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PORTABLE LAMP CONSTRUCTION

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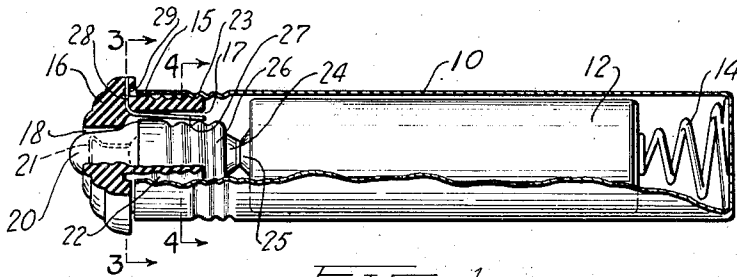


FIG. 1.

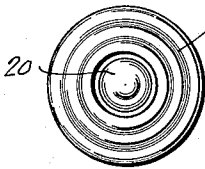


FIG. 2.

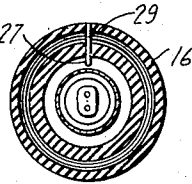


FIG. 3.

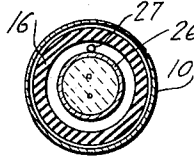


FIG. 4.

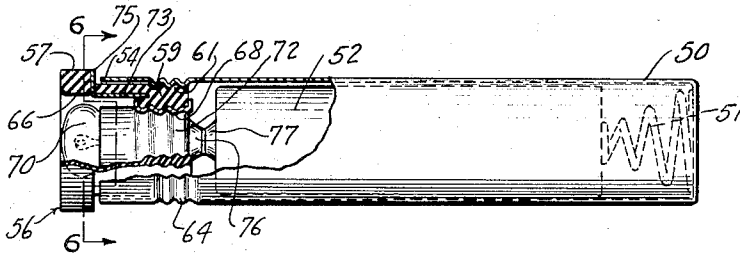


FIG. 5.

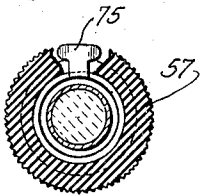


FIG. 6.

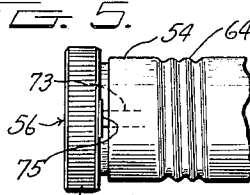


FIG. 7.

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PORTABLE LAMP CONSTRUCTION

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12 Claims. (Cl. 240—10.66)

This invention relates to electrical apparatus and more particularly to portable electric lamps using primary or dry cells as a source of energy.

The invention comprehends a simplified means for opening and closing the electrical circuit which energizes the lamp bulb.

The invention embraces a unitary structure wherein the housing is provided with current conducting portions which are adapted to form an electrical connection with the lamp bulb support for establishing the energization of the lamp bulb, thus eliminating switches and other additional circuit controlling elements.

An object of the invention is a flash light construction in which the support for the lamp bulb serves to control the circuit connections from the source of energy to the lamp bulb.

Another object of the present invention is the simplification of a flash light construction embodying few parts occupying a comparatively small space, thus effecting material savings in its manufacture and assembly.

Another object of the invention is a simplified unitary construction for portable lamps wherein the energization of the lamp bulb is obtained by relative movement of some of the component elements forming the lamp housing structure.

A further object of the invention is a simplified unitary construction for portable lamps wherein positive electrical connections are made when energization of the lamp bulb is established.

Further objects and advantages are within the scope of this invention such as relate to the arrangement, operation and function of the related elements of the structure, to various details of construction and to combinations of parts, elements per se, and to economies of manufacture and numerous other features as will be apparent from a consideration of the specification and drawing of a form of the invention, which may be preferred, in which:

Figure 1 is a side elevational view with a portion of the outer enclosure removed showing a portable lamp bulb and battery and also the circuit controlling elements;

Figure 2 is a top plan view of the device shown in Figure 1;

Figure 3 is a sectional view taken substantially in the plane indicated by the lines 3—3 of Figure 1 looking in the direction of the arrows;

Figure 4 is a sectional view taken substantially in the plane indicated by lines 4—4 of Figure 1 looking in the direction of the arrows;

Figure 5 is a side elevational view with a portion of the housing removed showing a modified form of the invention showing a portable electric lamp and circuit connections;

Figure 6 is a sectional view taken substantially in the plane indicated by lines 6—6 of Figure 5;

Figure 7 is an enlarged fragmentary side view showing the circuit controlling elements for the lamp illustrated in Figure 5.

I have illustrated the invention as embodied in a portable electric lamp, but it is understood that I contemplate its use whenever the same is found applicable. It is understood that I do not wish to limit the invention to the forms shown but that the same are used for illustrating purposes only.

The invention in one of its aspects includes a flash light construction in which the housing is provided with or formed of current conducting material in electrical connection with a battery cell and in which the electric bulb is supported by a non-conductive translucent member having conducting element electrically connected to one of the lamp terminals and supporting the lamp bulb so that the other lamp terminal is electrically connected with another terminal of the battery cell. The bulb support and housing are so arranged that relative movement therebetween serves to control the circuit which establishes the energization of the lamp bulb.

Referring to the drawing in which is illustrated a practical application of the principles of the present invention and particularly to the form shown in Figures 1 to 4, inclusive, the portable electric lamp comprises a casing or housing of thin tubular formation closed at one end preferably made of current conducting material or provided with a metallic lining serving as current conducting means. The housing is made of a suitable size for receiving a source of current, such as battery or dry cell, which in the form shown is resiliently supported within the casing by suitable means such as a coil spring. The open end of the casing is closed by a removable closure of a translucent non-conducting compound having a central bore terminating into a reduced opening which serves to enclose and support a lamp bulb enclosing a filament. Member is formed with a shank portion fitting within casing and being provided with suitable threads adapted to engage the threaded portion of casing thereby permitting relative movement between the casing and the support. The filament terminal of the lamp bulb is urged

into contact with the central terminal or electrode 25 of the battery 12 by means of a spring 14. The other terminal 26 of the lamp filament 21 is in electrical contact with a current conducting member 27 located within the bore 17 of the insulating member 16. Conducting member 27 in the form illustrated is made of spring wire having a portion 28 embedded in member 16 which has an exposed contacting portion 29 located in close proximity to the end portion 15 of lamp casing 10.

It can be seen that resilient member or spring 14 serves the dual purpose of providing current conducting means from the battery cell to the current conducting means of casing 10 and at the same time urging terminal 25 of cell 12 into engagement with central contact 24 of filament 21 of lamp bulb 20 thereby retaining lamp in proper position within support 16. The current conducting member 27 carried by the insulated cover 16 in the form illustrated consists of a rod of spring material which has one end under tension and thereby forms a positive connection with the terminal 24 of lamp bulb 20.

As particularly shown in Figure 1, the base of lamp bulb 20 is partially contained in the bore 17 and partially projecting therefrom so that by the action of the spring 14, the lamp bulb is urged against a restricted throat 18 of the translucent one piece globe or closure 16 which as shown is provided with integral means for mounting it on the casing, thus placing filament 21 in the advance end of the bore so that when the filament is energized the light discharging head 16 produces a direct beam of light surrounded at its source by a corona of diffused light.

The flow of current to cause the emission of light by the energization of the bulb filament is controlled by the relative movement of closure 16 with respect to housing 10, which is permitted by resiliently mounting the cell 12 in the housing 10 and by the screw thread connection between the housing 10 and light bulb support 16. This relative movement is accomplished by the user by turning closure 16 to the right thereby engaging the annular portion of closure 16 with the end of housing 10, this engagement closes the circuit which connects the filament 21 to the terminals of dry cell 12 thus establishing a positive electrical contact between the edge 15 of casing 10 and the exposed portion 29 of current conducting member 27.

The circuit for the flow of current being as follows: from one of the terminals of the electrical source formed at the bottom of the dry cell casing 12 through helical spring 14 to the housing 10 hence through the walls thereof to end portion 15, from housing portion 15 by its engagement with the exposed contact 29 of the conducting member 27 of the end portion thereof in engagement with contact 26 of filament 21, from the other end of filament 21 forming part of lamp bulb 24 to dry cell terminal 25 which is directly connected with terminal 24 thus forming a complete circuit for the flow of current from the dry cell to the lamp filament 21. When it is desired to interrupt the energization of the filament, the user turns to the left closure 16 with respect to housing 10 thereby interrupting the electrical circuit between the edge 15 of casing 10 and the exposed contact 29 of the current conducting member 27.

It should be noted that whenever the energization of the filament 21 is established, spring member 14 is compressed providing a positive

circuit connection from the one terminal of the dry cell to the housing and at the same time urges the other terminal of the dry cell into positive engagement with the lamp bulb thereby decreasing the resistance and eliminating the possibility of loose circuit connections which are highly objectionable in this type of portable lamp which uses relatively low voltage sources.

In connection with the form of the invention shown in Figures 1 to 4 inclusive, it should be noted that the embodiment is not limited to the use of electric lamp bulbs requiring a threaded connection, but that lamp bulbs of the bayonet and slot type of connection can also be used as sources of illumination.

Referring to the modified form of the invention shown in Figures 5 to 7 inclusive, the lamp construction comprises an open ended metallic casing 50, adapted to receive and resiliently support by means of coil spring 51 a dry cell 52. Removably secured to the open end 54 of the casing 50 is a tubular member 56 made of a dielectric compound having a bead or annular projecting portion 57 and portion 59 projecting within the housing 50 and being provided with a plurality of threads 61 adapted to engage the threaded portion 64 of casing 50. The inner surface 66 of tubular member 56 fixedly supports a socket or a threaded ring 68 adapted to receive a light bulb 70 having a threaded shell or filament terminal 72. The threaded ring or socket 68 is formed and contacts with a current conducting member 73 which projects through the wall of the tubular member 56 and terminates into a contacting member 75 adjacent to the beaded portion 57 and adapted to be engaged by the metallic end wall forming the open end 54 of the casing 50. In this form of the invention, the current flow which energizes the lamp bulb is controlled by the relative movement of tubular member 56 with reference to metallic casing 50, which movement is performed by the user by screwing or turning tubular member 56 by using the beaded portion 57, whereby the wall at the open end 54 of the casing 50 is placed into electrical contact with the end portion 75 of member 73 forming part of the socket member 68. It also should be noted that in this construction one end of the lamp filament which is connected to the contact member 76 forming the central terminal of the lamp bulb is in direct contact with the central terminal or electrode 77 of the dry cell.

In the form of the invention shown in Figures 5 to 7 inclusive, it should be noted that the lamp bulb can be removed without dis-assembling the other component parts of the structure and that the enclosure or glass envelope for the filament is protected against jar and possible breakage as the same does not project beyond the end of tubular member 56.

It will be recognized that in the two forms embodying the invention the facility with which the lamp can be taken apart and put together in proper operative relation enhances its utility for the purpose of replacement and repair of batteries and lamp bulbs and in that such constructions the turning to right or left of one of the component elements of the housing with reference to the other serves as switching means to open and close the circuit of the lamp bulb filament; and that to close the circuit permanently only one movement is required eliminating thereby complicated switching means including latches,

clips and other circuit locking means which have been heretofore used.

It is apparent that, within the scope of the invention modifications and different arrangements may be made other than is herein disclosed, and the present disclosure is illustrative merely, the invention comprehending all variations thereof.

What I claim is:

1. A portable electric lamp including a housing having current conducting means; a removable closure of insulating material; a source of power contained within said housing and having a terminal normally in electrical connection with said housing conducting means; a lamp whereof a terminal is in constant electrical connection with another terminal of said source; a current conducting member carried by said removable closure being in electrical connection with the other lamp terminal, said conducting member being arranged in close proximity to the current conducting means of said housing whereby relative movement between the housing and closure will cause the engagement of the housing conducting means and the current conducting member carried by the closure to establish an electrical circuit for the energization of said lamp.

2. A portable electric lamp including a housing provided with current conducting means; a source of power contained within said housing; a terminal of said source normally connected to said housing conducting means; a lamp; an insulating member supporting said lamp; a terminal of said lamp contacting directly with a terminal of said source; a current conducting member carried by said support and constantly engaging the other terminal of said lamp, said current conducting member being in close proximity to the current conducting means of said housing whereby relative movement between the housing and support will cause said current conducting member to engage said housing conducting means for establishing an electric circuit for the energization of said lamp.

3. A portable electric lamp including a metallic housing; a dry cell contained within said housing; a terminal of said cell constantly connected to said housing; a lamp bulb; a terminal of said lamp directly connected to the other terminal of said dry cell; a removable closure of insulating material having current conducting means engaging the other terminal of said lamp; the removable closure and housing being so arranged that their relative movement serves to cause the engagement of said current conducting means and said housing to close or open the circuit connecting said lamp to said dry cell.

4. A portable electric lamp including a housing formed of current conducting means; a source of power contained within said housing; a resilient member connecting said source to said housing; a lamp; an insulating member supporting said lamp; a terminal of said lamp held in direct contact with a terminal of said source by said resilient member; a current conducting member carried by said support and engaging the other terminal of said lamp, said current conducting member being in close proximity to the end wall of said housing whereby relative movement between the housing and support will cause the energization of said lamp.

5. In a flashlight, in combination, a metallic casing with a closed end formed with threads adjacent to its open end; a non-conductive member adapted to fit at the open end of said casing,

said member being provided with a threaded portion for establishing a connection between the end of said casing and said member; a conductive element carried by said non-conductive member having means to support a lamp bulb and provided with a projecting portion passing through the walls of said member and adapted to engage the end wall of casing when the member is threaded within said casing.

6. In a flashlight, in combination, a metallic casing formed with threads adjacent to one end; a dielectric tubular member adapted to fit the end of said casing and provided with a threaded portion for establishing a connection therebetween; a conductive member having means to support a lamp bulb formed with a conductive portion adapted to project through the walls of said tubular member and be engaged by the end of said casing when the tubular member is threaded within said casing.

7. In a flashlight, in combination, a housing having current conducting means; a non-conductive translucent member connected for relative movement on said housing and adapted to close one end thereof, said member having portions which hold and enclose a lamp bulb; a current conducting element supported on said non-conductive member adjacent to said lamp holding portion and serving as a portion of circuit connections for energization of the lamp bulb, said current conducting member having a portion passing through the wall of said non-conductive member, the connection of the non-conductive member and the current conducting means of the housing being such that relative movement therebetween serves to engage a portion of the current conducting member with the current conducting means of the housing.

8. In a searchlight, a terminal assembly including a one-piece globe of translucent material provided with integral means for mounting it on to the casing of a searchlight to close the same, said globe provided with an axially extending lamp positioning bore and a lamp having its light source end fitted in the advance end of the bore and having its threaded base end partially contained in the bore and partially projecting therefrom.

9. In a flashlight a translucent light discharging head formed to produce a direct beam surrounded at its source by a corona of diffused light, said head comprising a light transmitting globe that diffuses light from a source within the globe in all directions except axially, said globe having a restricted throat narrowing to a diameter less than that of a bulb, a bulb, and spring means for pressing the bulb into the narrowed portion of the throat which provides annular contact and support for the bulb.

10. A portable electric lamp including a housing having current conducting means, said housing adapted to enclose and support a source of power by engaging a terminal thereof by said housing current conducting means; a removable closure of non-conductive material for closing one end of said housing having a portion adapted to retain and engage a lamp bulb; a current conducting member carried by said removable closure having a portion adapted to engage a terminal of a lamp bulb, said conducting member being arranged in close proximity to the current conducting member of the housing whereby relative movement between the housing and the removable member will cause the engagement of the

housing conducting means and current conducting member carried by the removable member to cause the establishment of an electrical circuit for the energization of the lamp bulb.

- 5 11. In a flashlight in combination a housing having current conducting means; a translucent member connected for relative movement on said housing and adapted to engage one end thereof, said member having portions which enclose a
10 lamp bulb; a current conducting element supported on the wall of said translucent member adjacent to the lamp holding portion and adapted to engage a terminal of a lamp bulb and serve as a portion of a circuit connection for the energization of a lamp bulb, the connection of the
15 translucent member and the current conducting means of the housing being such that relative movement therebetween serves to engage a portion of the current conducting element with the

current conducting means of the housing for causing the energization of a lamp bulb.

12. A head for a flashlight formed of an integral body of translucent material including an inner end of cylindrical form having threads 5 formed therein and having an axially extending smooth bore with a diameter relatively large compared to the external diameter of the cylindrical end thereby to form the inner end as a relatively thin threaded annular wall, the forward 10 end of the head forming a socket or stop provided centrally thereof with a constricted opening forming an axial continuation of the bore and a lamp slidably mounted in the smooth bore of the head and adapted to have its filament containing end 15 pressed into abutting relation with said socket for support thereby.

ROBERT G. WILLIAMS.