UNITED STATES PATENT OFFICE.

EDWARD M. MANIGLE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO GEORGE H. HAZELTON, OF SAME PLACE.

IMPROVEMENT IN THE MANUFACTURE OF WASH-BOILERS, KETTLES, AND OTHER VESSELS MADE OF SHEET METAL.

Specification forming part of Letters Patent No. **59,722,** dated November 13, 1866.

To all whom it may concern:

Be it known that I, EDWARD M. MANIGLE, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have made a new and useful Improvement in the Manufacture of Wash-Boilers, Kettles, and other similar Vessels made of Sheet Metal; and I hereby declare the following to be a full and exact description of the same.

Heretofore it has been common to manufacture wash-boilers, kettles, and other similar vessels with a bottom of sheet-copper and sides of tin-plate or tinned iron; but it has always been difficult to keep a sound joint between the copper bottom and the tin-plate sides. The galvanic action which is induced by the joining of such dissimilar metals as copper and iron soon corrodes and destroys the joint. To avoid this difficulty, what are known as "metallic bottoms" are now frequently used instead of copper bottoms. But as some persons still prefer copper bottoms in wash-boilers, stove-kettles, and other similar vessels, the object of this invention is to remedy the defect above mentioned; and the invention consists in coating the plate used for such bottoms with tin or some alloy or alloys of tin, so as to secure a firm durable joint free from galvanic action. The plates are also thereby rendered more durable and less liable to be corroded by either acids or alkalies.

The following description will enable others skilled in the art to which my invention relates to make and use it.

Take sheet-copper of the size and thickness suitable for the vessel to be made, and give it, by means of dies, rolls, or other suitable method, the form desired. This plate is then coated in any of the modes known to metal-platers with tin, or any alloy of tin, and lead, or with an alloy of tin, lead, and antimony; or the plate may be first coated and then fashioned into the proper shape. If the plate or bottom is coated entirely on both sides it will resemble the metallic bottoms above mentioned, but will be stronger in proportion as copper is tougher than iron. When joined with ordinary tinned iron, or with iron coated with alloys of tin, with lead, and antimony, the copper and iron will be kept apart by the homogeneous coatings, and all galvanic action thereby prevented.

It is not necessary, however, to coat the entire surface of the copper plate or bottom. Persons accustomed to the use of copper bottoms wish to see that they have a real copper bottom, and therefore the coating may be omitted from all that part of the plate which forms the outside of the boiler or vessel except a border or flange next the joint. Thus the projecting part of the ordinary wash-boiler or stove-kettle which fits the opening upon the top of the stove may remain without any coating, so as to show the copper, while the whole of the other side of the plate is coated, and also the flange or border outside and next the joint. Boilers and kettles made of such partially-coated bottom plates will resemble the ordinary copper-bottomed vessels now in use.

I have described my invention as applied to sheet-copper bottoms; but it is also equally applicable where different parts of the same vessel are to be made of different metals of such character as to produce local galvanic action by being joined. By coating the part next the joint with tin, or with a non-corrosive alloy of tin and lead, or of tin, lead, and antimony, the joint will be durable.

I have mentioned sheet-copper for the reason that it is the material most used; but the same treatment is applicable to sheet-brass or plates of other similar alloys of copper, so that such plates or sheets may be joined to tinned or coated iron, or other metal which, without this homogeneous coating, would, with copper or its alloys, give rise to galvanic action.

There are a large number of alloys of tin, lead, and antimony which may be used in carrying out my invention.

For preparing bottoms for wash-boilers and similar vessels, an alloy composed of fifty-four parts of tin, forty-four parts of lead, and two parts of antimony has been found to answer; or, omitting the antimony, the tin and lead may combine in the proportion of fifty-five parts of the former to forty-five of the latter; but I do not limit myself to these proportions, nor to the particular alloys hereinabove mentioned.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

The manufacture and use of bottoms for wash-boilers and other similar vessels made of sheet-copper, sheet-brass, or of other equivalent sheet metal, and coated substantially in the manner and for the purpose herein set forth and described.

EDWARD M. MANIGLE.

Witnesses:
E. H. HAZELTON,
JAMES MA WHIRTER.