June 20, 1967 W. H. GEY 3,327,107

DISPOSABLE FLASHLIGHT

Filed Dec. 30, 1964

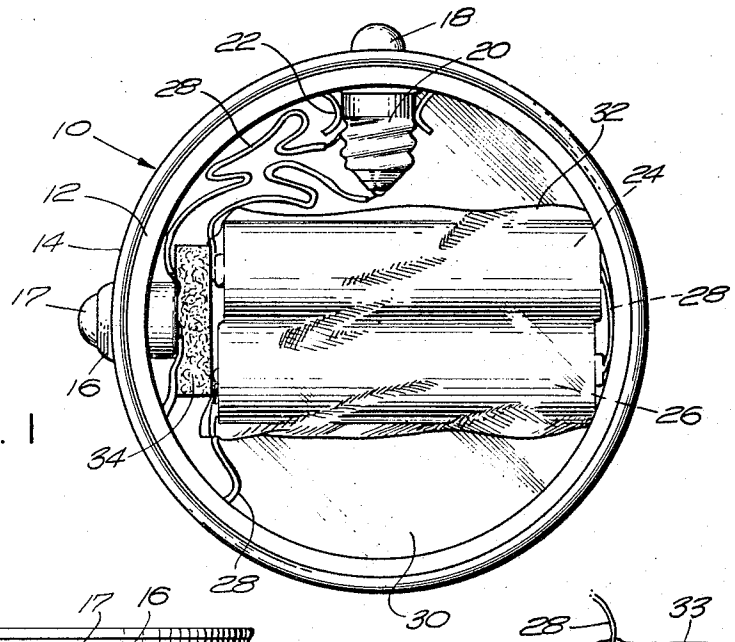


FIG. 1

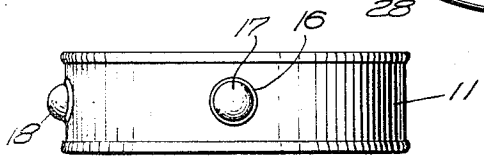


FIG. 5

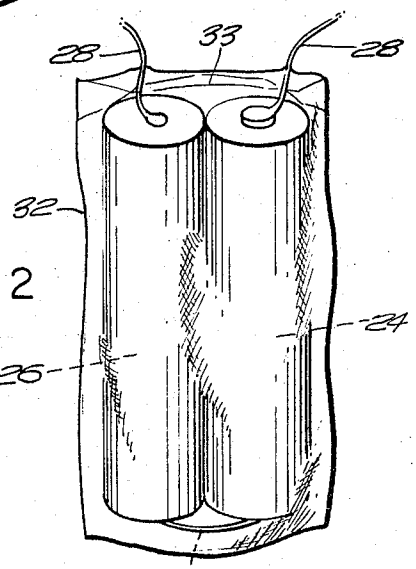


FIG. 2

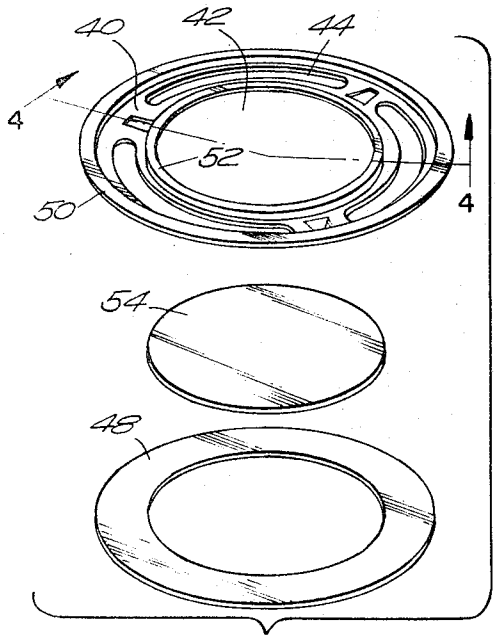


FIG. 3

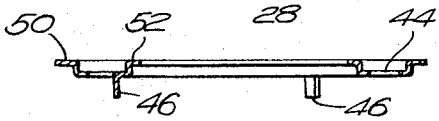


FIG. 4

INVENTOR.
WILLIAM H. GEY
BY
Morse, Altman & Oates
ATTORNEYS

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DISPOSABLE FLASHLIGHT

William H. Gey, 126 Summer St., Boston, Mass. 02110

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ABSTRACT OF THE DISCLOSURE

A small disposable flashlight contains a pair of dry cells enclosed by themselves in a heat-sealed plastic bag to protect the other parts of the flashlight in case of leakage of the cells. The push-button switch which projects through the wall of the casing is supported by a felt pad inserted between its inner end and an end of the battery cells.

This invention relates to improvements in small flashlights the parts of which are inexpensively made and permanently assembled so that when any part gives out, the entire flashlight is discarded. Flashlights of this type have been on the market for several years. It is an object of the present invention to build into flashlights of this kind features effective to lengthen the useful life of the flashlight.

The invention is exemplified in a flashlight in the form of a short cylinder having a diameter of 2½ inches and a length of ⅝ inch. This flashlight is hereinafter described, and is illustrated on the drawing, of which—

FIGURE 1 is a plan view, on an enlarged scale, of a flashlight embodying the invention, partially assembled;

FIGURE 2 is a perspective view of the batteries for the flashlight enclosed in a plastic bag;

FIGURE 3 is an exploded perspective view of one form of an end wall for the flashlight casing;

FIGURE 4 is a section on the line 4—4 of FIGURE 3; and

FIGURE 5 is an elevational view of a completed flashlight.

The flashlight **10** shown in FIGUURE 1 comprises a short cylindrical wall member **11** of cardboard or the like on the edges of which thin brass rings **12** are secured by crimping or spinning. Each such ring is made with a narrow annulus surrounded by a bead **14** which receives an edge of the cylindrical wall. A switch **16** with a push-button **17** and the glass bulb **18** of an electric lamp **20** project through holes in the wall member **11**. A spring clip **22** is secured within the casing to hold the lamp **20** in place. Two small dry-batteries **24**, **26** are connected in an electrical circuit with each other and with the switch **16** and lamp **20** by wires **28**, all the connections being soldered. This circuit is tested a number of times at intervals before insertion in the casing to determine whether any element in the circuit is defective.

In assembly the parts of a flashlight, one of the metal rings **12** is permanently secured to an edge of the cylindrical side wall and a clip **22** is fastened through the side wall. A disk **30** of cardboard is cut carefully to size so as to fit snugly within the bead **14** of one of the rings **12** and to bear against the annulus. An assembly of batteries, lamp and switch is then inserted in the casing, but before that is done the batteries **24**, **26** are encased in a small polyethylene bag **32** so that the wires **28** which connect the batteries to the switch and lamp protrude from the open end of the bag. The bag **32** is longer than the batteries, and the portions **33** of the sides of the bag that extend beyond the end of the batteries to which the wires **28** are connected are folded over one another against the adjacent end of the batteries to enclose them completely. The bulb **18** of the lamp is then thrust through the hole in the side wall of the casing through which the clip **22** is fastened. The switch **16** is thrust through the other hole in the casing from the inside, and the batteries encased in the bag **32**, are inserted in the casing in line with the switch **16** with a felt pad **34** wedged in between the inner end of the switch and the adjacent end of the batteries. This keeps the folds of the end of the bag against one another and prevents the switch **16** from being pushed bodily into the casing when the button **17** is pressed.

When these parts have been installed in the casing, melted wax is poured in to a level about half way to the top of the cylindrical wall. For this purpose a wax or mixture of waxes having relatively high melting points (150° F. or over) is used. Such waxes as ceresin, montan or carnauba can be employed with or without the admixture of a polymer of butylene. The molten wax soaks into the surface of the cardboard disk **30** and upon congealing anchors the disk securely in place. The heat of the molten wax seals the folds of the bag **32** together so that the batteries are completely sealed in the bag. An occasional battery may have a slight defect which results in the gradual escape of gas which, if there is no bag **32**, is apt to react with adjacent wax, corrode the adjacent portion of the case, and shorten the useful life of the flashlight. This is prevented when the batteries are sealed in the bag **32** as described.

The bag **32** also serves another purpose when the flashlight is being assembled. It then acts as a temporary heat insulator when the molten wax is being poured into the casing so that the wax can be introduced at a lower temperature than is necessary when no bag is used. Before congealing, it is necessary for the wax to flow around and under the parts within the casing.

After the first charge of wax has solidified, a second charge is poured in which nearly fills the casing. A second disk of cardboard is pressed into engagement with the upper ring **12** and the assembly is promptly inverted so that the molten wax will flow into contact with the second disk and anchor it in place.

The exterior surfaces of the cardboard cylindrical wall **11** and the two disks are preferably ornamented in a variety of ways. A modification can be had by substituting for one of the rings a wider ring **40** (FIGURE 3) with a circular central aperture **42**, arcuate apertures **44**, three such being shown in FIGURE 3 of the drawing, and three tongues **46** struck from the ring and projecting down. The ring **40** has a shallow channel in which a cardboard annulus **48** fits, covering the apertures **44**. It also has an outer flange **50** and an inner flange **52**. A disk **54** is fitted in the central aperture **42**, the edges of this disk engaging under the innner flange **52**. The tongues **46** are bent up against the under face of the disk **54** to hold it firmly in place in the aperture **42**. The outer face of the disk **54** may be a mirror, may be ornamented as desired, or may carry advertising matter. The outer flange **50** is curled into engagement with an edge of the cylindrical casing wall for permanent attachment thereto.

The assembling of the flashlight as a whole proceeds as hereinbefore described, the ring **40** with its parts taking the place of the initial ring **12** and its disk **30**. The first charge of molten wax reaches the cardboard ring **48** through the arcuate apertures **44** and anchors this ring in place. The wax also backs the central disk **54** and reinforces the tongues **46** in holding the rim of the disk **54** firmly against the inner flange **52**.

I claim:

1. A pocket flashlight comprising a casing in the form of a short cylinder, two dry-battery cells disposed side by

side in said casing, a heat-sealed polyethylene bag completely enclosing said cells by themselves, a push-button switch extending through the cylindrical wall of said casing near an end of said cells, a felt pad pressed between the inner end of said switch and the adjacent end of said cells, a lamp within said casing having a bulb projecting through said wall, wires connecting in series said cells, said switch and said lamp, and a congealed waxy substance partially filling said casing.

2. A pocket flashlight as described in claim 1, said casing including one circular side wall consisting of a sheet metal frame, a central circular disk mounted on said frame, and an annulus on said frame surrounding said disk.

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NORTON ANSHER, *Primary Examiner.*

R. M. SHEER, *Assistant Examiner.*