

# UNITED STATES PATENT OFFICE

AARON B. BROWN, OF WORCESTER, MASSACHUSETTS.

## IMPROVEMENT IN COMPOSITIONS FOR CLEANSING THE SURFACES OF METALS.

Specification forming part of Letters Patent No. 214,360, dated April 15, 1879; application filed February 27, 1879.

### *To all whom it may concern:*

Be it known that I, AARON B. BROWN, of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Tinning and Galvanizing Wire, of which the following is a specification.

My invention is designed to be used in galvanizing wire, and tinning wire, and covering wire formed from all baser metals with metals of a more costly kind; and it consists in substituting, in the place of the acids now used to cleanse the body to be covered, another chemical compound of an alkaline phosphatic character, to be followed by treatment or coating with caustic alkali, which acts upon the phosphatic coating as a cleanser, and operates, in conjunction with the said phosphatic coating, as a flux in the subsequent treatment of the metal, and causes the superimposed metallic coating to have a smooth and bright appearance.

In the methods now practiced in covering one metal with another of a more costly and valuable kind, it has been found necessary to use some kind of acid with sufficient dissolving qualities and power to cut and remove the foreign matter or substances which may have accumulated upon such body, the acid and salts formed being subsequently removed before coating the article.

I have discovered that by subjecting the metal to the action of alkaline phosphates, followed by treatment with caustic alkali, the wire will be prepared for the reception of the metal with which it is to be coated or plated, and a compound formed thereon which will act as a flux in the subsequent operations, which not only obviates the subsequent treatment for the removal of the compound, but enables a much better union of the two metals, and a smoother and brighter appearance of the metallic coating to be obtained.

The methods of applying these chemical compounds in the processes above named is to dissolve the solid compounds in water, and then first apply the alkaline phosphatic solu-

tion to the surface of the said wire; and after the wire has been dried or drawn through a die, I then apply a coating of a solution of a caustic alkali as a flux, in the same way that acids have hitherto been used in galvanizing and tinning wire. This treatment is followed by the application of the metal coating by usual methods.

It will be understood that the drawing of the wire through the die does not remove the alkaline phosphate solution first applied.

The effect of these alkaline phosphates and caustic alkalies upon the metal after it is covered is of a non-corroding tendency, and thereby obviates the now universal tendency of all plated and galvanized bodies to corrode beneath the plate, caused by the action of the acid heretofore used in cleansing upon the body covered, especially when the body covered is iron or steel; and another effect is to give the metallic coating a smooth and very bright character.

The solution of caustic alkali may be of any suitable strength—say, from one to three pounds of caustic alkali to one gallon of water—according to the strength of the caustic alkali.

I do not claim, broadly, the application of a solution of a caustic alkali to wire as a cleanser preparatory to drawing, as that method of preparing wire is old and well known.

What I claim is—

The method of preparing wire for coating with other metals, by coating the wire first with a solution of an alkaline phosphate, and superimposing upon the coating another of a caustic alkali, substantially as described, whereby a compound is formed on the wire which prepares it for intimately and smoothly blending with a metallic coating.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of the subscribing witnesses.

AARON B. BROWN.

Witnesses:

JAMES L. NORRIS,

JAS. A. RUTHERFORD.