June 17, 1952 F. H. MÜLLER 2,600,418

FLASHLIGHT COMPRISING PERMANENTLY ASSEMBLED LAMP, CELL, HOUSING, AND SWITCH STRUCTURE

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Fig. 1

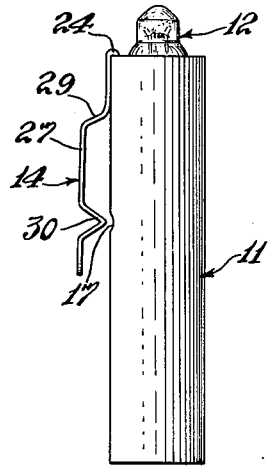


Fig. 3

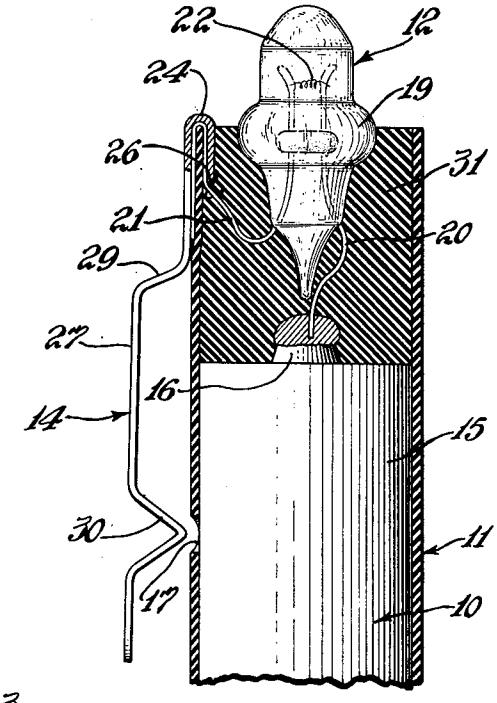


Fig. 2

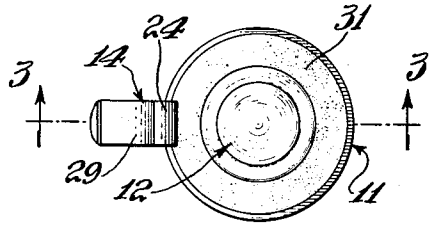


Fig. 4

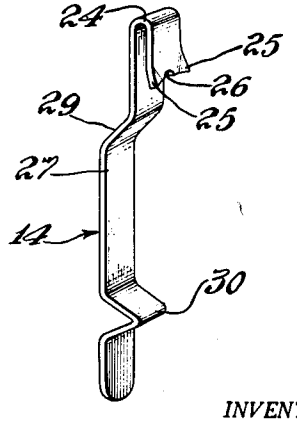
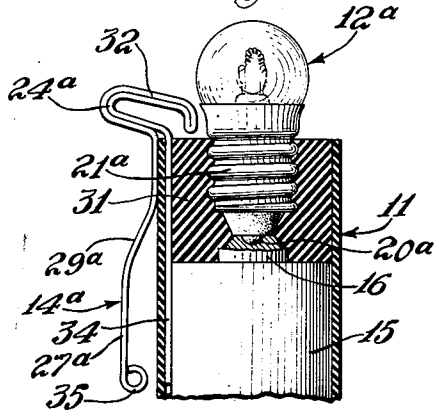


Fig. 5



INVENTOR.
Ferdinand H. Müller
BY
Ernest A. Jorren
ATTORNEY

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FLASHLIGHT COMPRISING PERMANENTLY ASSEMBLED LAMP, CELL, HOUSING, AND SWITCH STRUCTURE

Ferdinand H. Müller, Roseland, N. J.

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5 Claims. (Cl. 240—10.61)

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The present invention relates to portable flash lights, and more particularly to such flash lights wherein a dry cell, a lamp and switch means are irremovably secured to provide a unitary structure.

Accordingly, an object of the present invention is to provide an improved flash light of the foregoing character which is inexpensive in construction and can be sold at such a low cost whereby it is economically feasible to discard the entire structure when the energy of the dry cell has been consumed.

Another object is to provide such a flash light which is constructed of simple and/or standard parts adapted to be manufactured and assembled on a low cost mass production basis.

Another object is to provide such a flash light wherein the parts are effectively retained in assembled relation prior to final securement.

Another object is to provide such a flash light wherein the parts are so formed and arranged to facilitate irremovable securement.

Another object is to provide such a flash light wherein accidental operation of the switch means is prevented while the flash light is carried on the person.

A further object is to provide such a flash light wherein the switch means is in the form of a pocket engaging clip.

Other and further objects of the invention will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

In accordance with the invention, the foregoing objects are generally accomplished by providing a flash light which comprises a dry cell, a lamp having one terminal electrically connected to one terminal of the cell, a switch element operable to electrically connect the other terminal of the cell and the other terminal of the lamp to establish a closed circuit, and means for irremovably securing the cell, lamp and switch element, such means preferably constituting a non-conductive tube for housing the cell and a mass of cementitious or resinous material for uniting the cell, lamp and switch element in their aforementioned relation. The switch element may be in the form of a pocket engaging clip and of a construction which facilitates its cooperation with other parts both during assembly and after final securement thereof.

A preferred embodiment of the invention has

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been chosen for purposes of illustration and description, and is shown in the accompanying drawing, forming a part of the specification, wherein:

Figure 1 is an elevational view of a flash light in accordance with the invention.

Figure 2 is an enlarged plan view of the flash light shown in Figure 1.

Figure 3 is a fragmentary sectional view taken substantially along the line 3—3 on Figure 2.

Figure 4 is a perspective view of the switch element utilized in the construction illustrated in Figures 1 to 3.

Figure 5 is a fragmentary sectional view of a flash light construction illustrating a modification of the invention.

Referring to the drawing in detail and more particularly to Figures 1 to 4 thereof, there is shown a unitary portable flash light construction comprising a dry cell 10 or its equivalent, a tube 11, a lamp 12 and a switch element 14.

The cell 10 is of standard construction and preferably is of the cylindrical type wherein a metallic casing 15 constitutes one of the electrodes and provides a side terminal, and an axially extending electrode projects from the upper end of the cell to provide an end terminal 16.

The tube 11 is an open ended hollow cylinder formed to snugly house the cell 10 and frictionally retain the same therein prior to final securement. The tube extends beyond the upper end of the cell to provide a space for the purpose about to be made apparent, and has an aperture 17 (Figures 1 and 3) in the side wall thereof. The tube may be constructed of electrically non-conductive material, such as paper, cardboard, fibre, synthetic plastics or the like. A spirally wound cardboard tube provided with a printed exterior paper surface is preferred because of its cheapness, general availability and ease of decorating the same for attractiveness, or product identifying or advertising purposes.

The lamp 12, as shown in Figure 3, is of the baseless, focusing type, and comprises a glass or transparent synthetic plastic hollow body 19, a pair of leg wires 20 and 21 having one end extending outwardly of the body to provide terminals, and a resistance element 22 bridging the inner ends of the leg wires to provide the illuminating means.

The switch element 14, as shown in Figures 3 and 4, is formed of electrically conductive material, preferably somewhat resilient springy metallic flat stock which readily lends itself to forming and shaping operations. The switch

element comprises a U-shaped upper end portion 24 provided with offset tabs 25 and a recess 26 between the tabs at the free end thereof, and an outer depending leg portion 27 offset with respect to the upper end portion at 29 and provided with an inwardly facing V-shaped projection 30 in registry with the aperture 17 of the tube 11. The element 14, as illustrated and described herein, is adapted to serve as a combined pocket engaging clip and switch means.

The foregoing described elements preferably are assembled by inserting the cell 10 into the tube 11 in the manner shown, placing the lamp 12 in the space provided by the tube above the cell, soldering or otherwise securing the leg wire 20 to the cell terminal 16, folding the free end of the leg wire 21 over the upper edge of the tube, and positioning the U-shaped portion 24 of the element 14 to grip the upper end of the tube and to clamp the leg wire 21 in electrical contact therewith. In performing the latter operation, the recess 26 receives the leg wire 21 to center it with respect to the U-shaped portion and to prevent lateral movement or displacement thereof whereby a good electrical contact is assured which will not be disturbed between pre-assembly and final securement of the parts.

In order to irremovably secure the parts in the aforesaid assembled relation, a mass of cementitious or resinous electrically non-conductive material 31 is placed in the space provided by the tube 11 above the cell 10 to embed therein the lower end of the lamp 12, the leg wires 20 and 21, and the free end part of the U-shaped portion 24. Upon setting of the material, the tabs 25 are firmly rooted and the element 14 is secured to withstand rough usage both as a switch and a pocket clip.

The flash light is operated by simply pressing the depending portion 27 of the element 14 inwardly towards the cell and tube, whereby the projection 30 extends through the aperture 17 and engages the side terminal of the cell to close the electrical circuit. When the portion 27 is released, the springiness of the material of which the element is formed effects its return to open circuit position. When the flash light is carried in the pocket of the apparel of a person and the element 14 is used as a clip, a layer of material of the pocket extends between the aperture 17 and the projection 30 to prevent an accidental electrical contact to be established, thereby insuring longer life of the cell.

In Figure 5, a modified flash light construction is illustrated wherein identical parts are designated by like reference numerals and similar parts are designated by like reference numerals with "a" suffixed thereto. The essential difference between this modification and the embodiment just described is in the lamp 12a and the element 14a.

The lamp 12a shown in Figure 5 is of the screw-threaded base, socket securing type, wherein the exterior of the base provides a terminal 21a projecting partially above the material 31 with the screw threads thereon being rooted in the material 31, and the end terminal 20a is soldered to the cell terminal 16. This type of lamp has an advantage in that leg wires need not be handled in the assembly operations.

The element 14a comprises a U-shaped upper end portion 24a bent upon itself and providing an arm 32 for contacting the lamp terminal 21a, an inner depending leg 34 between the tube 11 and the side terminal provided by the case 15 of the cell to form an electrical connection with the latter, and an outer depending leg portion 27a offset at 29a and beaded at its free end 35 to provide a pocket engaging clip.

The flash light illustrated and described in connection with Figure 5, is operated by pressing the outwardly projecting portion of the arm 32 inwardly whereby the inner free end of the arm contacts the terminal 21a to establish an electrical circuit.

From the foregoing description, it will be seen that the present invention provides an improved unitary flash light structure, which can be readily manufactured and assembled and can be used conveniently. The flash light is so economically constructed that it can be discarded when the cell expires. The parts of the flash light structure are irremovably secured in an effective manner and can readily withstand such rough usage to which they normally may be subjected without separating or otherwise becoming ineffective.

As various changes may be made in the form, construction and arrangement of the parts herein, without departing from the spirit and scope of the invention and without sacrificing any of its advantages, it is to be understood that all matter herein is to be interpreted as illustrative and not in any limiting sense.

It is also to be understood that the following claims are intended to cover all the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

I claim:

1. A flash light comprising a dry cell, a non-conductive tube housing said cell and extending beyond the upper end thereof, said tube having an aperture in the side thereof, a lamp having one leg wire electrically connected to the upper end terminal of said cell, a switch element having a U-shaped portion provided with inner and outer legs engaging the upper end of said tube and having the other leg wire of said lamp electrically connected thereto, said switch element having a portion extending lengthwise along the exterior of said tube provided with a portion adapted to extend through said aperture and contact the side terminal of said cell to establish a closed circuit, and a mass of material in the upper end of said tube in which said lamp is partially embedded for irremovably securing said cell, lamp, switch element and tube to provide a unitary structure, the inner leg of said U-shaped switch element portion having an offset portion thereon to facilitate securement of said switch element in said mass of material.

2. A flash light comprising a dry cell, a non-conductive tube housing said cell and extending beyond the upper end thereof, said tube having an aperture in the side thereof, a lamp having one leg wire electrically connected to the upper end terminal of said cell, a switch element having a U-shaped portion provided with inner and outer legs engaging the upper end of said tube and having the other leg wire of said lamp electrically connected thereto, said switch element having a portion extending lengthwise along the exterior of said tube provided with a portion adapted to extend through said aperture and contact the side terminal of said cell to establish a closed circuit, and a mass of material in

the upper end of said tube in which said lamp is partially embedded for irremovably securing said cell, lamp, switch element and tube to provide a unitary structure, the inner leg of said U-shaped switch element portion having a recess for receiving and positioning said second mentioned lamp leg wire to secure the same between said U-shaped portion and said tube.

3. A flash light comprising a dry cell, a nonconductive tube housing said cell and extending beyond the upper end thereof, a lamp having one terminal electrically connected to the upper end terminal of said cell and having a second terminal in the form of a wire, a switch element operable to electrically connect the side terminal of said cell and the second terminal of said lamp to establish a closed circuit, and a mass of material in the upper end of said tube in which the base of said lamp is embedded to irremovably secure said cell, lamp and tube and provide a unitary structure, said switch element having a U-shaped clip portion for securing the same to the upper end of said tube provided with inner and outer legs, said inner leg having offset tabs thereon for rooting said portion in said mass of material and having a recess between said tabs for receiving said wire to secure the same between said tube and said inner leg.

4. A flash light comprising a dry cell, a nonconductive tube housing said cell and extending beyond the upper end thereof, said tube having an aperture in the side thereof, a lamp having one leg wire electrically connected to the upper end terminal of said cell and having a second leg wire provided with a U-shaped portion engaging the upper end portion of said tube, a switch element having a U-shaped portion provided with inner and outer legs engaging the upper end of said tube and positioned over said U-shaped leg wire portion to clamp the same and form an electrical connection therewith, said switch element having a portion extending

lengthwise along the exterior of said tube provided with a portion adapted to extend through said aperture and contact the side terminal of said cell to establish a closed circuit, and a mass of material within the upper end portion of said tube in which said lamp is partially embedded for irremovably securing said cell, lamp, switch element and tube to provide a unitary structure.

5. A flash light comprising a dry cell, a nonconductive tube housing said cell and extending beyond the upper end thereof, a lamp having one terminal electrically connected to the upper end terminal of said cell, a switch element operable to electrically connect the side terminal of said cell and the other terminal of said lamp to establish a closed circuit, said switch element having a U-shaped clip portion provided with an inner leg and an outer leg disposed in gripping engagement with the upper end portion of said tube and having an inwardly facing offset portion on the inner leg thereof, and a mass of material within the upper end portion of said tube in which the base of said lamp is embedded serving as the sole means for irremovably securing said cell, lamp and tube to provide a unitary structure and having said offset portion of said inner switch element leg rooted therein.

FERDINAND H. MÜLLER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,200,366	Kerlin	Oct. 3, 1916
1,981,544	French et al.	Nov. 20, 1934
2,387,144	Gey	Oct. 16, 1945

FOREIGN PATENTS

Number	Country	Date
439,812	Germany	Jan. 18, 1927