UNITED STATES PATENT OFFICE.

GEORGE LINSENMAYER, OF PHILADELPHIA, PENNSYLVANIA.

ELECTRO-DEPOSITION OF ALUMINIUM AND GOLD ALLOY.

SPECIFICATION forming part of Letters Patent No. 231,064, dated August 10, 1880.

Application filed April 29, 1880. (No specimens.)

To all whom it may concern:

Be it known that I, GEORGE LINSENMAYER, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in the Electro-Deposition of Aluminium and Gold, (combined,) which process is substantially a bath or solution, set forth in the following specification.

It is well known that baths or solutions for the electro-deposition of gold have contained salts, mentioned herein, as well as cyanide of potassium; but never before has such deposition of a combination of aluminium and gold been made or attempted by the means hereinafter set forth, which secures, in the greatest possible degree, economy in the use of the precious metal, the aluminium being made a substitute therefor to the greatest possible extent.

This improvement consists in the use of a new solution from which to deposit the combination of aluminium and gold by the electric current; and its novelty consists in the new ingredients used therein, which, till my discovery, were unused in connection with electro-deposition. The proportions of such chemicals as have before been used are new and different from old formulas, and the combination as a whole is entirely novel.

Dissolve in a vessel containing ten (10) liters of distilled water seven (7) ounces of phosphate of soda, one and one-half (1½) ounce of sal-ammoniac, and one (1) ounce of magnesia.

Dissolve in another vessel containing five (5) liters of distilled water two (2) ounces of bicarbonate of soda, one-half (½) ounce of muriate of soda, one-half (½) ounce of flowers of sulphur, and one (1) pennyweight of acetic acid.

Dissolve in a third vessel containing eight (8) liters of distilled water ten (10) ounces of cyanide of potassium and fifteen (15) pennyweights of spirits of wine.

When the contents of the three vessels are completely dissolved, pour them together in a vessel of sufficient capacity and boil the whole for half an hour, after which remove same from the fire, and when cool add thereto two (2) ounces of burnt alum dissolved in one (1) liter of water, one (1) ounce of aluminium, and one (1) ounce of gold, (the latter previously dissolved in nitro-muriatic acid,) and four (4) ounces of cyanide of potassium with one (1) ounce of aqua-ammonia. Boil again for half an hour, and at the expiration of that time filter while hot. Thus prepared the solution is ready for use, and should be operated in the usual way by means of the electric current at a temperature of 180° to 200° Fahrenheit.

I do not confine myself to the exact proportions of the ingredients above specified, as their strength may vary, and it may be necessary to increase or diminish the proportions accordingly.

This solution produces, at a minimum of cost, a brighter gold-like deposit on articles to be gilded than any gilding solution now in use, and it has been found by actual test that the aluminium and gold combined, deposited as described, is for practical wear of far greater durability than articles gilded with gold unalloyed at much greater expense.

I claim—

A solution for the electro-deposition of an alloy of gold and aluminium, composed of burnt alum, gold, aluminium, nitro-muriatic acid, cyanide of potassium, ammonia, sodium phosphate, magnesia, sodium bicarbonate, ammonium chloride, sodium chloride, flowers of sulphur, acetic acid, spirits of wine, and distilled water, in the proportions substantially as described.

GEORGE LINSENMAYER.

Witnesses:

SAMUEL A. BOYLE,

EWING HILLE.