

(No Model.)

W. HANSON.
PRIMARY BATTERY.

No. 452,303.

Patented May 12, 1891.

Fig 7

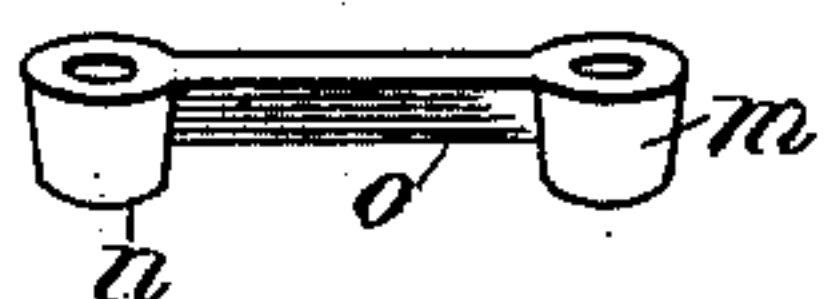


Fig 1

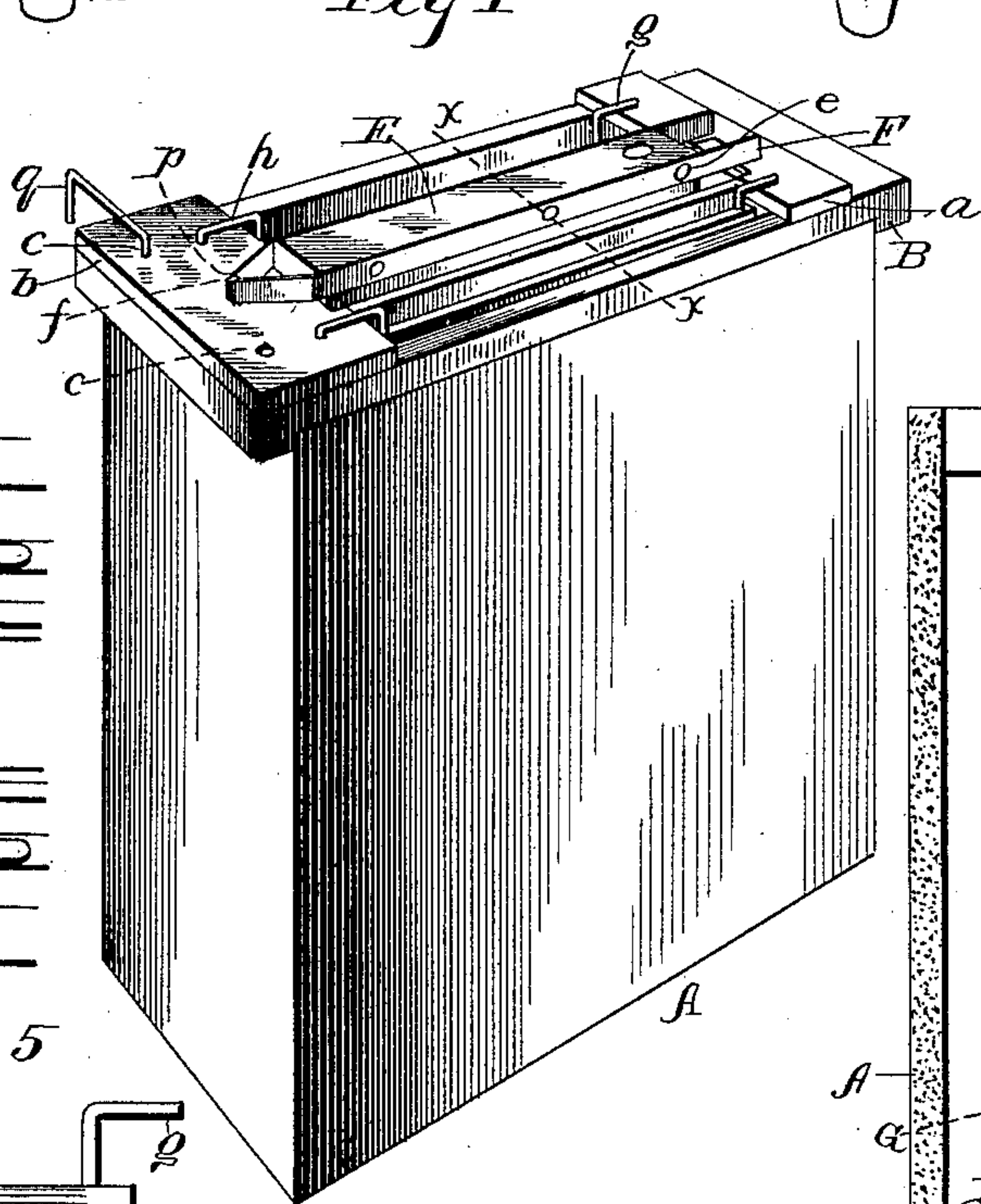


Fig 6

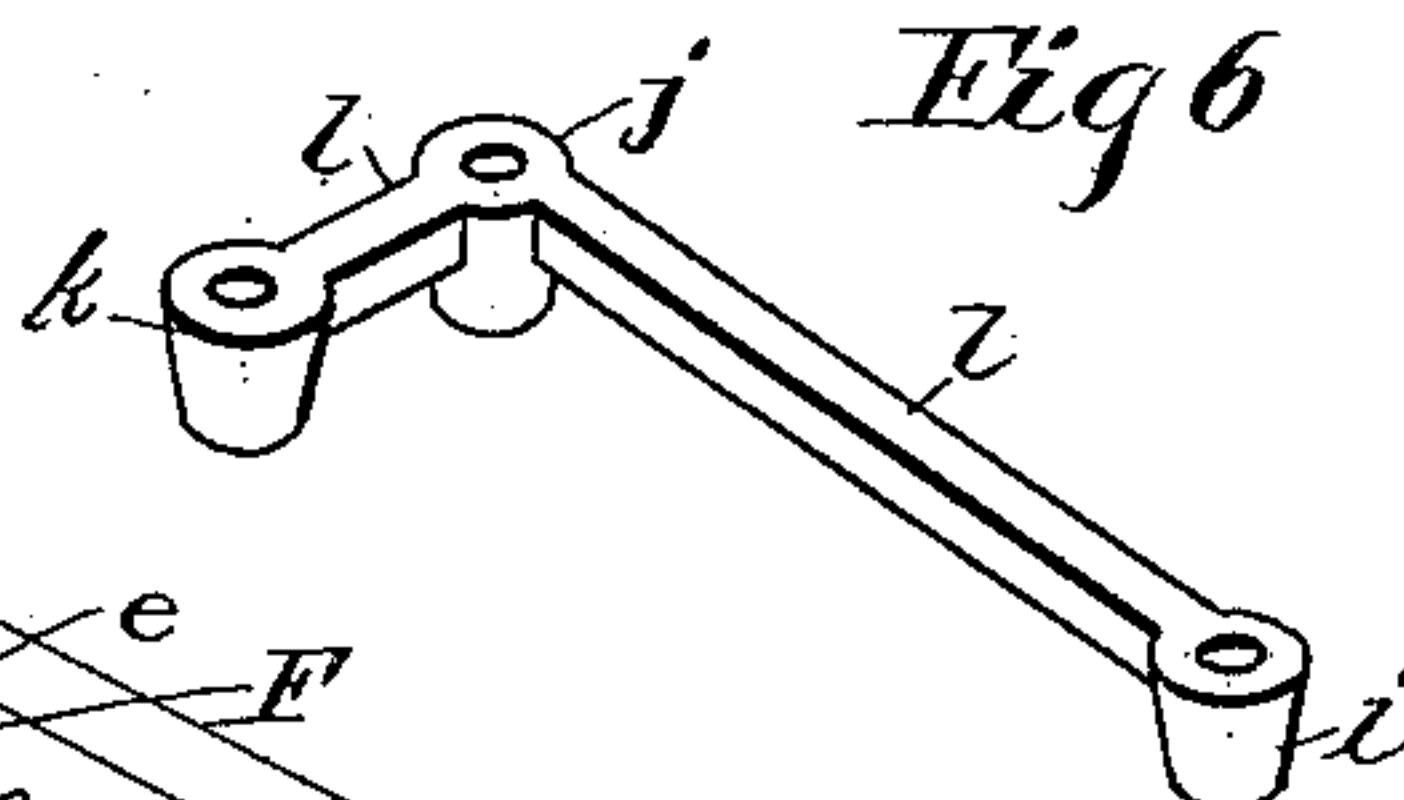


Fig 3

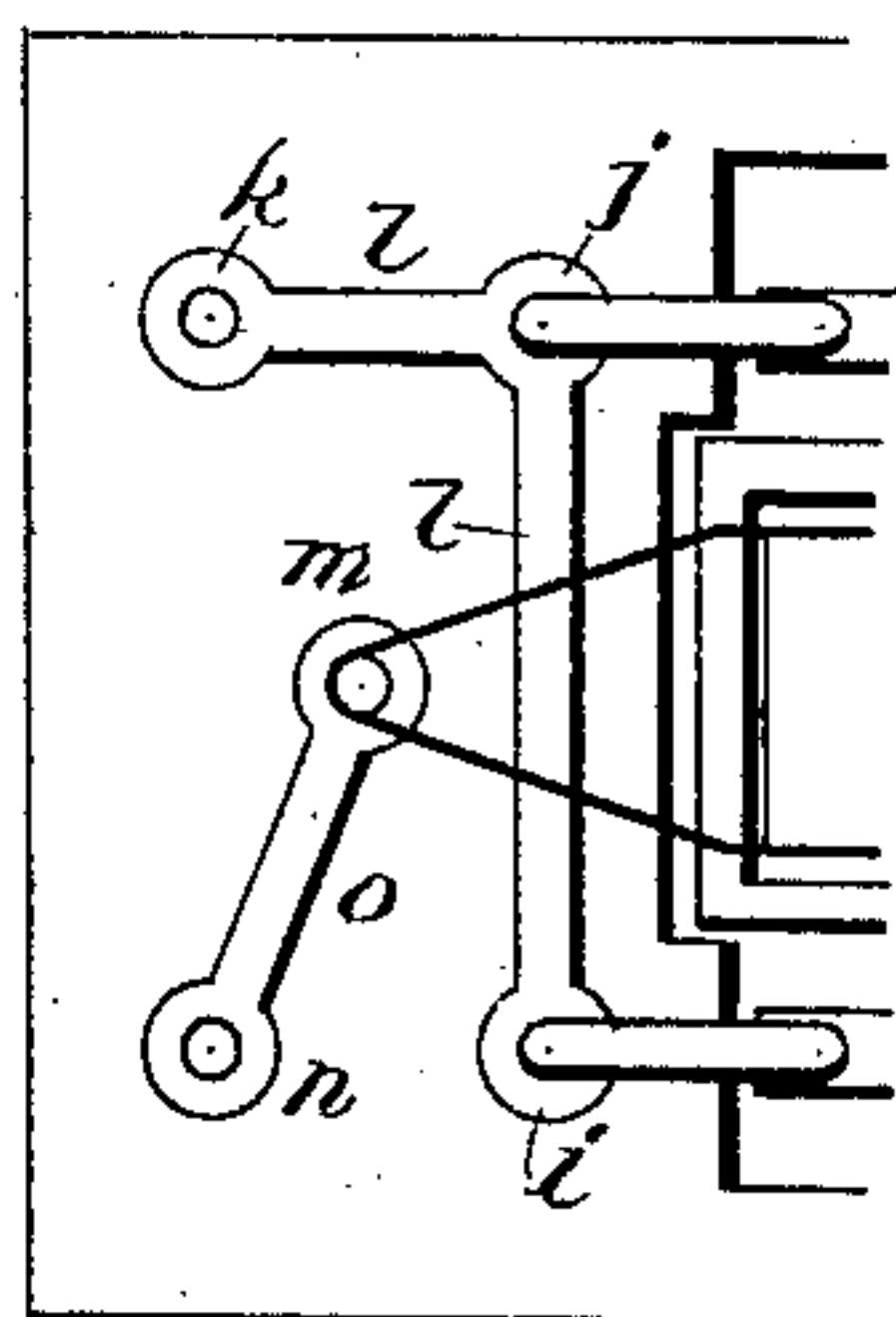


Fig 2

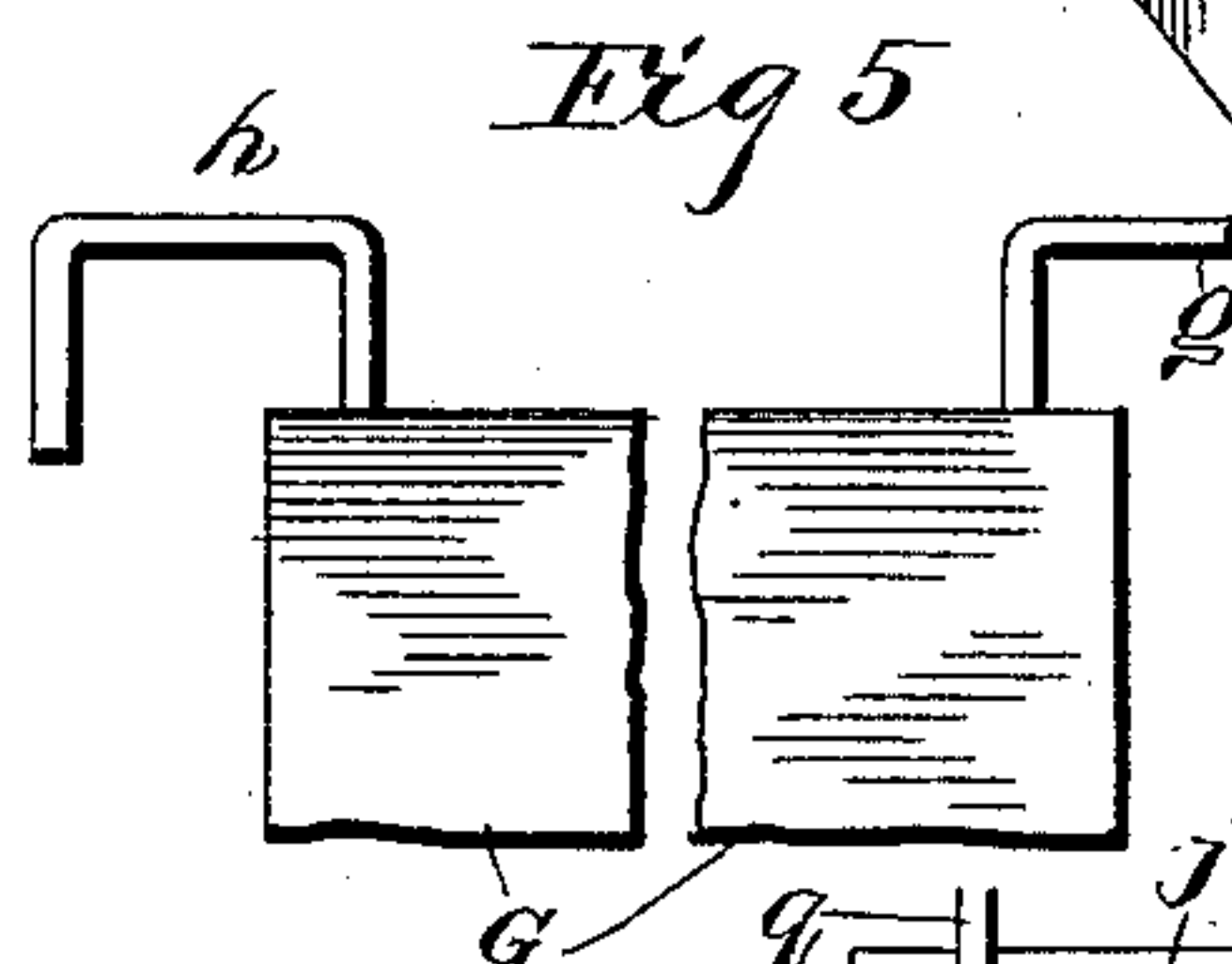
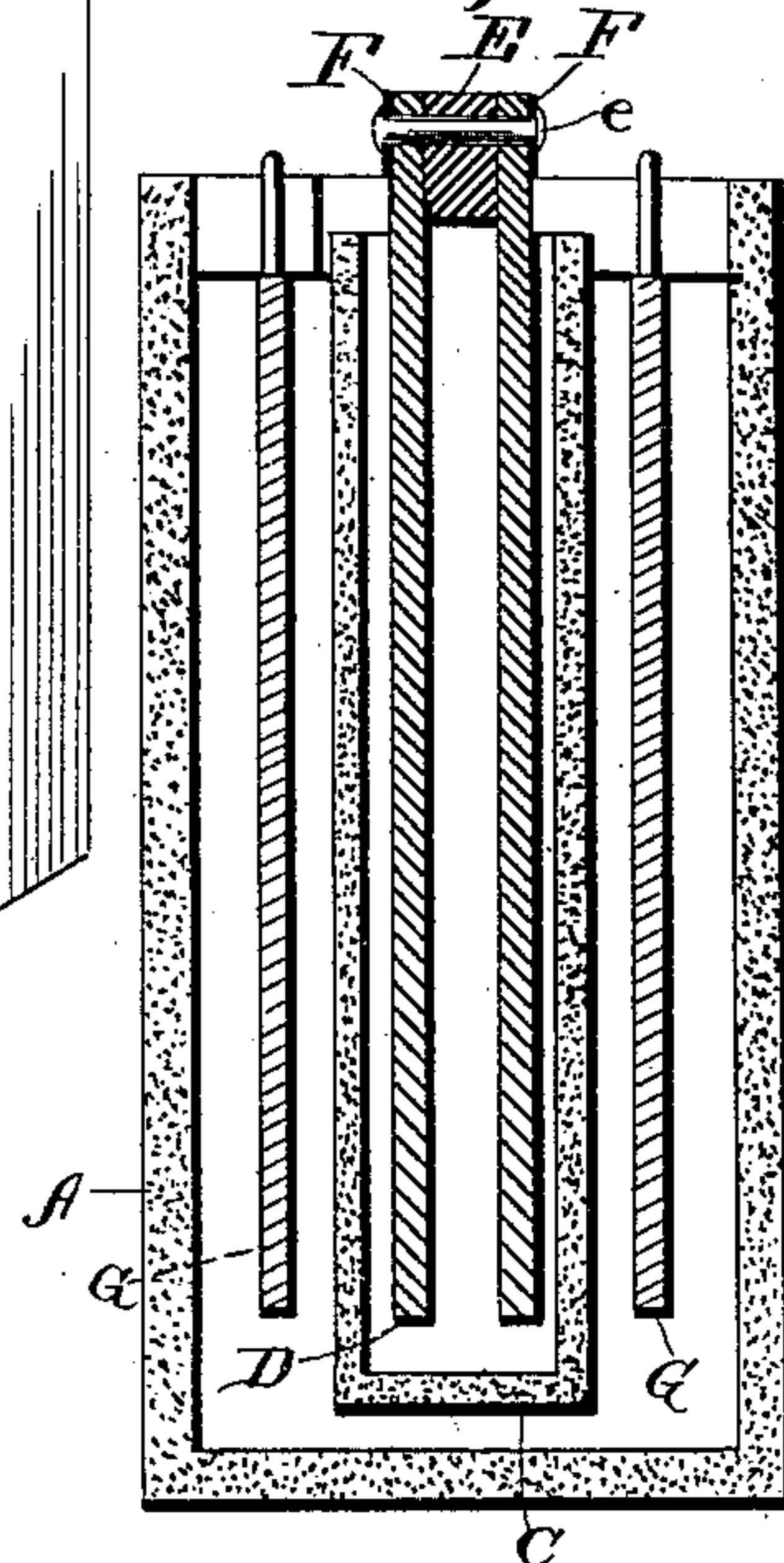
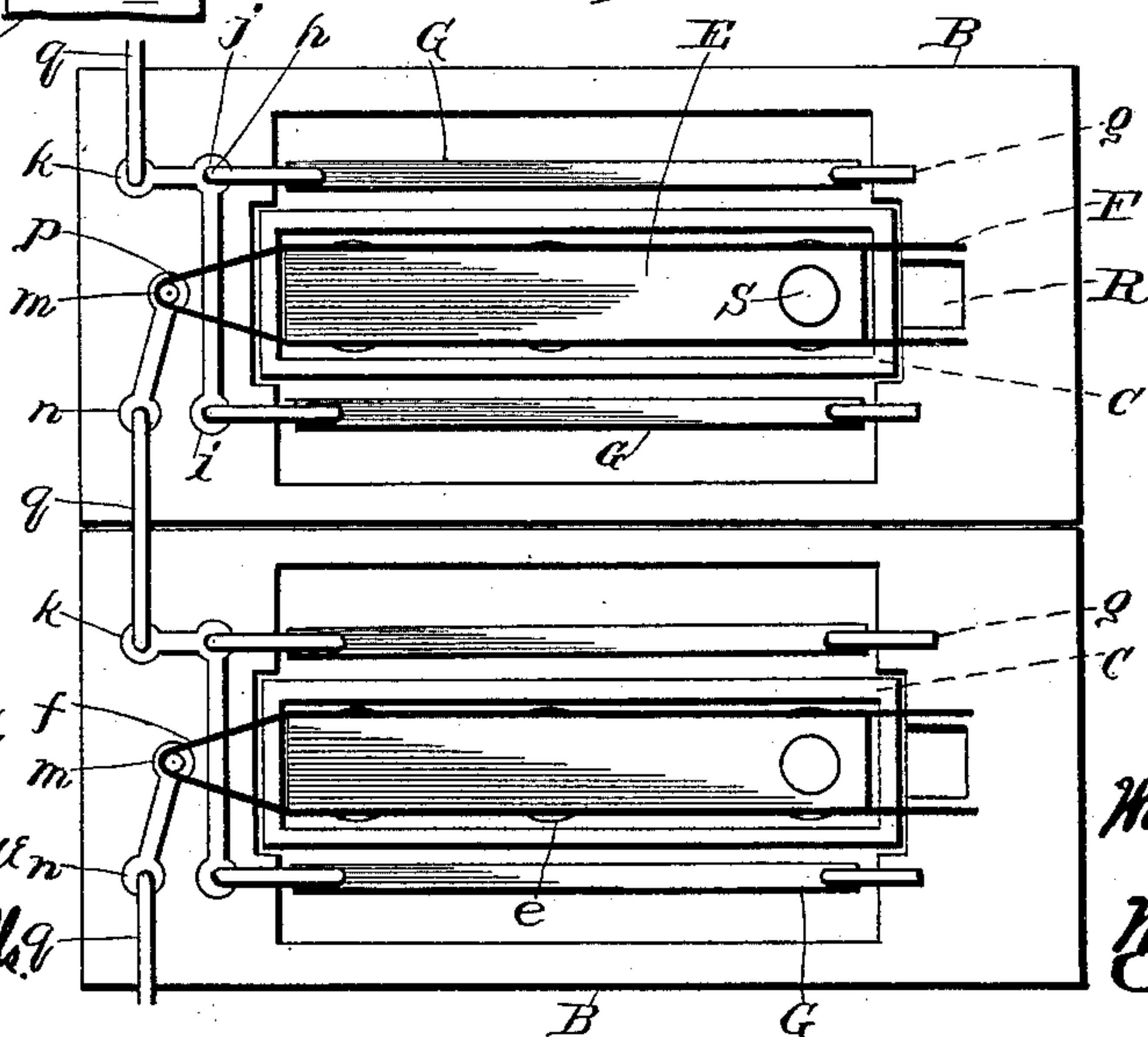


Fig 4



Witnesses,
C. C. Burdine,
A. V. Howell.

Inventor
Walter Hanson
By
M. W. Peck
His Attorney

UNITED STATES PATENT OFFICE.

WALTER HANSON, OF LONDON, ENGLAND, ASSIGNOR OF ONE-HALF TO
FRANK ALDRICH, OF WASHINGTON, DISTRICT OF COLUMBIA.

PRIMARY BATTERY.

SPECIFICATION forming part of Letters Patent No. 452,303, dated May 12, 1891.

Application filed February 4, 1891. Serial No. 380,204. (No model.)

To all whom it may concern:

Be it known that I, WALTER HANSON, a citizen of England, residing at London, in the county of Middlesex, England, have invented certain new and useful Improvements in Primary Batteries; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to the construction of primary batteries, more especially intended for use in private apartments for lighting dwellings by electricity, or for generating power for running small machines or operating bells, and for such other purposes as they are adapted, and has for its object to provide a battery in which two solutions of different strengths are used, the weaker solution being contained in an earthenware jar and the stronger in a porous cup suspended in the weaker solution, and particularly to the means employed for suspending the electrodes in their respective solutions.

My invention also provides means for coupling together a series of batteries; and it consists in the several details of construction and arrangement of parts, hereinafter fully set forth in the specification, and more particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a perspective view of my improved battery. Fig. 2 is a vertical section taken on the line xx of Fig. 1. Fig. 3 is a plan view of a portion of the top frame, the cap being removed. Fig. 4 is a plan view showing two batteries coupled together, the caps being removed from the top frames; and Figs. 5, 6, and 7 are detached detail views.

Like letters of reference refer to corresponding parts in each figure of the drawings.

A represents an earthenware jar, and B a wooden frame fitted on the top thereof. This frame is to support the electrodes, as will be hereinafter explained.

C represents a porous cup, preferably of clay, which may be suspended within the jar A from the frame B, or otherwise supported

therein, so that the solution in the jar A may be in contact with its sides and bottom.

D represents the carbon plates suspended in the cup C, and E designates a strip of wood placed between the carbons at their upper ends to keep them at a suitable distance apart. The sides of the upper ends of the carbon plates are electroplated with copper, to the sides of which a copper band F is soldered, which extends beyond the plates at each end. At one end the band is turned upon itself, forming a triangular loop f , with the sides of the carbons and end of the strip of wood between them. In the apex of the triangle f there is a pin, for the purpose hereinafter described. Copper bolts e are passed through the band F and carbon plates D and wooden strip E to secure them firmly together. The copper band F projects beyond the edges of the carbon plates D, and the projecting portions at one end rest on a cross-piece a , and at the other end on a cap b on the top of the frame B, and thus suspend the carbon plates within the porous cup C.

G represents zinc plates, to the upper ends of which are secured bent wires g and h , which rest on the cross-piece a and cap b of the frame, respectively, to suspend the zinc plates within the jar A. These zinc plates form the positive and the carbon plates the negative electrodes of the battery.

Two solutions of different strength are to be used in the battery, the stronger solution being placed in the porous cup C, while the jar A is filled with the weaker solution, which surrounds the bottom and sides of the cups C. The two solutions are not, therefore, united, but the porous cup C will act as a conductor between them, and thus increase the action of the battery.

In one end of the frame B, beneath the cap b , there is set into the frame a series of mercury-cups for concentrating the currents and providing convenient attachment for the poles when a single battery is used, or for attachment of the electrodes in coupling two or more batteries together when it is desired to use a series of batteries in obtaining a more powerful current. These cups are con-

cal externally, for the purpose of more ready insertion, and are composed of cast-iron or other suitable metal, and are coupled together by a bar of the same metal. One of the series of cups represented by *i j k* is connected by two bars *l*, standing at right angles to each other, while the other series *m n* are united by a straight bar *o*. (Shown in detail in Figs. 6 and 7.)

10 The frame B is cut out to receive these mercury-cups and their connecting-bars, and they are driven into the frame and covered by the cap *b*, which keeps them securely in place. The cap *b* is provided with holes *c*, which register with the mercury-cups. The wires *h* are bent in the form of a staple, one end being attached to the zinc plate and the other end passing through the cap and entering one of the mercury-cups. In the apex of the triangle *f* of the copper band F there is a copper pin *p*, which is soldered to the band, and which is adapted to enter one of the mercury-cups. It will be seen that the wire *h* of one of the zinc plates G enters the mercury-cup *i*, and that the wire of the other zinc plate enters the mercury-cup *j*, thus connecting the two zinc plates, while the pin *p* of the negative electrode enters the mercury-cup *m*.

30 In order to couple two or more batteries together, copper wires *q* are bent at a right angle at each end, and by inserting one bent end in the mercury-cup *n* of one battery and the other bent end in the mercury-cup *k* of the other adjacent battery, I connect the negative electrode of the former with the positive electrode of the latter. Any number of batteries may be coupled in series in this manner.

40 R represents a rectangular hole in the frame B, and S a circular hole in the wooden strip E. These holes are for the purpose of filling the jar A and cup C with the solutions or of emptying them with a siphon without removing the electrodes.

45 Having thus fully described my invention,

what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a battery, an outer earthenware jar and a wooden frame fitted on the top thereof, combined with a porous cell supported within the jar, a negative electrode, a copper band soldered and riveted to said electrode, said band projecting beyond the edges of the electrode and resting on the wooden frame to suspend said negative electrode within the porous cup, a positive electrode, and wires attached thereto and resting on the wooden frame to suspend the positive electrode in the outer jar, substantially as specified.

2. The combination of a battery-jar, a wooden frame fitted on the top thereof, positive and negative electrodes, two series of mercury-cups, metal bars connecting the cups of each series, a copper connection between the positive electrode and one series of mercury-cups, and a copper connection between the negative electrode and the other series of mercury-cups, substantially as specified.

3. The combination of a series of batteries, each having a wooden frame fitted on top thereof, two series of conical mercury-cups fitted in each wooden frame, the cups of each series being connected by metal bars, a suitable copper connection between the positive electrode of each battery and one of its series of mercury-cups, a suitable copper connection between the negative electrode of each battery and its other series of mercury-cups, and a copper-wire connection between the series of mercury-cups with which the positive electrode of one battery is connected, and the series of mercury-cups with which the negative electrode of the adjacent battery is connected, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

WALTER HANSON.

Witnesses:

C. C. BURDINE,
T. H. BROOKE.