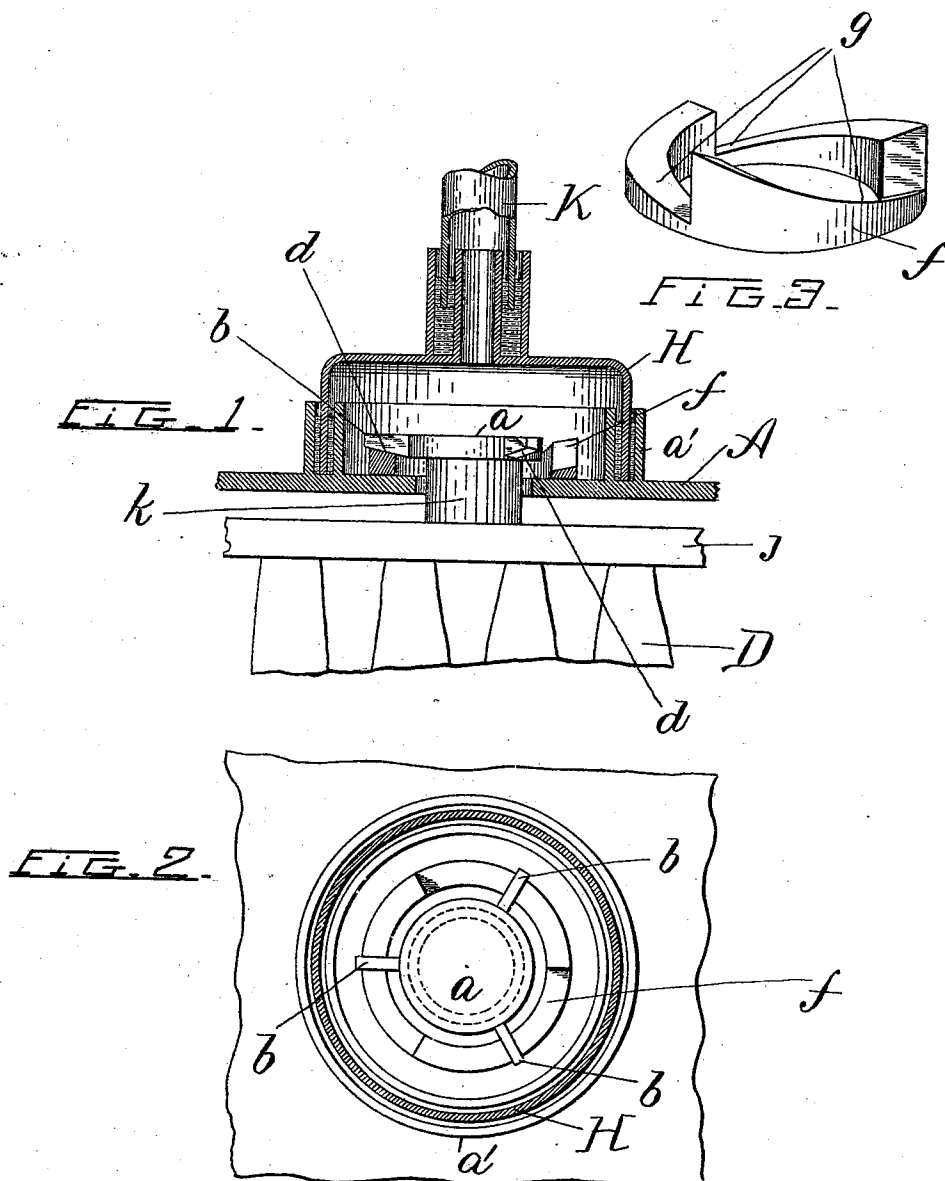


(No Model.)

E. A. LE SUEUR.
ELECTROLYTIC CELL.

No. 514,681.

Patented Feb. 13, 1894.



WITNESSES

Arthur F. Randall,
Robert Wallace.

INVENTOR

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UNITED STATES PATENT OFFICE.

ERNEST ARTHUR LE SUEUR, OF OTTAWA, CANADA.

ELECTROLYTIC CELL.

SPECIFICATION forming part of Letters Patent No. 514,681, dated February 13, 1894.

Application filed April 15, 1893. Serial No. 470,488. (No model.)

To all whom it may concern:

Be it known that I, ERNEST ARTHUR LE SUEUR, a subject of the Queen of Great Britain, residing at Ottawa, in the county of Carleton and Province of Ontario, Canada, have invented certain new and useful Improvements in Electrolytic Cells, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention has for its object an improvement in electrolytic cells, and relates to cells of the kind shown and described in Letters Patent No. 468,880, dated February 16, 1892, granted to me. In the use of cells constructed as set forth in said patent it is necessary to adjust the positive electrode from time to time in proportion as it is eaten away or destroyed in use; also, some difficulty has been experienced in preventing the escape of the chlorine which is generated in the cells owing to the manner in which the carbon electrode is mounted and supported. My present invention is designed to provide new and improved means of adjusting the positive electrode, and, also, to obviate the difficulty aforesaid.

It consists in certain features of construction and arrangement such as are hereinafter more fully described and the novel features of which are pointed out in the claims which are appended hereto.

My invention is shown in the accompanying drawings to which reference is made in the following specification and in which—

Figure 1 is a vertical central section of a portion of a cell showing the means employed for supporting and adjusting the carbon electrode as also for preventing the escape of the chlorine gas. Fig. 2 is a plan view thereof partly in section. Fig. 3 is a detail hereinafter referred to.

Referring to the drawings A shows a bell or receiver of stone-ware or similar material within which the positive electrode D is placed. The method of placing the bell in an outer vessel as also of securing the diaphragm and negative electrode is not shown as they are well known to those skilled in the art and form no part of my present invention. The carbon electrode consists of sticks or pieces of carbon which are set in a metallic backing or plate shown at j. The metallic

backing is provided with an upwardly extending supporting piece k which extends upwardly through an aperture in the top of the bell A. After placing the electrode in the bell I secure on the top of the upwardly projecting support k a cap a which is provided with preferably three lateral projections b. The under side of these projections b is beveled as shown at d and also preferably slanted or beveled transversely to insure a better bearing on the ring f. Between these projections b and the top of the bell I place a ring f see Fig. 3, of lead or other suitable material which will resist the action of the chlorine. The ring f is provided with notches shown at g which equal in number the projections b on the cap. It is interposed between the top of the bell and the projections b for the purpose of supporting the carbon electrode, and said ring is therefore of a depth or thickness sufficient to hold the carbon electrode at the highest point which it is desired to hold it within the bell. As the carbon electrode is eaten away or destroyed in use it is necessary to lower it and this is the purpose of the notches g. By turning the ring f the projections b may be made to rest at the lowest point of the notches or at any point along the beveled sides of the notches up to the highest point thereof thus permitting the raising or lowering of the carbon electrode in the bell and setting it in any position. As the carbon electrode is sometimes eaten away unevenly that is one side more than the other, it becomes desirable to tilt the carbon electrode inside the bell so as to immerse all parts of it equally in the liquid within the bell. For this purpose the under side of each of the projections b is made beveling so that by shifting the ring f toward one side or the other of the opening in the top of the bell one side of the cap will be raised and the other side lowered thus tilting the lead backing and carbon electrode. The top of the bell A is provided with a sealing groove formed by upwardly projecting flanges a' which are preferably circular and which encircle the ring f and parts supported thereby the said sealing groove being partly filled with liquid such as water as shown. The end of the conductor by means of which the chlorine is conveyed away from the cell is enlarged and made cup-shaped as shown at H

in order to fit into the sealing groove on the bell. This piece H is preferably separate from the conductor and the upper portion of it is provided with a sealing groove that is partly filled with liquid such as water into which in turn the enlarged end of the conveying pipe shown at K is placed. In this way when it is necessary to adjust the carbon electrode in the bell the sealing joint H may be readily removed, the ring *f* turned to adjust the electrode and the sealing joint H replaced.

I do not herein claim the removable liquid sealing joint H broadly as that forms the subject of another application for Letters Patent filed by me April 12, 1893, Serial No. 470,043. By the arrangement above described the danger from the escape of chlorine is very considerably lessened and the apparatus may be readily and speedily adjusted and a considerable saving in the expense of the manufacture of the chlorine effected.

What I claim is—

1. An electrolytic cell having a bell or receiver provided with an aperture in the top thereof, an electrode located within said bell and having a support projecting through said aperture, adjusting devices whereby the position of the electrode within the bell may be varied, and a liquid seal on said bell surrounding the said aperture therein and said adjusting devices, substantially as set forth.

2. In an electrolytic cell the combination with a bell or receiver having an aperture in the top thereof of an electrode located within said receiver, a support secured to said electrode and projecting through the aperture in said receiver, three or more lateral projections on said support and a ring of varying thickness co-operating with said projections to sup-

port the electrode and located between said projections and the top of the bell, substantially as set forth.

3. The combination with the electrode having a support provided with three or more lateral projections, said projections being beveled on the under sides thereof, of a supporting ring whereby by moving the ring laterally the electrode may be tilted and held in that position, substantially as set forth.

4. An electrolytic cell having a bell or receiver provided with an aperture in the top thereof, an electrode located within said bell and having a support projecting through the aperture therein, laterally projecting arms on said support, a ring interposed between said arms and the top of said bell, a liquid seal on said bell surrounding said ring and said support, and a suitable connection co-operating with said liquid seal for conveying the chlorine from the cell, substantially as set forth.

5. An electrolytic cell having a bell or receiver provided with an aperture in the top thereof, an electrode located within said bell and having a support projecting through said aperture, devices located above said aperture for adjusting the electrode, and a removable connecting piece arranged above and surrounding the adjusting devices whereby the said adjusting devices may be readily exposed and the carbon adjusted, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ERNEST ARTHUR LE SUEUR.

Witnesses:

W. D. LE SUEUR,
K. MERRICK.