Oct. 4, 1927. 1,644,125

DE WITT C. HARRIS

FLASH LIGHT CASE

Filed Nov. 12, 1925 4 Sheets-Sheet 1

Fig. 1.

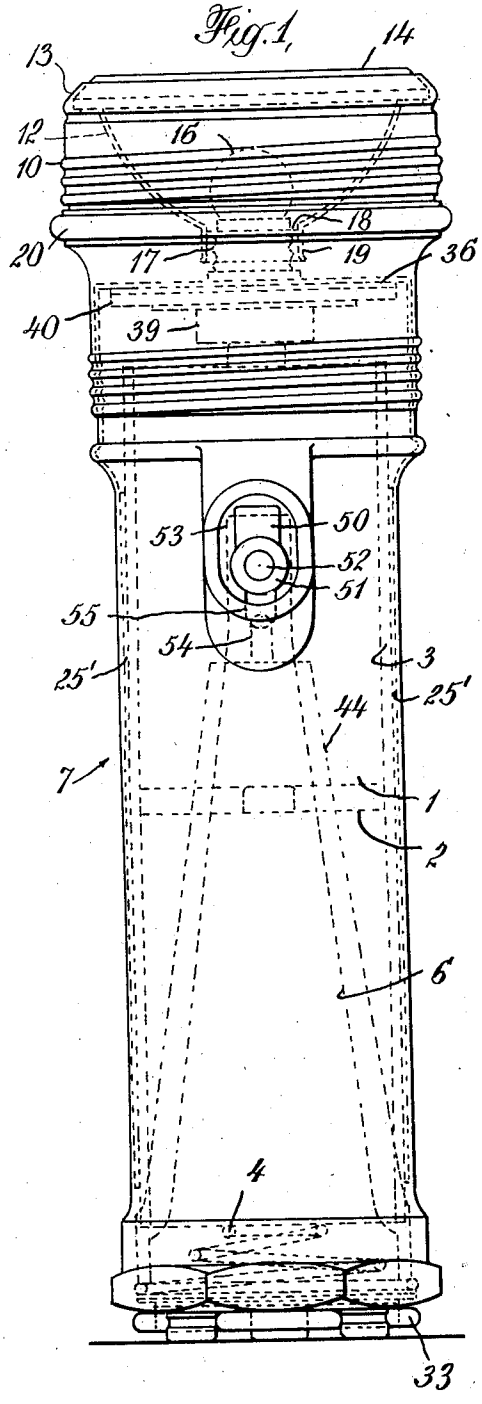
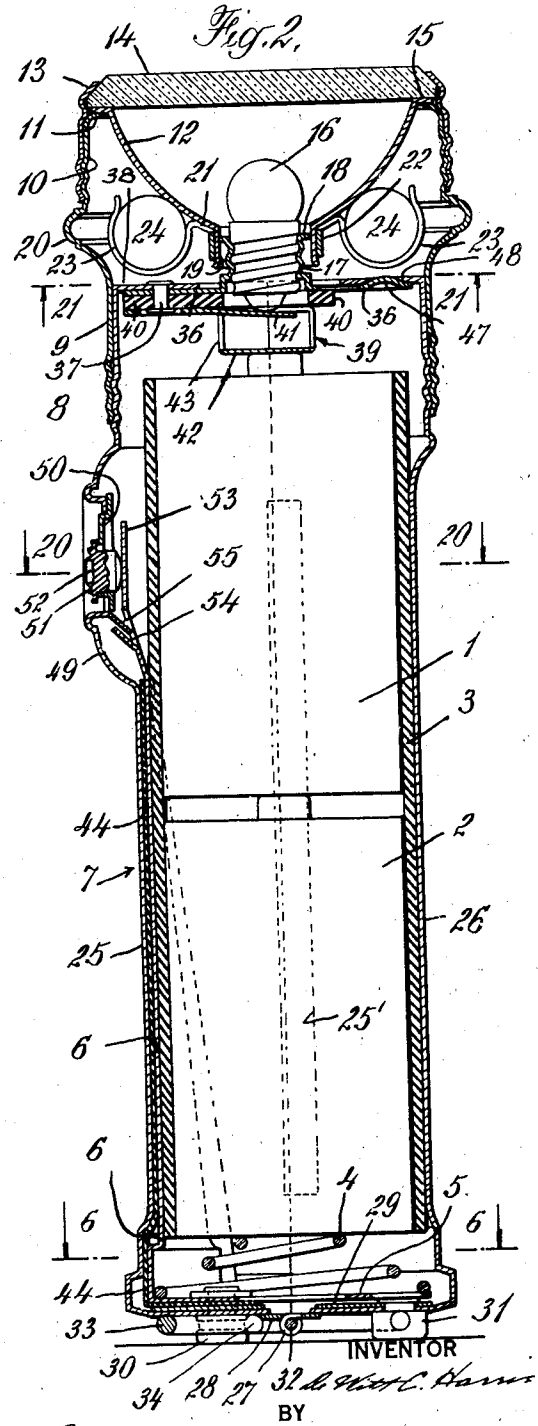


Fig. 2.



INVENTOR

BY

Dennis Davis Harris & Edmonds

ATTORNEY

Oct. 4, 1927. 1,644,125

DE WITT C. HARRIS

FLASH LIGHT CASE

Filed Nov. 12, 1925 4 Sheets-Sheet 2

Fig. 3,

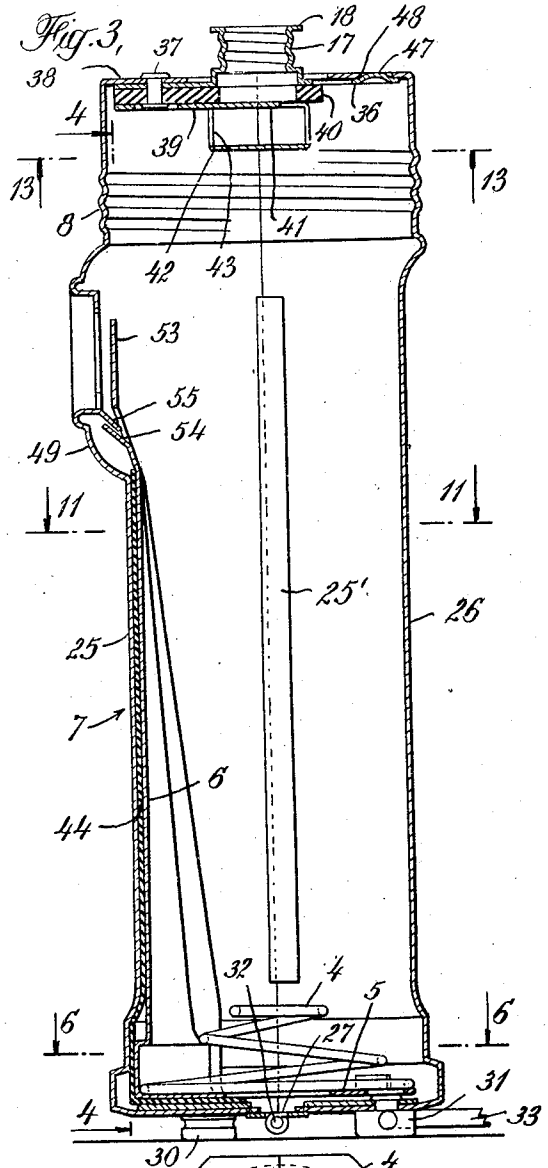


Fig. 4,

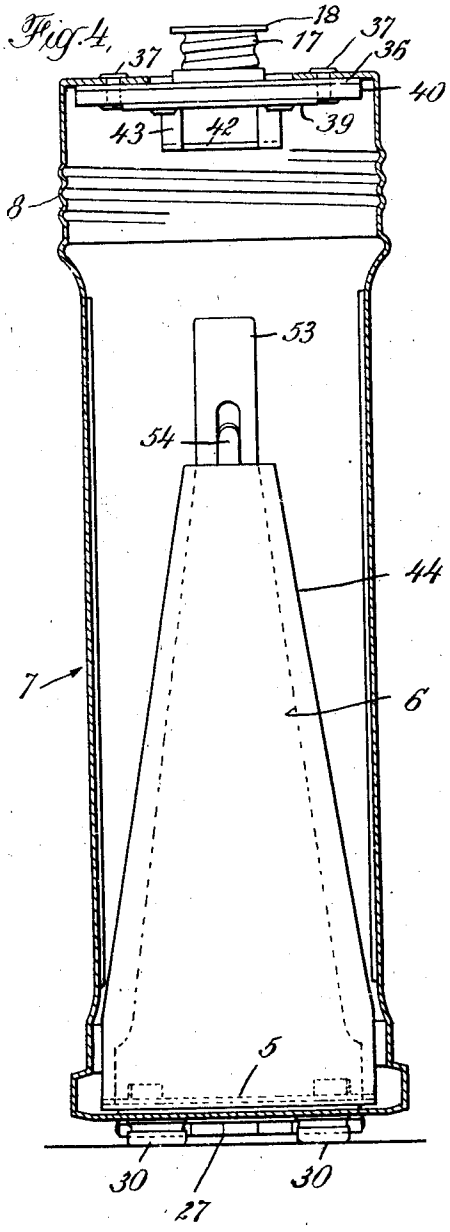
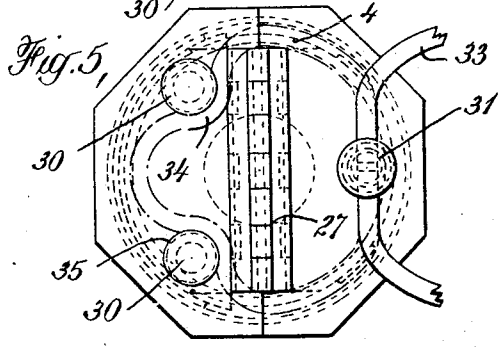


Fig. 5,



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Oct. 4, 1927. 1,644,125

DE WITT C. HARRIS

FLASH LIGHT CASE

Filed Nov. 12, 1925 4 Sheets-Sheet 3

Fig. 6,

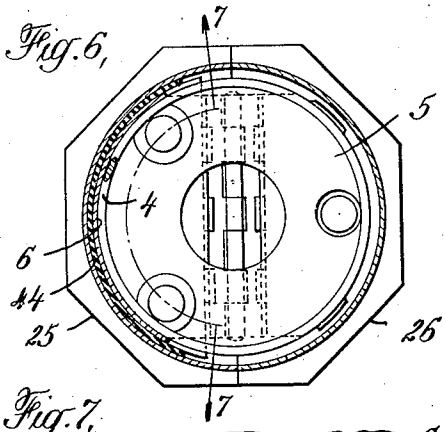


Fig. 8,

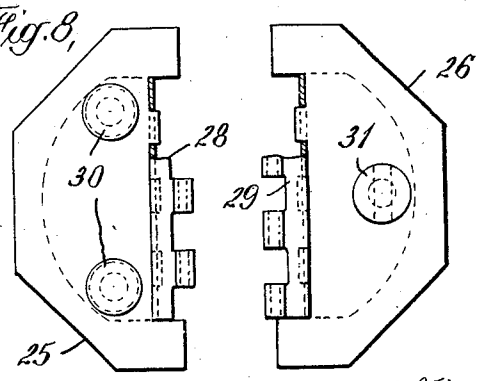


Fig. 7,

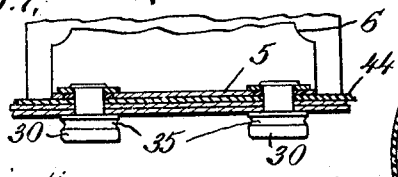


Fig. 9,

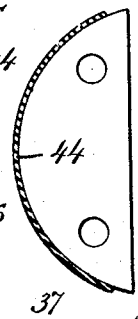


Fig. 10

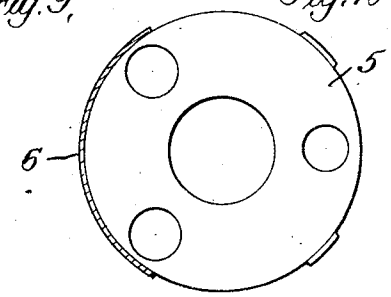


Fig. 14,

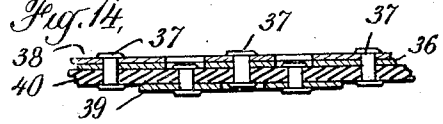


Fig. 12,

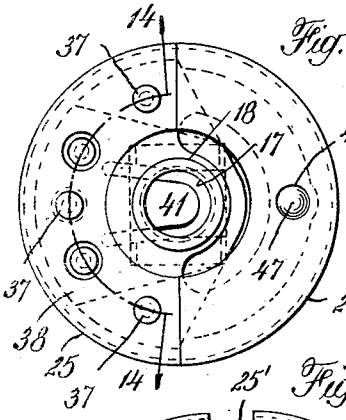


Fig. 13,

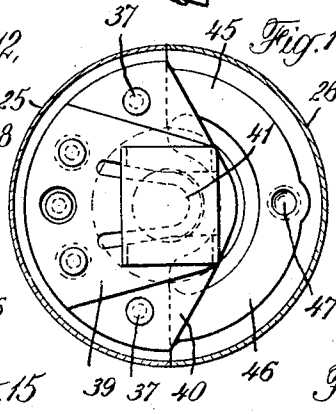


Fig. 11,

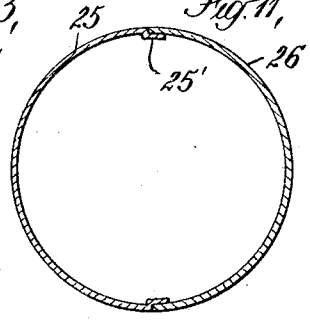


Fig. 15

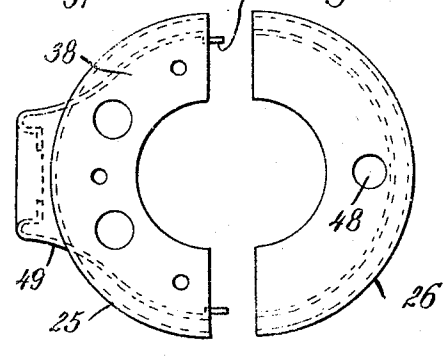
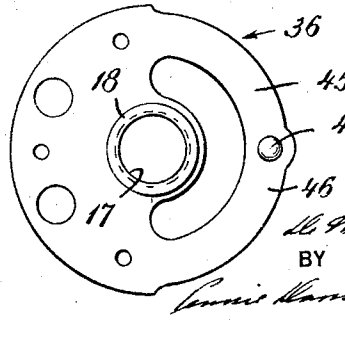


Fig. 16.



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Oct. 4, 1927. 1,644,125

DE WITT C. HARRIS

FLASH LIGHT CASE

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Fig. 17,

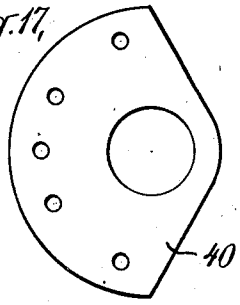


Fig. 18,

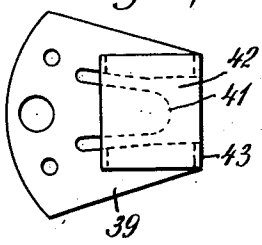


Fig. 19,

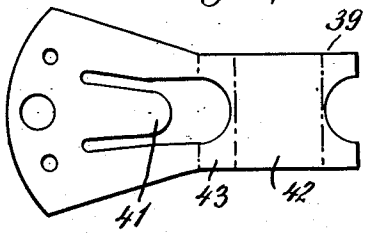


Fig. 22,

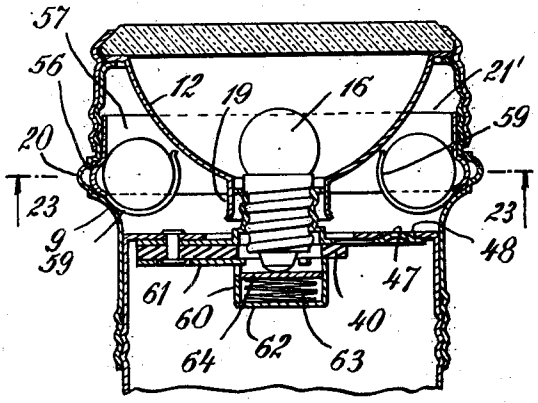


Fig. 20

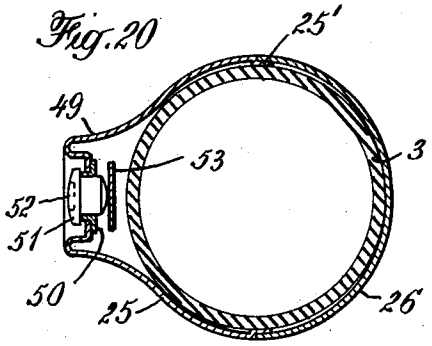


Fig. 21,

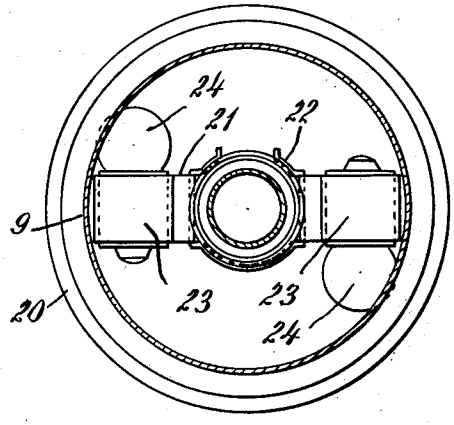
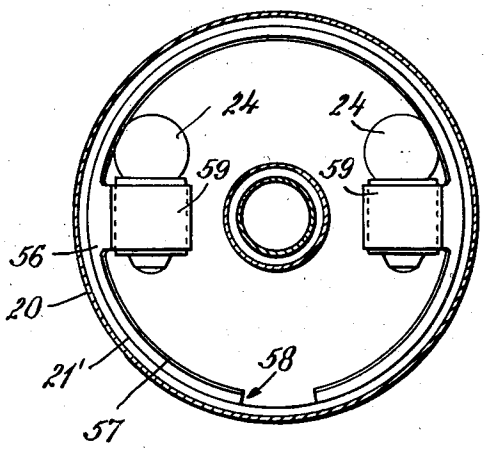


Fig. 23,



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Dennis Davis Marion & Edmonds

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Patented Oct. 4, 1927. 1,644,125

UNITED STATES PATENT OFFICE.

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FLASH-LIGHT CASE.

Application filed November 12, 1925. Serial No. 68,498.

My invention relates to battery hand lamps, and, more particularly, to improvements in battery hand lamp or flash light cases of the type disclosed in my copending application Serial No. 68,499, filed November 12, 1925. One of the principal objects of my invention is to provide a longitudinally split casing such that the two parts of the casing can be readily separated to permit free access to the switch mechanism and to all parts of the inside of the casing. Another object of the invention is to provide a battery hand lamp so constructed that it easily can be converted for use in delivering diffused light or the usual concentrated beam, as occasion may require. The lamp head is constructed so that the reflector, lens and lens retaining ring can be removed from the casing proper as a unit, leaving the lamp bulb in its socket adapted, like the ordinary candle, to distribute light in substantially all directions.

A further object of the invention is to provide improved means for establishing an electrical connection between the central terminal of the lamp bulb and the central electrode of a dry cell in the casing, and improved switch control means for establishing an electrical connection between the outer terminal of the lamp bulb and the outer terminal of the battery within the casing. One of the principal features of the invention consists of a metal contact strip extending between the switch mechanism and the base of the hand lamp casing, this strip being constructed in such a manner that it provides a firm support for a yielding contact part such as a helical spring located in the base of the casing. Another feature of my invention consists of improved means for storing spare bulbs within the head of the flash light.

The various objects and advantages of my invention will be more apparent on considering the following detailed description, which is to be taken in conjunction with the accompanying drawings in which—

Figure 1 is an elevation of a complete flash light, made in accordance with my invention.

Figure 2 is a longitudinal section view of the flash light shown in Figure 1.

Figure 3 is a longitudinal section of the flash light casing proper.

Figure 4 is a longitudinal section taken on line 4—4 of Figure 3, showing the construction of the contact strip and various details.

Figure 5 is a bottom plan view of the casing shown in Figure 3.

Figure 6 is a transverse section view taken on line 6—6 of Figure 3, showing the construction of the bottom of the casing.

Figure 7 is a fragmentary section view taken on line 7—7 of Figure 6, showing the construction of the bottom of the casing.

Figure 8 is a bottom plan view of the casing shown in Figure 3, parts being cut away to show the construction.

Figure 9 is a plan view of the bottom portion of the insulating member which separates the contact strip from the casing.

Figure 10 is a plan view of the bottom portion of the contact strip.

Figure 11 is a transverse section view taken on line 11—11 of Figure 3, showing the construction of the casing.

Figure 12 is a top plan view of the casing, shown in Figure 3.

Figure 13 is a transverse section view taken on line 13—13 of Figure 3, showing the construction of the top of the casing.

Figure 14 is a sectional development of the top of the casing, taken on line 14—14 of Figure 12.

Figure 15 is a top plan view of the casing of Figure 3, the two sections of the casing being separated.

Figure 16 is a plan view of the metal plate at the top of the casing, which supports the lamp socket.

Figure 17 is a plan view of the insulating member at the top of the casing.

Figure 18 is a plan view of the contact strip at the top of the casing, shown in Figure 3.

Figure 19 is a plan view of the contact strip of Figure 18, illustrating the shape of this strip before it is bent into the form shown in Figure 18.

Figure 20 is a transverse section view taken on line 20—20 of Figure 2.

Figure 21 is a transverse section view taken on line 21—21 of Figure 2, showing the construction of the lamp head and the spare bulb support.

Figure 22 is a longitudinal section view of a modified form of flash light head made in accordance with my invention.

Figure 23 is a transverse section view

taken on line 23—23 of Figure 22, showing the construction of the spare bulb support.

In the embodiments of the invention illustrated in the accompanying drawings, the dry cells 1 and 2, of which any suitable number may be provided, are arranged end to end in series relation within a paper tube 3. The naked bottom of the lowermost dry cell is electrically connected through a helical spring 4 to a plate 5, which forms part of a contact strip 6, extending from the base of the hand lamp to the switch mechanism.

At the front end of the casing 7, and detachably connected therewith, as by the screw-threaded connection 8, is a metal collar 9 with a threaded band 10 at its front edge. This band 10 has an inwardly bent edge 11, which forms a support for a reflector 12. A lens retaining ring 13 serves to clamp a lens 14 against the outwardly turned edge 15 of the reflector 12. The reflector has an opening in the center thereof large enough to permit the reflector to be slipped over a bulb 16 in the socket 17. This socket has an outwardly turned front edge 18, which slidably engages the neck or opening 19 in the center of the reflector 12. The edge 18 thus serves as a guide for the lamp bulb and insures the proper location of the bulb with respect to the reflector 12.

The portion 20 of the collar 9 is enlarged outwardly to provide space for a spare bulb holder 21 within the lamp head. This enlarged portion 20 also serves to give the lamp head a pleasing appearance. The spare bulb holder shown in Figures 2 and 21 comprises a collar 22 in the form of a spring clip which engages the neck 19 of the reflector 12, the collar 22 being firmly held in place by the outwardly turned lower edge of the band 19. Attached to the collar 22 are two supporting bands 23 adapted to receive spare bulbs 24 in the manner indicated in Figure 21.

The battery casing 7 is split longitudinally throughout the entire length thereof, so as to form two battery sections 25 and 26.

Flanges 25′ are provided on the section 25 and engage the inside of the adjacent section 26 in the manner shown in Figures 3 and 11.

The two sections 25 and 26 of the casing 7 are preferably hinged to each other, so that when they are separated for any reason, such as to replace the battery, the two sections remain associated with each other in such a manner that they can be readily fastened together. This hinged connection may assume any one of a considerable variety of forms, but I prefer to employ a hinge connecting the two sections along the dividing line between them at the bottom of the casing. Such a hinge is shown at 27. This hinge comprises two elements 28 and 29 separate from the casing sections 25 and 26, but attached thereto by means of the rivets 30 and 31. The hinge elements 28 and 29 are interconnected in the usual manner by means of a pin 32. It is to be understood that the hinge elements 28 and 29 could be formed integral with the casing sections 25 and 26, but I have found it quite satisfactory to use separate elements such as those shown in the drawings. Where such separate elements are employed, the hinge can be assembled and later applied to the casing sections by means of the rivets 30 and 31, which hold various parts of the hand lamp structure together.

The rivets 30 and 31 are of peculiar construction, adapted to perform functions in addition to that of holding various elements together. The rivet 31 has an opening therethrough adapted to receive a ring 33 by means of which the flash light can be hung up on the wall. This ring is provided with one or more loops 34, adapted to fit into grooves or notches 35 (see Figure 7) provided in the heads of the rivets 30. Thus when the ring 33 is not being used as a means for hanging the flash light on a suitable support, the ring can be snapped in place in the grooves 35.

The lamp socket 17 is fixed to and preferably integral with a plate 36 of substantially circular outline; and this plate is, in turn, fixed by the rivets 37 to the front end 38 of section 25 of the casing 7. The socket 17 is thus in electrical connection with the casing 7.

The central terminal of the lamp bulb 16 is electrically connected to the central electrode of the dry cell 1 by means of a contact strip 39. This contact strip is riveted, or otherwise fixed, to an insulating member 40 which, in turn, is fixed to the upper end 38 of the casing section 25. This latter connection is effected by the rivets 37 which hold the metal plate 36 and the portion 38 of section 25 together. The contact strip 39 has a spring contact piece 41, which engages the central terminal of the lamp bulb 16 and this strip is also provided with a portion bent into the form shown in Figure 2 for the purpose of making contact with the central electrode of the dry cell 1. The portion 42 of the contact strip, which is in direct contact with the central terminal of the uppermost dry cell, is spaced apart from the contact piece 41 and is separated from the insulating piece 40 by the upright portions 43. This portion of the contact strip is constructed so as to form a buffer for the uppermost dry cell, effectively preventing the dry cell from injuring the lamp bulb in case the flash light is dropped.

Since the lamp socket 17 is in permanent electrical connection with the battery casing, and the central terminal of the lamp bulb is electrically connected to the central termi-

nal of the battery, the flash light is operated by establishing an electrical connection between the casing and the outer electrode of the battery. My improved means for establishing this connection includes a switch mechanism cooperating with a contact strip 6, extending down into close proximity to the lower end of the battery disposed within the paper tube 3. This strip 6 is fixed to, and preferably integral with, the plate 5 in the base of the casing which supports and makes electrical contact with the helical spring 4. The strip 6 is substantially wider at the base than at the point where it comes in contact with the switch mechanism and the enlarged lower portion is shaped so as to form a brace for the metal plate 5 in the base of the casing. An insulating strip 44 separates contact strip 6 from the casing and serves to hold the bottom portion 5 of the contact strip out of contact with the base of the casing. The contact plate 5, the insulating strip 44 and the hinge piece 28 are all fixed to the lower end of the casing section 25 by means of the rivets 30.

The circular plate 36, which carries the lamp socket 17, is provided with means for establishing a snap fastener connection between the two sections of the casing 7. The plate 36 has two integral spring arms 45 and 46 having a rounded projection 47 at the point where they come together as shown in Figure 16. This projection 47 is adapted to snap into an opening 48 in the upper end of the casing section 26, so as to form a locking connection between the two parts of the casing.

The switch mechanism includes a raised shield 49 on the section 25 of the casing 7. This shield has an opening therein of greater length than width, one end of the opening being rounded, while the other end is provided with substantially square corners. A metal piece 50 fits into the opening of the shield from the underside and forms a support for a push button 51, preferably made of insulating material. The center of the exposed face of the push button 51 is provided with a spot of luminous material 52 so that the location of the switch can be readily determined in the dark. The forward end of the contact strip 6 is provided with a spring member 53, which comes in contact with the inner face of the push button 52. A lug 54 struck from the face of the contact strip 6 projects up into close proximity to a lug 55 fixed to the shield 49 and, therefore, to the casing proper. These parts are arranged in such a manner that when the push button 52 is pressed inward the spring member 53 is pressed toward the battery and this carries the lug 54 on the contact strip into contact with the lug 55 of the raised shield, thus establishing an electrical connection between the casing and the exposed lower end of the dry cell 2. If it is desired to maintain the switch mechanish in its closed position, the push button 52 is pressed inward and then pushed forward until a raised portion on the metal piece 50 engages the under edge of the shield 49 as will be readily understood upon referring to Figure 2.

When the switch mechanism is in its closed position, the circuit through which current is supplied to the lamp bulb consists of the central electrode of the dry cell 1, the contact strip 39, central terminal of the lamp bulb 16, the filament of the bulb, the lamp socket 17, the circular plate 36, the casing 7, the lug 54, the contact strip 6, the helical spring 4 and the outer electrode of the lowermost dry cell 2.

The ring 33 secured to the base of the lamp casing, is arranged in such a manner that when the casing is hung on the wall, the luminous spot on the push button 52 is visible. The three rivets designated 30 and 31 not only form a means for holding the ring 33, but they also form a standard or base upon which the hand lamp casing may rest in an upright position on a desk or table.

In Figures 22 and 23 I have illustrated a modified form of lamp head embodying my invention. The spare bulb holder 21′ shown in Figure 22 is not supported by the neck 19 of the reflector 12 as is the case in Figure 2. The spare bulb holder 21′ is supported by the metal collar 9. The enlarged portion 20 of this collar forms a channel which receives a correspondingly enlarged portion 56 on a band 57, which extends around the inside of the collar. This band is open at one point as shown at 58 in Figure 23, and this band is inserted in place in the collar 9 by pressing the ends together so as to temporarily reduce the diameter of this band. The band carries a number of retaining loops or rings 59, which support the spare bulb 24.

Figures 22 and 23 also show a modified form of contact piece for connecting the central terminal of the lamp bulb 16 with the central electrode of the battery. This contact piece comprises a plate 61 riveted to the insulating strip 40 and it is provided with an enclosed rectangular chamber 62, the outside of which comes in contact with the battery electrode and the inside of which contains a coiled spring 63, which presses a small plate 64 against the central terminal of the lamp bulb.

My improved flash light is useful for many purposes. It can be used as an ordinary flash light, supplying a narrow beam of light and, if it so desired, the spread of this beam of light can be altered by simply turning the head of the flash light with respect to the main portion of the casing. The lamp bulb is carried by the casing and

the reflector by the head; accordingly, the relative positions of these two parts can be altered by turning the lamp head on its screw-threaded support. The lamp head can be removed as a unit without first removing the lamp bulb or disarranging the electrical connections in any manner. With the lamp head removed, the flash light can be used as a candle, giving diffused light instead of a concentrated beam.

The longitudinally split casing 7 has many advantages over the ordinary type of casing. My improved casing can be spread wide open so as to expose the switch mechanism and permit ready adjustment of any parts which have gotten out of order. This construction makes it possible to remove any dry cells which have become corroded and have become lodged in the casing. The casing can be readily cleaned and after a new battery has been put in place, the flash light can be put in condition for use by simply snapping the two parts of the casing together.

My invention provides improved means for making electrical contact between the central electrode of the battery and the central terminal of the lamp bulb, this means being of such a nature that the central terminal of the bulb is, at all times, protected from injury by the movement of the battery in the casing whenever the flash light is dropped. The switch mechanism is simple in construction and very satisfactory in its operation. The number of moving parts is reduced to the minimum and those which are provided are of such character that they would seldom, if ever, get out of order. All of the parts of my improved flash light can be manufactured in quantity at low cost, for they consist of simple parts such as metal stampings and strips of inexpensive insulating material. The contact strip which extends from the switch mechanism to the base of the hand lamp, serves not only to conduct electric current between these parts, but it also serves as a firm support for the metal contact plate 5 in the base of the casing, this plate 5 being held out of contact with the casing at all times.

The base of the casing is octagonal in shape and, therefore, serves as a means for preventing the flash light from rolling when it is placed on a surface which is not exactly level.

It is to be understood that my invention is not limited to the particular embodiment illustrated and described but includes such modifications thereof as fall within the scope of the appended claims.

I claim:

1. In a battery hand lamp, the combination of a metal casing, a battery therein, a lamp bulb, a support therefor, means for connecting the central terminal of the bulb to the central electrode of the battery, means for connecting the outer lamp terminal to the casing, a switch button, a contact strip extending therefrom to the base of the casing, insulation between the said strip and the casing, a metal disc fixed to the contact strip at the base of the casing, the said strip being wide enough at the lower end thereof to form a brace for the sides of said disc, means for connecting the disc to the outer electrode of the battery, and means actuated by the push button for connecting the contact strip to the casing.

2. In a battery hand lamp, the combination of a metal casing having a contact lug thereon, a battery therein, a lamp bulb, a support therefor, means for connecting the central terminal of the bulb to the central electrode of the battery, means for connecting the outer lamp terminal to the casing, a switch button, a contact strip extending therefrom to the base of the casing, insulation between the said strip and the casing, a metal disc fixed to the contact strip at the base of the casing, the said strip being wide enough at the lower end thereof to form a brace for the sides of said disc, means for connecting the disc to the outer electrode of the battery, said strip having a lug thereon arranged so that when the push button is actuated this lug is brought into contact with the lug on the casing.

3. In a battery hand lamp, the combination of a casing a battery therein, a bulb, a bulb support, means connecting the central bu b terminal to the central battery electrode, a raised shield on the casing, means connecting the outer lamp terminal to the raised shield, a conducting strip extending from the shield into electrical connection with the outer battery terminal, and a push button mounted in said shield, the said shield having a depending contact lug thereon, and the said strip having an outwardly bent end portion forming a spring support for said push button, and a lug projecting into close proximity to the lug on said shield, whereby actuation of the push button brings the two lugs into contact with each other.

4. In a battery hand lamp, the combination of a longitudinally split metal casing comprising two casing sections having abutting end portions, a hinge connecting these portions, a battery within the casing, a switch mounted on the casing, a contact strip extending from the switch to the base of the casing, a metal disc in the base of the casing, and fixed to said strip, a coil spring supported by said disc and engaging the outer battery terminal, insulation between said strip and the adjacent casing section and between said disc and the end portion of said casing section, means for supporting the side

portions of the disc, and means for fixing the disc to the end portion of said casing section.

5. In a battery hand lamp the combination of a casing, a battery therein, a bulb, an insulating support secured to said casing, a bulb support fixed thereto, and a one piece contact member fixed to one face of said insulating support and comprising resilient contact portions separated by rigid spacing portions, one of said contact portions engaging the central battery terminal and the other engaging the central lamp terminal, whereby said contact member acts as a buffer between said battery terminal and said lamp terminal and transmits the thrust of the battery directly to the hand lamp casing.

6. In a battery hand lamp, the combination of a battery, a bulb, a bulb support, an insulating support, and a contact strip fixed to said insulating support, said strip having one end thereof bent to form a box-like structure engaging the central battery electrode and having upright portions separating this electrode from the lamp bulb, and the said strip having an integral contact piece engaging the central terminal of the bulb.

7. In a battery hand lamp, the combination of a longitudinally split metal casing, comprising two casing sections, a battery within the casing, a bulb, a disc fixed to one casing section, a bulb support carried by the disc, an insulating member fixed to the disc and having an opening therein through which the lamp bulb projects, a contact strip fixed to the insulating member and having an integral portion engaging the central battery electrode and forming a buffer therefor, and having an integral spring contact piece engaging the central bulb terminal.

8. In a battery hand lamp, the combination of a longitudinally split metal casing comprising two casing sections, a battery within the casing, a bulb carried by one casing section, switch mechanism for completing the circuit between said battery and bulb, and a raised shield integral with said bulb casing section and formed to enclose all of said switch contact mechanism within its limits and without the limits of the casing bore.

9. In a battery hand lamp, the combination of a casing, a reflecter mounted in the forward end of the casing, and a spare bulb holder comprising a spring clip fitting the inside of the casing adjacent to the reflector and a bulb supporting member carried by said clip.

10. In a battery hand lamp, the combination of a casing having an annular recess near one end thereof, a reflector mounted in this end of the casing, and a spare bulb support comprising a spring clip fitting in the annular recess in the casing, and a bulb supporting member carried by said clip.

In testimony whereof I affix my signature

D. C. HARRIS.