(No Model.) 2 Sheets—Sheet 1.

C. R. B. CLAFLIN, Jr. & J. W. FLAGG.

GALVANIC BATTERY.

No. 381,336. Patented Apr. 17, 1888.

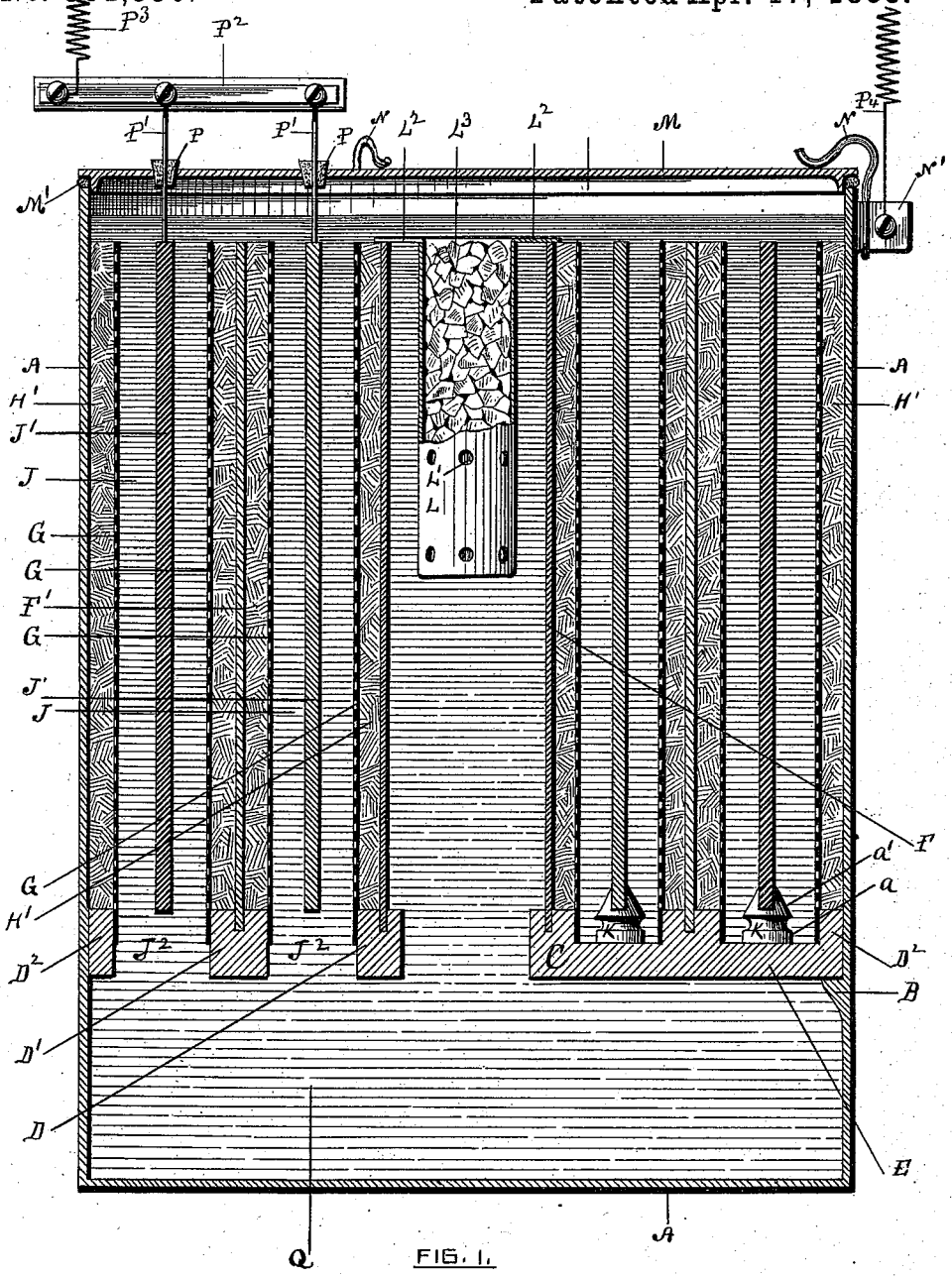

FIG. 1.

WITNESSES:

Rufus B. Fowler

Chas. F. Schmelz.

INVENTORS:

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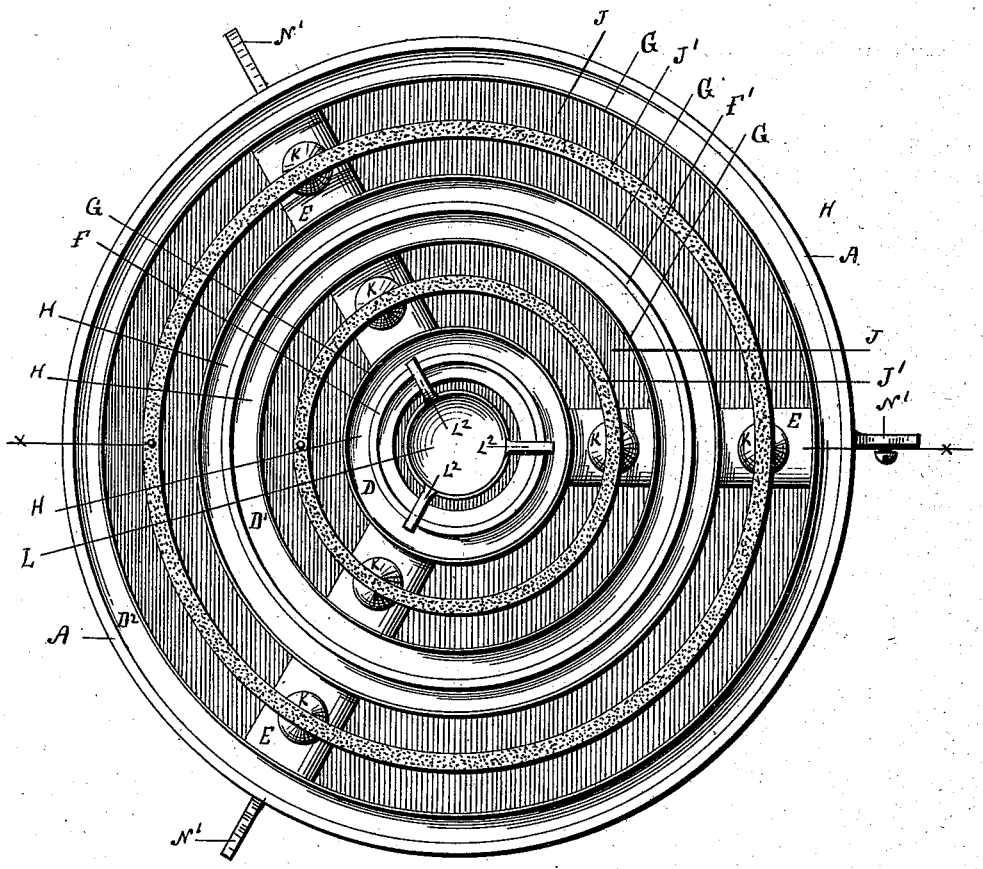

FIG. 2.

WITNESSES:

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INVENTORS:

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UNITED STATES PATENT OFFICE.

CHARLES R. B. CLAFLIN, JR., AND JOSEPH WALTER FLAGG, OF WORCESTER, MASSACHUSETTS.

GALVANIC BATTERY.

SPECIFICATION forming part of Letters Patent No. 381,336, dated April 17, 1888.

Application filed November 17, 1886. Serial No. 219,191. (No model.)

To all whom it may concern:

Be it known that we, CHARLES R. B. CLAFLIN, Jr., and JOSEPH WALTER FLAGG, citizens of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Galvanic Batteries, of which the following is a specification, containing a full, clear, and exact description, reference being had to the accompanying drawings, in which—

Figure 1 represents a vertical sectional view of a battery embodying our invention; and Fig. 2 is a top view with the cover, exciting-fluid, and depolarizing material omitted.

Similar letters refer to like parts in the several views.

A A denote a metallic jar, preferably of iron, having inwardly-projecting spurs or ledges B a short distance above the bottom of the jar to support the spider C, made preferably of iron or of the same material as the jar A A, which is formed of the three annular rings D D′ D^2, united by the radial arms E. In each of the rings D D′ we cast the sheet-iron cylinders F F′, which are thus united to the rings and are supported in a vertical position, or instead of being cast in the rings they may be otherwise united so as to secure a close contact. Cylinders G, of sheet metal, preferably of iron and finely perforated, are placed over the outer edge of the ring D, the inner edge of the ring D^2, and the outer and inner edges of the ring D′, with their lower edges resting on the radial arms E, whose upper surfaces are slightly below the upper surfaces of the rings, as shown in Fig. 1. The solid cylinders F F′ and the perforated cylinders G thus form annular chambers H, which are closed at the bottom by the rings D D′, and an annular space is also formed by the outer perforated cylinder and the sides of the jar. In each of the annular spaces J between the perforated cylinders we place the cylinders of zinc, J′, supported by the insulating feet or stands K, which we make preferably of wood or porcelain and which are shown in elevation in Fig. 1. These feet consist of a base, *a*, and a conical top, *a′*, having a groove to receive the zinc cylinders J′. A cylindrical cup or reservoir, L, closed at its lower end and having perforations L′ in its sides, is suspended by the hooks L^2, which rest on the upper edge of the inner iron cylinder, F.

In charging the battery we fill the annular chambers H with a depolarizing material, H′, preferably of oxide of copper, which forms a wall of oxide of copper held by the perforated cylinders G in contact with the solid iron cylinders F F′, and also with the inner surface of the sides of the jar, which form the negative electrodes of the battery. An exciting-fluid, preferably a solution of potash, is then placed in the jar, nearly filling it, as shown in Fig. 1. Crystals of potash are placed in the reservoir L and a cover, M, is placed on the jar with its edges resting on an elastic gasket of rubber or other suitable material, by which the jar is hermetically sealed by means of the hooks N, attached to the projections N′ on the outside of the jar, and which are sprung over the edge of the cover, their elasticity serving to hold the cover in close contact with the elastic gasket.

Insulating-stoppers P are placed in holes in the cover, through which wires P′, connected with the zinc cylinders or positive electrodes, are carried and attached to a bar, P^2, from which the circuit-wire P^3 is taken. To one of the projecting lugs N′ a circuit-wire, P^4, is taken, which is thus connected through the iron jar with the iron or negative electrodes. Beneath each of the zinc cylinders J′ are annular openings J^2, broken only by the radial arms, and in the center of the jar is a circular opening beneath the reservoir L, by which the central space inclosed by the iron cylinder F and the annular spaces J J have a communication with the chamber Q between the bottom of the jar and the spider C. The action of the battery is the same as the well-known potash and oxide-of-copper battery, and does not require particular description. In our improved battery, however, we largely increase its force and prolong its efficiency by our peculiar construction.

The negative electrodes are carried up on both sides of the zinc cylinders and at equal height. The depolarizing material is confined by the perforated walls, which allow the exciting-fluid to enter freely and come in contact with the negative electrodes.

The solution forming the exciting-fluid is

maintained by the immersed crystals held in the reservoir L, and the deposit arising from crystallization or other causes is permitted to fall freely through the openings in the spider C into the chamber Q, thereby keeping the electrodes free from the accretion incident to the deposit of solid matter.

The tops of the insulating-feet supporting the zinc cylinders are conical in form, in order to allow the deposit to slide off and prevent its accumulation in contact with the zinc cylinders.

The number of zinc cylinders may be diminished or increased, as desired, or the central reservoir may be omitted in the form, as shown, and a bottom placed in the central cylinder, F, forming a reservoir for crystals of potash, or they may be suspended in the exciting-fluid in any of the well-known methods.

We are aware that the electrodes of a galvanic battery have heretofore wound into volutes and embedded in an excitant material. Such we do not claim.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a galvanic battery consisting of a jar containing an exciting-fluid, a positive electrode formed of a wall standing vertically in said exciting-fluid, a negative electrode formed of a vertical wall presenting an opposing face to the positive electrode, a perforated wall parallel with the surface of the negative electrode, and a depolarizing material held between the negative electrode and said perforated wall, substantially as described, and for the purpose set forth.

2. In a galvanic battery, the combination, with a jar containing an exciting-fluid, of a spider or disk having openings and supporting the positive and negative electrodes, said spider or disk being maintained in position in said jar above the bottom, so as to form a chamber for the deposit of solid matter, substantially as described.

3. In a galvanic battery, the combination, with a jar containing an exciting-fluid and a central reservoir containing the crystals of the exciting-salt, of a series of positive and negative electrodes placed alternately around said central reservoir, with annular spaces between said electrodes for the exciting-fluid, said annular spaces communicating with each other, substantially as described, and for the purpose set forth.

4. In a galvanic battery, the combination, with a jar containing an exciting-fluid and positive and negative electrodes, of supporting-feet by which said positive electrodes are held above the bottom of the jar, the upper surface of said feet being conical, as and for the purpose set forth.

5. In a galvanic battery, the combination, with a jar containing an exciting-fluid and positive and negative electrodes, of a cover fitting said jar, an elastic gasket between said jar and cover, and elastic hooks attached to said jar and engaging the upper surface of the cover, substantially as described.

6. In a galvanic battery, the combination, with a jar containing an exciting-fluid and positive and negative electrodes, of a central chamber communicating with the spaces around the positive and negative poles, and a reservoir suspended in said central chamber, substantially as described, and for the purpose set forth.

7. In a galvanic battery, the combination, with a jar containing an exciting-fluid, of the positive electrodes J′, negative electrodes F F′, perforated walls G, and depolarizing material, H′, said electrodes, perforated walls, and depolarizing material being arranged in vertical walls immersed in the exciting-fluid, substantially as described.

8. In a galvanic battery, the combination, with a jar containing an exciting-fluid and positive and negative electrodes, of spurs B, spider C, having openings J^2, said spider supporting the electrodes above the bottom of the jar, and a central reservoir containing the crystals of the exciting-salt, substantially as described.

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Witnesses:
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