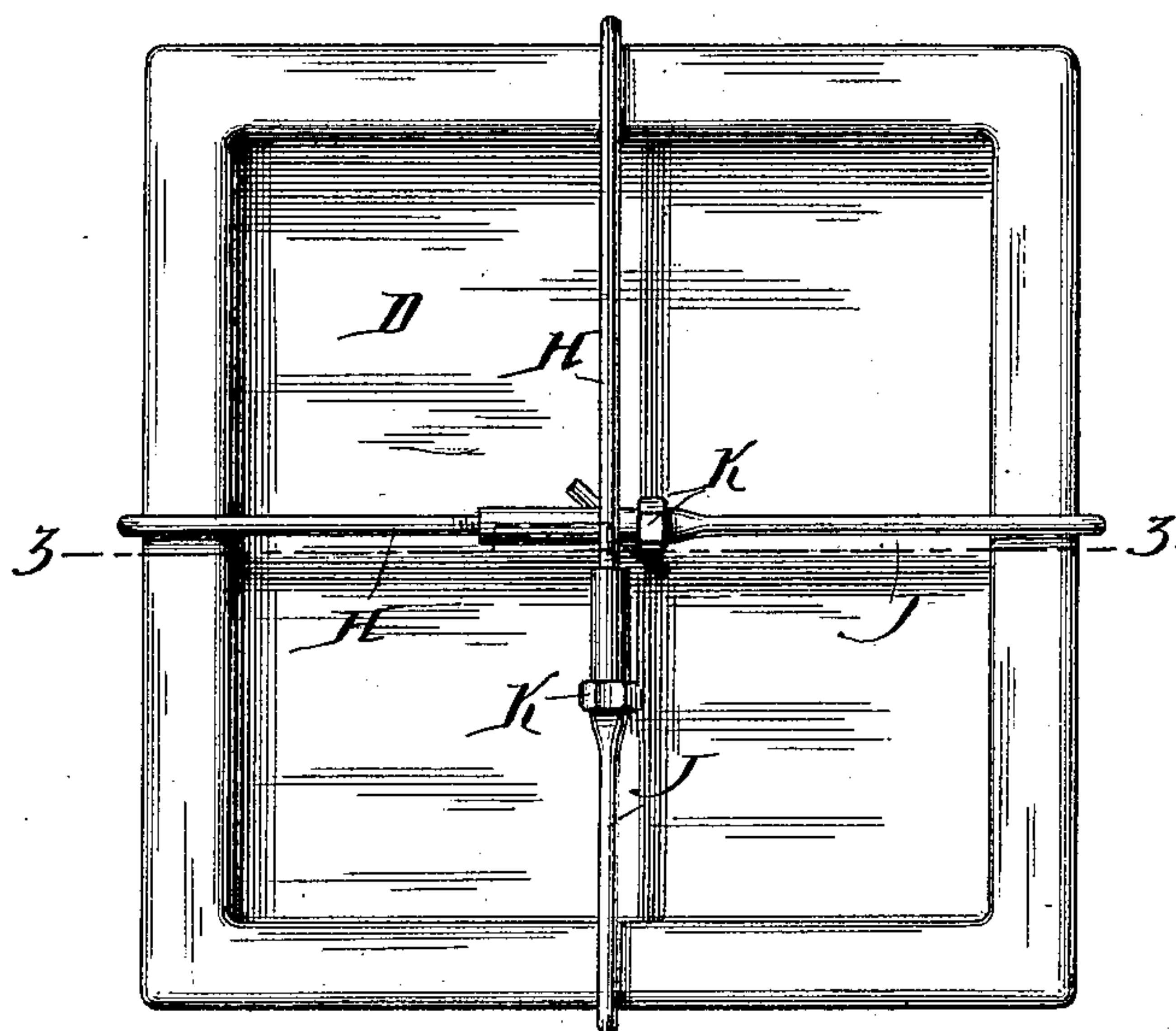
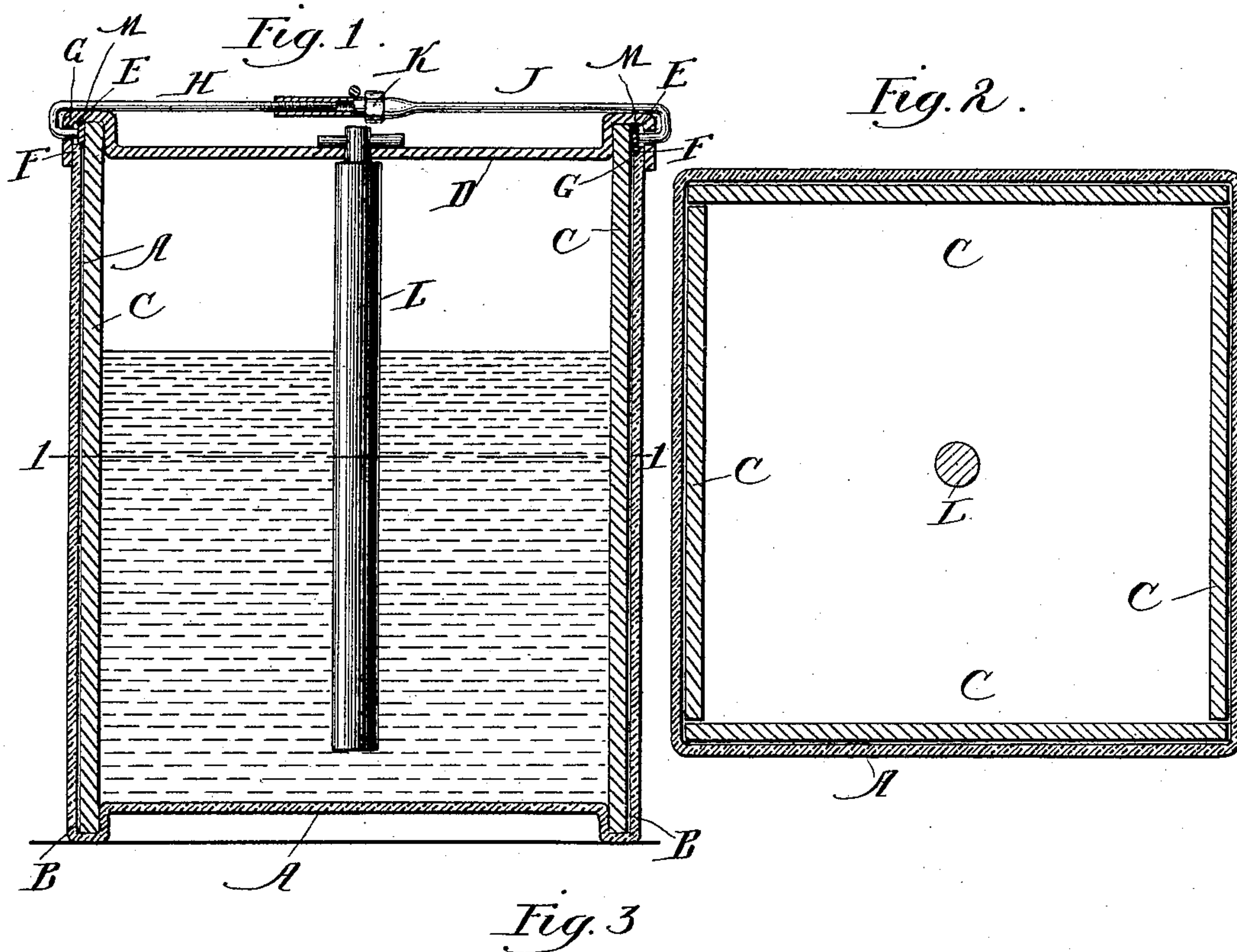


(No Model.)

E. J. COLBY.  
GALVANIC BATTERY.

No. 397,111.

Patented Feb. 5, 1889.



*Witnesses:*

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# UNITED STATES PATENT OFFICE.

EDWARD J. COLBY, OF CHICAGO, ILLINOIS.

## GALVANIC BATTERY.

SPECIFICATION forming part of Letters Patent No. 397,111, dated February 5, 1889.

Application filed May 21, 1888. Serial No. 274,485. (No model.)

### *To all whom it may concern:*

Be it known that I, EDWARD J. COLBY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Batteries, of which the following is a specification.

My invention relates to batteries, and has for its object to provide a convenient and cheap form of battery, which is capable of changes of the carbon plates so as to vary the carbon surface.

My invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a vertical section on the line 3 3 of Fig. 3. Fig. 2 is a cross-section on the line 1 1 of Fig. 1. Fig. 3 is a plan view.

Like parts are indicated by the same letter in all the figures.

A is a jar of material such as is commonly used for the purpose, and having the groove B about the inner perimeter of the bottom. The jar is square, and the groove B is designed to receive the lower edges of the carbon plates C. These carbon plates are of any desired width, and of a depth a little greater than the height of the jar, as indicated in Fig. 1. The top of the jar is indicated by the letter D, and is provided with the flange E along the inner edges of its lower side, into which the tops of the carbon plates C are received. The flange of this jar-top is somewhat wide, and is provided with a dependent lip, F, which engages the top of the jar. Through the lip F is formed the aperture G, through which extend the ends of the clamping-rods H J. These rods are connected together at their opposite extremities by the screw-coupling K.

L is the usual zinc, which passes into the center of the jar and comes out at the top, as indicated in Fig. 1.

M M are clamping-bars, which lie along the top of the carbon plate and are centrally engaged by the ends of the clamping-rods H J, so as to clamp the entire upper edge of the carbon plate against the side of the groove E in the top.

The use and operation of my invention are as follows: A square jar, provided with a flange along the sides of its bottom, as described and indicated, and provided also with

a cover or top having a corresponding groove about its edge, is filled with the suitable quantity of liquid required. The carbon plates C are placed in position, so that their lower edges lie in the groove B, and their upper edges in the groove E, the top being placed in position over the same. The zinc L is of course attached to the top in the usual manner. The clamping-rods H and J are now brought into place and the coupling K turned until the ends of such rods pass through the apertures G G and against the clamping bars or blocks M M, so that by further turning the coupling K the two rods H J are made to apply a strong pressure to the upper edge of the clamping-plates and bring them securely against the side of the grooves E E. Now, if it is desired to diminish the carbon surface, it is only necessary to replace any or all of the plates C with narrower plates. The plates C C are loosely fitted within the grooves B B, and are not closely in contact with each other, so that the liquid can circulate entirely about them.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is as follows:

1. In a battery, the combination of a square jar with a continuous carbon plate along each inner side thereof and a zinc in the center.

2. In a battery, the combination of a jar with a series of flat carbon plates which extend substantially around its inner surface, one continuous plate on each side of the jar, and a zinc in the center.

3. In a battery, the combination of carbon plates with a grooved cover to receive such plates and clamps which securely clamp such plates against the inner surface of said groove at their upper ends.

4. In a battery, the combination of carbon plates with a grooved cover, clamping-rods, and a coupling connecting such rods, so that by operating the coupling the rods may be made to clamp the upper edge of such carbon plates against the sides of the groove in the top.

5. In a battery, the combination of carbon plates with a grooved top, clamping-pieces, rods which engage such pieces at one end, and a coupling which connects the clamping-rods at their other extremities, so that by

turning such coupling the rods may be drawn together and the carbon plates be clamped along their entire upper edges against the inner sides of the groove in the top.

- 5 6. In a battery, the combination of a square jar with grooves in its bottom to receive the carbon plates, with a top grooved in like manner to receive the upper ends of the carbon

plates, a central zinc, and a series of clamping-rods and screw-couplings, whereby the said carbon plates may be securely clamped against the edge of the groove in the top.

EDWARD J. COLBY.

Witnesses:

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