Dec. 26, 1933. P. CAMESCASSE 1,941,387

ANODE FOR FUSED BATH ELECTROLYSIS

Filed May 28, 1930

Fig. 1

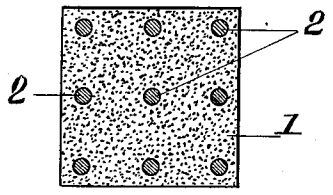
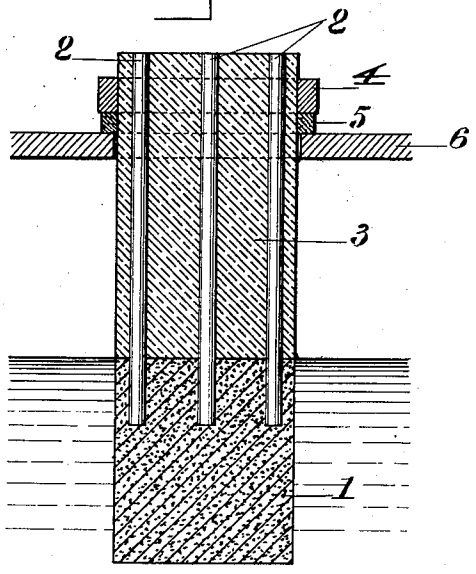


Fig. 2



Inventor
Pierre Camescasse
by
A. B. Forter
his attorney

Patented Dec. 26, 1933 1,941,387

UNITED STATES PATENT OFFICE

1,941,387

ANODE FOR FUSED BATH ELECTROLYSIS

Pierre Camescasse, Paris, France, assignor to The Magnesium Production Co., Ltd., London, England

Application May 28, 1930, Serial No. 456,721, and in France December 4, 1929

5 Claims. (Cl. 204—19)

In electric furnaces for the electrolysis of melted substances, use is frequently made of anodes of graphite or amorphous carbon which are immersed to a certain depth in the bath of melted salt. However, such anodes are subject to a rapid wear, and this represents a considerable part of the expense of the electrolysis.

In certain cases, the part of the anode immersed in the bath may be protected against premature wear, and chiefly in the case of the electrolysis of melted magnesium chloride, by a very complete drying of the salt under treatment. However, in all cases the portion of the anode extending above the bath is prematurely oxidized, for it is practically impossible to maintain an atmosphere entirely free from oxygen above the bath.

For this reason it is the part of the anode situated outside the bath, or the inoperative part, that is prematurely burned.

The present invention relates to a construction for the anodes of electrolytic furnaces especially applicable to the electrolysis of magnesium chloride for the obtainment of pure magnesium, and it is characterized by the fact that the anode consists of two parts, one of which is immersed in the bath and consists of graphite or amorphous carbon, the other part being situated above the bath and consisting of a substance which cannot be oxidized.

The upper part of the anode preferably consists of a refractory insulating substance reinforced by longitudinal iron rods which may serve at the same time as conductors for the current.

The following description and accompanying drawing which are given by way of example relate to a particular form of anodes in conformity to the invention.

Figure 1 is a cross section on a horizontal plane.

Figure 2 is a cross section on a vertical axial plane.

Into the block of graphite 1 adapted for immersion into the liquid bath are inserted iron rods 2; these latter are then imbedded in a refractory insulating substance 3, and the whole device is suspended in the furnace in the known manner, for instance by means of a collar 4 resting through the medium of an asbestos ring 5 upon supports 6.

If the refractory substance will not withstand the temperature of the furnace, it can be readily replaced at a comparatively small cost.

I claim:

1. An anode for use in electrolytic baths of fused $MgCl_2$ and the like and comprising a lower section of carbon, an upper section of non-conductive refractory oxide, resistant to the heat of the bath and the liberated gases, and a conductor rod extending downwardly through the upper section and having its lower end imbedded in the lower section, said upper and lower sections being of substantially equal and uniform horizontal cross-sectional area throughout.

2. An anode for use in electrolyte baths of fused $MgCl_2$ and comprising a lower section of carbon, an upper section of a refractory and non-conductive oxide, and reinforcing rods of conductive material extending vertically therein, their upper portion being imbedded in said refractory oxide and their lower ends imbedded in the lower section.

3. An anode for use in electrolytic baths of fused $MgCl_2$ and comprising a lower section of carbon, an upper section of a refractory and non-conductive oxide, and reinforcing elements of conductive material extending vertically through the upper section and having their lower ends imbedded in the lower section, said upper and lower sections being of equal and uniform cross-sectional area throughout.

4. An anode for use in electrolytic baths of fused $MgCl_2$ and comprising a lower active section of carbon, an upper section of a refractory and non-conductive oxide entirely covering the upper end of the carbon, and reinforcing rods of conductive material extending vertically through the upper section and having their lower ends imbedded in the lower section.

5. In electrolytic apparatus for the electrolysis of fused $MgCl_2$, the herein described anode which comprises a rod of carbon substantially all of which is within the fused $MgCl_2$ and a part which is above the bath of $MgCl_2$, the latter part being composed largely of a refractory oxide which is electrically non-conductive, and a conductive metallic rod extending downwardly through and tightly embedded within said refractory oxide part, the lower end of said metallic rod being tightly imbedded in said carbon rod, at least the part of said metallic rod which is within the electrolytic apparatus being wholly so imbedded and insulated by said refractory oxide coating, against the gases liberated at said anode.

PIERRE CAMESCASSE.