

[54] **FLASHLIGHT CONSTRUCTION**

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[22] Filed: Nov. 16, 1970

[21] Appl. No.: 89,907

[52] U.S. Cl.240/10.6, 240/10.61, 240/10.66,
240/10.68

[51] Int. Cl. F21 3/00

[58] **Field of Search**..240/10.66, 10.68, 10.65, 10.61,

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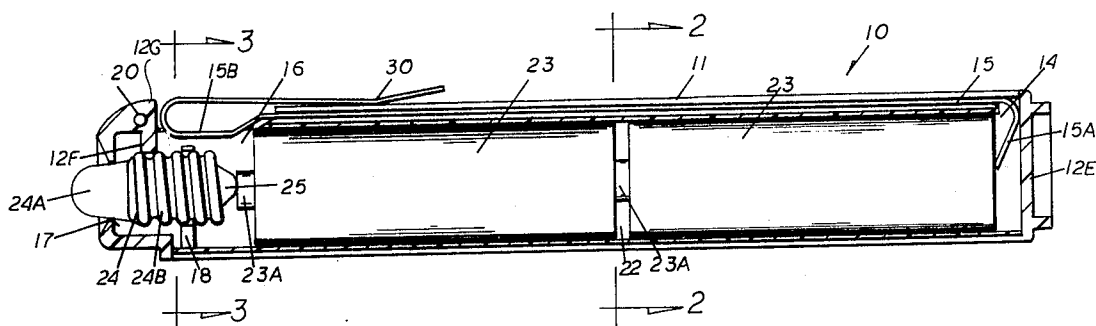
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[57] **ABSTRACT**

This disclosure is directed to a portable light or flashlight construction having a minimum number of component parts which can be readily assembled by a simple and expedient manner. The light construction comprises a housing for containing a source of battery power and a light bulb operatively connected in electrical circuit with the battery source by a single conducting member having a portion thereof extending externally of the housing wherein the conducting members function to normally urge the battery source in electrical contact with the bulb and to maintain the bulb in position within the housing. The conducting member also functions as a switch means independent of any actuator for energizing and de-energizing the circuit to the bulb. Also the conducting member is formed to define a holding clip for the flashlight with the exposed portion being usable as a decorative feature.

5 Claims, 7 Drawing Figures



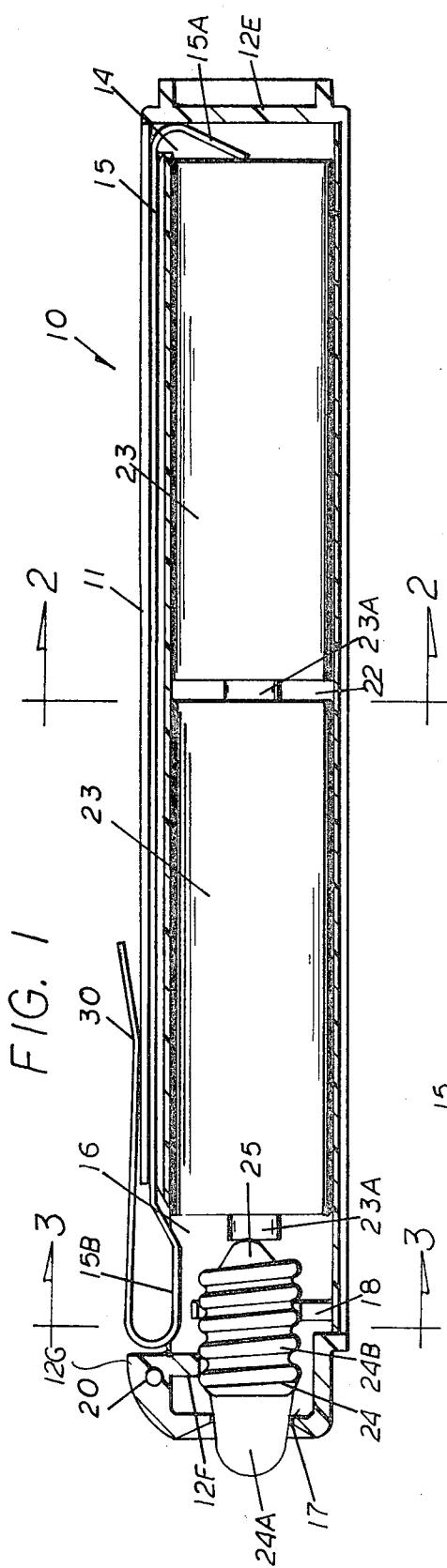


FIG. 1

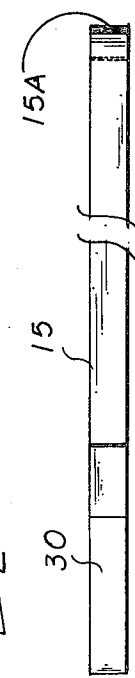


FIG. 5

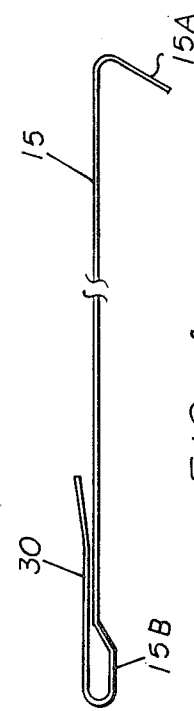


FIG. 4

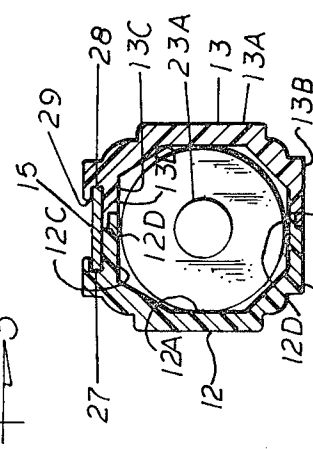


FIG. 2

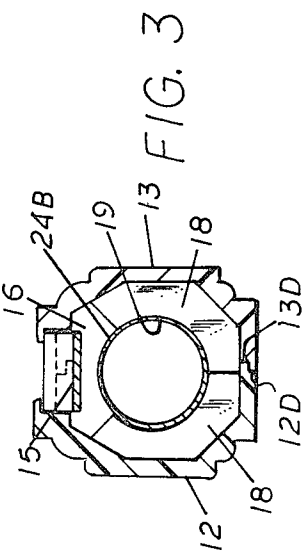


FIG. 3

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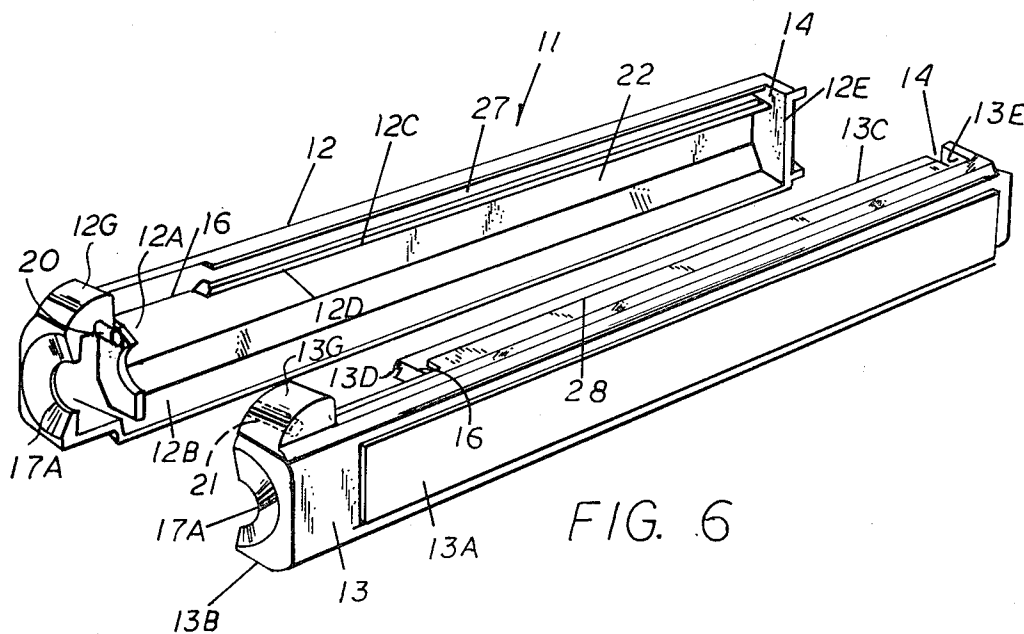


FIG. 6

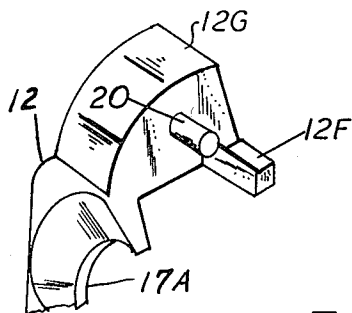


FIG. 7

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FLASHLIGHT CONSTRUCTION

PROBLEM AND PRIOR ART

Heretofore, many efforts have been made to manufacture an inexpensive flashlight construction. With the advent of improved battery constructions, efforts have been directed toward the manufacture of inexpensive, disposable flashlights. However, the known such flashlight constructions required a relatively large number of independent parts, all of which required relatively high capital expenditures and costs to manufacture and/or assemble. For this reason the cost of such light constructions to the ultimate consumer was relatively high, thereby making an expendible, throw-away type flashlight economically unfeasible.

OBJECTS

It is an object of this invention to provide an improved flashlight construction having a minimum number of component parts.

Another object of this invention is to provide for an inexpensive flashlight construction which renders it a feasibly expendible or economical throw-away unit.

Another object is to provide a flashlight construction that is relatively inexpensive to fabricate, small and light in weight and construction, and positive in operation.

Another object is to provide a pen light type construction in which the circuit between the battery source and the bulb is made by a single conducting member.

Another object is to provide in a flashlight construction a circuit forming member which functions for maintaining electrical contact between the battery source and the light bulb and for switching the current to the light bulb on or off.

BRIEF SUMMARY OF THE INVENTION

The foregoing objects and other features and advantages of this invention are attained by a flashlight construction comprising a housing preferably defined by a pair of complementary housing sections. The housing sections are adapted to be interfitted together to define a complete housing enclosure for containing a battery source of electrical power and a light bulb in electrical contact with an electrode of the battery source. A bulb opening is formed in one end of the housing which cooperates with an internally formed bulb seat for retaining the bulb in position between the electrode of the battery source and the bulb opening.

Formed in the housing adjacent the light bulb is a switch opening. An electrical conducting member is extended along side of the housing to complete the circuit between the other electrode of the battery source of power and the light bulb. The conducting member is formed with one end bent to extend into the housing to form a spring contact for engaging in electrical contact with one electrode of the battery means. The arrangement is such that the bent end portion normally biases the battery means to maintain the other electrode of the battery means in electrical contact with the bulb and to maintain the light bulb seated firmly against the bulb opening. The other end of the conducting member is extended over the switch opening and defines a switch means which is free to flex into and out of elec-

trical contact with the base portion of the bulb for energizing and deenergizing the circuit to the bulb. The conducting member adjacent the switch end is also reversely bent to form a holding or spring clip for supporting the flashlight in one's pocket.

FEATURES

A feature of this invention resides in the provision of a flashlight construction in which a single conducting member is utilized to complete the circuit between the battery and bulb and to function as the switch in energizing and de-energizing the circuit to the light bulb.

Another feature of this invention resides in the flashlight construction having a minimum number of prefabricated components which can be readily assembled in a simple and expedient manner to form an integrally constructed unit which, if desired, can be utilized as a readily disposable or expendible unit.

Another feature of this invention resides in a flashlight construction having a unitary conducting member constructed and arranged to function as a means for exerting a bias on the battery means and light bulb for maintaining them in positive electrical contact and having one end which is free to flex to form a switching means for energizing and de-energizing the circuit to the bulb.

Another feature of this invention resides in the provision of a flashlight construction having a conducting member constructed and arranged to define a spring clip for supporting the flashlight construction in one's pocket.

Other features and advantages will become more readily apparent when considered in view of the drawings and specifications in which:

FIG. 1 is a longitudinal sectional side view of the flashlight construction embodying the invention.

FIG. 2 is a sectional view taken along line 2—2 on FIG. 1.

FIG. 3 is a sectional view taken along line 3—3 on FIG. 1.

FIG. 4 is a detailed side view of the conducting member utilized in the assembly of the light construction of FIG. 1, having portions broken away.

FIG. 5 is a detailed plan view of the conducting member of FIG. 4.

FIG. 6 is a detailed exploded view of the housing construction for the light arrangement of FIG. 1.

FIG. 7 is a perspective view of the front end portion of a housing section to show the bulb lug.

DETAILED SPECIFICATION

Referring to the drawings, FIG. 1 illustrates a flashlight 10 embodying the present invention. The flashlight construction 10 comprises a housing 11 which is preferably formed by a pair of complementary housing sections 12 and 13. Each housing section 12 and 13 is defined by a side wall 12A, 13A, and a connected bottom wall segment 12B and 13B and top wall segment 12C and 13C. As best seen in FIGS. 2 and 3 the respective top and bottom wall segments 12B, 12C and 13B, 13C of the respective housing sections 12 and 13 are provided with complementary mating longitudinal extending edge portions 12D, 13D which are adapted to interfit or interlock in the assembled position of the respective housing sections as best noted in FIGS. 2 and 3.

A rear end wall segment 12E and 13E is included in the respective complementary housing sections 12 and 13, which when assembled define a rear or end wall of the housing unit. As best seen in FIGS. 1 and 5 the upper wall segments 12C, 13C of the housing adjacent the rear end of the housing define a slot or opening 14 for receiving the bent end portion 15A of a conducting member 15, as will be hereinafter described.

Adjacent the front end of the housing unit 11 the upper wall segments 12C, 13C of the respective housing sections 12, 13 are foreshortened to define a switch opening 16 in the assembled position. The front end of the respective housing sections is also provided with an arcuate opening 17A which in the assembled position of the housing unit defines a bulb opening 17. Spaced from the bulb opening 17 each of the respective sections is provided with a partition 18, 18 formed with an arcuate cut-out, which in the assembled position of the housing defines a bulb saddle seat 19 having an opened top disposed below the switch opening 16. The bulb saddle seat 19 thus defined is disposed in axial alignment with the bulb opening 17, as best seen in FIG. 1. Spaced forwardly of the bulb saddle seat 19, one of the housing sections, e.g., section 12, is provided with a depending lug 12F which is spaced forward of the partition 18, 18 and which lug functions to complement the bulb seat 19 to maintain the alignment of the bulb within the housing.

If desired, complementary aligning pins 20 and pin seats 21 may be provided on the respective housing sections 12, 13 to facilitate the alignment of the respective housing sections during the assembly thereof. Consequently in the assembled position of the housing 11, the portion defined between the rear or end wall 12E, 13E and the bulb seat 19 defines the compartment 22 in which a source of electrical energy, as for example, a battery means 23, may be housed therein.

In the illustrated form of the invention the housing 11 is defined as an elongated member in a shape simulating a pen light type housing in which one or more pen light type batteries or dry cells 23, as for example, A or AA batteries may be positioned.

In the construction described, a suitable light bulb 24 is disposed within the housing 11. Generally the bulb 24 is adapted to be loosely positioned between the bulb seat 19 and the bulb opening 17, the base of the bulb being substantially tangent to lug 12F. The head 24A of the bulb is generally defined with a slight taper so that in the assembled position the head 24A of the bulb 24 is normally urged or biased in the direction outwardly of the bulb opening 17. In this manner the tapered portion of the bulb head 24A is firmly seated against the bulb opening 17. Consequently as seen in FIG. 1, the bulb is firmly wedged or positioned between the positive electrode 23A of battery 23 and the bulb opening 17. Otherwise the bulb is loosely retained between the bulb seat 19 and the bulb opening 17; i.e., the bulb does not require a threaded socket for retaining the bulb in position. Lug 12F and bulb seat 19 cooperate to maintain the bulb properly seated within the housing.

To bias the battery means 23 into electrical contact with one contact 25 of the light bulb 24 and for maintaining a positive pressure between light bulb contact 25 and the positive electrode 23A of the battery, and in turn, seating the bulb 24 against the bulb opening 17, the conducting means 15 is constructed to define a

spring contact 15A at one end. In the illustrated form of the invention, the conducting means 15 comprises an elongated member formed of an electrical conducting material to extend longitudinally along the housing 11. Referring to FIGS. 1, 2 and 3, the respective housing sections adjacent the upper wall segment 12C, 13C are each provided with opposed longitudinally extending grooves 27, 28 which in the assembled position define a channelway 29 for retaining therein the intermediate portion of the conducting member 15. The rear end 15A of the conducting member 15 is bent so as to extend through the opening or slot 14 adjacent the rear portion of the housing to define a spring contact for maintaining a spring bias and electrical contact with the negative electrode of the battery means 23. The other end 15B of the conducting means 15 is arranged to extend over the switch opening 16 and is free to flex into and out of electrical contact with the base contact portion 24B of the bulb 24. Accordingly, the arrangement is such that the conducting member 15 defines the circuit forming means for connecting the bulb into and out of electrical circuit with the battery means 23.

In the illustrated form of the invention the switch end 15B of the conducting member 15 is reversely bent to define a spring clip or holder 30 by which the pen light construction may be supported in one's pocket. The arrangement is such that when the light construction is supported on one's pocket by use of the clip holder 30, the arrangement is such that the light will not be inadvertently energized. Consequently the batteries will not be inadvertently run down. Also the arrangement is such that an operator, to energize the light bulb needs only to effect a depressing action on the switch end portion 15B of the conducting member 15 to make contact between the conducting member and the base contact 24B of the light bulb 24.

The housing sections 12 and 13 of the construction described are preferably formed of a dielectric material, as for example, a plastic or the like. Consequently the upper wall segments 12C, 13C of the complementary member 12, 13 extending longitudinally of the housing function to electrically insulate the intermediate portion of the conducting member from the negative electrodes or casings of the battery means 23. Consequently only the end spring contact portion 15A of the conductor means 15 is arranged to effect electrical contact with the battery means, and the switch end portion 15B to contact the bulb contact 24B when depressed.

With the construction described, it will be readily apparent that the assembly of the entire unit 10 can be readily attained simply by positioning the battery source 23 and the bulb 24 in position between the respective housing sections before the mating thereof. Also the conductor member 15 can be readily assembled to the respective housing sections 12, 13 by positioning the intermediate portion of the conducting member between the complementary grooved portions 27, 28 of the housing sections during the assembly thereof. Alternatively the conducting member 15 can be press fitted into the channelway 29 defined by the complementary grooves 27, 28 after assembly of the housing sections.

Consequently in the assembled arrangement it will be noted that the conducting member 15 is firmly

retained to the housing within the channelway and that it functions both to maintain the biasing force between the battery means 23A and the light bulb 24 and to securely position the light bulb 24 in seating position between the bulb opening 17 and the central electrode 23A of the battery means. Also that the unitary conducting member 15 functions as a switching means for controlling the current flow to the light bulb 24 and also as a spring clip holder for securing the light construction in one's pocket.

Referring to FIGS. 1 and 2, the channelway 29 is disposed so as to extend externally of the housing 11. Consequently the conducting member for the most part extends externally along a substantial portion of the housing. Disposing the conducting member externally of the housing achieves a number of important advantages. With the construction described, assembly is greatly expedited in that the conducting member can be applied after the assembly of the housing. This was not possible by earlier known construction. Also the exposed portion of the conducting member may be used as a decorative feature of the light construction for added sales appeal. Because the conducting member is generally made of metal, attractive styling may be imparted to the light construction by externally displaying the conducting member 15, as seen in FIGS. 1 and 2.

The construction illustrated includes the further feature that the arrangement is such that the light will not be inadvertently energized in the event it is carried in a purse or other like place. This is attained by the inclusion of a protrusion or hump 12G, 13G formed on the respective housing sections 12 and 13 adjacent the switch opening 16. As best seen in FIG. 1 the hump 12G, 13G projects upwardly to substantially the height of the switch end or reverse end of the switch member 15B. Thus when the switch end 15B is disposed against a plane surface, as when carried in a purse, or laid onto a table or counter, the hump will prohibit such plane surface from depressing or activating the switch.

From the foregoing it will be noted that the flashlight construction constitutes a minimum of component parts which can be readily assembled in a simple and expedient manner, and which complementary housing sections can be readily sealed, as by fusing, welding, bonding, cementing or the like in the assembled position, to form an integral readily expendible and/or disposable unit which may be readily discarded after the batteries have been totally run down.

While the instant construction is highly desirable for the manufacturing of readily disposable pen light type flashlights, it will be understood that the housing section may be formed so as to be rendered readily separable so that a user could replace the battery if so desired.

While the instant invention has been described with respect to a particular embodiment thereof it will be readily appreciated and understood that variations and modifications may be made without departing from the spirit or scope of the invention.

What is claimed is:

1. A flashlight comprising:
means defining a housing adapted to contain a battery source of electrical energy,
said housing having a bulb opening in one end, a switch opening disposed adjacent said one end and

a slotted opening adjacent the other end of said housing,
a light bulb positioned in said bulb opening,
said housing having means defining a channelway extending along the exterior portion thereof between said switch opening and said slotted opening,
said channelway having opposed grooves co-extensive therealong,

a unitary conducting member disposed in said channelway and retained therein by said grooves, and said conducting member having an end portion defining a spring contact extending into said slotted opening and into said housing for urging the battery source in electrical contact with said bulb, and said contact member having its other end defining a switch for making and breaking the circuit to said bulb,

said switch end portion of said contact member extending over said switch opening and free to flex into and out of contact with said bulb,
said switch end portion being reversely bent to define a clip holder for said flashlight,
and a guard means formed on said housing adjacent said switch opening,

said guard means projecting outwardly of said housing to a distance at least equal to the radial extent of said reverse bent portion defining said clip holder to prohibit electrical contact of said switch end portion with said bulb when said switch end portion is disposed against a flat surface.

2. The invention as defined in claim 1 and including a bulb saddle seat spaced inward of the housing from said bulb opening,

said bulb being loosely retained in said saddle seat in axial alignment with said bulb opening.

3. A readily disposable multiple cell pen light type flashlight comprising:

an elongated housing defined by a pair of complementary housing sections having a forward end and a rear end,

a bulb opening formed in the forward end of said housing,

means defining a bulb seat disposed within said housing, spaced inwardly of said bulb opening,

said bulb seat means including complementary partitions connected to the respective housing section to extend transversely thereof, said partitions having an open top portions, and a depending lug connected to one of said housing sections and extending laterally, said lug being disposed between said partitions and said bulb opening, and adapted to overly a bulb,

a bulb having a base portion adapted to be retained in alignment by the coaction of said lug and said bulb seat means with said bulb opening between said lug and said partitions,

said housing having a switch opening formed therein, said switch opening overlying the open top portion of said bulb seat means and the base portion of the bulb retained in said bulb seat means,

battery means including at least two independent batteries tandemly disposed in said housing, one of said battery means having an electrode adapted to engage said bulb in electrical contact,

means formed in the respective complementary housing section defining a channelway extending along an exterior portion of said housing on the side containing said switch opening, said channelway having one end adjacent said switch opening, and having its other end terminating adjacent the rear end of said section, 5

means defining a slotted opening formed in said housing and in communication with the interior thereof disposed adjacent the rear end of said channelway, 10

an elongated electrical conducting member disposed in said channelway,

said channelway being formed by opposed complementary grooves for positively securing said conducting members in said channelway to said housing sections, 15

said conducting member having a bent end portion adapted to extend through said slotted opening and into said housing to engage in electrical contact with the opposite electrode of said other battery means, 20

said bent end normally exerting a spring bias on said batteries urging them into electrical contact with each other and with said bulb, and for retaining said bulb in seating position against said bulb opening, 25

said member having its other end extending over said switch opening to define a switch end free to flex into electrical contact with the base portion of the bulb for making and breaking the current thereto, 30

said switch end being reversely folded to define a spring clip for supporting the flashlight,

and a guard means defined as a hump formed on the respective housing section adjacent the front end thereof to extend substantially to the radial extent of the reverse switch end of said conducting member to define a guard for prohibiting electrical contact of said switch with said bulb when said switch end is disposed against a plane surface. 40

4. The invention as defined in claim 3 wherein the reversely bent portion of said conducting member having a free end portion which is angled outwardly and away from said housing to extend beyond the radial extent of said reversed bent portion. 45

5. A flashlight construction comprising:

an elongated housing having circumscribing side

walls, and front end wall and a rear end wall, means defining a bulb opening in said front wall, a light bulb means loosely retained and extending through said bulb opening, said bulb means having a base portion extending into said housing, said housing having a switch opening formed in a side wall portion, said switch opening being disposed above the base of said bulb, said housing including a slot formed in a wall portion adjacent said rear wall, means defining a longitudinally extending channelway extending along an external portion of said housing between said switch opening and said slot, said channelway including opposed grooves extending co-extensively therealong, a battery means disposed within said housing, an elongated conducting strip extending the length of the channelway between said grooves whereby said strip is positively secured in said channelway along an external portion of said housing, said strip having a bent biasing end portion adapted to extend into said slot and into said housing to engage in electrical contact with an electrode of said battery means and to exert a biasing force thereon to maintain said battery means in electrical contact with said bulb and said bulb in position against said bulb opening, and said strip having its other end portion extending over said switch opening and free to flex into and out of electrical contact with said bulb means, said other end of said strip being reversely bent to define a spring clip, said reversely bent spring clip portion being angled toward said channelway, and said spring clip having its free end bent to extend outwardly from said channelway, and a guard means defined as a hump formed on said housing on the side wall containing said switch opening, said hump being disposed between the front end of said housing and said switch opening, and said hump projecting beyond the plane of said side wall a distance substantially equal to the radial extent of the reversely bent clip portion to define a guard to prohibit accidental energizing of said bulb when said flexing end portion is disposed adjacent a flat plane.

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