UNITED STATES PATENT OFFICE.

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OXIDATION OF TIN.

1,362,237. Specification of Letters Patent. Patented Dec. 14, 1920.

No Drawing. Application filed August 9, 1920. Serial No. 402,357.

To all whom it may concern:

Be it known that I, DUDLEY DE ROS, a subject of the King of Great Britain, residing at Black Duck Wharf, Greenhithe, in the county of Kent, England, have invented certain new and useful Improvements in and Relating to the Oxidation of Tin, of which the following is a specification.

This invention refers to improvements in and relating to the oxidation of tin and has for its object to obtain stannic oxid in an economical, simple and expeditious manner.

The process to which the invention relates is that in which the tin is heated to a temperature at which stannic oxid is formed, air, oxygen or other suitable gas or gaseous mixture, preferably heated being then blown into or on to the molten tin, with the result that exothermic action is set up in the molten mass.

According to this invention, the further heating for the continuance of the process is performed by the exothermic action alone, further additions of metal being made from time to time to maintain a more or less uniform level and so that it is possible to conduct the process in this continuous and self-contained manner.

A suitable method of carrying the invention into effect consists in placing the metal in an appropriate deep vessel, such as a crucible, pot or bath, made of or lined with refractory material and a flame from an oil burner is caused to play upon the crucible or on the surface of the metal contained therein, until the metal is brought to a temperature at which stannic oxid is formed, say 1000° C. The flame is then shut off and air, suitably pre-heated to allow temperature by the waste gases from the oil burner and thereafter by the oxid given off, is blown into or on to the molten mass, but, preferably, below the surface thereof. Exothermic action then commences, the temperature of the molten metal is considerably raised and dense fumes are given off, containing or consisting of stannic oxid. These fumes are then passed into condensers and the stannic oxid is collected in known manner.

Additional metal preferably heated by the surplus or waste heat from the exothermic reaction is added from time to time in order to maintain a more or less uniform level of the molten metal.

The reason for heating the air supplied to produce the exothermic action and for heating the metal to be added resides in the fact that any undue lowering of the temperature of the molten metal tends to cause the formation of stannous oxid in lieu of stannic oxid or to reduce the output.

Instead of using liquid fuel, it will be understood that any other appropriate means of heating may be employed such as solid or gaseous fuel, or an electric furnace, consisting, for example, of an electric resistance in or outside of the crucible or bath, for containing the molten metal or submerged in the molten metal itself.

I claim:—

1. The method of making tin oxid, which comprises heating a body of tin to oxidizing temperature, then discontinuing the heating and supplying a gaseous oxidant thereto, thereafter continuing the oxidation under the exothermic reaction conditions so that volatilized stannic oxid is given off, and finally condensing said oxid.

2. The method of making tin oxid, which comprises heating a body of tin to oxidizing temperature sufficient to melt the tin, then discontinuing the heating and supplying a gaseous oxidant into the body of the molten tin, thereafter continuing the oxidation under the exothermic reaction conditions so that volatilized stannic oxid is given off, and finally passing said volatilized oxid to condensers.

3. The method of making tin oxid, which comprises heating a body of tin to oxidizing temperature, then discontinuing the heating and supplying a gaseous oxidant thereto, thereafter continuing the oxidation under the exothermic reaction conditions so that volatilized stannic oxid is given off in the form of fume, condensing said volatilized oxid and preheating the oxidant by the waste gases of initial heating and by the fume emanating from the molten tin.

4. The method of making tin oxid, which comprises heating a body of tin to oxidizing temperature, then discontinuing the heating and supplying a gaseous oxidant thereto, thereafter continuing the oxidation under the exothermic reaction conditions so that volatilized stannic oxid is given off, condensing said volatilized oxid and preheating subsequent additions of metal by the waste gases and fume.

DUDLEY DE ROS.