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(No Model.) 2 Sheets—Sheet 1

W. P. KOOKOGEY.

GALVANIC BATTERY.

No. 402,166. Patented Apr. 30, 1889.

Fig. 1.

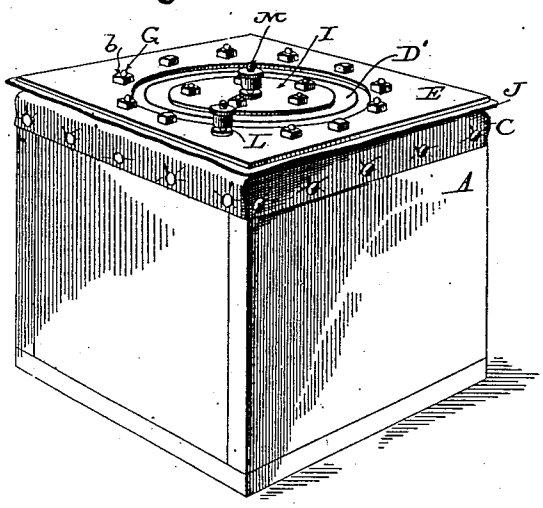


Fig. 2.

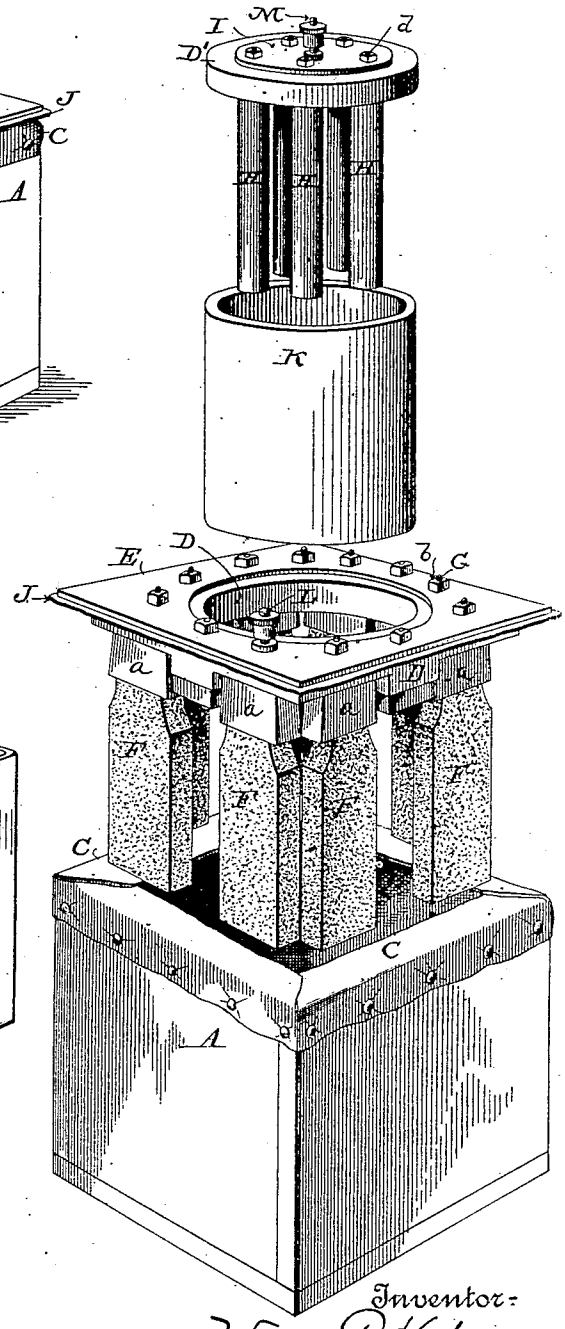
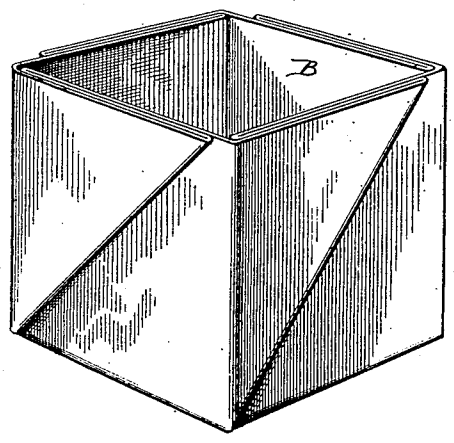


Fig. 3.



Witnesses
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Walter S. Dodge

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William P. Kookogey,
By his Attorneys,
Dodger Son

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Fig. 4.

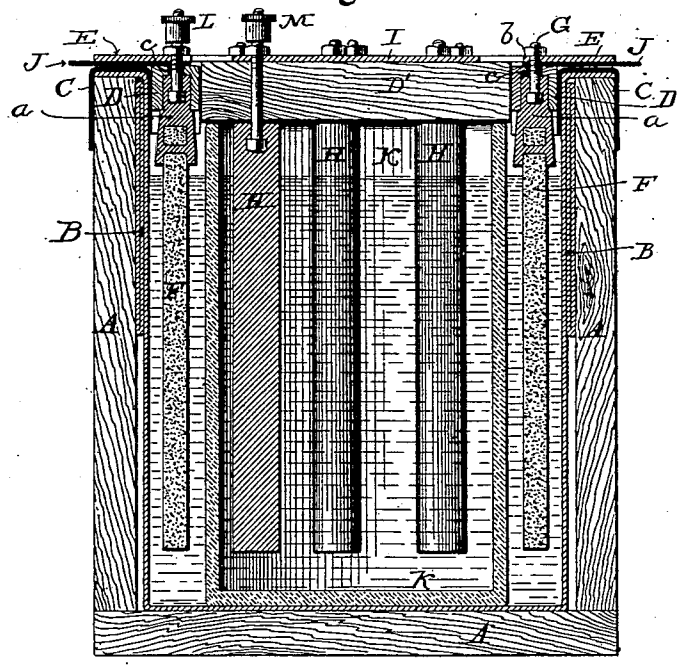


Fig. 5.

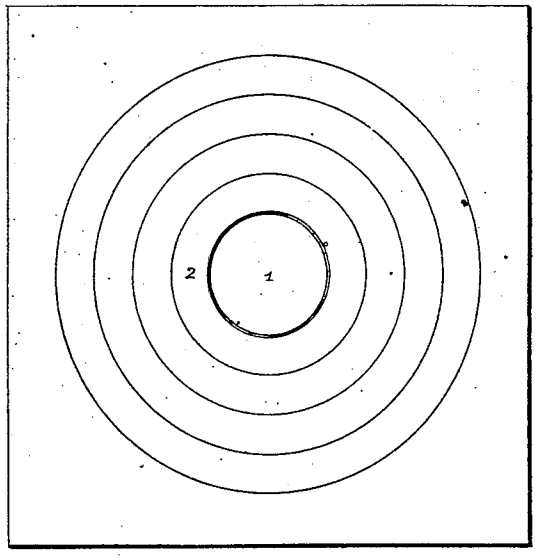
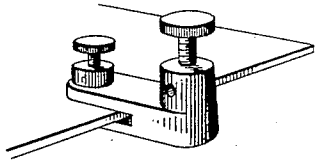


Fig. 6.



Witnesses,
James F. DuHamel
Walter S. Dodge

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By his Attorneys,
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UNITED STATES PATENT OFFICE.

WILLIAM P. KOOKOGEY, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE KOOKOGEY ELECTRIC COMPANY.

GALVANIC BATTERY.

SPECIFICATION forming part of Letters Patent No. 402,166, dated April 30, 1889.

Application filed June 13, 1887. Serial No. 241,181. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. KOOKOGEY, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Electrical Batteries, of which the following is a specification.

My invention relates to batteries for the generation of electricity; and it consists in various features and details of construction hereinafter set forth, the improvements having reference more particularly to the connection of the elements with the binding-screws and to the packing or closing of the cell to prevent the slopping of the liquid or solution therefrom.

Referring to the accompanying drawings, Figure 1 is a perspective view of a battery-cell embodying my improvements; Fig. 2, a view of the same, showing the elements and the porous cup removed from the cell; Fig. 3, a perspective view of the lining of the cell; Fig. 4, a transverse section through the battery, showing the manner of attaching the elements to the connecting-plates; and Fig. 5, a diagram or view illustrating the manner of cutting the connecting-plates, whereby I am enabled to utilize all the material; Fig. 6, a view showing the adjustable binding-post.

Referring again to the drawings, the outer casing or shell proper consists of a box, A, which may be conveniently and economically made of wood, and a lining, B, of lead or other material not liable to injury by the solution. This lining I preferably form of sheet-lead, without joints, by folding the sheet in the manner indicated in Fig. 3, the edges of the sheet being folded over the edges of the box to protect the same.

C indicates a packing formed of sheet-rubber tacked to the upper portion of the box A on the outer face overlapping the upper edges of the box and extending inward, as indicated in Figs. 2 and 4.

D indicates the cover or top of the box, which is made of wood or other suitable material, adapted to fit within the top of box or shell A, and provided on its upper face with a plate, E, of brass, copper, or other good electrical conductor.

F indicates the carbon pencils, each of which is perforated and has cast upon it a head, *a*, the metal of which passes through the perforation or perforations in the carbon, and is thus securely held thereto. Cast and embedded in the lead head of each carbon pencil is a brass screw, G, which may be formed with a polygonal head or shank, or with a thread the reverse of that on the protruding end to prevent the screw from turning or drawing out when the nut *b* is being turned off the screw.

The screws or stems G of the several pencils are each passed through holes *c* in the wooden top D and in the brass plate E, and are drawn firmly against the top or cover by means of the nuts *b* applied to the protruding ends of the screws. The nuts are formed with true plane faces, so as to insure a close contact and broad bearing with and upon the metal plate E to produce a good and ample electrical contact. By this arrangement the several elements are electrically connected with each other through the plate E and constitute in effect one large element. In like manner the zinc rods or pencils H are provided with threaded stems or screws *d*, which pass through the cover or top D, and a second brass plate or disk, I, of smaller area than the interior opening of the plate E and insulated from said plate by the wood of the top or cover D.

If desired, the zinc element can be carried by an independently-removable cover, D'; but this is immaterial, and the principle and result will remain the same whether the cover be made in two parts or in a single piece, the brass connecting-plates E and I being in either case separated and insulated one from the other. It is of course immaterial what form is given to said plates, or either of them, so far as their office in connecting the separate rods or pencils is concerned, though I prefer, for considerations of economy hereinafter set forth, to adopt the circular form for all the plates except the larger or outer plate of the largest battery ordinarily constructed on this plan, such batteries at this time being usually put up in three sizes.

Between the wooden top D and the brass plate, and projecting beyond the edges of the latter, is clamped a rubber packing-sheet, J, which, resting upon the packing C, insures a

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close and water-tight joint. So, too, the under face of the cover D or D', in case the latter be made separate, is faced with rubber to rest upon the top of the porous cell K and prevent the solution from slopping over the upper edge thereof.

The opening in the cover, when the cover is provided with such opening, is of a size to permit the passage of the porous cell through it, but not larger than necessary for that purpose. When, however, the cover is made without such opening, I prefer to form a groove in the under face of cover D and to extend the mouth of the porous cell into said groove, such arrangement effectually preventing the slopping of the solution.

The binding-posts L and M may be applied to the plates E and I at any desired points, which is a matter of great convenience and enables the batteries to be conveniently connected with the translating devices with which they are to be used without being placed in any special or prescribed position, and by employing a clamping binding-screw socket, as in Fig. 6, the point of connection may be shifted at will. The form, size, and character of the elements may be varied as desired, and the invention is to a greater or less extent applicable to batteries employing other elements, as will be readily understood.

On referring to Fig. 5 the manner of cutting the connecting rings or plates from the sheet of brass or other metal will be readily understood. These sheets come of standard and uniform size, and the rings or plates are cut therefrom in concentric circles, as shown in said figure, the central disk or plate, 1, and the first outer ring, 2, which are separated by a broad saw-kerf, forming the connecting-disks for the smallest-sized battery. The next outer or second ring from the central disk and the fourth ring from said central disk constitute the connecting-plates for the second-sized battery, and the remaining third ring and outer plate or ring constitute the connecting-plates for the largest of the three sizes. In this manner I am enabled to utilize to the greatest advantage the metal of the plate, producing no waste except what is cut out by the saws, and this loss is scarcely appreciable.

It is obvious that, instead of circular form, any other geometrical figure may be adopted for the plates E and I, the important point being that the same general outline be preserved, so that one may be cut from within the other in order to utilize fully and to the best advantage the material of the plate.

I am aware that it is not broadly new to construct a battery with concentric rings, each ring carrying a series of pins or plates constituting a battery element, and hence I do not broadly claim such construction; but I am not aware that any one has hitherto secured a series of metallic elements to such rings by means of threaded stems and nuts, thereby securing perfect contact with and holding the rings in place upon the top or cover.

I claim—

1. In combination with box or shell A, the lining B, formed of a single piece of sheet metal folded together, substantially as shown, to fit the bottom and walls of the outer shell, and forming a water-tight lining without seam or joint.

2. In combination with box A, provided with metallic lining, the rubber packing, C, applied to the upper edge of said box or shell, top or cover D, provided with metal plates E and I, carbon element sections F, each having a threaded stem extending through the brass plate E, nuts B, applied to said stems and bearing upon the plate E, zinc element sections H, likewise provided with threaded stems extending through plate I, and nuts applied to said stems and bearing upon the plate, substantially as set forth.

In witness whereof I hereunto set my hand in the presence of two witnesses.

WM. P. KOOKOGEY.

Witnesses:

WILLIAM W. DODGE,

T. W. SORAN.