

Dec. 22, 1936.

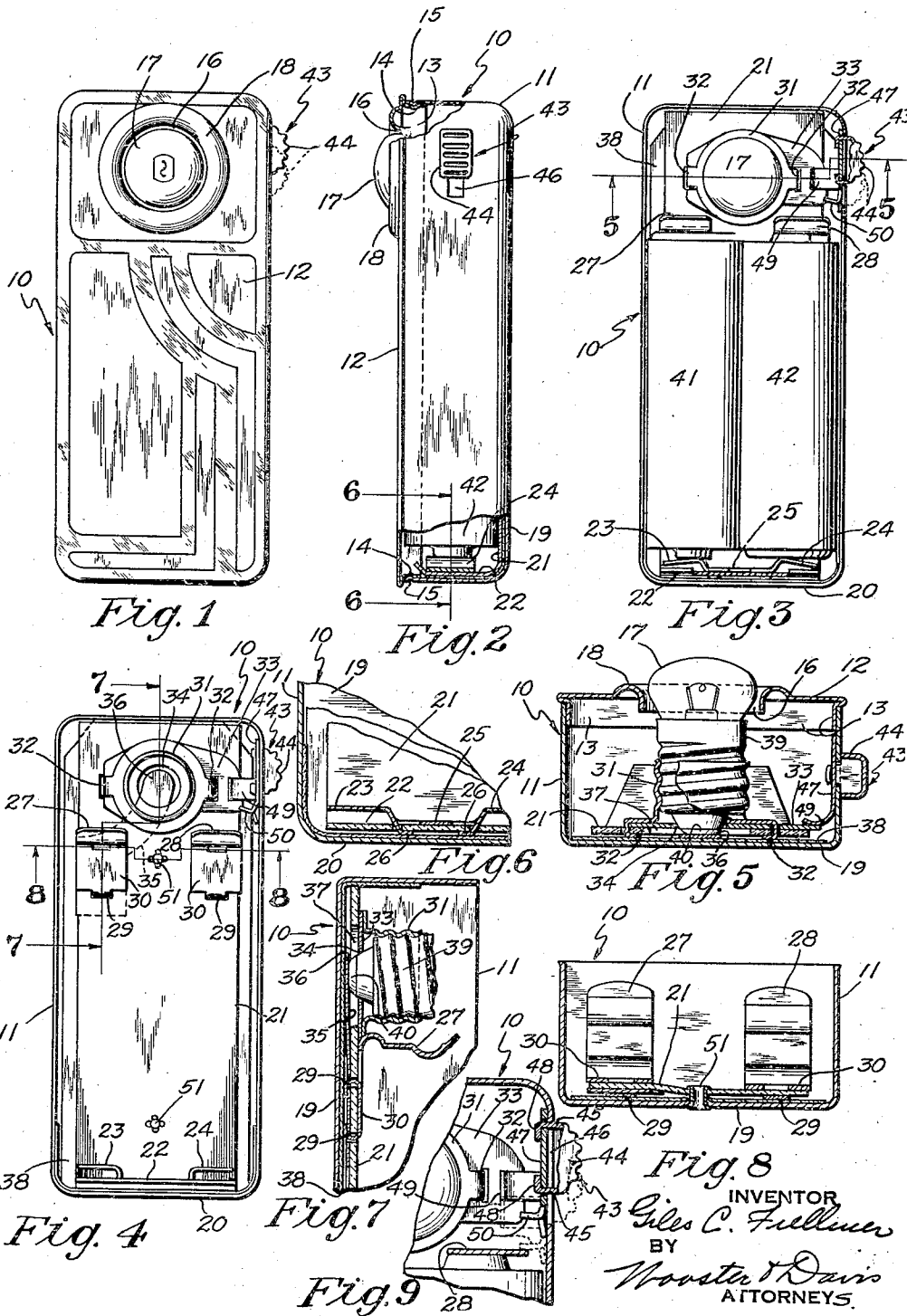
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2,065,307

ELECTRIC FLASHLIGHT

Filed Feb. 7, 1935

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

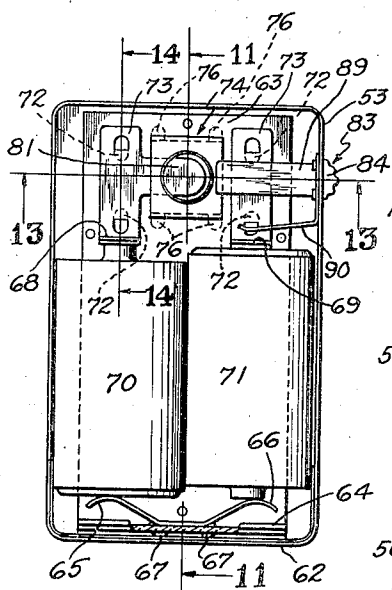


Fig. 10

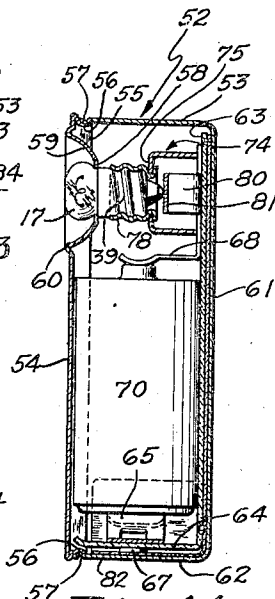


Fig. 11

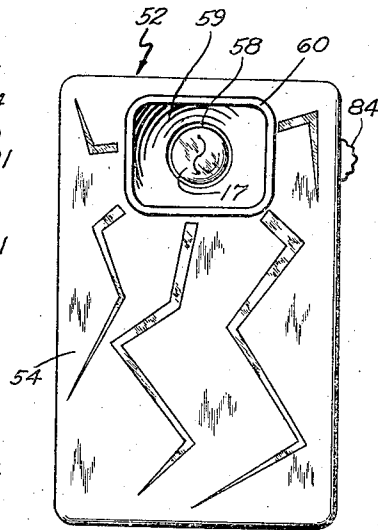


Fig. 12

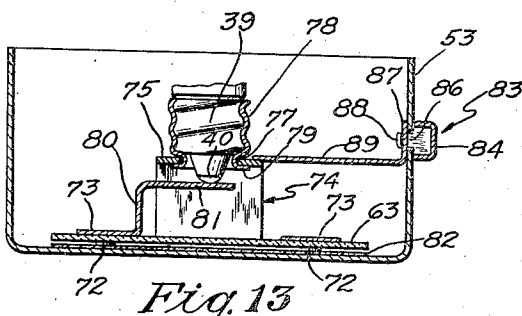


Fig. 13

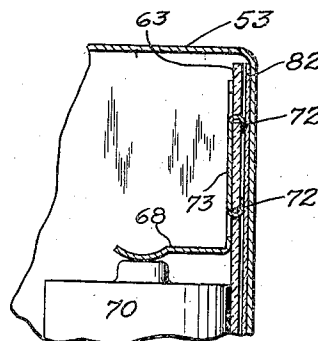


Fig. 14

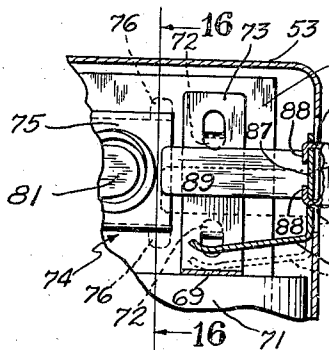


Fig. 15

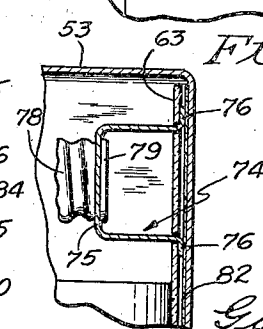


Fig. 16

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2,065,307

ELECTRIC FLASHLIGHT

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Application February 7, 1935, Serial No. 5,350

8 Claims. (Cl. 240—10.65)

This invention relates to new and useful improvements in flashlights and has particular relation to a small flashlight adapted to be carried in a pocket or purse.

5 The invention includes amongst its objects the providing of a flashlight which is of simple and inexpensive construction and in which the parts are compactly arranged so that the flashlight occupies but a minimum of space.

10 Another object of the invention is to provide a flashlight which is relatively narrow and which may be conveniently held in the hand of a user, and the switch of which may be conveniently operated by the thumb of the hand holding the flashlight.

15 Other objects and advantages will become apparent from a consideration of the following detailed description taken in connection with the accompanying drawings wherein satisfactory embodiments of the invention are shown. However, it will be understood that the invention is not limited to the details disclosed but includes all such variations and modifications as fall within the spirit of the invention and the scope of the appended claims.

25 Fig. 1 is a front elevational view on an enlarged scale showing a flashlight constructed according to the present invention;

30 Fig. 2 is a side elevational view thereof with parts broken away;

Fig. 3 is a front elevational view of the flashlight with the cover omitted, and with a part of the switch means in section;

35 Fig. 4 is a view somewhat similar to Fig. 3 but with the switch parts in elevation and with the batteries omitted;

Fig. 5 is a transverse sectional view on an enlarged scale and taken substantially along the line 5—5 of Fig. 3;

40 Fig. 6 is an enlarged detail sectional view taken substantially along the line 6—6 of Fig. 2;

Fig. 7 is an enlarged detail sectional view taken substantially along the line 7—7 of Fig. 4;

45 Fig. 8 is an enlarged transverse sectional view taken substantially along the line 8—8 of Fig. 4;

Fig. 9 is an enlarged detail sectional view showing the switch mounting;

Fig. 10 is a front elevational view showing a modified construction, primarily for using somewhat larger sized batteries than in the form of Figs. 1 to 9, the scale used being about natural size, the lamp and the cover of the casing being omitted;

55 Fig. 11 is a sectional view taken substantially along the plane of the line 11—11 of Fig. 10

but with the lamp and the casing cover in place;

Fig. 12 is a front elevational view of the flashlight of Fig. 10 with the cover in place;

Fig. 13 is an enlarged transverse sectional view taken substantially along the plane of the line 13—13 of Fig. 10;

Fig. 14 is an enlarged detail sectional view taken substantially along the plane of the line 14—14 of Fig. 10;

Fig. 15 is an enlarged detail partly in section 10 and partly in elevation and showing the switch mounting; and

Fig. 16 is a detail sectional view taken substantially along the line 16—16 of Fig. 15.

Referring in detail to the drawings, and at 15 first particularly to Figs. 1 through 9, the improved flashlight is shown as including a casing generally designated 10 and comprising an elongated box-like body portion 11 and a cover or closure 12. As shown, the body 11 is generally 20 rectangular with rounded corners and is entirely open at its front side. The cover 12 includes a flange 13 entering the open side of the body 11 and which flange may be indented as at 14 to receive indented portions 15 of the end walls of the body to provide catches whereby the cover 25 is secured on the body against casual displacement. Adjacent one end the cover 12 is provided with an opening 16 for the passage of a lamp 17 as will later be more fully described, 30 and about the opening the material of the cover may be pressed outwardly to provide a bead 18 surrounding the opening.

Within the body 11 extending along the rear or bottom wall 19 and the lower end wall 20 35 thereof is a sheet 21 of a stiff insulating material such as fibre board. An end portion 22 of the sheet extends along the end wall 20 of the body 11 and secured to such portion 22 of the sheet are connected clips 23 and 24. These 40 clips are of resilient metal and are integral with an intermediate portion 25 disposed against the upper or inner surface of the sheet portion 22 and having lugs 26 lanced and pressed therefrom and passing through and disposed at the 45 lower or outer side of said sheet portion whereby the clips are secured in place.

Resilient metal clips 27 and 28 are secured to the insulating sheet 21 and extend outwardly from the sheet in aligned relation with the clips 50 23 and 24 respectively whereby the clips 23 and 27 form one pair of spring contact clips, while the clips 24 and 28 form a second pair. The clips 27 and 28 are secured to the sheet 21 of insulating material by lugs 29 lanced and pressed 55

from the attaching portions 30 of the clips and passed through and clamped against the underside of the insulating sheet.

Above the clips 27 and 28 a lamp socket 31 is secured to the sheet 21, preferably a screw lamp socket, although not necessarily so, as it may be of any of the usual constructions for holding and securing a lamp bulb. This socket is open at its inner end to receive a lamp bulb and is secured to the insulating sheet by lugs 32 passing through the sheet and clamped against the underside thereof. A contact piece 33 is clamped against the sheet 21 by the socket 31 and this contact piece is directly engaged by the inner end portion of the socket so that there is a good electrical contact between the piece 33 and the socket. In alignment with the axial center line of the socket the piece 33 is provided with a perforation 34. One or more of the lugs 32 attaching the socket to the insulating sheet may be passed through notches or openings in the contact piece 33 whereby said piece will be securely held in the desired position.

An extension or contact piece 35 is disposed at the underside of the insulating sheet 21 and is clamped against the sheet by means of the lugs 29 which pass through the sheet and serve to secure the clip 27 in place. This is as shown best in Fig. 7 from which figure it will be apparent that the clip 27 is electrically connected with the extension 35. Continuing at the underside of the sheet 21 and between it and the insulating paper 38 so that it is insulated from the casing, the extension 35 has an end portion 36 disposed at the inner end of the socket 31. Below the socket the insulating sheet 21 is provided with a perforation 37 whereby said end portion 36 of the extension is exposed beyond the inner end of the socket 31. A sheet 38 of insulating material, such for example as paper, is disposed against the rear or bottom wall and the end walls of the body 11 so as to thoroughly insulate each of the clips, the extension 35 of the clip 27, the socket and contact piece 33 from the casing. From this it will be understood that the sheet 38 is beneath the extension 35 and that said extension is beneath the sheet 21 whereby in addition to being insulated from the casing the extension is insulated from the socket 31.

The lamp 17 has its stem 39 forming a screw shell providing one terminal of the lamp threaded into the socket 31 to bring the center contact 40 of the lamp into engagement with the end portion 36 of the extension 35. Batteries 41 and 42 are arranged in the casing and the battery 41 is conductively engaged with the clips 27 and 23 while the battery 42 is conductively engaged with the clips 24 and 28, the batteries being reversed so they are connected in series. A switch generally designated 43 is arranged on a side wall of the casing and such switch includes an outer finger or button-piece 44 provided with arms 45 extending through a slot 46 in the wall of the casing and then through a switch element 47 disposed against the inner surface of said wall of the casing. Inwardly of said elements the ends of the arms are turned or bent against the elements as at 48, whereby to secure the finger piece 44 and the element 47 to one another and for movement on the casing wall, which movement will be limited by the length of the slot 46. Element 47 includes a pair of arms or contact portions 49 and 50 projecting from the lower and an upright

edge thereof, and of which the arm 49 bears against and is slidable on the contact piece 33.

Normally when the circuit is open the switch 43 is toward the upper end of the slot 46 as shown by the full lines in the drawings, and when the switch is in this position the batteries 41 and 42 are not energizing the lamp 17. When it is desired to use the flashlight the switch is shifted to the dotted line position of Fig. 9 to bring the portion or arm 50 of the contact member 47 against the clip 23. When this is done a series circuit is completed through the clips, battery and lamp. The circuit may be described as from the center contact 40 of the lamp to the extension 35, clip 27, through battery 41 to clip 23, from thence to clip 24 and through battery 42 to clip 28, and from clip 28 through the arm 50 of the contact or switch element 47 to the arm 49 of said element and the contact piece 33 to the socket 31 and the lamp filament.

The sheets 21 and 38 insulate the clip and socket from the casing and with this arrangement the circuit is independent of the casing and accordingly there is no limit as to the material of which the casing may be made since it is not necessary that the casing be of conducting material. Any suitable means, as for example the rivets 51, may be used to secure the insulating sheets in place. It will be apparent that the contact portion 49 of the switch has wiping engagement with the contact piece 33 of the socket so that a good electrical engagement between these parts is maintained. The switch parts 44 and 47 frictionally engage the side wall of the casing so that the switch will remain in any position to which it is shifted. The various clips and contacts for mounting the batteries and making electrical connection therewith, the lamp socket and central contact are all mounted on the insulating sheet 21, so they can all be assembled and properly adjusted outside the casing and then assembled in the casing as a unit by merely mounting it in the casing.

The flashlight is particularly adapted for carrying in a pocket or purse and is quite small. Figs. 1 through 4 show the flashlight approximately one and one-half times actual size and it will therefore be appreciated that the flashlight may be conveniently carried in a purse or in a vest pocket or the like. The same construction and arrangement may of course be used for larger constructions using larger batteries, if desired, but it is particularly adapted for small lights as it is very compact and requires a minimum of space. Since the batteries 41 and 42 are arranged side by side with the socket for the lamp above the batteries it will be apparent that a relatively narrow casing may be used thereby keeping low the overall width of the flashlight. The entire casing and particularly the cover 12 may be highly ornamented, and it is noted that the opening 16 in the cover 12 is so located as to align with the lamp 17 so that the lamp extends into said opening in the completely assembled flashlight.

Figs. 10 through 16 show a construction particularly adapted for use when batteries of greater diameter than the batteries 41 and 42 of Fig. 3 are used, and which batteries of greater diameter necessitate the employment of a casing the body or box-like portion of which is of a depth greater than the overall length of a lamp to be used. In the modified construction the casing is generally designated 52 and comprises the box-like body portion 53 and a

cover 54 having a flange 55 entering the open side of the body, which flange may be provided with depressions 56 receiving the depressions 57 in the end walls of the body forming catches whereby to prevent casual separation of the body and cover. Toward one end the cover is provided with an opening 58, and the portion 59 of the cover about the opening is depressed or concaved to provide a reflector. At the outer edges of this reflector portion a bead 60 may be pressed up from the cover.

Within the body and extending along the rear wall 61 and one end wall 62 thereof is a sheet of insulating material 63 whose portion along the end wall 62 of the body is designated 64. Resilient metal clips 65 and 66 are secured to the portion 64 of the sheet 63 by lugs 67 passed through said portion and turned against its under or outer side. Resilient metal clips 68 and 69 are secured to the sheet 63 of insulating material in spaced relation to the clips 65 and 66, and the clips 65 and 68 form one pair while the clips 66 and 69 form another pair. Batteries 70 and 71 are arranged between the clips 65 of the respective pairs and each battery engages conductively with its pair of clips. The batteries are reversed so as to be connected in series. Clips 68 and 69 are secured to the sheet 63 by means of lugs 72 lanced and pressed from the mounting portions 73 of the clips and passed through openings in the sheet and turned or pinched against its underside.

The socket supporting member 74 of metal is secured to the sheet 63 between the mounting portions 73 of the clips 68 and 69. This supporting member is generally U-shaped and is arranged with its connecting portion 75 disposed outwardly or in spaced relation to the sheet 63. It is secured to the sheet by lugs 76 carried by the free ends of its arms and passing through openings in the sheet and turned or clinched against the underside of the latter. In its connecting portion 75 the supporting member 74 is provided with a perforation 77 through which extends the inner end of a socket 78, and the inner end of such socket may be turned over as at 79 whereby the socket is secured to the member.

With the described arrangement the inner end of the socket is disposed outwardly with respect to the inner or rear wall of the body and an extension from the mounting portion of the clip 68 is provided and includes an outwardly directed portion 80 supporting a spring contact portion 81 extending across the inner end of the socket 78. When the lamp 17 has its stem 39 threaded into the socket 78 the central contact 40 of the lamp engages the contact portion 81 of the extension of the clip 68. A sheet of insulating material 82 is arranged under the sheet 63 and serves to insulate the securing lugs of the various clips and the securing lugs of the supporting member 74 from the casing. Obviously, the socket 78 is directly in engagement with the metal supporting member 74 and so has electrical contact therewith.

A switch generally designated 83 is mounted on a side wall of the body 53 and includes a finger piece 84 at the outside of said wall and which finger piece has arm portions 85 passing through a slot 86 in the wall of the body and then passing through a switch element 87 against the inner side of which the arms are bent over as at 88. With this construction it will be apparent that the wall is clamped be-

tween the finger piece 84 and the switch element 87 and that these parts frictionally engage the wall of the body and may be adjusted or slid along the same within the limits defined by the ends of the slot 86.

Switch element 87 includes contact arms 89 and 90 of which the arm 89 bears against the connecting portion 75 of the socket supporting member 74. The arm 90 is arranged in alignment with the clip 69 and when the switch 83 is in its open position this arm 90 is spaced from said clip as shown by the full lines in Figs. 10 and 15. When it is desired to close a circuit to the lamp 17 the switch is shifted downwardly along the slot 86 so as to bring the arm 90 into engagement with the clip 69 as shown by the dotted lines in Fig. 15. During this movement the arm 89 slides on the supporting member 74 and when the arm 90 engages the clip 69 a circuit is completed through the lamp, clips and batteries. This circuit may be described as from the center contact of the lamp to the contact portion 81 of the extension of the clip 68, through battery 70 to clip 65 and then to clip 66, through battery 71 to clip 69 and then through arm 90 of switch element 87 to arm 89 of said element to the support 74 and thence the socket and the side contact of the lamp.

From the foregoing it will be clear that the casing 52 does not form part of the circuit but that the various parts forming the circuit are electrically independent of the casing and that the casing may therefore be formed of non-conducting material or metal as preferred. The outer surfaces of the casing may be ornamented as desired and it is noted that Figs. 10, 11 and 12 show the modified construction in actual size. Due to the employment of the socket supporting member 74 the socket is located outwardly with respect to the rear wall of the casing and so when the lamp 17 is threaded into the socket the glass or globe portion of the lamp is located within or forwardly of the opening 58 in the cover 54. This is best shown in Fig. 11 from which figure it will be apparent that the use of the support 74 makes it possible to correctly position the lamp when the batteries 70 and 71 of increased diameter are used.

In both the disclosed forms the lower battery engaged clips are supported on an insulating portion disposed at the inner side of and extending along one end wall of the body of the casing. It will, therefore, be apparent that these clips are so supported that they do not have any great movement away from the clips at the upper portion of the insulating sheet. Further, in both forms of the invention the batteries are arranged in side-by-side relationship so as to keep the casing as narrow as possible and in each case the lamp and its socket is located at the upper end of the batteries and the lamp projects through a side of the casing. With this arrangement the lower portion of the casing forms a hand piece which may be gripped without having the hand obscure the light from the lamp, and further the arrangement is such that with the thumb of the hand which is holding the flashlight the switch may be conveniently manipulated.

It will be noted that in the form of Fig. 10 the contact 81 leading to the central lamp contact is in one-piece with the clip 68, while in the form of Figs. 1 to 9 the contact 36 is a separate piece from clip 27. This contact 36 may,

however, be in one piece with contact 27 the same as in the form of Fig. 10, if desired.

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

1. In a flashlight, a casing, a socket in the casing, pairs of clips in the casing, a pair of batteries in side-by-side relation and each conductively engaging a pair of said clips, an extension from a clip of one of said pairs of clips to the inner end of the socket and engaged by the center contact of a lamp in the socket, a switch including a portion constantly electrically connected with said socket, and said switch including a portion shiftable into and out of engagement with a clip of the other of said pairs of clips whereby to connect the lamp, clips and batteries in a circuit independent of the casing.
2. In a flashlight, a casing, a sheet of insulating material in said casing, pairs of clips extending from and secured to said sheet and each pair adapted to engage conductively with a battery, a lamp socket extending from and secured to said sheet, an extension from a clip of one of said pairs of clips to the inner end of said socket and engaged by the central contact of a lamp in the socket, means insulating said clips, extension and socket from the casing, said lamp, clips and batteries mounted to be connected in a series circuit, and switch means operable to connect a clip of the other of said pairs of clips with said socket.
3. In a flashlight, a casing including rear and end walls, insulating means within the casing and extending along the rear and one end wall thereof, pairs of clips secured to said means, a pair of batteries arranged in side-by-side relationship and each conductively engaging a pair of said clips, one clip of each of said pair at the inner side of that portion of the means at the end wall of the casing and the second clip of each pair extending outwardly of said means and located toward the other end of the casing, a socket secured to said means beyond the said second clip of each pair, an extension from the second clip of one of the pairs of clips to the inner end of the socket and engaged by the central contact of a lamp in the socket, means insulating the clips and socket from the casing, and switch means operable to close a circuit between the second clip of the other of said pair of clips and the socket.
4. In a flashlight, a casing, a sheet of insulating material in said casing, pairs of clips secured to said sheet and each pair adapted to engage conductively with a battery, a lamp socket secured to said sheet, a contact piece clamped between said sheet and socket and in electrical engagement with the extending beyond the socket, an extension from one of said clips to the inner end of the socket and engaged by the central contact of a lamp in the socket, a switch slidably mounted on a wall of the casing and having a pair of connected conductor portions of which one bears against said contact piece and the other overlies a clip of the other of said pairs of clips, and said switch slidable along the wall of the casing to bring said other conductor portion into and out of engagement with the last mentioned clip to close and open a circuit through the batteries, clips and lamp.

5. In a flashlight, a casing, a sheet of insulating material in the casing, a lamp socket secured to said sheet, a separate contact piece clamped to said sheet by the socket and extending beyond and in electrical engagement with the socket, contacts adapted to connect electrically with a battery mounted on said sheet, an extension from one of said contacts to the inner end of the socket and engaged by the central contact of a lamp in the socket, a switch including a pair of electrically connected conductor portions of which one bears against said contact piece, and said switch shiftable to bring its other portion to and from engagement with the other of said contacts to complete a circuit through the lamp and battery.

6. In a flashlight, a casing, a sheet of insulating material in the casing, a lamp socket secured to said sheet, a contact piece secured to the sheet and extending beyond and in electrical engagement with the socket, contacts adapted to connect electrically with a battery, an extension from one of said contacts to the inner end of the socket and engaged by the central contact of a lamp in the socket, a switch including a pair of electrically connected spring arms of which one bears against said contact piece, and said switch shiftable to bring its other arm to and from engagement with the other of said contacts to complete a circuit through the lamp and battery.

7. In a flashlight, a casing, a lamp in the casing, said casing having an opening in its front wall for the passage of the stem of the lamp and said casing of a depth greater than the length of said lamp, a sheet of insulating material in the casing, spaced pairs of clips secured to said sheet and each adapted to engage conductively with a battery, a socket receiving the stem of said lamp within the casing, a generally U-shaped supporting member secured to said sheet by its arm portions and having its connecting portion perforated and disposed toward the front wall of the casing and mounting said socket whereby the bulb portion of the lamp is at the outer side of the front wall of the casing when its stem is in said socket, an extension from a clip of one of said pairs of clips to the underside of the perforation in the connecting portion of said member and engaged by the center contact of said lamp, a switch including a pair of electrically connected arms of which one bears against said support, and said switch movable to bring its other arm into and out of engagement with a clip of the other pair of said clips to close and open a circuit to the lamp.

8. In a flash light, an oblong casing, an insulating plate in the casing, pairs of contact clips mounted on said plate each pair being adapted to engage conductively with the terminals of a battery, and so arranged that the batteries lie side by side, a lamp socket mounted on said plate beyond the ends of the batteries, means including a switch for connecting the lamp and the batteries in series, and a window in the front wall of the casing in alignment with said socket.

GILES C. FULLMER.