

UNITED STATES PATENT OFFICE.

LUCIAN W. BUGBEE, OF SOUTHBRIDGE, MASSACHUSETTS, ASSIGNOR TO AMERICAN OPTICAL COMPANY, OF SOUTHBRIDGE, MASSACHUSETTS, A VOLUNTARY ASSOCIATION OF MASSACHUSETTS.

PROCESS OF PLATING.

1,214,271.

Specification of Letters Patent. Patented Jan. 30, 1917.

No. Drawing.

Application filed December 4, 1916. Serial No. 134,870.

To all whom it may concern:

Be it known that I, LUCIAN W. BUGBEE, a citizen of the United States, residing at Southbridge, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Processes of Plating, of which the following is a specification.

My invention relates to an improved process of plating metallic articles, and has particular reference to the plating of aluminum by electrodeposition or otherwise, this application being a continuation in part of my prior application Serial No. 808,152 which was filed December 22, 1913.

Up to the present time difficulty has been uniformly experienced in attempting to satisfactorily plate aluminum, on account of the fact that aluminum having an affinity for oxygen and due to chemical action in the plating bath rapidly oxidizes or forms a film on its surface, to which a plating or coating will not securely adhere, and consequently plating hitherto produced on aluminum would either peel or rub off and would not be a permanent matter.

It is the object of my improved process to overcome this difficulty and thus permit of the ready and satisfactory plating of aluminum articles. It will be understood, however, that while particularly adapted for use in the plating of aluminum, my process may also be very satisfactorily employed in connection with the plating of other substances.

Briefly stated, my process consists in the immersion of the article to be plated in the plating bath or solution and at the outset subjecting the article to a simultaneous abrading and plating action, which abrading action shall initially be as great or greater than the plating action, whereby the surface to be plated is thoroughly abraded, freed from hydrogen or other bubbles, and a chemically clean surface which will receive a plate secured, subsequent to which the abrading action is decreased or the plating action increased until the plating action becomes equal to and subsequently greater than the abrading action, and ultimately ceasing the abrading action after the article has been thoroughly covered with a film or plate to eliminate abrasion of the plate, while continuing the plating action till the desired thickness of plate has been obtained.

The result referred to may be attained in a

number of ways, all of which I consider as falling within the scope of my invention, and among which might be mentioned the placing within the plating bath of a blast or spraying device operating on the surface to be plated or coated; the employment of a scratch brush or similar device, the article and brush being moved relative to each other to abrade the article being plated, or the placing in the plating bath and surrounding the article, of sand or other abrasive substance, the article to be plated being moved up and down in said substance, while within the plating bath, the said substance thus, by this abrasive action, breaking up the oxid film and allowing satisfactory plating of the article.

While any desired method of causing the depositing of the plating on the article may be employed, I preferably couple the article with a source of electrical supply and employ my process in connection with any customary electroplating apparatus.

I claim:

1. The process of plating aluminum, consisting in submerging the aluminum article in a plating bath and simultaneously subjecting the article to a plating action and to an abrasive blast, substantially as described.

2. The process of electro-plating, consisting in submerging the article to be plated in a plating bath, coupling the article with a source of electrical energy and directing an abrasive spray through the bath onto the article during the plating action.

3. The process of plating an article, consisting in subjecting the article to a plating action and directing an abrasive spray against the article during a portion at least of the plating.

4. The process of plating an article, consisting in submerging the article in a plating bath, subjecting the article to a plating action, abrading the article during the early stages of the plating action, and stopping the abrasion before the plating action is completed.

5. The process of plating an article, consisting in subjecting the article to a plating action, and variably abrading the article, the initial rate of abrasion being greater than and the final rate of abrasion being considerably less than the rate of plating, substantially as and for the purpose described.

6. The process of plating aluminum, consisting in submerging the article to be plated

in a plating bath, subjecting the article to be plated to a plating action and to a pronounced abrading action, and relatively varying the rates of plating and abrading action, the initial abrading action being greater and the final abrading action being considerably less than the plating action.

7. The process of plating an article, consisting in submerging the article in a plating bath, directing an abrasive spray against the article to clean the surface of the article, and subjecting the article to a plating action, the force of the spray being initially sufficient to more than counterbalance the plating effect and to slightly cut away the surface to be plated, and the abrading action being gradually reduced to maintain the surface properly clean and allow a plate to be gradually formed thereon.

8. The process of plating an article, con-

sisting in submerging the article in a plating bath, directing an abrasive spray against the article to clean the surface of the article, and subjecting the article to a plating action, the force of the spray being initially sufficient to more than counterbalance the plating effect and to slightly cut away the surface to be plated, and the abrading action being gradually reduced to maintain the surface properly clean and allow a plate to be gradually formed thereon, and finally stopping the abrasive action while continuing the plating action after a skin has been formed on the article to be plated.

In testimony whereof I affix my signature in the presence of two witnesses.

LUCIAN W. BUGBEE.

Witnesses:

H. H. STYLL,

H. R. PARSONS.