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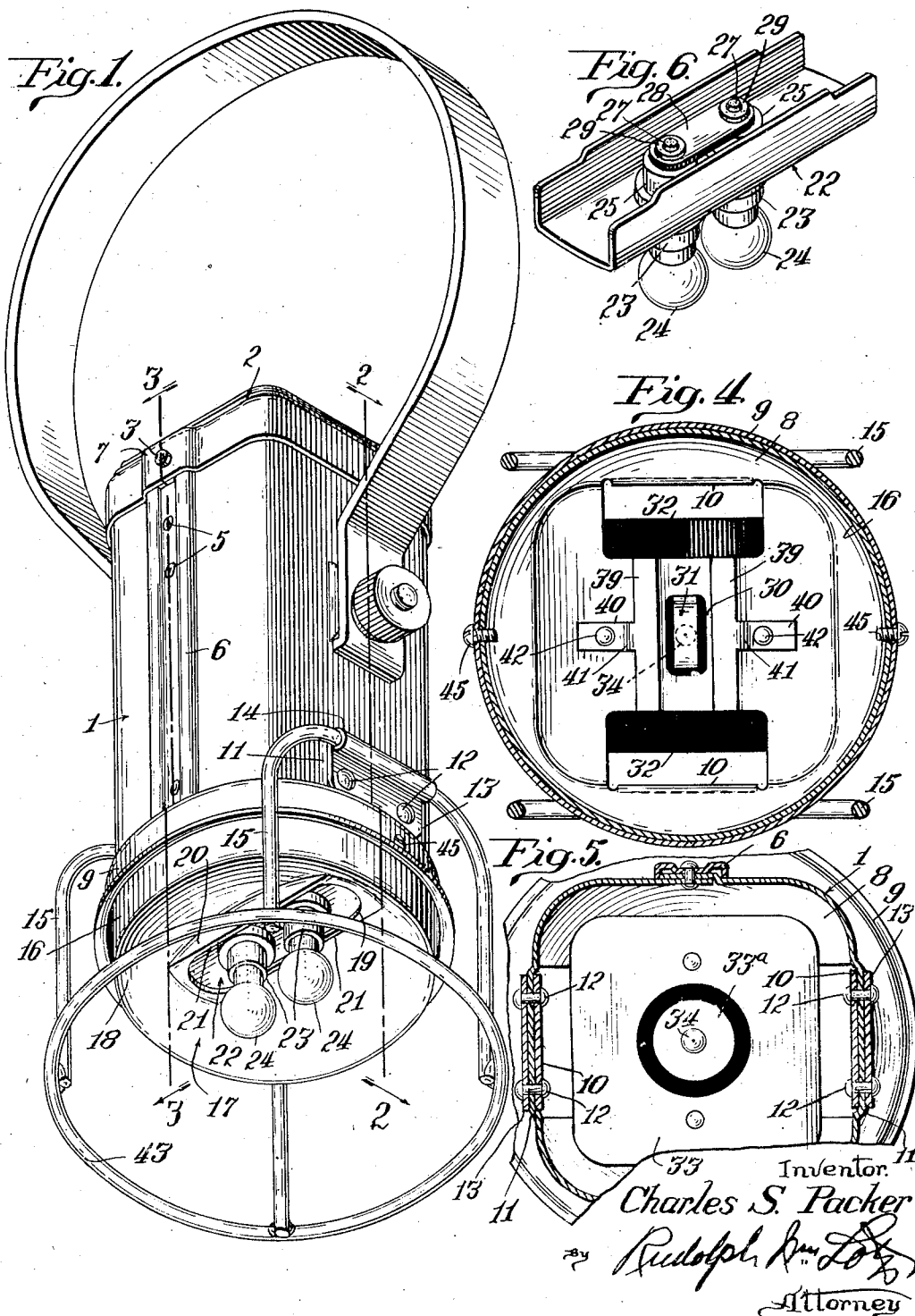
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PORTABLE ELECTRIC LANTERN

Filed Sept. 22, 1938

2 Sheets-Sheet 1



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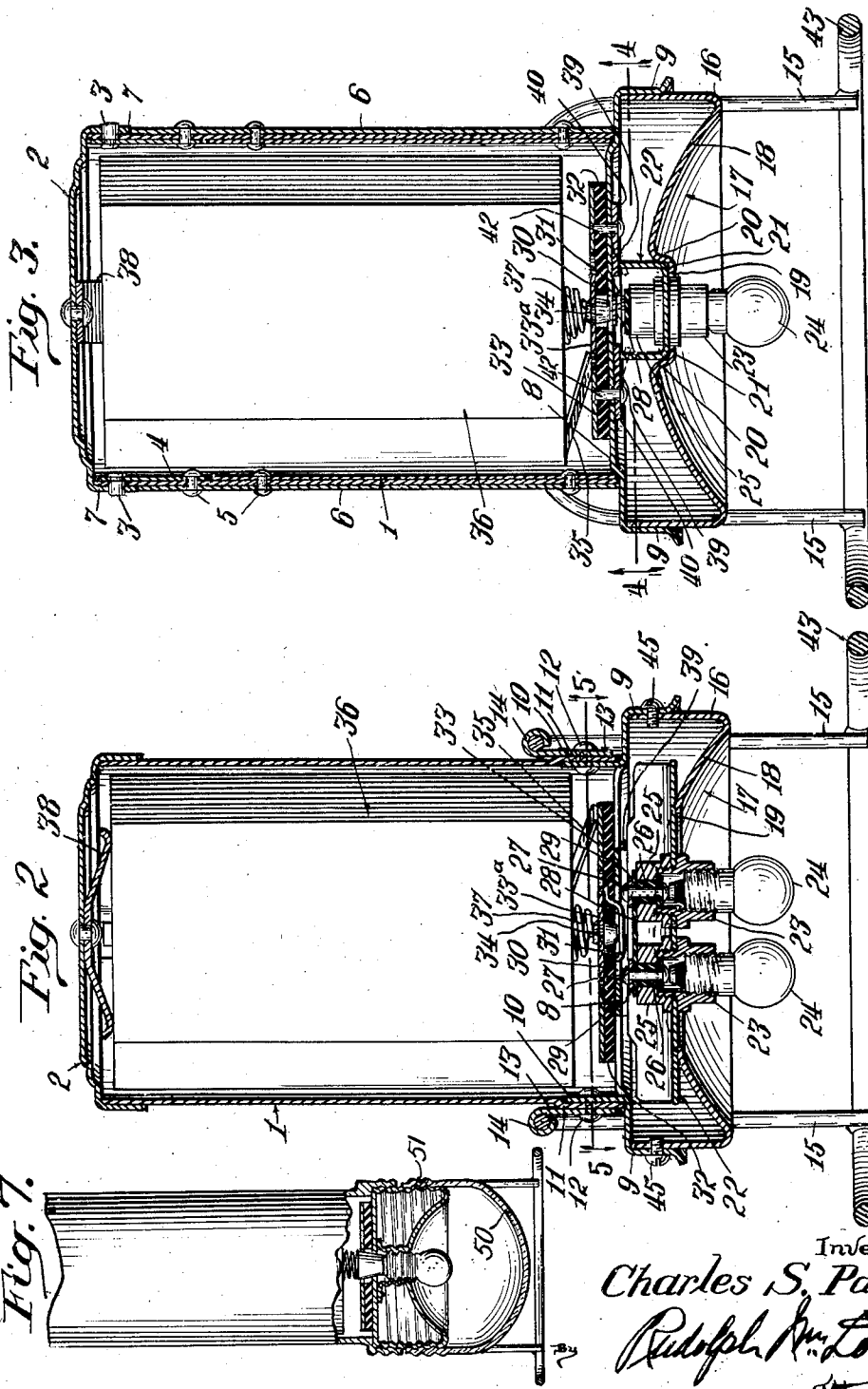
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Inventor.
Charles S. Packer
Rudolph M. Loh
 Attorney

UNITED STATES PATENT OFFICE

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PORTABLE ELECTRIC LANTERN

Charles S. Packer, Chicago, Ill., assignor to Just-rite Manufacturing Company, Chicago, Ill., a corporation of Illinois

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5 Claims. (Cl. 240—11.3)

The present invention relates to improvements in portable electric lanterns such as are used for signalling and other temporary illuminating purposes, and has for its object to provide a structure of this type wherein none of the operative parts are exposed for digital actuation and wherein the operation of closing and opening the lamp circuit is effected by impact of a portion of the structure against an object, such as a wall or a post, or against the palm of a hand; thus to provide a substantially hermetically sealed structure of the type specified which may be used safely in the vicinity of gas wells, gasoline and other volatile fluid tanks, gas generating plants and the like.

A further specific object of the invention is to provide a lamp circuit control switch which is disposed entirely within a sealed chamber and is inaccessible from the exterior of the structure for digital operation.

Other objects of the invention are pointed out in or will be readily understood from the following specification.

The invention is capable of being variously embodied and in the accompanying drawings there is illustrated a suitable and exemplary embodiment of the invention.

In said drawings:

Fig. 1 is a perspective view of a portable illuminating device constructed in accordance with the invention.

Figs. 2 and 3 are central longitudinal sectional views of the same taken on the lines 2—2 and 3—3 respectively of Fig. 1, the bail and connections of the latter with the battery casing being omitted from illustration in Fig. 2.

Fig. 4 is a detail inverted plan sectional view of the device taken on the line 4—4 of Fig. 3.

Fig. 5 is a detail plan section of the same taken on the line 5—5 of Fig. 2.

Fig. 6 is a perspective view of the lamp socket carrier of the structure.

Fig. 7 is a view similar to Fig. 3 showing a further embodiment of this invention, modified to the extent of providing a lens or cover glass.

The present invention comprises a battery casing 1 which is equipped with a removable cover 2, the latter serving to seal the upper end of the casing substantially hermetically.

By reference to Fig. 3 it will be seen that the buttons 3 are mounted upon the upper ends of leaf springs 4 which are secured to the inner face of the peripheral wall of the casing 1 by means of rivets 5. The said leaf springs 4 are disposed in outwardly projecting offsets 6 of the

casing 1 which extend into the offset portions 7 of the cover 2 as best shown in Fig. 1.

The said casing 1 is equipped with a bottom wall 8 which projects outwardly from the peripheral wall of the casing 1 and is equipped with an annular peripheral flange 9 outwardly of said casing 1. Said wall 8 is permanently secured to the peripheral wall of the casing 1 by means of the upwardly projecting tongues 10 which are struck up out of said bottom wall and fit telescopically within outwardly offset portions 11 of the lower end portion of the peripheral wall of the casing 1. Said tongues 10 are secured to the casing 1 by means of rivets 12 which extend also through plates 13 having tubular upper end portions 14 through which the middle portions of the inverted resilient U-shaped wire elements 15 pass, the latter being rigidly secured to the casing 1.

The connection of the bottom wall 8 with the lower and normally open end of the casing 1 is such as to afford a substantially fluid tight joint along the meeting edge of the peripheral wall of the casing 1 and the underlying portion of said wall or plate 8.

The peripheral flange 16 of a suitable reflector 17 fits telescopically snugly within the flange 9 of the plate 8 to provide a substantially hermetic seal between the said flanges 9 and 16, both of said flanges being preferably cylindrical.

The said reflector 17 is equipped with a substantially spherio-segmental surface 18 and is also equipped with a middle longitudinal slot 19 which is bordered by the flanges 20 struck inwardly to project from the concave face of said reflector. Said flanges 20 are substantially ogee-curved in cross section and afford straight guide rails 21 upon which a channeled member 22 rides. Said channeled member 22 is shown in perspective in Fig. 6 and, in the instance illustrated, is equipped between its ends with a pair of sockets 23 for the electric lamps 24 which are spaced from each other, said sockets being so mounted in the middle portion or web of the member 22 as to provide a hermetic seal for the openings through which portions of lamp sockets project. The said web of the member 22 is of appreciably greater length than the slot 19 of the reflector 17 and is reciprocable relatively to the latter for a given length of stroke which may be determined either by the length of the slot 19 or by the diameter of the flange 16 relatively to the length of said member 22.

The lamp sockets 23 are secured to the member 22 by means of nut 25 which engage the threaded ends of the lamp sockets which project

through the openings in the web of the member 22 as particularly shown in Fig. 2.

A tubular insulating sleeve 26 is mounted in a central opening in each of the nuts 25, each of said sleeves being equipped at one end with an annular flange engaging the annular shoulder bordering the central opening in the nut at the end of the latter opposed to the lamp-receiving end of the lamp socket 23. A rivet 27 passes through each of the insulating sleeves 26 with one head thereof opposed to the base of the lamp 24 engaged in the socket 23, the other end of the rivet extending through an insulating plate 28 which bridges the two nuts 25, there being metallic washers 29 interposed between the other heads of said rivets and the said plate 28.

The said plate 8 is equipped with a central slot 30 shown in Fig. 4, through which the curved middle portion of a light resilient sheet metal spring element 31 projects. One end of said element 31 (which may be sheet copper or like material) is embedded in an insulating plate 32 mounted upon the upper face of the bottom wall or plate 8 of the battery-containing chamber of the housing, said spring 31 being adapted to be flexed for contact with the projection 34, constituting a battery circuit terminal as hereinafter described, to close said circuit through one of the lamps 24.

Mounted upon the insulating plate 32 is a flat metal ring 33, of copper or the like, having a central opening. A circular plate 33a of smaller diameter than the opening in plate 33 is mounted concentrically with the plate 33 upon the plate 32, and is provided with a central opening through which the shank of a rivet 34 projects, the end of said rivet opposed to the spring 31 being normally spaced from the latter. Said spring 31 is completely insulated from the said plates 33 and 33a.

A leaf spring 35, constituting a part of a conventional battery set 36 and which constitutes a terminal of the battery circuit, bears normally upon the plate 33 to connect said plate 32 with one pole of said battery circuit. The said rivet 34 is also insulated from the plate 33 and is engaged at one end by the helical spring 37 which is connected with the other terminal of the battery circuit.

The battery set 36 is normally disposed between the plate 33 and the leaf spring 38 mounted upon the inner face of the head of the cover 2 with its ends bearing upon the upper end of said battery set. The spring 31 is spaced from the walls of the slot 30 through which it projects into the path of the rivets 27.

The said plate 8 is further equipped with a pair of T-shaped spring elements 39, the stems or shanks 40 of which are riveted thereto and the cross heads of which extend parallel with the side or longitudinal walls of the slot 30 and are spaced from the same.

The said stems or shanks 40 are ogee curved along the ends connecting with the cross-heads as shown at 41 to space the latter normally from said plate 8. The parallel cross-heads of said springs 39 constitute yielding rails upon which the edges of the flanges of the member 22 slide and also constitute means for firmly holding the web of the member 22 in relatively firm contact with the portions 21 of the flanges 20 of the reflector to maintain a substantially hermetic seal between the latter and said reflector. The rivets 42 which connect the T-shaped member 39 with the plate 8 extend through the insulating plate 32

and the said plate 33, thereby connecting said members 39 with the springs 35 and thus with one terminal of the battery circuit, the member 22 being thus connected with said terminal.

By reference to Fig. 2 it will be noted that the rivets 27 are disposed at respectively opposite ends of the spring 31 and are spaced from the latter so that when the member 22 is in the position shown in Fig. 2, the circuit through the lamps is then open.

Mounted upon the lower ends of the arms of the U-shaped member 15 is a ring 43 of a resilient wire of heavy gauge and which is of appreciably larger diameter than the flange 9 from which it is spaced an appreciable distance so that the lamp bulbs lie between the plane of the ring 43 and the surface of the reflector 16. By projecting the ring 43 against a solid object, or giving it a blow with the palm of the hand at a point aligned with either end of the member 22, the latter will be projected toward the point of impact against the ring 43 and will cause one of the rivets 27 to ride and rest upon the spring 21 and depress the latter into surface contact with the rivet 34, thereby closing the circuit through one of the lamps 24.

By striking a substantially diametrically opposite point of the ring 43 with the palm of the hand or applying other impact to the same, the member 22 will return to the position shown in Fig. 2, thereby opening the lamp circuit. By impact against the last-mentioned point in the ring 43, the member 22 will move to close the circuit through the other of the two lamps, the selection of the lamp being open to the operator and two lamps being provided so that if one thereof burns out, the other will still be in usable condition.

The said ring 43 and the arms 15 by which it is carried, constitute a resilient structure which is more or less shock-absorbent to reduce stress on the filaments of the lamps 24 and constitutes a very efficient means for preventing injury to the casing of the structure and the interengaged flanges 9 and 16.

Obviously, the weight of the member 22 and the frictional resistance to its movements offered by the members 39 and 31, determines the degree of impact necessary to effect its movement from one to another of its respective positions, it being preferable to render said member 22 responsible to relatively light impacts against the ring 43 in order to render the life of the lamps 24 as long as possible.

Obviously, the reflector 16 may be equipped with a lens engaging member, such as is common to flash lights, in order that the lamp bulb or bulbs may also be enclosed in a substantially hermetically sealed chamber.

It will be noted from the foregoing description that the member 22 constitutes a switch member which controls the circuit through the one or several lamps carried thereby and that said switch member is absolutely inaccessible from the exterior of the structure. Hence, the lantern of the present invention may be used safely in close proximity to natural gas wells, gasoline and other volatile and inflammable fluids as well as in gas generating plants, and the like.

The ring 43 and other parts of the structure which may be brought into contact with stone or concrete structures, or the like, are made, preferably, of hard brass or other non-sparking metal, it being obvious that the possibility of any spark being generated during movements of the rivets 27 into and out of contact with the spring mem-

ber 31 is not only remote, but would also be without danger.

The reflector 17 is firmly secured against accidental removal by means of the screws 43 shown in Fig. 2. As already indicated, the lantern of this invention may be equipped with a cover glass or lens if such should be desired. Fig. 7 shows an illustration of one possible construction which includes such cover glass or lens. In this figure it will be noted that the cover glass or lens 50 may be attached directly to the edge of the reflector by means of screw threads 51.

The details of construction shown and described may be changed and modified as engineering skill and low production cost may dictate without departing from the invention as defined in the appended claims.

I claim as my invention:

1. A portable lantern comprising a substantially sealed battery containing casing, a lamp projecting from the casing, and an electric switch-operating member slidably mounted within the casing operatively associated with the battery and having means thereon for mounting said lamp and serving to open and close the circuit through the latter responsively to imparting to the casing impacts in alternately opposite directions, said casing having portions covering said member and lamp carrying means, whereby the same are wholly inaccessible for digital operation from the exterior of said casing.

2. An electric lantern comprising a substantially hermetically sealed battery containing housing, a switch chamber in said housing and a switch member in said chamber inaccessible from the exterior of said housing, a lamp projecting from said housing and mounted on said switch member, said switch member being slidably mounted and operable responsively to impacts imparted to said housing for connecting and disconnecting the lamp from the battery.

3. An electric lantern comprising a substantially hermetically sealed battery containing housing, a switch chamber in said housing and a resilient guard member mounted upon said housing, a switch member in said chamber inaccessible from the exterior of said housing, a lamp projecting from said housing and mounted on said switch member, said switch member being slidably mounted and operable responsively to impacts imparted to said guard member for connecting and disconnecting the lamp from the battery.

4. A portable electric lantern comprising a substantially hermetically sealed housing containing batteries, a lamp, a battery circuit for said lamp, a movable switch member within the housing inaccessible from the exterior said lamp projecting from said housing and mounted on said switch member, said switch member being slidably mounted and movable by impacts imparted to the housing from circuit closing to circuit opening position and vice versa, and means for frictionally resisting free movements of said member from one to another of said positions.

5. A portable electric lantern comprising a substantially hermetically sealed housing containing batteries, a lamp, a battery circuit for said lamp, a movable switch member within the housing inaccessible from the exterior, said lamp projecting from said housing and mounted on said switch member, said switch member being slidably mounted and movable by impacts imparted to the housing from circuit closing to circuit opening position and vice versa, a resilient shock absorbing means mounted upon the exterior of the housing, and means for frictionally resisting free movements of said member from one to another of said positions.

CHARLES S. PACKER.