

UNITED STATES PATENT OFFICE

TURE ROBERT HAGLUND, OF STOCKHOLM, SWEDEN, ASSIGNOR TO INTERNATIONAL PATENT CORPORATION, A CORPORATION OF MARYLAND

PROCESS FOR PRODUCING ALUMINUM AND ALUMINUM ALLOYS

No Drawing. Application filed October 19, 1925, Serial No. 83,547, and in Sweden November 15, 1924.

This invention has for its object a process for producing aluminum and aluminum alloys by electrolysis of a molten electrolyte containing aluminum oxide, and refers to such processes in which a raw material containing Al_2O_3 in a crystallized or crystalline state is supplied to the electrolytic bath. In such processes a hard crust of solidified material is formed on the top of the electrolytic bath on account of the high specific gravity of such oxide.

According to the present invention the extent of the said crust formation is reduced by using amorphous aluminum oxide together with the crystallized or crystalline aluminum oxide. The percentage of amorphous aluminum oxide may vary within very wide limits. A good result is for instance reached by keeping the amorphous oxide 10-40% of the total quantity of aluminum oxide.

The two kinds of oxide may either be mixed before the charging, or they may be conveyed separately to the electrolytic bath. In the latter case the amorphous oxide should suitably be supplied immediately after the crystallized or crystalline oxide, in order to form a layer of amorphous oxide covering the latter.

With crystallized or crystalline aluminum oxide I mean an aluminum oxide of high specific gravity, and in the first place oxides formed by crystallization out of a melt, such as corundum, produced for instance by the process described in my co-pending U. S. patent application Ser. 579,964, of August 5, 1922.

With amorphous aluminum oxide I mean an oxide with a lower specific gravity, for instance such as received by calcination of hydrate or salts of aluminum.

I claim:

1. In a process of producing metallic aluminum by electrolysis of a molten bath containing aluminum oxide, the method of adding aluminum oxide to the bath, comprising first adding crystallized aluminum oxide and thereupon adding amorphous aluminum oxide as a layer covering the crystallized oxide.

2. In a process of producing metallic aluminum by electrolysis of a molten bath containing aluminum oxide, the step of adding to the bath a quantity of aluminum oxide comprising a mixture of crystallized aluminum oxide and amorphous aluminum oxide, the quantity of added amorphous aluminum oxide amounting to about 10-40% of the total weight of the added aluminum oxide.

3. In a process of producing metallic aluminum by electrolysis of a molten bath containing aluminum oxide, the step of adding to the bath a quantity of aluminum oxide comprising a mixture of fine grained crystallized aluminum oxide and amorphous aluminum oxide, the quantity of said crystallized aluminum oxide being in excess of the quantity of added amorphous aluminum oxide.

In witness whereof I have hereunto set my hand.

TURE ROBERT HAGLUND.