

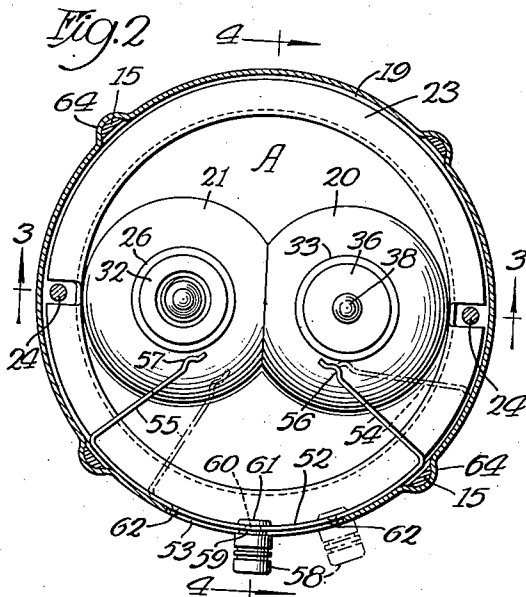
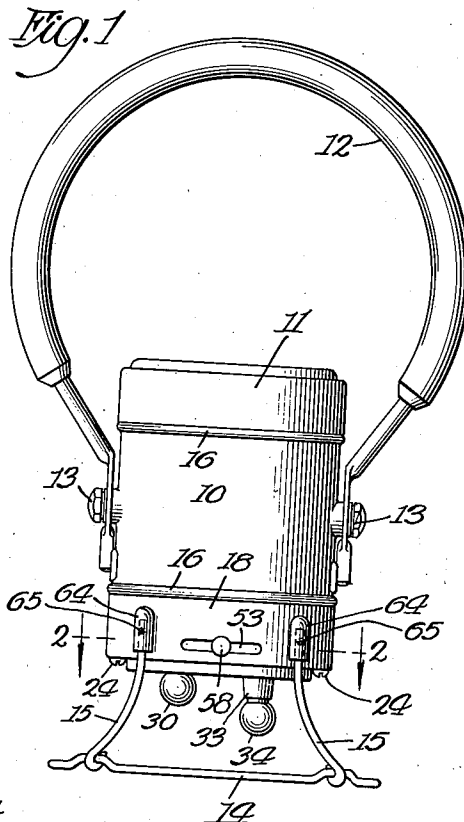
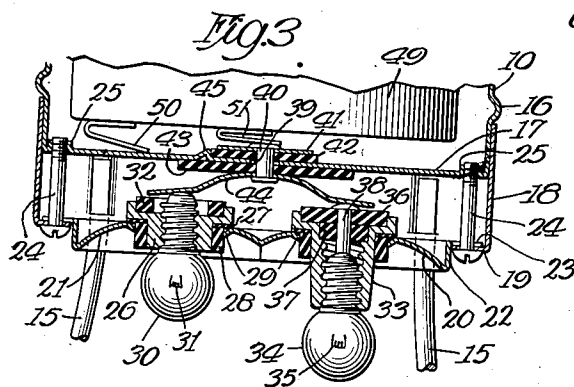
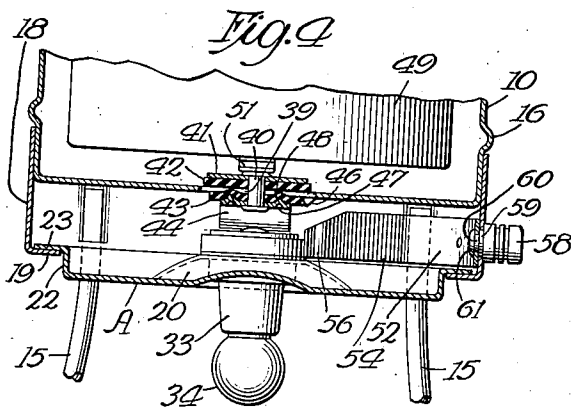
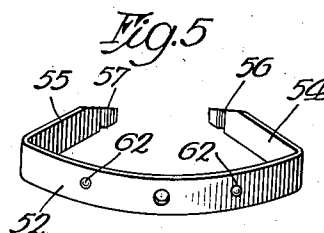
Sept. 9, 1941.

C. H. LARSON
ELECTRIC HAND LANTERN

2,255,291

Filed Sept. 21, 1938

2 Sheets-Sheet 1



Inventor:
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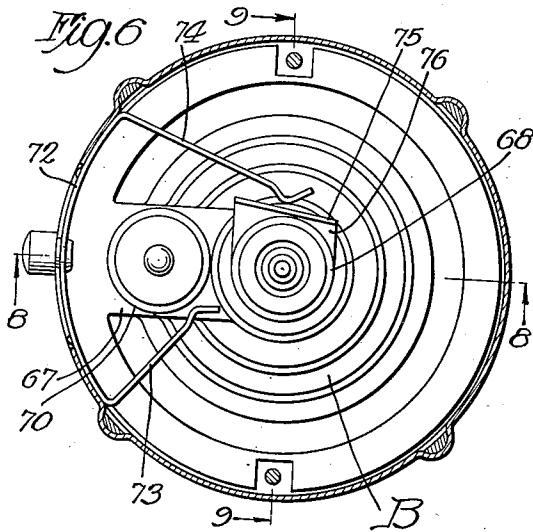
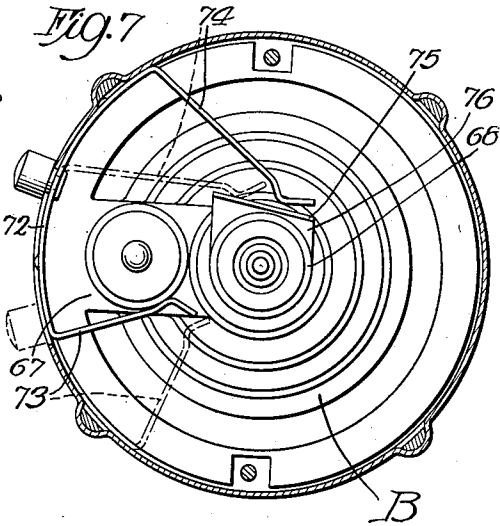
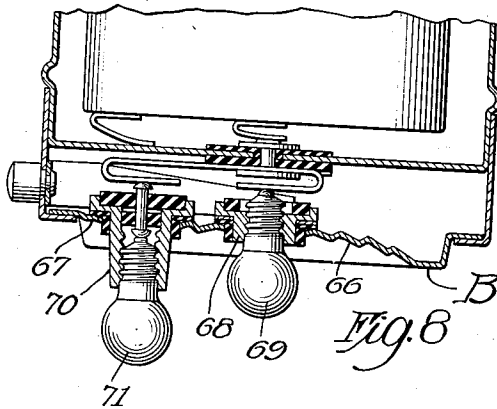
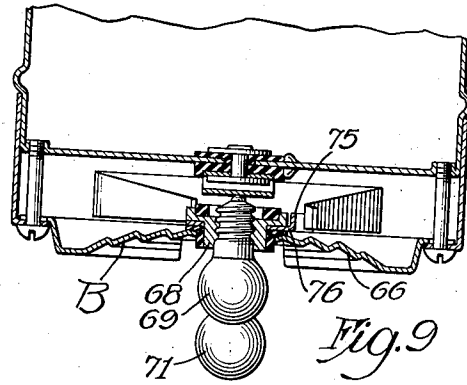
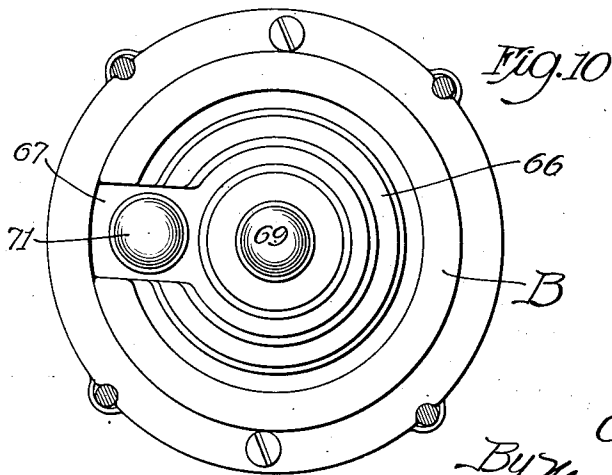
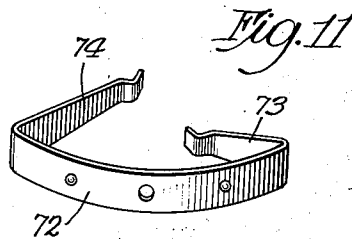
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,255,291

ELECTRIC HAND LANTERN

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Application September 21, 1938, Serial No. 231,037

7 Claims. (Cl. 240—10.63)

Much work done by railway trainmen and switchmen requires a lantern that will light up car numbers and such like to make them clearly visible for quick reading, and that is best accomplished with a lamp well focused in a good reflector. Such a lamp, however, is not clearly visible for signals to the side of the reflector. For instance, an engine man in a locomotive cab would get no direct rays from a bottom reflector lantern carried by the bail in the normal way by a switchman standing on the ground.

One of the principal objects of this invention is to provide a well focused lamp for general illumination and a well exposed lamp to throw direct rays for signals.

Another object of the invention is to simplify and improve the switch mechanism for controlling the lamps.

Further objects and advantages of the invention will be revealed as the description is read in connection with the accompanying drawings illustrating selected embodiments of the invention, and in which

Fig. 1 is a side elevation of a lantern;

Fig. 2 is a plan section taken on the line 2—2 of Fig. 1;

Figs. 3 and 4 are vertical sections taken on the lines 3—3 and 4—4, respectively, of Fig. 2, the upper and lower parts of the lantern being broken away;

Fig. 5 is a perspective view of the preferred form of switch;

Fig. 6 is a plan section similar to Fig. 2, showing a modified form of construction with the switch in open circuit position;

Fig. 7 is a view similar to Fig. 6 showing the switch in solid lines in closed circuit on the signal lamp and in dotted lines in closed circuit on the other lamp;

Figs. 8 and 9 are vertical sections on the lines 8—8 and 9—9, respectively, of Fig. 6, the upper and lower parts of the lantern being broken away;

Fig. 10 is a view looking at the bottom of the lantern; and

Fig. 11 is a perspective view of a modified form of switch suited to the construction shown in Figs. 6 to 10.

These particular forms, however, are shown for the purpose of disclosure only and are not intended to impose unnecessary limitations on the claims.

Generally speaking the lantern includes a casing 10 equipped with a removable cover 11 and having a hinged bail 12 secured to it by bolts 13.

The base of the lantern is formed by a guard ring 14 and four legs 15 having their upper ends secured to the casing.

As will be seen best from Figs. 1, 3 and 4, the casing in this instance is a drawn cylinder with heads 16 and an integral bottom 17.

A sleeve 18 telescopes over the lower portion of the casing and has an intumed flange 19. Secured to this flange is a false bottom, generally indicated by the letter A, which bottom has two reflecting surfaces 20 and 21 spaced equally from the center and surrounded by a cylindrical wall 22 having a flange 23 resting on top of the flange 19. Bolts 24 passing through the flanges 19 and 23 and threaded into struckup sockets 25 in the bottom 17 secure the sleeve and the false bottom to the casing.

The reflector 21 is equipped with a concentric lamp socket 26 insulated from the metal of the false bottom by non-conducting rings 27 and 28 and made fast by crimping the edge 29 of the central opening against the side of the ring 28. This socket 26 receives a lamp bulb 30 and holds its filament 31 at the focus of the reflector 21.

The upper end of the lamp socket is protected by a ring of non-conducting material 32.

The reflector 20 is in like manner equipped with a relatively long lamp socket 33 to hold a similar lamp 34 with its filament 35 well below the other lamp and the reflector in order to make its rays clearly visible for signaling purposes. The lamp socket 33 is provided with rings 36, 37, of insulating material which loosely receive a metallic contact rivet 38.

The bottom or head 17 of the battery casing has a central opening 39 for a rivet 40 that passes through a metallic disc 41, an insulating disc 42 above the bottom, an insulating strip 43 and a metallic contact plate 44 below the bottom. The opening 39 is large enough to keep the rivet out of contact with the metal of the casing.

The contact plate 44 closes with the center contact of the lamp bulb 30 and with the contact rivet 38, which in turn closes with the center contact of the lamp 34. In order to insure that the strip 44 will be assembled and will remain in proper position, lugs 45, Fig. 3, are struck up from the bottom 17 to center the insulating disc 42. Lugs 46, Fig. 4, are struck down from the bottom to locate the insulating strip 43 and lugs 47 are struck up from the contact strip 44 into depressions 48 in the insulating strip 43. Then the rivet 40 is inserted and set up.

The battery 49 has a side contact 50 to engage the bottom 17 of the casing and a center contact

51 to engage the rivet 40. Thus the casing of the lantern is in electrical contact with one side of the battery and is normally insulated from the side contacts of the lamps while the center contact of each of the lamps is electrically connected with the center contact of the battery.

The circuits through the lamps are controlled by a switch best shown in Fig. 5 and which includes a slide 52 to fit the inside of the sleeve 18 and cover a slot 53 therein. At its ends, the slide is provided with contact arms 54 and 55 each crimped at its free end to form rounded contacts 56 and 57.

The slide is controlled by a knob or handle 58 having a reduced portion 59 entering the slot 53 and a further reduced portion 60 passing through the slide and riveted at 61. The slide is also provided with spaced stops in the form of protuberances 62 which rest against the ends of the slot or recess 53 in open circuit position and one of which bears against the inside of the sleeve 18 as the switch moves toward closed circuit position. The switch member is made of resilient material, such as phosphor bronze.

The normal open circuit position of the switch is shown in Fig. 2. When it is desired to light the lower lamp 34, the knob is pushed to the dotted line position, thus bringing the contact 56 into contact with the rim of the lamp socket 33. When the lamp 30 is to be lit, the knob is pushed to a corresponding position in the opposite direction.

The contacts 56 and 57 make a wiping engagement with the lamp sockets as they move into closed position which insures clean surfaces and therefore good electrical connection.

The sleeve 18 is provided with four bosses 54 open at the bottom to receive the upper ends of the legs 15 which are then secured by spot welding as indicated at 65.

As the switch is moved from normal open circuit position one of the stops 62 rides out of the slot 53, bending the slide which then forces the stop into frictional engagement with the inner wall of the sleeve 18. The pressure of this engagement is increased as the arm 54 or 55 is forced against the corresponding lamp socket and bent toward the slide and is sufficient to hold the switch in closed position, but to make sure of that, even when the lantern is struck against the car as the trainman mounts the ladder, the stops 62 are so placed that one of them drops into the corresponding boss 64 at the end of the switch closing movement and thus functions as a latch for the switch.

By removing the screws 24, the base and the sleeve 18 with the reflector and lamp assemblies can be removed for inspection or repair.

In the form shown in sheet 2, the false bottom A is replaced by a similar false bottom B having one large stepped reflector 66 and a generally flat seat 67. The reflector 66 is concentric with the casing and is fitted with a central lamp socket 68 similar to the socket 26 to receive a lamp 69 and hold its filament focused with respect to the reflector 66. The seat 67 is fitted with a lamp socket 70 similar to the lamp socket 33 to receive a signal lamp 71 and hold it in position to be clearly visible for signals. The switch 72 is similar to the switch 52 but has a short arm 73 for closing the circuit with the lamp socket 70 and a long arm 74 for closing the circuit with the lamp socket 68 by contact with a flange 75 on a metallic disc 76 surrounding and in electrical connection with the lamp socket 68.

The flange 75 is made necessary by the fact that the lamp socket 68 is concentric with the casing and therefore with the motion of the switch.

This form of construction provides a large reflecting surface for the lamp used for reading car number and such like, and therefore provides better illumination than the smaller reflecting surface used in the first form, but it is a little more costly to make.

Many lanterns having reflectors like that shown on sheet 1 are in common use and they can be given a proper signal lamp utility by replacing one of the short lamp sockets with a long lamp socket 33. The knob 58 of the switch is here shown at right angles to the plane of the bail 12, which is the preferred arrangement, but it might just as well be in substantially the same plane as the bail 12.

Just how far the signal lamp 34 should be below the head of the lantern will vary somewhat with circumstances, but it has been found that with the sleeve 18 approximately $3\frac{3}{8}$ " in diameter, a long lamp socket 33, $\frac{3}{4}$ " in length gives satisfactory results.

I claim:

1. In an electric lantern having an electric circuit, a casing having a curved wall forming part of the circuit and provided with a circumferential slot, a pair of lamp sockets insulated and spaced from the curved wall and spaced from each other, a resilient sector-shaped switch including an arcuate member slidably mounted on the casing to close the slot on the inside and two converging circuit-closing arms integral with said arcuate member at the opposite ends thereof and spaced from the sockets in open circuit position, and an external handle for said arcuate member extending through the slot and movable in one direction to bring one of said switch arms into engagement with one of said sockets and in the opposite direction to bring the other of said arms into engagement with the other socket.

2. In an electric lantern, a battery casing, a bottom for the casing, a pair of lamp sockets mounted on said bottom, a reflector cooperating with one of said sockets whereby a lamp mounted in said socket will be substantially at the focal point of said reflector, said other socket extending below the first and below the margins of said reflector and laterally of the principal axis of said reflector so as to be out of focus therewith, switch means for selectively energizing lamps mounted in said sockets from a battery in the casing, and a bail mounted on the casing and adapted to extend above the top thereof for swinging the lantern for signal purposes with the second lamp illuminated, whereby the lantern may be swung for signalling without interruption of light from said second lamp by said reflector.

3. In an electric lantern, a metallic casing adapted to contain a battery and be electrically engaged with one terminal thereof and having a slot perforating its outer wall and having an outwardly projecting recess formed in and open to the inner side of said outer wall beyond an end of the slot, a pair of lamps mounted on the casing, a contact in the casing insulated therefrom and adapted to be engaged by the other terminal of the battery, means electrically connecting the center contact of each lamp with said contact, separate conductors electrically connected to the rim contacts of the lamps and having contact portions spaced apart, a switch handle penetrating the slot in the casing and

movable along the slot, a one-piece movable switch element inside the casing having a portion disposed adjacent to the slot and mounting the handle so as to be movable along the slot with the handle and having integral terminal contact means provided with spaced contact surfaces movable alternatively into electrical engagement with one or the other of said contact portions and into an intermediate open-circuit position spaced from both contact portions, and means for yieldably retaining the switch element in a selected position along its range of movement comprising an outwardly extending protuberance on the first named portion of the switch element adapted to move in frictional engagement with the inner side of the casing and be received in said recess.

4. In an electric lantern, a casing adapted to contain a battery and be electrically engaged with one terminal thereof, a pair of lamps mounted on the casing, a contact in the casing insulated therefrom and adapted to be engaged by the other terminal of the battery, means connecting the center contact of each lamp with said contact, a separate conductor connected to the rim contact of each lamp, switch means penetrating a slot in the casing and grounded thereon comprising a peripheral portion covering the slot and mounted on the casing so as to be movable along the slot selectively into electrical engagement with said conductors, and means for yieldably latching the switch means out of engagement with both conductors comprising a protuberance on said peripheral portion cooperating with said slot so as to be within the slot when the circuit to a lamp is open and adapted to be forced out of the slot and into engagement with the casing when the switch means is moved to close the circuit to said lamp.

5. In an electric lantern, a casing adapted to contain a battery and be electrically engaged with one terminal thereof, a pair of lamps mounted on the casing, a contact in the casing insulated therefrom and adapted to be engaged by the other terminal of the battery, means connecting said contact with the center contact of each lamp, a switch element penetrating a slot in the casing and grounded thereon comprising a peripheral portion covering the slot and mounted on the casing so as to be movable along the slot and having inwardly extending integral terminal arm means movable with the peripheral portion to opposite sides of a central open circuit position so as to make selective electrical connection with the rim contacts of said lamps, and means for yieldably latching the switch element in open circuit position comprising projecting means formed on said peripheral portion of the switch element and yieldably positioned in said slot when the switch element is in its central position and adapted to be forced out of the slot and frictionally engage the wall of the casing at a side of the slot as the switch element is moved from its central position to close the circuit to either of said lamps.

6. In an electric lantern, a casing adapted to contain a battery and be electrically engaged with one terminal thereof, a pair of lamps mounted on an end wall of the casing, a plurality of legs mounted in recesses in the casing and cooperating to form a guard for the lamps, a contact in the casing insulated therefrom and adapted to be engaged by the other terminal of the battery, means connecting said contact with the center contact of each lamp, a separate conductor connected to the rim contact of each lamp, a switch element penetrating a slot in the casing, grounded thereon, and comprising a peripheral portion covering the slot and mounted on the casing so as to be movable along the slot to opposite sides of a central, open circuit position and having inwardly extending integral terminal arm means movable with said peripheral portion so as selectively to engage and ground said conductors, and means for yieldably latching the switch element out of engagement with both conductors comprising projecting means formed on said peripheral portion and yieldably positioned in said slot when the switch element is in its central position and the arm means is out of engagement with both conductors and adapted to be forced out of the slot and snap into one of said recesses when the switch element is moved from its central position to close the circuit to either of said lamps.

7. In an electric lantern, a metallic casing adapted to contain a battery and be electrically engaged with one terminal thereof and having a slot perforating its outer wall and having an outwardly projecting recess formed in and open to the inner side of said outer wall beyond an end of the slot, a pair of lamps mounted on the casing, a contact in the casing insulated therefrom and adapted to be engaged by the other terminal of the battery, means electrically connecting the center contact of each lamp with said contact, separate conductors electrically connected to the rim contacts of the lamps and having contact portions spaced apart, a switch handle penetrating the slot in the casing and movable along the slot, a one-piece movable switch element inside the casing having a portion disposed adjacent to and closing the slot throughout its range of movement and mounting the handle so as to be movable along the slot with the handle and having integral terminal contact means provided with spaced contact surfaces movable alternatively into electrical engagement with one or the other of said contact portions and into an intermediate open-circuit position spaced from both contact portions, and means for yieldably latching the switch element in any of its said three positions comprising an outwardly extending protuberance on the first named portion of the switch element adapted to bear frictionally against the inner side of the casing and be received in said recess.

CARL H. LARSON.