

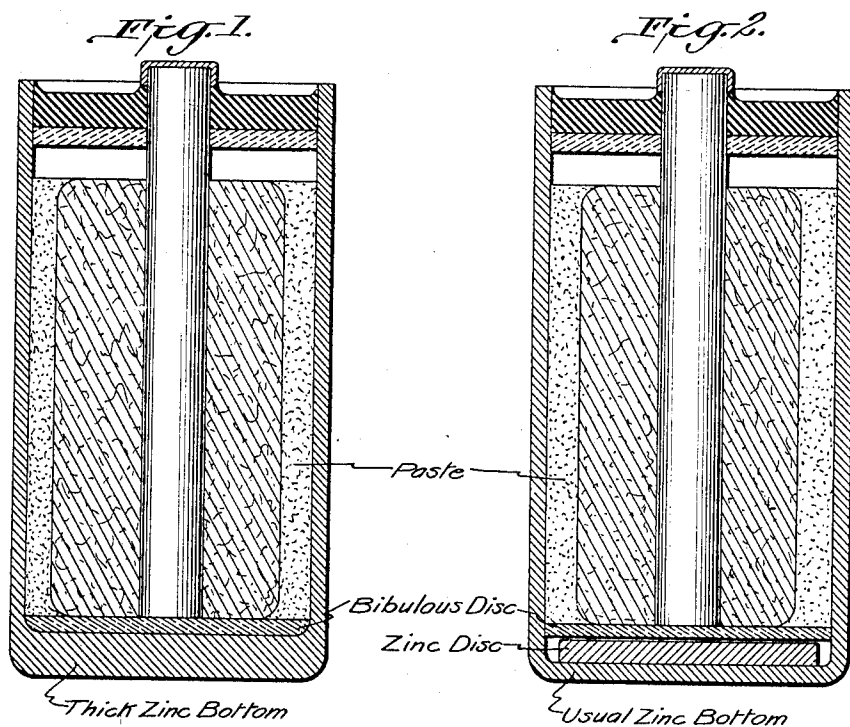
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G. W. HEISE ET AL

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DRY CELL

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Inventors:

George W. Heise,
Erwin A. Schumacher,

By *Byrne, Townsend & Brichenstein*

Attorneys.

UNITED STATES PATENT OFFICE.

GEORGE W. HEISE, OF BAYSIDE, AND ERWIN A. SCHUMACHER, OF BROOKLYN, NEW YORK, ASSIGNORS TO NATIONAL CARBON COMPANY, INC., A CORPORATION OF NEW YORK.

DRY CELL.

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The invention is a dry cell of improved construction. The object of the invention is to provide a larger anode surface than has heretofore been present in cells of similar size and kind, thereby extending the useful life of the cell; and to do this without sacrificing any of the desirable features of prior constructions.

Dry cells of the larger sizes, used in stationary installations, are now made by lining a zinc cup with bibulous material, centering a carbon rod in the lined cup, and then packing the space between the rod and the cup with depolarizing mixture wet with electrolyte. In such a cell the sides and bottom of the cup are subjected to about the same degree of electrolytic action during service, and the bottom may become perforated as soon as or even before the sides. This is not seriously objectionable as the bottom like the sides serves only as anode and container for the other parts of the cell.

The above method is not well adapted to the manufacture of small cells, such as those intended for use with flashlights. In making this type of cell, the carbon rod and depolarizing mix making up the cathode are formed into a self-sustaining cylinder or bobbin, which is inserted axially into the zinc cup. There must be enough difference between the diameters of the bobbin and cup to permit the bobbin to be readily inserted.

While small dry cells of this latter type are being assembled, the bobbin is supported from below, and it remains in contact with its support when the cell is finished. It will be apparent that if the space under the bobbin is filled with electrolyte, like the annular space at the sides of the bobbin, the comparative rates of corrosion of the cup-bottom and the cup-sides will depend upon their distances from the bobbin or cathode, proximity of course promoting corrosion.

In flashlight cells, the cup-bottom serves not only as anode and container, but also as a contact member against which the cathode of another cell or terminal of the flashlight casing bears. It is therefore desirable that the bottom remain imperforate until the cell is exhausted. The bottom of the cup is usually closer to the cathode than the sides are, and in such case the most rapid corrosion will occur at the bottom of the cell unless special measures are adopted to prevent this. The measure usually employed is to place a disc

of insulating material, for example paraffin-impregnated paper-board, on the bottom of the cup, and to set the bobbin on this while the cell is being assembled.

In accordance with our invention, no insulating disc is used. If necessary to prevent contact between the bobbin and cup-bottom, a disc of bibulous material is placed between them. Such disc is rendered conductive by saturation with electrolyte, and of course permits electrolytic action to go on over all the upper surface of the cup-bottom.

The omission of the insulating disc will often result in the cup-bottom becoming the region where the anode is most strongly attacked electrolytically. To prevent premature perforation of the cup-bottom, we reinforce it, either by making it thicker than the side walls or by lining it with a separate zinc disc of suitable thickness. The latter method is preferred, as it has manufacturing advantages.

In the accompanying drawing we show in Fig. 1 a cell of our improved construction with the cup-bottom reinforced by increasing its thickness. Fig. 2 is a modification having the zinc disc reinforcement. Except for the parts indicated by legends on the drawing, both cells are of usual construction. They comprise the usual depolarizing bobbin set in electrolyte paste, and since these features are no part of our invention they are somewhat diagrammatically shown and are not further described.

Dry cells made as described herein are capable of giving in certain classes of service an improvement of as much as 20% over cells of the present standard construction.

We claim:

1. In a dry cell, a self-sustaining cathode, and a zinc cup anode having a bottom reinforced with a zinc disc, said disc being exposed to electrolytic action.

2. In a dry cell, a self sustaining cathode and a zinc cup anode having a bottom reinforced with a zinc disk, the thickness of said disk being at least equal to that of the walls of the cup, said disk being exposed to electrolytic action.

In testimony whereof, I affix my signature.

GEORGE W. HEISE.

In testimony whereof, I affix my signature.

ERWIN A. SCHUMACHER.