

July 16, 1968

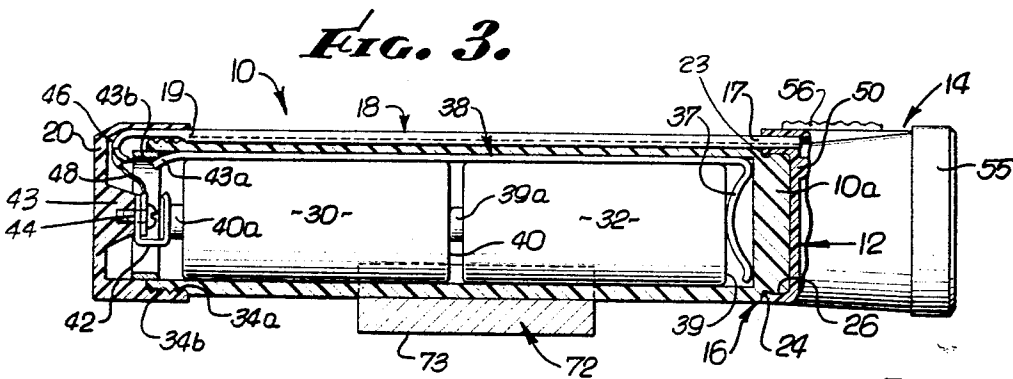
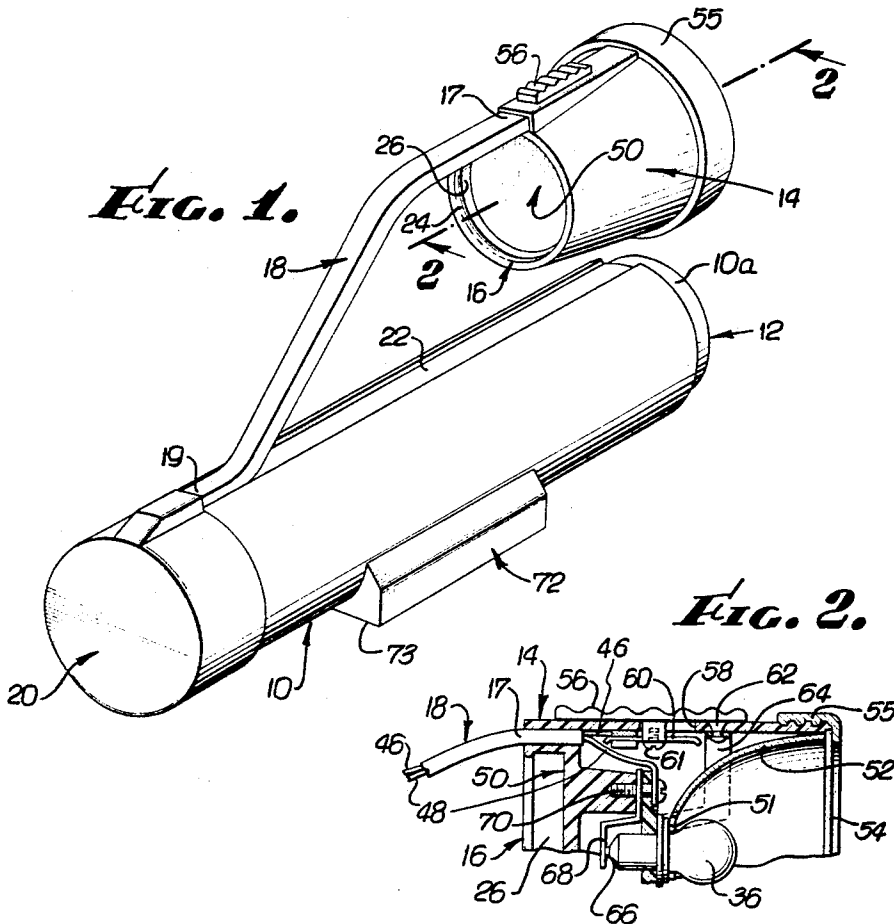
F. L. DAHL

3,393,312

ADJUSTABLE FLASHLIGHT

Filed July 18, 1966

4 Sheets-Sheet 1



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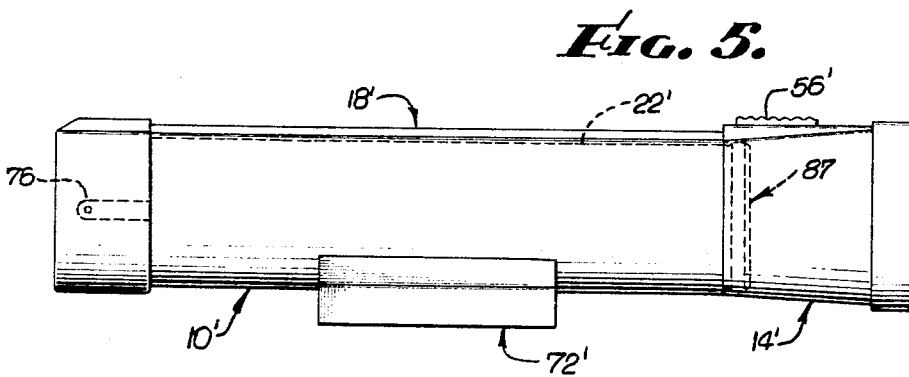
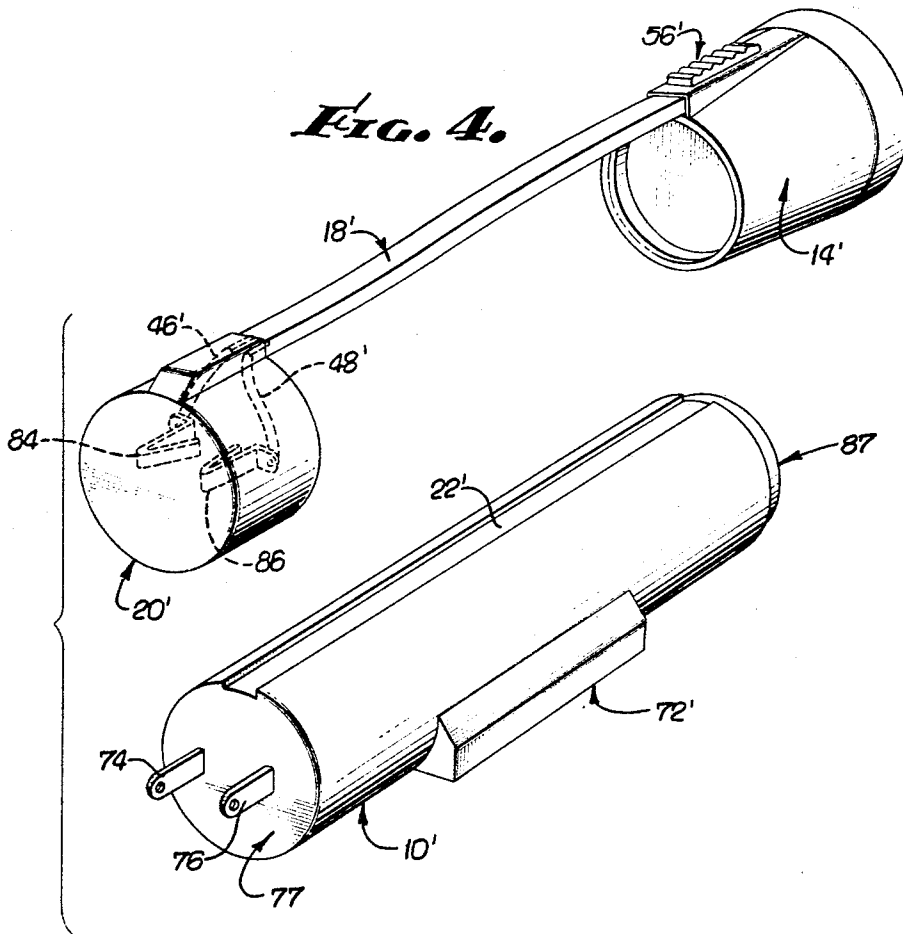
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ADJUSTABLE FLASHLIGHT

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4 Sheets-Sheet 2



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ADJUSTABLE FLASHLIGHT

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4 Sheets-Sheet 3

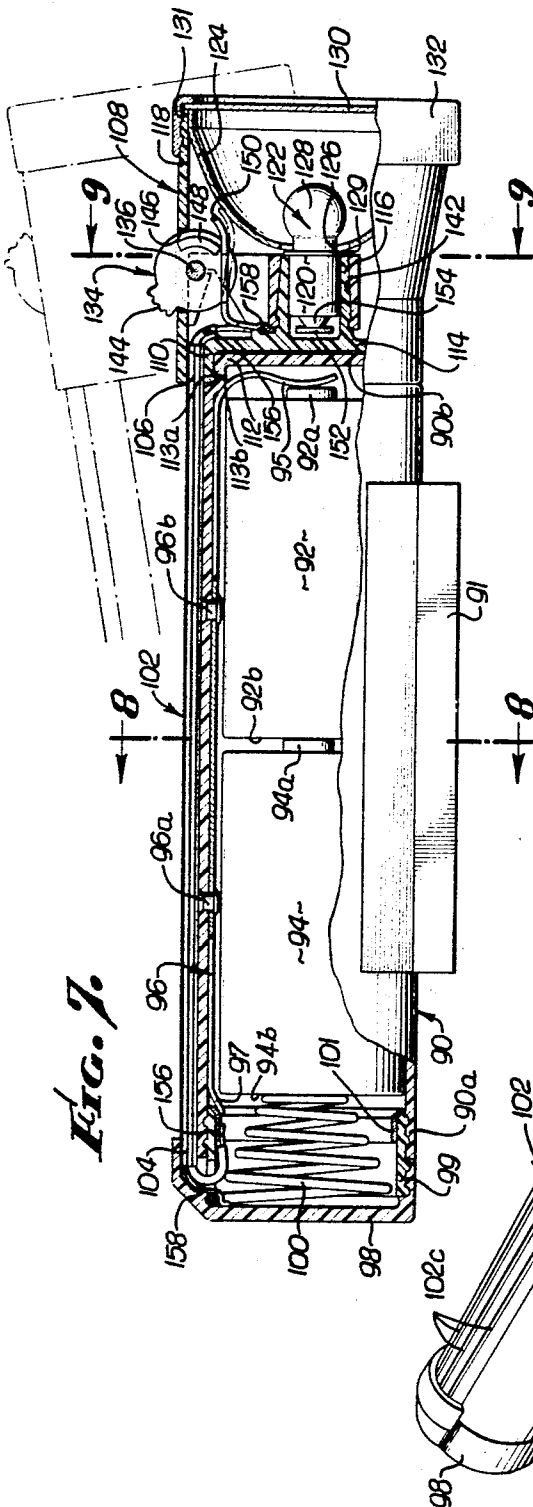


Fig. 7.

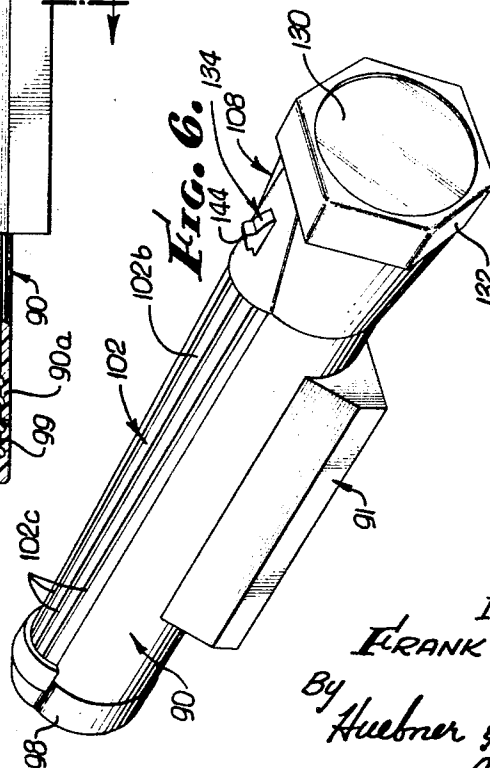


Fig. 6.

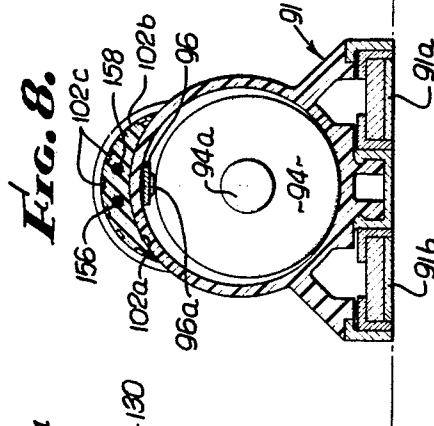


Fig. 8.

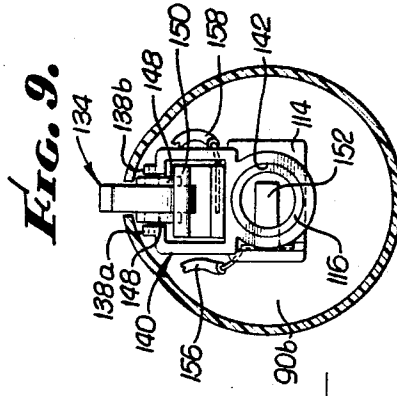


Fig. 9.

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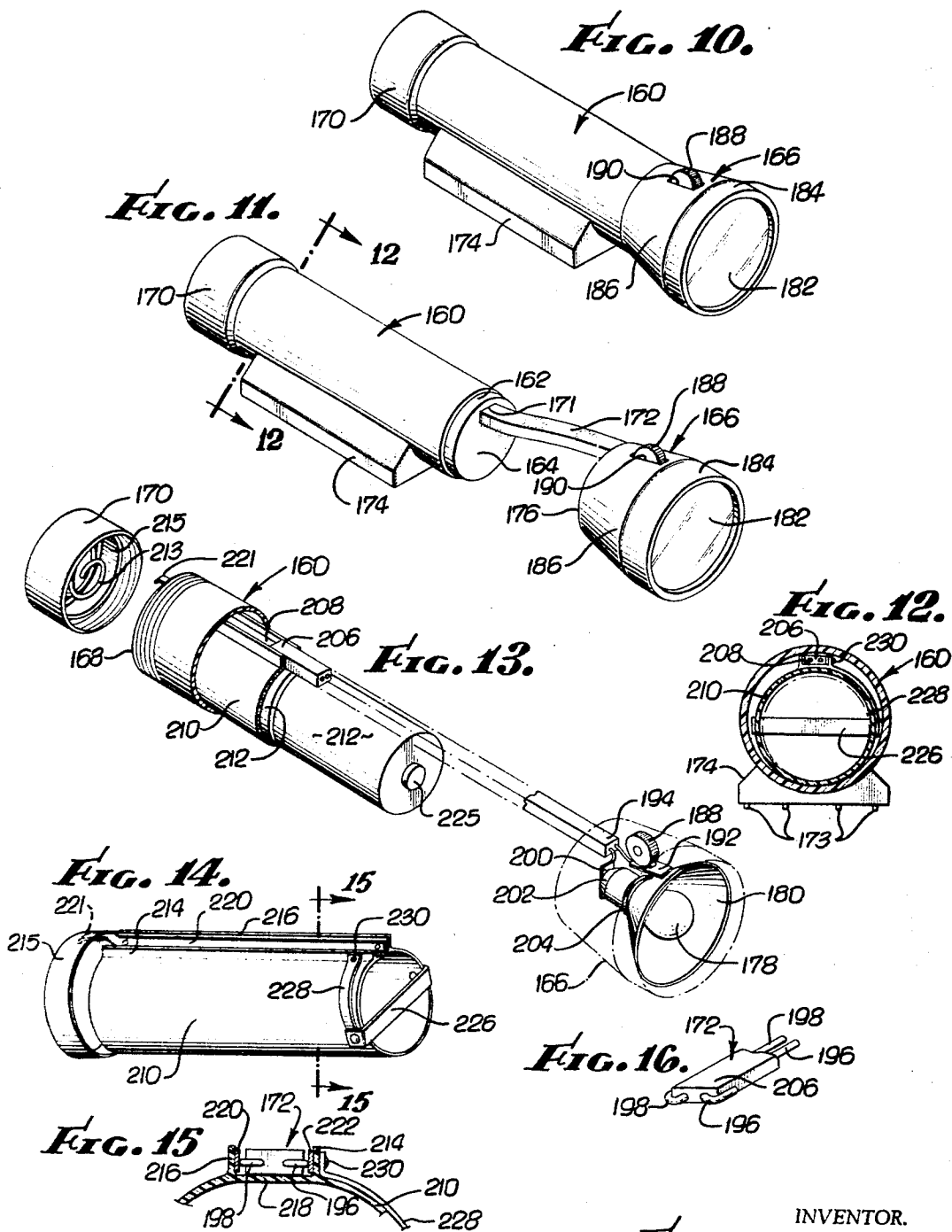
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ADJUSTABLE FLASHLIGHT

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4 Sheets-Sheet 4



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3,393,312

**ADJUSTABLE FLASHLIGHT**  
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Continuation-in-part of application Ser. No. 486,048,  
Sept. 9, 1965. This application July 18, 1966, Ser.  
No. 565,823

13 Claims. (Cl. 240—10.67)

## ABSTRACT OF THE DISCLOSURE

A hand-held portable flashlight having a detachable light emitting head. The head is attached to the main body of the flashlight containing the batteries by a flexible arm which carries electrical conductors to supply electric current to the head. An on-off switch is provided in the detachable head in order to prevent possible destruction due to corrosion of the batteries in the main body of the flashlight.

This is a continuation-in-part of application Ser. No. 486,048 filed Sept. 9, 1965. It relates to an adjustable flashlight and, more particularly, to a flashlight of the type which has a detachable and adjustable light emitting head connected to the body of the flashlight by a deformable and flexible connecting arm.

It is a common problem for flashlights to become inoperative due to exposure of the on-off switch to the batteries of the flashlight so as to corrode the switch. Such a defect can occur in a flashlight having a detachable and adjustable light emitting head.

Therefore, an object of this invention is to provide a flashlight of the type which has a detachable light emitting head connected to the battery case by a flexible connected arm with an on-off switch located in the light emitting head. Thus, the switch will not come into contact with the batteries and become inoperative due to corrosion.

It is another object of this invention to provide a flashlight having a rechargeable battery with a detachable and adjustable light emitting head.

Other objects and advantages will become apparent from the following description and drawings wherein:

FIGURE 1 is a perspective view of the subject flashlight showing the light emitting head in extended position and detached from the battery case of the flashlight;

FIGURE 2 is an enlarged fragmented longitudinal sectional view of the light emitting head taken through 2—2 in FIGURE 1;

FIGURE 3 is a longitudinally sectioned view of the flashlight in FIGURE 1 showing the light emitting head attached to the battery case;

FIGURE 4 is a perspective view, partly in phantom, showing another embodiment of this flashlight having a rear end cap and light emitting head adapted to be attached to a rechargeable battery which is carried within the separated battery case shown;

FIGURE 5 is an elevational view of the flashlight in FIGURE 4 with the rear end cap and light emitting head attached to the battery case;

FIGURE 6 is a perspective view of still another embodiment of the flashlight;

FIGURE 7 is a fragmented, longitudinally sectioned view of the embodiment of this flashlight invention shown in FIGURE 6 with a phantom view of the light emitting head detached from the flashlight body;

FIGURE 8 is a cross-sectional view taken through line 8—8 in FIGURE 7;

FIGURE 9 is a cross-sectional view taken through line 9—9 in FIGURE 8;

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FIGURE 10 is a perspective view of still another embodiment of this invention wherein the flexible arm retracts within the battery case of the flashlight;

FIGURE 11 is a perspective view of the flashlight as in FIGURE 10 with the flexible arm partially extended;

FIGURE 12 is a cross sectional view taken along line 12—12 in FIGURE 11;

FIGURE 13 is a partly fragmented and phantom perspective view of the flashlight as in FIGURES 10, 11, and 12 showing the internal structure thereof;

FIGURE 14 is a perspective view of the arm track and battery contacting elements separated from the flashlight as in FIGURE 13;

FIGURE 15 is a fragmented cross-sectional view taken through line 15—15 in FIGURE 14 showing the connecting arm when mounted in the arm track and FIGURE 16 is a fragmented perspective view of the end of the connecting arm.

Referring to the drawings the improved embodiments of this invention shown in FIGURES 1, 2 and 3 are similar to the flashlight disclosed in FIGURES 1 and 2 of copending patent application Ser. No. 486,048. It includes an elongated hollow circular cylindrical battery case 10 to which is detachably engaged at the reduced, closed front end 12 thereof, a short truncated cone-shaped light emitting head 14. Secured to the top periphery of rear end 16 of light emitting head 14 is the forward end 17 of a flat rectangular cross-sectioned elongated flexible connecting arm 18 which is preferably made of an electrically non-conductive plastic material such as polyvinyl chloride that can be twisted to various positions and is approximately the length of battery case 10. The rear end 19 of flexible connecting arm 18 is secured to an enlarged top portion of the closed rear end cap 20 which is secured to the rear of battery case 10.

Thus, the subject flashlight appears to be conventional as shown in FIGURE 3 when light emitting head 14 is attached to a short reduced diameter portion 10a on the front end 12 of battery case 10 since flexible connecting arm 18 will then lie flat within mating groove 22 which extends longitudinally the length of battery case 10. That is, groove 22 is just wide enough to accommodate connecting arm 18 therein and connecting arm 18, in turn, is just long enough to extend from the rear end cap 20 within mating groove 22 to the front end 12 of battery case 10 without any excess length to fold over.

When light emitting head 14 is detached from the front end 12 of battery case 10 it can be adjusted to a multitude of fixed positions since flexible connecting arm 18 is a manually bendable and deformable structure of the type described in copending patent application Ser. No. 486,048. Near the front end 12 of battery case 10 in the reduced diameter portion 10a thereof is an exterior curved annular groove 23 which is matingly engageable with a curved interior annular lip 24 formed within a shallow cylindrical inset portion 26 in the rear end 16 of light emitting head 14. The short reduced diameter portion 10a of battery case 10 extends between the annular groove 23 and front end 12 and is constructed so that it can be matingly received within the cylindrical inset portion 26 of light emitting head 14, and lip 24 thereof snapped into engagement with groove 23.

Slidably fitting within battery case 10 in the usual end to end electrical contact are a pair of conventional circular cylindrical dry cell flashlight batteries 30 and 32. When the forward annular interior threaded portion 34a of back end cap 20 is threadably engaged with the annular rear exterior threaded portion 34b of battery case 10 and screwed tight thereon an electrical circuit can be completed between batteries 30 and 32 to a conventional flashlight bulb 36 which is mounted in light

emitting head 14 in the usual manner. An inwardly bowed, diametrically extending resilient forward end portion 37 of a flat elongated contact strip 38 made of electrically conductive metal positioned within the front interior end of battery case 10 presses the rear end 39 of battery 32 so that its forward terminal 39a contacts the rear end 40 of battery 30. The forward terminal 40a of battery 30, in turn, contacts a U-shaped electrical contact plate 42 centrally secured within rear end cap 20. An turned rear end portion 43a of contact strip 38 electrically contacts an annular metal ring 43b mounted within rear end cap 20.

Within battery case 10 one lead of the electrical circuit for the flashlight contacts end 39 of battery 32 via the forward portion 37 of contact strip 38 which is longitudinally secured to the top interior surface of battery case 10. The other lead of the circuit contacts terminal 40a of battery 30 via contact plate 42 centrally secured to an axially protruding portion 43 formed in the interior of rear end cap 20 by screw 44. Contact strip 38 through ring 43b and contact plate 42 are, in turn, electrically connected to circuit wires 46 and 48, respectively, which leave battery case 10 via the interior of flexible connecting arm 18 and then enter the interior of light emitting head 14 as in copending application Ser. No. 486,048. These wires 46 and 48 are sufficiently malleable and strong that support for the connecting arm 18 in a fixed deformed position is provided thereby. For instance, sixteen gauge solid copper wire has been found suitable for this purpose.

Light emitting head 14 is substantially a conventional flashlight head. It includes an internal electrically insulated base member 50 which supports light bulb 36 centrally so that it protrudes forward through a central opening 51 in curved parabolic reflector 52. When light bulb 36 is energized light is beamed therefrom out a lens 54 held in position by a lens cap 55 screwed on the forward end of light emitting head 14. When light emitting head 14 is disengaged from battery case 10 it can be pointed in nearly any desired position relative to case 10 and will be held in position by the supporting structure of flexible connecting arm 18.

A switch 56 made of non-conductive material is slidably mounted within head 14 and protrudes through a longitudinal opening 58 in the top of light emitting head 14. Switch contact plate 60 within head 14 is connected to switch 56 by screw 61 and can be slid into electrical contact with contact pin 62 mounted on the top inside surface of head 14 when in the forward "on" position to complete the circuit or interrupt the circuit when slid to the rearward "off" position. When switch 56 is in the forward "on" position electricity will flow through, respectively, circuit wire 46, switch contact plate 60, contact pin 62, a light bulb contact strip 64 extending along the interior surface of head 14 from contact pin 62 to bulb 36, light bulb base terminal 66, bulb terminal contact plate 68, through a contact screw 70 threaded into base member 50 to which contact plate 68 is attached and then into circuit wire 48 which is also attached to contact screw 70. The electricity then flows through wire 46 to battery 32 via annular ring 43b and strip 38 and through wire 48 to battery 30 via plate 42.

A magnetic attaching member 72 formed with a flat outer contact surface 73 is secured longitudinally to the periphery of battery case 10 so as to provide a means for detachably mounting the flashlight to a suitable metallic surface. Other attaching means such as suction cups could be used for this purpose. Preferably the attaching member provides a weighted base support for the flashlight.

The embodiment of this invention disclosed in FIGURES 4 and 5 is essentially the same as previously disclosed and the same numerals primed are used for like parts. However, instead of utilizing ordinary flashlight dry cell batteries as a source of electrical power a re-

chargeable battery is used. Accordingly, the structure of the cylindrical battery case 10' is modified to accommodate a rechargeable battery (not shown) within it. Thus, in order that this battery may be recharged a pair of contact terminals 74 and 76, which may be plugged into a conventional wall socket, extend out the rear end 77 of battery case 10' from the rechargeable battery contained therein. When charged a short cylindrical end cap 20' that has a pair of contact sockets 84 and 86 disposed therein is attached to the rear end 77 of battery case 10' by slidable mating engagement of terminals 74 and 76 in sockets 84 and 86, respectively.

Circuit wires 46' and 48' are connected to sockets 84 and 86, respectively, and extend internally within flexible connecting arm 18' from rear end cap 20' to cylindrical light emitting head 14' so as to provide an electrical circuit thereto as in the previously described embodiment of this invention. The on-off switch 56' for this circuit is also located on the light emitting head 14' which is detachably engageable with the front end 87 of battery case 10'.

A longitudinal slot 22' adapted to accommodate arm 18' extends down the full length of one side of battery case 10'. Flexible coupling arm 18' lies within the slot 22' when rear cap 20' and light emitting head 14' are attached to battery case 10'. A magnetic attaching member 72' is secured to the side of battery case 10' to provide a means for temporarily securing the flashlight to a structure from which it is to be supported in operative position.

In the embodiment of this invention shown in FIGURES 6 through 9 the flashlight is comprised of a hollow cylindrical battery case 90 embodying an open internally threaded rear end 90a and a closed front end 90b. Longitudinally secured to the external bottom periphery of battery case 90 is an elongated magnet holder 91 which is adapted to carry a pair of elongated flat magnets 91a and 91b on its bottom surface.

Normally carried in end to end contact within battery case 90 are a pair of conventional circular cylindrical dry cell batteries 92 and 94 wherein the forward central terminal 92a of battery 92 bears against and electrically contacts the intumed forward radially extending, axially resilient end 95 of an elongated flat contact strip 96 made of electrically conductive metal. Contact strip 96 extends longitudinally along the upper internal surface of case 90 from end 90a to end 90b thereof and is attached to the inside of battery case 90 by rivets 96a and 96b. It terminates at a slightly intumed rear end 97 near the rear end 90a of battery case 90.

The rear contacting surface 92b of battery 92 bears against the forward central terminal 94a of battery 94. An internally threaded circular end cap 98 is screwed onto a plastic, externally threaded circular collar 99 which, in turn, is screwed into the threaded rear end 90a of case 90. End cap 98 axially presses an internally located cone-shaped spiral spring 100 made of electrically conductive metal against the rear contacting surface 94b of battery 94. Mounted inside of the forward portion of collar 99 is a metal ring 101 so positioned and of suitable circumference to bear against the intumed rear end 97 of contact strip 96.

An elongated flexible connecting arm 102 with a curved cross-sectional crescent shape is attached at its rear end 104 to end cap 98 and at its front end 106 to the rear of a short cylindrical light emitting head 108. As in the previous forms of this invention the connecting arm 102 is primarily made of a flexible non-conductive material and is structured so that it can be deformed and bent to various positions so as to hold light emitting head 108 in a predetermined position. Arm 102 is just long enough to extend from the rear end 90a to the forward end 90b of battery case 90 so that when head 108 is attached to the forward end 90b of battery case 90 arm 102 will lie flat against it. In the form shown arm 102 has a curved

internal surface 102a which conforms to the exterior of battery case 90 and a slightly more curved outer surface 102b with a plurality of small longitudinal grooves 102c therein. Hence, the cross-sectional shape of connecting arm 102 somewhat resembles a crescent.

Light emitting head 108 is formed with a closed shallow recessed circular rear end 110 which is matingly received by a short circular reduced front end 112 of battery case 90 when head 108 is attached thereto. An internal annular lip 113a on the peripheral edge of rear end 110 insures a tight fit thereof by snapping into engagement with a mating annular groove 113b formed in the reduced front end 112 of case 90.

A base structure 114 is centrally located within head 108 and embodies a circular recessed cup receptacle 116 which opens axially toward the front end 118 of head 108. Cup receptacle 116 is adapted to receive and hold the circular cylindrical base 120 of an electric light bulb 122. A parabolic reflector 124 made of electrically conductive metal is secured within the front end 118 of head 108 with its shiny reflecting surface facing forward. Reflector 124 is formed with a circular central opening 126 through which the transparent glass envelope 128 of bulb 122 protrudes. An annular metal flange 129 of bulb 122 contacts the rear surface of reflector 124 adjacent to opening 126 therein. A circular transparent glass or plastic lens 130 is secured within the forward exterior threaded portion 131 of the front end 118 of head 108 by an internally threaded open lens cap 132 having a hexagonal peripheral surface.

In order to energize electric light bulb 122 a generally disc-shaped on-off switch 134 is pivotally mounted axially on pin 136 the latter of which is supported between the spaced arms 138a and 138b of a switch support member 140. This switch support member 140, in turn, embodies an axially positioned circular opening 142 which is adapted to be secured around cup receptacle 116 so that a protruding knurled finger grip portion 144 formed on the circumferential peripheral surface of switch 134 extends through a slot 146 in head 108 to serve as the means by which the flashlight can be turned on and off.

Formed in the side of switch 134 near a peripheral edge thereof is a protruding curved cam element 148 which is positioned so that it will bear against a flat resilient contact lever 150 mounted on base element 114 within head 108. Lever 150 is made of electrically conductive material and is biased out of contact with the reflector 124 when switch 134 is in its off position. However, when switch 134 is pivoted forward to its on position, cam element 148 presses it down into contact with reflector 124 so that bulb 122 is energized by an electrical circuit being completed through, respectively, electrically conductive portions of lever 150, reflector 124, flange 129 of bulb 122, the filament (not shown) in bulb 122, a contact plate 152 supported by base structure 114 and bearing against terminal 154 of bulb 122, a circuit wire 156 connected to contact plate 152 and extending within arm 102 to emerge from its rear end 104 into case 90 where it is connected to ring 101 which, in turn, contacts the rear end 97 of contact strip 96, through contact strip 96 to its end 95 into batteries 92 and 94, spring 100 and back to lever 150 by a circuit wire 158 within arm 102 which contacts spring 100 and emerges from the front end 106 of arm 102 and enters into light emitting head 108.

Preferably circuit wires 156 and 158 are of sixteen gauge solid copper. This has been found to be sufficiently malleable to allow manual bending of the connecting arm 102 within which they are carried, yet strong enough to support the weight of the light emitting head 108 in a multitude of detached positions relative to battery case 90.

The flashlight in accordance with this invention shown in FIGURES 10 through 16, as in the previously described forms of this invention, includes a hollow cylindrical battery case 160. Detachably mounted to a short

annular reduced portion 162 of its closed front end 164 is a truncated conically shaped light emitting head 166. And threaded on its open rear end 168 is a shallow cylindrical rear end cap 170. The closed front end 164 is circular in shape and near the top edge thereof contains a small rectangular opening 171 slightly greater in size than the rectangular cross-section of the flexible connecting arm 172 which connects the light emitting head 166 to the battery case 160. The flashlight can be attached to suitable iron structures by the thin vertically aligned plate magnets 173 mounted so as to protrude from the bottom of the elongated flat-faced magnet holder 174 secured longitudinally to the periphery of battery case 160.

Light emitting head 166 is essentially the same as previously described and embodies an annular recess (not shown) in its rear end 176 which matingly receives the annular reduced portion 162 of the front end of battery case 160 in such a manner that it can be securely attached thereto. Within the light emitting head 166 is the usual bulb 178 mounted centrally therein and protruding through a central opening within a parabolic reflector 180 so that light emitted therefrom is beamed out through a circular transparent glass or plastic lens 182 secured by an annular lens cap 184 to the front end 186 of the light emitting head 166.

As on-off switch 188 protrudes through a slot 190 in the top of head 166, it engages an abutting resiliently mounted switch plate 192 so as to be moved into contact with reflector 180 when in the "on" position and moved out of contact with reflector when in the "off" position. This selectively completes or breaks the electrical circuit, to be described hereinafter, whereby the flashlight bulb 178 is energized.

The forward end 194 of the flexible connecting arm 172 is secured to the rear of light emitting head 166 and passes through a rectangular hole (not shown) in the upper portion of the rear end 176 thereof into the interior of head 166. Connecting arm 172 is approximately the length of battery case 160 and carries within it a pair of circuit wires 196 and 198 which protrude from both ends of arm 172 and are sufficiently malleable and strong enough to support the connecting arm 172 and attached light emitting head 166 in any selected position desired. As an example I have found that sixteen gauge solid copper wire is satisfactory for this purpose.

Protruding from the forward end 194 of arm 172 within head 166 wire 196 makes electrical contact with bulb 178 through a contact plate 200 abutting the base 202 of bulb 178 and circuit wire 198 makes electrical contact with bulb 178 through resilient switch plate 192 and reflector 180 abutting an annular flange 204 of bulb 178. Circuit wires 196 and 198 protrude from the rear end 206 of arm 172 and bend back so as to extend a short distance along each adjacent side of connecting arm 172 as best seen in FIGURE 16.

The flexible connecting arm 172 extends into battery case 160 through the small rectangular opening 171 in the closed front end 164 of the case 160. This opening 171 is large enough to permit arm 172 to slide therein but smaller than the cross-sectional perimeter presented by arm 172 with circuit wires 196 and 198 bent around the adjacent sides thereof as at its rear end 206. Thus, the bending of circuit wires 196 and 198 around the sides of arm 172 provides a stop means which prevents the rear end 206 thereof from sliding out of the battery case when arm 172 is extended.

The portion of connecting arm 172 which is within battery case 160 is slidably mounted in an elongated longitudinally extending channel 208 formed on the upper peripheral surface of a hollow, generally circular, cylindrical battery carrier 210. Carrier 210 is mounted axially within battery case 160, is open at both ends, and is just slightly larger in internal circumference than the external circumference of flashlight batteries 212 to

be carried therein. It is ordinarily the length of the two flashlight batteries 212 placed in conventional end to end operative relationship. However, since the size and number of batteries within the flashlight may vary, the size of battery case 160, battery carrier 210 and the length of connecting arm 172 will vary accordingly. A conical spring 213 made of electrically conductive metal is mounted within the rear end cap 170 and resiliently presses against the rearmost battery 212 contained in the battery carrier 210.

The channel 208 is comprised of a pair of upright parallel walls 214 and 216 spaced apart slightly greater than the width of connecting arm 172 by a flattened floor portion of battery carrier 210 which is formed by the flat top surface 218 of battery carrier 210. Channel 208 extends the full length of battery carrier 210 and is positioned within battery case 160 so that it opens in alignment with opening 171 in the front end 164 thereof. Its floor portion is formed from the flat top surface 218 of battery carrier 210 and the parallel walls 214 and 216 thereon can be resiliently sprung slightly apart.

Attached to the inside surface of each of the upright walls 214 and 216 are electrical contact runner strips 222 and 220, respectively, which extend the full length of walls 216 and 214 and are made of electrically conductive metal. The spacing between runner strips 220 and 222 is such that they will be resiliently pressed by the walls 216 and 214 of battery carrier 210 against the exterior portions of circuit wires 198 and 196, respectively, which are bent to extend around the rear end 206 of arm 172 and a short distance along each of its opposite sides as shown in FIGURE 16. However, the pressure between runner strips 220 and 222 is not so great against the wires 198 and 196 as to interfere with the easy longitudinal sliding of arm 172 in channel 208.

The portion of the electrical circuit between the end of circuit wire 198 protruding from the rear end 206 of connecting arm 172 and a battery 212 within carrier 210 is completed by an annular metal band 215 secured adjacent the rear of carrier 210 so as to bear against and electrically contact an electrically conductive peripheral portion of conical spring 213 which, in turn, contacts the rear of a battery 212. This band 215 is also electrically connected to runner strip 220 by contacting a bent finger portion 221 protruding upward from the rear of strip 216.

The portion of the electrical circuit between the end of circuit wire 196 protruding from the rear end 206 of connecting arm 172 and the forward central terminal 225 of a battery 212 within carrier 210 is completed by terminal 225 contacting a forward battery contact plate 226 which is disposed diametrically across the front of the carrier 210 and connected by forward arcuate connector strip 228 to runner strip 222 by a pin 230 which passes through wall 214 of the channel 208. The forward battery 212 is resiliently pressed against contact plate 226 by the spring 213 mounted within cylindrical rear end cap 170.

Thus, it can be seen that the light emitting head 166 can be extended and positioned in any direction desired relative to battery case 160 by bending connecting arm 172. Yet, the circuit between the batteries 212 in battery case 160 and bulb 178 can be closed by switch 188 as desired since the ends of circuit wires 198 and 196 extending around the sides of connecting arm 172 at its rear end 206 will be continually in contact with runner strips 220 and 222, respectively. At the same time arm 172 can be fully retracted into battery case 160 and the rear end 176 of head 166 securely attached to the annular reduced portion 162 on the front of battery case 160 so that it appears to be an ordinary flashlight.

While the particular adjustable flashlights herein shown and described in detail are fully capable of attaining the objects and providing the advantages hereinbefore mentioned, it is to be understood that they are merely illus-

trative of the presently preferred embodiments of the invention and that no limitations are intended to the details of construction or design herein shown other than as defined in the appended claims.

I claim:

1. A flashlight comprising an elongated hollow battery case embodying a forward end and a rear end and adapted to be gripped in the hand of an operator, a back end cap secured to said rear end, at least one battery contained within said battery case, a light emitting head internally supporting a light bulb and reflector positioned to beam light from said bulb forward from said light emitting head, said light emitting head being detachably engageable with the forward end of said battery case, an elongated manually deformable flexible connecting arm having a front and rear end and solely physically linking said light emitting head with said battery case, said flexible connecting arm being of such a length that when said light emitting head is engaged on the forward end of said battery case said flexible connecting arm extends to the rear thereof and does not protrude from said battery case, said flexible connecting arm being characterized by a structure which can be manually bent and will remain in its bent position so that said light emitting head can be adjusted relative to said battery case, an electrical circuit connecting said battery with said light bulb in said light emitting head by means of said flexible connecting arm and an on-off switch disposed in said light emitting head which opens and closes said electrical circuit.

2. A flashlight as defined in claim 1 wherein a magnetic attaching means is secured to the battery case.

3. A flashlight as defined in claim 1 wherein the battery case is cylindrical, the rear end of the flexible arm is secured to the back end cap of the battery case, the battery case is formed with a longitudinal exterior groove extending its full length and the elongated flexible connecting arm fits in said groove so as to lie flat therein when the light emitting head is attached to the end of the battery case.

4. A flashlight as defined in claim 1 wherein the battery is rechargeable, the back end cap of the battery case to which the flexible connecting arm is attached contains sockets electrically connected with said light emitting head through circuit wires carried within said flexible arm and said back end cap is detachable from the rear end of the battery case, electrical contact prongs extend through the rear end of the battery case from said rechargeable battery wherein said contact prongs are matingly engageable with said sockets in said end cap so as to complete a portion of the electrical circuit of the flashlight and when said back end cap is detached said electrical contact prongs provide a means by which the battery can be recharged.

5. A flashlight as defined in claim 1 wherein the battery carried within said battery case is supported within an internal assembly therein which is formed with a longitudinally extending peripheral parallel side channel adapted to slidably receive the flexible connecting arm, a pair of electrical contact runner strips, each of which are electrically connected to the opposite pole of the battery in said battery case, said runner strips being mounted to the opposing internal sides of said channel, and a pair of circuit wires extending within said connecting arm and protruding from its front end into electrical contact with said light emitting head and protruding from its rear end a short distance around each side of said connecting arm, wherein said connecting arm is slidably mounted in said channel and the circuit wires extending around the rear end of said arm slidably bear against the opposing contact runner strips therein so as to complete the portion of the electrical circuit to said battery within the battery case.

6. An adjustable flashlight comprising: an elongated cylindrical, hollow, battery case adapted to be gripped

in the hand of an operator; a short cylindrical back end cap detachably engageable with the rear end of said battery case; a light emitting head including a lens at its forward end, a curved reflector therein, and a light bulb directed toward said lens, said light emitting head being detachably engageable at its rear end with the front end of said battery case; a flexible connecting arm comprised of a structure which can be manually bent and will remain in its bent position, said flexible connecting arm interconnecting said back end cap and said light emitting head and being about the length of said battery case with its internal surface conforming to the adjacent periphery of said battery case and positioned so that when said light emitting head is attached to the front end of said battery case said flexible connecting arm lies flush against said battery case so that the flashlight appears conventional; at least one battery contained within said battery case; and electrical circuit provided between said battery and the light bulb in said light emitting head, said circuit including circuit wires carried internally within said flexible connecting arm; and an on-off switch for said circuit mounted in said light emitting head so that it is completely separated physically from said battery.

7. An adjustable flashlight as defined in claim 6 wherein the circuit wires carried internally within the flexible connecting arm are sufficiently malleable and strong to provide the support for the light emitting head in various positions relative to the battery case when it is detached therefrom.

8. An adjustable flashlight as defined in claim 6 wherein a magnet is secured to the battery case to provide a means for attaching the flashlight to suitable supporting structures.

9. An adjustable flashlight as defined in claim 6 wherein the battery is rechargeable, the back end cap of the battery case to which the flexible connecting arm is attached contains sockets electrically connected with the light emitting head and is detachable from the rear end of the battery case, electrical contact prongs extend through the rear end of the battery case from the rechargeable battery which are matingly engageable with said sockets in said back end cap and when said back end cap is detached said electrical contact prongs provide a means by which the battery can be recharged.

10. A flashlight comprising: an elongated hollow cylindrical battery case formed with a closed front end and an open rear end and adapted to be gripped in the hand of an operator; and end cap secured to said battery case rear end; a battery carrier mounted within said battery case; at least one battery supported within said battery carrier, said battery carrier formed with a longitudinally extending guide channel having a pair of spaced parallel walls; electrical contact members connecting electrical contact runners inside said parallel walls of said guide channel with the opposite poles, respectively, of said battery; an elongated flexible connecting arm having a front and rear end and carrying a pair of circuit wires therein, said connecting arm being about the length of said battery carrier and having a cross-sectional shape which can slidably fit within said guide channel; a light emitting head including a transparent lens mounted on

its forward end, a light bulb centrally mounted therein, and a reflector mounted so as to beam light from said bulb through said transparent lens, said light emitting head being formed so that it can be detachably engaged at its rear end with the front end of said battery case; said closed front end of said battery case having an opening therein slightly greater in size than the cross-section of said connecting arm and aligned with the guide channel of said battery carrier in said battery case; said rear end of said connecting arm passing through the opening in the forward end of said battery case and slidably mounted for longitudinal movement within said guide channel of the battery carrier; said front end of said connecting arm secured to the rear of said light emitting head; an electrical circuit formed between said light bulb in said light emitting head and said battery in said battery case comprising said circuit wires, an extension of said pair of circuit wires from the front end of said connecting arm into electrical contact with said light bulb and an extension of said pair of circuit wires from the rear end of said connecting arm into electrical contact with the contact runners on said parallel walls of said guide channel to complete the circuit to the battery; an on-off switch in said light emitting head for selectively opening or closing said circuit; and said circuit wires within said flexible connecting arm being formed of sufficiently malleable and strong enough material that the light emitting head will be supported in position by bending the connecting arm when it is detached from the battery case.

11. A flashlight as defined in claim 10 wherein the circuit wires extend from the rear of said connecting arm a short distance along the opposite sides of said connecting arm and into contact with the parallel walls of said guide channel so as to present a cross-section perimeter greater than the opening in the forward end of said battery case through which said connecting arm passes thereby providing a stop means which limits the extension of said arm from said battery case.

12. A flashlight as defined in claim 10 which includes an attaching means secured to the periphery of the battery case.

13. A flashlight as defined in claim 10 wherein the pair of parallel walls of the guide channel are resiliently movable relative to each other so that the electrical contact runners press firmly against the pair of circuit wires extending from the rear of said connecting arm but still permit longitudinally slidable movement of said connecting arm within said guide channel.

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