UNITED STATES PATENT OFFICE.

EDWARD I. BRADDOCK, OF MEDFORD, MASSACHUSETTS.

PROCESS OF COATING IRON WITH TIN OR ITS ALLOYS OR OTHER METALS.

SPECIFICATION forming part of Letters Patent No. 371,248, dated October 11, 1887.

Application filed September 7, 1886. Serial No. 212,939. (No specimens.)

To all whom it may concern:

Be it known that I, EDWARD I. BRADDOCK, of Medford, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Processes of Coating Iron with Iron or with other Metals, of which the following is a clear, full, and exact description.

As well known, in the coating of cast or malleable iron with another and different metal or metals—such as tin or its alloys, zinc or its alloys—it is difficult to secure a perfect and uniform adhesion between the metal, iron, and the other metal or metals with which it is coated, or, in other words, a perfect and uniform deposition of the coating metal upon the surface of the iron; and it is the object of this invention to remedy this difficulty.

To that end this invention consists in first preparing and coating the iron with iron, which is done by an electro-deposition thereof, and in then coating the so-prepared iron with another and different metal or metals fusible at low degrees of heat as compared with iron—such as tin or its alloys, zinc or its alloys, either separate or in any desired suitable combinations—by dipping it in a bath of such metal or metals in a molten state.

In carrying out this invention the iron which is to be used for preparing the iron surface previous to coating it with another and different metal or metals—such as above stated—is in a state of solution, composed of equal parts of the sulphate of iron and of the sulphate of ammonia, or their respective equivalents, and of water in sufficient quantity for the solution, and in this state it is then electro-deposited upon the iron by the ordinary and well-known process, or otherwise, of the electro-deposition of metal upon metal, the whole thereby preparing the iron with a film or layer of iron which is practically pure and free of impurities. It is preferable and desirable to have this deposit of a white silvery color or appearance, and this is secured with a comparatively weak current of electricity, and increasing the strength of the current deepens or darkens the color of the deposit, which, if the current is sufficiently strong, becomes black. The anode or plate used may be either of iron or steel. If iron, then the deposit secured is soft, and if steel, then the deposit secured is hard, resembling steel.

The articles which are being coated should remain under the action of the electric current for about an hour. The so-prepared iron is then to be coated with the other and different metal or metals desired or required, as above stated—for instance, tin or its alloys or zinc or its alloys—and this is accomplished by dipping the so-prepared iron in a bath of the metal or metals with which it is to be coated in a molten condition.

I am aware that iron has been coated with copper, zinc, and nickel by electro-deposition, and that the so-coated iron has been coated with another metal by its immersion in that metal in molten state; and I am also aware that iron has been coated with iron by electro-deposition, and that the so-iron-coated iron has been coated with gold, silver, platinum, or copper by electro-deposition; but I am not aware that so-iron-coated iron has been coated with a metal—such as zinc, lead, or tin—fusible at low degrees of heat, as compared with iron in a molten condition, by immersing the iron therein.

I do not claim, broadly, coating iron coated with iron by electro deposition with another metal, as I am aware that it is not new; nor do I claim it to be new to directly coat iron by electro-deposition with another metal, or by the immersion of the iron in a solution of the metal or in the molten metal; but—

What I do claim as my invention, and desire to secure by Letters Patent, is—

In the coating of iron with zinc, tin, lead, or other metal and their alloys fusible at low degrees of heat as compared with the iron, first coating the iron with iron by electro-deposition, and then coating the so iron-coated iron with zinc or other metal by immersing the iron in said metal in a molten condition, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

E. I. BRADDOCK.

Witnesses:
ALBERT W. BROWN,
FRANCES M. BROWN.