is a specification.

This invention relates to the coating by electro-deposition of articles of metal or other suitable material with a new metallic alloy; and its object is to produce upon the said articles a brilliant coating or plating resembling silver, but which is better adapted than silver to resist the tarnishing influences of the atmosphere. For this purpose I deposit upon the said articles by electrolysis an alloy of zinc and silver, or cadmium and silver, or zinc, cadmium, and silver, I find that to protect the silver from being rapidly tarnished by the atmosphere about from thirty-five to twenty-five per cent., or even less, of zinc or cadmium is sufficient. When, however, I desire to produce less costly coatings, I employ, say, from forty per cent. to ninety per cent. of the baser metal or metals.

My said invention, moreover, comprises a method or process of electro-depositing the aforesaid alloy, whereby I am enabled to obtain a homogeneous coating—that is to say, a coating which consists throughout of a perfect intermixture of the metals constituting the alloy instead of a succession of layers having a different composition.

In carrying on my improved method of electro-deposition I proceed as follows—that is to say: I prepare an electrolytic bath by dissolving a suitable quantity of cyanide of zinc or cadmium in a solution of cyanide of potassium, so as to form a double salt having a slight excess of cyanide of potassium. To this solution I add a small quantity of the double salt of the cyanides of potassium and silver, the two together forming the electrolyte or electrolytic bath, which is introduced into any suitable electroplating or electrotyping apparatus. I employ an anode composed of an alloy of zinc and silver or cadmium and silver in the same or approximately the same proportions as are desired in the alloy to be deposited. For example, for the deposition of an alloy composed of equal parts, by weight, of silver and cadmium I use an anode composed of equal or about equal parts of the said metals. After the cathodes—that is to say, the articles upon which it is desired to form the deposit—have been placed in the electrolytic bath and the current caused to flow the metals are deposited thereon as an alloy of the desired composition.

The electrolytic bath may be used either hot or cold, and I can increase or diminish the hardness of the deposit by varying the proportions of the metals in the alloy.

I wish it understood that I do not limit myself to any special proportions of the metals, as such proportions may be varied according to the purpose for which the alloy is required without departing from the nature of my invention.

What I claim is—

The method of depositing by electrolysis an alloy of silver and any known metal or metals other than the rare metals, which has or have a specific gravity between 6.5 and 9.0 at 15° centigrade and boils or boil at a temperature between 710° centigrade and 1045° centigrade under the ordinary atmospheric pressure on metals and other suitable articles, wherein the articles to be coated are placed in a bath of the double cyanides of such metal or metals and silver and potassium, and an anode is employed consisting of an alloy of the metals to be deposited in approximately the proportions of the required deposit, substantially as herein described.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

SHERARD OSBORN COWPER-COLES.

Witnesses:

GEORGE HARRISON,

ARTHUR HENRY DEATH.