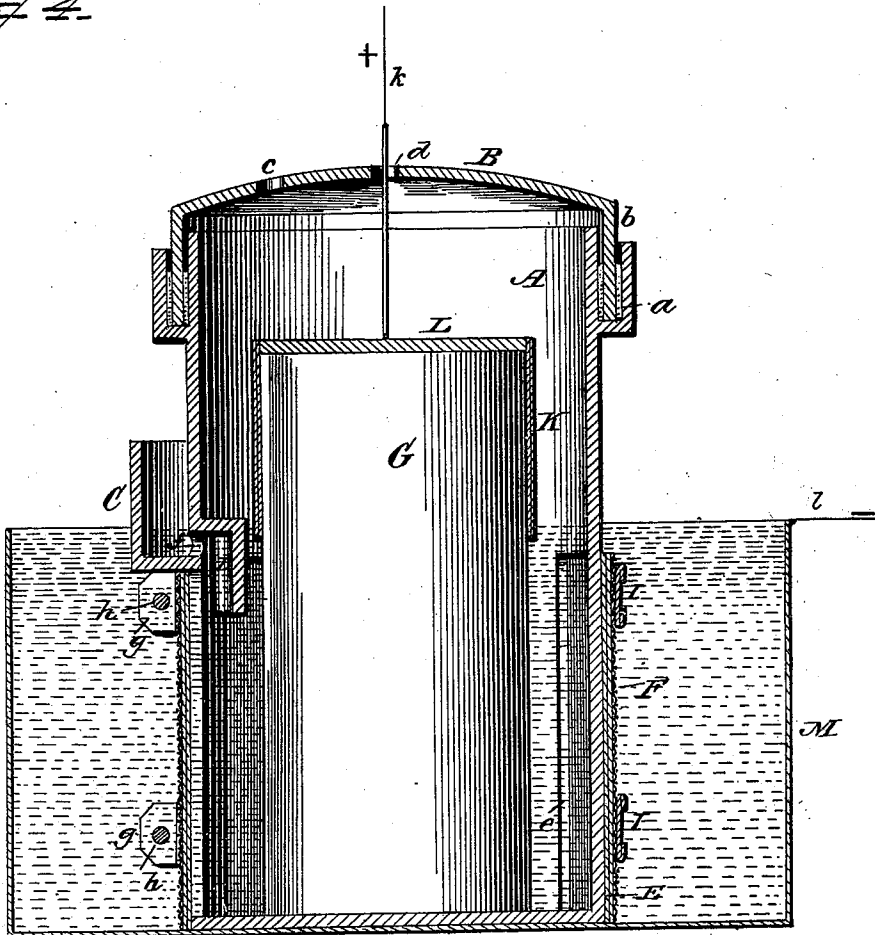


J. MERCER.
CELL.

No. 564,311.

Patented July 21, 1896.

Fig 4



Witnesses
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UNITED STATES PATENT OFFICE.

JAMES MERCER, OF RUMFORD FALLS, MAINE.

CELL.

SPECIFICATION forming part of Letters Patent No. 564,311, dated July 21, 1896.

Application filed January 10, 1896. Serial No. 574,955. (No model.)

To all whom it may concern:

Be it known that I, JAMES MERCER, a subject of the Queen of Great Britain, residing at Rumford Falls, in the county of Oxford and State of Maine, have invented certain new and useful Improvements in Cells; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon.

The present invention has for its object to provide a cell which is especially adapted for the decomposing of salt brine by the action of electricity and thereby generating chlorine gas and caustic liquids; and the invention consists in a cell constructed substantially as shown in the drawings and hereinafter described and claimed.

Figure 1 of the drawings represents a side elevation of a cell constructed in accordance with my invention; Fig. 2, a central vertical section thereof; Fig. 3, a horizontal section taken through line *x x* of Fig. 2; Fig. 4, a sectional view showing the cell and tank in which it is placed and the wires connecting with the same.

In the accompanying drawings, A represents the body of the cell, which is in the form of a hollow cylinder of any diameter and height found best adapted to the purpose and of any suitable thickness, said body being open at the top, but temporarily closed by a suitable cover B.

The body and cover of the cell are preferably formed of baked clay or of suitable pottery ware, and the upper end of the body is formed with a circumferential chamber *a* for containing oil, water, or other suitable liquid.

The downwardly-extending flange or rim *b* of the cover B enters the chamber *a* and extends into the liquid, thereby forming a sealed joint between the cover and top of the body A to prevent the escape of the gases and render the cell air-tight.

The cover B is preferably convex, as shown, and is formed with two openings *c d*, one for the admission of the electric wire to connect with the electrode and the other for the connection of the pipe which is to convey the gas to the gas-main after its formation.

The upper half of the body A of the cell

consists of a solid wall, while the lower half has a plurality of upright openings *e*, which extend around the body, as shown in Figs. 2 and 3 of the drawings. Through the solid portion or half of the body A is a suitable opening *f*, through which the supply of salt will be furnished to the liquid in the interior of the cell.

On the outside of the body A and directly opposite the opening *f* is a funnel or receptacle C, which extends upward a suitable distance to receive the salt which is fed to the opening, said funnel or receptacle also serving as a gage or regulator in showing the amount or height of the liquid contained in the cell.

On the inside of the body A directly over the opening *f* is a hood D, which extends downward from the opening a sufficient distance to enter the liquid in the cell or below the surface thereof.

In the employment of the funnel or receptacle C and the hood D upon the exterior and interior of the body A, respectively, a communication is effected with the interior of the body and through the side thereof which will be perfectly air-tight in addition to providing a gage by which the amount of liquid in the cell can be ascertained.

The lower portion of half of the body A has a covering or diaphragm E, consisting of a suitable length of asbestos paper, which is wound around the exterior of the lower portion of the body to cover the openings *e*, the diaphragm comprising two or more thicknesses of the asbestos paper, as shown; also a covering F, of wire netting or gauze, is used, which is placed over the covering E and held in place by sectional metal clamping-bands. These clamping-bands are preferably of spring metal, each band comprising two sections H I, having at their meeting ends outwardly-extending flanges *g*, with holes to receive headed screws *h*. The screws extend through the holes in the flanges, and nuts *i* engage the ends of the screws, whereby the two sections H I which form the clamping-band are tightly held around the diaphragm to retain it in place over the openings in the lower portion of the body A. These sections H I of the clamping-band are not semicircular in form, the section H being less than a semi-

circle and the section I greater than a semicircle, or, in other words, the two sections are of unequal lengths. This enables the longer section I to be sprung into place, and being greater than a semicircle it will remain in position around the diaphragm by its own elasticity, while the shorter section H is secured thereto and the band drawn tight against the diaphragm by means of the screws and nuts.

The electrode consists of a solid carbon, as shown at G, which is preferably cylindrical in shape and of a suitable height and diameter, and is provided with a lead cap L, which forms the top, the lead cap being of any desirable thickness and is to be connected with the electric wire.

In Fig. 4 the usual tank M is shown and also the positive wire k, which wire connects with the electrode in the usual and well-known manner, the electric current entering the cell at the top, passing through the carbon and salt brine, through diaphragm of cell, thence through the caustic liquid in the tank, and leaves the same through the wire l, which connects with the tank.

The upper portion of the electrode G is covered with asbestos paper, as shown at K, which extends down a sufficient distance to be below the surface line of the liquid, thus protecting the carbon at the surface line from the more intense chemical action which takes place at that point, and which would produce a corresponding waste of carbon and secure a uniform waste over the entire surface thereof.

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

1. A cell consisting of a suitable body having an opening through the wall thereof for the feeding of salt, funnel or receptacle upon the outside of the body and surrounding said opening, and a hood upon the inside of the body opposite the opening, substantially as and for the purpose specified.

2. A cell consisting of a suitable body having an opening through its side, a funnel or

receptacle and a hood upon the exterior and interior of the body respectively which are disposed opposite the opening, a chamber for liquid around the open end of the body, and a suitable cover having a downwardly-extending flange adapted to enter the chamber, substantially as and for the purpose specified.

3. A cell consisting of a suitable body, openings through the wall thereof at the lower portion of the body, a diaphragm around the body and over the openings composed of asbestos paper, and a wire gauze or netting, the same being held to the body by clamping-bands, each band being composed of two unequal sections detachably connected together at their ends by screws and nuts, substantially as and for the purpose described.

4. A cell consisting of a suitable body, a cover therefor and means whereby said cover may be hermetically sealed, openings through the walls of the body at the lower portion thereof, a suitable diaphragm secured around and over the openings, an electrode formed of carbon, a lead cap secured upon the end thereof, and a covering of asbestos paper around said electrode, substantially as and for the purpose set forth.

5. A cell consisting of a suitable body, a cover therefor and means for hermetically sealing it, opening through said body at the lower portion thereof, a diaphragm comprising a covering of asbestos paper and a covering of wire gauze or netting secured over and around the openings by sectional clamping-bands, an opening through the wall of the body for the feeding of salt, and a funnel or receptacle and a hood upon the exterior and interior of the body respectively and on a line opposite the opening, substantially as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JAMES MERCER.

Witnesses:

ARETOS E. STEARNS,

RUSSELL H. DEARBORN.