

March 18, 1924.

W. BALDERSTON

1,487,430

BATTERY

Filed Aug. 11, 1921

2 Sheets-Sheet 1

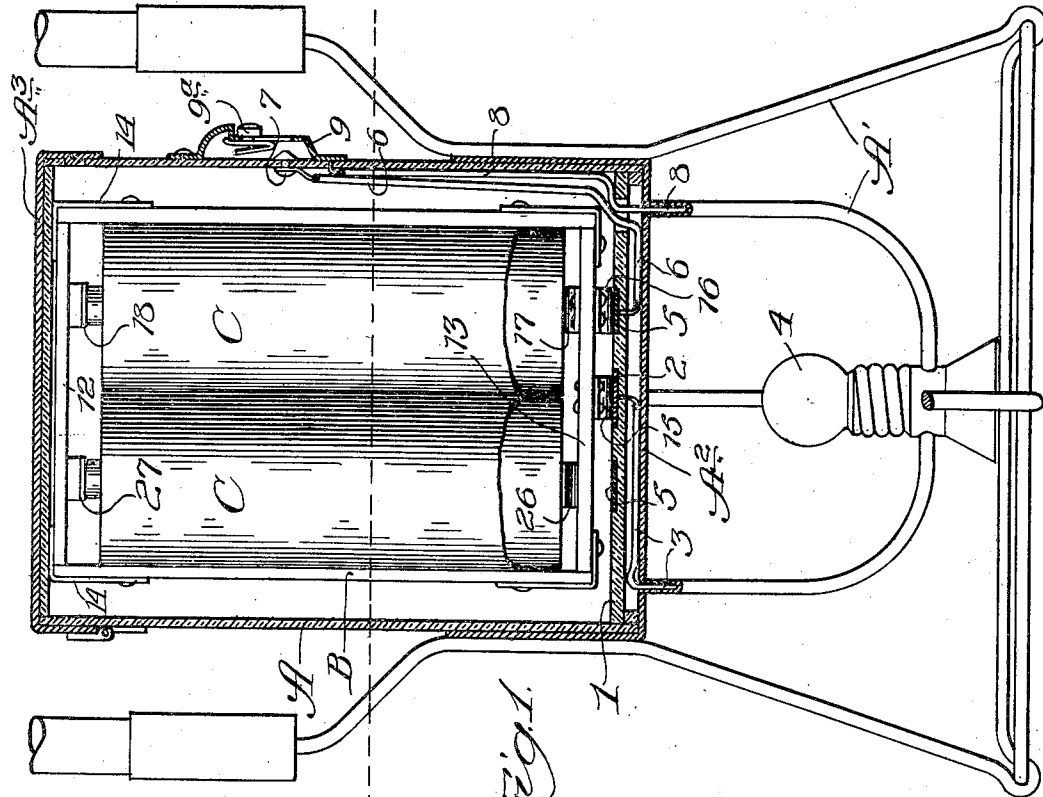


Fig. 1.

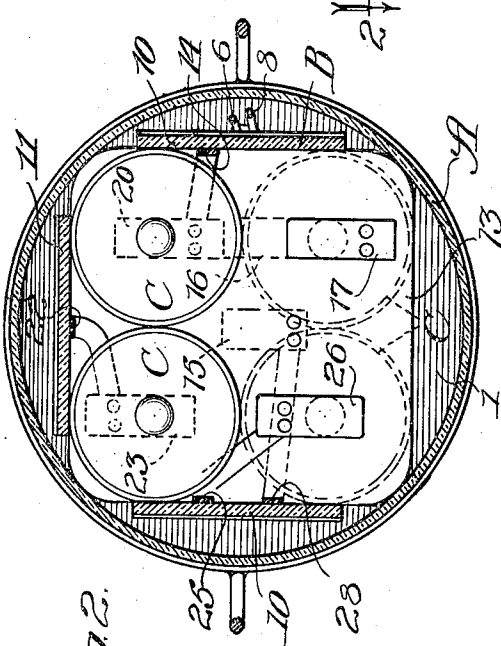


Fig. 2.

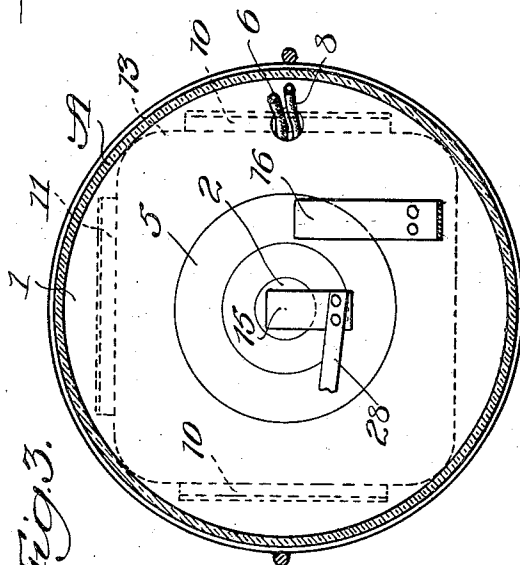


Fig. 3.

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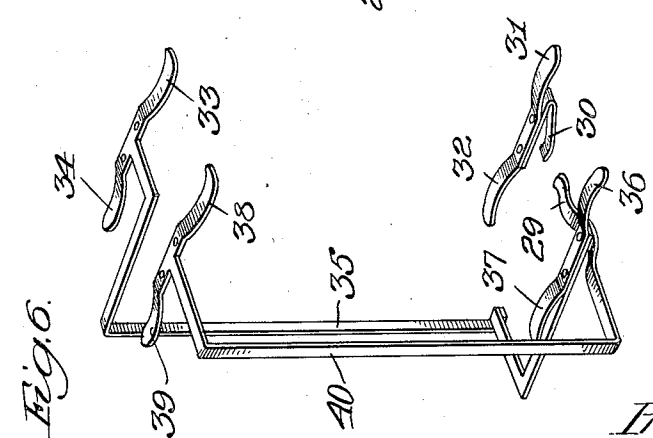
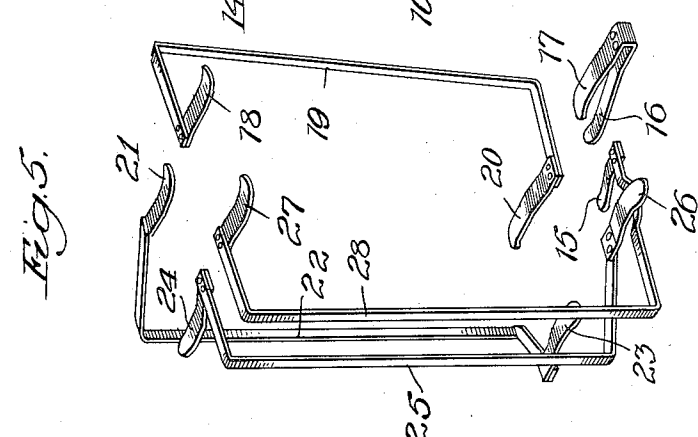
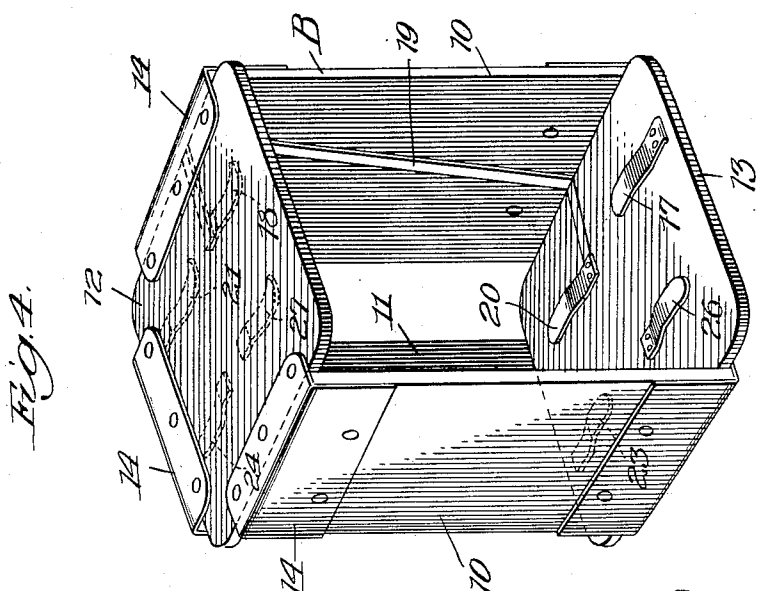
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BATTERY

Filed Aug. 11, 1921

2 Sheets-Sheet 2



Inventor:
William Balderston,
By J. J. Smith, Attorney.

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 11, 1921. Serial No. 491,415.

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 is introduced into the container, the circuit is automatically established between the cell-holder and the container.

The present application is directed to a modification of the invention set forth in my application No. 491,268 filed of even date herewith.

The present invention is embodied, in its preferred form, in an electric lantern shown in the accompanying drawing, in which—

Fig. 1 represents a broken vertical sectional view of a lantern provided with a casing containing an 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 represented 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 A^a and with a top closure A^b; 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^a. 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 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 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 side walls 10 which are of insulating material, a rear vertical wall 11, and top and bottom walls 12 and 13, respectively, constituting the ends of the cell-holder. All of the walls described may be of hard fiber, or other suitable sheet insulating material. The walls are rigidly connected together by angle-plates 14.

The cell-holder B, as shown, is adapted to accommodate four dry cells. In the arrangement shown in Figs. 4 and 5, the cells are automatically connected in series when they are inserted into the cell-holder thru the open front side of the holder. The bottom wall 13 is equipped on its lower side with a central spring contact 15 which is adapted to engage the central contact 2 of the lantern-casing, and the wall 13 is further equipped on its lower side with a spring contact 16 which is adapted to engage the annular contact 5 of the lantern casing. On the upper side of the bottom wall 13 is a spring cell-contact 17 which is electrically connected with the contact 16. When a cell is disposed above the contact 17, the current passes thru the cell to an upper spring cell-contact 18 which is secured to the lower surface of the top wall 12 and is disposed directly above the cell-contact 17. From the contact 18, a conductor 19 leads to a rear lower cell-contact 20 which is disposed immediately back of the contact 17. When a cell is in position above the contact 20, the circuit passes therethru to an upper rear cell-contact 21 which is located directly back of the contact 18. From the contact 21 a conductor 22 leads to a rear lower spring contact 23 which is secured to the inner surface of the lower wall 13.

When a cell is in position above the contact 23, the circuit passes therethru to an upper rear cell-contact 24 which is secured to the lower surface of the top wall 12 and is disposed directly above the contact 23. From the contact 24 extends a conductor 25 which connects at its lower end with a low-

er front cell-contact 26 which is disposed directly in front of the contact 23. When a cell is in position above the contact 26, the circuit passes therethru to an upper front
 5 cell-contact 27 which is secured to the lower surface of the top wall 12 and is disposed directly above the contact 26. From the contact 27, a conductor 28 leads to the lower end of the cell-holder and connects with the
 10 central external contact 15. Thus, it will be seen that in the arrangement of contacts and connections shown in Fig. 5, the cells will be automatically connected in series when inserted in the holder.

15 In the modification shown in Fig. 6, the arrangement of contacts and connections is such as to automatically connect the cells in multiple series when they are inserted. In this arrangement, the central external
 20 contact is designated 29, and the eccentrically positioned external contact is designated 30. Electrically connected with the contact 30 are lower spring cell-contacts 31 and 32. When a pair of cells are in position
 25 above these contacts, the circuits pass therethru to upper contacts 33 and 34, from which leads a conductor 35 which connects with a pair of lower cell-contacts 36 and 37. When a pair of cells are in position above
 30 the contacts 36 and 37, the circuits pass therethru to a pair of upper contacts 38 and 39, from which a conductor 40 leads to the bottom of the cell-holder and connects with the external central contact, or outlet-con-
 35 tact, 29.

It will be understood from the drawings and from the description given that the lower cell-contacts 17 and 20 are in alignment from front to rear. The same is true
 40 with respect to the upper cell contacts 18 and 21 which are disposed, respectively, over the contacts 17 and 20. In the same manner, the contacts 26 and 23 are in alignment from front to rear of the cell-holder, and
 45 the contacts 27 and 24 are, respectively, above the contacts 26 and 23. Four dry cells may be introduced into the holder with the bottoms of the zinc containers resting on the lower cell-contacts and the carbon-poles
 50 engaging the upper cell-contacts, so that the cells are automatically established in circuit upon insertion. When the cell-holder is loaded with cells, it may be introduced into the container A, and the outlet contacts 15
 55 and 16 of the cell-holder will engage the central contact 2 and the annular contact 3 of the container, thereby automatically connecting the cells with the external (lamp) circuit.

60 The cell-contacts, in conjunction with the walls of the cell-holder, will sufficiently retain the cells in position to enable the cell-holder to be introduced into or removed from the container A. If desired, however,
 65 some additional retaining means may be em-

ployed, as, for example, where it may be desired to carry the cell-holders, already loaded, before inserting them in the container.

The conductors which connect the spring
 70 cell-contacts together may comprise brass strips having their end portions suitably secured to the contact members.

From the description given, it will be understood that the cells may be introduced
 75 into the cell-holder by lateral movement of the cells; that no special construction of the cell is necessary to enable the cells to be properly established in circuit and maintained in position; and that the cells may be
 80 removed with great facility to enable them to be replaced by fresh cells. Moreover, the cell-holder is simple of construction and may be cheaply manufactured.

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

In practice, the cells are preferably inserted with the bottoms of the zinc containers resting on the lower cell-contacts.
 90 If desired, for any reason, the cells may be reversed in the cell-holder, however. It is understood, of course, that the cell-contacts of the holder preferably are so spaced with
 95 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
 100 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 side walls, a back wall, and end walls fixedly joined together, said structure being open at its front side to admit cells one of the end walls being equipped with external
 110 outlet contacts, pairs of lower cell-contacts mounted on the inner surface of the bottom wall, the members of each pair being aligned from front to rear of the cell-holder, pairs of upper cell-contacts secured to the inner
 115 surface of the upper end wall of the cell-holder, the members being disposed, respectively, above the members of the pairs of lower contacts, and electric connections whereby dry cells introduced into said
 120 holder are automatically established in circuit.

2. In combination, a cell-holder comprising a pair of side walls and upper and lower end walls fixedly joined together, a
 125 pair of lower spring cell-contacts secured to the inner surface of the lower end wall near the lower end of each side wall, a pair of upper spring cell-contacts secured to the inner surface of the upper end wall near
 130

the upper end of each side wall, the construction and arrangement permitting two dry cells to be introduced into the holder from one open side of the holder and in front to rear alinement, conductors connecting some of said cell-contacts so that the cells are automatically established in circuit when introduced into the holder, and external outlet contacts secured to one of said end walls and electrically connected with some of said cell-contacts, said outlet contacts being adapted to engage the contacts of and become automatically connected with an external circuit.

3. In combination, a cell-holder comprising a pair of side walls and upper and lower end walls fixedly joined together, pairs of lower spring cell-contacts secured to the inner surface of the lower end wall, the members of each pair being aligned from front to rear of the cell-holder, pairs of upper spring cell-contacts having their members disposed over the corresponding lower cell-contacts, conductors connecting some of said contacts, external outlet spring contacts connected with one of said end walls and electrically connected with some of said

cell-contacts, and pairs of dry cells in said holder, the construction and arrangement being such that the cells may all be introduced thru the open front side of the holder and automatically established in circuit when so introduced.

4. In combination, a cell-holder comprising a pair of side walls and upper and lower end walls fixedly joined together, a pair of lower cell-contacts and an external outlet contact electrically connected together and secured to the bottom wall, a second pair of lower cell-contacts secured to the bottom wall and electrically connected together, a first pair of upper cell-contacts secured to the upper wall and electrically connected together, a conductor connecting said last-named contacts to the second named pair of lower cell-contacts, a second pair of upper cell-contacts electrically connected together, a conductor leading from said last-named pair of cell-contacts to the bottom of the holder, and an external outlet contact electrically connected with said last-named conductor.

WILLIAM BALDERSTON.