UNITED STATES PATENT OFFICE.

WILLIAM EVANS TILLEY, OF MIDDLESEX COUNTY, ENGLAND.

IMPROVEMENT IN COATING OR ELECTRO-PLATING IRON, BRASS, COPPER, &c., WITH TIN.

Specification forming part of Letters Patent No. 128,081, dated June 18, 1872.

To all to whom it may concern:

Be it known that I, WILLIAM EVANS TILLEY, of No. 6 Kirby street, Hatton Garden, in the county of Middlesex, England, electro-plater, a subject of the Queen of Great Britain, have invented or discovered new and useful "Improvements in Coating or Electro-Plating Iron, Copper, Brass, Lead, and other metals with Tin;" and I, the said WILLIAM EVANS TILLEY, do hereby declare the nature of the said invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof—that is to say:

My invention relates to the preparation of the bath of tin in which the metals to be coated or plated are to be immersed.

It has hitherto been found difficult to keep in solution the tin contained in the said bath, the said tin having a tendency to fall to the bottom of the said bath in the form of a precipitate. Now, the object of my invention is to remedy this defect.

According to my improvements I prepare the bath of tin as follows: I dissolve grain-tin in nitro-muriatic acid or in nitric acid, (but preferably the former,) and thus obtain a solution of nitro-muriate or of nitrate of tin. This solution I then evaporate to dryness, or nearly so. I then dissolve cyanide of potassium in boiling water, in the proportion of about one pound of cyanide to three gallons of water, and to the boiling solution I add the dried nitrate or nitro-muriate of tin in the proportion of about one pound for each pound of cyanide of potassium, and continue to boil the solution for, say, half an hour.

The oxide of tin thus obtained is thrown onto a suitable filter, and is washed three or four times with boiling water, and is then either allowed to drain or is evaporated to dryness. I prefer to allow it to drain till it is of a pasty or semi-fluid consistency. I then put the said oxide into an earthenware pan and add as much sulphuric or muriatic acid, or sulphuric and muriatic acid, as will take up the oxide and hold the tin in solution. I find in practice that a mixture of two parts of muriatic acid to one part of sulphuric acid gives a good result.

I then put the solution of tin thus obtained into the vat or vessel in which the articles to be coated or plated are to be immersed, and I add to the said solution as much water (preferably filtered or soft) as will make a bath of the ordinary strength used in electro-plating.

The bath thus formed is now ready for use, the articles to be coated or plated being immersed in it with poles of tin in the usual way.

Having thus described the nature of my invention and the manner in which the same is to be performed, I would have it understood that I claim—

1. The process, substantially as described, for the preparation of a bath of tin by adding dried nitro-muriate or nitrate of tin to a solution of cyanide of potassium, for the purpose of precipitating the tin and then washing and draining or drying the resulting precipitate previously to the addition thereto of the sulphuric or muriatic acid, as described; and

2. I claim the employment of a bath of tin thus prepared for coating or electro-plating iron, copper, brass, lead, and other metals with tin.

W. E. TILLEY.

Witnesses:
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