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J. W. SINGER ET AL

ELECTRIC LAMP

Filed March 1, 1926

Fig. 1.

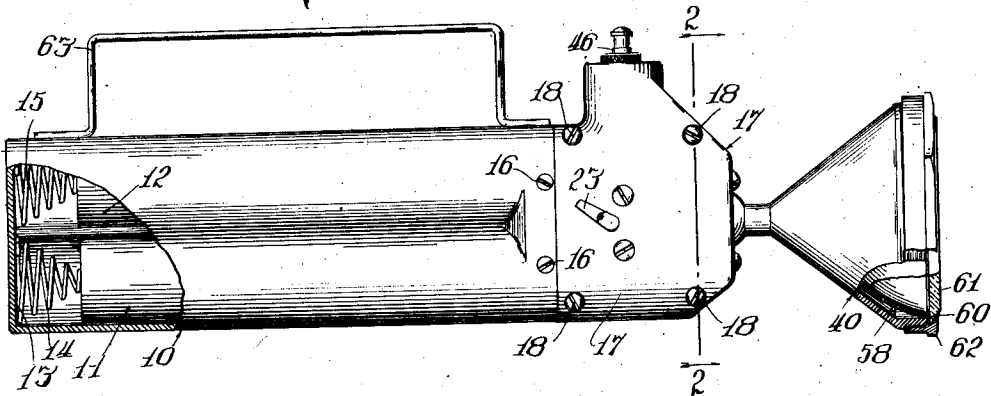


Fig. 2.

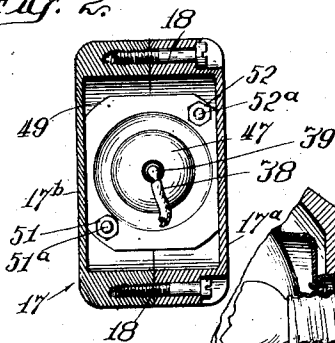


Fig. 3.

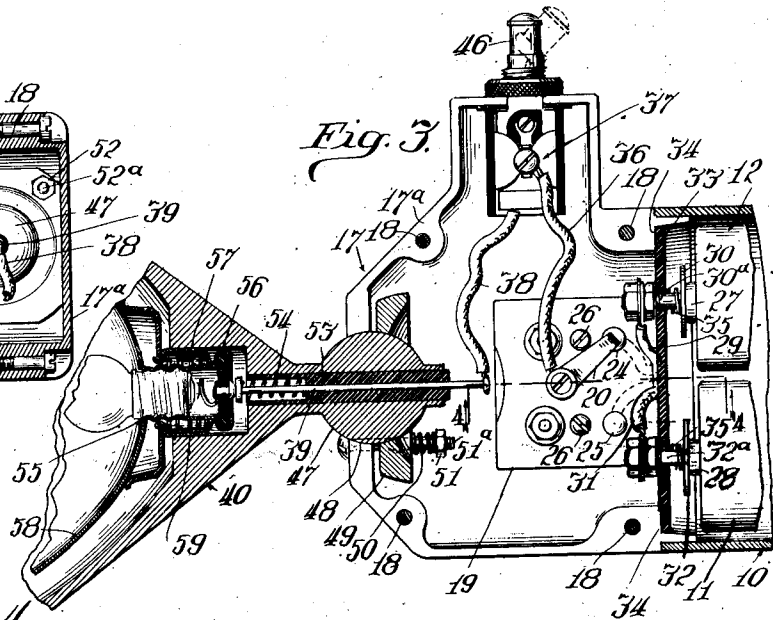
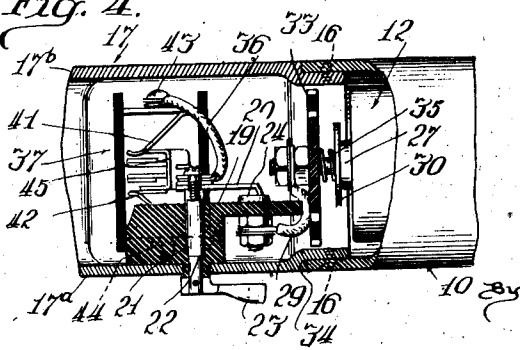


Fig. 4.



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ELECTRIC LAMP.

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Our invention relates to portable electric lamps and has for its principal object the provision of an improved lamp of the above character which will be suitable for use in situations where a bright light is desired for short or for relatively long periods of time, as may be desired, or in situations where danger of explosion, fire, or other damage is increased by the use of flame lamps or torches.

A more specific object of the invention is to provide a portable electric lamp that will be particularly suitable for use in connection with the inspection of railway cars and locomotives and which may be used to an advantage in various other situations and which will be particularly advantageous in situations where it may be desirable to direct the light rays at various angles without holding the body of the lamp at that angle.

The invention consists in the new and improved constructions, arrangements, and combination of parts and devices hereinafter described and claimed for carrying out the above mentioned objects and such other objects as will appear from the following description of the embodiment of our invention shown in the accompanying drawing.

In the drawing:

Fig. 1 is a side view, with parts broken away, of a portable electric lamp constructed in accordance with our invention.

Fig. 2 is a sectional view taken on lines 2—2 of Fig. 1, looking in the direction indicated by the arrow.

Fig. 3 is a fragmentary view of one end of the lamp shown in Fig. 1; a part of the casing being removed so as to show the internal mechanism, and

Fig. 4 is a fragmentary view in section taken on line 4—4 of Fig. 3.

Referring to the drawing, 10 designates a container for two sets of batteries 11 and 12. The batteries are preferably of the cylindrical type and are held in spaced relation to each other by separate pockets formed by the configuration of said casing. A spring plate 13 is arranged in the bottom of the container and is provided with coil springs 14—15 which press against the bottom of the batteries. The open end of the container is connected, by means of screws 16 or any other suitable fastening devices, to a switch casing 17. The switch casing is made up of a front section 17^a and a rear section 17^b, se-

cured together by means of screws 18. Upon the inner face of section 17^a is secured a switchboard 19 of fiber or other suitable insulating material. A switch arm 20 is secured to one end of a pin 21 rotatably supported in an opening in the switchboard. The other end of the pin 21 is reduced in diameter to provide a shoulder 22 which bears against a corresponding shoulder of the switchboard so as to prevent axial movement of the pin. This end of the pin extends outside the casing section 17^a and is provided with an arm 23 by means of which the switch arm may be moved, when desired, into engagement with either of the two contact stubs 24 or 25. Stop screws 26 limit the movement of the switch arm 20.

The contact studs 24 and 25 are electrically connected to the battery terminals 27—28; the stud 24 being connected with the terminal 27 of battery 12 by means of a wire 29 and spring contact 30, and contact stud 25 being connected with battery terminal 28 by means of a wire 31 and spring contact 32. The spring terminals 30 and 32 are supported in their normal position by means of a plate 33 of insulating material supported against shoulder 34 formed on the switch casing. The shank portions 30^a—32^a of the spring contacts are slidably supported in holes in the plate 33 and are held in their normal position by springs 35—35 interposed between plate 33 and the contact members 30—32.

The switch arm 20 is connected by means of a wire 30 to one binding post of a circuit making and breaking device 37. A wire 38 leads from the other binding post of the circuit making and breaking device to one end of a rod 39 carried by the reflector head 40.

The circuit making and breaking device 37 may be of any suitable or preferred construction. In the drawing I have shown a form of snapswitch which is well known and which may be purchased on the open market. The type of switch shown consists in part of spring contacts 41—42 connected to the binding post 43—44 and a switch member 45 adapted to be moved into and out of engagement with the contacts by a spring which is tensioned by outward or angular movement of the thumb stud 46.

The reflector head 40 consists of a funnel shaped housing formed at its lower end with

a ball 47 which is held against a curved bearing surface 48 of the switch casing, by means of a ball socket plate 49. The ball socket plate 49 is supported in position by means of springs 50 held between the socket plate and the nuts 51—52 of screws 51^a—52^a. The tension of the springs 50 may be adjusted by turning the nuts 51—52 and thereby exert such pressure as may be necessary to hold the head 40 in any adjusted position and at the same time permit said head to be readily moved to any desired angular position within the range of the universal joint connection of said head and the said switch casing. The rod 39 is slidably supported in a bushing 53 of insulation and is urged outwardly by means of a spring 54. The outer end of the rod is formed with a flat head which bears against the contact of the light bulb socket 55. The light bulb socket is provided with a spring cup 56 having a telescopic connection with the cylindrical end portion 57 of the reflector 58. This telescopic arrangement of the members 56 and 57 provides a spring pocket for a coil spring 59. The springs 59 and 54 are normally compressed when the lamp socket and the reflector are in their normal operative position. The reflector, in its normal position, bears at its outer edge against a fiber washer 60 on the inner face of the lens 61 and is forced inwardly against the spring 59 by threading the lens cap 62 upon the threaded end of the head 40.

The handle 63 is secured to the battery container and is so arranged that the thumb stud 46 may be actuated by the thumb of the hand in which the lamp is held.

In operation, the batteries 11 and 12 are positioned in the respective pockets of the container 10. The container is then secured to the switch casing 17, in which position the spring contacts 30—32 engage the terminal contacts 27, 28 of the batteries. When the switch 20 is in the position shown in Fig. 3, the electric current flows from battery 12 through spring contact 30, wire 29, contact plug 24, switch arm 20, wire 36, through snap switch 37, wire 38 and rod 39 to the contact of the light bulb socket 55. The electric current after passing through the electric light bulb passes through the light socket, the casing 10, and springs 15 to the zinc casing of the battery 12.

When it is desired to use the battery 11 instead of the battery 12, the arm 23, on the outside of the casing is pressed downwardly. This movement brings the inner switch arm 20 into contact with contact plug 25, thereby cutting out the battery 12, and establishing an electrical connection from battery 11 through the electric light bulb. The electric circuit in the latter case is the same as that of the former, with the exception that the electric current passes from battery 11 through spring contact 32, wire 31 and con-

tact plug 25 to the switch arm 20, thence through the same course previously described, and returns to the zinc of the battery 11 through the coil spring 14.

While we have described our invention in connection with one specific embodiment, it will be obvious that various modifications in structure may be made without departing from the spirit of our invention. We therefore wish it understood that our invention contemplates all such modifications in structure as come within the scope of the appended claims.

We claim:

1. In a portable electric lamp the combination with a light producing element having a grounded connection, of a body casing, a plurality of sources of electric energy in said casing, a closure for said casing, a partition of insulating material positioned across said closure member and means for selectively connecting any one of said sources of electric energy with the light producing means, comprising spring pressed contact members carried by said insulating partition and engaging a contact of each of said sources, a switchboard having a plurality of contact plugs thereon, electric conductors connecting said plugs with said spring contacts, a switch for selectively engaging any one of said contact plugs, and an electric conductor leading from the switch to said light producing means.

2. In a portable electric lamp the combination with a light producing element having a grounded connection, of a body casing, a sectional switch casing removably attached to the body casing, a plurality of sources of electric energy supported in said body casing, and means for selectively connecting any one of said sources of electric energy with the light producing means, comprising spring pressed contact members for engaging a contact of each of said electric sources, a switchboard having a plurality of contact plugs thereon supported on the inner face of one of said sections of the switch casing, electric conductors connecting said plugs with said spring contacts, a switch for selectively engaging any one of said contact plugs, an electric conductor leading from said switch to said light producing means, and a second switch device for opening and closing an electric circuit through said last mentioned conductor.

3. In a portable lamp, the combination with a casing for containing a source of electric energy, of a switch casing having removable side sections, a switchboard secured to the inner face of one of said sections, a circuit making and breaking device supported thereon, means for projecting outside of the casing for operating said making and breaking device, a reflector and electric light bulb supporting head clamped between the sections of said switch casing with capacity for

pivotal movement, and a second switch device for opening and closing an electric circuit through said light bulb.

4. In a portable electric lamp, a casing 5 formed with pockets for the reception of a plurality of batteries, a closure head for said casing comprising separable sections secured together, a light producing element, a head in which said light producing element is supported 10 formed at one end with a ball, and means in said closure providing a friction bearing for said ball, whereby the head may be adjusted to various angular positions.

5. In a portable electric lamp, a casing 15 formed with pockets for the reception of a plurality of batteries, a closure head for said casing comprising separable sections secured together, a light producing element, a head in which said light producing element is supported, 20 formed at one end with a ball, and means in said closure providing a friction bearing for said ball, a switchboard positioned in said closure and formed with a plurality of contact plugs, a connector extending 25 from each of said plugs to one of said batteries, a movable switch arm, a connector connecting said switch arm with said light producing means, and means outside of said closure member for moving said switch arm into 30 and out of contact with any one of said contact plugs.

6. In a portable electric lamp, a casing 35 formed with pockets for the reception of a plurality of batteries, a light reflector head formed at one end with a ball, a closure head for said casing comprising separable sections having curved bearing surfaces for the ball 40 portion of said reflector head, a ball socket plate disposed within said closure, and spring members for pressing said socket plates against the ball portion of said light reflector head, whereby the said reflector head may be 45 adjusted to various positions and held by friction in said adjusted position.

7. In a portable electric lamp, a casing for 50 the reception of a plurality of electric batteries, a closure for said battery casing, a light reflector head formed at one end with a ball and having a universal connection with said closure, a bushing of non-conducting material extending through the ball end of said 55 reflector head, a rod extending through said

bushing, a spring for holding one end of the 60 rod against a lamp socket member, a lamp bulb supported in said socket, a partition of insulating material at the open end of said closure members, spring terminal members carried by said partition member and bearing 65 against a contact member of each of said batteries, a switchboard having a plurality of contact plugs thereon, electric connectors connecting each of said spring contacts to one of 70 said switchboard contact plugs, a switch arm, an electric connector attached to one end of said rod and to said switch arm, and means 75 outside of said closure for moving said switch arm to put any one of said batteries in circuit with said light bulb.

8. In a portable electric lamp, a casing for 80 the reception of a plurality of electric batteries, a closure for said battery casing, a light reflector head formed at one end with a ball and having a universal connection with said 85 closure, a bushing of non-conducting material extending through the ball end of said reflector head, a rod extending through said 90 bushing, a spring for holding one end of the rod against a lamp socket, a partition of insulating material at the open end of said closure, spring terminal members carried by said 95 partition member and bearing against a contact member of each of said batteries, a switchboard supported within said closure member and having a plurality of contact plugs thereon, electric connectors connecting each of said 100 spring contacts to one of said switchboard contact plugs, a switch arm, an electric connector attached to one end of said rod and to said switch arm, a circuit making and breaking 105 device interposed in said last mentioned electric connector, means outside of said closure for moving said switch arm to put any one of said batteries in circuit with the lamp 110 bulb, and a handle secured to the outside of the battery casing in a position whereby said circuit making and breaking device and said 115 switch arm operating means may be operated by the operator's hand in which the lamp is held.

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