

UNITED STATES PATENT OFFICE.

NAPOLEON W. WILLIAMES, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR
TO HIMSELF AND WM. W. KEYS, OF SAME PLACE.

IMPROVEMENT IN PROCESSES FOR BRONZING METALS.

Specification forming part of Letters Patent No. **211,610**, dated January 21, 1879; application filed
September 2, 1878.

To all whom it may concern:

Be it known that I, NAPOLEON W. WILLIAMES, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and Improved Process of Bronzing Metals; and I do hereby declare that the following is a full, clear, and exact description of the same.

The invention relates to an improvement in bronzing metals, more particularly for iron railings for yards, cemeteries, or verandas, crest-work for houses, awning-frames, hitching-posts, &c.; and it consists in first coating the object with paraffine-varnish to close up the holes, make a smooth surface, and stop oxidation, then covering the varnished surface with plumbago, to render it conductive, and finally depositing upon said surface of plumbago a coating of the required metal by galvanic action in a bath as hereinafter more fully described.

In carrying out my invention, the metal object to be treated requires no pickling or cleansing to remove oxide and dirt, as is necessary by other methods, but is coated at once with paraffine-varnish. This, when dried in, completely incases the iron, so as to prevent further oxidation, and also fills up the little holes and cracks, and makes a smooth, uniform surface for the succeeding coat of plumbago and electroplate of bronzing metal. As the surface of the metal is insulated by the paraffine-varnish, plumbago is next rubbed or brushed over the surface of the paraffine-varnish until a new continuous conducting-surface is obtained. This conducting-surface being applied directly to the paraffine-varnish, a close mechanical adherence is maintained between the two, which holds the subsequent bronze coating firmly to the object.

In applying the bronze coating, the object provided with its conducting-coating of plumbago is dipped into any of the ordinary acid solutions of the metals, (sulphate of copper or other salts suitable for producing such deposits,) and the metal deposited by a battery or dynamic machine, in the usual way.

I am aware of the fact that objects in iron have first been galvanized or coated with zinc and then electroplated; but this process is expensive, for the reason that the iron has to be pickled and cleaned before galvanizing, and

in depositing the metallic coating upon the zinc surface sweet or alkaline solutions have to be employed, which are much more expensive than the acid solutions.

By my process the pickling or cleaning of the iron is dispensed with, and the coating of plumbago enables me to employ the cheap acid solutions (chlorides or sulphates) for depositing the coating metal. The previous cleansing of the object with acid also preparatory to coating them with metals (whether immediately galvanized or not) causes little germs of rust to be deposited in the pores of the iron, which, in subsequent treatment, swell up beneath the outer coat and "spit" through, producing an unsightly surface. This, it will be seen, is obviated by my process, no acid being allowed to touch the iron, while the paraffine coating hermetically seals any openings which may exist.

In further defining my invention, I would state that I am aware that in the processes of electro-metallurgy plumbago has been rubbed upon non-conducting molds to render the surface of the same conductive, and that it has been suggested that varnish be applied to the mold to make the plumbago adhere. I therefore only claim the process herein described when applied to metallic objects which are already good conductors, but which are rendered non-conductive on the surface by the coat of paraffine-varnish, which I employ to economically stop oxidation and give a smooth surface for subsequent plating without pickling and galvanizing.

Having thus described my invention, what I claim as new is—

The process herein described of covering and plating metallic objects whose surfaces are rough, which consists in coating the rough surface of the object with paraffine-varnish, then applying to the latter a coating of plumbago, and finally depositing upon this conducting-surface an electro-deposit of the bronzing or finishing metal, substantially as described.

The above specification of my invention signed by me this 29th day of August, 1878.

N. W. WILLIAMES.

Witnesses:

SOLON C. KEMON,
EDWD. W. BYRN.