

UNITED STATES PATENT OFFICE

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METHOD AND MEANS FOR FORMING
SEPARABLE PLATED COATINGS ON METAL
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tion of DelawareNo Drawing. Application March 12, 1931
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5 Claims. (Cl. 204-8)

This invention relates to an improved method and means for preventing bonding of electro-deposits and immersion-deposits of metal to metal surfaces.

5 The main objects of the invention are to provide improved means for conditioning metal surfaces to permit the removal therefrom of subsequently applied film like metal deposits, particularly consisting of nickel; to provide improved means of this kind which does not alter the conductive properties of the treated metal surfaces or in any way vary the rate at which the deposit is formed thereon; to provide an improved method for obtaining samples of metal coatings from a plated article from which the thickness of the metal coating may be accurately and conveniently determined; to provide an improved method of this kind by which electro-deposited metal plates of foil of selected thickness may be obtained in desired shapes; and to provide a method of this character which is also adapted to condition the anodes upon which articles are supported during plating, so as to prevent rigid bonding of the plated metals thereto.

25 I have found that when articles having iron, copper, brass, or other metal surfaces to which nickel rigidly bonds during electro-plating operations, are treated with chromic acid prior to immersion in a conventional nickel plating bath, the resulting deposit may be stripped from the article in an integral sheet. The chromic acid solution may vary from 2 ounces of C. P. chromic acid per gallon to a saturated solution and it may or may not contain sulphate. Satisfactory results are obtained with a conventional chromic acid plating bath which includes substantially 50 ounces of chromic acid and 4 ounces of a sulphate per gallon.

40 The chromic acid solution is applied on the metal surface to be plated with nickel after the surface has been thoroughly cleaned and prepared in the usual manner and then the surface is carefully rinsed in cold water without excessive agitation so as to present a thin film of the solution. The article is then suspended in a nickel plating bath from an anode while a current is passed through the article and bath. The resulting nickel deposit which is uniformly distributed clings loosely to the treated surface of the article and may be removed from the article by loosening an edge or corner of the coating with a knife so as to enable a purchase to be obtained. Then the metal coating may be stripped from the article with little effort and without breaking or tearing it. In this manner

samples of nickel plate may be obtained from various portions of an article for the purpose of determining the thickness of the nickel.

Nickel foil may be produced in sheets of desired dimensions and thickness, or in the form of plates by treating a planular metal surface, preferably having a copper coating, with the chromic acid solution and depositing nickel thereon in a conventional plating bath and then stripping off the nickel deposit.

65 A previously nickel plated article may also be treated with the chromic acid solution and then retreated with nickel. In this event the latter coating strips from the previously nickel coated surfaces even more readily than from other metal surfaces.

The cathodes used in supporting articles in a plating bath have heretofore been discarded after the accumulation thereon of excessive coatings of metal being plated. Both the cathodes, and the coating thereon can be economically salvaged by treating the cathodes with chromic acid in the above manner, prior to their immersion in the plating bath. When this is done the metal which accumulates on the cathodes can be readily broken off, or otherwise conveniently removed so as to condition the cathodes for further use and the metal removed may be recast into cathodes or applied to any other useful purpose.

85 The chromic acid treatment produces particularly satisfactory results in conditioning surfaces for the removal of nickel, and it may also be employed with varying degrees of success to condition surfaces for the removal or other metals, such as cadmium and zinc.

Formal changes may be made in the specific embodiment of the invention without departing from the spirit and substance of the broad invention, the scope of which is commensurate with the appended claims.

What I claim is:

1. The method of forming sheets of nickel which consists in forming a film of a chromic acid solution on the surface of a metal plate to prevent the adhesion of nickel thereto, plating nickel on said film covered surface, and stripping the nickel from said surface.

2. The method of forming sheets of nickel which consists in forming a film of a chromic acid solution on the surface of a metal plate to prevent the adhesion of nickel thereto, rinsing the chromic acid film in cold water, plating nickel on said film covered surface, and stripping the nickel from said surface.

3. The method of forming sheets of nickel

which consists in forming a coating of nickel on a metal surface, applying a solution containing chromic acid on said coating, depositing a second nickel coating on said first coating, and separating the second coating from the first coating.

4. The method of obtaining a sample of a nickel plated coating from a selected surface of an article for determining the thickness of the coating which consists in forming a film of chromic acid on the selected surface of said article, electroplating said article in a nickel bath thereafter,

and stripping the nickel coating from the film covered surface of said article.

5. The method of preventing the adhesion of nickel plate coatings on selected surfaces of an article which consists in cleaning such surfaces, applying a solution containing chromic acid on said surfaces so as to provide a film thereon, rinsing said film with cold water, and plating nickel on the surfaces of said article.

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