

(No Model.)

F. J. CROUCH.

NON-POLARIZING CONSTANT CURRENT BATTERY.

No. 379,372.

Patented Mar. 13, 1888.

Fig. 1.

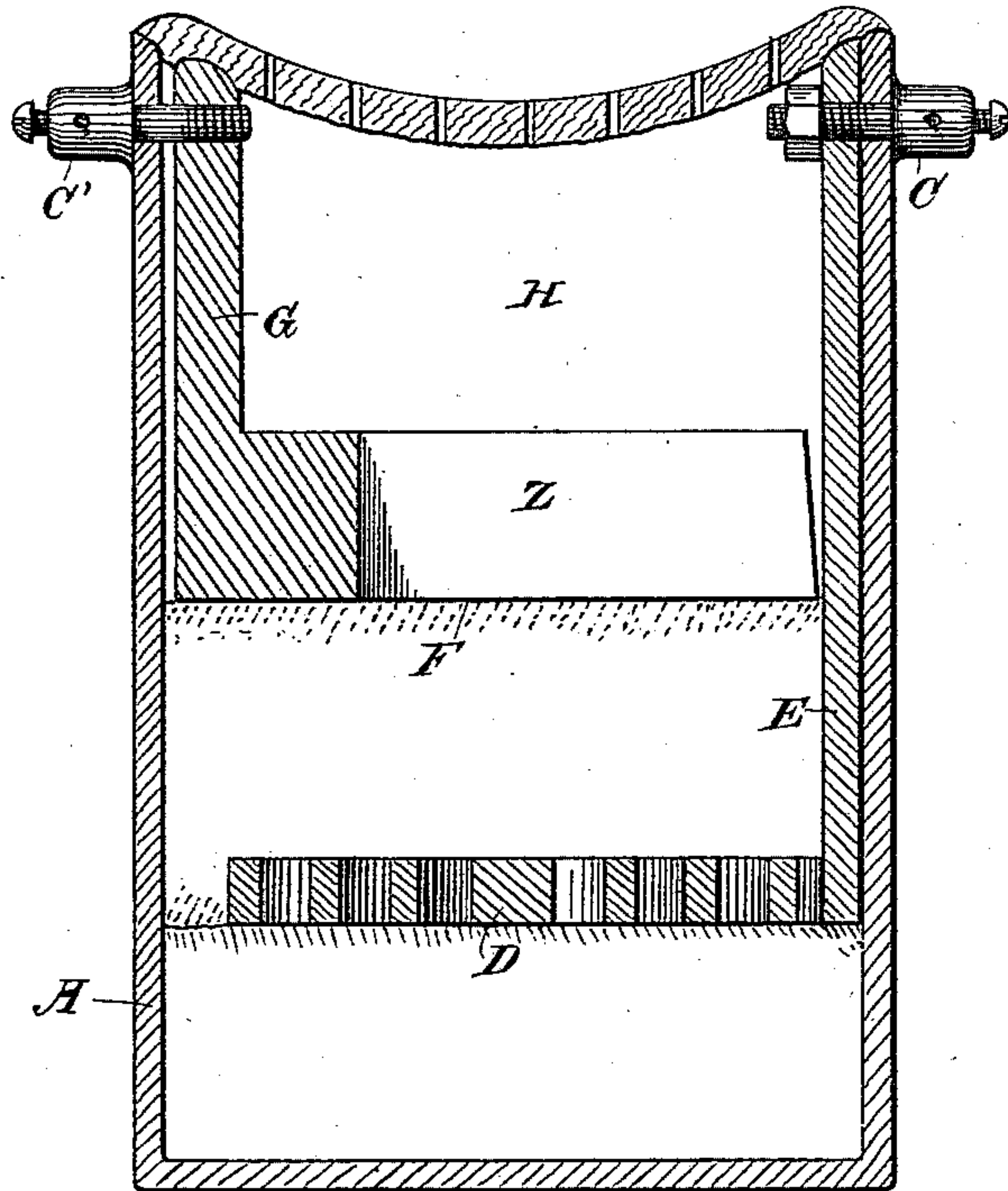
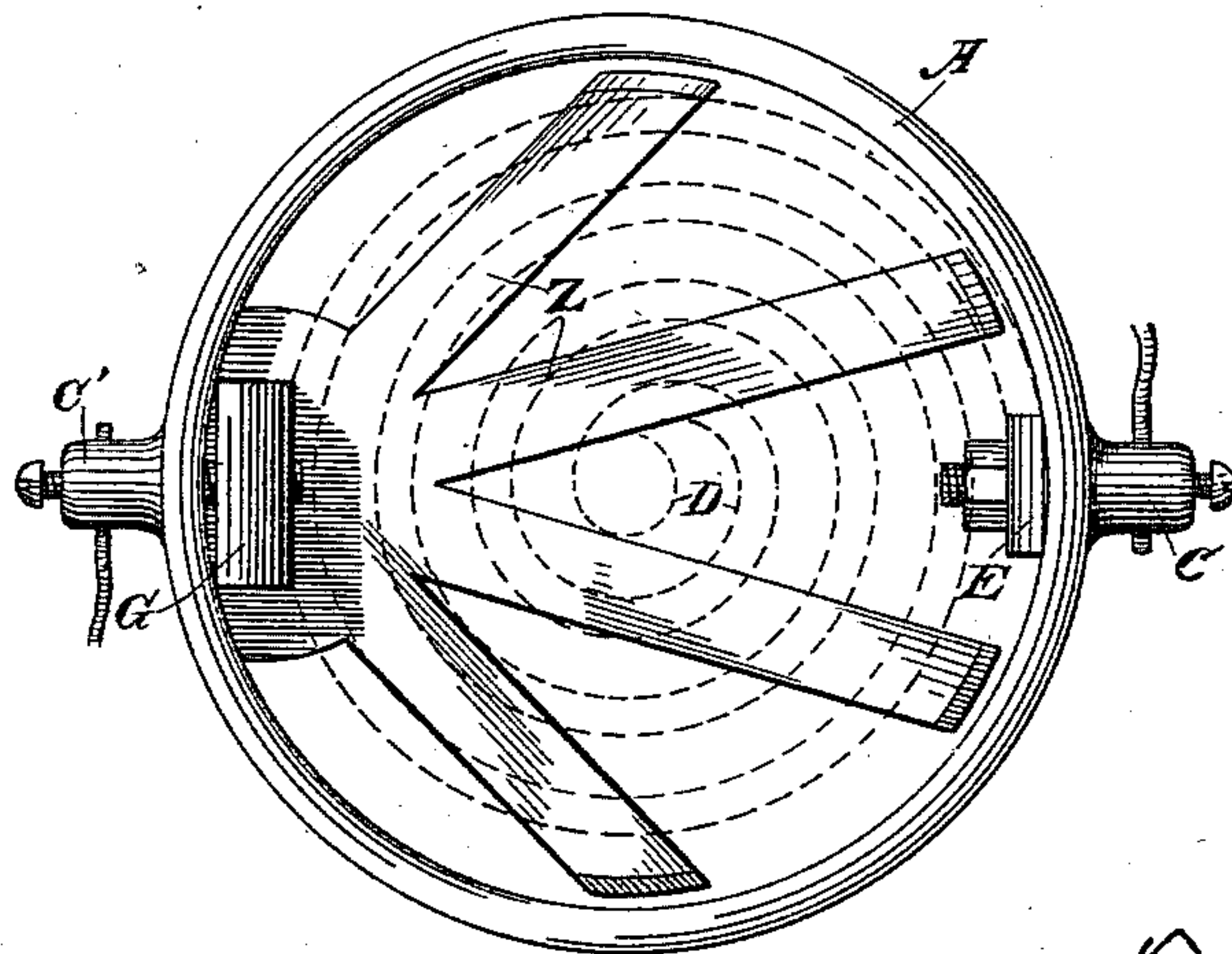


Fig. 2.



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UNITED STATES PATENT OFFICE.

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NON-POLARIZING CONSTANT-CURRENT BATTERY.

SPECIFICATION forming part of Letters Patent No. 379,372, dated March 13, 1888.

Application filed June 11, 1887. Serial No. 241,082. (No model.)

To all whom it may concern:

Be it known that I, FRANK J. CROUCH, of Eugene City, Lane county, State of Oregon, have invented an Improvement in Non-Polarizing Constant-Current Batteries; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an improved voltaic battery. It consists of a jar, containing a leaden coil which is connected with one binding-screw, a zinc plate which is connected with the opposite binding-screw, the two being separated and surrounded by sand, which is tamped in, and both of them lie above a body of sulphate of copper, which is placed in the bottom of the jar, while above the whole a mixture of sand and salt is tamped, and the whole is covered with a concave perforated cap of plaster-of-paris, tenacious clay, or other closing material.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a vertical section of a jar, showing the interior arrangement. Fig. 2 is a plan view showing the arrangement of the zinc.

A is a jar, made of any suitable material, the height of which is preferably about twice the diameter, and it has small holes made in each side near the top to receive the binding-screws C C', to which the connecting-wires may be attached. In the bottom of the jar I place sulphate of copper sufficient in quantity to last until the zinc is consumed.

Upon the top of the sulphate of copper a lead coil, D, is placed, and it has an arm, E, extending upward at one side, where it is fastened to the side of the jar by the binding-screw C, as shown. Upon this coil and the sulphate of copper fine sand or loam is placed and well tamped down until the jar is about one-half full, as shown at F, Fig. 1. Upon the top of this sand is placed the zinc, Z, which may be of any suitable form for the best results, and this zinc has an arm, G, extending up on one side of the jar, to which it is secured by the binding-screw C' in a manner similar to the leaden coil, thus holding the two metals firmly in place and preventing them shifting and moving about during transportation. More sand, mixed with a little chloride of sodium to make it absorb moisture

more readily, is tamped in about and above the zinc, as shown at H, Fig. 1, until the jar is nearly filled. The surface of this top layer is made concave, as shown, and is then finished by a thin coating of plaster-of-paris or tough potters' clay. It is then perforated for vent and to allow water to pass through it.

The object of the sand is to keep the metal clean and cause a greater steadiness in the chemical action and prevent all bubbles or deposits from accumulating, so as to weaken the action, which is a common difficulty in ordinary batteries. The absence of any liquid and the solidity with which the parts are secured together make it a valuable battery to ship or move about. In order to set this battery up for use the operator simply pours the concave basin on the top full of water, and allows it to stand four or five hours, with the poles or binding-screws C C' connected, and the water will gradually percolate through the packing to the bottom.

If the battery prove not strong enough, more water may be poured in after the first has been absorbed until no more can be absorbed by the battery. This battery will then work for several weeks without any care, and if it becomes weak after a time it may be enlivened by placing a table-spoonful of solution of sulphate of zinc or copper in the basin, so that it will flow down into the interior, as before described; or if the battery be new a simple addition of water will usually be sufficient.

This battery may be used in the same manner with other batteries, being coupled up either for quantity or intensity.

After the battery becomes old and used up the top or basin may be removed and the battery washed out and charged, as before described.

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

1. A voltaic battery consisting of the outer containing-jar, the leaden coil, and the superposed zinc, connected with and secured by opposite binding-screws, in combination with a preliminary layer of sulphate of copper upon which the leaden coil rests and a filling of sand intermediate with and surrounding the lead and zinc, substantially as herein described.

2. A voltaic battery comprising an exterior containing-jar having a layer of sulphate of copper upon its bottom, a leaden coil resting upon this layer and connected with and secured to a binding-screw at the upper side of the jar, and a filling of fine sand upon which a zinc plate is placed and secured to the opposite binding-screw with a final filling of sand and salt, with a cap or covering of plaster-of-paris or tough clay, substantially as herein described.

3. The battery composed of an exterior jar having binding-screws passing through holes near the top, a leaden coil placed upon a bed of solid sulphate of copper, connected with one

of the binding-screws, and a zinc plate or plates placed upon an intermediate bed of sand which is tamped upon and around the leaden coil, the zinc plate being connected with the opposite binding-screw, in combination with a final filling of sand and salt, forming a concave basin at the top, and a protecting cover or cap formed of plaster-of-paris or tough clay, perforated, substantially as herein described.

In witness whereof I have hereunto set my hand.

FRANK J. CROUCH.

Witnesses:

JEAN MORGAN,
GEO. F. CRAW.