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CHROMIUM PLATED ARTICLE AND METHOD
OF MAKING THE SAMEGeorge L. Moore, Cleveland, Ohio, assignor to
Aluminum Company of America, Pittsburgh,
Pa., a Corporation of PennsylvaniaNo Drawing. Application November 24, 1928
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2 Claims. (Cl. 91—68.2)

This invention relates to the plating of metals. It more particularly relates to the plating of metals with another metal which normally does not adhere firmly thereto.

It is desirable to plate metals such as aluminum or its alloys with a material such as chromium having other properties of hardness, strength, and so forth, than the base metal. Difficulty, however, has been experienced in causing these and other metals to adhere to each other sufficiently firmly to resist flaking and cracking of the plating from the base metal. The present invention is directed to firmly bonding a metal with another metal which normally cannot be caused to adhere satisfactorily thereto.

With a preferred embodiment in mind but without desiring to place undue limitation upon the scope of the invention beyond what may be required by the prior art the invention comprises plating a metal such as aluminum or its alloys with a coating of a normally non-adherent metal such as chromium by means of an intermediate layer of a metal such as tin which can readily be caused to adhere to both the base metal and the plating. Inability to secure a bond between the chromium and the base is due primarily to the oxide coating on the base. By brushing vigorously the base surface with a wire brush impregnated with molten tin, it is possible to brush off the oxide and simultaneously deposit in place of the removed oxide a coating of tin directly to the oxide free surface of the base. By a continued brushing operation with the tin impregnated brush practically all the oxide is brushed off the surface of the base and a thin coating of tin remains alloyed to the oxide free surface of the base. The chromium can then be plated on to the layer of tin in any suitable way as, for example, by electro-deposition, the chromium and tin when united in this manner being naturally highly adherent to each other.

While in the specific embodiment of the invention chromium has been secured to aluminum or its alloys it will be understood that the process can be used for securing other naturally non-adherent metals to aluminum such as, for example, iron.

The procedure above outlined has extensive use in the arts and chromium plated aluminum articles are desirable where the articles are subjected to excessive wearing action. As a specific example, the plating of chromium may be applied to the bore of a cylinder block made of aluminum or its alloys and when so applied makes a satisfactory bearing surface upon which the piston may operate without causing flaking or cracking of the chromium plating.

Aluminum and aluminum base alloys are included in the term aluminum as employed in the claims.

While a specific embodiment of the invention has been shown and described it will be apparent that modifications can be made therein within the spirit and scope of the invention and such modifications are intended to be covered by the appended claims.

I claim:

1. The method of plating an aluminum alloy surface having an oxide coating which comprises mechanically removing the oxide by brushing vigorously the surface with a wire brush impregnated with molten tin to brush off the oxide and simultaneously deposit in place of the removed oxide a coating of tin directly to the oxide free surface, a portion of which is alloyed with the aluminum alloy without the interposition of oxides and thereafter depositing a layer of chromium on the layer of tin.

2. The method of bonding to an aluminum alloy surface having an oxide coating, a metal which is naturally non-adherent with the aluminum which comprises mechanically removing the oxide by brushing vigorously the aluminum alloy surface with a wire brush impregnated with molten metal which is inherently adherent both to the aluminum alloy and the non-adherent metal to brush off the oxide and simultaneously deposit in place of the removed oxide a coating of molten metal directly to the oxide free surface of the aluminum alloy surface without the interposition of oxides, and thereafter applying a layer of said non-adherent metal to the surface formed.

GEORGE L. MOORE.