March 18, 1924. 1,487,429

W. BALDERSTON

BATTERY

Filed Aug. 10, 1921 2 Sheets-Sheet 1

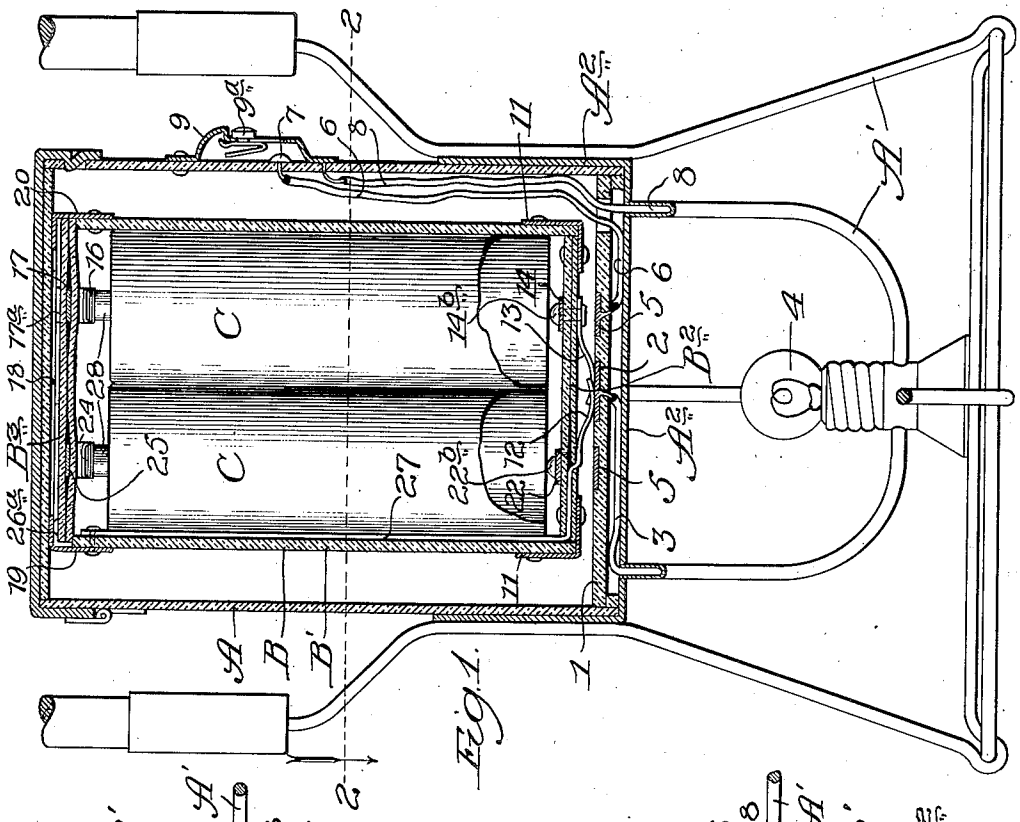

Fig. 1.

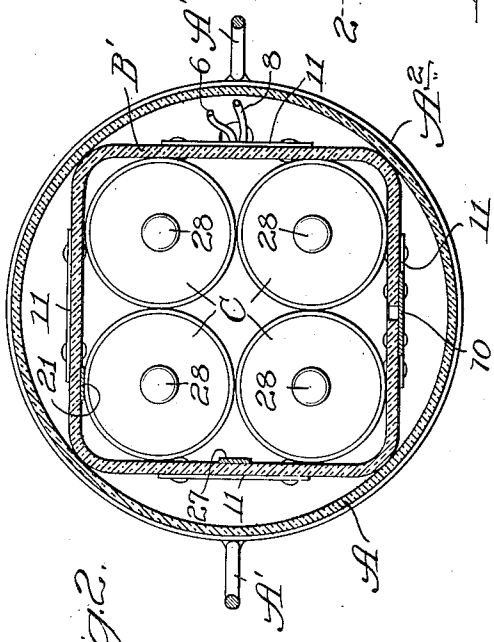

Fig. 2.

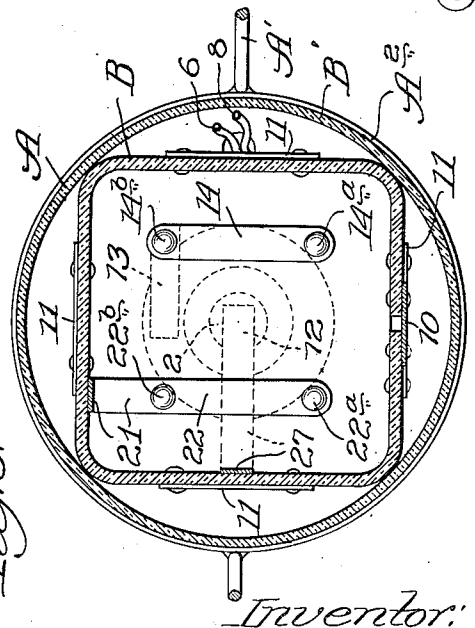

Fig. 3.

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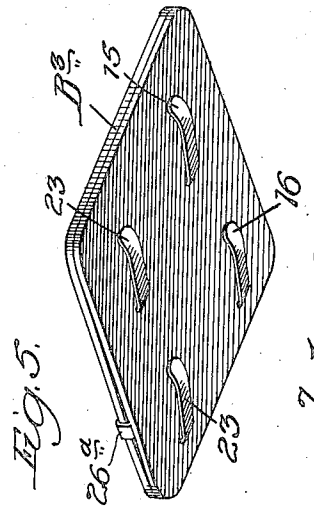

Fig. 5.

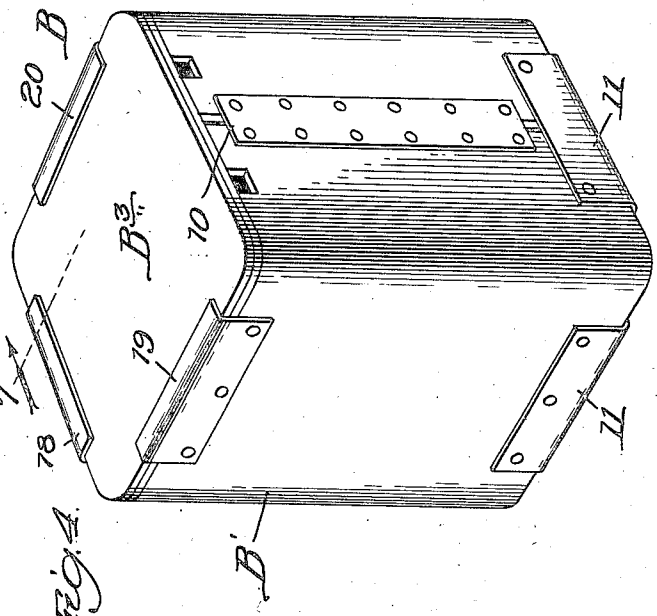

Fig. 4.

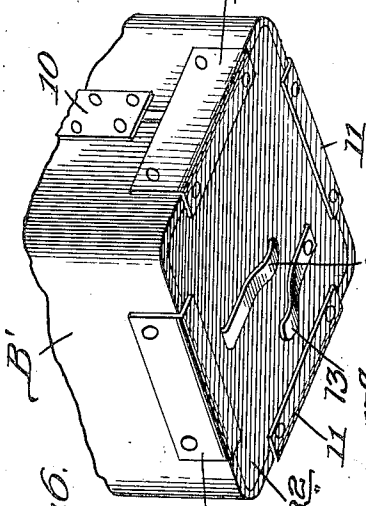

Fig. 6.

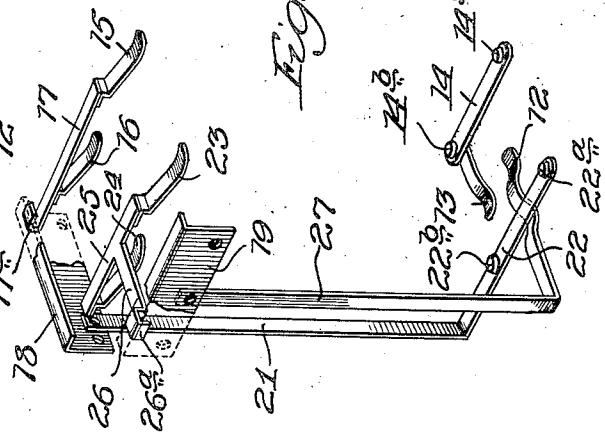

Fig. 8.

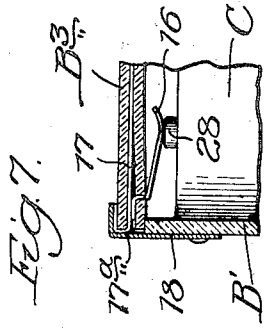

Fig. 7.

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Patented Mar. 18, 1924. 1,487,429

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. 491,269.

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 contacts of the external circuit with which the container is equipped.

The present invention constitutes a modification of the invention set forth in my application No. 491,268 filed in the United States Patent Office of even date herewith.

The present invention 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, the view showing the cells in position in the holder; Fig. 3, a similar section with the cells removed; Fig. 4, a perspective view of the cell-holder in closed condition; Fig. 5, a bottom perspective view of the removable closure with which the cell-holder is equipped; Fig. 6, a broken perspective view of the bottom portion of the cell-holder, showing the lower side of the bottom wall; Fig. 7, a broken sectional view taken as indicated at line 7 of Fig. 4; and Fig. 8, a perspective view illustrating the contacts and connections.

In the construction illustrated, A represents the casing or container of an electric lantern which is supported on a spider A′ and which is provided with a bottom A^2 and a top closure A^3; B, the improved cell-holder; and C, 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 A^2. 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 or annular contact 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 contact 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 is of substantially rectangular form and of insulating material. It comprises a peripheral vertical wall B′, a bottom wall B^2, and a removable top wall or closure B^3. The vertical wall B′ may be formed by bending a thin plate of hard fiber into rectangular form and securing the end portions together, as by means of a strip 10. The bottom wall B^2 may be a separate plate, secured to the vertical wall by angle pieces 11.

The bottom wall B^2 is equipped on its lower side with a central spring outlet contact 12 and with an eccentric spring outlet contact 13, the contact 12 being adapted to engage the central contact 2, and the contact 13 being adapted to engage the annular contact 5.

The arrangement of contacts and connections is shown diagrammatically in Fig. 8. This arrangement is such as to establish the dry cells in multiple series. Any other suitable arrangement may be employed, if desired, however. Upon the inner surface of the bottom wall B^2 of the cell-holder is mounted a metal strip 14 equipped with contacts 14^a and 14^b adapted to make contact with the lower ends of two cells. These contacts are electrically connected with the outlet contact 13. When two cells are in position, resting on the contacts 14^a and 14^b, circuits are established therethru to a pair of upper spring cell-contacts 15 and 16 which are mounted on the inner surface of the closure B^3, the contacts 15 and 16 being connected with a brass strip 17 whose rear end 17^a is adapted to make contact, when the closure is in the closed position, with a brass angle bar 18 which is secured to the upper portion of the rear wall of the holder B. The side walls of the holder B are

equipped with brass angle pieces 19 and 20 which serve as lateral guides for the removable closure B^3. The angle piece 19 is further adapted to serve as a contact in a manner similar to the piece 18. From the angle piece 18 a conductor 21 leads to the bottom of the cell-holder and connects with a horizontal strip 22 which is secured to the inner surface of the bottom wall B^2 and is equipped with a pair of cell-contacts 22^a and 22^b. When cells are in position above the cell-contacts 22^a and 22^b, the circuits pass thru said cells to a pair of upper spring cell-contacts 23 and 24 which are mounted on the inner surface of the closure plate B^3 and carried by a bar or strip 25. From the strip 25 extends an arm 26 whose free end portion 26^a is adapted to make sliding contact with the brass angle piece 19 when the closure B^3 is shoved into the closing position. From the brass angle piece 19, a conductor 27 leads to the lower end of the cell-holder and connects at its lower end with the central outlet contact 12 of the holder.

The cell-holder shown is adapted to receive four dry cells. These may be introduced into the holder B when the closure plate B^3 thereof is retracted or withdrawn, after which the closure may be moved to the closed position. Thus, the dry cells will be automatically established in circuit by the action of inserting them in the holder and closing the holder. When the cells are in the holder, the bottoms of the zinc containers of the cells rest upon the lower cell-contacts; and when the closure plate B^3 is moved to the closed position, the upper spring cell-contacts are carried into engagement with the carbon poles 28 of the cells. At the same time, the upper spring cell-contacts are automatically placed in electrical connection with the brass angle pieces 18 and 19, so that the circuits of the cell-holder are completed.

When the cell-holder B, loaded with cells, is introduced into the container A, the outlet spring contacts 12 and 13 automatically establish connection with the contacts 2 and 5 of the external (lamp) circuit.

The construction described is simple, durable, permits easy insertion and removal of the cells, and insures against improperly connecting the cells.

The improved cell-holder is adapted to receive and hold 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 supports or contacts 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.

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

1. In combination, a cell-holder comprising a peripheral wall, a bottom wall and a slidably withdrawable top closure, a pair of external outlet contacts mounted on said bottom wall, pairs of cell-contacts mounted on the inner surface of said bottom wall, pairs of cell-contacts carried by said closure, the members of each pair of cell-contacts being in alinement in the direction of movement of the sliding closure, and electrical connections whereby, when cells are introduced in said holder and the closure moved to the closed position, the cells are automatically established in circuit.

2. In combination, a cell-holder comprising a peripheral wall, a bottom wall and a slidably withdrawable top closure, a pair of external outlet contacts carried by said bottom wall, pairs of cell-contacts mounted at the inner surface of said bottom wall, pairs of cell-contacts carried by said closure and arranged in front to rear alinement, and electrical connections including contacts carried by said closure, and horizontal bars carried by the upper portion of said peripheral wall which engage each other when the closure is in the closed position; whereby, when cells are introduced into said holder and the closure moved to the closed position, the cells are automatically established in circuit.

3. In combination, a cell-holder comprising a substantially rectangular peripheral vertical wall, a bottom wall, and a slidably withdrawable top closure, a pair of outlet contacts carried by said bottom wall, cell-contacts mounted on the inner surface of the bottom wall and arranged to be engaged by the bottom of cells when entered in said holder, spring cell-contacts mounted on the inner surface of said closure and arranged in front to rear alinement, electrical connection between some of the upper cell-contacts and some of the lower cell-contacts, such connections being completed in the operation of moving the closure to the closed position, and dry cells in said holder having their bottoms resting on the lower cell-contacts and having their carbon poles engaging the upper cell-contacts.

4. In combination, a cell-holder comprising a peripheral wall, a bottom wall and a slidably mounted closure constituting a top wall, external outlet contacts carried by said bottom wall, pairs of cell-contacts mounted

on the inner surface of said bottom wall, spring cell-contacts carried by said closure and arranged in front to rear alinement, electric conductors leading from the top of the holder to the bottom thereof and equipped at their upper ends with means for establishing electrical connections with the upper cell-contacts, horizontal bars carried by the upper portions of the peripheral walls of the cell-holder and constituting a portion of the means for establishing connections with the upper cell-contacts, and dry cells in said holder having their bottoms resting on the bottom cell-contacts and having their carbon poles slidably engaged by the upper cell-contacts.

WILLIAM BALDERSTON.