UNITED STATES PATENT OFFICE.

SAMUEL A. PETO, OF LONDON, ENGLAND.

IMPROVEMENT IN THE MANUFACTURE OF PLUMBAGO CRUCIBLES AND OTHER VESSELS IN PLUMBAGO SUITABLE FOR CHEMICAL AND METALLURGICAL PURPOSES.

Specification forming part of Letters Patent No. **217,295**, dated July 8, 1879; application filed October 26, 1878.

To all whom it may concern:

Be it known that I, SAMUEL ARTHUR PETO, of London, England, have invented certain Improvements in the Manufacture of Plumbago Crucibles and other Vessels in Plumbago Suitable for Chemical and Metallurgical Purposes, of which the following is a specification.

Plumbago crucibles as hitherto manufactured require to be annealed or "got up" before they can be used, in consequence of the porous nature of the material of which they are composed, which allows them to absorb a quantity of moisture from the atmosphere, which, if not expelled by the annealing process, causes them to "fly," "blow," "bump," or burst when first put in the furnace, thereby causing the loss of the crucible, and, in some cases, of the metal. Further, if the annealing process be not skillfully and carefully performed, the crucible is liable to injury during the annealing process.

Now, the object of my invention is to dispense with the ordinary annealing process and to improve the crucible by affording protection to the plumbago and preventing the crucible from absorbing moisture.

My improvements consist in coating or covering plumbago crucibles when manufactured in the ordinary manner, but preferably before they are baked, with a compound such as is hereinafter described. The crucible covered with the compound is then burned, and at the proper temperature is "salted," and thereupon the said compound will form with the salt a glaze over the crucible impervious to moisture, and which will allow of the crucible being placed in a white fire without previously being annealed in the ordinary way.

The compound I find it advantageous to employ in order to form the glaze or impervious coating is the following, videlicet: about twelve parts, by weight, of ball clay, two parts of Cornish stone, four parts of burnt clay, one and a half parts of red clay, ground and mixed with water, so as to form a creamy paste, one-half part of manganese or its equivalent being added.

The above proportions may be varied without materially affecting the required result. In all cases, however, the proportions must be so arranged that the shrinkage of the covering shall correspond with the shrinkage of the crucible.

I sometimes dispense with the salt, in which case the compound must be so composed that it will vitrify in the kiln; or in lieu of the salt I use a suitable glaze of materials similar to those used by potters.

In some cases it may be desirable, for the sake of economy, to omit the preliminary coating of the crucible, and cover it either before or after biscuiting with any suitable glaze or impervious coating; but I do not recommend this method.

My improvements are applicable to the manufacture of other plumbago vessels than crucibles, such as vessels for the manufacture and treatment of acids for which glazed plumbago would be suitable from its power of resisting great variations of temperature.

The improvements are also applicable to the covers, stands, and stirrers of plumbago crucibles.

Having thus described the nature of my said invention and the manner of performing the same, what I claim is—

1. A plumbago crucible or other vessel of plumbago, rendered damp-proof by a suitable impervious coating, in the manner and for the purposes hereinbefore described.

2. The methods hereinbefore described of rendering plumbago crucibles and other vessels of plumbago damp-proof, the same consisting in first applying to them the impervious coating or covering, as stated, and then burning such coated vessels, and either salting or glazing the same.

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Witnesses:

G. F. REDFERN,

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