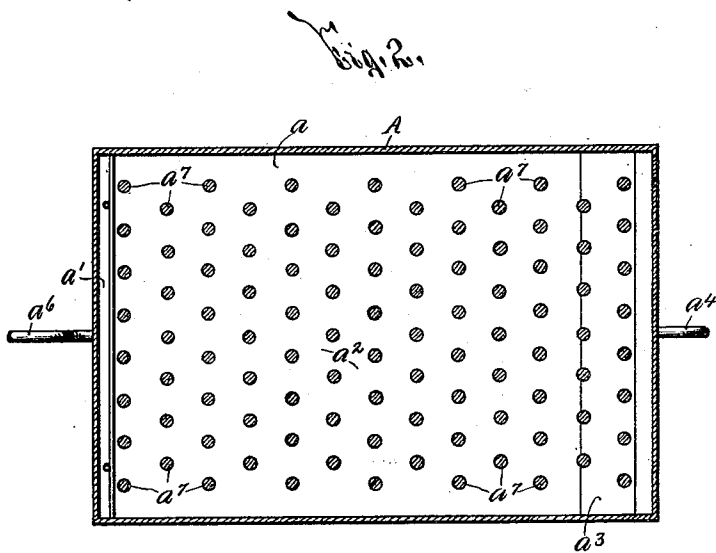
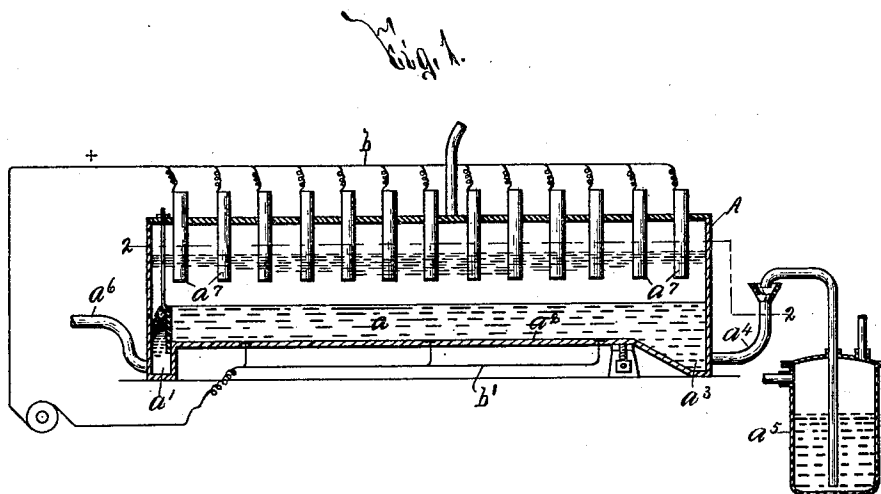


No. 742,865.

PATENTED NOV. 3, 1903.

E. HANNON.
ELECTROLYTIC PROCESS.
APPLICATION FILED OCT. 4, 1898.

NO MODEL.



WITNESSES:

W. C. Chase,
H. C. Reichardt

INVENTOR

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BY

Wey & Parsons,

ATTORNEYS

UNITED STATES PATENT OFFICE.

EDOUARD HANNON, OF BRUSSELS, BELGIUM, ASSIGNOR TO THE SOLVAY PROCESS COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

ELECTROLYTIC PROCESS.

SPECIFICATION forming part of Letters Patent No. 742,865, dated November 3, 1903.

Application filed October 4, 1893. Serial No. 692,604. (No specimens.)

To all whom it may concern:

Be it known that I, EDOUARD HANNON, a subject of the King of Belgium, residing at Brussels, Belgium, have invented a new and useful Electrolytic Process, (for which I have filed applications for foreign letters patent as follows: in Belgium, No. 134,177, March 5, 1898; in Great Britain, No. 7,470, March 28, 1898; in Germany, No. S. 11,225/75, March 18, 1898; in Russia, No. 4,602, May 4/16, 1898; in France, No. 266,676, June 14, 1898; in Switzerland, No. 18,973, July 28, 1898; in Austria, August 12, 1898, and in Hungary, No. 12,054, August 25, 1898,) of which the following is a specification.

My invention consists of a simple, practical, and effective electrolytic process particularly applicable for electrolyzing alkaline chlorids and other salts in the presence of a fluid electrode, as mercury, as hereinafter specifically described, and pointed out in the claim.

In describing this invention reference is had to the accompanying drawings, in which like letters indicate corresponding parts in both views.

Figure 1 is a vertical sectional view of an electrolytic apparatus particularly applicable for carrying out my process. Fig. 2 is a horizontal sectional view taken on line 2-2, Fig. 1.

In carrying out the present processes for electrolyzing alkaline chlorids and other salts in which fluid electrodes, as mercury, are utilized it is customary to effect the circulation of the fluid electrode by rocking the apparatus, by causing the electrode to flow along an inclined surface or in spiral channels, or by displacing the same by pistons, plungers, pumps, and other devices. These processes are more or less objectionable, since if the movement of the fluid electrode is arrested the supply thereof ceases, although the current continues to pass. My process differs from said processes in that a fresh supply of the material forming the fluid electrode is added to the side of said electrode opposite to its side adjacent to the electrolyte, and the surface of the fluid electrode adjacent to the electrolyte is removed by gravity from the remaining portion of the fluid electrode with-

out agitating or mixing the adjacent surfaces of said electrode and electrolyte and without agitating said remaining portion of the electrode. A fresh surface is thus continually presented to the metal being liberated on said electrode. The alkaline amalgam forms in greatest quantity at the surface of the fluid electrode adjacent to the electrolyte and tends to remain on said surface by reason of its lightness. Consequently my process is particularly practical and effective, since the surface of the fluid electrode which is richest in alkaline metal is positively and readily withdrawn without displacement of the remaining portion of the fluid electrode or agitation of said surface during its removal from said remaining portion of the electrode.

In order that my process may be readily understood, I have shown and will briefly describe an electrolytic apparatus which is particularly applicable for carrying out said process. This apparatus is composed of a receptacle A for receiving the electrolyte and a fluid electrode, as mercury, and suitable means for adding a fresh supply of the material forming the fluid electrode to the side of said electrode opposite to its side adjacent to the electrolyte and for removing by gravity the upper surface of the electrode from above the underlying body thereof. Said receptacle is provided with chambers *a a'*, arranged side by side at its base. The fluid electrode is admitted to one side of the chamber *a*, at the lower portion thereof, by a supply-reservoir *a²* and overflows by gravity from the opposite side of said chamber *a* at the top thereof into the chamber *a'*. The reservoir *a²* is supplied with fluid electrode by an inlet-conduit *a⁴*, discharging into said reservoir beneath the level of the fluid electrode therein and connected to a suitable source, as a fluid-elevator *a³*, which may be of any desirable form, size, and construction. The illustrated fluid-elevator consists of a closed shell partly filled, as indicated by the dotted line therein in Fig. 1, with the material, as mercury, forming the fluid electrode, an inlet-conduit for said material, an outlet-conduit leading from a point below the level of the material to the inlet-conduit *a⁴*, and a

third conduit for discharging a suitable fluid under pressure above said material and forcing the same through said outlet-conduit. The fluid electrode is withdrawn from the
5 chamber a' by an outlet-conduit a^6 , which opens from the chamber a' below the level of the fluid electrode therein, and is so arranged and connected that the level of the fluid electrode within said chamber and conduit is below the level of the fluid electrode
10 in the chamber a .

The electrolyte within the receptacle A contains the alkaline chlorids or other salts to be electrolyzed, is supported upon the fluid
15 electrode in the chambers a a' , and receives a suitable electrode, as a plurality of conductors a^7 , which are connected to one of the branches or conductors b of an electric circuit having its other branch or conductor b'
20 passed through the bottom wall a^2 of the receptacle A and electrically connected to the fluid electrode.

The described electrolytic apparatus is particularly applicable for carrying out my process; but I do not limit my invention thereto,
25 as any other suitable means may be employed in carrying out said process.

My electrolytic process will now be readily

understood upon reference to the foregoing description and the accompanying drawings. 30

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The herein-described electrolytic process, the same consisting in passing an electric
35 current through an electrolyte and a fluid electrode electrically in contact therewith, in adding a fresh supply of the material forming the fluid electrode to the side of said electrode opposite to its side adjacent to the elec-
40 trolyte, and in removing by gravity the surface of the fluid electrode adjacent to the electrolyte from the remaining portion of the electrode without mixing the adjacent sur-
45 faces of said electrolyte and fluid electrode and without agitating the remaining portion of the electrode, substantially as and for the purpose described.

In testimony whereof I have hereunto signed my name, in the presence of two at-
50 testing witnesses, at Brussels, Belgium, this 1st day of September, 1898.

EDOUARD HANNON.

Witnesses:

J. S. FÜRSTENHOFF,
GREGORY PHELAN.