UNITED STATES PATENT OFFICE.

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METHOD OF PLATING METAL CASTINGS.

1,276,978. Specification of Letters Patent. Patented Aug. 27, 1918.

No Drawing. Continuation of application Serial No. 178,728, filed July 5, 1917. This application filed December 6, 1917. Serial No. 205,779.

To all whom it may concern:

Be it known that I, ROBERT J. SHOEMAKER, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Methods of Plating Metal Castings, of which the following is a specification.

My invention relates to the operation of plating castings, particularly iron castings, with lead, lead alloys, or other metals; and the object of the invention is to provide a method of treating the castings to prepare them for the plating operation so that the plating metal will properly adhere to the castings. It has not been feasible, so far as I am aware, to plate iron castings, such, for example, as pipe unions, elbows or other fittings, with lead or a lead alloy or other similar plating metal, so that the plating metal will adhere to the casting in a permanent and satisfactory manner; or at least it has not been possible to successfully plate such articles. The reason for the difficulty is to be found in the fact that iron castings (the same is true of steel and malleable iron castings) contain foreign matters, such as silicon and graphite, and also traces, possibly, of sand from the molder's flask. The presence of these substances in the surface of the casting hinders the adhesion of the plating metal thereto.

In accordance with my invention the castings before plating are submerged in a bath of molten caustic alkali. I employ preferably caustic soda to which a small amount of borax may be added. The caustic alkali acts upon the foreign substances, silicon and graphite, for example, in the surfaces of the castings, dissolving and chemically uniting with said substances, with the result that when the castings are dipped into the plating metal the metal will adhere smoothly and permanently to the surfaces of the castings.

If the castings are to be plated with lead or lead alloy, I preferably follow substantially the method disclosed in the patent to McClintock and Shoemaker, No. 1,195,376, modified by the improved procedure set forth in my co-pending application filed July 5, 1917, Serial No. 178,728, of which the present application is a continuation. Preferably the metal articles, after being removed from the molten alkali, are first washed with water and then pickled in an acid, muriatic acid, for example. After this they are introduced into a body of the molten plating metal, lead, for example, by which term I intend to include alloys of lead, through a supernatant flux. The flux I prefer to use for lead plating operations is the one disclosed in my co-pending application above referred to containing chlorid of zinc and common salt to which may be added a small percentage of tin chlorid. I use preferably a flux consisting of eighty per cent. of zinc chlorid, fifteen per cent. of common salt, and five per cent. of tin chlorid.

I claim:

1. Improvement in the method of plating iron or steel castings which consists in bringing the surface to be plated into contact with a caustic alkali heated to a molten state and thereafter plating the same with a plating metal.

2. Improvement in the method of plating iron or steel castings which consists in bringing the surface to be plated into contact with a caustic alkali heated to a molten state, washing the surface with water, treating it with an acid and thereafter plating the same with a plating metal.

3. Improvement in the method of plating iron or steel castings which consists in bringing the surface to be plated into contact with an alkali heated to a molten state and afterward into contact with the plating metal in a molten state.

4. Improvement in the method of plating iron or steel castings which consists in bringing the surface to be plated into contact with an alkali heated to a molten state, washing it, treating it with an acid, and then bringing it into contact with the plating metal in a molten state.

5. Improvement in the method of lead plating iron or steel castings which consists in bringing the surface to be plated into contact with an alkali in a molten state and afterward into contact with molten lead.

6. Improvement in the method of lead plating iron or steel castings which consists in bringing the surface to be plated into contact with an alkali in a molten state, washing the surface with water, then treating it with an acid and afterward bringing it into contact with molten lead.

7. Improvement in the method of plating metal articles which consists in immersing the same in a bath of alkali heated to red heat and thereafter introducing the article so treated into a body of molten plating metal through a supernatant flux.

8. Improvement in the method of plating iron or steel castings which consists in immersing the same in a bath of alkali heated to red heat, washing them, pickling the castings in an acid and then introducing them into a body of plating metal in a molten state through a supernatant flux.

9. Improvement in the method of plating metal articles which consists in immersing the same in a bath of caustic soda and borax heated to red heat, and thereafter introducing them into a body of molten plating metal through a supernatant flux.

ROBERT JAY SHOEMAKER.

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