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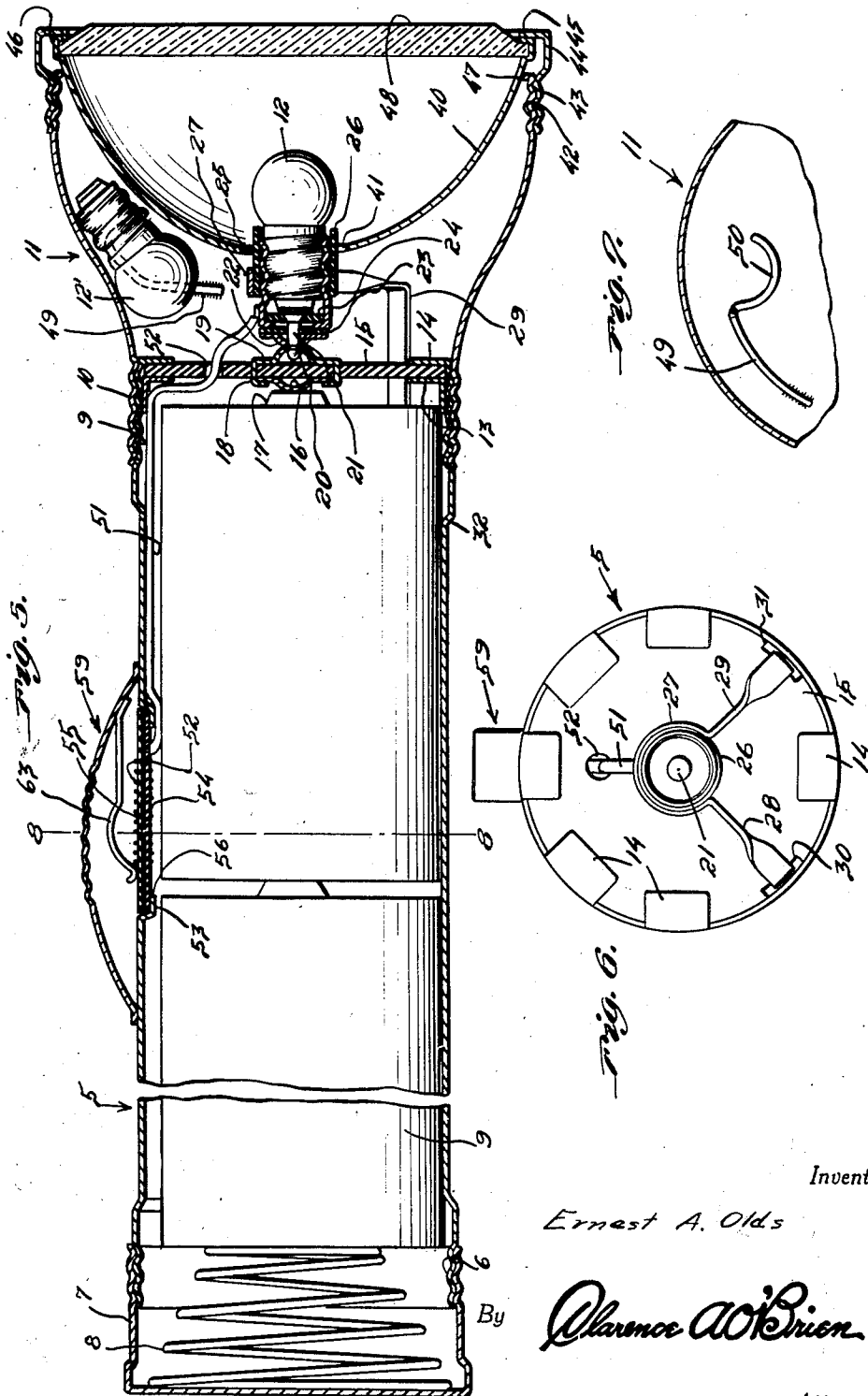
E. A. OLDS

2,312,670

ELECTRIC TORCH OR FLASHLIGHT

Filed Feb. 17, 1941

3 Sheets-Sheet 2



Inventor

Ernest A. Olds

By Clarence A. O'Brien

Attorney

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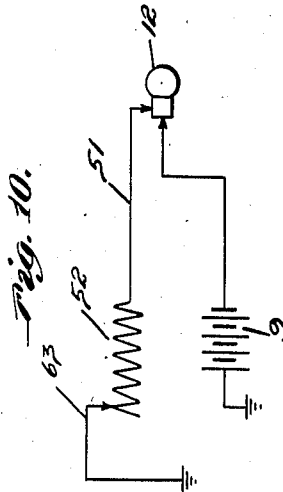
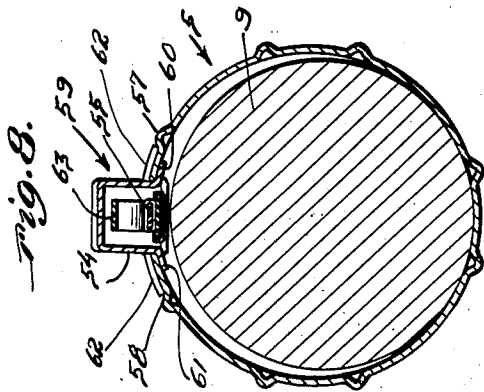
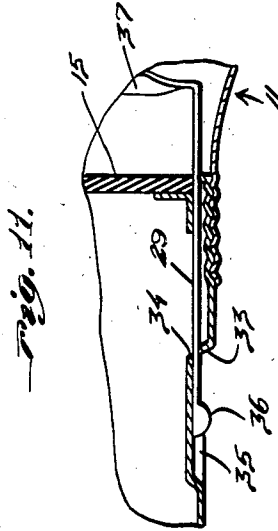
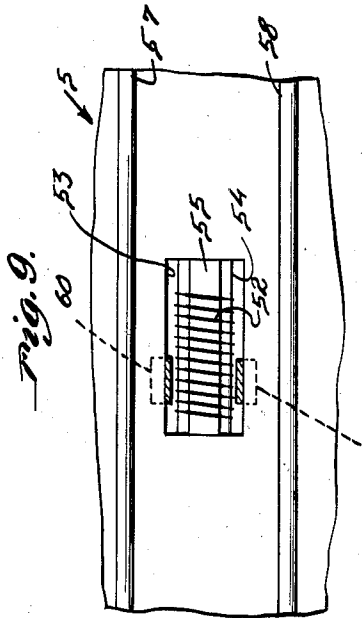
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# UNITED STATES PATENT OFFICE

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## ELECTRIC TORCH OR FLASHLIGHT

Ernest A. Olds, Curve, Tenn., assignor of one-half to Emmett C. Cutlip, Henning, Tenn.

Application February 17, 1941, Serial No. 379,354

3 Claims. (Cl. 240—10.6)

My invention relates to improvements in electric torches and flashlights, and the primary object of my invention is to provide an arrangement of this character wherein external means is provided for easily adjusting the bulb with respect to the center of the parabolic reflector, whereby more efficient utilization of the light generated by the bulb is procured.

Another important object of my invention is to provide in an arrangement of the character indicated, space-saving spare bulb containing means whereby the overall length of the elongated type of torch or flashlight may be reduced without sacrifice of reflector and battery space.

Another important object of the invention is to provide a rheostat switch means for the selective operation of an arrangement of the character indicated whereby between the "off" and "on" positions of the switch, manipulation of the switch produces greater or less energization of the bulb of the flashlight.

Other important objects and advantages of my invention will be apparent from a reading of the following description taken in connection with the appended drawings, wherein for purposes of illustration I have shown a preferred embodiment of my invention.

In the drawings:

Figure 1 is a general side elevational view of the embodiment.

Figure 2 is a fragmentary top plan view of Figure 1.

Figure 3 is a fragmentary bottom plan view of Figure 1.

Figure 4 is an enlarged perspective view of the rheostat switch slide or button.

Figure 5 is an enlarged and contracted longitudinal vertical sectional view taken through Figure 1.

Figure 6 is a front end elevational view of Figure 1 with the bulb and the reflector assembly removed.

Figure 7 is a fragmentary transverse vertical sectional view taken through the upper right hand portion of Figure 5 with the spare bulb removed from the spare bulb holder.

Figure 8 is a transverse section taken through Figure 5 along the line 8—8.

Figure 9 is a fragmentary horizontal sectional view taken through the upper part of Figure 5.

Figure 10 is a wiring diagram showing the connection of the rheostat in the switch and battery circuit to the bulb.

Figure 11 is a fragmentary longitudinal sec-

tional view taken through Figure 3 along the line 11—11.

Referring in detail to the drawings, the numeral 5 generally designates the substantially cylindrical tubular body of the torch or flashlight, the body being formed to provide external threads 6 at its butt end for reception of the cap 7 which is equipped with the spiral spring 8 to exert the necessary confining tension against the bottom of the adjacent battery cell 9, to hold the battery cells in place, and to make a good electrical connection between one side of the battery cells and the cap 7, and through the cap 7 to the metal body 5.

The forward end of the body or case 5 is formed to provide external screw threads 9 threadably accepting the internal threads 10 on the tubular head 11 which is thereby removable to provide access for the removal and replacement of the bulb 12, and to provide access to the spare bulb 12'.

The forward end of the case or body 5 is provided with an axially spaced pair of radially inwardly projecting sets of circumferentially spaced fingers 13 and 14 which engage opposite sides of a fiber or other insulating material disk 15 to hold the same relatively rigidly in place. A bulbous conductive disk 16 is mounted on the rear side of the disk 15 for engagement with the center terminal 17 of the adjacent battery cell, the said disk being held in place by fingers 13 passing through the disk and bent over in back of the edges of the contact 16, the said fingers being formed on a concavo convex disk 19 which acts as the socket of a ball and socket joint. The convexity of the disk 19 has an opening receiving the reduced shank behind the ball 20 on the bulb socket assembly, whereby the said bulb socket assembly is swivelly mounted on the disk 15 for a purpose to be indicated.

The bulb socket assembly comprises the shank 21 which passes axially through a concavo-convex disk 22 opposed to the similarly shaped socket disk 19. Besides the disk 22 the shank 21 axially traverses an insulating disk 23 and a second insulating disk 24, these disks clamping between them inward projections on the metallic threaded socket 25 which surrounds the disk 24 and projects forwardly in a generally axial direction as indicated in Figure 5 of the drawings.

The forward end of the shank 21 is expanded and riveted to fasten the disk 24 in relation to the disk 23, and also to act as a contact for the center contact of the bulb 12.

Surrounding the bulb socket 25 is the in-

sulating sleeve 26 upon which is constricted the tensioned broken ring 27 on the ends of which are right angularly spaced bulb socket positioning arms 28 and 29, respectively, which are of a reclining L-shape as indicated in Figures 5 and 11. The standard portions of the arms 28 and 29 pass along the sides of the case or body 5 through notches 30 and 31, respectively, formed in the edges of the disk 15. The intermediate portion of the body 5 is slightly reduced in diameter at the point indicated by the numeral 32 and the conjoining wall 33 of the said body is slotted as indicated by the numeral 34 to expose the rear portion of the arms in corresponding depressions 35 formed in the wall of the intermediate portion of the body as indicated in Figure 11. A knob 36 is provided on the rear extremity of the reclining standard portion of the arms as clearly indicated in Figure 11. The foot portions 37 of the bulb socket operating arms are connected to the ends of the broken ring 27. The depressions 35 in the exterior of the intermediate portion of the casing or body of the flashlight or torch are spaced circumferentially at substantially ninety degrees as indicated in Figure 3 of the drawings and also in Figure 6, whereby the knobs 36 are conveniently located for selective operation. It is obvious that if one of these knobs be operated forwardly the action will force the bulb socket and hence the bulb 12 toward the opposite side of the axis, while forward pushing of the knob of the other arm will produce movement of the bulb socket in the opposite direction. The adjustment thus achieved may be varied by pulling the knobs rearwardly as may be required, all of these actions being devoted to the purpose of centering the bright portion of the filament of the bulb 12 at substantially the optical center of the parabolic reflector 40 which has an axial opening 41 spacedly accepting the insulating sleeve 26 surrounding the bulb socket. The opening 41 is sufficiently large to provide for any normal adjustment of the bulb socket and the sleeve 26 prevents electrical contact taking place between the bulb socket and the reflector either before or after installation of the bulb 12.

The hollow tubular bell-shaped head 11 which has the interior screw threads 10 threaded on the threads 9 of the forward end of the case or body 5 is formed at its wider and forward end with external screw threads 42 accepting the internal screw threads 43 formed on the annular reflector holder 44 which is generally channel-shaped in cross section and has the radially inwardly projecting terminal flange 45 arranged to press rearwardly in an axial direction on the front flange of the channel-shaped lens retainer 46 on the front end of the parabolic reflector 40, thereby pressing the reflector rearwardly to supportably engage its exterior wall adjacent its front end with a smaller diameter internal annulus 47 formed on the front end of the head 11, whereby the lens 48, and reflector 40 are properly assembled with respect to each other in the head 11.

The space between the reflector 40 and the disk 15 at the side walls of the head 11 is utilized as a storage chamber for spare bulbs 12' which are held releasably in place by a spring wire holder 49 which is suitably secured in a circumferential position on the side wall of the head 11, with a curved retaining finger 50 of suitable spring material spaced from the side wall of the head in such a position as to embrace and tension

the base portion of the spare bulb and thereby press the spare bulb retainably against the interior side wall of the head in the position illustrated in Figure 5. It is obvious that this arrangement does not necessarily procure any enlargement or elongation of the head 11 but definitely does reduce the requirements for length of the closure cap 7 at the butt end of the flashlight or torch, which is ordinarily required to provide a storage space for a spare bulb. It will also be noted that the arrangement of the installed bulb 12 in the head 11 and with respect to the reflector 40 enables the bulb 12 to be placed farther forward in and closer to the optical center of the reflector, so as to provide for powerful and efficient light, through better reflection of the light and through better focusing of the center of the light source relative to the optical center of the reflector.

An insulated wire 51 leads from the side of the bulb socket rearwardly through an opening 52 formed in the insulating material disk 15 and lies along the inner wall of the case or body 5 to connect with one end of the rheostat 52 which is longitudinally arranged in a depression 53 in the side of the case or body 5 and is composed of inner and outer dielectric plates 54 and 55, the resistance wire being wound on the plate 55 and the plate 54 acting to insulate the wire from the case or body 5 and from the sides of the battery cells 9 which are exposed through the opening 56 which is formed in the floor of the depression 53.

Slidable along the side of the case or body 5 between two of the longitudinal ribs 57 and 58 which are formed on the exterior of the case or body 5 in the switch knob or button 59 which has intermediate its ends a pair of oppositely laterally projecting lugs 60, 61, respectively, which slide against the underside or radially inward side of the wall of the case 5 to hold the button or slide in place with lateral flanges 62 on the opposite sides of the said button 59 slidably bearing on the radially outward side of the wall of the case in opposition to the lugs 60 and 61. The button 59 is hollow and provided interiorly with a longitudinally extending spring contactor or slider for movement in contact with and along the resistance wire of the rheostat, the parts being so positioned that at one end of the travel of the button 59 the contactor or slider 63 leaves the wire of the rheostat so as to completely cut off energization of the bulb 12. In this position the switch button 59 is in the "off" position. In order to energize the bulb 12 it is provided that the push button be started manually in the opposite direction from the described position.

In moving toward the right from the "off" position the slider 63 first touches the offhand end of the winding of the rheostat remote from the wire 51, so that a minimum energization of the bulb 12 takes place. Further movement of the button in the right hand direction correspondingly reduces the amount of winding of the rheostat in circuit between the slider and the wire 51, thereby producing increased energization of the bulb 12. In the extreme right hand position of the button the slider is in substantially direct connection with the wire 51 so that maximum energization of the bulb takes place. By the means described controlled gradual increase and decrease in the energization of the bulb 12 is enabled, so that the amount of light desired may be accurately provided.

The life of the bulb is lengthened because cur-

rent comes on first at lowest bulb energizing rate and is increased gradually as the switch button is moved toward the point of highest energization for the bulb.

While the described arrangement is adapted to use of ordinary flashlight bulbs, it is especially adapted by reason of its rheostat switch to the use of special low voltage bulbs, thereby permitting the flashlight or torch to produce long distance, super brilliant spotting light.

Although I have shown and described herein a preferred embodiment of my invention, it is to be definitely understood that I do not wish to limit the application of my invention thereto except as may be required by the scope of the subjoined claims.

Having described the invention, what is claimed as new is:

1. In an electric torch comprising a tubular battery case having a lamp bulb, means on the case adapted to connect one side of the lamp with one side of a battery in the case, the wall of said case being formed with an elongated opening, laterally inset flanges at the opposite ends of said opening, an elongated dielectric plate having opposite end portions thereof conformably seated in the ends of the opening upon said inset flanges, the outer side of said dielectric plate being substantially flush with the outer surface of the case, a resistance wire wound on an intermediate part of said dielectric plate toward the opposite ends of said plate to form a rheostat resistance insulated from the case, means to electrically connect the remaining side of the lamp bulb with one end of said rheostat resistance, and a slider slidably mounted on the exterior of the case and covering said opening, said slider comprising a conductive longitudinally extending internal spring

contactor electrically connected to the first mentioned means, said contactor being inwardly tensioned to engage with different portions of the said resistance in different positions of the slider to vary the brightness of the lamp bulb, said contactor being adapted to engage a portion of said dielectric plate in another position of the slider to electrically disconnect the lamp bulb from the battery.

2. An electric torch according to claim 1 wherein said slider comprises a hollow housing having a plate portion at its inner side slidably bearing against the exterior of the case, said inner side further having offset lateral projections slidably engaging behind the opposite longitudinal edges of said opening to slidably mount the slider on the case, said lateral projections further acting as stops to engage the opposite ends of said opening to prevent further movement of the slider in corresponding directions.

3. An electric torch according to claim 1 wherein said slider comprises a hollow housing having a plate portion at its inner side slidably bearing against the exterior of the case, said inner side further having offset lateral projections slidably engaging behind the opposite longitudinal edges of said opening to slidably mount the slider on the case, said lateral projections further acting as stops to engage the opposite ends of said opening to prevent further movement of the slider in corresponding directions, said contactor comprising a spring finger fixed to the interior of the housing at one end and extending longitudinally of the housing, with the free end of the finger tensioned toward said dielectric plate to engage with said resistance or the said dielectric plate in accordance with the position of the slider.

ERNEST A. OLDS.