No. 897,633. PATENTED SEPT. 1, 1908.

G. C. LANDIS.

ELECTROLYTIC CELL.

APPLICATION FILED JULY 2, 1907.

Fig. 2.

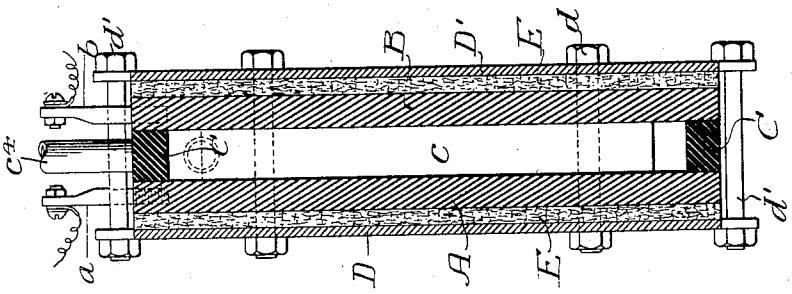
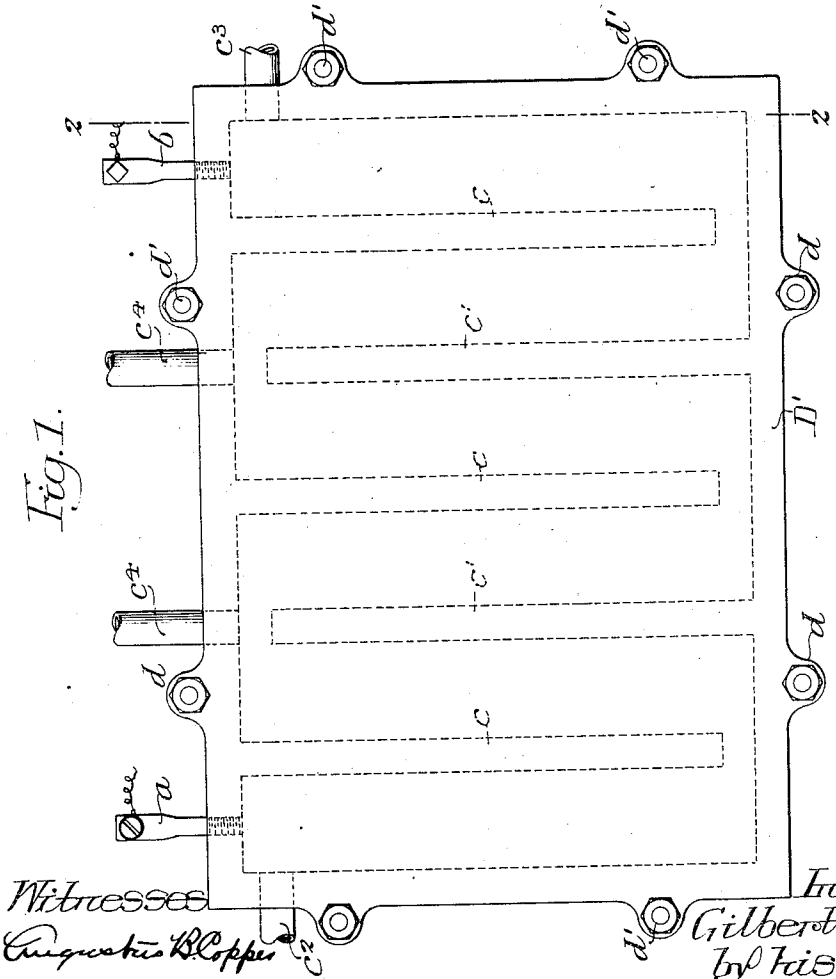


Fig. 1.



Witnesses
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ELECTROLYTIC CELL.

No. 897,633. Specification of Letters Patent. Patented Sept. 1, 1908.

Application filed July 2, 1907. Serial No. 381,915.

To all whom it may concern:

Be it known that I, GILBERT C. LANDIS, a citizen of the United States, residing in York, Pennsylvania, have invented certain Improvements in Electrolytic Cells, of which the following is a specification.

One object of my invention is to provide a cell particularly designed for the electrolytic treatment of solutions of chlorids for the production of chlorates, which shall have its parts so arranged that the solution under treatment is forced to circulate and thereby permits the most efficient operation of the cell both from the standpoint of current consumption as well as from that of time required and amount of finished product obtained.

It is further desired to provide a cell having its parts so arranged relatively to each other that in the event of particles of either the anode or the cathode becoming detached, such pieces will be carried with the solution through the cell in such a manner as to be prevented from short circuiting the cell.

Another object of the invention is to provide a cell particularly designed for the electrolytic treatment of chlorids, which may be commercially operated without the use of a diaphragm.

These and other advantageous ends I attain as hereinafter set forth, reference being had to the accompanying drawings, in which:—

Figure 1, is a side elevation of my improved cell, and, Fig. 2, is a vertical section taken on the line 2—2 Fig. 1.

In the above drawings, A represents the anode of my improved cell which in the present instance consists of a flat plate of graphite having a terminal *a* electrically connected to and projecting from its upper edge. The cathode of the cell is formed by a similar plate B also of graphite which has at its upper edge a second terminal *b* of the cell. These two plates are spaced apart by a flat frame C of rubber or other suitable insulating material constructed in the form of a relatively narrow strip or strips extending between the plates adjacent to their edges and forming with them a hollow, relatively thin container or cell. From the inner edges of the upper and lower portions of this rubber frame projections *c* and *c'* respectively extend toward the opposite sides thereof, so as to form a relatively circuitous passage through the cell from one end to the other. In other words, these projecting portions *c* and *c'* constitute a series of baffles so that fluid entering the inlet c^2 of the cell is compelled to flow alternately down and up while passing between the plates to the outlet c^3 at the opposite end of the cell.

The anode and cathode, with the rubber frame, are held together in the form of a closed container by two clamping structures consisting in the present instance of iron or other metallic plates D and D', which are provided with projecting lugs *d* for the reception of bolts *d'* whereby the whole structure is connected and clamped together. These lugs are so proportioned that the bolts do not come into direct contact with the graphite plates, and the iron plates are insulated from said graphite plates by plates or sheets E of insulating material such as asbestos. These insulating sheets or plates are preferably of the same extent as are the graphite and iron plates, so that it will be understood there is no opportunity for the current to leak from the anode to the cathode.

The bolts *d* are set up sufficiently to prevent leakage of the liquid from between the anode or the cathode and the rubber frame C, while for the purpose of permitting the escape of any gas which may be formed in the cell, I provide vent pipes c^4 extending through the top portion of the rubber frame C. The baffle plates *c* are extended sufficiently near the bottom portion of the rubber frame C to cause the current of liquid flowing through the cell to take up and carry with it any solid particles which may fall from the anode or cathode so that there is consequently little opportunity for such particles to cause a short circuit of the cell.

Under operating conditions the terminals *a* and *b* are connected to suitable sources of current supply, while the liquid to be treated is delivered to the cell through the inlet c^2 from whence it flows up and down between the baffles *c* and *c'* until it finally flows out at the openings c^3. While passing through the cell it is subjected to the action of the electric current flowing through at right angles to the general plane of its course between the anode and cathode A and B and is thereby decomposed or otherwise acted on as desired.

The constant agitation of liquid as it passes through the cell results in fresh quantities of un-ionized material being brought into contact with the ions primarily separated at the electrodes and I have found under operating conditions that such action materially aids

the formation of chlorids, particularly at a high temperature.

I claim as my invention:—

The combination of a plurality of graphite plates having terminals for connection with a source of current, a frame of insulating material extending around the edges of the plates and interposed between the graphite plates so as to form a circuitous course for liquid flowing from the inlet to the outlet, metallic plates outside of the graphite plates and provided with lugs, an asbestos plate interposed between each of the graphite plates and each of its adjacent metallic plates, and bolts extending between the lugs of said metallic plates for clamping together the various parts.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

GILBERT C. LANDIS.

Witnesses:

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