

July 18, 1933.

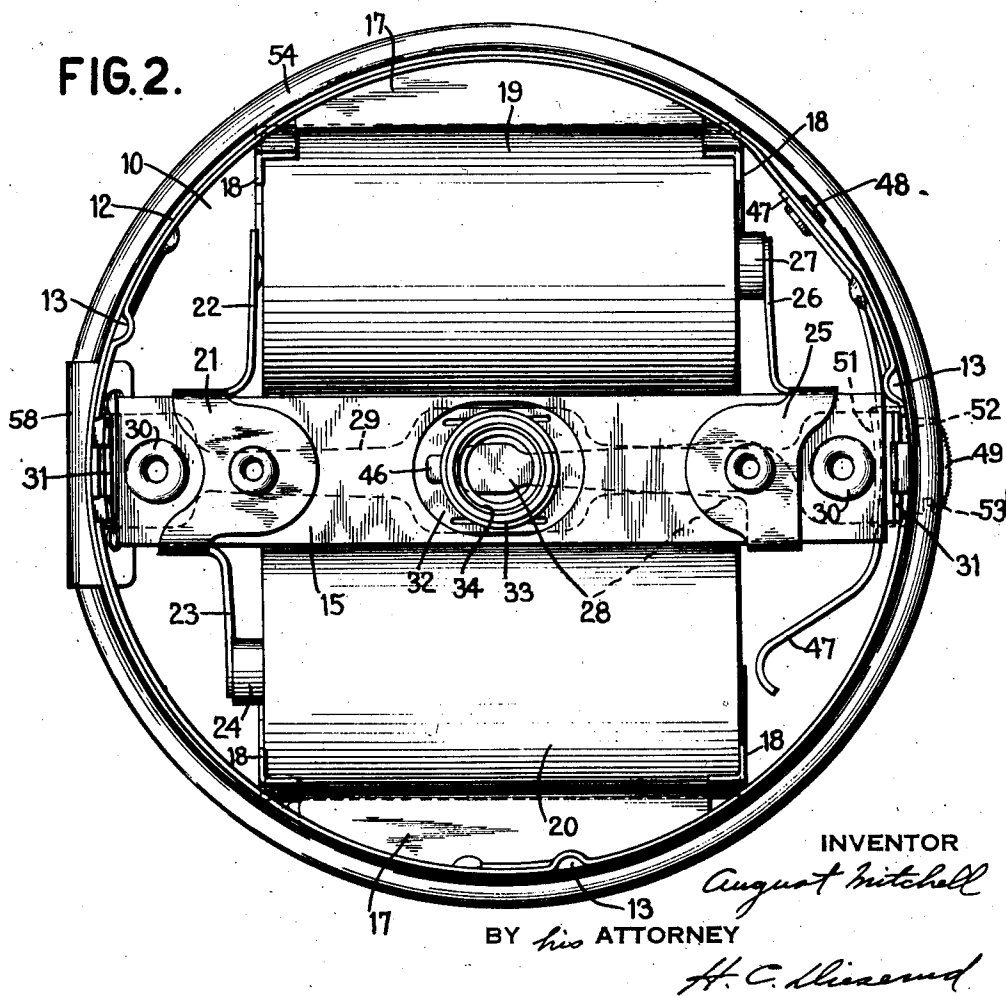
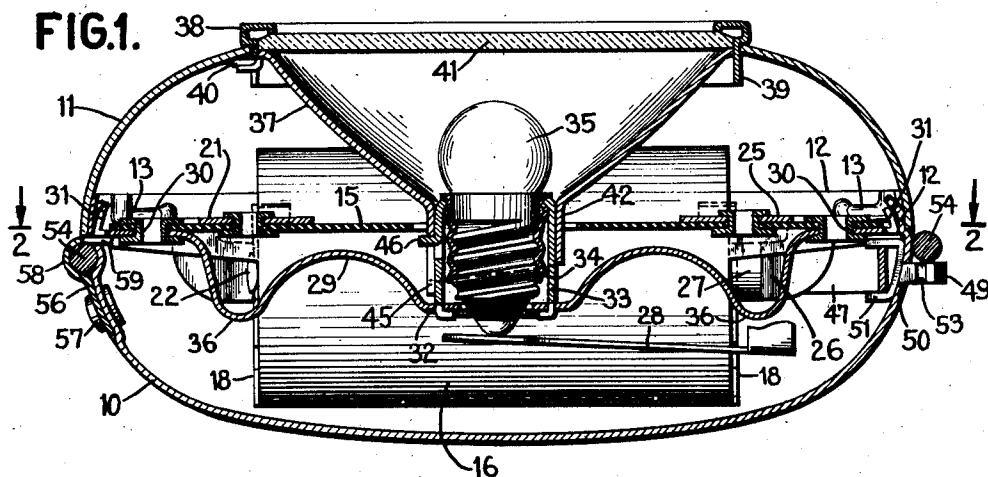
A. MITCHELL

1,918,347

FLASH LIGHT

Filed Feb. 5, 1931

3 Sheets-Sheet 1



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FIG. 3.

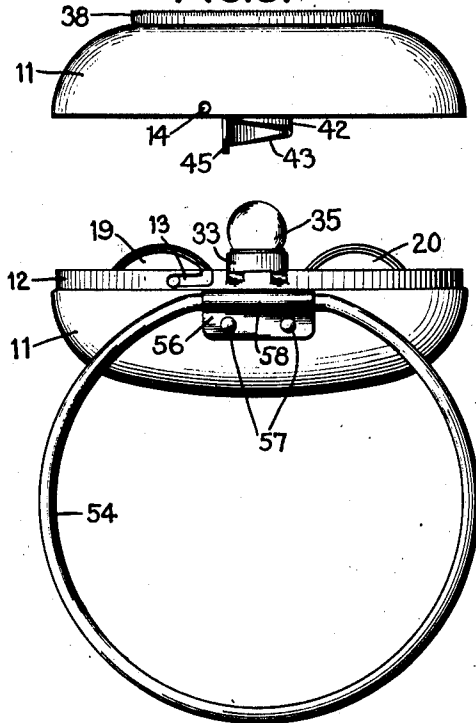


FIG. 4.

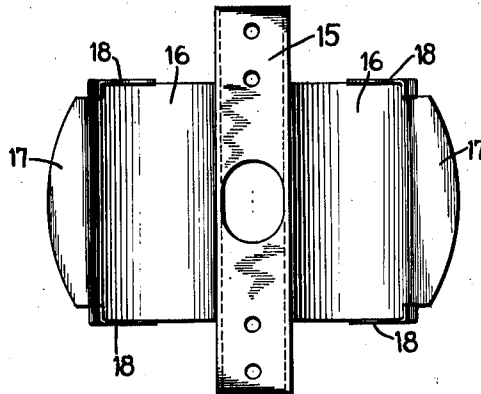


FIG. 5.

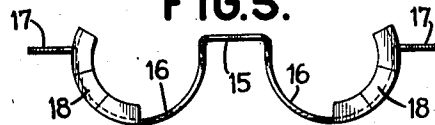


FIG. 6.

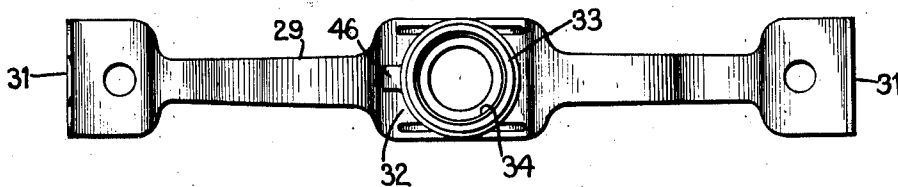
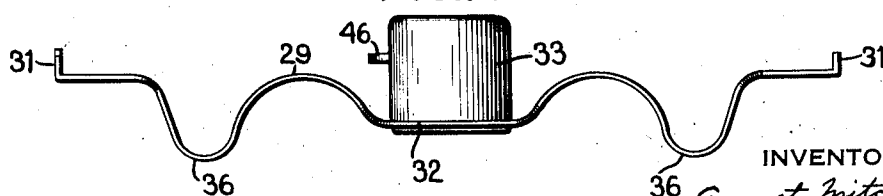


FIG. 7.



INVENTOR

August Mitchell

BY *his* ATTORNEY

H. C. Elserund

July 18, 1933.

A. MITCHELL

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FIG. 8.



FIG. 9.

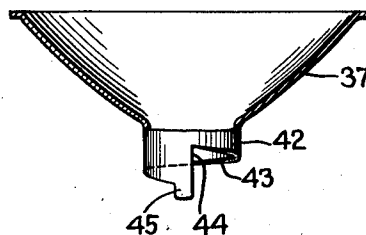


FIG. 10.

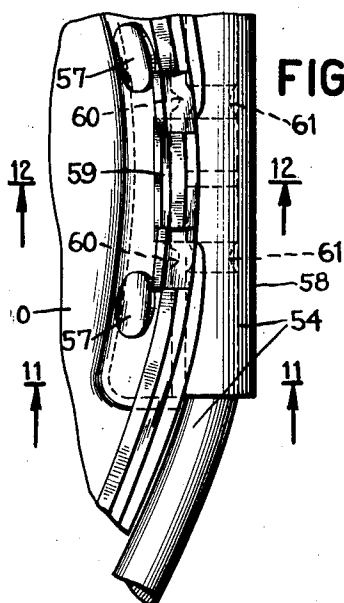


FIG. 12.

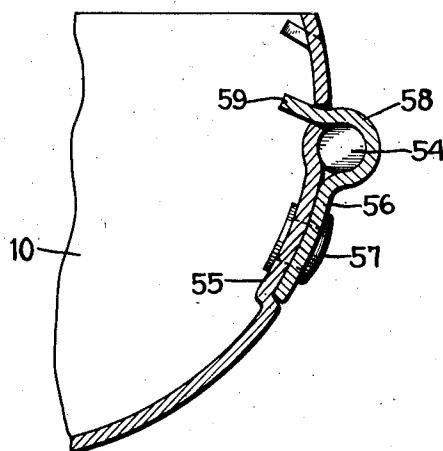
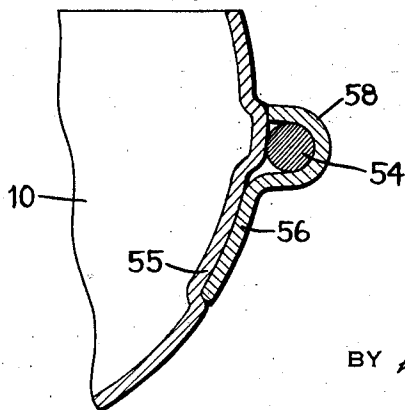


FIG. 11.



INVENTOR

August Mitchell

BY *his* ATTORNEY

H. C. Blieser

UNITED STATES PATENT OFFICE

AUGUST MITCHELL, OF NEW YORK, N. Y., ASSIGNOR TO THE CHASE COMPANIES, INCORPORATED, OF WATERBURY, CONNECTICUT, A CORPORATION OF CONNECTICUT

FLASH LIGHT

Application filed February 5, 1931. Serial No. 513,554.

This invention relates to an improved form of flashlight which is a compact, conveniently handled unit including a suitable source of current and means for connecting a small electric lamp with the current source to cause a beam of light to be cast in a desired direction.

A feature of the invention is the general arrangement and assembly of the several parts which results in a compact and readily portable unit of pleasing design. Due to the construction of the flashlight as a whole, it may assume the form of a relatively flat biscuit; it may conveniently be what is commonly termed watch-shaped and in an effective form need not be much larger than a good-sized watch.

Among the specific features of the invention is the provision of a supporting ring which, when not in use, may be conveniently made to surround the casing of the unit but when desired may be employed either as a supporting stand or as a carrying handle or a means of attachment to the person or to any suitable object. Another specific feature of the unit is the provision of a convenient and effective means for adjusting the focus of the light so that it may cast a beam of variable divergence. For this purpose use is made of a bezel ring which surrounds the glass closure for the bulb and reflector, no additional protruding means being required to effect the focal adjustment. Still another feature of the unit is the provision of an improved form of operating element for causing the light to be turned on or off. This means includes provisions for latching the element in either a "light-on" or a "light-off" position or in a neutral position in which the light may be flashed on or off at will. Other features of the invention have to do with the means provided for supporting and retaining the dry cells, employed as the source of current, in proper relation to various contact elements, all of which contribute to the production of a neat, convenient, compact and efficient form of flashlight.

Additional objects and advantages of the invention will appear from a detailed description which will now be given of an illus-

trative form of the same in conjunction with the accompanying drawings, in which:

Figure 1 is a vertical sectional view taken substantially through the center of the improved flashlight.

Figure 2 is a plan view of the unit with the cover element removed.

Figure 3 is an elevational view of the casing with the base and cover portions separated and the handle shown depending.

Figure 4 is a plan view of an insulating partition member provided in the casing.

Figure 5 is an elevational view of the member shown in Figure 4.

Figure 6 is a plan view of the lamp socket and its support.

Figure 7 is an elevational view of the structure shown in Figure 6.

Figure 8 is a detail view of a finger piece for controlling the flashlight.

Figure 9 is a detail view partly in section of the reflector employed in the unit.

Figure 10 is an enlarged detail view, in plan, showing the attachment of the handle to the casing.

Figure 11 is a sectional view taken along the line 11—11 of Figure 10, and

Figure 12 is a sectional view taken along the line 12—12 of Figure 10.

Referring now to the drawings, the improved flashlight may comprise an outer casing conveniently formed in two sections, including a main section 10 adapted to house and support the principal portions of the light and a cover section 11 adapted to completely enclose the parts. As shown, the casing may be of relatively flat construction and may, if desired, be of circular form so as to present a neat outward appearance and permit it to be conveniently carried in the pocket, if desired. The general form of the casing may be such as to resemble a large watch, the diameter and thickness being only slightly greater than a good-sized watch. The lower or main section of the casing is preferably provided with an upstanding flange 12 set inwardly from the outer contour of the casing and adapted to fit within the rim of the cover section. Any suitable means may be provided for securing the two sections of the

casing together. This may conveniently comprise a series of bayonet slots 13 formed in the flange 12 and adapted to receive small, inward projections 14 carried by the rim of the cover section.

For the purpose of supporting the principal operative elements of the device, there may be provided a suitable retaining member 15 having a portion extending diametrically across the casing and forming in effect a partition which serves to divide the casing into the two portions symmetrically disposed on opposite sides of the axis of the member 15. On each side of the central partition, the member 15 is provided with semi-cylindrical troughs or pockets 16 of suitable radius to receive a small dry cell of standard construction. The outer ends of the trough portions may suitably terminate, in a plane substantially horizontally in line with the centers of curvature of the troughs, in tabs 17 having arcuate outer ends adapted to cooperate with the circular walls of the casing. In the assembly of the element 15 within the casing the lower portions of the troughs 16 rest upon the bottom of the casing while the ends of the tabs 17 cooperate with the sides of the casing to hold the element in relatively fixed position. The element 15 should be formed of a suitable insulating material, such as heavy paper, so as to properly insulate the dry cells, as well as the various contact elements, from the walls of the casing which is preferably formed of metal, such as sheet brass or the like, stamped or otherwise formed into the desired shape.

In order to more effectively insulate the dry cells from the walls of the casing, the trough portions 16 are preferably provided at their opposite ends with flanges 18 extending over a portion of the arc of the troughs. As shown in Figure 2, the dry cells 19 and 20 are preferably adapted to be inserted in the troughs 16 with their central or positive electrodes pointing in opposite directions. This is to enable the series connection of the cells in the manner to be presently explained. For the purpose of joining the negative or zinc electrode of one cell with the positive or carbon electrode of the other cell, a metallic member 21, preferably formed as a brass stamping or the like, is secured in any suitable way, as by riveting, to the central partition portion of the element 15. An arm 22 of the element 21 is provided with a contact point adapted to engage the base of the cell 19, thereby making connection with the negative electrode of this cell. Similarly, an arm 23 extending from the opposite side of the element 21 is adapted to engage the central, positive electrode 24 of the cell 20. In this way the two cells are connected in series. At the opposite end of the partition a contact element 25 is secured, as by riveting or the like, and this element is provided with

an arm 26 adapted to make contact with the positive electrode 27 of the cell 19. An arm 28 of the element 25 is adapted to extend longitudinally of the partition between the two trough portions 16 to a point beneath substantially the center of the partition. Also supported by the insulating or partition member there is provided a metallic member 29, preferably formed of a resilient material such as brass, which may be secured to the partition in any suitable way, as by means of rivets 30. The element 29 should be so formed and connected to the partition member that it is out of electrical contact with either of the elements 21 and 25. At its opposite ends the element 29 may be suitably formed with upturned tabs 31 adapted to engage over the opposite ends of the partition portion of the member 15. These tabs 31 are in direct engagement with the walls of the casing and, for the purpose of firmly securing the unit in assembled position, may suitably cooperate with inward projections or tabs carried by the casing.

At its center the member 29 may be provided with a flat, horizontal portion 32 having a suitable opening over which may be fitted a shell 33. The latter may be secured in any suitable way, as by means of overturned tabs passing through the portion 32 of the member 29. Within the shell 33 there may be provided a threaded shell 34 adapted to receive the base of an electric lamp 35 of the type ordinarily provided for flashlight use. For the purpose of imparting a certain springiness to the member 29 so that its central portion may be depressed, in the manner to be explained, and be restored upon the release of pressure, it is provided with curved portions 36 at opposite sides of the center.

The upper or cover portion of the casing is provided with an opening at its top beneath which there is mounted a reflector 37. The lower end of the latter is adapted to surround the base of the element 35. The reflector 37, which may be of any suitable form, is not secured directly to the cover 11 but is carried by a bezel ring 38 surrounding the opening in the cover. This ring on its upper side is preferably provided with a knurled or grooved surface by which it is adapted to be readily turned. The ring is provided with a downwardly extending flange 39 adapted to fit within the opening in the cover and it may be held in place by suitable overturned tabs 40 cooperating with the edge of the opening. This method of attachment is such that the ring may be readily turned to effect the adjustment to be presently explained. Suitable interlocking tabs or projections may be provided for securing the reflector and bezel ring together. Between the rim of the reflector and the undersurface of the bezel ring a glass

or lens 41 completely closing the opening in the casing may be provided and held in place. At its lower end the reflector is provided with a collar 42 of slightly larger diameter than the shell 33 and adapted to surround the latter. The lower edge 43 of this collar is in the form of a helix, as best shown in Fig. 9, terminating at one end in a shoulder 44 and at its opposite end in a shoulder provided by a tab 45. The spiral or helical edge 43 is adapted to cooperate with a tab 46 extending laterally from the side of the shell 33. As will be apparent, the arrangement is such that upon rotation of the bezel ring and reflector the shell 33 will be cammed downwardly or permitted to rise, depending upon the direction of rotation. The springiness of the member 29 and the provision of the portions 36 thereon will permit the desired movements of the shell.

For the purpose of controlling the operation of the flashlight, a shiftable contact 47 adapted to be carried into and out of engagement with the base of the cell 20 is provided. This contact may suitably be secured to the casing by means of a rivet 48, or the like, and may be forced inwardly by means of a suitable fingerpiece 49 extending through an opening 50 in the casing 10. The contact 47 is preferably formed of brass or similar springy, conducting material so as to normally hold the element 49 outwardly with the contact out of engagement with the bottom of the cell. The inner end of the fingerpiece 49 may suitably be provided with an enlarged or flattened shoe 51 cooperating with the surface of the element 47. In order to permit latching of the fingerpiece in positions in which the contact element 47 is either in or out of engagement with the cell 20, a pair of notches 52 and 53 may be provided on opposite sides of the fingerpiece. When the latter is in its outer or "light off" position, it may be slid toward the left to engage the notch 52 with the edge of the opening 50, thus preventing closing of the circuit through the light. Similarly if the fingerpiece is pressed inwardly to close the circuit, it may be slid to the right to engage the notch 53 with the edge of the opening so as to hold the circuit in closed condition. This may be said to be the "light on" position. When it is simply desired to flash the light on or off at will, the fingerpiece is preferably left in its central position.

In order to assist in readily transporting and supporting the flashlight in any desired position, it is preferably provided with a handle in the form of a ring 54 which, when not in use, is adapted to completely surround the casing. This handle may be hingedly secured to the casing in any suitable way. For this purpose the wall of the casing 10 may be indented slightly, as indicated at 55 in Figures 11 and 12, and a separate sheet of metal

56 may be secured to the casing at this point as by means of rivets 57. The free ends of the handle 54 may be inserted between the outer wall of the casing and an outwardly curved portion 58 of the plate 56. An inwardly extending tab 59 carried by the plate may be passed through a suitable slot in the wall of the casing to assist in retaining the parts in proper relation. In order to prevent withdrawal of the ends of the handle from the hinge and to increase the frictional engagement between the parts, the wall of the casing may be provided with suitable indentations 60 adapted to cooperate with small, annular recesses 61 in the handle. This construction is such that if desired the handle may be laid flat on a table or desk and the main body of the flashlight may be inclined at any suitable angle to cast a beam of light in a desired direction. Then again the ring forming the handle may be inserted in the pocket of the user and caused to direct a beam of light in any required direction. This method of carrying the flashlight is particularly advantageous where it is desired to illuminate a portion of an engine, for example, while both hands are left free to do the necessary work. At other times the handle may be extended at 180° to its normal position around the casing and used in the manner of the handle of a lantern. When not in use the handle is made to fit snugly around the circumference of the casing and has a portion, diametrically opposite the point where it is hingedly attached, in engagement with the fingerpiece 49.

In the operation of the flashlight it will be noted that upon depression of the fingerpiece the series connection of the dry cells 19 and 20 and the lamp 35 will be completed by means of the following circuit: The central contact at the base of the lamp will be connected through the spring arm 28 with the element 25 and through an arm 26 of the latter with the positive electrode of the cell 19. The negative electrode of the latter will be connected with the positive electrode of the cell 20 through the arms 22 and 23 of the element 21. The base or negative electrode of the cell 20 will then be connected through the spring contact 47 with the metallic wall of the casing, which, in turn, is connected through the metal of the supporting element 29 and the shells 33 and 34 with the outer contacts surrounding the base of the lamp. Whenever the fingerpiece is in its outer position, the circuit will be broken by virtue of the gap between the spring contact 47 and the base of the cell 20.

While one admirable form of the invention has been disclosed in considerable detail, it will be understood that the embodiment disclosed is simply illustrative and that many changes may be made without departing from the general spirit and scope of the in-

vention as defined by the appended claims.

What I claim is:

1. A flashlight comprising a flat spheroidal casing adapted to receive a standard cylindrical dry cell and an electric lamp, means extending exteriorly of said casing for controlling the operation of said lamp by said cell, and a handle hingedly secured to said casing and adapted to snugly surround the entire periphery of said casing when not in use, said handle abutting and being arrested by said controlling means when it surrounds said casing.

2. A flashlight comprising a flat casing, a partition formed of a thin insulating sheet dividing said casing into two chambers, said sheet being formed into troughs on each side of said partition each adapted to receive a dry cell, a socket carried by said partition adapted to receive an electric lamp, means carried by said partition for electrically connecting said cells and said lamp, and a finger piece for controlling said means, said finger piece being adapted to be latched in light on, light-off or flashing position.

3. A flashlight comprising a flat circular casing having a separable cover portion, a partition element formed of a thin insulating sheet for dividing said casing into two sections, said sheet being formed into a trough at each side of said element adapted to receive a dry cell, a socket carried by said partition adapted to receive an electric lamp, and means for electrically connecting said cells and said lamp.

4. A flashlight comprising a flat circular

casing having a separable cover portion, a partition element formed of a thin insulating sheet for dividing said casing into two sections, an insulating trough associated with each side of said element adapted to receive a dry cell, a socket carried by said partition adapted to receive an electric lamp, means for electrically connecting said cells and said lamp and a reflector carried by said cover portion adapted to fit over said lamp.

5. A flashlight comprising a flat circular casing having a separable cover portion, a partition element for dividing said casing into two sections, a trough connected with each side of said element adapted to receive a dry cell, a socket carried by said partition adapted to receive an electric lamp, means for electrically connecting said cells and said lamp, a reflector rotatably mounted on said cover portion adapted to fit over said lamp, and means carried by said reflector for shifting said lamp to vary the relative position of said lamp and reflector upon rotation of the latter.

6. A flashlight comprising a casing adapted to receive dry cells and an electric lamp, a detachable cover for said casing, a reflector rotatably carried by said cover adapted to freely receive said lamp, spring contact means urging the lamp outwardly, and a spirally formed cam edge at the base of said reflector for moving the lamp to vary the relative position of said lamp and reflector upon rotation of the latter.

AUGUST MITCHELL.