UNITED STATES PATENT OFFICE.

HENRY G. COYLE, OF WEST MERIDEN, CONNECTICUT, ASSIGNOR OF ONE-HALF HIS RIGHT TO CHARLES H. SHAW, OF SAME PLACE.

IMPROVEMENT IN SOLUTIONS FOR ELECTROPLATING.

Specification forming part of Letters Patent No. **162,627**, dated April 27, 1875; application filed April 12, 1875.

To all whom it may concern:

Be it known that I, HENRY G. COYLE, of West Meriden, in the county of New Haven and State of Connecticut, have invented a new Solution for Electroplating; and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to the preparation of a solution in which a deposit of tin may be made upon any metal without previous preparation of the surface.

Tin has usually been deposited by dipping the surface to be coated into a bath of molten tin, the surface having been previously prepared by a coating of copper, or otherwise, to cause the tin to adhere. In electroplating with tin a similar preparation of the surface has been essential, and then generally unsuccessful.

The object of this invention is to make an electro-deposit of tin without such previous preparation, and upon any metal. To this end this invention consists in a solution composed of muriate of tin, sulphate of ammonia, sulphuric acid, aqua ammonia, urine, and water, in the proportions substantially as hereinafter specified.

Take of muriate of tin, three (3) parts; sulphate of ammonia, eight (8) parts; sulphuric acid, four (4) parts; aqua ammonia, five (5) parts, and to these, thoroughly mixed, add urine, ten (10) parts, and water, two hundred and sixty (260) parts. This completes the solution.

The articles to be plated and the tin are suspended in the bath, and the battery applied in the usual manner for electroplating with other metals, save that the battery power should be about forty (40) per cent. less than the usual power for depositing silver.

The proportion may be somewhat varied from that mentioned, but it is found the proportions named give good results.

Iron or softer metals, as britannia, are thus plated with tin without previous preparation.

I claim—

The herein-described solution for electroplating, consisting of muriate of tin, sulphate of ammonia, sulphuric acid, aqua ammonia, urine, and water, in the proportions substantially as specified.

HENRY G. COYLE.

Witnesses:

GEORGE A. FAY,

FRANK S. FAY.