

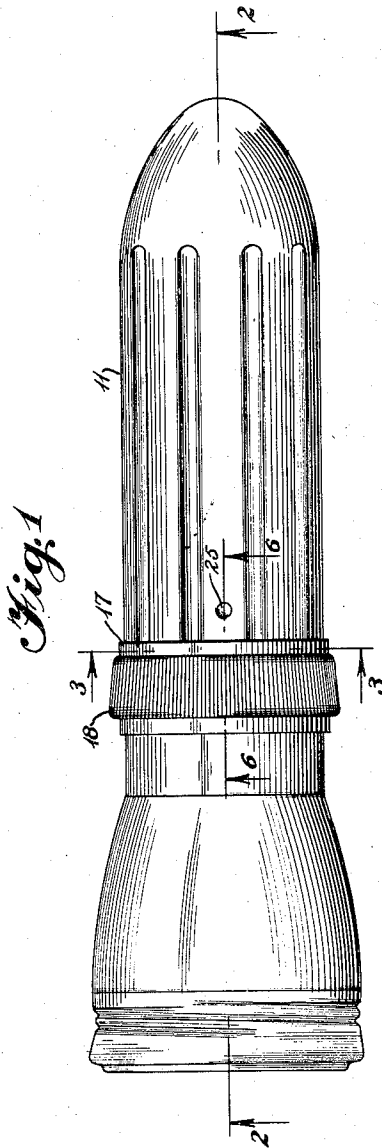
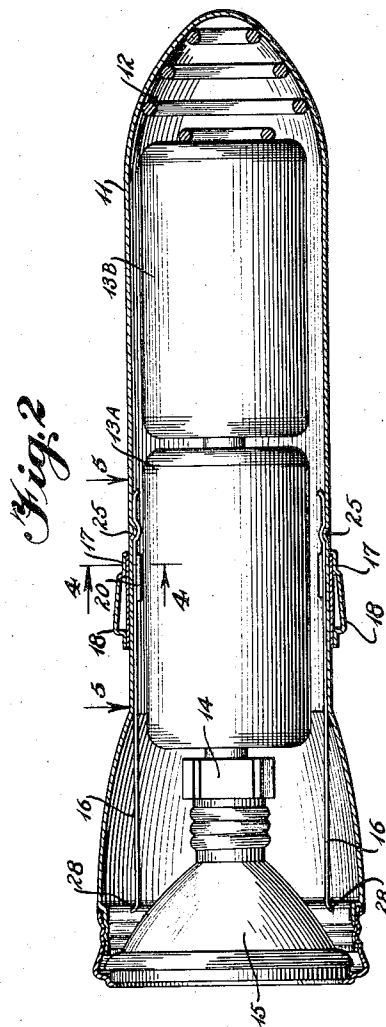
Sept. 16, 1958

E. J. GARLAND
FLASHLIGHT CONSTRUCTION

2,852,661

Filed July 5, 1955

2 Sheets-Sheet 1



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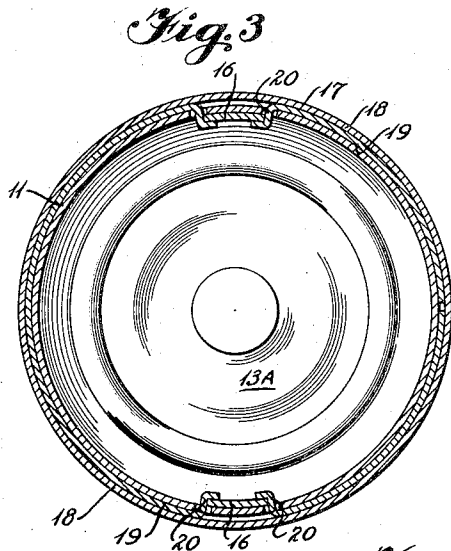
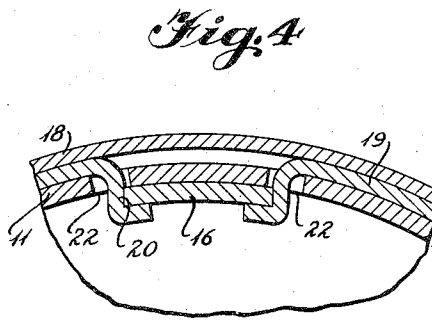
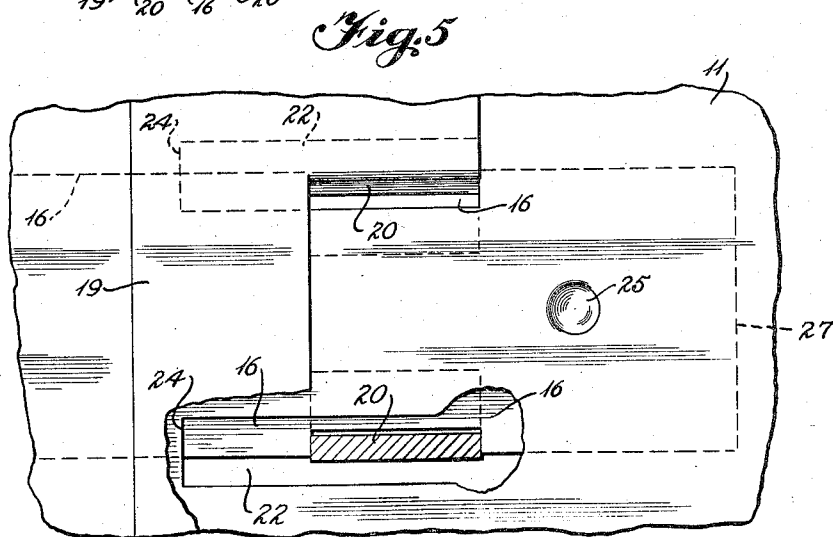
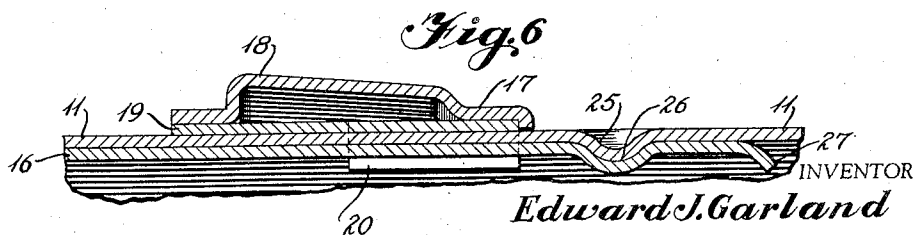
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Filed July 5, 1955

2 Sheets-Sheet 2



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FLASHLIGHT CONSTRUCTION

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Application July 5, 1955, Serial No. 519,808

3 Claims. (Cl. 240—10.66)

This invention relates to a novel switching mechanism, and particularly to a novel electrical switching mechanism adapted for use with a tubular flashlight casing.

Flashlights now commonly in use are customarily provided with a push-button type of switch. In a common type of switch, it is usually necessary to depress a small button in order to complete the electrical circuit. A slide may then be advanced generally toward the front end of the flashlight to lock the button in the depressed position and keep the circuit of the flashlight in a closed position, for provision of a continuous beam of light. A major disadvantage of switches of this type resides in the difficulty of locating and maneuvering the switch, particularly in emergency situations.

A principal object of this invention is to provide a novel type of flashlight switching mechanism which will be very easy to locate and operate in the darkness and under other disadvantageous conditions.

Another object of the invention is to provide a switch for a flashlight which is a major feature in the silhouette or contour of the flashlight, readily discernible to the vision as well as to the touch.

Still another object of the invention is to provide a ring switch for a tubular flashlight casing which is operated by longitudinal sliding movement of the ring relative to the flashlight casing, and which is so constructed as to lock in either the "on" or "off" position.

These and other objects of the invention, which will become more readily apparent from the following description, are achieved by providing a tubular flashlight casing with a reciprocable ring mounted around the casing adjacent the head of the flashlight. Within the casing are disposed a pair of reciprocable contact strips which are secured to the ring and which are actuated thereby. As is conventional in many flashlight structures, the electrical connection is completed through a circuit which includes the undersurface of the reflector bowl, the lamp filament, a contact base, and the adjacent terminal of the foremost dry cell in the flashlight. Electrical contact with the adjacent terminal of the rear dry cell in the casing is obtained through the use of a contact spring in the bottom of the casing, which is in electrical circuit with the contact strips.

The novel switch of the present invention comprises the combination of the reciprocable ring on the exterior of the flashlight casing with the plurality of contact strips mounted within the casing and activated by the reciprocating, longitudinal sliding movement of the ring. These contact strips close and open the circuit as they are moved into and out of contact with the undersurface of the reflector bowl. The switch may be locked in either the "on" or the "off" position through the provision of detents on the interior of the flashlight casing which cooperate with corresponding recesses in the contact strips.

These and other details in the construction and operation of the ring switch of this invention may be best under-

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stood by referring to the accompanying drawings, in which:

Fig. 1 is a side elevational view of a flashlight having the novel switch according to the teachings of the present invention;

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1;

Fig. 4 is a greatly enlarged sectional detail view taken on line 4—4 of Fig. 2;

Fig. 5 is a plan view in partial section taken on line 5—5 of Fig. 2;

Fig. 6 is a greatly enlarged view in cross-section taken on line 6—6 of Fig. 1.

Referring now in detail to the drawings, a flashlight casing 11 is provided, as is conventional, with a bottom contact spring 12, a pair of dry cells 13A and 13B, a contact base 14, and a reflector bowl assembly 15 containing a lamp bulb. One filament terminal of the flashlight bulb is in electrical contact with the top terminal of dry cell 13A in the flashlight casing, and the other filament terminal is in electrical connection with the undersurface of the reflector bowl 15. The reflector bowl may be made of solid metal having a polished interior surface or, alternatively, may be made of a plastic material having a highly polished metallic deposit on its front surface for reflective purposes and having a copper coating on the undersurface so that the undersurface may function as a part of the electrical circuit of the flashlight.

Where a metallic flashlight casing is employed, the entire casing 11 is in electrical contact with the bottom terminal of the dry cell 13B through the bottom spring 12. However, the metallic casing is insulated from any contact with the undersurface of the reflector bowl, either through the use of a front end gasket or through a proper spacing of the component parts of the front end assembly. The electrical circuit of the flashlight may be completed by a plurality of contact strips 16 disposed within the casing and in electrical contact with the casing. Preferably, two or more contact strips 16 are employed, preferably equally spaced from each other within the casing to provide a balanced pressure against the undersurface of the reflector bowl, so as to give a positive contact, and so as to decrease the resistance of the electrical circuit of the flashlight. While two contact strips are illustrated in Fig. 2, and are used in the preferred embodiment of this invention, three, four, or even a greater number of such contact strips may be employed if desired.

Switching control over the flashlight may be obtained by longitudinal or reciprocating movement of the contact strips 16 into and out of contact with the undersurface of the reflector bowl 15. According to the present invention, this movement of the contact strips 16 is accomplished through movement of a slidable ring assembly 17 which is mounted around the exterior of the tubular casing of the flashlight. While the precise construction details of the slidable ring assembly may vary somewhat, in the preferred embodiment of the invention the ring assembly is a compound structure having an outer ring 18 and an inner ring 19. The inner ring 19 is desirably provided with internally directed flanges 20 which embrace each contact strip 16 sufficiently tightly to cause its sliding movement into and out of contact with the reflector bowl undersurface. This engagement may be enhanced by providing each contact strip 16 with specially designed slots (not shown in the drawings) within which the flanges 20 may seat. Each pair of flanges 20 protrude through the wall of the flashlight casing 11 through a corresponding pair of apertures 22 (Fig. 4), which apertures restrict the longitudinal movement of the flanges 20 and consequently the longitudinal movement of the slidable ring assembly 17.

The seating engagement of the flanges 20 within the apertures 22, at a plurality of points around the circumference of the flashlight casing, restricts rotation of the ring assembly 17 as well as the longitudinal distance of its reciprocating motion. In assembling the inner ring 19 around the flashlight casing, the flanges 20 are first formed in a flat metal blank, which is wrapped around the flashlight body to form the inner ring 19. At the same time, the flanges are inserted through the apertures in the flashlight casing wall. Where double contact strips are employed as illustrated in Figs. 2 and 3, the apertures are 180° apart on the casing body. After the flanges have been projected through the apertures, the flanges may be bent around the two sliding contact strips, preferably into preformed notches in the strips.

Since the structure at this point has a slidable ring which is constructed of flat, plain metal stock, which might be unattractive in appearance, and which would be slightly difficult to operate, an attractively finished outer ring 18 is desirably secured firmly to the inner ring 19 through any conventional fastening means. The outer ring 18 is desirably an attractively finished metallic piece which will enhance the appearance of the flashlight. The outer ring 18 is also desirably provided with a raised knurled section which will facilitate the operation of the ring switch.

While the forward movement of the contact strips 16 is restricted by their contact with the undersurface of the reflector bowl 5, another important factor in restricting their forward movement is the engagement of the flanges 20 with the forward end 24 of each slot. Rearward movement of the ring is also controlled by the engagement of the flanges 20 in the slots. As a guide to the operator of the flashlight, the casing 1 may be provided with a series of detents 25 in the wall of the casing which engage corresponding recesses 26 in each contact strip. The seating of the detents in the recesses provides a noticeable sensation which signals the operator of the flashlight that the limit of rearward movement of the ring assembly has been attained. The use of such detents, as illustrated in Fig. 6, prevents accidental or unintentional movement of the ring switch when in open circuit position. Preferably, the rear extremity of each contact strip 16 is provided with a curled portion 27, which is so disposed as to engage the detent 25 when the contact strip 16 is in the closed circuit position and in engagement with the undersurface of the reflector bowl 5. The engagement between the curled portions 27 of the contact strips 16 with the detents 25 locks the switch in its closed circuit position insuring a continuous beam of light. At its forward end each strip 16 is desirably curled so as to slide easily on and against the curvilinear conductive surface of the reflector element 15 thus avoiding scoring of the conductive surface and erosion of the conductive metal thereon.

There has thus been described a preferred embodiment of the invention in which a novel type of attractive ring switch mechanism having a positive action has been provided. In the preferred embodiment of the invention described above, there have been mentioned many conventional structural flashlight components. It should be understood that certain modifications in this preferred embodiment of the invention may be made by the substitution of the equivalent components for those which

have been described, within the contemplation of this invention. For example, while the flashlight electrical circuit is considerably simplified where the flashlight casing is metallic, it is within the contemplation of the invention to fabricate the flashlight casing of a non-conductive synthetic plastic material. In this case, the electrical connection between the container electrode of the rear dry cell and each contact strip 16 is completed through a special conductor which may be placed in electrical contact between the bottom contact spring and each contact strip. Similarly, as has already been pointed out, the number of contact strips which may be employed is somewhat discretionary. The use of two contact strips is preferred because an even and balanced pressure against the undersurface of the reflector bowl is assured, together with a positive electrical contact. The use of a plurality of contact strips minimizes the effects of wear on any one contact strip and insures proper electrical contact even though one strip may be deformed.

I claim:

1. A flashlight having a ring switch, comprising a tubular metallic casing enclosing at least one dry cell and making electrical contact with one terminal thereof, said casing supporting a lamp bulb within a reflector bowl, the filament of said bulb being electrically connected at one terminal thereof to the opposite terminal of said dry cell and at the other terminal thereof to a conductive contact surface of said reflector bowl, an externally mounted longitudinally slidable electrically conductive ring in close physical and electrical engagement with said metallic casing, said ring being provided with at least two circumferentially-spaced, inwardly directed flanges protruding through correspondingly-spaced apertures in said casing each of said flanges being secured in physical and electrical engagement with a corresponding elongated electrical contact strip reciprocable by said ring within said tubular casing into make and break electrical connection with said conductive contact surface, whereby the filament of said bulb may be energized.

2. The flashlight of claim 1 in which said metallic casing is provided with an inwardly directed detent for each contact strip, said detent being seatable in a corresponding recess in each contact strip, whereby a position lock for said switch is provided.

3. A flashlight according to claim 1 in which the said slidable ring is provided with a raised central portion around the circumference of said ring, whereby manual operation of said sliding ring is facilitated.

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