No. 754,114. Patented March 8, 1904.

UNITED STATES PATENT OFFICE.

GEORGE JONES ATKINS, OF TOTTENHAM, ENGLAND.

PROCESS OF PREPARING ELECTRODES.

SPECIFICATION forming part of Letters Patent No. 754,114, dated March 8, 1904.

Application filed October 6, 1903. Serial No. 175,988. (No specimens.)

To all whom it may concern:

Be it known that I, GEORGE JONES ATKINS, a subject of the King of Great Britain, residing at Tottenham, in the county of Middlesex, England, have invented certain new and useful Improvements in or Connected with the Electrodes of Electrolytic Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in the electrodes of electrolytic apparatus which are composed of carbon or other analogous conductive material; and the object of the invention is to provide means for preventing the disintegration of such by the electrolyte.

It is well known that carbon electrodes are liable to be disintegrated by the action of the electrolyte. To prevent this disintegration, I saturate the carbon or other analogous material composing the pole with oil, preferably oxidizable oil—such as linseed or cotton-seed oil, for example—whereby the electrode is rendered practically insoluble and impervious to aqueous solutions, but still retains its normal conductivity, or nearly so. In some cases I mix with the oxidizable oil lampblack or any other finely divided carbon before saturating the material of the pole with such oil, whereby the conductivity of the mass is improved and disintegration still more effectually prevented. Of course the particles of finely-divided carbon mixed with the oil are carried into the pores of the electrode along with the oil. In order to effect the saturation of the electrode with the oil, it is only necessary to place the same in a bath of the oil and to let it absorb as much oil as it will. When thoroughly saturated, the pole may be removed from the bath of oil and then preferably allowed to stand for a time to enable the oil to oxidize more or less before being placed in the electrolytic cell. It will be understood that any surplus oil should be removed from the outside or acting surfaces of the electrode, so as not to interfere with the contact of such surfaces with the electrolyte.

It will be understood that the oil prevents the disintegration of the electrode by the action of the electrolyte upon it by filling up the interstices between the particles of carbon or other analogous matter composing the pole, and it will also be readily understood that this oil does not interfere materially with the conductivity of the carbon mass, because it only fills up spaces which do not act as conductors. This filling in of spaces with oil prevents the entrance into such spaces of the electrolyte, and consequently the action of such electrolyte upon the particles of carbon. The reason why oxidizable oil is used is that after the mass is saturated the oil gradually oxidizes, especially after the pole so saturated is put to work in a cell, and forms an insoluble material which, on the one hand, is unattackable by the electrolyte, and, on the other, will not melt and quit the pole when in course of working the latter becomes heated. Heretofore paraffin-wax, beeswax, and other fatty matters have been used for this purpose; but they become quite useless when the electrode gets hot, because they melt out of the latter and float on the top of the electrolyte. This, however, is not possible with oxidizable oil when oxidized.

I claim—

1. For preventing the disintegration of carbon or other analogous electrodes of electrolytic or the like apparatus, the process which consists in saturating the material of such electrode with an oxidizable oil impermeable to the electrolyte, substantially as described.

2. For preventing the disintegration of carbon or other analogous electrodes of electrolytic or the like apparatus, the process which consists in saturating the material of such electrode with an oxidizable oil impermeable to the electrolyte, and which has been previously mixed with finely-divided carbon, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

GEORGE JONES ATKINS.

Witnesses:
H. D. JAMESON,
H. RANDS.