

J. DOYLE.
Galvanic-Battery.

No. 224,404.

Patented Feb. 10, 1880.

Fig. 1.

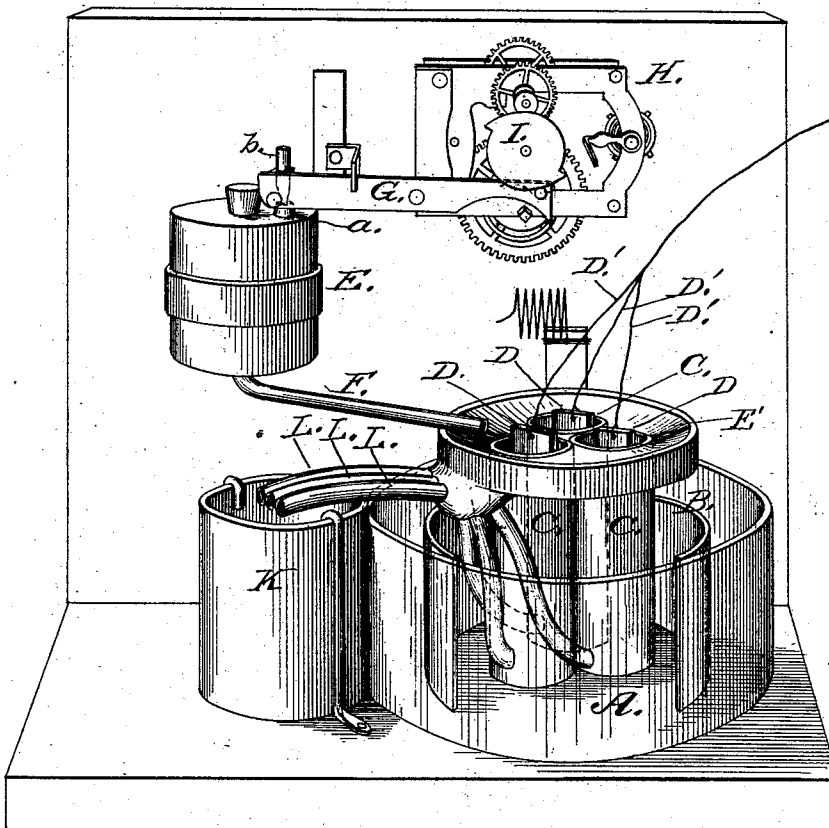
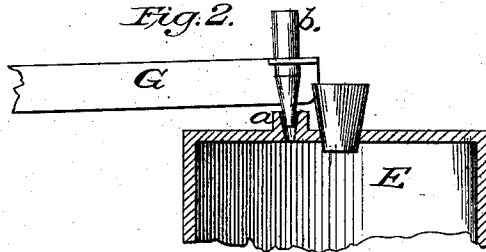


Fig. 2.



WITNESSES

John A. Blair.
Frank J. Chas.

INVENTOR

John Doyle
by E. W. Anderson
his ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN DOYLE, OF HOBOKEN, NEW JERSEY, ASSIGNOR OF ONE-HALF OF HIS
RIGHT TO C. COLES DUSENBURY, OF NEW YORK, N. Y.

GALVANIC BATTERY.

SPECIFICATION forming part of Letters Patent No. 224,404, dated February 10, 1880.

Application filed September 29, 1879.

To all whom it may concern:

Be it known that I, JOHN DOYLE, of Hoboken, in the county of Hudson and State of New Jersey, have invented a new and valuable Improvement in Galvanic Batteries; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a perspective view of my improved battery, and Fig. 2 is a detail view of the same.

This invention has relation to improvements in galvanic batteries.

The object of the invention is to devise a battery of this class which, in proportion to the strength of the current produced, will be of comparatively small cost both in construction and materials used, and which will give a strong, uniform, and continuous current.

My invention consists, first, in the combination, with a series of porous cups grouped together in a single cell of a galvanic battery, and containing a series of negative elements connected to one of the circuit-wires, of a funnel-shaped receptacle to receive and convey the excitant from a reservoir to said cups and a series of overflow-pipes to convey the exhausted excitant from the porous cups, as more fully hereinafter specified; second, in the combination, with a galvanic battery, of a reservoir containing the excitant and having a valve secured to a lever, and suitable time mechanism for operating said lever to open the valve at regular intervals, so as to admit air to the reservoir and permit a fresh supply of the excitant to flow into the cups, as more fully hereinafter specified.

In the annexed drawings, the letter A designates an ordinary jar, within which is a cleft annular zinc plate, B, connected in the usual manner to one of the circuit-wires, and two or more porous jars, C, having each an electro-negative plate, D, arranged therein. Each of these plates has a coupling-wire, D', that, at a suitable distance from the cups, are connected to the other circuit-wire.

E indicates a reservoir of suitable size containing a supply of the excitant, and provided

with a feed-pipe, F, extending, at its free end, over a species of funnel or hopper, E', in the bottom of which the porous cups are cemented.

In the top of this reservoir is a tube, *a*, usually of conical bore, in which fits tightly a plug, *b*, connected pivotally to a vertically-vibrating lever, G, having a suitable fulcrum. This lever is vibrated automatically by means of a clock mechanism, H, driving a single, double, or other cam, I. The cam is a simple metallic disk having one, two, or more eccentric teeth, which, as they come successively in contact with the lever aforesaid, depress its power end and raise the plug *b*, admitting air into the interior of the reservoir and allowing the exciting-fluid to flow through the feed-pipe into the porous cups aforesaid. This cam will usually rotate completely in an hour, more or less, and if provided with two of the teeth aforesaid diametrically opposite each other will renew the exciting-fluid at the end of each half-hour. If there be four teeth arranged at a distance of ninety degrees this will occur every one-quarter of an hour.

L indicates tubes opening usually into the bottom portion of the porous cups aforesaid, and extending over the edge of a vessel, K, as shown in Fig. 1. These pipes carry off the overflow of expended or partly-expended material from the porous cups, and discharge it into the vessel K, where it may be rendered effective by the addition thereto of proper chemicals.

By using two or more porous cups, each holding a negative plate of the battery, in connection with the zinc plate or positive pole, the strength of the current is greatly increased without increasing the rate of decomposition of the zinc plate, and I obtain with two porous cups, a zinc, and jar a current equal in strength to that produced by the use of two cups, two zinc plates, and two jars without a corresponding consumption of material. At the same time this battery occupies one-half less space than the two-cell battery, and economizes in the cost of one jar and one zinc plate.

In practice the valve in the reservoir may be operated by hand or other suitable means.

What I claim as new, and desire to secure by Letters Patent, is—

1. In combination with the porous cups of

an electric battery grouped together, as described, and containing a series of negative elements connected to one of the circuit-wires, the funnel E', to receive and convey the excitant
5 from a reservoir to the cups, and the overflow-pipes L L L, to convey the exhausted excitant from the cups, substantially as specified.

2. In combination, in a galvanic battery, a reservoir containing the excitant, the said res-
10 ervoir having a valve secured to a lever, and suitable time mechanism for operating said lever to open the valve at regular intervals, so as to admit air to the reservoir and permit a supply of fresh excitant to flow into the cups,
15 substantially as specified.

3. In combination with the porous cups C, containing the negative elements of a galvanic battery, the funnel E', the overflow-pipes L, the reservoir E and pipe F, and the opening *a* and valve *b*, the latter being connected to a lever, 20 G, adapted to be operated by suitable time mechanism, substantially as and for the purposes specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence 25 of two witnesses.

JOHN DOYLE.

Witnesses:

GEO. R. JAKES,
GEORGE W. TIBBATS.