Sept. 1, 1931. G. C. FULLMER 1,821,430

FOCUSING SPOTLIGHT

Filed May 2, 1929

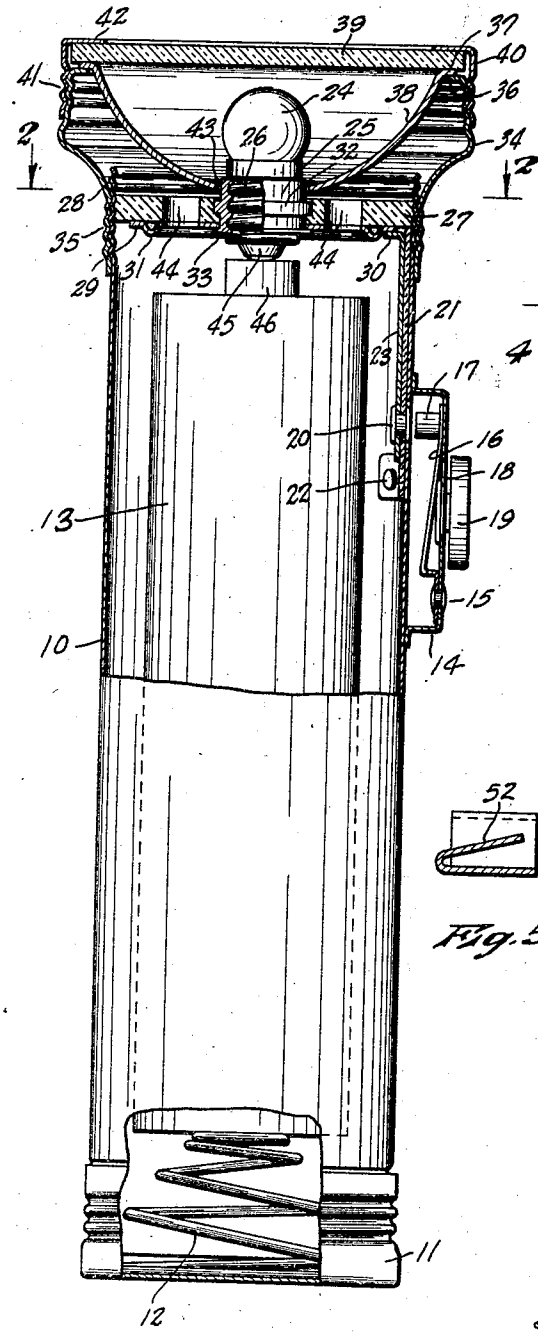


Fig. 1.

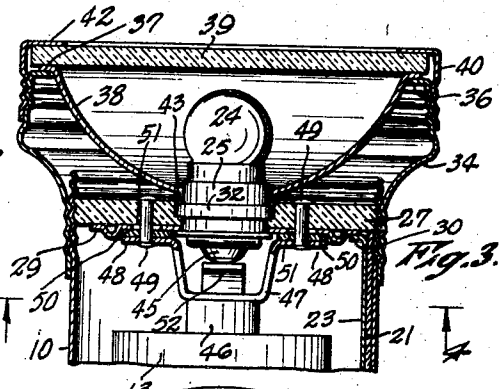


Fig. 3.

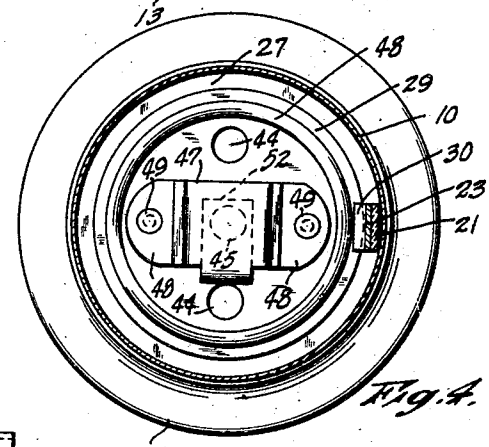


Fig. 4.

Fig. 5.

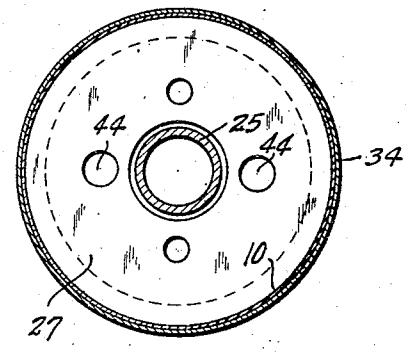


Fig. 2.

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UNITED STATES PATENT OFFICE

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FOCUSING SPOTLIGHT

Application filed May 2, 1929. Serial No. 359,826.

This invention relates to spot lights or hand flash lights, and has for an object to provide an improved construction for this type of light which will be simpler than those now generally employed, and which will be stronger and can be made at less cost.

It is also an object of the invention to provide a simple and effective construction for focusing the light.

It is another object of the invention to provide a construction in which the removal of exhausted batteries is facilitated.

With the foregoing and other objects in view, the invention consists in certain novel features of construction, combinations and arrangements of parts as will be more fully disclosed in connection with the accompanying drawings, it, of course, being understood that various changes and modifications may be employed within the principles of the invention.

In the drawings

Fig. 1 is a partial side elevation and partial longitudinal section of the device showing my improved construction.

Fig. 2 is a transverse section substantially on line 2—2 of Fig. 1.

Fig. 3 is a longitudinal section of the light end of the device showing a somewhat modified construction.

Fig. 4 is a transverse section substantially on line 4—4 of Fig. 3, and

Fig. 5 is a detail of the spring contact used in the forms shown in Figs. 3 and 4.

The construction illustrated includes a tubular casing 10 of metal open at its opposite ends, the lower end being closed by a cap 11, which is threaded on the casing for easy application and removal, and carries the spring contact 12 adapted to engage the end wall of a battery 13 to ground the metal contact of the battery on the casing 10. Suitably located on the casing 10, as on a side wall thereof, is a control switch of any suitable type, the switch illustrated comprising a metal housing secured to the casing 10 by any suitable means, such as rivets, not shown. Riveted to the inside of the housing at 15 is a spring contact 16 carrying a contact point 17, and mounted for sliding and transverse movements in a slot 18 in the housing is a push button 19 for depressing the contact 17 into engagement with a complementary contact 20 insulated from the casing 10. This may be done by means of a fibre strip secured to the inside of the casing as by rivets 22, and this strip carries a conductor strip 23 which may be secured thereto by the contact 20 in the shape of a rivet.

The lamp 24 is mounted in any suitable type of socket 25, such for example as a screw socket of metal to receive and engage the screw shell contact 26 of the lamp. The socket is mounted in a plate 27 of insulating material, such for example as compressed fibre, which is threaded at its edge to engage the corresponding threaded end 28 of the casing 10. Carried on the underside of this member 27 is a metal disc 29 which is of less diameter than the casing, so as to remain out of contact with it. When the member 27 is threaded into the casing this disc engages the inturned end 30 of the conductor 23 and forms electrical contact therewith. The disc 29 also has a circular bead or rib 31 spaced from its outer edge which stiffens the disc and also acts as a stop to engage the free end of the member 30 when the support is carried into position, and prevent the forcing of the contact 23 out of position. The socket 25 may have a flange 32 to engage the support 27 on one side and is rolled or riveted over at its opposite end 33 onto the bottom of the disc 29 to also secure this disc to the insulating member 27.

This end of the casing is closed by a cap 34 which is threaded at 35 so that it can be threaded onto the outside of the casing 10 on the threads 28. At its outer end it has an inturned flange 36 against which may be seated the outturned flange 37 of a concave reflector 38. Seated on the flange 37 is the lens 39, and the flange and lens are clamped against the flange 36 by a ring 40 threaded onto the cap 34 as shown at 41, and it has an inturned flange 42 engaging the outer surface of the lens. It will, thus, be seen that the reflector 38 and lens 39 are

carried wholly by the cap 34 and independently of the casing or the mounting for the lamp. The reflector has an opening 43 through which the lamp and the socket may extend. Therefore, as the lamp is carried by the casing 10, and reflector 38 and lens 39 are carried by the cap 34, which is adjustable longitudinally on the casing 10, it will be evident that by turning the cap 34 it will have movement on the casing 10 longitudinally thereof, which will adjust the reflector 38 relative to the lamp 34 and, therefore, will focus the lamp at any point desired. This makes a very effective and easily manipulated means for focusing the lamp, as the threads 28 and 35 are made of sufficiently tight fit to retain the cap in adjusted positions.

The support 27 and plate 29 may be provided with openings 44 therethrough to permit the insertion of a tool to force out an exhausted battery after, of course, the cap 34 is removed from the casing. It is often very difficult to remove an exhausted battery as the corrosion formed by leaving such a battery in the casing freezes the battery to the casing. It will, of course, be understood that when the lamp 24 is in the socket, its central contact 45 is in position to engage the central contact 46 of the battery, and they are held in engagement by the spring 12.

In the form shown in Figs. 3, 4 and 5 means is provided for supporting the weight of the battery independently of the lamp contact, so that should the light be dropped, the weight of the battery will not break the lamp. For this purpose, there is mounted on the underside of the disc 29 a yoke 47 which is preferably substantially U-shape to straddle the central lamp contact 45, and has feet 48 by which it may be secured to the support 47 through the rivets 49. It will, of course, be understood these feet are insulated from the disc 29 by insulating washers 50, and openings 51 in the disc, through which the rivets 49 pass are of sufficiently large diameter, so that the rivets do not engage this disc. On the inner side of the yoke 47 is a spring contact 52 to engage the central contact 45 of the lamp, and a convenient way of forming this contact is to provide an extension on one end of the yoke and bend it inwardly to the position shown in Fig. 5. In this form the central or carbon contact 46 of the battery engages the top of the yoke 47 so that all pressure of the battery is transmitted by this yoke to the support 27, and therefore, there is no weight of the battery on the lamp contact 45 and should the device be dropped, there would be no injury to the lamp.

It will be apparent from the foregoing description, that the device is of a very simple and rugged construction, and that a very simple and effective means has been provided for causing relative movement between the lamp and reflector to focus the lamp.

Having thus set forth the nature of my invention, what I claim is:

1. In a light of the character described, an open ended casing internally threaded at said open end, a circular insulating plate of compressed fiber threaded on its periphery for direct engagement with the threads of the casing to detachably secure the plate in the casing, a lamp socket mounted in the plate, a metal disc mounted on the inner surface of the plate in contact with the socket, said plate forming the support for the socket and the disc, a switch having relatively movable contacts one of which is grounded on the casing and the other insulated therefrom, a conductor leading from the latter contact and having an end in position to engage said metal disc when the plate is threaded into position in the casing, and said disc having a circular bead projecting laterally therefrom and spaced inwardly from its outer edge in position to limit inward movement of the end of the contact when the plate is threaded to position.

2. In a light of the character described, a casing open at one end and internally threaded at said end, a circular insulating plate of compressed fiber threaded on its periphery for direct engagement with the threads of the casing to detachably secure the plate in the casing, an open ended lamp socket mounted in the support to expose a central lamp contact carried thereby at the inner side of the plate, said casing being adapted to hold a battery at the inner side of said support, a metal disc mounted on the inner surface of the plate in contact with the socket, a switch having relatively movable contacts one of which is grounded on the casing and the other insulated therefrom, a conductor leading from the latter contact to a position to be engaged by said disc when the plate is threaded into position in the casing, a metal yoke carried by the plate and insulated from the disc, rivets passing through the yoke and plate to secure the yoke to the plate, and said yoke being of one piece to engage the central pole of the battery to support it and having a spring contact bent inwardly from one side to engage the central lamp contact.

In testimony whereof I affix my signature.

GILES C. FULLMER.