United States Patent [19]

Strauss

[11] **3,742,207**

[45] **June 26, 1973**

[54] **THROW-AWAY FLASHLIGHT**

[75] Inventor: **Howard J. Strauss**, Bloomington, Minn.

[73] Assignee: **Gould Inc.**, Mendota Heights, Minn.

[22] Filed: **May 15, 1972**

[21] Appl. No.: **252,977**

[52] **U.S. Cl.** ..... **240/10.68**, 240/2 S

[51] **Int. Cl.** **F21l 7/00**

[58] **Field of Search** ..... 240/10.6, 10.66, 240/10.68, 6.4 R, 2 S

[56] **References Cited**

UNITED STATES PATENTS

2,070,316	2/1937	Recker	240/10.68
2,171,304	8/1939	Gelardin	240/10.68
2,249,691	7/1941	Gelardin	240/10.68 X
2,666,894	1/1954	Babernitsh	240/10.68 X

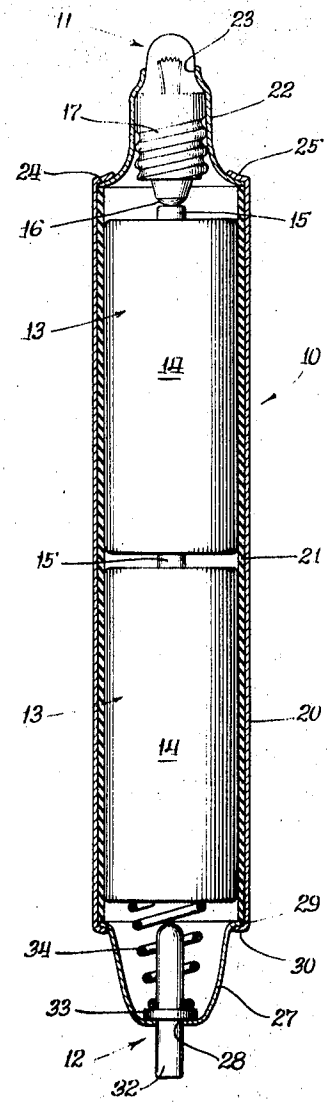
Primary Examiner—Joseph F. Peters, Jr.

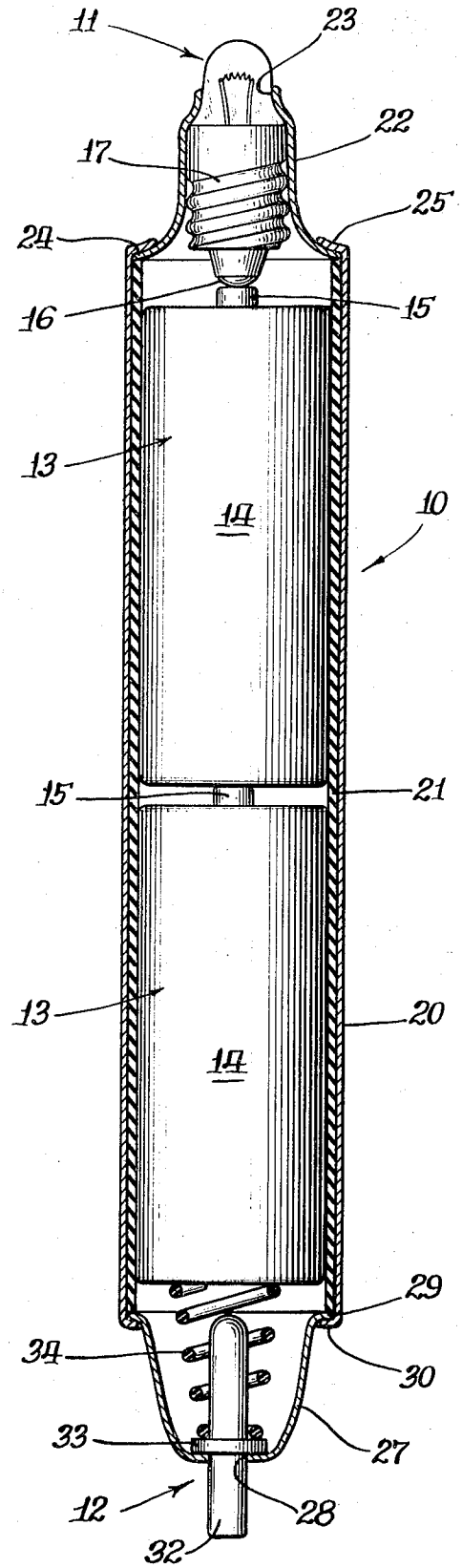
Attorney—Howard H. Darbo et al.

[57] **ABSTRACT**

The case of the flashlight comprises a paper shell within a metal tube. At one end is a metal ferrule having a peripheral flange which is trapped between the crimped end of the tube and the shell. This ferrule holds a light bulb. At the other end is a second metal ferrule also having a peripheral flange trapped between the crimped end of the tube and the shell. A metal plunger extending through the latter ferrule is resiliently held away from the dry batteries within the tube by a plastic spring. When the plunger is pushed against the adjacent end of the dry cells an electrical circuit is completed to light the light.

5 Claims, 1 Drawing Figure




11
23
22
17
25
24
16
15
13
14
10
15
21
13
20
14
29
34
30
33
27
12
28
32

THROW-AWAY FLASHLIGHT

SUMMARY OF THE INVENTION

The present invention relates to an inexpensive form of flashlight having non-replaceable batteries.

DESCRIPTION OF THE DRAWING

The drawing is a longitudinal cross-section of an embodiment of the invention.

DESCRIPTION OF SPECIFIC EMBODIMENT

The following disclosure is offered for public dissemination in return for the grant of a patent. Although it is detailed to ensure adequacy and aid understanding, this is not intended to prejudice that purpose of a patent which is to cover each new inventive concept therein no matter how others may later disguise it by variations in form or additions or further improvements.

The flashlight comprises a case, generally **10**, having a light bulb, generally **11**, at one end thereof and a switch, generally **12**, at the other end. Within the case are two dry cells **13**. As is conventional, the dry cells have a zinc can **14** which forms the anode and the cathode is electrically tied to a projecting contact **15**. The light bulb **11** is a conventional lens-front bulb and has a projecting contact **16** and circumferential contact **17**.

The case **10** includes an extruded aluminum tube **20** within which is a sleeve or shell **21** of insulating material, in this case a spiral-wound paper tube. This prevents a short between the exposed zinc cans **14** and the tube **20**. At the lens end is a metallic ferrule **22**. This ferrule has an opening **23** through which the lens of the bulb **11** projects and it has a peripheral flange **24** which is trapped between the crimped end **25** of the tube **20** and the end of the sleeve **21**. The eyelet contacts the base terminal **17** of the bulb.

At the other end is a ferrule **27** having an opening **28** and a peripheral flange **29**. Again, the flange is trapped between the crimped end **30** of the tube **20** and the adjacent end of the sleeve **21**. A metal plunger **32** extends through opening **28**. The plunger has an abutment **33** to prevent it from completely coming out through the opening. A coil spring **34** of plastic material has one end bearing against the adjacent end of can **14** and the other end against abutment **33** on the plunger. This spring (a) holds the adjacent end of the battery can **14** away from the ferrule **27**, (b) holds terminal **15** of the adjacent battery against the can **14** of the next battery and the terminal **15** of the next battery against the center terminal **16** of the bulb and (c) normally holds the plunger **32** away from the can **14** of the adjacent battery.

When the plunger **32** is pressed inwardly and brought into contact with the end of adjacent can **14**, an electrical circuit is formed from that can through the plunger, the ferrule **27**, the tube **20**, the ferrule **22**, the base terminal **17** and then from the center terminal **16** of the bulb back through the batteries. The power from the batteries will flow through the bulb and light the bulb. When plunger **32** is released, the spring **34** returns it to the position illustrated and the electrical circuit is broken at the gap between the plunger and the adjacent can **14**.

To those familiar with manufacturing procedures, it will be readily apparent that the construction is such that these flashlights can be manufactured very inexpensively. The battery cells **13** are bare cells and do not even require the insulator normally positioned about electric dry batteries. The ferrules can be formed very inexpensively on an eyelet forming machine. The plungers can be made on a screw machine. The assembly of the components is exceedingly uncomplicated. The sleeve and the batteries are put into the tube **20**. The bulb is put into the ferrule **22**. The plunger and spring are put into ferrule **27**. Then the two ferrules are put into the respective ends of the tube **20** and pressed against the ends of the sleeve **21**. While being so held, the ends **25** and **30** of the tube are crimped over against the respective flanges **24** and **29** to hold the assembly together. Not only is this a simple and inexpensive construction, but it also forms a very sturdy flashlight assembly.

I claim:

1. In a flashlight comprising an elongated outer case holding a dry cell battery and a light bulb at one end of the case, said bulb having two connections,

said case comprising a metal tube, a ferrule having an opening therein and a flange about one end thereof, said opening being of a size to permit a portion only of said bulb to project therethrough, and closure means having a peripheral flange, said ferrule being at one end of said tube and said closure means being at the other end of the tube, said flanges being positioned in juxtaposition to said tube with the tube being permanently crimped over the flanges to prevent them from separating from the tube; and including

first means at said one end of the tube to provide an electrical conduit between said one end of the tube and one of the connections on the bulb; and

second means at said other end of the tube to provide an electrical conduit between said other end of the tube and the battery;

one of said means being openable to selectively make and break the respective conduit.

2. In a flashlight as set forth in claim **1**, wherein said ferrule is formed of metal and forms said first means, said closure means being a second metal ferrule having an opening therethrough, said second means including said second ferrule, said case including an annular shell of insulating material within said tube, said flanges seating against the ends of said shell.

3. In a flashlight comprising a metal tubular case containing a dry cell battery insulated from said case and having end terminals, a light bulb permanently mounted at one end of said case with one terminal in contact with a terminal of the battery and the other bulb terminal connected with the metal case, and switching means including a metal plunger mounted at the other end of the case and electrically connected therewith; the improvement which comprises resilient non-conductive means for normally holding the plunger out of contact with the terminal of the battery and permitting such contact when the plunger is pushed inwardly to close the bulb circuit.

4. Structure in accordance with claim **3** wherein the resilient non-conductive means comprises a coil spring of plastic composition arranged in compression between the battery and the plunger.

5. A flashlight comprising a metal tubular case, a non-conductive tube interiorly adjacent to said case, a dry battery having end terminals within said tube, a light bulb arranged at one end of said case, said bulb

having a base terminal and a center terminal, a metal ferrule surroundingly engaging the base of said bulb and having an opening therein through which said bulb projects, said ferrule having a peripheral flange at its base clamped between the end of said non-conductive tube and the crimped over end of said case, a second metal ferrule having a central opening therein and a peripheral flange clamped between the other end of said non-conductive tube and the crimped over other end of said case, a metal plunger extending through the opening in said second ferrule and having an abutment on the portion thereof within said ferrule, and a plastic coil spring arranged in compression between said abutment and said battery, said spring holding said battery in contact with said bulb and normally holding said plunger out of contact with said battery but permitting such contact when said plunger is pushed in to engage the battery and thus close the bulb circuit.

* * * * *