(No Model.)

# H. J. BREWER.

## BATTERY ELECTRODE.

No. 390,748. Patented Oct. 9, 1888.

Fig. 1.

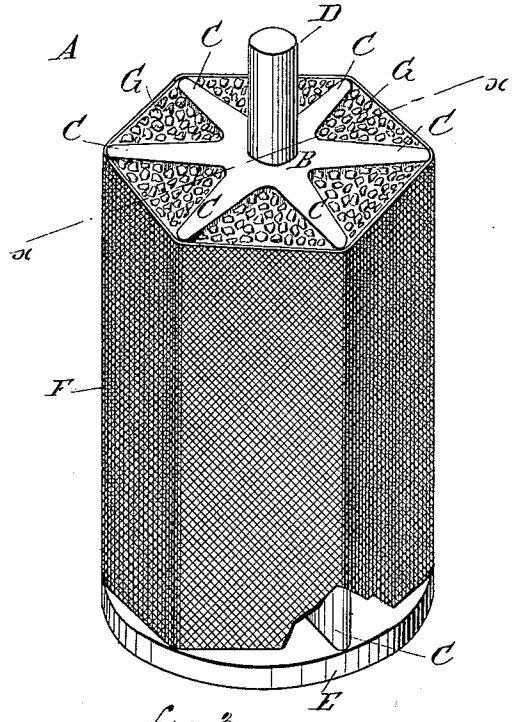



Fig. 2.

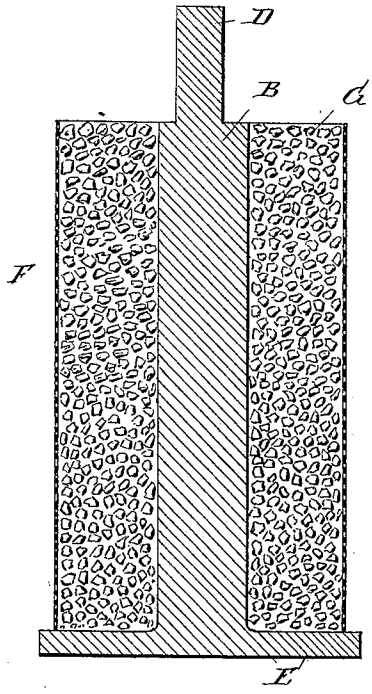



Fig. 3.

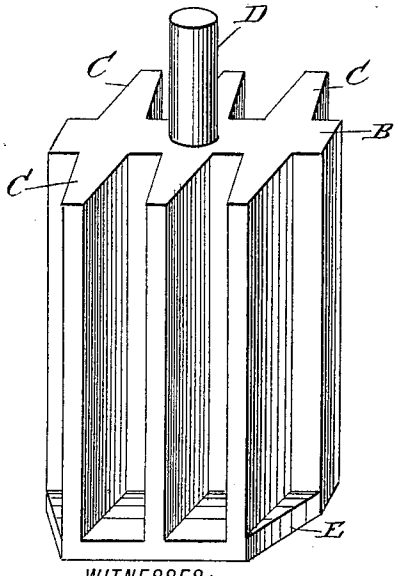
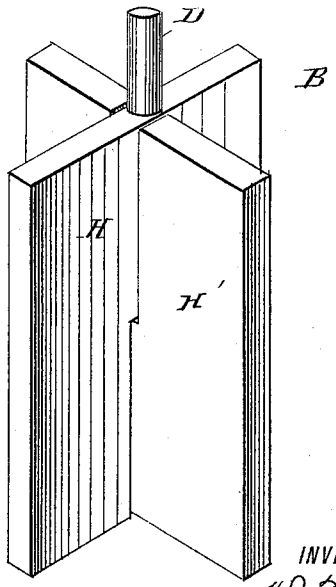



Fig. 4.




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# UNITED STATES PATENT OFFICE.

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

## BATTERY-ELECTRODE.

SPECIFICATION forming part of Letters Patent No. 390,748, dated October 9, 1888.

Application filed May 22, 1888. Serial No. 274,739. (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 Improved Battery-Electrode, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved battery-electrode which combines a large amount of contact-surface with great conductivity and a low electrical resistance.

The invention consists of an electrical conductor formed of carbon or other suitable material and provided with projections on its surface, of an envelope or bag of suitable material drawn over the said projections to form pockets, and of a granulated or powdered electro-negative material packed in the said pockets between the said conductor and the envelope or bag.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claim.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of my improvement with parts broken out. Fig. 2 is a sectional side elevation of the same. Fig. 3 is a perspective view of a modified form of conductor; and Fig. 4 is a like view of another modification of the conductor.

The improved battery-electrode A is provided with a conductor, B, formed of carbon or other suitable material, and provided with projections C, which may be arranged either in the shape of a star, as illustrated in Fig. 1, or in the form shown in Fig. 3. On the upper end of the conductor B is formed a post, D, of any approved construction, for conducting the electricity from the electrode. On the lower end of the conductor B may be held a disk, E, forming the bottom for the electrode.

Over the outer ends of the projections C is stretched an envelope or bag, F, of suitable material, so as to form pockets between the said envelope or bag and the projections of the conductor. Into these pockets is packed tightly the granulated or powdered electro-negative material G, which is pressed firmly into contact with the conductor B and its projections C and the said bag or envelope. If the conductor is provided with the bottom disk, as before mentioned, the envelope F may be open at both ends; but the envelope or bag may itself form the bottom, thus avoiding the necessity of having a disk E on the conductor B, as the said bottom of the envelope or bag will form the bottom for the electrode. The envelope may also be drawn over the top of the projections and fastened in any suitable manner, so as to cover the substance packed in the pockets. I may also form the conductor in the manner shown in Fig. 4, in which the plates H and H′ are provided in their middle with slots extending half the length and fitted together at right angles, as shown in Fig. 4. The plates thus form projections, over the outer ends of which is stretched the envelope or bag F, in the same manner as above described in reference to the other figures.

A very compact electrode is thus formed, which presents a large amount of surface in the conducting-carbon B and its projections C for contact both with the electro-negative material G and the exciting-liquid, and which, as the said liquid can pass freely through the fabric F, offers a low internal resistance to the action of the battery.

The projections C are preferably integral with the conductor B; but they may be independent of the latter, and of different material therefrom. The envelope or bag F is preferably of linen or cotton fabric loosely woven; but it may be constructed of wire or any other suitable material.

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

A battery-electrode comprising a conductor having projections, a bag or envelope fitting over said projections to form pockets, and an electro-negative material packed in the said pockets between the said bag and the conductor, substantially as shown and described.

HORATIO J. BREWER.

Witnesses:
THEO. G. HOSTER,
C. SEDGWICK.