

United States Patent Office

ALEXANDER LAWE, OF KINGSTON, CANADA

Letters Patent No. 109,633, dated November 29, 1870.

IMPROVEMENT IN ELECTRO-PLATING IRON AND STEEL WITH SILVER.

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

To all whom it may concern:

Be it known that I, ALEXANDER LAWE, of the city of Kingston, in the county of Frontenac, in the province of Ontario, Canada, gentleman, have discovered new and useful Improvements in the Art of "Electro-plating Iron or Steel with Silver;" and I do hereby declare that the following is a full, clear, and exact description of the manipulation and operation of the same.

My improvement consists in silver-plating iron by first depositing thereon a thin covering of gold.

It is a well-known fact that it is difficult to cover iron directly with silver. The common method in use of first dipping the iron in a copper solution is found defective in practice, because no real union is formed between the metals, the metals having simply a chemical affinity for each other.

By my process, which will now be described, a perfect union is formed between the two substances.

I employ a voltaic battery composed of zinc and copper, using a bath of sulphate of copper. When the battery is ready the gold solution is prepared in the following manner:

Take one ounce of cyanide of potassium and dissolve it in two pints of soft water; then, having fastened a piece of gold to the positive pole of the battery and a piece of copper to the negative pole, immerse both poles, with the metals attached, in the solution of cyanide of potassium.

In the course of a short space of time the piece of copper attached to the negative pole of the battery will be found coated with gold. The solution is now ready for use.

Now take the object, whether iron or steel, which you wish to plate, and having first cleansed it with diluted muriatic acid, attach it to the pole to which the piece of copper was previously attached, *i. e.*, the negative.

Then pour out the bath of sulphate of copper, and substitute in its place a bath of salt and water.

The object can now be removed, and plated with silver in the ordinary way.

Having thus fully described my invention,

What I claim, and desire to secure by Letters Patent, is—

The process described of plating iron with silver by first plating it with gold, with the solution of cyanide of potassium and battery, as described, and covering it with silver in the ordinary manner, as and for the purpose set forth.

9th September, A. D. 1870.

Witnesses: ALEXANDER LAWE.

S. M. HENLINE,

T. I. CARTWRIGHT.