

March 18, 1924.

W. BALDERSTON

1,487,428

BATTERY

Filed Aug. 10, 1921

2 Sheets-Sheet 1

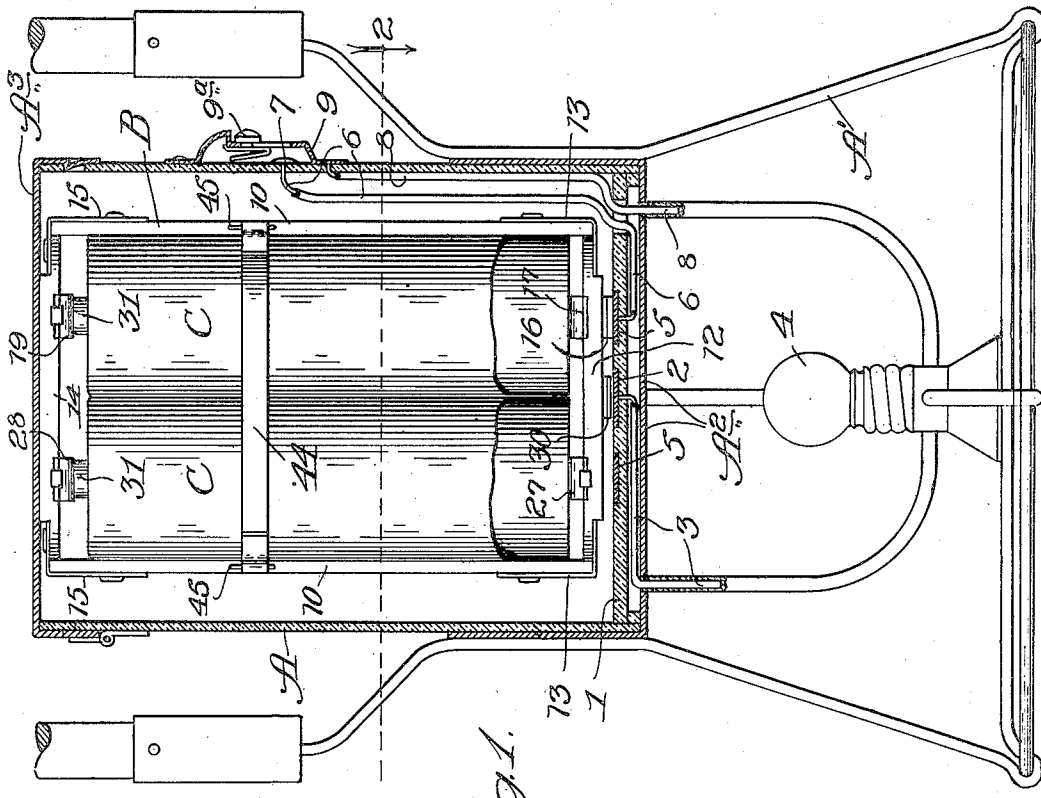


Fig. 1.

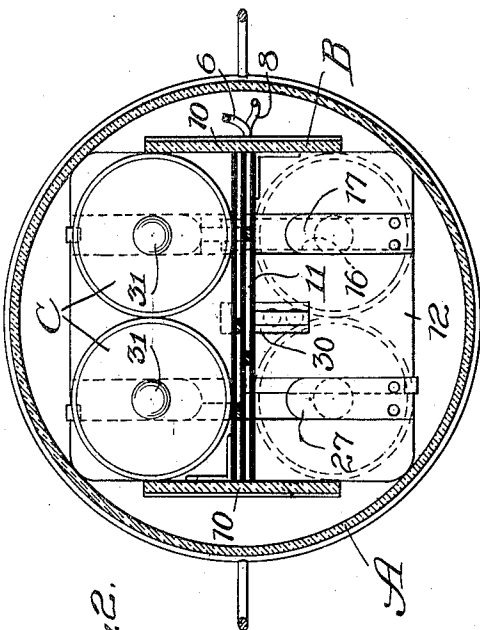


Fig. 2.

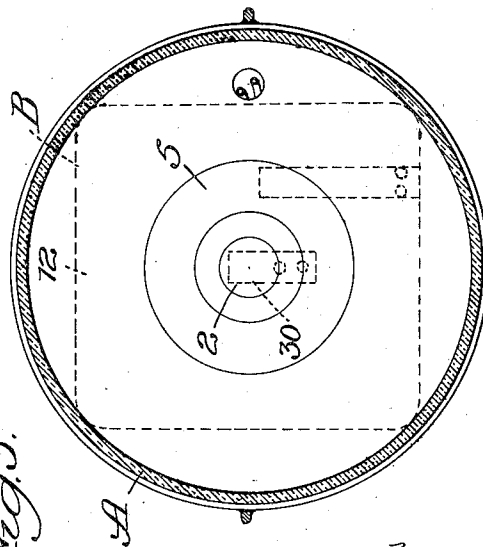


Fig. 3.

Inventor:
William Balderston,
By *Dryden & Co.,* Attorneys,
Chicago, Ill.

March 18, 1924.

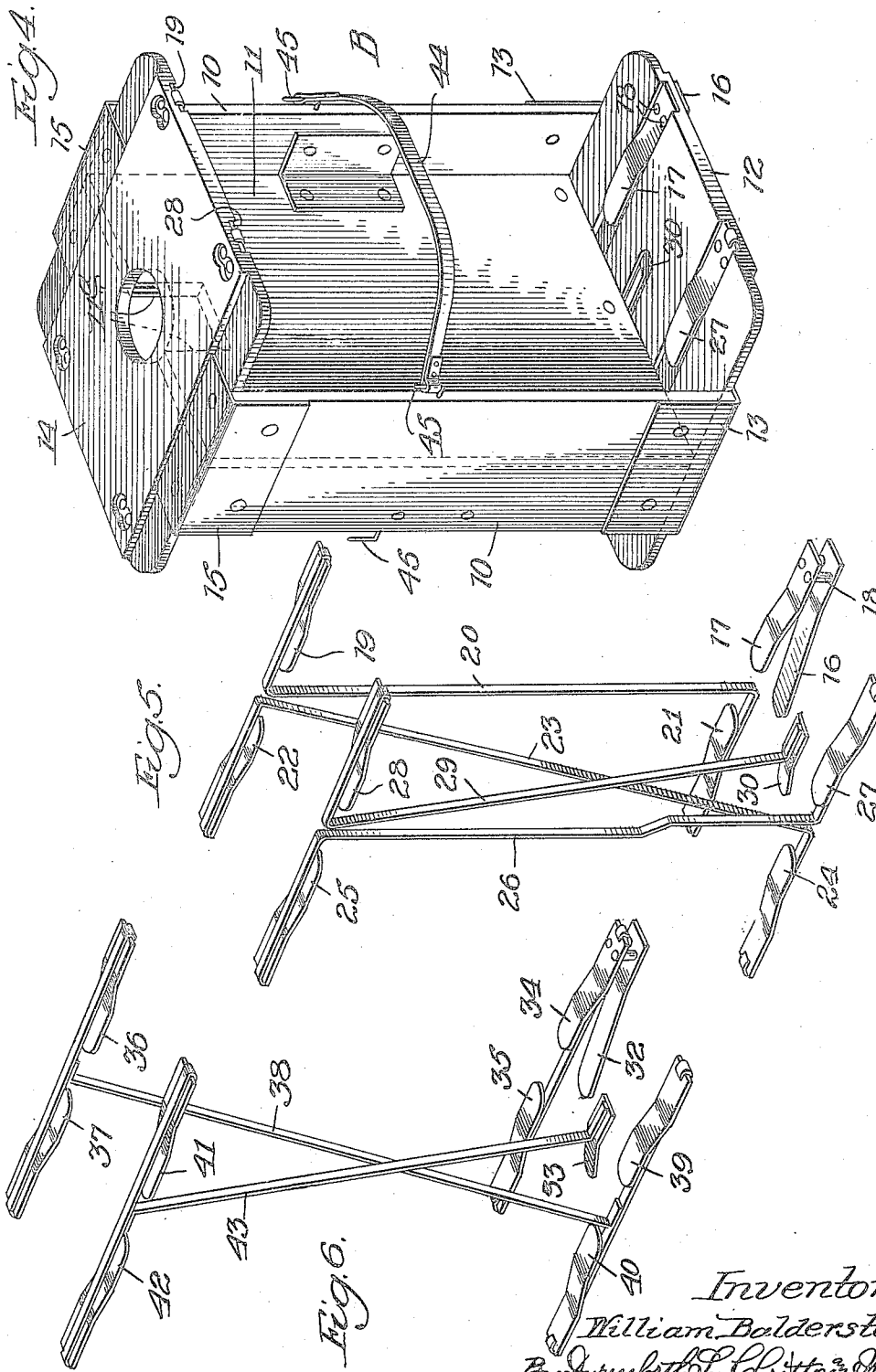
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2 Sheets-Sheet 2



Inventor:
William Balderston,
By *Byrd, Russell, Smith, & Co.,*
Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM BALDERSTON, OF MADISON, WISCONSIN, ASSIGNOR TO FRENCH BATTERY & CARBON CO., OF MADISON, WISCONSIN, A CORPORATION OF WISCONSIN.

BATTERY.

Application filed August 10, 1921. Serial No. 491,268.

To all whom it may concern:

Be it known that I, WILLIAM BALDERSTON, a citizen of the United States, residing at Madison, in the county of Dane and State of Wisconsin, have invented a new and useful Improvement in Batteries, of which the following is a specification.

This invention relates particularly to a plural cell dry battery; and the primary object is to provide a cell-holder and adapt the same to use in a suitable container, such as a lantern-casing, the construction and arrangement being such that the cells may be readily introduced into the cell-holder and automatically established in circuit when so introduced, and, further, such that when the cell-holder, loaded with cells, is introduced into the container, the circuit is automatically established between the cell-holder and the container.

In the preferred construction, the cell-holder is provided with a central dividing wall; and the cells may be inserted or removed at opposite sides of the cell-holder by lateral movement of the cells.

The preferred construction is illustrated in the accompanying drawings, in which—

Fig. 1 represents a broken vertical sectional view of a lantern provided with a casing containing the improved cell-holder; Fig. 2, a horizontal section taken as indicated at line 2 of Fig. 1; Fig. 3, a view similar to Fig. 2 but showing the cell-holder removed, the cell-holder being indicated by dotted lines, however; Fig. 4, a perspective view of the improved cell-holder; Fig. 5, a perspective view showing the contacts and connections of the construction shown in Fig. 4; and Fig. 6, a view similar to Fig. 5, but showing a modified arrangement of contacts and connections.

In the illustration given, A represents the casing or container of an electric lantern which is supported on a spider A' and which is provided with a bottom A² and a top closure A³; B, the improved cell-holder; and C, dry cells mounted in the holder B.

The casing A is provided in its lower portion with an insulation disk 1 spaced above the bottom A². The disk 1 is fitted on its upper side with a central metal disk or contact 2 with which is connected a conductor 3 which leads to the central contact of the lamp 4. The disk 1 is further equipped on its upper side with a metal ring 5 which is

connected, by a conductor 6, with a contact 7 mounted on the vertical wall of the container A. Another conductor 8, which may be grounded at the base or spider A', forms the other outlet for the lamp 4. The conductor 8 is connected with a switch 9, the slide-button 9^a of which may be moved into contact with the contact point 7 to complete the outside lamp-circuit.

The cell-holder B preferably comprises a pair of vertical insulation side plates 10 between which extends a vertical central insulation wall 11, which is preferably made up of a plurality of spaced insulation sheets, as appears from Fig. 2. At the lower end of the cell-holder is a bottom wall or base 12 of insulating material which is rigidly connected with the side walls 10 by means of sheet-metal angle-plates 13. At the upper end of the cell-holder is a top wall or insulation plate 14 which is rigidly connected with the side walls 10 by angle-plates 15. Storage space for an extra lamp-bulb is afforded by cutting a perforation 14^a in the top-plate and recessing the upper end of the partition 11, as indicated at 11^a.

The cell-holder shown is adapted to receive four dry cells, two on each side of the division wall 11. In the arrangement of contacts and connections shown in Fig. 4 and Fig. 5, which are arranged to connect the cells in series, the bottom wall 12 is equipped at its lower side with a spring contact 16 and at its upper side with a spring contact 17, these contacts being connected by rivets 18. Above the contact 17 and secured to the upper wall 14 is a spring contact 19. From this contact leads a conductor 20 which is connected at its lower end with a spring contact 21 which is secured to the bottom wall 12 immediately opposite the contact 17 and back of the division wall 11. Secured to the top wall 14 back of the division wall 11 and opposite the contact 19 is a spring contact 22, from which leads a conductor 23 which extends to a bottom spring contact 24 which is secured to the bottom wall 12 back of the division wall 11. Directly above the contact 24 is a top spring contact 25 which is secured to the top wall 14 and which is disposed back of the division wall 11. From the contact 25 extends a conductor 26 whose lower end is connected with a bottom spring contact 27 which is mounted on the bottom wall 12 in front of the divi-

sion wall 11 and in line with the contact 24. In front of the division wall 11 and in line with the contact 25 is a top spring contact 28, from which leads a conductor 29 which connects at its lower end with a spring contact 30. The spring contact 30 is located at the center of the bottom wall 12 so as to project beneath the bottom wall, being adapted to make contact with the central contact 2 of the lantern-casing. The spring contact 16 is adapted to make contact with the annular contact or ring 5 of the lantern-casing. The conductor 20 may comprise a brass bar or strip, and the contacts 19 and 21 may either be formed integrally therewith or soldered or otherwise secured to the end portions of the strip 20. Similarly, the conductors 23, 26 and 29 may be brass strips with the end portions of which the corresponding contact members are suitably connected.

In each case, with the exception of the contacts 16 and 30 of the cell-holder, the contact members are adapted to make contact with the base portions of the zinc containers of the cells and with the carbon poles 31 with which the cells are provided. The contacts are suitably formed to enable the cells to be shoved into the cell-holder by lateral movement; and, when this is done, the contacts between the cells and the contact members of the cell-holder are automatically established, so that the cells are automatically connected in circuit. Moreover, the spring contacts are of suitable form and strength to exert a sufficient pressure on the cells to hold them in position in the cell-holder while the cell-holder is being introduced into or withdrawn from the lantern-casing.

The construction described is simple, durable, permits easy insertion and removal of the cells, and insures against improperly connecting the cells. When the cell-holder is introduced into the lamp-casing, the circuit is automatically established between the cell-holder and the external circuit of the lamp.

In the modification shown in Fig. 6, the contacts and connections are so arranged as to establish the cells in multiple series. In this case, the contacts for the external portion of the circuit are designated 32 and 33. The contact 32 is connected with a pair of bottom cell-contacts 34 and 35, which correspond in position with the contacts 17 and 21. Assuming cells to be in position above the contacts 34 and 35, the current passes thru both cells to a pair of upper cell-contacts 36 and 37. From these contacts, a conductor 38 leads to a pair of cell-contacts 39 and 40, which correspond in position with the cell-contacts 27 and 24. Assuming a pair of cells to surmount the contacts 39 and 40, the current will pass thru said cells to a pair of upper cell-contacts

41 and 42, which correspond in position with the cell-contacts 28 and 25. From the contacts 41 and 42, a conductor 43 leads to a central contact 33 which, it will be understood, is disposed below the lower side of the bottom of the cell-holder. The contacts 32 and 33 should be understood to be so positioned beneath the bottom of the cell-holder as to make contact, respectively, with the contact-ring 5 and the central contact 2 of the lantern-casing.

For most purposes, the cell-contacts carried by the cell-holder, mounted as they are on the projecting ledges afforded by the top and bottom walls 12 and 14, will serve to hold the cells in proper position while the cell-holder is being introduced into the container A or removed therefrom. If desired, however, the cell-holder may be equipped with any suitable additional cell-retainer, such as the flexible member 44 which engages the hooks 45. Such a retainer may be drawn about the cells on either side of the division wall 11 after the cells have been inserted.

In practice, the cells are preferably inserted with the bottoms of the zinc containers resting on the lower cell-contacts and the carbon poles engaging the upper cell-contacts. The cells may be inserted in inverted position if desired, however.

The improved cell-holder is adapted to receive flash-light cells of standard construction, no alteration or special provision with relation to the construction of the cells being necessary. Moreover, the improved cell-holder affords a support for the cells at both top and bottom, and the cells may also bear against the vertical walls of the cell-holder and against each other, so that they are quite securely nested. It will be understood that the cell-contacts of the holder preferably are so spaced with relation to the vertical walls of the cell-holder as to correspond with the vertical axes of the cells when the cells are introduced.

The foregoing detailed description has been given for clearness of understanding only and no unnecessary limitations should be understood therefrom, but the appended claims should be construed as broadly as permissible in view of the prior art.

What I regard as new, and desire to secure by Letters Patent, is—

1. In combination, a cell-holder equipped with outlet contacts adapted to engage companion contacts of and become automatically connected with an external circuit and equipped also with top and bottom cell-contacts, some of which are electrically connected with said first-named contacts, and dry cells mounted in said holder, said dry cells being automatically established in circuit with the cell-contacts by insertion of the cells.

2. In combination, a cell holder having yielding contacts adapted to frictionally engage contacts of an external circuit and provided internally with yielding top and bottom cell-contacts, some of which are electrically connected with said first named contacts, and dry-cells mounted in said holder, said dry-cells being automatically established in circuit with the cell contacts by frictional engagement therewith in the operation of inserting the cells.

3. In combination, a cell-holder comprising vertical and top and bottom walls, said top and bottom walls being equipped at their inner surfaces with spring cell-contacts, external contacts connected with some of said cell-contacts and adapted to establish contact with the contacts of and become automatically connected with an external circuit, and dry cells mounted in said cell-holder with the bottoms of their zinc containers engaging the cell-contacts at one end of the cell-holder and their carbon poles engaging the cell-contacts at the other end of the cell-holder.

4. In combination, a cell-holder having vertical walls and an open-side and having top and bottom walls equipped with cell-contacts, one of said last-named walls being equipped with external contacts electrically connected with some of the cell-contacts and adapted to engage the contacts of and become automatically connected with an external circuit, and dry cells mounted in said cell-holder with the bottoms of their zinc containers engaging one set of cell-contacts

and with their carbon poles engaging the other set of cell-contacts, said dry cells being introduced and removed from the cell-holder by lateral movement of the cells.

5. In combination, a cell-holder having vertical walls adapted to be engaged by the sides of cells and having fixed end walls equipped at their inner sides with spring cell-contacts and equipped also at one end with external contacts electrically connected with some of said first-named contacts, the cell-holder being open-sided, and dry cells mounted in said cell-holder with the bottoms of their zinc containers engaging the cell-contacts at one end of the cell-holder and their carbon poles engaging the cell-contacts at the other end of the cell-holder, the cells being automatically established in circuit by inserting them laterally into the holder.

6. In combination, a cell-holder having vertical walls and two open sides and two end walls fixedly secured to said vertical walls, spring cell-contacts carried by said end walls at their inner surfaces, external contacts carried by one of said end walls and electrically connected with some of said cell-contacts, dry cells mounted in said cell-holder with the bottoms of their zinc containers engaging one set of cell contacts and their carbon poles engaging the other set of cell contacts, said dry cells being insertable and removable from opposite sides of the cell-holder, and centrally disposed cell-separating means in said cell-holder.

WILLIAM BALDERSTON.