United States Patent Office.

HIRAM TUCKER, OF NEWTON, MASSACHUSETTS.

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IMPROVEMENT IN PLATING METALS.

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, HIRAM TUCKER, of Newton, in the county of Middlesex, and State of Massachusetts, have invented an Improvement in Plating Metals by electro-deposit; and I do hereby declare that the following is a description of my invention, sufficient to enable those skilled in the art to practise it.

Where metals and alloys liable to oxidation and corrosion, such as iron, copper, brass, &c., are coated with gold by electro-deposit, it occurs, that unless the deposited coating is made so thick as to be very expensive, oxidation of the inner metal takes place sooner or later, according to the circumstances of the exposure of the electro-plated metal, and throws off or otherwise destroys the electro-plating of gold to a greater or less extent.

The object of my invention is to make permanent and durable thin and comparatively inexpensive electro-plating of gold over bodies of oxidizable metals and alloys; and

My invention consists in first coating bodies or surfaces of oxidizable metals or alloys with an electro-deposit of nickel, and then in electro-plating such deposit in whole or in part with gold.

Electro deposited nickel is quite hard, and, if deposited on smooth, hard metal, like finished iron or steel, has a surface of considerable smoothness and lustre, which may be increased by polishing, so that an electro-deposit of gold on such polished surface has a high degree of smooth finish and lustre.

The metal base is entirely protected from oxidation by the nickel, which does not itself oxidize by any ordinary exposure, so that the gold deposited thereon remains very permanently on the nickel, even though the deposit is very thin. Even if the gold is removed, by wear or polishing, to some extent, its absence will not be readily detected, except upon very close examination, because of the lustre of the surface of the nickel, and of the reflection thereon of the color of the adjacent coating of gold.

When a portion or portions only of the deposited nickel are to be coated by electro-deposited gold, I proceed by covering the deposited nickel preferably with varnish, which I harden by exposure to heat, and then grind off the hard varnish covering the surfaces to be electro-gilded by the action of an abrasive polisher, preferably acting by rotation. It is, however, nearly impossible to so remove the varnish, or any hard equivalent for the varnish, without removing the deposited nickel beneath, and exposing the metal base; and, when the deposited nickel is so removed, I redeposit, on the exposed metal surfaces, a new coat of nickel, on which I then deposit gold.

When the gold has been deposited, I remove the hardened varnish or its equivalent, which has acted as a "resist," to prevent deposit of gold on the parts covered by the varnish, by treating the article in a bath of any suitable solvent of the "resist."

For the "resist," I preferably make use of a varnish or equivalent matter, having, in its composition, oil, which makes the "resist" tenacious, and decreases the risk of accidental removal under manipulation, and by the action of the solutions used in the electro-deposit process.

1. I claim the improvement in coating metals with metals, substantially as described.

2. Also, articles of manufacture in which metals are coated with metals, substantially as described.

3. Also, the process consisting in covering a metal base, surfaced by electro-deposit, with a fluid or semi-fluid coating, afterward hardening said coating, and then removing portions of such coating, when hardened, and then coating the surfaces so exposed, by electro-deposit.

HIRAM TUCKER.

Witnesses:
J. B. CROSBY,
S. B KIDDER.