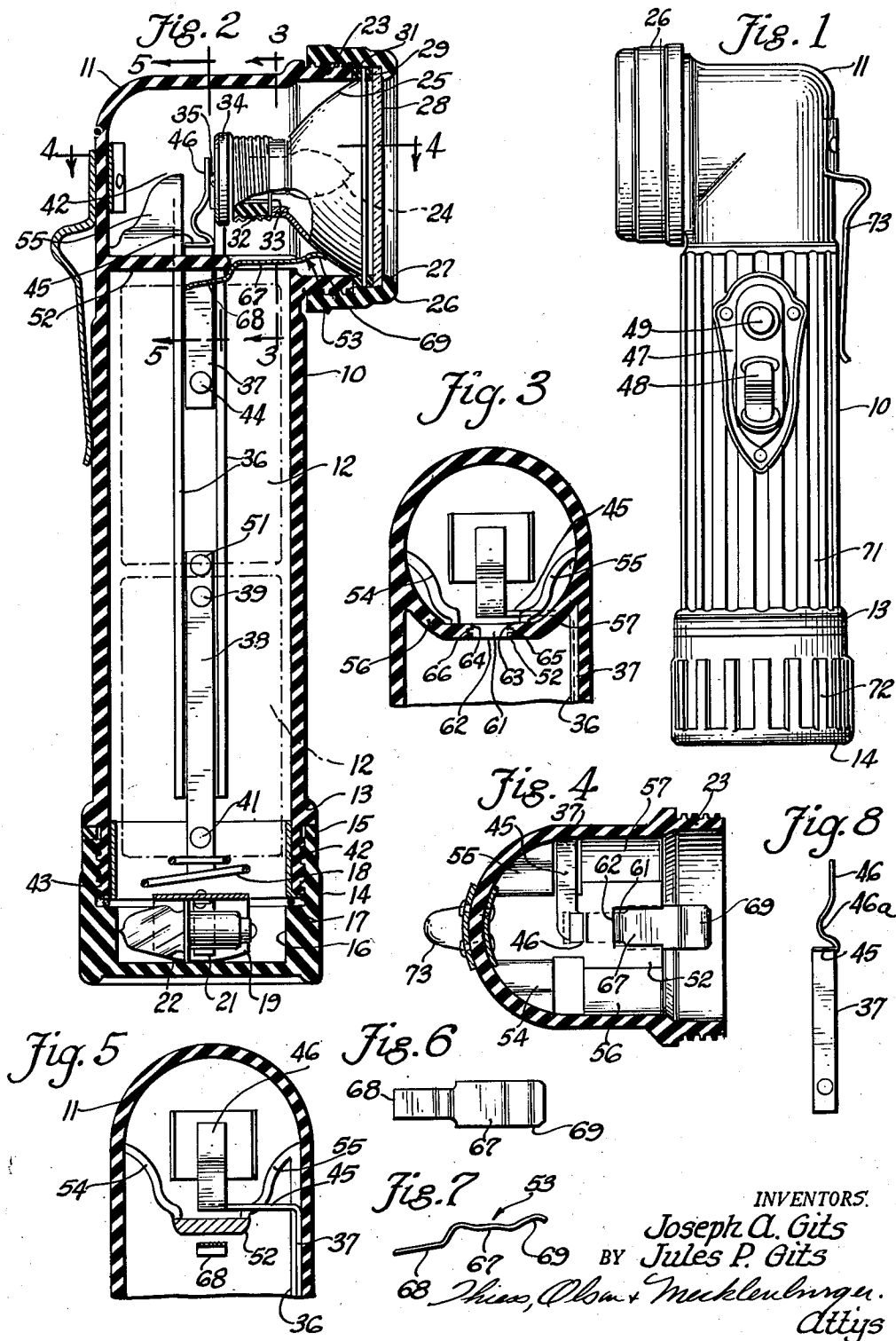


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ANGULAR HEAD FLASHLIGHT CASING, INCLUDING A READILY
ATTACHABLE REFLECTOR CONTACT MEANS

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ANGULAR HEAD FLASHLIGHT CASING, INCLUDING A READILY ATTACHABLE REFLECTOR CONTACT MEANS

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This invention relates to flashlights and more particularly to contact structures for angular-head flashlights.

Flashlights usually comprise a barrel for containing batteries, a head containing a reflector and bulb, and a contact structure for connecting the batteries to the bulb, the contact structure including various conductors and a switch. Between the head and barrel a bridging member is arranged to provide an abutment for one end of the batteries and for holding contact means adapted to engage one terminal of the batteries on one side of the bridging member and to engage the bulb on the other side of the bridging member. Angular-head flashlight contact structures, in addition to the contacts carried by the bridging members, usually include flat strip conductors lying along the casing wall and projecting into the angular heads, the strip conductors being provided with an angular portion at their forward end for extending parallel to the axis of the angular head and for engaging the reflector.

It is an object of the invention to provide an improved contact structure for angular-head flashlights wherein the strip conductor extending along the flashlight casing extends into the head for engaging one terminal of the flashlight bulb, and the resilient conductor carried by the bridging member has a portion extending into the head for engaging the reflector.

It is a further object of the invention to provide an improved contact structure for angular-head flashlights wherein the contact carried by the bridging member engages the reflector and is held to the bridging member without rivets or the like.

In copending application Serial No. 693,737, filed August 29, 1946, entitled "Flashlight," to Joseph A. Gits, a flashlight structure is disclosed and claimed wherein the contact engaging the flashlight bulb is carried by the bridging member and is held thereto without the use of rivets or similar means.

It is a further object of the invention to provide an improved contact structure of the character described which is simple in form, inexpensive to make, and durable in use.

In carrying out the invention in one form, a flashlight is provided comprising a barrel for holding a source of energy, an angular head extending from the barrel and adapted to receive a bulb and reflector, a transverse bridging member between the head and the barrel, a contact carried by the bridging member for engaging the reflector and the source of energy, a flat strip con-

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ductor lying along the barrel and projecting into the head, a conductor portion extending from the strip for engaging the bulb, and means associated with the bridging member for preventing twisting of the strip. The contact carried by the bridging member includes a central portion received in suitably provided slots in the bridging member, a portion extending from one end of the central portion for engaging a terminal of the source of energy, and a second portion extending from the other end of the central portion for engaging the reflector.

For a more complete understanding of the invention, reference should be had to the accompanying drawings, in which:

Figure 1 is a side view of a flashlight embodying the invention;

Fig. 2 is a sectional view on an enlarged scale of the flashlight shown in Fig. 1;

Fig. 3 is a sectional view taken substantially along line 3-3 of Fig. 2, with certain elements removed for clarity;

Fig. 4 is a sectional view taken substantially along the line 4-4 of Fig. 2, with certain elements removed for clarity;

Fig. 5 is a sectional view taken substantially along the line 5-5 of Fig. 2;

Fig. 6 is a top view of one conducting member forming part of the invention;

Fig. 7 is a side view of the structure shown in Fig. 6; and

Fig. 8 is a side view of another conducting member forming part of the invention.

Referring to the drawing, the invention is shown embodied in a flashlight including a barrel 10 and a head 11 extending at right angles thereto, the barrel being of sufficient diameter and length to receive one or more flashlight batteries 12 (shown in dot-and-dash lines). At the lower end of barrel 10 a circumferential flange 13 is provided, against which a closing cap 14 abuts through a sealing gasket 15, the cap 14 and the portion of the barrel beyond flange 13 being threadable to each other. Cap 14 is hollow and includes a portion 16 of decreased diameter, thereby forming an internal shoulder 17 against which the base of a spiral contact spring 18 abuts. Within portion 16, a U-shaped bracket 19 is received, the bracket including a pair of spring arms 21 for holding a spare bulb 22.

The angular head 11 may be of any desired shape and includes a threaded portion 23 extending outwardly from barrel 10. Within head 11 and its portion 23, a bulb 24 and a reflector 25 in a unitary assembly are held by means of a cap

26 having threads corresponding to those of portion 23. A flange 27 on cap 26 overlies the periphery of a lens 28, the lens bearing against a gasket 29 on one side of the reflector rim, which in turn bears against a gasket 31 on the other side of the reflector rim to force gasket 31 against the outer edge of portion 23. By screwing cap 26 tightly onto portion 23, gaskets 29 and 31 are sufficiently compressed to provide a water-tight seal at this point in the flashlight casing.

Reflector 25 may be formed of any metal, such as brass, for example, which has been suitably plated with nickel or chromium, for example, to provide an internal reflecting surface, and has a threaded ferrule 32 projecting rearwardly therefrom, the ferrule including an internal shoulder against which a rim 33 attached to bulb 24 may bear. A hollow plug 34 is threaded into ferrule 32 to bear against rim 33 for holding bulb 24 in its proper position in the reflector and to permit contact 35 on the bulb to project outwardly from the rear of the plug.

Internally of barrel 10 are a pair of ribs 36 defining a channel between them, within which channel conductor strips 37 and 38 may lie. Ribs 36 project away from the inside surface of the barrel a sufficient distance so that the channel has enough depth for strips 37 and 38 to be out of contact with the outer surface of the flashlight batteries. Rear conductor strip 38 is held to the casing at its forward end by means of a rivet 39 and to the casing at its rearward end by a rivet 41 which also connects the strip to an annular ring or shell 42 having an outwardly bent flange 43. When cap 14 is screwed onto the flashlight barrel, internal shoulder 17 causes the base of spring 18 to contact flange 43.

The forward conductor strip 37 is attached at its rearward end to barrel 10 by means of a rivet 44, and includes an angular portion 45 (Figs. 4, 5 and 8) extending substantially at right angles into head 11 and a contact portion 46 extending forwardly to engage contact 35 of bulb 24. Angular portion 46 extends at right angles from the upper edge of portion 45 and includes a depressed portion 46a (Fig. 8) thereby to stiffen this part somewhat.

Conductor strips 37 and 38 form part of the electrical circuit within the flashlight casing, and have their adjacent ends spaced apart from each other to provide an incomplete circuit. Externally of barrel 10 there is a switch housing 47 attached thereto by means of suitable rivets which may be of any suitable construction in so far as the present invention is concerned and may affect full on, full off or a signal light by the thumbpiece 48 and button 49 if so desired. Other types of switches may also be used. Rivet 44 and rivet 51 project into the inside of housing 47, and a circuit is completed between them to complete a circuit between conductors 37 and 38 through manipulation of thumbpiece 48 along casing 47, as is well understood in the art. One form of switch structure is described in United States Letters Patent No. 2,408,393, entitled "Flashlight," to Joseph A. Gits and Jules P. Gits.

Spaced between angular head 11 and barrel 10, and preferably integrally formed therewith, is a transverse bridging member 52 forming an abutment for the forward end of batteries 12 and forming a support for a resilient contact 53. At one end of bridging member 52, reinforcing wings 54 and 55 extend from the respective sides and join the bridging member to the walls of head 11. Similarly, at the other end thereof there are a

pair of reinforcing wings 56 and 57 joining the bridging member to and forming a part of the inner walls of head 11. The adjacent edges of wings 55 and 57 are spaced apart, as is seen best in Fig. 4, thereby forming a space through which conductor strip 37 passes. At the forward end of the bridging member adjacent wings 56 and 57 there is a cutout portion 61 terminating in a rear surface 62 and having side surfaces 63 and 64. Extending inwardly from side surfaces 63 and 64, respectively, are slots 65 and 66 for receiving contact member 53.

Contact member 53 includes a corrugated central portion 67 which is received in slots 65 and 66, the corrugations engaging with the walls of the slots for firmly holding the contact member attached to bridging member 52. Spaced downwardly from central portion 67 is a rearward portion 68 which extends below the bridging member for contacting one terminal of batteries 12, that part of the contact structure between portions 67 and 68 being adapted to abut against rear surface 62 for limiting inward movement. Projecting forwardly from central portion 67 is an upwardly curved portion 69 which extends forwardly into the threaded part 23 of the head for contacting the outer surface of reflector 25. Curved portion 69 is resilient by virtue thereof and rubbingly engages reflector 25 when assembled to the flashlight (Fig. 2), thereby forming good contact. In order that contact member 53 may be properly placed in position, portion 68 is narrower than the remaining part of the contact so that it will pass between walls 63 and 64 of opening 61.

Contact member 53 preferably may be formed from a single piece of strip material, such as brass, and formed into the desired shape by any process, such as by stamping.

The tendency of contact 46 to be pushed rearwardly by terminal 35 of the flashlight bulb when the reflector and bulb unit is assembled to the casing without making good contact with the bulb terminal is substantially prevented by placing portion 45 so that the lower edge thereof engages the top surface of wing 55 about midway between the extremities of portion 45. Consequently, when the flashlight bulb bears against the outer end of contact 46, this engagement combined with the riveting of strip 37 to the casing wall prevents strip 37 from twisting away from the wall of the flashlight barrel. Portion 45 may twist a small amount, but the stiffness thereof, combined with the stiffness of contact 46, causes this member to exert its full force against the contact of the bulb. Contact part 45 is still resilient and rubbing is produced therebetween and bulb contact 35 whereby good electrical contact is made.

When the flashlight switch is closed, the electrical circuit to the batteries is completed by the resilient portion 46 engaging contact 35 of the bulb, the forward portion 69 of contact 53 engaging the reflector, the rearward portion 68 engaging one terminal of the battery, and through conical spring 18, annular ring 42, and conductor strip 38.

It is preferred that the flashlight, including casing 10, head 11, and bridging member 52, together with its reinforcing members, be formed by molding, say by the injection method, in which all of the various parts are formed integrally with each other. The exteriors of barrel 10 and of cap 14 may be provided with ribs 71 and 72, as shown best in Fig. 1, whereby good gripping

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of these members may be had. Attached to the rear portion of head 11 by rivets, as shown, is a spring hanger 13.

With contact structure 52, as described, the flashlight casing proper may best be completed and the contact structure thereafter manually applied thereto by a simple manual operation, thereby preventing damage to the bridging member 52, as well as preventing improper positioning of the contact structure 53 arising out of the manufacturing process.

Without further elaboration, the foregoing will so fully so explain the gist of my invention that others may, by applying current knowledge, readily adapt the same for use under varying conditions of service, without eliminating certain features, which may properly be said to constitute the essential items of novelty involved, which items are intended to be defined and secured to me by the following claims.

We claim:

1. A flashlight structure comprising a barrel, a head forming a juncture at one end of said barrel and extending from said barrel at an angle to the axis thereof, said head having an opening defining the upper end and the front side of said flashlight, an apertured bridging member extending transversely across said barrel substantially at the juncture of said barrel and said head, said apertured bridging member having two edges parallel to the plane of the axes of said barrel and said head to form an aperture, said edges having grooves therein substantially parallel to the surface of said bridging member, said apertured bridging member separating said barrel and said head into a first compartment within which a source of energy may be received and a second compartment within which a bulb and reflector may be received, a contact member slidably received in the grooves of said bridging member through the front opening of said head, said contact member being so shaped that an end of said contact member will extend into each compartment, one end of said contact member being a reflector-engaging contact and the other end of said contact member being an energy source engaging contact, and a conductor lying along the inside of said barrel and projecting from said first compartment into said second compartment and terminating in a bulb-engaging contact.

2. A flashlight structure comprising a barrel, a head forming a juncture at one end of said barrel and extending from said barrel at an angle to the axis thereof, said head having an opening defining the upper end and the front side of said flashlight, an apertured bridging member separating said barrel and said head into a first compartment within which a source of energy may be received and a second compartment within which a bulb and reflector may be received, said apertured bridging member having two edges parallel to the plane of the axes of said barrel and said head to form an aperture, said edges having grooves therein substantially parallel to the surface of said bridging member, a contact member slidably received in the grooves of said bridging member through the front opening of said head, said contact member being so shaped that an end of said contact member will extend into each compartment, one end of said contact member being a reflector-engaging contact and the other end of said contact member being an energy source engaging contact, and a conductor lying along the inside of said barrel and project-

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ing from said first compartment into said second compartment and terminating in a bulb-engaging contact.

3. A flashlight structure comprising a barrel, a head forming a juncture at one end of said barrel and extending from said barrel at an angle to the axis thereof, said head having an opening defining the upper end and the front side of said flashlight, an apertured bridging member separating said barrel and said head into a first compartment within which a source of energy may be received and a second compartment within which a bulb and reflector may be received, said apertured bridging member having two edges parallel to the plane of the axes of said barrel and said head to form an aperture, said edges having grooves therein substantially parallel to the surface of said bridging member, a contact member anchored in the aperture of said bridging member by a friction engagement with the grooves of said bridging member so that one end of said contact member extends into one compartment and the other end of said contact member extends into the other compartment, one end of said contact member being a reflector-engaging member and the other end of said contact member being an energy source engaging contact, and a conductor lying along the inside of said barrel and projecting from said first compartment into said second compartment and terminating in a bulb-engaging contact.

4. A flashlight structure comprising a barrel, a head forming a juncture at one end of said barrel and extending from said barrel at an angle to the axis thereof, a bridging member internally dividing said barrel from said head, said bridging member having two edges parallel to the plane of the axes of said barrel and said head to form an aperture, said edges having grooves therein substantially parallel to the surface of said bridging member, a contact member inserted in said aperture and retained in said grooves with one end extending into said barrel to form an energy source engaging contact therein and with the other end extending in said head to form a reflector-engaging contact.

5. A flashlight structure comprising a barrel, a head forming a juncture at one end of said barrel and extending from said barrel at an angle to the axis thereof, a bridging member internally dividing said barrel from said head, said bridging member having two edges parallel to the plane of the axes of said barrel and said head to form an aperture, said edges having grooves therein substantially parallel to the surface of said bridging member, a contact member inserted in said aperture and having its opposed edges lying in said grooved edges of said aperture, said contact member corrugated to resiliently secure said contact member in the grooved edges of the aperture in said bridging member, one end of said contact member extending into said head to form a reflector-engaging contact and the other end of said contact member extending into said barrel to form an energy source engaging contact therein, and a conductor in said barrel and projecting from said barrel into said head and terminating into a bulb-engaging contact.

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