Patented July 3, 1934 1,965,251

UNITED STATES PATENT OFFICE

1,965,251

ELECTROPLATING BATH

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No Drawing. Application April 26, 1932, Serial No. 607,660

12 Claims. (Cl. 204—1)

The present invention relates to electroplating baths and more particularly to baths for plating from cyanide solutions of indium.

The object of the invention is to provide a bath and method of stabilizing such a bath, so that the bath will remain stable over a considerable period of time, for example, considerably more than forty-eight hours, and also so that the bath will retain its stability when heated, whereby precipitation of the indium with time or elevated temperatures is greatly retarded or eliminated.

A bath for electrodepositing indium may be made up as follows:

Free potassium cyanide_____ 7½ ozs. per gal.
Indium in the form of potassium-indium cyanide_____ 5 ozs. per gal.

The bath may be used at a temperature of about 20° C., with a current density of about 0.25 amperes on 15 square inches of surface, although it will be understood that the bath may be used at varying temperatures and with different current densities.

In accordance with the present invention a bath similar to or such as the foregoing is stabilized by the addition of a suitable saccharide, such for example, as glucose, dextrose, fructose, lævulose, saccharose, lactose or maltose.

The stabilizing substance may be added to the bath in an amount equal to half the quantity of the potassium-indium cyanide, although it will be understood that different amounts of the stabilizer may be added.

By way of example, however, where the hereinabove mentioned bath formula is employed, 2½ ozs. of dextrose per gallon may be used. It will be understood also that either potassium or sodium cyanide may be used in the bath.

The bath may be made up by first preparing a very concentrated solution of the selected cyanide. To the cyanide solution may be added about half as much dextrose by weight as the weight of indium to be added.

The indium may be added in several ways. For example, a solution of indium chloride, -sulphate or -nitrate, or other soluble indium salts may be poured directly into the concentrated cyanide solution; or the indium may be precipitated as ferro-cyanide, using sodium ferro-cyanide added to an acid solution of indium. The use of ferro-cyanide has the advantage that it may be washed at leisure, dried and left for some time and still be soluble in cyanide solution.

A preferred procedure for adding the indium, however, is to precipitate indium hydroxide from an indium chloride solution, using a small excess of ammonia. This hydroxide is washed rapidly by suction and is preferably added as quickly as possible to the cyanide solution containing the stabilizer. The amount of ammonia used is important. Enough should be used to complete the precipitation, but not an excess which would cause the precipitate to be slimy and difficult to filter and wash quickly.

By the present invention a very clear and nearly colorless bath may be made, stable enough under heat to be boiled down to a considerably less volume without precipitating the indium. Such a bath may stand for days, in fact long enough to evaporate to a crystalline mass. With the addition of water the material could still be used for a plating bath.

It will be understood that the stabilizer of the present invention may be used in baths for plating with indium alloys, such for example, as in a bath for plating with an alloy of silver and indium.

What is claimed is:

1. In the process of electrodepositing indium, the step which comprises preparing a cyanide indium plating bath and adding dextrose thereto.

2. In the process of electrodepositing indium, the step which comprises preparing a cyanide indium plating bath and adding lævulose thereto.

3. In the process of electrodepositing indium, the step which comprises preparing a cyanide indium plating bath and adding saccharose thereto.

4. In the process of electrodepositing indium, the step which comprises preparing a cyanide indium plating bath and adding thereto a saccharide of an order lower than a trisaccharide.

5. In the process of electrodepositing indium, the step which comprises preparing a cyanide indium plating bath and adding thereto a monosaccharide.

6. In the process of electrodepositing indium, the step which comprises preparing a cyanide indium plating bath and adding thereto a disaccharide.

7. A cyanide electrolytic bath containing indium and containing a stabilizer such as a saccharide of a lower order than a trisaccharide.

8. A cyanide electrolytic bath containing indium and containing a stabilizer such as a disaccharide.

9. A cyanide electrolytic bath containing indium and containing a stabilizer such as a monosaccharide.

10. A cyanide electrolytic bath containing indium and containing a stabilizer such as dextrose.

11. A cyanide electrolytic bath containing indium and containing a stabilizer such as lævulose.

12. A cyanide electrolytic bath containing indium and containing a stabilizer such as saccharose.

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