

June 17, 1941.

C. S. PACKER

2,245,707

ELECTRIC LANTERN

Filed Jan. 29, 1938

3 Sheets-Sheet 1

Fig. 1.

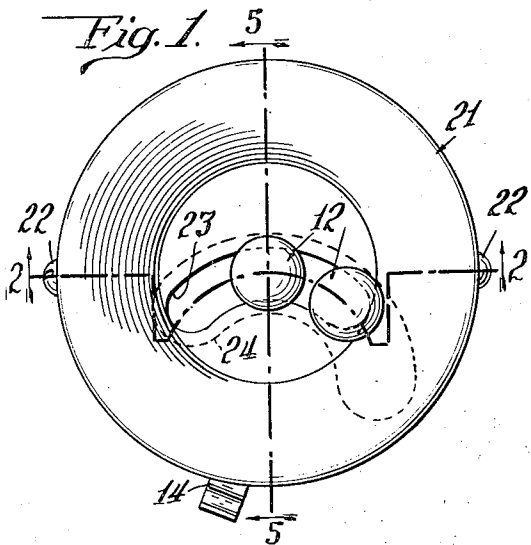


Fig. 4.

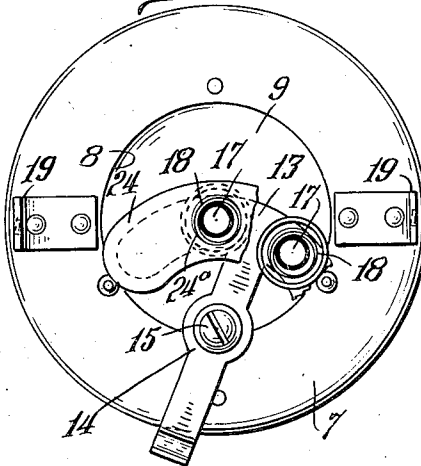


Fig. 2.

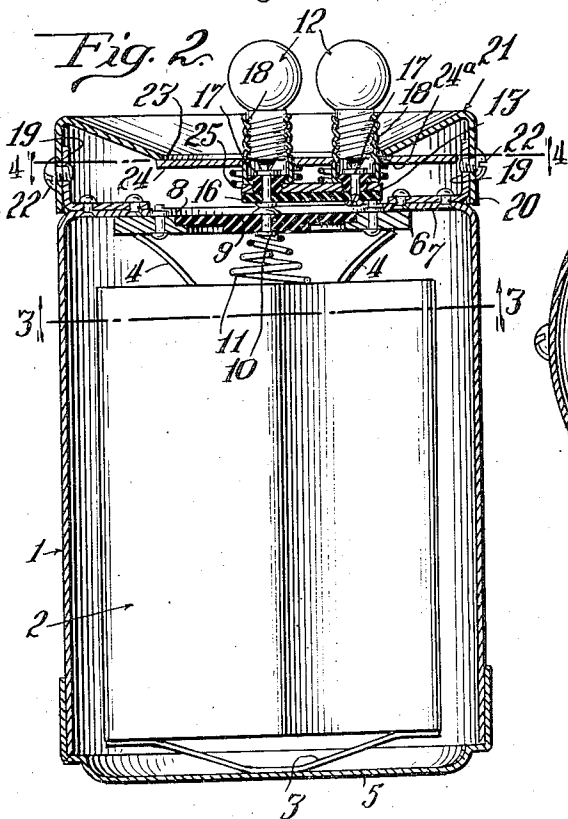
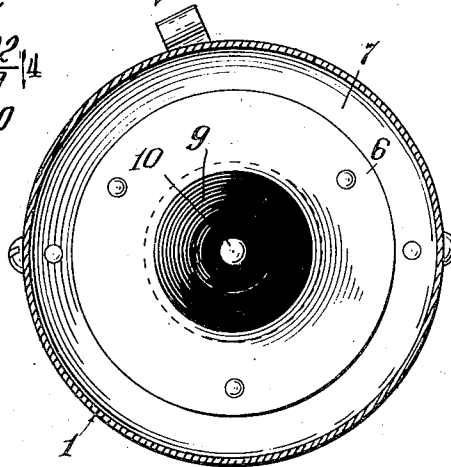


Fig. 3.



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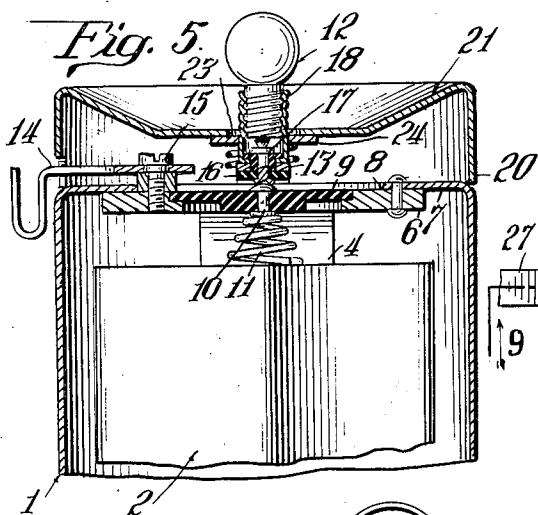
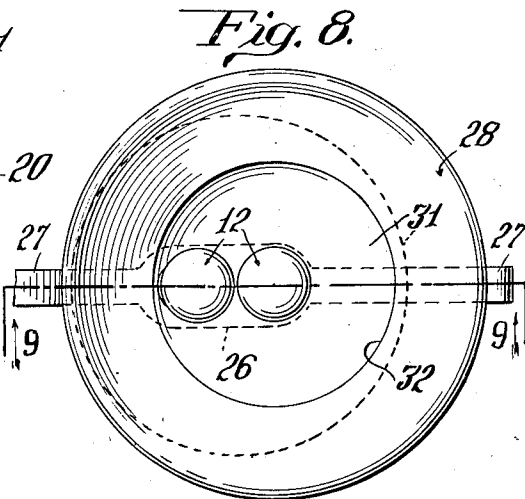
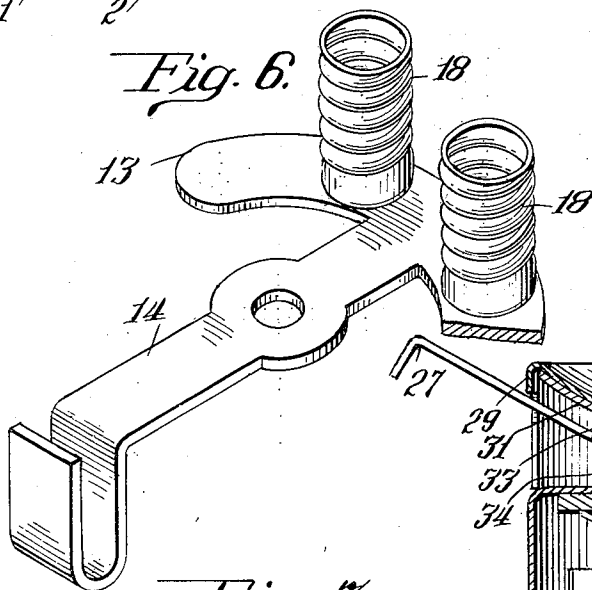
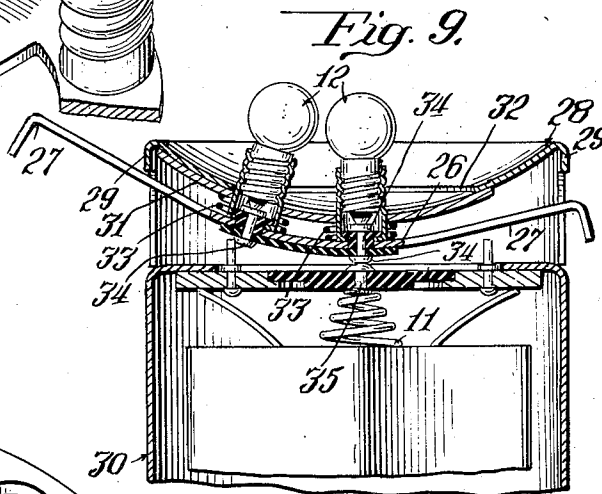
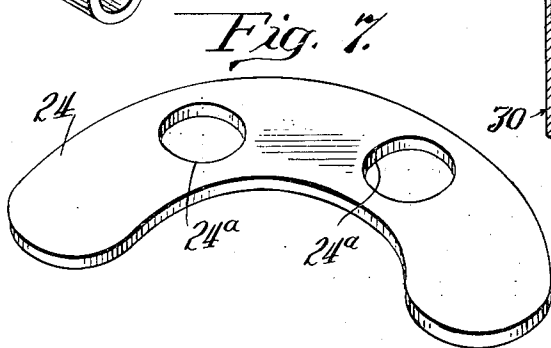
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ELECTRIC LANTERN

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3 Sheets-Sheet 2



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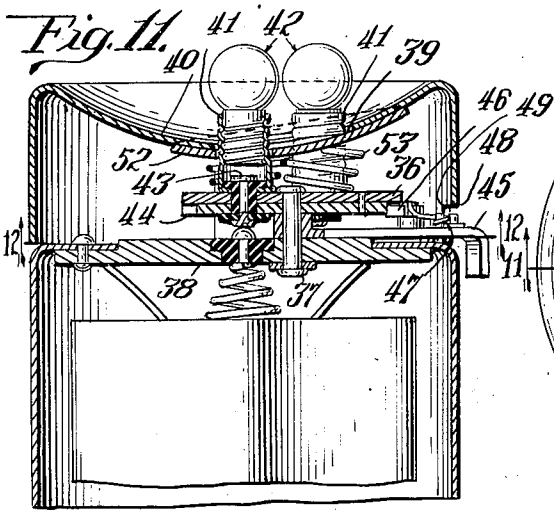
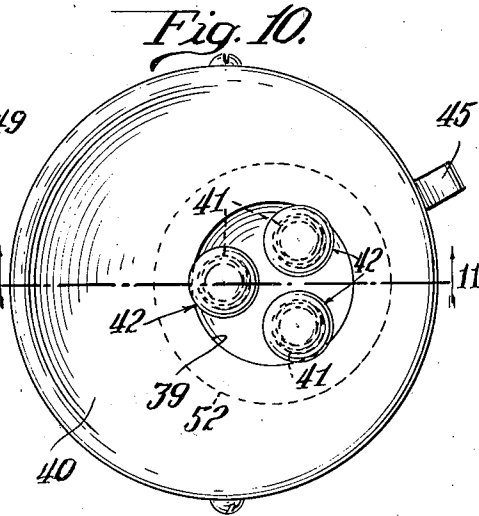
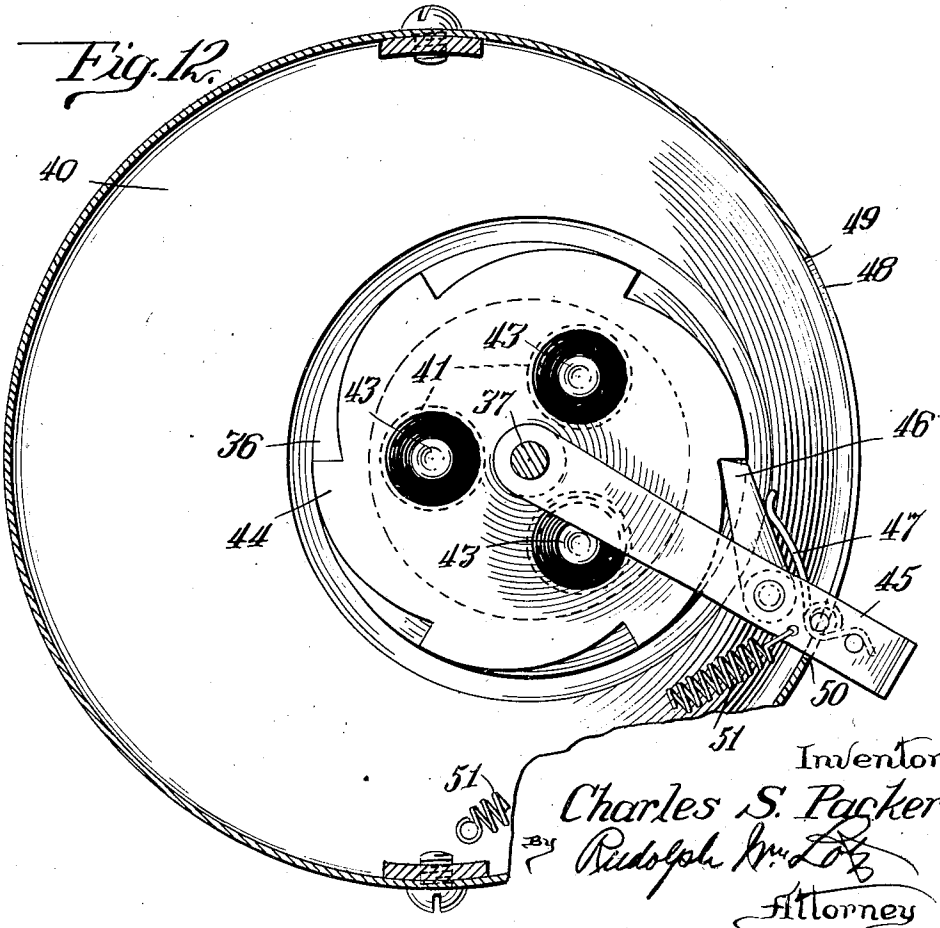
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ELECTRIC LANTERN

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,245,707

ELECTRIC LANTERN

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Application January 29, 1938, Serial No. 187,599

11 Claims. (Cl. 240—10.6)

The present invention relates to portable electric lanterns of the type commonly used for railway signalling and similar purposes, and has for its object to provide a device of this character wherein a plurality of lamps are so associated with a reflector of the dished type that any selected one of said electric lamps may be positioned centrally of the reflector at the same time that the circuit through the selected lamp is closed.

The purpose of employing a plurality of lamps to be used selectively, as aforesaid, is to assure the presence in the lantern of at least one operative lamp at all times, it being obvious that in railway signalling the presence of an operative lamp at all times is an absolute necessity.

Lanterns embodying the invention may be constructed in various ways and, therefore, in the accompanying drawings the several different suitable embodiments of the same are illustrated.

In said drawings:

Fig. 1 is a plan view of an electric lantern constructed in accordance with the invention, the bail for same being omitted from illustration as constituting no part of the invention.

Fig. 2 is a central vertical sectional view of the same taken on the line 2—2 of Fig. 1.

Fig. 3 is a transverse sectional view of the same taken on the line 3—3 of Fig. 2.

Fig. 4 is a plan view of the structure of Figs. 1 and 2 taken on the line 4—4 of Fig. 2.

Fig. 5 is a central fragmentary vertical sectional view taken on the line 5—5 of Fig. 1.

Fig. 6 is a perspective view of a switch lever employed.

Fig. 7 is a perspective view of a removable reflector plate employed in connection with the switch lever shown in Fig. 6.

Fig. 8 is a plan view of the reflector end of a lantern embodying a modified form of construction.

Fig. 9 is a fragmentary central vertical sectional view of the same taken on the line 9—9 of Fig. 8.

Fig. 10 is a plan view of the reflector end of another modified embodiment of the invention.

Fig. 11 is a fragmentary central vertical sectional view of the same taken on the line 11—11 of Fig. 10.

Fig. 12 is an inverted transverse sectional view on an enlarged scale taken on the line 12—12 of Fig. 11.

The device of the present invention comprises the customary battery casing 1 which usually is cylindrical and contains a conventional type of

dry battery assembly 2 containing a plurality of battery cells connected with each other in parallel or series parallel, as the case may be.

The said assembly 2 is equipped at one end with a resilient terminal member 3, and at its other end with a pair of flat springs 4 which may be taken as parts of the battery set for connecting one side of the circuit with the casing 1 and which act as cushioning element to firmly, but yieldingly, maintain the battery set in the desired position in said casing. The member 3 engages the removable cover 5 of said casing and the springs 4 engage the metallic ring 6 which is suitably secured to the head 7 of the battery casing 1.

The head of the battery casing is equipped with a central opening 8 of larger diameter than the inner diameter of the ring 6. Mounted as a closure for the opening in the ring 6 is a disk 9 of suitable insulating material equipped centrally with a suitable metallic device 10 against which the spring 11 bears, said spring 11 being connected with the other terminal of the battery set and constituting a switch element for closing the circuit through either of the lamps 12, the sockets for which are carried by a manually operable switch plate 13 constituting the cross arm of the switch lever 14 which is pivotally secured by its ends to the ring 6 by means of the screws 15.

Mounted upon the lower face of the switch plate 13 is a plate 16 of insulating material. Rivets or similar devices 17 extend through the bottoms of the sockets 18 for the lamps 12, through openings in the switch plate 13 and insulating disk 16 and are suitably insulated from the said plate 13 and from the lamp sockets 18 in a well known manner.

Said devices 17 constitute switch terminals adapted to cooperate with the member 10 to close the circuit through the selected lamp 12 upon bringing the member 17 associated with the socket of said selected lamp 12 into engagement with said member 10.

Mounted upon the head 7 of the battery casing, at diametrically opposite points, is a pair of upstanding projections 19 to which the annular flange 20 of the reflector 21 is secured by means of screws 22. The said reflector 21 is dished, and in the instance illustrated in Figs. 1 to 6, is equipped with a flat circular bottom which is provided with an arcuate slot 23 through which the sockets 18 for the lamps 12 project. The member 10 is disposed axially of said reflector 21 and consequently as the switch lever is turned to bring a member 17 into engagement with said

member 10, the circuit will be closed through the lamp 12 disposed in the now centrally disposed lamp socket 18. A closure plate 24 for the arcuate slot 23 of the reflector is disposed below the reflector bottom and is held in contact with the latter by means of compression springs 25 mounted upon the switch plate 13 and bearing against the lower face of said plate 24. The latter is provided with openings 24a through which the lamp sockets 18 project.

The reflector 21 and said plate 24 are provided with highly polished surfaces.

The bottom wall 5 of the casing constitutes a cover member for the same, the annular flange of which is usually equipped with a bayonet joint connection with the lower end portion of said casing 1, said bayonet joint connection being omitted from illustration as constituting no part of the present invention.

From the foregoing description it will be obvious that upon moving the lever 14 from the position shown in Figs. 1, 2 and 4 to a position to the right thereof, wherein neither of the members 17 is in contact with the member 10, the battery circuit will be open. From this position the lever 14 may be swung to close the circuit through either one of two lamps 12 illustrated herein. In the event that one of said lamps 12 shall have been burned out, the operator may readily bring the other of said lamps into proper position for closing the circuit therethrough and this may be done instantly so as not to interrupt his signalling.

In the structure of Figs. 1-7, inclusive, the switch plate 13 operates in a plane parallel with the plane of the head of the battery casing, while in the modified embodiment of Figs. 8 and 9, the switch plate 26 constitutes an integral part of a bowed substantially reciprocable manually operable switch lever or rod 27, said plate 26 constituting the middle portion of the switch member and being substantially concentric with the reflector 28 which consists of a rigid outer spherio-concave portion equipped with the annular flange 29 secured to the battery casing 30 in the same manner as the reflector of Fig. 1 is secured to casing 1 and a companion spherio-concave reflector plate 31 which constitutes a closure for the central slot 32 in the reflector 28. The sockets for the lamps 12 project through openings in said plate 31 for causing the same to be moved in unison with the switch plate 26.

In the instance of Figs. 8 and 9, the section 31 of the reflector is held in contact with the lower face of the section 28 of the same by means of the compression springs 33 so that the movement of the switch from the position shown in Figs. 8 and 9, wherein the centrally disposed lamp 12 is interposed in the closed circuit, to a position wherein the switch terminals 34 associated with the lamps are both out of contact with the terminal member 35, the reflector plate 31 will be moved correspondingly and the battery circuit will be open. From this intermediate position either of the lamps 12 selected may be moved to circuit closing position centrally of the reflector 28.

While, generally speaking, a structure such as illustrated in Figs. 1-7 inclusive and Figs. 8 and 9, wherein only one spare lamp is provided, is entirely satisfactory, there may be instances wherein it is desirable that a greater number of spare lamps be provided in readiness for use to make greater the assurance that at least one of said lamps will be operative when required. There-

fore, in the embodiment shown in Figs. 10-12 inclusive, the lamp carrying device is shown as equipped with three sockets instead of two and obviously may be equipped with even a greater number without departing from the invention.

In this structure the construction of the battery casing is substantially adhered to with slight exceptions, as will appear from comparison of Fig. 11 with Figs. 1 and 9, respectively. In the instance of Figs. 10 and 12 inclusive the switch plate 36 is rotatable on the pivot member 37 mounted upon the ring 38 of the battery casing, disposed eccentrically of the axis of the latter. Said pivot member 37 is substantially co-axial with an opening 39 in the spherio-concave reflector 40 which is mounted upon the battery casing in the same manner as is true of the reflector of Fig. 1.

Carried by the switch plate 36 are the lamp sockets 41 for the lamps 42. The switch terminal members 43 for the lamp sockets 41 project through and are also insulated from the plate 36 and the ratchet wheel 44 rigid with the said switch plate 36. There is also rotatably mounted on the member 37 a lever 45 which carries a pawl 46 maintained in engagement with the ratchet wheel 44 by means of the spring 47.

In the instance illustrated the ratchet wheel 44 is equipped with six ratchet teeth, there being two of said teeth for each of the lamp sockets. It is obvious that in the event of a greater number of lamp sockets being carried by the plate 36, the ratchet wheel will be provided with teeth double the number of said sockets.

The said lever 45 projects through a slot 48 in the annular flange of the reflector, the end walls of said slot constituting stops 49 and 50 for the lever 45.

In the structure last described, the lever 45 is moved throughout the length of the slot 48 from a lamp circuit closing position, wherein the lamp through which the circuit is closed is disposed centrally of the reflector 40, to a position wherein the circuit is open. A spring 51 connected at one end with the head of the battery casing and at its other end with the lever 45 maintains the latter normally engaged with the stop 50 and thus, when the said lever 45 is moved into engagement with the stop 49, the ratchet wheel will have been rotated through an arc of 60 degrees thereby opening the battery circuit, said lever being then restored to normal position by said spring 51.

The closure plate 52 for the opening 39 in the reflector 40 and which constitutes a section of said reflector, is provided with openings through which the lamp sockets project and is of larger diameter than said opening 39. It is maintained yieldingly in contact with the lower face of the reflector 40 by the spring 53 as shown in Fig. 11.

In the structure of Figs. 10-12 inclusive, the lamps are successively brought into lamp circuit closing position, but obviously the ratchet wheel may be moved with sufficient rapidity to enable the operator to rapidly bring any one of the selected lamps into circuit closing position, but in the ordinary course of operation the successive use of the several lamps will insure such long life to them as to make reasonably certain that not more than one of them will be burned out at any time.

Attention is directed to the fact that the several springs disposed about the lamp sockets in each of the embodiments illustrated react against the switch elements and, in Figs. 10-12, the ratch-

et wheel, to resist frictionally the movements thereof to such a degree as to hold said members and ratchet wheel firmly against movement between digital actuations thereof.

The said springs also cooperate with the closure members for the openings in the several reflectors and the switch members to carry current from one battery set terminal to the lamp sockets, as will be obvious.

I claim as my invention:

1. An electric lantern comprising a battery casing, a housing for a switch member mounted upon one end of the battery casing and having an outer wall constituting a reflector equipped with a slot intersecting the axis of said reflector and casing, a slidable closure plate for said slot disposed within said casing and equipped with spaced apart openings, a shiftable lamp carrier mounted within said housing, lamp sockets mounted upon said carrier projecting through the openings in said closure plate, an electric terminal disposed axially of the battery casing within said housing, means on the lamp carrier associated with the lamp sockets for closing one side of the battery circuit through a lamp in said socket when said carrier is disposed to bring one of said lamps into alignment with said battery terminal, the other side of said circuit being permanently connected with the lamp socket through said closure plate and reflector, the battery circuit being open when none of the lamps is disposed in axial alignment with the battery casing.

2. An electric lantern comprising a battery casing, a housing mounted at one end of said casing with one wall thereof constituting a reflector equipped with a slot intersecting the axis of said casing, a sliding closure plate for said slot disposed within said housing and having openings therein, a lamp carrier comprising a shiftable member equipped with spaced apart lamp sockets projecting through the openings in said closure plate, the said sockets being insulated from said carrier, an electric circuit terminal disposed axially of the battery casing, means on the carrier for connecting the respective lamps disposed in said sockets with said terminal selectively by moving said carrier to bring one of the lamps into substantial axial alignment with the battery casing, the said casing and the walls of the housing and the said closure plate and lamp sockets being permanently connected with the other side of the battery circuit, and compression springs intersecting between said carrier and said closure plate for maintaining the latter yieldingly into close contact with the inner face of the reflector for maintaining the slot in the latter closed.

3. An electric lantern, comprising a housing having an insulated contact member mounted thereon, an electric cell or battery mounted in said housing with one of its electrodes electrically connected to conducting means and another of its electrodes electrically connected to said insulated contact member, a reflector on said housing having a concaved external face, a movable carriage mounted in association with said reflector having a plurality of lamp sockets mounted thereon each having one of its contacts electrically connected to said conducting means and its other contact normally unconnected but adapted for electrical connection with said insulated contact member, and each of said sockets being so disposed as to at all times hold lamp bulbs, respectively, in positions exteriorly of said reflector on the concave side thereof, and lamp

bulbs mounted in said sockets, said carriage being adapted to be moved so as to selectively locate one or another of said lamp bulbs in a position where its incandescing filament lies substantially on the axis of said reflector and so as to cause, when so located, an electrical connection to be made between said insulated contact member and said normally unconnected contact of the socket which is so located.

4. An electric lantern, comprising a housing having an insulated contact member mounted thereon, an electric cell or battery mounted in said housing with one of its electrodes electrically connected to a conducting means and another of its electrodes electrically connected to said insulated contact member, a reflector on said housing having a concaved external face, a movable carriage mounted in association with said reflector having a plurality of lamp sockets mounted thereon each having one of its contacts electrically connected to said conducting means and its other contact normally unconnected but adapted for electrical connection with said insulated contact member, and each of said sockets being so disposed as to at all times hold lamp bulbs, respectively, in positions exteriorly of said reflector on the concave side thereof, and lamp bulbs mounted in said sockets with their axes disposed parallel to each other and parallel to the focal axis of said reflector, said carriage being adapted to be moved so as to selectively locate one or another of said lamp bulbs in a position where its incandescing filament lies substantially on the axis of said reflector and so as to cause, when so located, an electrical connection to be made between said insulated contact member and said normally unconnected contact of the socket which is so located.

5. An electric lantern, comprising a housing having an insulated contact member mounted thereon, an electric cell or battery mounted in said housing with one of its electrodes electrically connected to a conducting means and another of its electrodes electrically connected to said insulated contact member, a reflector on said housing having a concaved external face, a movable carriage mounted in association with said reflector having a plurality of lamp sockets mounted thereon each having one of its contacts electrically connected to said conducting means and its other contact normally unconnected but adapted for electrical connection with said insulated contact member, and each of said sockets being so disposed as to at all times hold lamp bulbs, respectively, in positions exteriorly of said reflector on the concave side thereof, and lamp bulbs mounted in said sockets with their axes disposed parallel to each other and parallel to the focal axis of said reflector, said carriage being adapted to be moved so as to selectively locate one or another of said lamp bulbs in a position where its incandescing filament lies substantially in the focal center of said reflector and so as to cause, when so located, an electrical connection to be made between said insulated contact member and said normally unconnected contact of the socket which is so located.

6. An electric lantern, comprising a housing having at least a portion serving as an electrical conductor and an insulated contact member mounted thereon, an electric cell or battery mounted in said housing with one of its electrodes electrically connected to said portion of said housing serving as a conductor and its other electrode electrically connected to said insulated

contact member, a reflector on said housing having a concaved external reflecting face, a movable carriage mounted in association with said reflector having a plurality of lamp sockets mounted thereon each having one of its contacts electrically connected to said portion of said housing serving as a conductor and its other contact normally unconnected but adapted for electrical connection with said insulated contact member, and each of said sockets being so disposed as to at all times hold lamp bulbs, respectively, in positions exteriorly of said reflector on the concave side thereof, and lamp bulbs mounted in said sockets, said carriage being adapted to be moved so as to selectively locate one or another of said lamp bulbs in a position where its incandescing filament lies substantially on the axis of said reflector and so as to cause, when so located, an electrical connection to be made between said insulated contact member and said normally unconnected contact of the socket which is so located.

7. An electric lantern, comprising a housing having at least a portion serving as an electrical conductor and an insulated contact member mounted thereon, an electric cell or battery mounted in said housing with one of its electrodes electrically connected to said portion of said housing serving as a conductor and its other electrode electrically connected to said insulated contact member, a reflector on said housing having a concaved external reflecting face, a movable carriage mounted in association with said reflector having a plurality of lamp sockets mounted thereon each having one of its contacts electrically connected to said portion of said housing serving as a conductor and its other contact normally unconnected but adapted for electrical connection with said insulated contact member, and each of said sockets being so disposed as to at all times hold lamp bulbs, respectively, in positions exteriorly of said reflector on the concave side thereof, and lamp bulbs mounted in said sockets with their axes disposed parallel to each other and parallel to the focal axis of said reflector, said carriage being adapted to be moved so as to selectively locate one or another of said lamp bulbs in a position where its incandescing filament lies substantially in the focal center of said reflector and so as to cause, when so located, an electrical connection to be made between said insulated contact member and said normally unconnected contact of the socket which is so located.

8. An electric lantern, comprising a housing having at least a portion thereof serving as an electrical conductor and an insulated contact member mounted thereon, an electric cell or battery mounted in said housing with one of its electrodes electrically connected to said portion of said housing serving as an electrical conductor and its other electrode electrically connected to said insulated contact member, a reflector on said housing having a concaved external reflecting face and further having an opening therethrough intersecting the axis of said reflector, a carriage having a plurality of lamp sockets thereon mounted for slidable movement in association with said reflector, and with each of said lamp sockets at all times projecting through the opening in said reflector, and lamp bulbs in said lamp sockets, each of said sockets having one of its contacts electrically connected to said portion of said housing serving as an elec-

trical conductor and its other contact normally unconnected but adapted for electrical connection with said insulated contact member, said carriage being adapted to be moved so as to selectively locate one or another of said lamp bulbs in a position where its incandescing filament lies substantially on the axis of said reflector and so as to cause, when so located, an electrical connection to be made between said insulated contact member and said normally unconnected contact of the socket which is so located.

9. An electric lantern, comprising a housing having at least a portion thereof serving as an electrical conductor and an insulated contact member mounted thereon, an electric cell or battery mounted in said housing with one of its electrodes electrically connected to said portion of said housing serving as an electrical conductor and its other electrode electrically connected to said insulated contact member, a reflector on said housing having a concaved external reflecting face and further having an opening therethrough intersecting the axis of said reflector, a carriage having a plurality of lamp sockets thereon mounted for slidable movement in association with said reflector, and with each of said lamp sockets at all times projecting through the opening in said reflector, lamp bulbs in said lamp sockets, each of said sockets having one of its contacts electrically connected to said portion of said housing serving as an electrical conductor and its other contact normally unconnected but adapted for electrical connection with said insulated contact member, said carriage being adapted to be moved so as to selectively locate one or another of said lamp bulbs in a position where its incandescing filament lies substantially on the axis of said reflector and so as to cause, when so located, an electrical connection to be made between said insulated contact member and said normally unconnected contact of the socket which is so located, and manually operable means connected to said carriage for selectively moving said carriage in the desired manner.

10. An electric lantern, comprising a housing having at least a portion thereof serving as an electrical conductor and an insulated contact member mounted thereon, an electric cell or battery mounted in said housing with one of its electrodes electrically connected to said portion of said housing serving as an electrical conductor and its other electrode electrically connected to said insulated contact member, a reflector on said housing having a concaved external reflecting face and further having an opening therethrough intersecting the axis of said reflector, a carriage having a plurality of lamp sockets thereon mounted for slidable movement in association with said reflector, and with each of said lamp sockets at all times projecting through the opening in said reflector, lamp bulbs in said lamp sockets each of said sockets having one of its contacts electrically connected to said portion of said housing serving as an electrical conductor and its other contact normally unconnected but adapted for electrical connection with said insulated contact member, said carriage being adapted to be moved so as to selectively locate one or another of said lamp bulbs in a position where its incandescing filament lies substantially on the axis of said reflector and so as to cause, when so located, an electrical connection to be made between said insulated contact member and said normally unconnected contact

of the socket which is so located, and means associated with said carriage for closing the opening through said reflector in all positions of said carriage.

11. An electric lantern, comprising a housing 5 having at least a portion thereof serving as an electrical conductor and an insulated contact member mounted thereon, an electrical cell or battery mounted in said housing with one of its electrodes electrically connected to said portion 10 of said housing serving as an electrical conductor and its other electrode electrically connected to said insulated contact member, a reflector on said housing having a concaved external reflecting face and further having an opening therethrough intersecting the axis of 15 said reflector, a carriage having a plurality of lamp sockets thereon mounted for slidable movement in association with said reflector, and with each of said lamp sockets at all times projecting 20 through the opening in said reflector, lamp bulbs

in said lamp sockets, each of said sockets having one of its contacts electrically connected to said portion of said housing serving as an electrical conductor and its other contact normally unconnected but adapted for electrical connection with said insulated contact member, said carriage being adapted to be moved so as to selectively locate one or another of said lamp bulbs in a position where its incandescing filament lies substantially on the axis of said reflector and so as to cause, when so located, an electrical connection to be made between said insulated contact member and said normally unconnected contact of the socket which is so located, and means associated with said carriage for closing the opening through said reflector in all positions of said carriage, said last named means having an exterior reflecting surface which supplements the reflecting surface of said reflector in all positions of said carriage.

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