UNITED STATES PATENT OFFICE.

WILLIS E. HARMON, OF MECHANIC FALLS, MAINE, ASSIGNOR TO AMERICAN ELECTROLYTIC COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF DELAWARE.

MERCURIAL ALKALINE PROCESS.

No. 814,692. Specification of Letters Patent. Patented March 13, 1906.

Application filed July 6, 1905. Serial No. 268,524.

To all whom it may concern:

Be it known that I, WILLIS E. HARMON, of Mechanic Falls, in the county of Androscoggin and State of Maine, have invented certain new and useful Improvements in Mercurial Alkaline Processes, of which the following is a specification.

My improvements relate to electrolytic processes for the production of alkali of the well-known type in which two compartments are separated by a body of mercury in order that an alkaline amalgam may be formed with the mercury in one compartment, from which the alkaline element may be dissociated in the other compartment. Such processes are termed "mercurial processes," and I employ the phrase "amalgamating-compartment" to designate that compartment in which the electrolytic production of alkaline amalgam is carried on usually by the electrolysis of a solution of common salt. In such processes it has heretofore been observed that to secure the best results it is necessary that the contents of the amalgamating-compartment be kept free from an excess of hydrates or other compounds of the alkaline metal, and it has heretofore been proposed to accomplish this by adding acid to the electrolyte in this compartment.

I have discovered that the advantage above referred to can best be secured by interposing pieces of carbon in the amalgamating-compartment between the mercury and the electrolyte in contact with both. This maintains an acid condition in the compartment and secures the resulting advantages of increased efficiency of the apparatus and freedom from explosion.

According to my invention I place in the amalgamating-compartment at the beginning of the process small pieces of carbon, the quantity and size being regulated according to the requirements of the case. Ordinary powdered or disintegrated carbon, such as may be obtained by grinding up an ordinary carbon electrode, serves well; but larger pieces may be employed. The total quantity added should be but small and should be maintained fairly constant as the process proceeds. The pieces of carbon being heavier than the electrolyte, but lighter than the mercury, descend through the electrolyte and rest on top of the mercury in contact with it and with the electrolyte. In this position they maintain the acid condition of the compartment.

I have found that satisfactory results are obtained by using one gram of powdered carbon per square foot of mercurial surface in the amalgamating-compartment. As the process proceeds a slight loss of carbon may occur, and this should be made up by further additions, without, however, increasing the total quantity used.

Having thus described my invention, I claim—

1. In a mercurial alkaline process, the insertion of pieces of carbon in the amalgamating-compartment in contact with both the mercury and the electrolyte.

2. In a mercurial alkaline process the method of increasing the efficiency of the process, which consists in placing a small quantity of carbon between the electrolyte and the mercury in the amalgamating-compartment.

3. In a mercurial alkaline process, the method of increasing the efficiency of the process which consists in adding a small quantity of powdered carbon to the electrolyte in the amalgamating-compartment, and maintaining the quantity of the carbon therein fairly constant as the process proceeds.

In testimony whereof I have hereunto signed my name, at Philadelphia, Pennsylvania, this 3d day of July, 1905.

WILLIS E. HARMON.

Witnesses:
JAMES H. BELL,
E. L. FULLERTON.