

UNITED STATES PATENT OFFICE.

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TREATMENT OF SURFACES OF ALUMINIUM OR ITS ALLOYS FOR THE DEPOSITION OF METALS THEREON.

1,045,718.

Specification of Letters Patent.

Patented Nov. 26, 1912.

No Drawing.

Application filed April 29, 1912. Serial No. 693,943.

To all whom it may concern:

Be it known that I, QUINTIN MARINO, citizen of Italy, and residing at "The Homestead," Woodstock avenue, Golders Green, London, England, have invented certain new and useful Improvements Relating to the Treatment of Surfaces of Aluminium or Its Alloys for the Deposition of Metals Thereon, of which the following is a specification.

In the electro-deposition of metals upon surfaces of aluminium or its alloys, difficulty is experienced owing to the presence of a film of oxid on such surfaces. Even if the aluminium is cleaned or submitted to a pickling bath the coating will not take, or, if it does, it will not adhere properly and becomes detached when burnished. Methods have been proposed with a view to overcoming this difficulty. According to one such method the aluminium or like surface is submitted to a preliminary bath containing salts of heavy metals and other substances, with the object of depositing upon the surface a thin coating of the heavy metal intended to absorb the aluminium oxid. According to another such method the aluminium article is prepared by being immersed in an aqueous solution of a salt of a heavy metal in order to remove aluminium oxid from the surface.

The difficulty before mentioned can be overcome by means of the present invention, which enables a good and adherent metallic coating to be deposited on surfaces of aluminium or its alloys.

According to the present invention I subject the surface, after appropriate cleansing, to a solution of a suitable metallic fluorid, such for example as fluorid of tin, nickel, silver, zinc, cadmium or other metal, in conjunction with tartrate of potash or other tartrate.

In carrying this invention into effect I first clean the aluminium or alloy by means of a weak solution of potash or in any other well-known way, and then dip it into a weak solution of nitric acid (of about 2% strength, for example), and rinse well. The article is then immersed in a solution of a metallic fluorid and tartrate of potash or other tartrate. The fluorid is preferably prepared by precipitating a salt or compound of the corresponding metal by means of an alkali carbonate, and dissolving the resulting precipitate in hydrofluoric acid.

For example, to prepare a solution of fluorid of tin, I take an aqueous solution of chlorid of tin of about 10% strength, and add thereto a solution of carbonate of soda or potash of about the same strength. The resulting precipitate is washed two or three times with fresh water and is then dissolved in hydrofluoric acid. This solution is diluted with about 8 or 9 times its volume of water, and I dissolve in the resulting solution about 5% of tartrate of potash. The cleaned metal is immersed in this solution for a few seconds; this produces a slight coating of tin or other metal on the surface, and at the same time still further cleans the metal of the surface. This coating can be applied electrolytically with a small current if desired. The coated metal, after being washed, is ready to have a coating of any metal applied thereon electrolytically.

Instead of tartrate of potash I may use other tartrates, and instead of fluorid of tin I may use fluorids of other metals. It will be understood that the solutions of metal fluorid and of the tartrate may be applied separately to the surface instead of using a single solution containing both.

I claim:

1. A process for the treatment of surfaces of aluminium or aluminium alloys, comprising subsection of the surface to a solution of a metallic fluorid in conjunction with a tartrate.

2. A process for the treatment of surfaces of aluminium or aluminium alloys, comprising subsection of the surface to a solution of fluorid of tin in conjunction with potassium tartrate.

3. A process for preparing surfaces of aluminium or aluminium alloys for electro-deposition, comprising subsection of the surface to a solution of a metallic fluorid in conjunction with a tartrate.

4. A process for preparing surfaces of aluminium or its alloys for electrodeposition, comprising subsection of the surface to a solution containing a metallic fluorid and tartrate of potash.

5. A process for preparing surfaces of aluminium or its alloys for electrodeposition, comprising subsection of the surface to a solution containing fluorid of tin and tartrate of potash.

6. The process of preparing a solution for the treatment of surfaces of aluminium and

its alloys, which process consists in precipitating a metallic compound by an alkali carbonate, dissolving the resulting precipitate in hydrofluoric acid, diluting the solution and dissolving a tartrate therein.

5 7. The process of preparing a solution for the treatment of surfaces of aluminium and its alloys, which process consists in adding alkali carbonate to a solution of chlorid of tin, separating the resulting precipitate and
10 dissolving the same in hydrofluoric acid, diluting this solution and adding tartrate of potash thereto.

8. A process for the treatment of surfaces
15 of aluminium or aluminium alloys, which consists in electrolytically depositing a pre-

liminary metallic coating thereon from a bath containing a metallic fluorid and a tartrate.

9. A process for the treatment of surfaces
20 of aluminium or aluminium alloys, which consists in electrolytically depositing a preliminary coating of tin thereon from a bath containing fluorid of tin and tartrate of
25 potash.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

QUINTIN MARINO.

Witnesses:

G. BOURGAT,

O. J. WORTH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."