(No Model.)

C. E. KAMMEYER.

GALVANIC BATTERY.

No. 400,088. Patented Mar. 26, 1889.

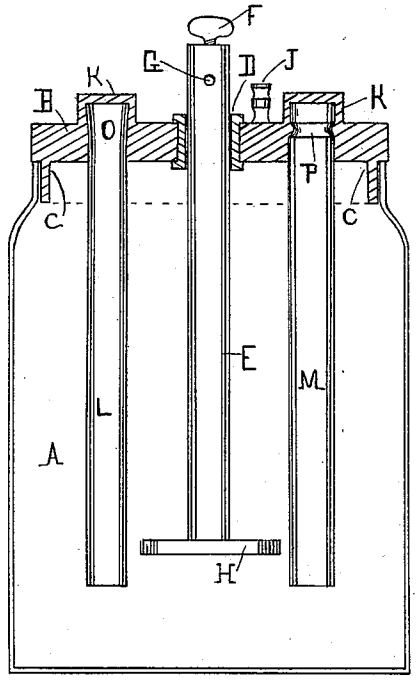


Fig. 1.

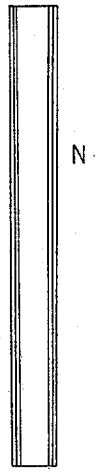


Fig. 3.

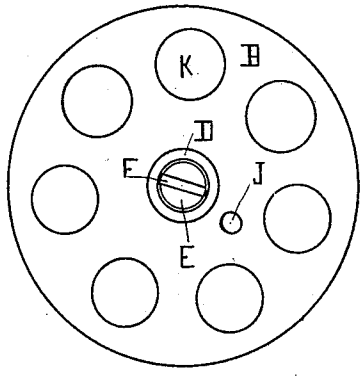


Fig. 2.

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UNITED STATES PATENT OFFICE.

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GALVANIC BATTERY.

SPECIFICATION forming part of Letters Patent No. 400,088, dated March 26, 1889.

Application filed November 19, 1888. Serial No. 291,193. (No model.)

To all whom it may concern:

Be it known that I, CARL EDWARD KAMMEYER, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented a new and useful Battery, of which the following is a specification.

My invention relates to batteries, and has for its object to provide a cheap, simple, and effective battery. I accomplish this object by means of the mechanism illustrated in the accompanying drawings, wherein—

Figure 1 is a cross-section of the battery, showing the modifications with the ends of the carbons secured. Fig. 2 is a plan of the battery. Fig. 3 is a view of a carbon as ordinarily used.

Like parts are indicated by the same letters in all the figures.

A is a jar. B is a cover or top having the flange C and insulation-piece D about the cavity, through which passes the zinc E.

F is a thumb-screw on the top of such zinc.

G is a cavity for the wire, which passes through the zinc below the thumb-screw.

H is a piece of insulation on the lower end of the zinc E.

J is a thumb-screw on the cover for one end of the wire.

K K are inverted cup-shaped pieces continuous with the cover and adapted to receive the upper ends of the carbons L M N. The carbon L has a downwardly-flanged and enlarged head, O. The carbon M has the circumferential groove P about its end. The carbons are shaped with enlarged upper ends or grooved upper ends or the like to make them the more firmly cling to the cover in which they are secured. They are attached to the cover, preferably by casting the cover thereon, as in this manner a very perfect setting of the metal about the head of the carbon is made, and thus a very perfect connection between the two is secured. I am thus enabled to dispense with clamps and the like. These carbons may also be secured by the employment for the covers of comparatively soft metal, wherein cavities have first been made of suitable size to receive the ends of the carbons. The carbons having been placed in position, the metal of the cover is submitted to great pressure, which causes it to set about the heads of the carbons. The object of grooving or enlarging or otherwise changing the shape of the end of the carbon is to present a bearing for such carbon within the cover, to prevent the carbon from escaping. When the cover is cast about the carbons, I have found it desirable to use such metals or alloys as will expand upon cooling, thus contracting the cavities containing the carbons when cooled about the carbon, as in the case just described, where the metal is set about the carbon by great pressure applied. The result is the same, for the metal is in either case set by pressure about the head of the carbon. In like manner the insulation D, which may be of any size and shape, may be cast with the cover about it. I practice the art of manufacturing this battery in this manner: The carbons, with the ends shaped as may be desired, though of course a smooth carbon will answer also, are secured in such manner that the heads extend the proper distance into the molds for the cover. The metal is now poured in or forced in until the mold is filled, when the metal sets about the heads of such carbons. As the metal cools and expands, the carbons are securely fastened to their cover. In a somewhat similar manner the heads are placed in the prepared cavities, and the metal, with the carbon heads inclosed, is placed in such mold or box in such position as to admit of great pressure being applied to the metal of the cover.

A metal or compound which has the property of expanding upon cooling may be composed of nine parts of lead, two of antimony, and one of bismuth.

I have shown my device as applied to carbon batteries; but of course it might be applied to other batteries.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is as follows:

1. In a battery, the combination of a cover composed of metal which expands when cooling with elements some of which are cast in such cover.

2. In a battery, the combination of a cover

with elements some of which are provided with heads inclosed within the substance of such cover and cast therewith and shaped so as to form shoulders bearing upon such substance within the cover.

3. In a battery, the combination of a metal cover with elements the heads of some of which are inclosed within the metal of such cover and connected by the portion of the metal of the cover about the heads of the elements.

4. In a battery, the combination of a cover with elements the heads of which are inserted within such cover and provided with integral shoulders, so as to be secured thereto.

CARL E. KAMMEYER.

Witnesses:
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