(No Model.) 2 Sheets—Sheet 1.

J. M. STEBBINS.

VOLTAIC BATTERY.

No. 272,493. Patented Feb. 20, 1883.

Fig. 1.

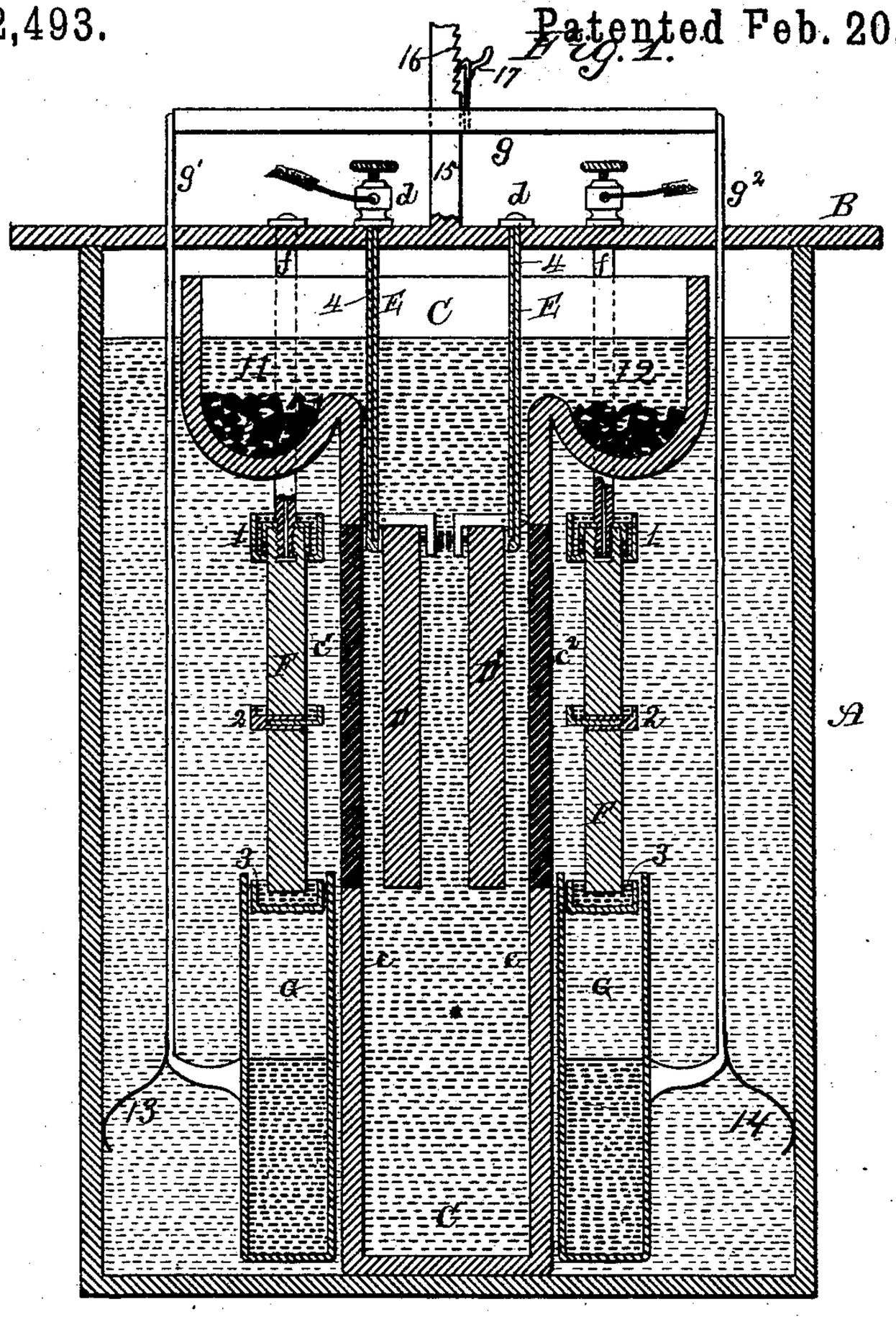
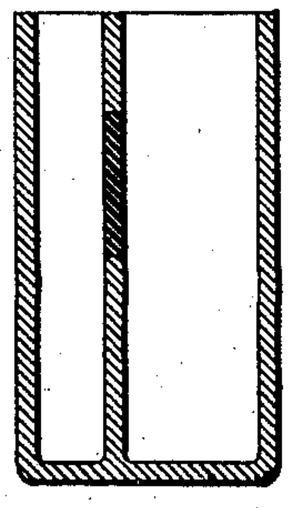


Fig. 2.



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Jas. L. Talley

Inventor:

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

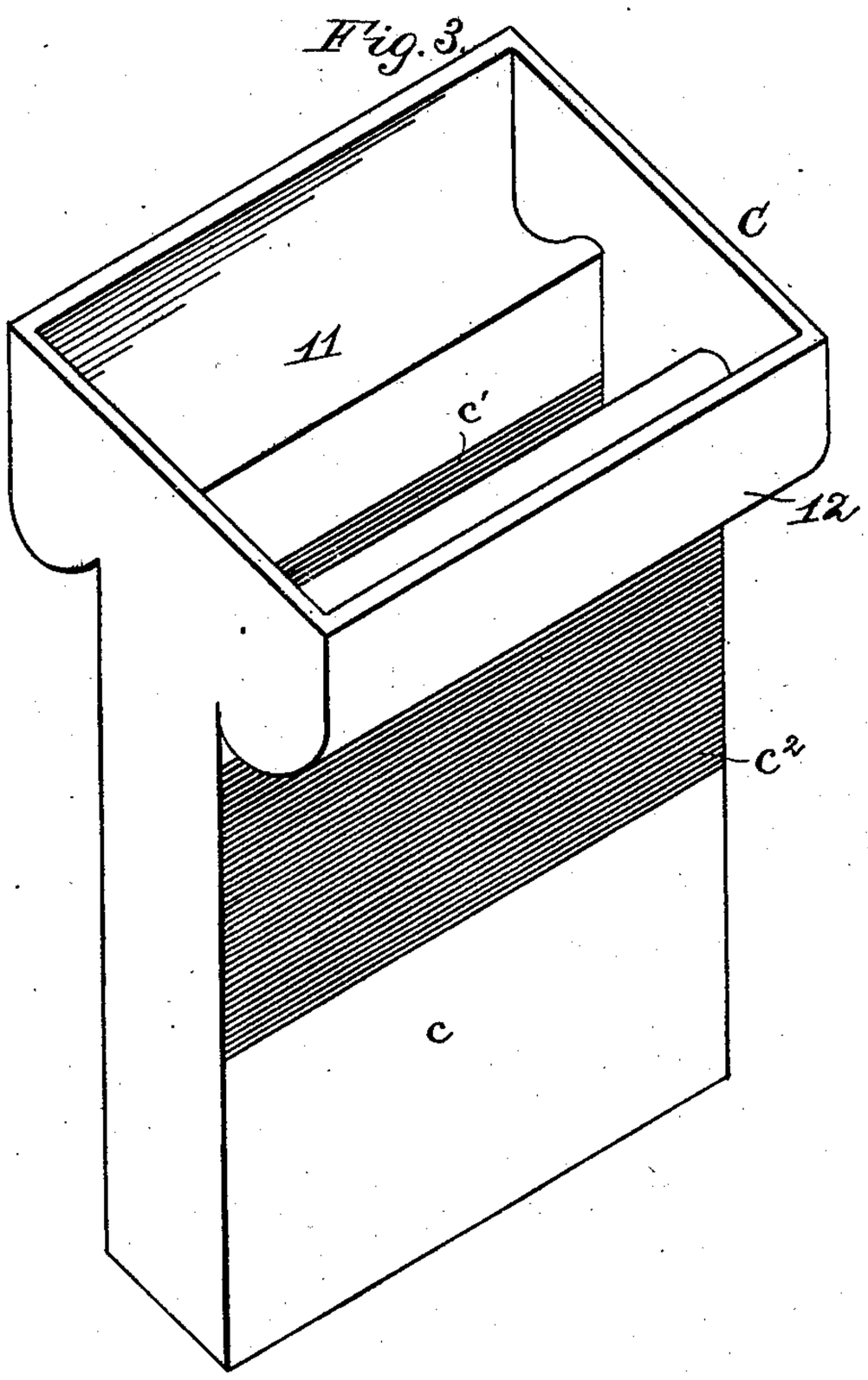


Fig. 4.

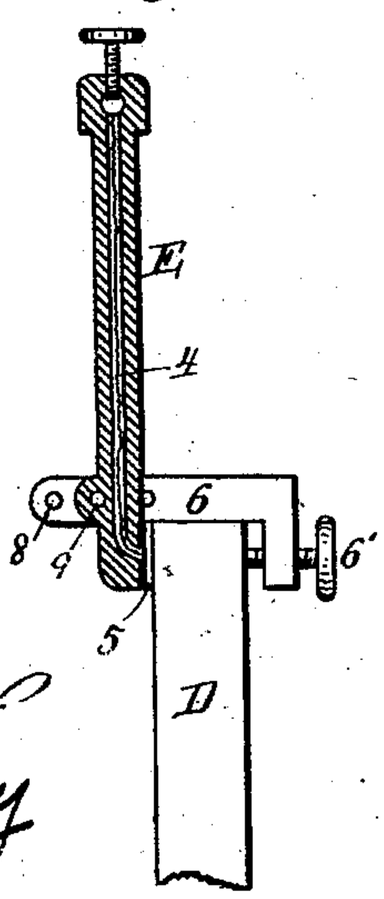
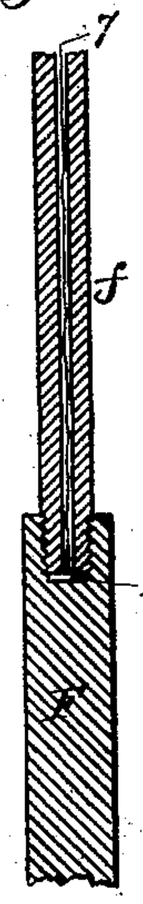


Fig. 5.



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UNITED STATES PATENT OFFICE.

JULIUS M. STEBBINS, OF NEW YORK, N. Y.

VOLTAIC BATTERY.

SPECIFICATION forming part of Letters Patent No. 272,493, dated February 20, 1883.

Application filed July 7, 1882. (No model.)

To all whom it may concern:

Be it known that I, JULIUS M. STEBBINS, a citizen of the United States of America, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Voltaic Batteries, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention has relation to improvements in electric batteries, and its object is to provide a battery for use in its various applications to this art which shall be practically constant for an indefinite length of time, and at the same time furnish a maximum of motive force during its existence; and to that end the novelty consists in the construction of the same, as will be hereinafter more fully described, and particularly pointed out in the claims.

Figure 1 is an end elevation, partly in section, of my improved battery. Fig. 2 is a modification of the battery-jar, showing a partition, partially porous, and the whole made in one piece. Fig. 3 is a perspective view of the cup C, non-porous at all points except c' and c^2; and Figs. 4 and 5 are the connections for the zinc and carbon elements.

A is the cell, of rubber or any suitable vitreous material, and B is the cover, which is made to fit as nearly air-tight as possible.

C is an interior cup or cell, closed on all sides except at the top. This cup C is made of any non-porous material, except the porous portions c' c^2, which are between the plates.

D D′ are the carbon plates, suspended in the cup C so as to be submerged in the exciting solution, and are connected to the screw-cup *d* by the compound rods E passing through the cover B.

F F are the zinc plates, suspended from the cover by the connecting-rods *f f*. These plates are provided with troughs or cups 1, 2, and 3, to contain mercury to keep up the supply, so as to maintain a uniform and constant amalgamation of the plates.

G G are hard-rubber cups suspended from the cross-bar *g* by the rods g' g^2, so when the cups G G are lowered the zinc plates are exposed to the action of the exciting-fluid and a free communication established between the zinc and the carbon through the medium of the porous wall c' c^2, so that the full strength of the battery is obtained; but when the cups G G are raised they surround the sides, ends, and bottoms of the zinc plates, so as to cut off all communication with the exciting-fluid and stop the action of the battery. The sides of the cups as they are raised press against the outside of the inside cup, C, so as to completely cover the porous part c' c^2, and thus prevent all commingling of the fluids on the in and out side of the cup C. At the same time the loose mercury which is placed in the bottom of the rubber cups G G is forced up by the zinc displacing it, and it flows over into the troughs 1, 2, and 3, from whence it is distributed by gravity and capillary attraction over the surface of the zincs, and the surplus runs back into the bottom of the rubber cup, where it is retained until the raising operation is repeated.

The screw-post *d* is a hard-rubber rod, through the center of which passes a copper wire, 4, terminating in a platina button. (See Fig. 4.) A rubber clamp, 6, is secured to the lower end of the screw-post rod *d* to force the platina 5 against the carbon plate D.

The zinc connection is likewise a rubber rod, *f*, through the center of which passes the copper wire 7, terminating in a platina button, 10, so that when the rubber rod is screwed tightly into the element the platina is forced into intimate contact therewith. The peculiar feature of these connections is that when the plates are thus connected and submerged in the exciting-fluid the contact is safe and reliable, as the acid cannot get access to the joint, and all corrosion is thus effectually prevented.

In case the connecting-rod *d* is applied to the zinc element the clamp 6 is provided with holes 8, through which a pin, 9, passes, so that as the zinc plate is consumed the clamp may be adjusted closer to the screw 6′, thereby utilizing the zinc as long as there is enough left to hold together, and maintaining a sure connection all the time. It is also very desirable where the elements are of different thicknesses.

13 and 14 are rubber springs attached to the lower ends of the lifting-rods g' and g^2, so as

to press the cup G against the porous walls c' and c^2 and prevent the mixing of the different fluids.

15 is a standard secured to the cover B, and is provided with ratchet-teeth, 16. A spring-pawl, 17, attached to the cross-bar *g*, serves to engage the ratchet-teeth, so that the sheath G may be made to cover the whole or a portion of the zinc plates, and thus utilize more or less of the strength of the battery.

In practice I make the cup C of any porous earthenware, and before it is finally baked I coat all that part of it but what is interposed between the positive and negative elements with a glaze such as potters use for porcelain and the like, and then bake it; or it may be made by inserting a piece of carbon or other porous material in that portion, leaving the rest of the cup glazed as above.

In the cup C, in its upper part, are reservoirs 11 and 12, in which are placed crystals of the bichromate of potash, so that as the solution is decomposed the crystals will dissolve, and thus keep up a saturated solution.

What I claim is—

1. In voltaic batteries, a cup made with its middle section porous, having at its top enlarged reservoirs, with depressed bottoms, for holding a supply of the salt of the depolarizing solution, substantially as and for the purpose described.

2. The zinc plates F F, suspended in the exciting-liquid near the porous portion of cup C, in combination with the adjustable cups G G, substantially as and for the purpose described.

3. The adjustable cups G G, supplied with mercury and suspended in the exciting-liquid, having springs to force them into close contact with the sides of the cup C, so that when elevated the cups G, will cover the porous part and cause the galvanic action to cease when not required for use, substantially as and for the purpose described.

4. The combination of the zinc plates F F, the carbon plates D D′, the partially-porous cup C, so arranged that the porous part will be in exact line with plates D D′ and F F, and the adjustable cups G G, whereby the action of the exciting-liquid may be used or suspended as may be required.

5. In a voltaic battery, a positive or negative plate having a screw-threaded recess, in combination with the hard-rubber rod *f*, screw-threaded on its lower portion and provided with the wire 7 and button 10, as set forth.

6. In a voltaic battery, a connection for one or both of the elements, consisting of the hard-rubber rod *d*, wire 4, and button 5, in combination with the clamp 6, having holes 8, pin 9, and screw 6′, as set forth.

7. A battery-cup composed of non-porous material, having an inserted section of carbon, as set forth.

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

JULIUS M. STEBBINS.

Witnesses:
H. J. ENNIS,
JAMES MCKENZIE.