United States Patent

[11] **3,609,344**

[72] Inventor **Pak Hung So**
Kowloon, Hong Kong, Great Britain

[21] Appl. No. **807,741**
[22] Filed **Mar. 17, 1969**
[45] Patented **Sept. 28, 1971**
[73] Assignee **Honour Metal Manufacturing Co. Limited**
Shamshuipo, Kowloon, Hong Kong, Great Britain
[32] Priority **Mar. 18, 1968**
[33] **Great Britain**
[31] **13058**

[54] **FLASHLIGHT WITH INDEPENDENT BLINKER**
1 Claim, 6 Drawing Figs.

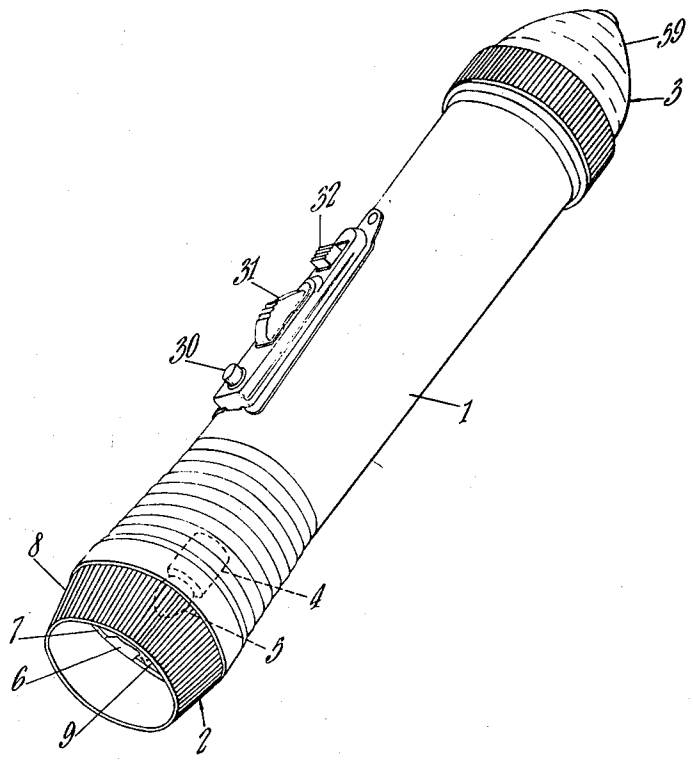
[52] **U.S. Cl.** ..... **240/10.66,** 240/10.6 SB
[51] **Int. Cl.** **F21l 7/00**
[50] **Field of Search** ..... 240/10.66, 10.6 SDA

[56] **References Cited**
UNITED STATES PATENTS

1,969,320	8/1934	Officer et al.	240/10.6 (S.D.A.) UX
1,991,753	2/1935	Kurlander	240/10.6 (S.D.A.) UX
2,983,812	5/1961	Ashe	240/10.66

Primary Examiner—Samuel S. Matthews
Assistant Examiner—Kenneth C. Hutchison
Attorney—Irving M. Weiner

ABSTRACT: An electric flashlight having independently operable continuous and blinker bulbs mounted at opposite ends of a tubular barrel. A contact assembly is removably located at one end of the barrel and has two coaxially arranged contact elements. The first contact element rests on the edge of the barrel and a blinker bulb electrically connects the first contact element to the second contact element. Two separate switches are mounted for controlling the bulbs.



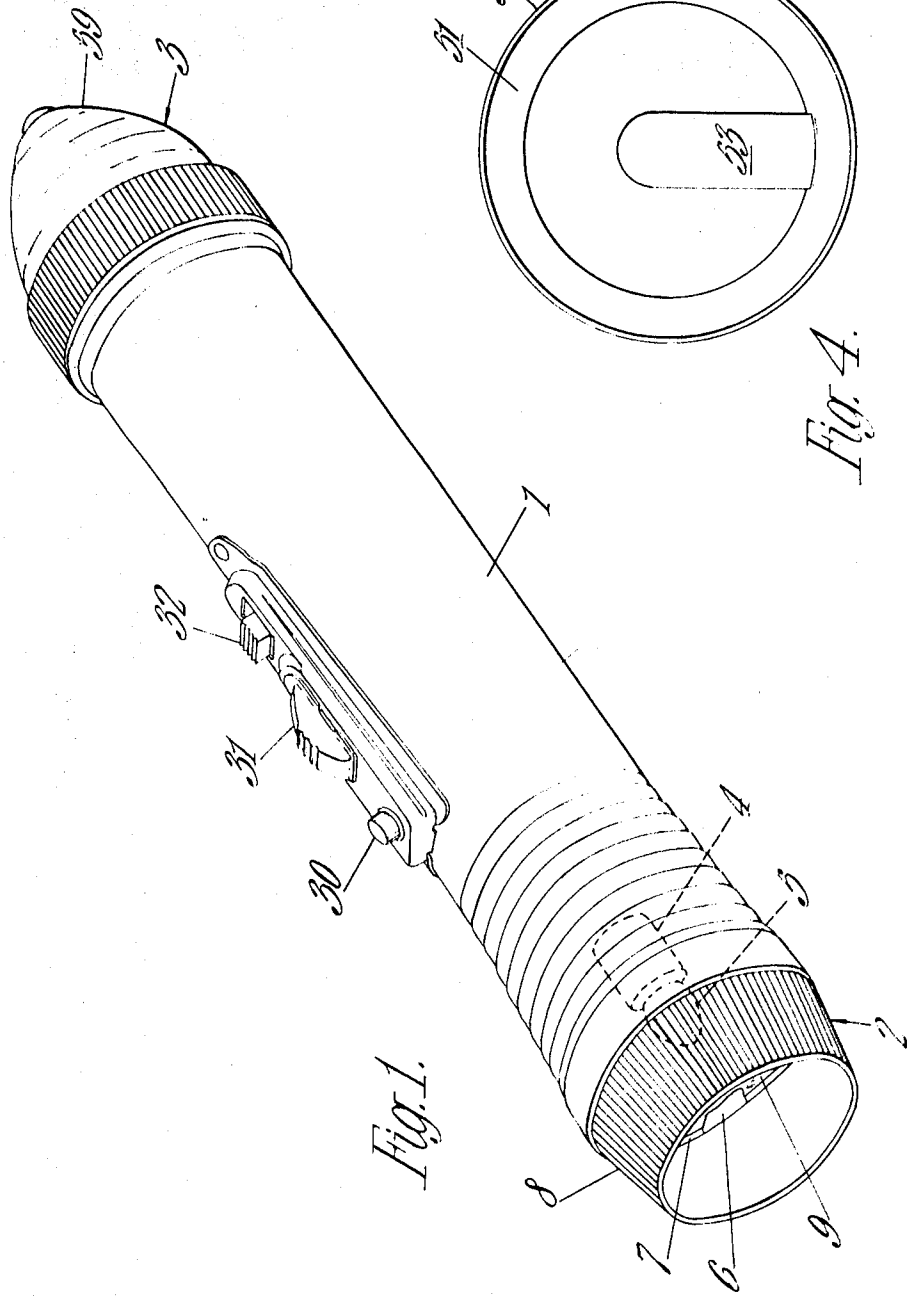


Fig. 1.

Fig. 4.

INVENTOR
PAK HUNG SO
BY Irving M. Weiner
ATTORNEYS

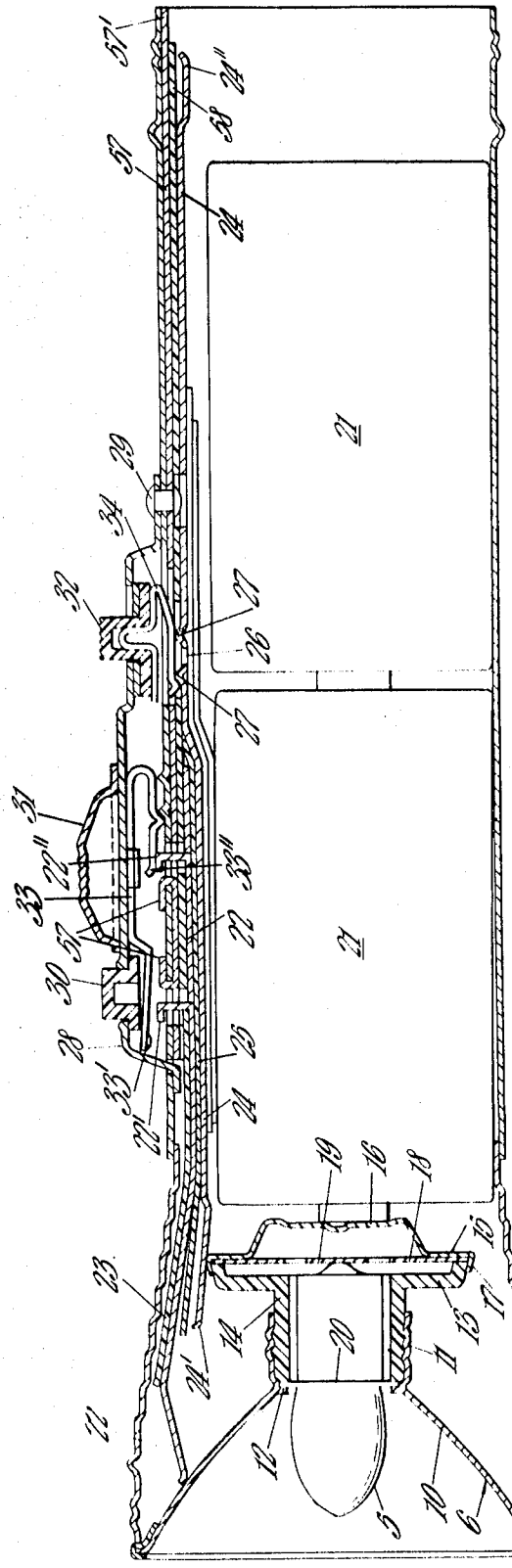


Fig. 2

INVENTOR
PAK HUNG SO
BY Irving M. Weiner
ATTORNEYS

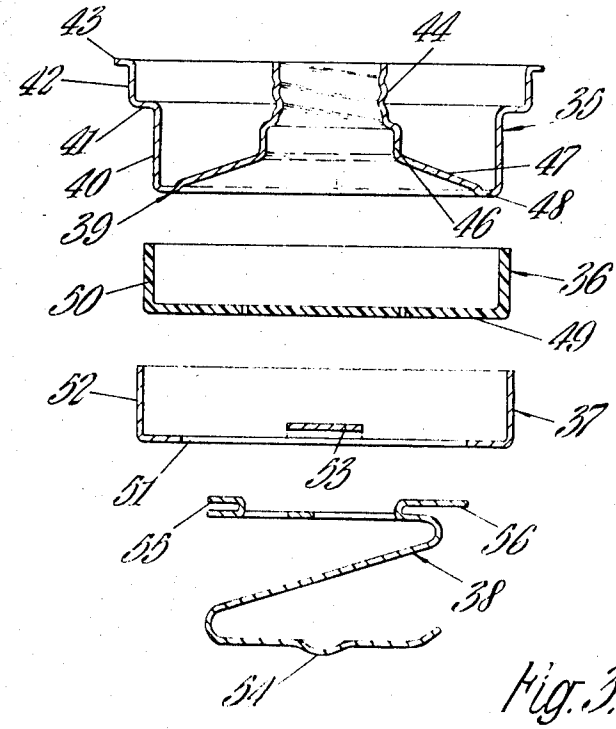


Fig. 3.

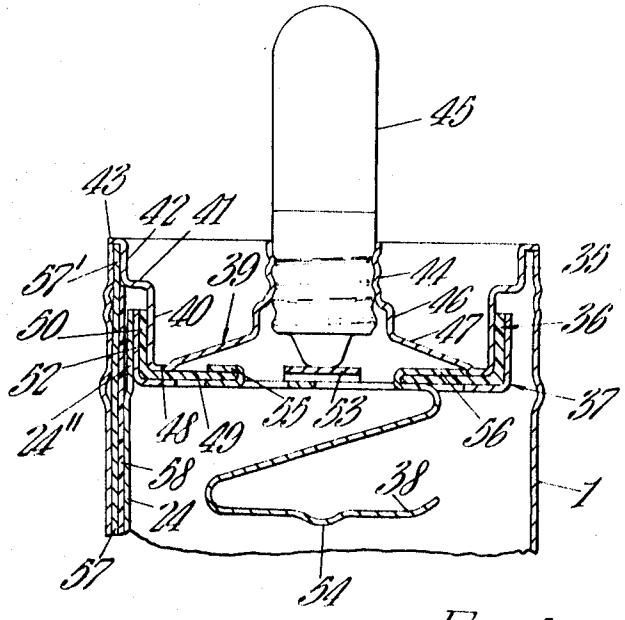


Fig. 5.

INVENTOR
PAK HUNG SO
BY Irving M. Weiner
ATTORNEYS

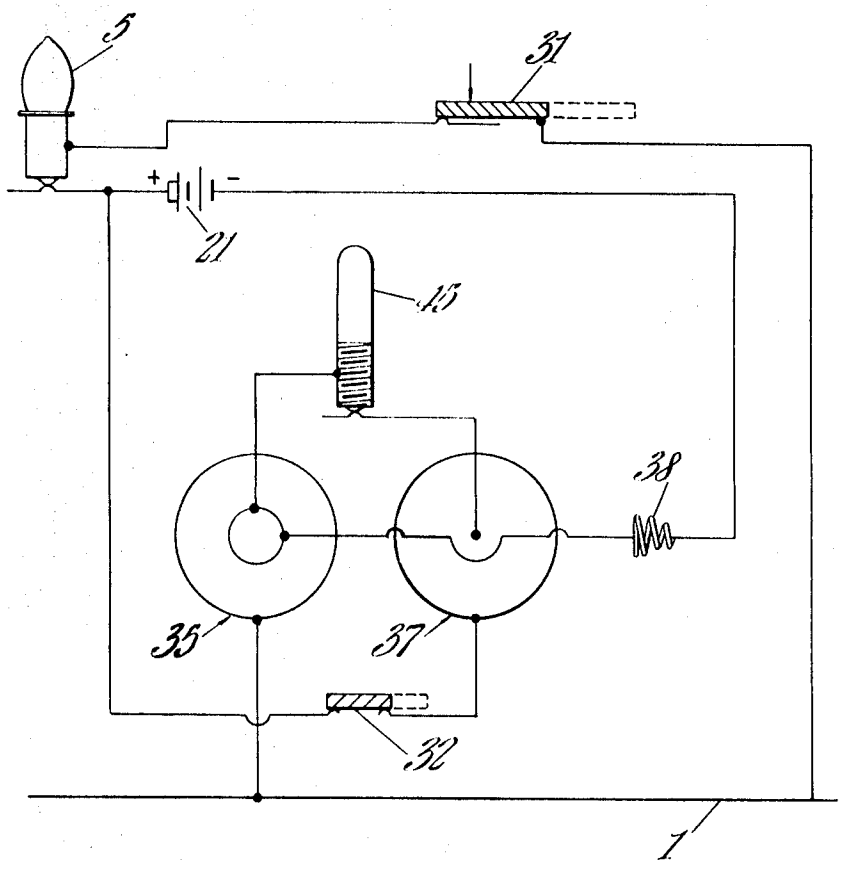


Fig. 6.

INVENTOR
PAK HUNG SO
BY Irving M. Weiner
ATTORNEYS

FLASHLIGHT WITH INDEPENDENT BLINKER

This invention relates to an electric flashlight of the type having two independently operable bulbs comprising a battery holding tubular barrel having a contact assembly removably located at one end of the said barrel.

The invention consists in an electric flashlight comprising a battery-holding tubular barrel, a contact assembly removably located at one end of the barrel, wherein the contact assembly comprises first and second stacked coaxially arranged contact elements of substantially circular configuration and an insulating separator between the said first and second contact elements, the first contact element being outermost and having a peripheral border resting on one edge of the torch barrel and being adapted to receive a first bulb for electrically connecting the first contact element to the second contact element, a spring member for engaging one terminal of a battery when in the tubular barrel, the spring member being fixed to the insulating separator and being electrically insulated from the second contact element but electrically connected to the first contact element, a first switching member for selectively connecting the second contact element to the other terminal of a battery when in the tubular barrel, means for receiving a second bulb for electrical contact with the said other terminal of a battery when in the tubular barrel, and a second switching member for selectively connecting the second bulb when in the said means for receiving a second bulb to the said first contact element.

The contact assembly of the present invention is cheaper to manufacture than known contact assemblies, since there are fewer parts.

Preferably the said spring member is a flat Z-shaped strip of conducting material.

Preferably, the said spring member has at least one cutout portion and the said insulating separator has at least one slit receiving the said at least one cutout portion of the said spring member, one of the said at least one cutout portions electrically contacting the said first contact element.

Preferably, the flashlight has a casing on the torch barrel, wherein the said first switching member and the said second switching member are contained in the said casing.

In a preferred embodiment the flashlight has a metal strip divided into two parts, one part of which is electrically connected to the said second contact element and the other part of which is arranged to contact the said other terminal of a battery when in the tubular barrel, wherein the first switching member is in the form of a slide button having a brass contact for connecting the two said parts of the said metal strip.

Preferably, the said second switching member comprises a slide button and has a brass contact for electrically connecting the said means for receiving a second bulb with the first contact element via the tubular barrel.

Preferably, the said slide button of the second switching member is movable into an "off" position, an "on" position, and an intermediate position, and the second switching member further comprises a pushbutton operable to actuate the second switching member in the said intermediate position of the slide button of second switching member.

Preferably, a blinker bulb is mounted in the said means for receiving a first bulb, and a flashlight bulb is mounted in the said means for receiving a second bulb.

The invention will be further described with reference to an embodiment shown by way of example only in the accompanying drawings, wherein:

FIG. 1 is a perspective view of the assembled flashlight;

FIG. 2 is a longitudinal section through the switch assembly;

FIG. 3 is an exploded longitudinal sectional and fragmentary view of the contact assembly of the flashlight;

FIG. 4 is a plan view of the second contact element;

FIG. 5 is a longitudinal section of the assembled contact assembly; and

FIG. 6 is a diagrammatic view of the circuit of the flashlight.

In FIG. 1 the flashlight comprises a barrel portion 1 having a flashlight head 2 and a blinker head 3 at opposite ends of the barrel portion 1. Barrel portion 1 is a cylindrical metal tube for carrying one or more batteries. In the embodiment shown there are two batteries. A socket 4 in the flashlight head 2 carries a bulb 5, and is connected to a reflector 6 which is insulated by means of an insulating ring 7 from the barrel portion 1. The flashlight end of the barrel portion 1 is screw threaded to receive a correspondingly threaded plastic shield 8. A glass or transparent plastic disc 9 is maintained in place by means of shield 8.

In FIG. 2 the glass 9 and shield 8 have been removed. Reflector 6 is formed from a front conical portion 10 and a rear screw-threaded cylindrical portion 11 and has an inwardly extending circular shelf 12 therebetween.

The bulb holder 4 comprises an annular plastic portion 13 having an outwardly extending screw-threaded cylindrical portion 14 concentric and integral therewith. A metal disc 15 has a central and outwardly extending well portion 16. The peripheral edge 17 of disc 15 is folded over so as to attach disc 15 to annular plastics portion 13. An annular metal disc 18 having a contact tongue 19 across the central hole of the annulus is fixed between metal disc 15 and plastic portion 13, and is in electrical contact with metal disc 15.

Flashlight bulb 5 has a metal collar 20 which, when the torch is assembled, is held against the inner side of circular shelf 12 by means of the cylindrical portion 14 of bulb holder 4 screwed inside cylindrical portion 11. The contact of bulb 20 presses against metal tongue 19 of disc 18. Well portion 16 of metal disc 15 is in electrical contact with a terminal of one of the batteries 21.

Reflector 6 is in contact with one end of a metal strip 22 which is insulated from the barrel portion 1 by means of an insulating strip 23. The metal strip 22 has two outwardly turned contact portions 22 and 22''. Disc 15 is in contact with one end 24' of a metal strip 24 which is insulated from metal strip 22 by means of an insulating strip 25. The other end 24'' of metal strip 24 is in contact with the second contact element (described later). Metal strip 24 is divided along its length to form a gap 26. The ends of metal strip 24 on either side of gap 26 have outwardly directed portions 27.

A switch casing 28 is riveted to the barrel portion 1 by means of rivets 29, and houses a front push button 30, a front slide switch 31 and a rear slide button 32. The front slide switch 31 is provided with a brass contact member 33 having contact ends 33' and 33'' for contacting the contact portions 22' and 22'' respectively of the metal strip 22 for illuminating the flashlight bulb (as described later). The front slide switch 31 is movable into any one of three portions. When the slide switch 31 is in a position remote from front pushbutton 30, then the flashlight bulb 5 cannot be illuminated since the contact end 33'' does not touch the contact portion 22'' and the contact end 33' cannot touch the contact portion 22' even when the button 30 is depressed. When switch 31 is in a position near to front pushbutton 30 (as shown in FIG. 2), then the bulb 5 lights up since the contact end 33'' touches the contact portion 22'' of the metal strip 22. When switch 31 is intermediate the two above-mentioned positions the contact end 33'' does not touch the contact portion 22'' but the bulb 5 can be illuminated by depressing the button 30 to force the contact end 33' against the contact portion 22' of the metal strip 22.

The rear slide switch 32 has a brass contact 34 for contacting the two outwardly directed portions 27 and illuminating the blinker bulb (as described later).

In FIGS. 3 and 5 the contact assembly of the blinker head comprises a first contact element 35, an insulating separator 36, a second contact element 37 and a spring member 38. The first contact element 35 is in the form of a metal annulus 39 having an upstanding peripheral wall 40. The top of peripheral wall 40 has an outwardly directed peripheral flange 41 having an upstanding peripheral wall 42. The top of peripheral wall 42 is provided with an outwardly directed flange 43 which, in the assembled condition of the torch rests against the blinker-head end of barrel portion 1. At the center of metal annulus

39 there is an internally threaded cylindrical portion 44 for receiving a correspondingly threaded blinker bulb 45 (see FIG. 5) which may be of the thermal arm-type A peripheral shoulder portion 46 depends from cylindrical portion 44. A sloping shelf portion 47 depends from the peripheral edge of shoulder portion 46. The lower peripheral edge of shelf portion 47 is connected to the bottom of the upstanding peripheral wall by means of a peripheral trough 48.

The insulating separator consists of plastic disc 49 having a peripheral upstanding wall 50 integral with the disc 49.

The second contact element is in the form of a metal annulus 51 having a peripheral upstanding wall 52 integral with the annulus 51. A tongue 53 (see also FIG. 4) integral with the annulus 51 extends radially from the inside edge of annulus 51 to at least the center of annulus 51.

Spring member 38 is a flat spring bent into the shape of a letter Z. The bottom arm of the Z has a depending well contact portion 54, and the top arm of the Z has two upwardly and outwardly bent cutout portions 55,56. Cutout portion 56 is considerably longer than cutout portion 55.

In the assembled condition of the blinker assembly as shown in FIG. 5, the first contact element 35 fits tightly inside the insulating separator 36 such that wall 50 envelops wall 40. The insulating separator 36 fits tightly inside the second contact element 37 such that wall 52 envelops wall 50. Tongue 53 of the second contact element 37 passes through a slit in the insulating separator so as to lie on the upper side of plastic disc 49. The first and second contact elements 35 and 37 are completely insulated electrically from one another by means of insulating separator 36.

Spring member 38 is fixed to the underside of plastic disc 49 of separator 36 by means of the cutout portions which are inserted through two slits in the plastic disc 49 and are bent flat against the upper side thereof. The longer cutout portion 56 is wedged between the first contact element 35 and the insulating separator 36 and hence provides an electrical contact between spring member 38 and the first contact element 35.

Bulb 45 screwed into cylindrical portion 44 contacts the tongue 53 of the second contact element 37. When the contact assembly is inserted into the blinker-head end of barrel portion 1, the wall 52 of the second contact element 37 contacts end 24'' of metal strip 24 (see FIG. 2). Wall 42 and flange 43 contact the end 57' of a metal strip 57 fixed to the inside of barrel portion 1. Metal strip 24 is insulated from metal strip 57 and the barrel casing by an insulating strip 58. The blinker-head end of the barrel portion 1 is threaded to receive an internally threaded transparent plastic dome 59 which has concentric ridges therein acting as a lens. Conveniently, dome 59 is red.

Referring to the circuit layout of the torch as shown in FIG. 6 and to FIGS. 2 and 5, when slide switch 31 is operated, a circuit is completed between brass contact 33, metal strip 22, reflector 6, flashlight bulb 5, tongue 19, disc 15, batteries 21, spring 38, cutout portion 56, first contact element 35, metal strip end 57', metal strip 57 and back to brass contact 33. In this way the flashlight bulb 5 is illuminated.

When slide switch 32 is operated, a circuit is completed between switch 32, brass contact 34, metal strip 24, disc 15, batteries 21, spring 38, cutout portion 56, first contact element 35, blinker bulb 45, tongue 53, second contact element 37, metal strip 24, and back to rear slide switch 32. In this way the blinker bulb 45 is illuminated.

The circuit shown in FIG. 6 illustrates how the blinker bulb 45 and the flashlight bulb 5 may be illuminated separately or together.

I claim:

1. An electric flashlight comprising a battery-holding tubular barrel, a contact assembly removably located at one end of the barrel, wherein the contact assembly comprises first and second stacked coaxially arranged contact elements of substantially circular configuration and an insulating separator between the said first and second contact elements, the first contact element being outermost and having a peripheral border resting on one edge of the torch barrel and being adapted to receive a first bulb for electrically connecting the first contact element to the second contact element, a spring member for engaging one terminal of a battery when in the tubular barrel, the spring member being fixed to the insulating separator and being electrically insulated from the second contact element but electrically connected to the first contact element, a first switching member for selectively connecting the second contact element to the other terminal of a battery when in the tubular barrel, means for receiving a second bulb for electrical contact with the said other terminal of a battery when in the tubular barrel, a second switching member for selectively connecting the second bulb when in the said means for receiving a second bulb to the said first contact element, the said spring member being a flat Z-shaped strip of conducting material, the said spring member having at least one cutout portion, and the said insulating separator having at least one slit receiving the said at least one cutout portion of the said spring member, one of the said at least one cutout portions electrically contacting the said first contact element.