

(No Model.)

H. J. BREWER.
GALVANIC BATTERY.

No. 323,902.

Patented Aug. 11, 1885.

Figure 1.

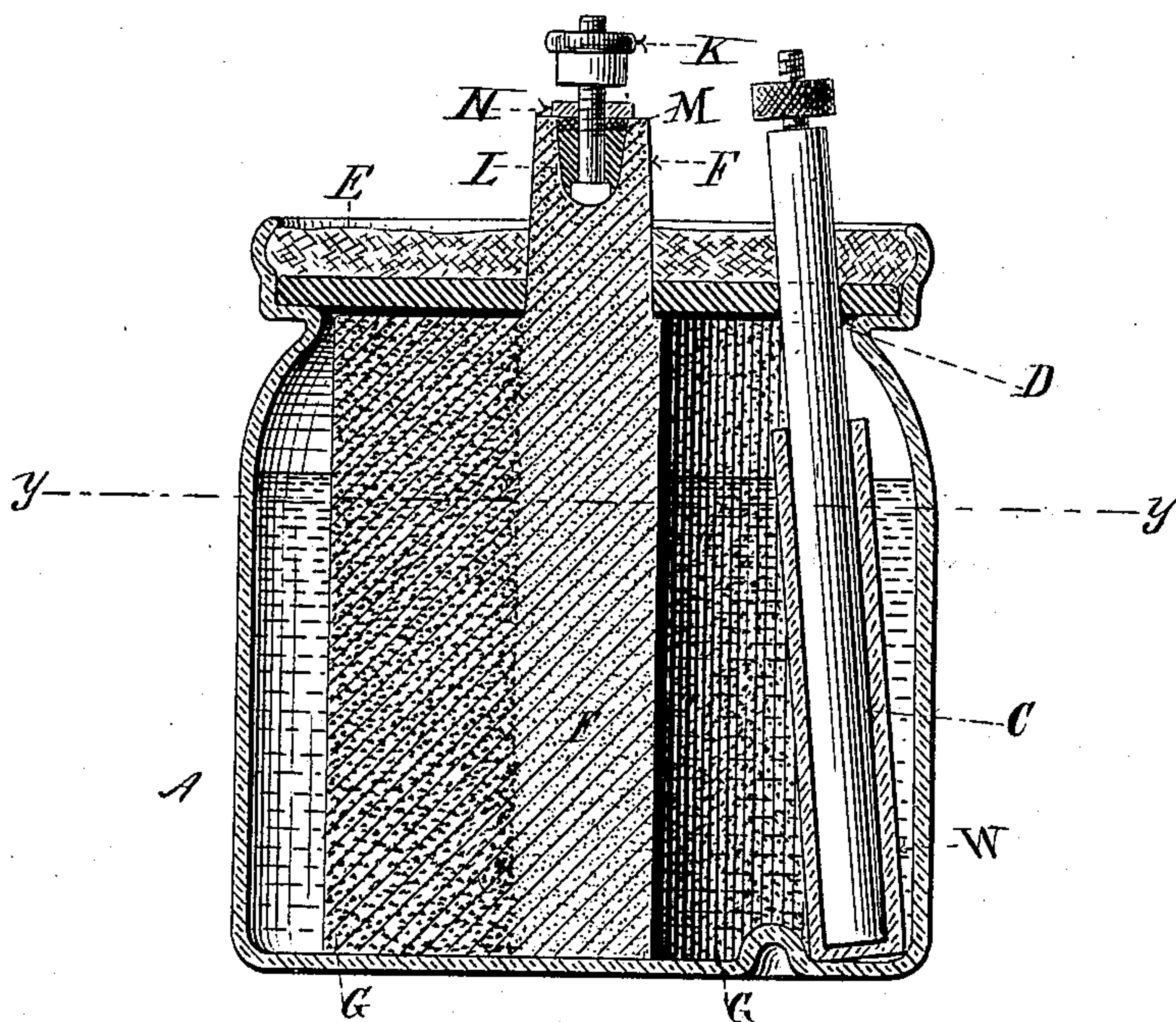
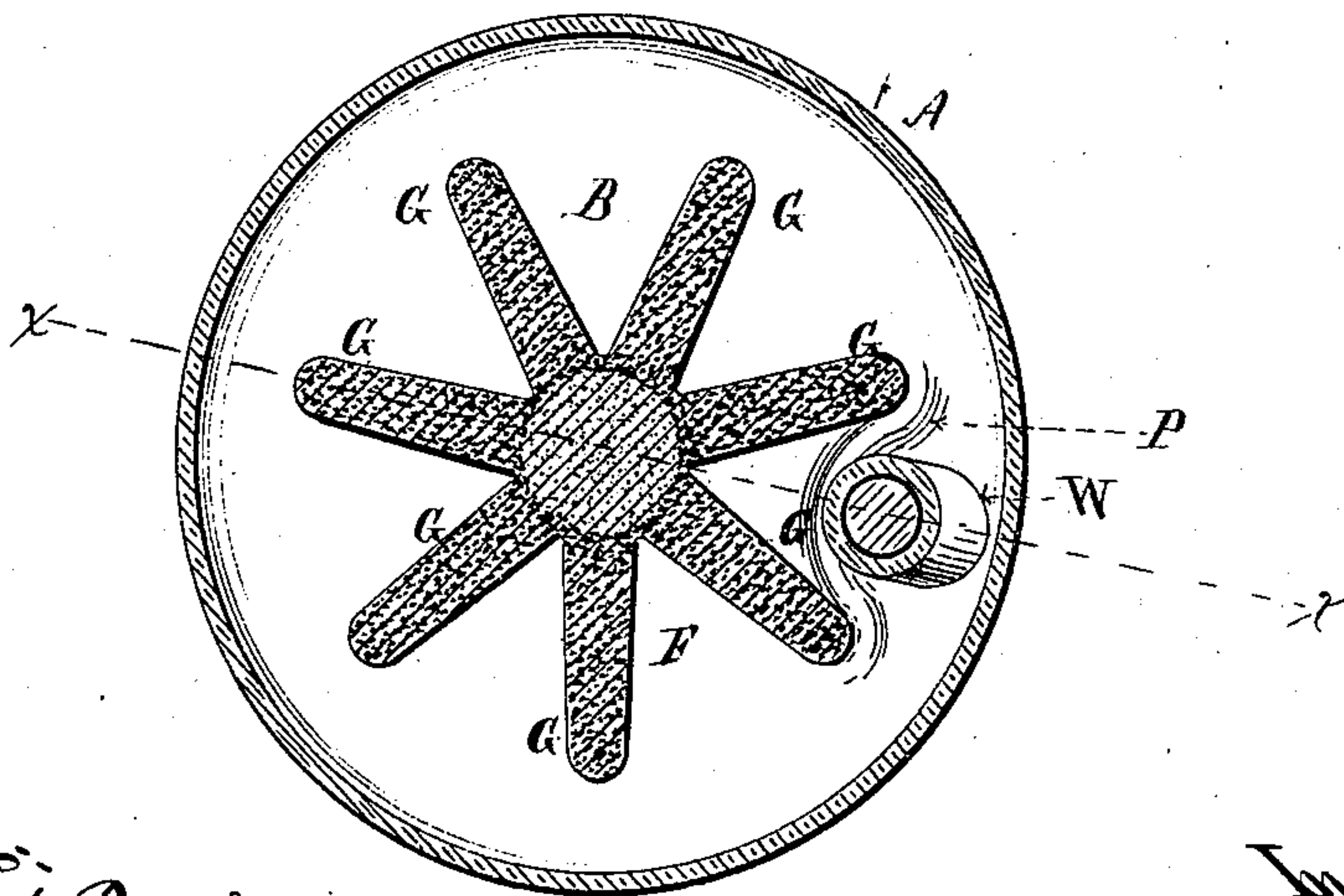


Figure 2.



Witnesses:
William A. Pollock
Wm. Gardner

Inventor:
Horatio J. Brewer
By his Attorney,
E. W. Dickerson

UNITED STATES PATENT OFFICE.

HORATIO J. BREWER, OF NEW YORK, N. Y.

GALVANIC BATTERY.

SPECIFICATION forming part of Letters Patent No. 323,902, dated August 11, 1885.

Application filed July 25, 1884. (No model.)

To all whom it may concern:

Be it known that I, HORATIO J. BREWER, of the city, county, and State of New York, have invented a new and useful Improvement in Galvanic Batteries, of which the following is a full, true, and exact description, reference being had to the accompanying drawings.

This invention relates to an improvement in galvanic batteries. It is shown as applied to a form of cell patented to me on the 23d day of May, 1882, and on the 15th day of January, 1884, the difference being mainly in the form of the electro-negative element. I have found that a very beneficial result and a greatly increased efficiency in the battery are obtained by exposing a large surface of the electro-negative element to the exciting-liquid. I therefore propose to make my electro-negative element star-shaped in cross-section—that is, having three or more projections or ribs exposed on both sides to the action of the exciting-liquid. This electro-negative pole may be either of carbon conglomerate, or it may be of a compound of carbon with the conglomerate patented to G. L. Leclanché November 16, 1880, or it may be composed of conglomerate entirely. By using a rod of zinc and the peculiar-shaped electro-negative element shown the zinc can be brought closely between two of the wings of the electro-negative body. The preferable method of making my electro-negative element is, however, shown in the drawings, in which I employ a compound element of carbon and another more strongly electro-negative conglomerate.

My invention will be readily understood from the accompanying drawings, in which Figure 1 represents a vertical section of my battery; Fig. 2, a cross-section through Fig. 1 on the line *y y*, Fig. 1 being a cross-section through Fig. 2 on the line *x x*.

Similar letters refer to similar parts in the drawings.

A represents a suitable inclosing-jar; B, the electro-negative element; C, the zinc; D, the cover, which is shown as sealed in the cell by paraffine E.

The particular construction of my cell, other than that of the electro-negative element, is not fully shown. The electro-negative ele-

ment, as shown, consists of a central carbon rod, F. Surrounding and attached to this are the wings G G G. This element is made in a mold by pressing together firmly the pole F and the wings G, and thereafter heating them together to a suitable temperature to drive out the cementing material without destroying the effective parts of the electro-negative element. The carbon compound and the electro-negative wings are of course put in in a soft condition and melted together. If desired, as before stated, the element might be made of the more strongly electro-negative material alone or entirely of a carbon compound; but by using the form shown I am enabled to utilize the conducting power of carbon and the strongly electro-negative quality of the compound, said compound not being so good a conductor as the carbon within it. I may likewise make my element by making the upper part of carbon and the lower part of carbon conglomerate—that is, only the upper part of the wings and the center may be of carbon, or the carbon rod may extend only partly down through the electro-negative element. I propose to attach a binding-screw, K, to my electro-negative element by placing it in a cup-shaped recess in the upper end of the carbon, and then pouring in melted lead L or other suitable material around it. This lead I may cover with sealing-wax M, and then place a washer, N, upon that. I do not limit myself to this method of making a connection; but any other suitable one may be used. As will be seen, the zinc rod is located in the opening between two of the wings of the electro-negative element, and the rib P, molded in the glass bottom, separates the lower end of the zinc from the lower end of the electro-negative element. In certain cases I inclose the lower part of my zinc rod in a porous cup, W. This porous cup serves, further, to prevent any accidental contact with the carbon element.

Instead of making the center rod, F, of the carbon element of carbon, in some cases I may make it of metal, though I prefer carbon. When making it of metal, I may use brass, and preferably cut a screw-thread or other rib upon its surface to insure good contact. It is obvious, likewise, that the size of the ribs is not essential, and they may not extend so far

as shown, and in some cases they need not extend all the way around the center conductor, but may be arranged on two sides thereof, so as to increase the effective surface.

5 What I claim as my invention, and desire to secure by Letters Patent, is—

10 1. The improved electro-negative element shown, consisting of two parts of different materials, one part being of a rod of comparatively good conducting material and the other of wings or projections of a comparatively good depolarizing material, substantially as described.

15 2. The combination, in an electro-negative element, of a central supporting-core consisting of a compound composed substantially of pure carbon, and having attached to it and integral therewith three or more ribs or plates projecting radially from the center and formed of a compound more strongly electro-negative than carbon, substantially as described.

20 3. The combination, in an electro-negative element, of a central supporting-core consisting of a compound composed substantially of pure carbon, and having attached to it and integral therewith three or more ribs or plates projecting radially from the center and formed of a compound more strongly electro-negative than carbon, with a zinc rod located between 30 the said ribs, substantially as described.

4. The combination, in an electro-negative

element, of a central supporting-core consisting of a compound composed substantially of pure carbon, and having attached to it and integral therewith three or more ribs or plates 35 projecting radially from the center and formed of a compound more strongly electro negative than carbon, and provided at its upper extremity with a binding-cup attached to the carbon-support by an intermediate lead filling, 40 substantially as described.

45 5. The improved electro-negative element shown, which consists of a central rod of relatively good conductivity surrounded by three or more projecting plates formed of a conglomerate made in whole or in part of carbon, substantially as described.

6. The combination of a zinc rod, C, and enclosing porous casing W, for the purpose of preventing contact of the zinc rod with the 50 carbon element of a battery, substantially as described.

7. The combination of the zinc rod, porous casing embracing said rod, and the electro-negative element provided with projecting 55 wings, the said zinc being arranged between the wings, substantially as described.

HORATIO J. BREWER.

Witnesses:

GEO. H. EVANS,
WM. A. POLLOCK.