May 24, 1966 A. H. MOORE ETAL 3,252,733

ELECTRIC HAND LANTERN

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Fig. 2.

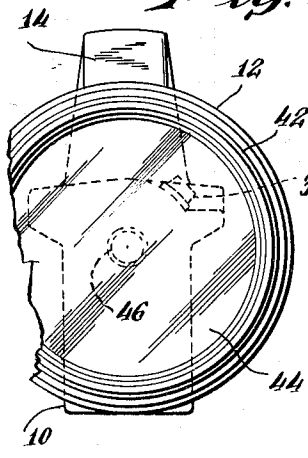



Fig. 1.

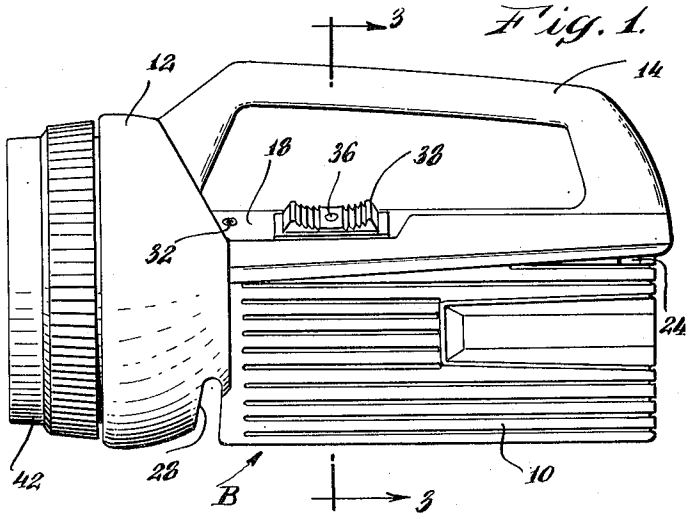



Fig. 3.

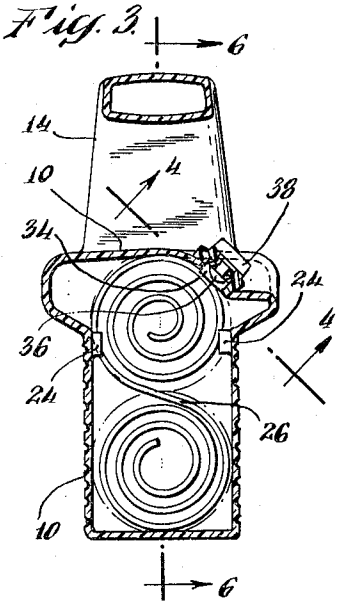



Fig. 5.

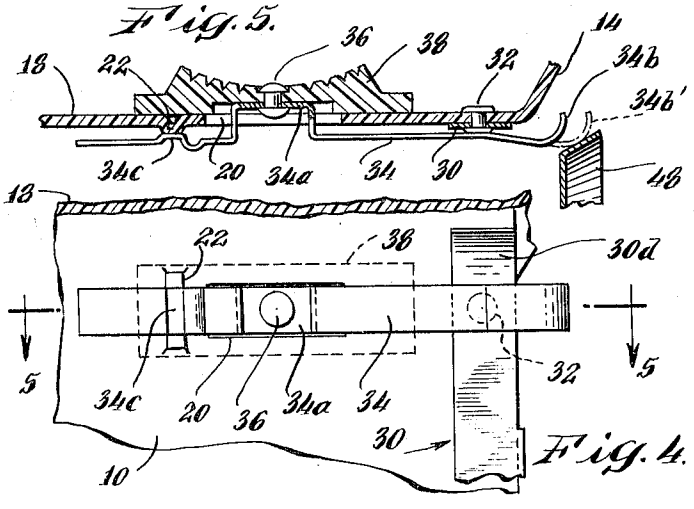
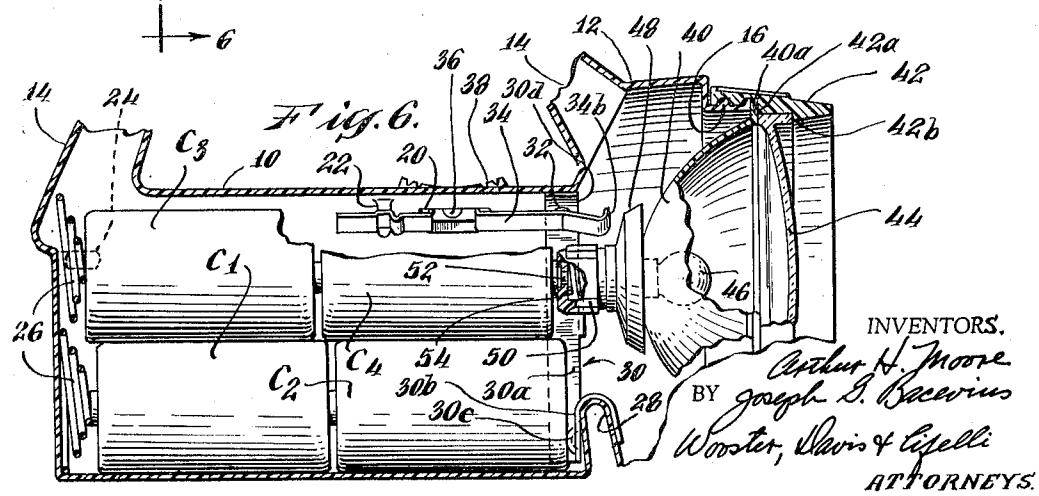



Fig. 4.

Fig. 6.




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# ELECTRIC HAND LANTERN

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This invention relates to an electric hand lantern and, more particularly, to such a lantern employing a plurality of electric cells.

Although a number of variations of electric hand lanterns exist, they may be broadly considered to fall into two categories. The first of these categories is that of the standard flashlight which contains one or more cells positioned in line in a tubular body. The best known and most widely used flashlights contain two such cells. Although more powerful flashlights utilizing three and four cells are sometimes employed, they are unwieldy and difficult to store due to their excessive length.

In order to overcome the disadvantages of the standard flashlight, a second type of hand lantern is often employed. This type lantern customarily includes a lens assembly, a handle, and a battery chamber which contains a battery or battery pack having a rating which may be equal to that of several standard flashlight cells. One difficulty with a lantern of this type is that the batteries which are required are more expensive and more difficult to obtain than standard flashlight cells. Another problem is often encountered when the main body of a lantern of this type is formed of an unbreakable plastic material. Since the plastic is not an electric conductor, a simple slide switch of the type employed in standard flashlights, wherein the flashlight body is utilized as one of the switch contacts, is unusable. For this reason, lanterns of this type must employ a "self contained" switch. In other words, a switch wherein both contacts and the actuating elements are contained within a single unit. After this unit is mounted on the body, it then becomes necessary to wire the switch to the battery and to the lamp. This type of construction makes the lantern difficult to assemble and also increases its cost.

Accordingly, it is the primary object of this invention to provide an improved hand lantern. Other objects are to provide such a lantern which employs a plurality of standard flashlight cells; which includes a simple unwired switch; and which may be molded of a nonconductive plastic material.

The above objects and others are attained by providing a hand lantern having a body which includes a chamber for containing a plurality of batteries and includes an opening communicating with the chamber. Conducting means are provided in the chamber to contact opposite poles of at least two batteries. A lamp is positioned in the opening with one of its terminals in contact with the remaining pole of one of the batteries. A switch is provided to selectively interconnect the other terminal of the lamp with the remaining pole of the other battery.

For a more particular description of a preferred embodiment of this invention reference may be had to the following disclosure, the appended claims, and the figures of the attached drawings wherein:

FIG. 1 is a side elevational view of a hand lantern constructed in accordance with this invention;

FIG. 2 is a left end view of the lantern of FIG. 1;

FIG. 3 is a cross section taken along the line 3—3 of FIG. 1;

FIG. 4 is an enlarged cross section taken along the line 4—4 of FIG. 3;

FIG. 5 is a cross section taken along the line 5—5 of FIG. 4; and



FIG. 6 is a cross section taken along the line 6—6 of FIG. 3.

In the drawings, there is illustrated a hand lantern having a body B molded of a shock-resistant and electrically insulating plastic material, such as polyethylene. The body B includes a rectangular battery chamber **10**, a lens support bell **12**, and a handle **14**. The lens support bell **12** terminates in an annular cylindrical flange **16** (FIG. 6) which is molded with a screw thread encircling its outer surface. The outer surface of battery chamber **10** is contoured in such a manner as to provide a curved switching surface portion **18** conveniently adjacent the user's thumb when the lantern is held in the right hand. The surface portion **18** defines a rectangular slot **20** (FIGS. 5 and 6) which serves as a switch guide in a manner to be later described. Directly behind the slot **20**, the surface **18** is shaped to form a short rib **22** running transverse to the longitudinal dimension of slot **20**.

Each side of the battery chamber **10** is shaped to form a molded lug **24** which extends inwardly of the battery chamber closely adjacent the rear wall. A double coil spring **26** is mounted against the back wall by being slipped beneath the lugs **24**. The spring **26** is constructed of a single length of copper coated steel wire formed into two adjacent conical spirals as illustrated.

The body B includes an internally extending shoulder **28** formed between the lens support bell **12** and the battery chamber **10** as shown in FIG. 6. A substantially L-shaped metallic battery contact strip **30** is positioned within the battery chamber **10** adjacent its intersection with the lens support bell **12**. The contrat strip **30** includes a vertical portion **30***a* which fits against the inner surface of one side wall of battery chamber **10**. The upper end **30***d* of the vertical portion **30***a* is curved to conform to the inner surface of the curved surface portion **18**. Bent outwardly from the lower end of portion **30***a* is a horizontally extending clip portion **30***b* which is curved to clamp onto the shoulder **28** to retain the strip in position. Clip portion **30***b* also includes a formed "dimple" **30***c* which extends inwardly of the battery chamber. The battery contact strip **30** is then retained in position by means of a rivet **32** which passes through the wall of surface portion **18**.

A metallic switching strip **34** extends longitudinally of the battery chamber **10** and along the inner surface of curved portion **18**. The switching strip **34** includes a central portion **34***a* which is offset to extend into the slot **20** as shown in FIG. 5. The forward end of the switching strip **34** bears resiliently against the rivet **32** and at its forward extremity is shaped to provide a curved contact nose **34***b*. The opposite end of switching strip **34** is formed in such a manner as to define a raised detent ridge **34***c* which resiliently bears against the rib **22**. The switching strip **34** is held in position by means of a rivet **36** which secures the raised central portion **34***a* of the strip within a recess formed in a plastic sliding switch button **38**. The switching strip **34** is formed of a resilient material such as brass and the ends are sprung in such a manner that they exert outward pressure against the wall of the battery chamber while switch button **38** is simultaneously urged inwardly against the outer surface of curved portion **18**. It will thus be seen from an inspection of FIG. 5 that the switch button-switching strip assembly is longitudinally slidable in slot **20**, the vertical portions of the central portion **34***a* acting as stops to limit the forward and backward motion. In FIGS. 5 and 6 the switch is illustrated in a central position with the detent ridge **34***c* on top of rib **22**. Forward advancement of switch button **38** will cause the ridge **34***c* to slide over rib **22** so as to yieldingly position the switch assembly in its forward position. When the button **38**

is so advanced, the contact nose 34*b* assumes the position illustrated as 34*b'*. When button 38 is retracted, the detent ridge 34*c* slides over rib 22 in the opposite direction and positions the switch assembly in its rearward position.

The construction of the lens end of the lantern of this invention is illustrated most clearly in FIG. 6. As will be noted therein, the metalized plastic reflector 40 includes an outer rim 40*a* which fits against the outer edge of flange 16. A threaded plastic lens ring 42 is screwed onto the flange 16 and includes an annular shoulder 42*a* which bears against rim 40*a* and retains the reflector 40 in position. A clear plastic lens 44 is also retained within lens 42 by means of a second shoulder 42*b*. A lamp 46 is positioned within the reflector 40 with its shell making electrical contact with an outwardly extending conductive flange member 48. The lamp 46 is retained in the reflector 40 by means of a threaded plastic insert 50 which includes a tubular rivet 52 pasisng through its base. A coil spring 54 mounted within the hollow body of the insert makes electrical contact between the tubular rivet 52 and the base of lamp 46 and also serves as a shock absorber to minimize the possibility of breakage of lamp 46.

Standard flashlight dry cells are used to power the lantern of this invention. The manner in which they are disposed when assembled is illustrated in FIG. 6. Following is a description of the steps of assembly of the lantern. With the lens ring 42 and the reflector assembly removed, cell $C_1$ is inserted into position with its tip contacting the lower spiral of spring 26; cell $C_2$ is then inserted and it urges cell $C_1$ inwardly against the force of spring 26 until the base of cell $C_2$ is snapped into assembled position behind shoulder 28 in electrical contact with the dimple 30*c* on battery contact strip 30. After assembly of cells $C_1$ and $C_2$, they are confined and retained in chamber 10 by shoulder 28, as can be clearly seen in FIG. 6. As used in the present specification, the term "battery" is intended to be given its broadest definition to encompass, for example, either one electrical cell or several cells electrically connected together. Thus, referring to FIG. 6, cells $C_1$ and $C_2$ may be considered to form a single battery, having one pole connected to a spiral of spring 26 and the other pole connected to battery contact strip 30. Cells $C_3$ and $C_4$ are next inserted with the base of cell $C_3$ in contact with the remaining spiral of spring 26 and the tip of cell $C_4$ positioned concentrically with respect to the opening formed by the flange 16. The reflector assembly is then inserted through the opening formed by the flange 16; lens 44 is placed in position in lens ring 42 and the latter is screwed onto flange 16. When the lantern is assembled as shown in FIG. 6, the rivet 52 contacts the tip of cell $C_4$ and biases cells $C_3$ and $C_4$ inwardly against the force of spring 26. Cells $C_3$ and $C_4$ may now be considered to form a second battery in series with the battery formed by cells $C_1$ and $C_2$.

It will be seen by reference to FIG. 6 that when in the illustrated condition, an open electrical circuit is formed, but the following elements are electrically connected: conductive flange member 48, the shell of lamp 46, the lamp filament, the base of lamp 46, spring 54, rivet 52, cells $C_4$ and $C_3$, double coil spring 26, cells $C_1$ and $C_2$, and battery contact strip 30 to switching strip 34. In order to light the lantern, it is merely necessary to slide switch button 38 forwardly, thus advancing the contact nose 34*b* of switching strip 34 against the conductive member 48 so as to close the electrical connection and complete the circuit. The circuit is broken by sliding the button 38 in the opposite direction.

It will be noted that, by means of the present invention, all of the objectives set forth above have been attained. For example, there is provided a hand lantern which may utilize standard size flashlight cells and which, even though constructed of a nonconductive material, does not require the use of wired, self-contained switches. Other variations and modifications may be made in this invention without departing from its spirit and scope. Accordingly, it is to be understood that the foregoing description is illustrative only, rather than limiting. This invention is limited only by the scope of the following claims.

What we claim as new and desire to secure by Letters Patent of the United States is:

1. An electric hand lantern comprising: a body of electrical insulating material defining a chamber adapted to contain a plurality of batteries; conductor means in said chamber positioned to contact opposite poles of at least two of said batteries; lamp positioning means mounted in said body to position a lamp with one of the lamp terminals electrically connected to the remaining pole of one of said batteries; said lamp positioning means including a conductive portion in contact with the other terminal of said lamp; switch means for selectively electrically interconnecting said conductive portion with the remaining pole of another of said batteries, including a metallic contact strip secured to said body in a fixed position to contact the remaining pole of the said another of said batteries, and a metallic switching strip movably mounted on said body and arranged to slidingly engage said contact strip at all times but selectively engage said conductive portion only in one position to which it is movable; and means accessible from the exterior of said body for selectively moving said switching strip into and out of said position.

2. The lantern defined in claim 1 wherein said body is an integral formation of plastic material having an open end; and a ring is detachably secured to said body, said ring being arranged to support a lens and said lamp positioning means, and when secured to said body to dispose the lens to cover said open end.

3. The lantern of claim 1 wherein said contact strip is L-shaped.

4. The lantern of claim 1 wherein said body defines a slot therethrough and said switching strip includes a finger-activated slidable portion extending through said slot.

5. A lantern as defined in claim 1 wherein said metallic contact strip includes a portion for mounting it on said body.

6. The lantern of claim 1 wherein said body includes a shoulder that confines at least one of said batteries in said chamber.

7. An electric hand lantern which comprises: a body formed of an electrically insulating material defining a chamber therein adapted to contain a first and a second battery in side-by-side relationship; a shoulder formed on said body and disposed to confine said second battery in said chamber; a metallic conductor positioned in said chamber to resiliently contact opposite poles of said batteries; a lamp-reflector assembly positioned in said body to support a lamp with one of the lamp terminals in contact with the remaining pole of said first battery and including a conductive flange positioned to contact the other terminal of said lamp; a metallic switching strip mounted within said chamber and selectively movable between a first position out of contact with said flange and a second position in contact with said flange; a metallic contact strip fixedly mounted within said chamber to electrically connect the remaining pole of said second battery with said switching strip; and means on said body to selectively move said switching strip between its first and second positions.

8. The lantern of claim 7 wherein said metallic contact strip includes a portion for clamping on said shoulder to mount said metallic contact strip on said body.

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