

UNITED STATES PATENT OFFICE.

JEAN B. A. DODÉ, OF REIMS, FRANCE.

IMPROVEMENT IN COATING METALS WITH PLATINUM.

Specification forming part of Letters Patent No. **219,807**, dated September 23, 1879; application filed November 30, 1878; patented in England, January 19, 1877.

To all whom it may concern:

Be it known that I, JEAN BAPTISTE ALEX-ANDRE DODÉ, of Reims, France, have invented Improvements in Coating Metals with Platinum; and I do hereby declare that the following is a full, clear, and exact description of the same.

Many attempts have been made to give metals a coating capable of preserving them from oxidation when exposed to the air, to fire, or to the action of gaseous acids; but the processes at present in use give but imperfect results. Plating with copper, nickel, silver, or tin, by immersion or by electro-deposition, is insufficient to prevent oxidation, which goes on notwithstanding, although relatively high prices are charged for the articles so plated. The articles to which I more particularly refer are those made of cast-iron.

After having examined and considered all methods heretofore proposed, I have directed my attention to the employment of platinum in a sufficiently-divided state to admit of its being used as a preventive of oxidation, and that at a cost considerably lower than that of the methods now in use. To this end I have, after many experiments, devised the following process:

First operation.—I make a mixture of ten kilograms of borate of lead and two kilograms of oxide of copper, in a grinding-mill, by adding enough spirits of turpentine to render the product sufficiently fluid to be applied to the articles to be coated. When I deem the mixture complete, I place it in a cast-iron kettle, and add to it fifty grams of neat's-foot or other suitable oil. The kettle is exposed to a gentle heat, in order to render the mixture very fluid and avoid the necessity of adding a large quantity of spirits of turpentine.

When the composition is lukewarm it may be used in the following manner: The article or piece of metal to be platinized, if of cast-iron, should first be cleaned of any sand from the mold which may remain in the cavities of the article; but if of wrought or rolled iron it is simply necessary to remove the dust or other foreign matter adhering thereto. It is unnecessary to disturb any portions of the surface that may be already oxidized, as this in no way interferes with the operation. A horse-

hair brush is then dipped into spirits of turpentine, and the entire surface of the article thoroughly brushed over therewith, care being taken to leave no parts untouched, and the article is then allowed to stand until the turpentine has partly dried, after which the mixture, prepared as above described, and which must be kept lukewarm, is applied. For this purpose, a large and sufficiently hard brush is dipped into the composition, and the latter is applied by brushing and "dabbing" the surface of the article therewith. Care should be taken to lay on the composition as evenly as possible, and the coat should be very thin, as it is only intended to prepare the metal to which it is applied to receive the platiniferous coating, hereinafter described, and to prevent, more especially in the case of cast-iron, the absorption of too large a quantity of platinum. A thin coat is also advisable in the case of a molded form, so as to avoid filling up the cavities of the design and destroying its sharpness. This done, the article is placed in a drying-oven or muffle, built of sheet-iron, cast-iron, or brick-work, and of a construction to suit the article to be platinized. This oven or muffle is highly heated, in order to fix the composition, which by the action of the fire becomes a fine dark-green and very lustrous. The article is then allowed to cool, when it is ready to be platinized by the following process:

Second operation.—I mix intimately ten kilograms of borate of lead with five kilograms of German litharge by grinding them as fine as possible in a mill, as in the previous case, having care to thoroughly moisten the mixture with a certain quantity of oil of lavender or other essential oil. I then collect the product in an enameled cast-iron pot, and let it stand for some hours. During this time I prepare in another enameled iron pot the following mixture, viz: Five kilograms of dry chloride of platinum, upon which I pour two kilograms of common ether. The ether dissolves the chloride of platinum, and as soon as this is effected I pour in slowly (having care to stir the mixture well with an enameled iron spatula while doing so) fifteen kilograms of oil of lavender. When this mixture is complete I cover the kettle, and let it stand for thirty minutes. I then take the kettle into the open air and re-

move the cover, so as to allow the ether to evaporate, the oil of lavender alone remaining with the platinum held in suspension therein. I slowly pour the platiniferous product obtained on the mixture of borate of lead and litharge, stirring briskly the while. When completely mixed I add twenty kilograms of amylic alcohol, and when the whole is mixed together the platiniferous composition is ready for use.

To platinize the article coated or prepared as described under the first head, it is dipped into the platiniferous composition to cover it with a very thin coating. The composition is allowed to drain off, and when it has become sticky, if there are any deep cavities, as in the case of a molded form, a small brush or pencil should be used to remove the large drops, which would, if allowed to remain, mar the appearance of the article. The article is then placed in a similar oven or muffle to that above mentioned, care being taken not to raise the temperature to so high a degree. The article is then left to cool, and when removed presents the appearance of fine silver-white.

By applying this platiniferous composition

to articles of enameled cast-iron, either by dipping or by means of a brush, similar effects may be obtained.

I claim—

1. The process herein described of platinizing metal, whether enameled or not, by the employment of a mixture in which the platinum is held in suspension in an essential oil, substantially as specified.

2. The process, as herein described, for coating metals with platinum, and which consists, first, in brushing over the article of metal with spirits of turpentine; secondly, in coating the article with a layer composed of a mixture of borate of lead and oxide of copper, and drying same in an oven; and, thirdly, in dipping the article thus prepared in a composition of borate of lead, German litharge, platinum-chloride, ether, oil of lavender, and amylic alcohol, and afterward submitting the object so coated to the action of heat, all as specified.

JEAN BAPTISTE ALEXANDRE DODÉ.

Witnesses:

GEORGES KRAUS,

EUGÈNE HÉBERT.