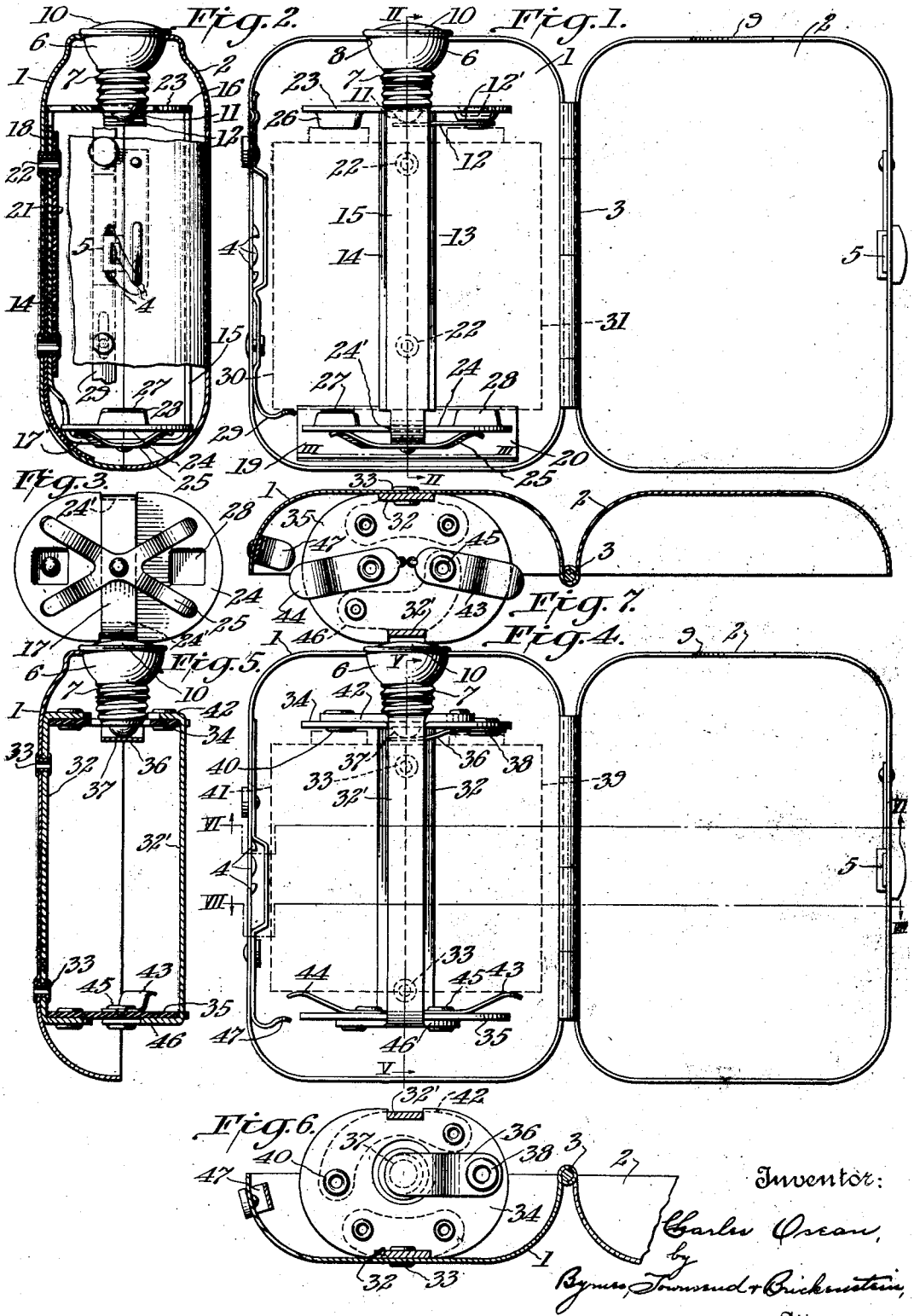
June 15, 1926. 1,588,464

C. OSEAN

FLASH LIGHT

Filed March 15, 1922



Inventor:
Carlos Osean,
by
Byrnes, Townsend & Brickenstein,
Attorneys.

Patented June 15, 1926. 1,588,464

UNITED STATES PATENT OFFICE.

CHARLES OSEAN, OF WOODCLIFF, NEW JERSEY, ASSIGNOR TO NATIONAL CARBON COMPANY, INC., A CORPORATION OF NEW YORK.

FLASH LIGHT.

Application filed March 15, 1922. Serial No. 544,018.

This invention relates to portable electric lamps energized by a battery composed of separate cells placed side by side and removably mounted in a casing.

It has heretofore been proposed to use unit cell batteries in electric lamps of the flat flashlight type, and various means have been devised with this end in view. The present invention embodies improvements in structures of this type. It has for its principal objects the provision of simple and effective cell holding and circuit completing means.

In general, the invention comprises a casing provided with a rigid cell supporting frame, having spring means for holding the cells securely in operative position, while permitting easy insertion and removal of the individual cells. The frame will be suitably insulated from the casing, if this is made of conductive material.

One of the marked advantages of the present structure is the elimination of all connecting wires. The frame itself is so constructed that the cells are series connected by mere insertion therein. Further, the cells are to be similarly arranged in the frame. This is the way in which the user of the lamp would naturally place the cells and the likelihood of an erroneous insertion is therefore much less than in prior devices in which one or more of the cells must be reversely placed with respect to the others. Additional objects and advantages of the invention will be apparent from the succeeding description.

In the accompanying drawings, which illustrate the invention,

Fig. 1 is a front elevation of the lamp, the cover being in open position,

Fig. 2 is a vertical central section on line II—II of Fig. 1, but showing the cover in closed position,

Fig. 3 is a view looking upward on line III—III Fig. 1, and showing the bottom plate member and its springs,

Fig. 4 is a front elevation of a modified form of lamp, the cover being open,

Fig. 5 is a vertical central section on line V—V of Fig. 4, and

Figs. 6 and 7 are views taken respectively on lines VI—VI and VII—VII of Fig. 4, looking in the directions indicated by the arrows.

Referring to Figs. 1, 2 and 3 of the drawings, 1 indicates a flat metal casing comprising a cover 2 hinged at 3. The embodiment of the invention which has been selected for illustration is intended for use as a pocket flashlight, and the casing is therefore rounded at its margin, so that it may fit conveniently into the pocket of the user. The dimensions and contour of the casing are adapted to the ordinary cylindrical flashlight cells. Any desired configuration of the casing may be chosen, however, with a view to the intended use of the lamp or the shape of the battery cells. Projections 4 are stamped in the side of casing 1 and engage a depressible locking catch 5, of known type, when the cover is closed.

A bulb holder 6 having a threaded stem 7 is mounted in one end of casing 1. The bulb holder may be secured either to the cell-holding portion of the casing, as shown, or in the corresponding position on the cover. The holder is partly received within a semicircular recess 8 in the casing wall and is secured to the wall by soldering or in any other suitable manner. A corresponding recess 9 in the cover 2 fits over the projecting portion of the holder when the cover is in closed position. The exterior rim of the holder is preferably substantially flush with the surface of the casing. A lamp bulb 10 is screwed into the stem 7 and the outer terminal of the lamp is in electrical contact with the stem. The central lamp terminal 11 extends below the end of the stem and engages resilient contact member 12 carried by a frame, which is designated generally by reference numeral 13.

The principal improvements presented by my invention reside in the construction and mounting of the rigid unitary frame 13 that is permanently secured in the casing. This frame consists of a metal strip bent into rectangular form. The sides of the rectangle are designated by numerals 14, 15, 16, 17. Side 14 is secured to the flat wall of casing bottom 1 and extends along said wall at the medial longitudinal portion of the casing. The rigid substantially parallel sides 16 and 17 are substantially perpendicular to said flat wall and carry abutment and contact means adapted to bear against the opposite ends of the cells. The altitude

of the rectangle is such that the side 15 projects outside the cup-shaped casing section 1 and into the complementary cup-shaped cover 2, but out of contact therewith, when the cover is shut.

A strip of insulating material 18 is interposed between side 14 and the casing wall. This insulation may be extended laterally at 19 and 20, adjacent the lower end of the casing. A second insulating strip 21 is placed over side 14. Rivets 22 are passed through the parts assembled as described, holding the frame 13 securely and permanently in position within the casing and out of electrical contact therewith.

For the purpose of retaining the cells in position, the frame 13 is provided with plates 23 and 24, extending at right angles to sides 16 and 17 of frame 13. The plate 23 may be formed integrally with the frame or may consist of separate members suitably secured thereto. In the form of the invention shown in Figs. 1, 2 and 3, the lower plate 24 is indented at 24' for slidably engaging sides 14 and 15 (see Fig. 3). Plate 24 is supported upon an upturned spring member 25, carried by the lower part 17 of frame 13.

Plate 23 has a depression 26 adjacent one end adapted to engage a cell terminal, while its other end carries the contact member 12. In the form of the invention shown, the contact member is insulated from the plate 23 by discs 12', but any other suitable means for rigidly mounting and insulating the member may be adopted. Plate 24 carries at one extremity a raised insulating member 27 and at the other a contact-making projection 28. The plate 23 and the frame side 16 are so disposed as to leave a clearance between them and the stem of the bulb. Insulating material might of course be used if desired to prevent the stem of the bulb from coming into electrical contact with the casing.

A switch contact 29 is provided adjacent the lower plate 24. In the illustration, a simple slide mechanism is shown, but obviously any other suitable switch may be adopted.

Cells 30 and 31 are shown in outline in Fig. 1. When switch 29 is moved into contact with the exposed zinc bottom of cell 30, the following circuit is completed: through cell 30 to contact 26, thence through insulated frame 13 to contact 28, through cell 31 to contact member 12 and lamp terminal 13, through the filament to the outer terminal of the lamp, and so to the casing and the switch 29, in electrical contact therewith.

In the embodiment of the invention illustrated in Figs. 4 to 7, a two-part conductive frame 32, 32', is secured by rivets 33, or other suitable means, directly to the metal wall of the casing. This latter is similar to the casing previously described. The frame is cut away at the top, so as to leave a clearance between the frame and the bulb stem extending therethrough. Frame sections 32, 32', are held in a unitary assembled relation, but out of contact, by insulating plates 34 and 35, to which the sections are suitably fastened.

Plate 34 is secured to the under side of the top of frame sections 32, 32', and plate 35 is secured to the upper side of the bottom of these sections. The plates 34 and 35 are indented marginally, as shown to receive the sides of sections 32 and 32'.

Insulating plate 34 carries a metal contact strip 36, which engages the inner terminal 37 of the lamp bulb. The strip is secured to plate 34 by conductive rivet 38 which is adapted to contact with the carbon terminal of cell 39. At the other extremity of plate 34 a similar rivet 40 engages the carbon pole of cell 41. Rivet 40 is in electrical connection with the outer portion of the frame, 32', through the metal connector strip 42, which is secured to the upper surface of plate 34.

Plate 35 is provided with spring supports 43 and 44, upon which cells 39 and 41 rest. A conductive rivet 45 passes through spring 43 and one end of a metal connector strip 46, arranged on the under side of plate 35. This strip, and strip 42 previously mentioned, may advantageously be formed integrally with frame section 32', and are electrically connected through the latter. The other spring member 44 is similarly secured to the plate 35, but this spring is not electrically connected with any part of the frame. A switch member 47 is adapted to engage the zinc bottom of cell 41.

The circuit through the device so constructed is as follows: through cell 41 to rivet 40 and connector strip 42 in contact with frame section 32', down through section 32' to connector strip 46, rivet 45 and cell 39, from cell 39 to rivet 38, contact strip 36 and the central terminal of the lamp, through the filament to the outer lamp terminal and thence to the casing and the switch 47 in electrical contact therewith, and, lastly, from switch 47 to the zinc cup of cell 41.

In both of the described forms of the invention, the lamp is made ready for service merely by the insertion of the two cells, which have the usual paper wrapping or other lateral insulation, the frame providing the necessary conductive parts for connecting the cells in series. As the dimensions of the closed case are such that no undue freedom of motion is allowed the cells, and as the contact members are spring pressed against the electrodes, good electrical contact is permanently assured.

A metal casing has been described, but it will be understood that features of the invention are applicable as well to non-conductive casings. The number and alinement of the cells, as shown, are preferable for pocket flashlights of the flat type. For other purposes or for casings of other kinds, however, the battery may be composed of a different number of cells, the frame parts being suitably duplicated to accommodate them. Various other changes may be made in the form and arrangement of parts, within the scope of the appended claims.

I claim:

1. In a portable battery-operated electric lamp, the combination of a casing, and a rigid conductive frame secured therein comprising conductive portions to receive and retain a plurality of cells and a conductive portion joining and supporting such cell-receiving portions, said conductive portions cooperating to electrically connect such cells in series circuit.

2. In a portable battery-operated electric lamp, the combination of a casing, and a unitary conductive frame secured to an inner wall of said casing and comprising conductive portions adapted to receive a plurality of cells, such cells being electrically connected in series circuit with one another through said frame.

3. The invention defined in claim 2, in which said frame has a conductive portion permanently secured to said inner wall along the medial longitudinal portion of the latter.

4. In a portable battery-operated electric lamp, the combination of a casing comprising complementary cup-shaped sections, a conductive frame secured in one of said sections and projecting into the other section when such sections are closed together, said frame comprising means for supporting a plurality of separate cells in the casing formed by said sections and connecting said cells in series circuit.

5. In a portable battery-operated electric lamp, the combination of a casing comprising complementary cup-shaped sections, and a unitary conductive frame therein comprising metal strip means secured to one of said sections and means at the ends of said frame providing abutments for a plurality of cells, said abutment means being secured to and perpendicular to said strip means and projecting into the other casing section when such sections are closed together.

6. In a portable battery-operated electric lamp, the combination with a casing, of a conductive frame therein for supporting a plurality of separate cells in such manner that they may be readily inserted and removed independently of one another, said frame being rigidly mounted upon a fixed wall of said casing medially of the latter and having upper and lower plates carrying relatively separable conductive members adapted to engage the electrodes of cells inserted therebetween.

7. In a portable battery operated electric lamp, the combination with a casing, of a frame therein for supporting a plurality of cells in such manner that they may be readily inserted and removed, said frame having upper and lower plates carrying conductive members adapted to engage the cell electrodes, spring means for holding the cells in engagement with the conductive members, one of said plates being slidably mounted on the frame and resting upon part of said spring means.

8. In a portable battery operated electric lamp, the combination with a casing, of a frame therein for supporting a plurality of cells in such manner that they may be readily inserted and removed, said frame comprising upper and lower plates electrically connected through the frame and carrying conductive members adapted to engage the cell electrodes, and spring means for holding the cells in engagement with the conductive members.

9. In a portable battery operated electric lamp, a frame for supporting a plurality of cells in such manner that they may be readily inserted and removed, said frame comprising a strip of metal bent into rectangular form, a contact-carrying plate rigidly secured to the upper portion of said frame, a second contact-carrying plate slidably mounted on the lower part of the frame, and spring means for supporting the second contact-carrying plate.

10. A portable electric lamp of the flat flashlight type, comprising a metallic casing, a cover therefor, a metallic frame disposed medially within the casing and insulated therefrom, said frame having means to retain a plurality of cells and to place the same in series, a lamp bulb, and means for establishing an electrical circuit comprising the cells, the filament of the lamp, and the casing.

11. A portable battery operated electric lamp, comprising a metallic casing, a lamp bulb having its exterior terminal in contact therewith, a frame disposed medially within said casing, an insulated contact member adapted to engage the central terminal of the bulb, a plurality of cells supported by said frame, an electrode of one of said cells being in contact with said contact member, said frame having a conductive portion insulated from the casing and adapted to place the cells is series, and means for making connection between the casing and an electrode of another cell, whereby the circuit is completed through the filament of the lamp.

12. In a portable battery-operated electric

lamp, the combination of a casing; an incandescent lamp carried thereby; separate cells connected in series circuit with said lamp and arranged side by side in said casing; means for supporting said cells in said casing comprising a conductive strip secured to a wall of said casing and carrying spaced substantially parallel members providing abutment and contact means for the ends of said cells; and a lamp engaging contact secured to one of said members.

13. The invention according to claim 12, in which one of said members comprises spring means whereby its cell abutment and contact means may be separated from the other member for insertion and removal of cells, said lamp engaging contact being secured to but insulated from such other member.

14. In a portable battery-operated electric lamp, the combination of a metal casing; an incandescent lamp carried thereby; separate cells connected in series and in circuit with said lamp; and a rigid self-supporting conductive cell-carrying frame secured to said casing and having spaced substantially parallel members, cell abutments provided on each of said members, and means whereby said abutments are insulated from said casing.

15. In a portable battery-operated electric lamp, the combination of a casing, an incandescent lamp carried thereby, and cell supporting means in circuit with said lamp comprising metal strip means secured to a wall of said casing carrying members substantially perpendicular to said wall as well as cell abutments severally adapted to engage the top and bottom ends of a pair of cells similarly inserted side by side in said casing.

16. In a portable battery-operated electric lamp, the combination with a metal casing, of a conductive frame medially disposed therein for supporting a plurality of separate cells in such manner that they may be readily inserted and removed independently of one another, said frame being riveted to but insulated from a wall of said casing and carrying spaced pairs of members adapted to bear against the opposite ends of cells to retain the latter in place.

In testimony whereof, I affix my signature.

CHARLES OSEAN.