

# United States Patent Office.

JOSEPH ALEXANDER ADAMS, OF BROOKLYN, NEW YORK.

*Letters Patent No. 99,806, dated February 15, 1870.*

## IMPROVED MODE OF COVERING MOLDS AND OTHER ARTICLES WITH A METALLIC SURFACE.

The Schedule referred to in these Letters Patent and making part of the same.

I, JOSEPH ALEXANDER ADAMS, of Brooklyn, in the county of Kings, and State of New York, have invented a certain new and useful Process for Covering Molds and Various Articles with a Metallic Surface, to be used in connection with the process of electrotyping, or otherwise, of which the following is a specification.

In forming electrotype plates for the printing-press by means of this process, I proceed as follows:

When the wax with which the impression of the form of type is taken is still warm in the molding-pan, the surface is covered with a layer of finely-powdered tin, which is applied with a soft brush, until the whole surface presents a metallic appearance. The superfluous powder is then brushed off the surface, and after the wax has become perfectly cold and solid it is polished with a fine soft brush until a bright surface is obtained.

The form of type from which the wax is to receive the impression is first coated with powdered tin or plumbago, to insure the separation of the mould from the type, and an impression of the form is taken in the wax in the usual way.

The mold, after being built up in the customary manner, and the parts so built being brushed with tin powder, is then brushed all over with tin powder or a small quantity of plumbago, in order to cover any small breaks that may have been made in the tinned surface at the time the impression was being taken from the form, and the excess of powder is removed with a bellows. The mold, after being treated in the usual manner with water and alcohol, to remove the air from the surface, is now ready to be immersed in a solution composed of the following ingredients, taken in about the proportions named below:

Water, four (4) gallons; sulphate of copper, four (4) pounds; sulphuric acid, one pint—the whole intimately mixed together.

The prepared mold is then immersed in the above solution, and connected with the positive pole of a

galvanic battery, when, upon examination, the surface of the mold will be found to have been almost instantaneously covered with a thin coating of copper. This will be effected, indeed, even before the connection with the battery has been made, as it is due to the chemical action alone between the tin surface of the mold and the solution in which it is immersed, and is independent of the galvanic action of the battery. It is simply an exchange or chemical substitution that takes place, by virtue of which the oxygen in union with the copper seizes upon the tin, for which it has a greater affinity, and the copper is deposited in its place. The film of copper thus formed is kept in connection with the battery until it has become of the required strength and thickness.

For coating articles for other purposes by this process, either of glass, wood, *papier-maché*, or other non-conducting surfaces and substances, it will be necessary to first apply a layer of thin varnish, or any equivalent, upon which, before it is entirely dry, the layer of tin powder must be applied. The article is then subjected to the action of the solution as above described, and, if a thick coating is required, to the action of the battery also.

A coating of silver, nickel, or other metal may be also precipitated upon the film of copper first formed, or on that precipitated by the battery, if required.

By this process of using a metallic powder in connection with the plumbago, or in place of it, I am enabled to accomplish in a few minutes what, with plumbago alone, would require three or four hours.

### Claim.

I claim coating or covering molds or other articles with a metallic surface, by the process substantially as hereinbefore described and specified.

J. A. ADAMS.

Witnesses:

C. A. DURGIN,  
EDWARD E. OSBORN.