

Dec. 25, 1951

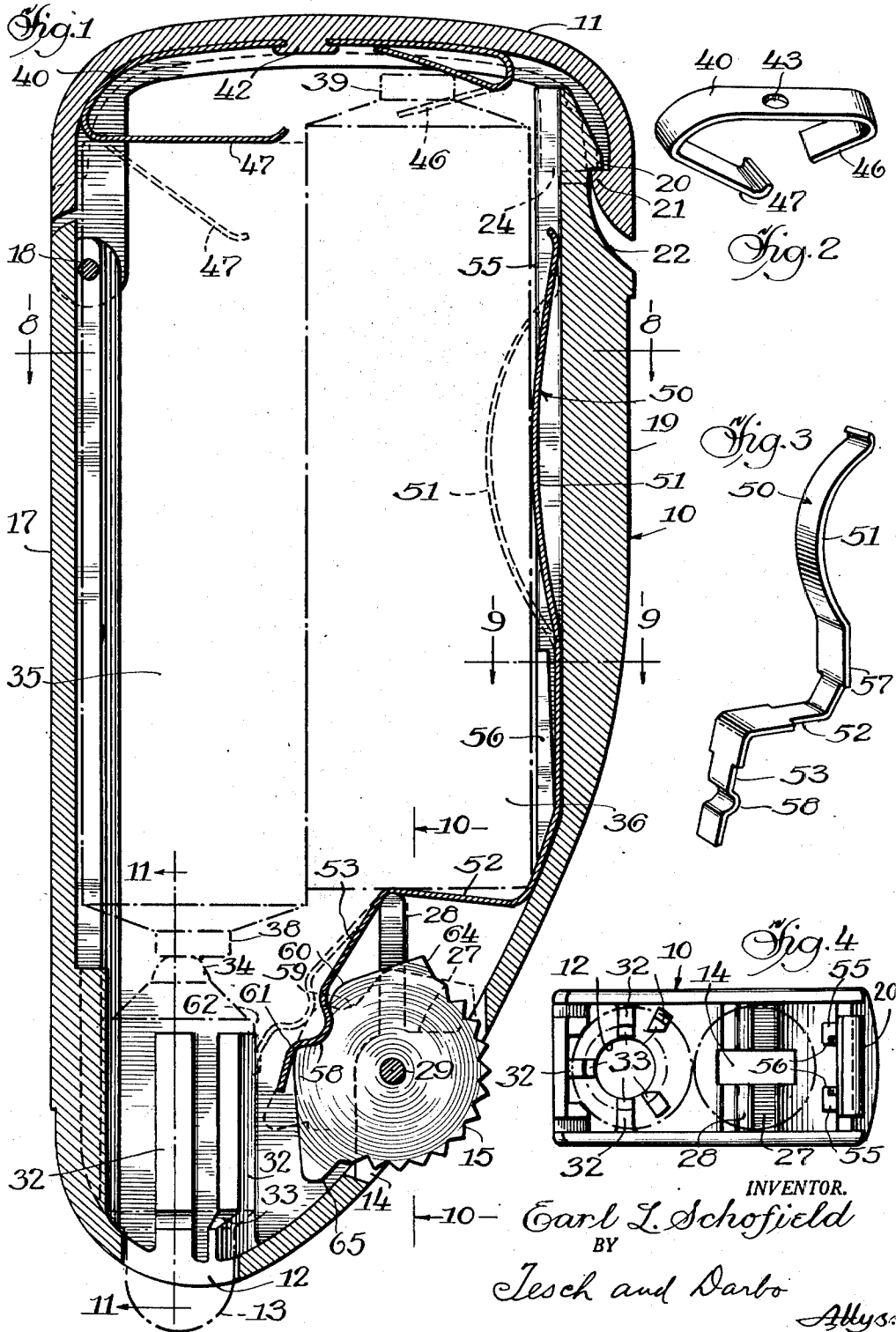
E. L. SCHOFIELD

2,579,762

FLAT POCKET HANDLAMP

Filed Dec. 26, 1947

2 SHEETS—SHEET 1



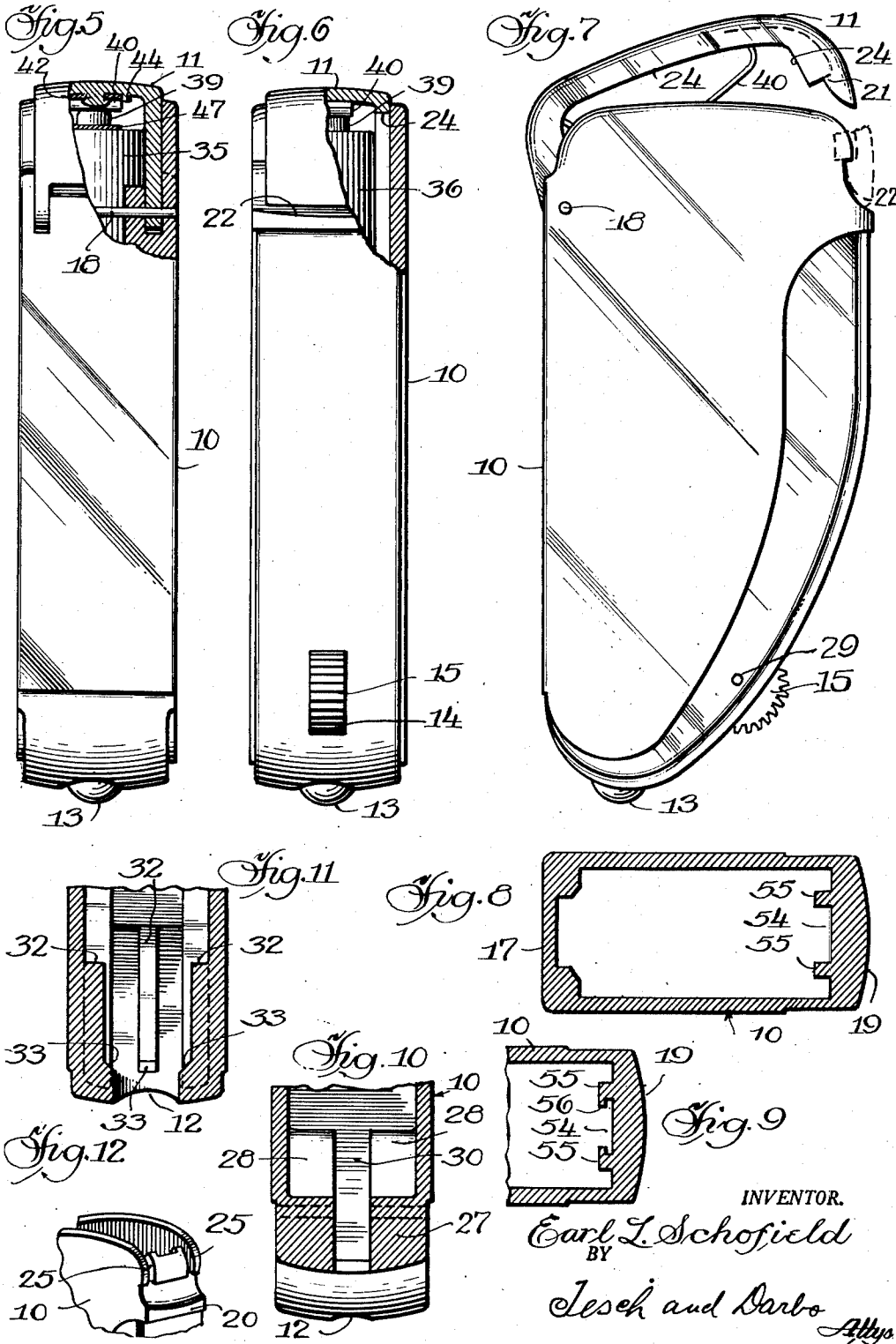
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2 SHEETS—SHEET 2



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FLAT POCKET HAND LAMP

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4 Claims. (Cl. 240—10.65)

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This invention relates to handlamps and more especially to small sized handlamps which are adapted to be carried in a lady's purse or the pocket of a man's coat or vest. However, the invention is not limited to handlamps of such small size but may be used with those of larger size.

It is an object of the invention to provide a handlamp which is structurally simple and economical and still reliable in its operation.

In carrying out this object, it is more specifically an object of the invention to provide an improved construction for handlamps which requires but a few parts which are simple and economical of construction.

It is a further object of the invention to provide an improved handlamp construction in which the energizing cells can be replaced with new ones when they are exhausted by a simple opening of a latched cover at one end.

It is a further object of the invention to provide an improved handlamp construction which, though simple and composed of few parts, maintains the energizing battery or the component cells thereof under compression within the casing whereby any looseness or rattling is avoided.

It is a further object of the invention to provide an improved handlamp construction which, in the small size mentioned above, lies conveniently in the hand and the switch operating member lies conveniently for operation by the thumb.

It is a further object of the invention to provide an improved handlamp construction of the character described in which the switch operating member moves to the on and off positions with a snap.

It is a further object of the invention to provide an improved handlamp construction of the character described in which the cover, when it is unlatched, is spring-urged to the open position.

It is a further object of the invention to provide an improved handlamp construction of the character described in which the contacts are of a wiping character, including those contacts made by the conductor which connects the cells of the battery together and the contact made by the switch when it moves from the open to the closed position.

Other objects and advantages will become apparent as the following description progresses, which is to be taken in conjunction with the accompanying drawings, in which

Fig. 1 is an enlarged longitudinal sectional view of the handlamp of the invention;

Fig. 2 is a perspective view of a conductor which connects the cells of the battery together;

Fig. 3 is a perspective view of the conductive switch member for the handlamp;

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Fig. 4 is a top view of the casing with the cover removed, that is, showing the casing without the cover, the battery cells, the incandescent lamp, the switch member, and the switch operating member;

Figs. 5 and 6 are rear and front views, respectively, of the handlamp with a portion of the wall of the casing broken away;

Fig. 7 is a side view of the handlamp with the cover in the partially open position;

Figs. 8, 9, 10 and 11 are sectional views along lines 8—8, 9—9, 10—10 and 11—11, respectively, of Fig. 1; and

Fig. 12 is a perspective view of the top end portion of the casing with the cover removed.

The handlamp is composed of a casing which is of generally flat shape and is preferably small and is adapted to be held conveniently in the palm of the hand or inserted in a lady's purse or in the pocket of a man's coat or vest. The casing is of greater length than width and one of its transverse dimensions is substantially greater than the other to provide a generally thin, flattened, elongated configuration. A cover 11 is hinged to the casing at one end thereof and an opening 12 is provided at the other end through which a lamp 13 is adapted to project. A second opening 14 is provided adjacent to the opening 12 and a switch operating member 15 has a portion thereof projecting through the last mentioned opening whereby said operating member is adapted to be manipulated by the thumb or other finger to the on and off positions. For convenience, the end of the casing carrying the cover 11 will be designated as the top, and the wall 19 carrying the operating member 15 will be designated as the front wall.

The casing may be composed of any suitable non-conductive material, such as phenol-formaldehyde resin, and the cover may be composed of a similar material or of conductive metal. The cover is pivotally supported upon the rear wall 17 by means of the pin 18 which passes through the material of the casing and the cover. The front wall 19 of the casing and the front end of the cover 11 have cooperating latching elements 20 and 21, as shown in Fig. 1, and the said casing wall has a depression 22 therein which permits the insertion of a finger nail for the purpose of unlatching and opening the cover. The cover extends upwardly a short distance above the end of the casing and has downwardly projecting flanges 24 at the side edges thereof which interiorly overlap the edge portions of the casing sidewalls when the cover is closed. As is shown in Fig. 12, the upper end portion of front wall 19 has a pair of slots 25 adapted to accommodate the said flanges 24.

The opening 12 for the lamp 13 is located adjacent to the rear wall 17 and remote from the front wall 19. The bottom end of the casing is

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rounded and has an apex approximately at the opening 12. The front side 19 recedes relatively gradually from the opening 12; and the operating member 15 is located substantially midway of the said receding portion. The advantages of this arrangement will be described hereinafter. The remainder of the sides of the casing recede relatively abruptly from the opening 12.

The front wall 19 of the casing has a shoulder 27 projecting inwardly therefrom at the location of the operating member 15, and said shoulder has an extension 28 projecting upwardly therefrom. Shoulder 27 and extension 28 have a slot 30 therein (see Fig. 10) registering with opening 14 and adapted to receive the operating member 15, which is supported for oscillation upon the pin 29 which extends across the slot 30 and is mounted at its ends in shoulder 27.

A socket for the lamp 13 is provided by a plurality of rib members 32 which project inwardly from the bottom, side and rear walls of the casing. The said rib members frictionally engage the cylindrical surface of the lamp to hold it in place and have shoulder surfaces 33 at their bottom portions which are adapted to cooperate with a shoulder upon the lamp to form a positive stop for the lamp in the position indicated in dotted lines in Fig. 1, in which the end terminal 34 of the lamp projects upwardly.

Two cylindrical dry cells 35 and 36 are arranged in side-by-side relationship within the casing 19, cell 35 being arranged toward the rearward wall 17 and having its positive terminal 38 in contact with the end terminal 34 of the lamp 13, and cell 36 being arranged toward the front wall 19 and having its positive terminal 39 projecting upwardly. Each of the cells has a non-conductive sheath surrounding the cylindrical wall thereof, and has a negative terminal exposed at the end thereof opposite to the positive terminal, in the manner which is usual with cylindrical cells of the character disclosed. The two cells are connected in series when the cover 11 is closed by means of resilient conductor 40 which is mounted interiorly on said cover by means of a cylindrical lug 42 which projects from the mid-portion of the cover and passes through an opening 43 in the conductor and is buried over to hold the conductor in place. The interior surface of the cover also has a pair of spaced apart longitudinal fillets 44 on the opposite sides of the lug 42 to assist in maintaining the conductor in position.

The normal shape of conductor 40 is as shown in Fig. 2. It is looped back upon itself at both ends and the end portions 46 and 47 extend diagonally inwardly and downwardly. The normal unstressed position of end portions 46 and 47 are indicated in dotted lines in Fig. 1, and when the cover 11 is in the closed position, the said end portions are bent upwardly and make firm pressure contact with the terminals of cells 35 and 36 to connect the cells in series to form a battery and hold the cells under resilient pressure in a direction longitudinally of the casing. Terminal 38 of cell 35 and the terminal exposed at the lower end of cell 36 are the terminals of the battery.

An elongated resilient conductor 50 is supported upon the interior of the front wall 19 of the casing and serves as the switch member for the handlamp. Said conductor is in the form of a resilient conductive metal strip, flat in cross section, as shown in Fig. 3. It has an upper portion 51 which is disposed generally vertically between front wall 19 and cell 36, an intermediate portion 52 which extends substantially horizontally be-

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tween the lower end of cell 36 and the upper end of projection 28, and a lower portion 53 which extends diagonally between the operating member 15 and the lamp 13. The vertical portion 51 rests in the groove 54 which is defined by the spaced apart vertical ribs 55 upon the interior surface of the front wall and is held in position by the flanges 56 which project toward each other from the ribs 55 and underneath which extends the widened section 57 at the lower end of said vertical portion 51. Said flanged ribs form hook members which hold the switch member in position. The section 51 above the widened section 57 is bowed inwardly, as shown in Fig. 3, so that in the absence of cells from the casing 10, it occupies the position shown in dotted lines in Fig. 1. When the cells are in position in the casing, it is in a stressed condition and occupies the position shown in solid lines, whereby it maintains the cells under resilient pressure in a direction laterally of the casing.

The lower end portion 53 of the switch member has a portion which is curved so as to present a protuberance or convexity 58 to the operating member 15, and the operating member has a cooperating depression or concavity 59 upon the surface thereof and a pair of convexities 60 and 61 on either side of the said concavity. These cooperating elements assist in the switching function upon manual manipulation of the operating member 15 as will be described hereinafter.

With the cells 35 and 36 in position and the cover 11 closed, the end portions 46 and 47 of the resilient conductor 40 maintain the cells under resilient compression in a direction longitudinally of the casing, to prevent looseness and rattling in such direction. They also maintain the electrical contacts of the handlamp in firm pressure engagement, that is, the contact between end portion 46 and the positive electrode 39 of cell 35, that between end portion 47 and the negative electrode of cell 35, that between the positive electrode 38 of cell 35 and the end terminal 34 of lamp 13, and that between the horizontal section 52 of conductor 50 and the negative electrode of cell 36. The projection 28 forms an abutment which holds the section 52 in contact with the negative terminal of cell 36. With the operating member 15 in the position shown in solid lines in Fig. 1, in which the convexity 58 of the switch member 50 rests in the cooperating concavity 59 of the operating member, the handlamp is inoperative. To turn it on, the operating member is rotated by means of the finger in a clockwise direction (as viewed in Fig. 1) to the position indicated in dotted lines. In so doing, the convexity 58 of switch member 50 is moved from the concavity 59 of the operating member to the convexity 61 of the latter; and the lower portion 53 of said switch member is moved to the left and the end portion thereof makes contact with the cylindrical surface 62 of the lamp 13, which is a terminal thereof. The terminals of the battery are then connected to the terminals of lamp 13. When it is desired to turn the lamp off again, the operating member 15 is rotated by the finger in the opposite direction back to the position shown in solid lines in Fig. 1, during which time the end of the switch member moves out of contact with the terminal 62 of the lamp 13. The exposed portion of the switch operating member 15 is knurled as shown for ready manipulation by the finger, and said member is provided with abutment portions 64 and 65 which are adapted to engage the interior surface of the casing 10 and limit the

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travel of the operating member. The convexities 60 and 61 of the operating member and the convexity 58 of the switch member 50 are so shaped that the operating member moves to the two positions with a snap under the influence of the resilient switch member. While the one-piece switch member 50 possesses the advantage of simplicity, it may be a two-piece member if desired, one piece comprising the spring portion 51 and the other piece comprising the remainder.

The handlamp which has been described possesses many advantages. It is shaped to fit conveniently in the hand, because of the gradually receding shape of the front wall at the portion containing the operating member 15. When it is laid in the palm of the hand with the thumb resting upon the operating member, it fits the natural shape of the hand and no bending or twisting of the hand is required except for the bending of the fingers around the rear wall 17 to prevent the handlamp from falling out of the hand. Also, the direction of the light emitted by lamp 13 is the convenient and natural direction for most uses of the handlamp. An additional advantage of the arrangement is that a generally triangular space is provided beside lamp 13 and beneath cell 36 which accommodates the switch parts in a convenient manner.

As has been explained above, the conductive members 40 and 50, in addition to serving as connector and switch member, maintain the cells under resilient pressure in both longitudinal and lateral directions and prevent any looseness or rattling, and also maintain the electrical contacts in firm pressure engagement.

The structure is of extreme simplicity. All that it amounts to is the casing which contains the socket members 32 and the shoulder members 27 and 28 as integral parts thereof, the lamp 13, the cells 35 and 36, the operating member 15 and the conductors 40 and 50. The number of parts is reduced by employing the conductors for the multiple purpose of making electrical connections, maintaining the cells under pressure, and switching.

To replace exhausted cells with fresh ones, all that is required is to open the cover 11, which is accomplished by inserting the fingernail in depression 22 under the lip of the cover and pulling the cover open. The cover then springs to the open position under the influence of the resilient end portions 46 and 47 of the conductor 40. The cells 35 and 36 can then be ejected by turning the casing upsidedown and fresh cells can be inserted and the cover again closed. In the latter operation, pressure upon the middle of the cover causes the same to bend inward slightly whereby the lip 21 of the cover passes rather readily over the latching surface 20 of the casing. The lamp 13 remains in place due to its frictional engagement with ribs 32, but can be removed for replacement by pushing it in an upward direction, as viewed in Fig. 1.

The contacts between conductor 40 and the terminals of the cells are wiping contacts, and when the operating member 15 is moved to the on position, the end portion of the conductive switch member is pressed against the side terminal of the lamp 13 with sufficient pressure that an appreciable bending of the switch member takes place. This results in a wiping contact between the switch member and the lamp terminal whereby a good electrical contact is made with every operation.

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While but a single embodiment is described and illustrated, the invention is not limited thereto and various modifications thereof may be made within the scope of the invention as the same is defined in the appended claims.

What is claimed is:

1. In a handlamp, a non-conductive casing having a lamp socket at one end thereof and an openable cover at a portion thereof remote from said socket, a lamp in said socket, a battery in said casing having one terminal in connection with one terminal of said lamp, an abutment in said casing closely adjacent to the second terminal of said battery, a resilient elongated conductive switch member having a first portion anchored to said casing and in stressed condition between the interior of said casing and a side of said battery and a second portion sandwiched between said abutment and said second terminal, said second portion being urged against said abutment by said second terminal whereby rigid support is provided for said second portion and a positive electrical connection is made with said second terminal, and a third portion adjacent to and normally out of contact with the second terminal of said lamp, and a switch-operating member mounted for oscillation in said casing and having a portion thereof exposed at the exterior of said casing for manual manipulation to the on and off positions, said operating member when moved from the off to the on position moving said third portion of said switch member from said normal position into connection with said second terminal of said lamp.

2. In a handlamp, a casing having greater length than width and being generally flat in transverse section and having one pair of opposite sides narrower than the other, the forward end of said casing having an opening therein adjacent to one of said narrower sides, said end of said casing having an apex at said opening, a battery in the portion of said casing remote from said apex and a lamp in the portion of said casing adjacent to said apex and exposed at said opening, the wall of said casing sloping gradually from said apex to a point of the remote narrow casing side adjacent to the forward end of said battery to provide a generally triangular space beside said lamp and adjacent the end of said battery, a switch member located in said space and an exposed switch operating member located on said gradually sloping wall of said casing.

3. In a handlamp, a non-conductive casing of the elongated flat type, a pair of elongated cells arranged lengthwise of said casing and in side-by-side juxtaposed relation in the rearward portion of said casing, said cells each having a terminal at each end thereof, said casing having an opening in the forward end thereof forwardly of the first of said cells, said casing having a lamp socket therein between said first cell and said opening, a lamp mounted in said socket and projecting through said opening and having one terminal thereof in electrical contact with the forward terminal of said first cell, said casing having a space therein laterally adjacent said lamp and forwardly of the second of said cells, said casing having a fixed internal abutment closely adjacent to the forward terminal of said second cell, an elongated resilient conductive switch member having a first portion anchored to said casing adjacent to the side of one of said cells and in stressed condition be-

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tween said cell and the interior of said casing, and a second portion sandwiched between said abutment and the forward terminal of said second cell, said second portion being urged against said abutment by said last mentioned terminal whereby rigid support is provided for said second portion and a positive electrical connection is made with said last mentioned terminal, and a third portion extending forwardly from said last mentioned terminal into said space toward said lamp and terminating in a free end portion adjacent to and normally out of contact with the second terminal of said lamp, a switch-operating member mounted for movement in said casing and having a portion thereof exposed at the exterior of said casing and a second portion in cooperative relation to said free end portion of said switch member, and spring means urging said first and second cells forwardly into contact with said first mentioned lamp terminal and said switch member at said abutment respectively.

4. In a handlamp, a non-conductive casing generally flat in transverse section and having one pair of opposite sides narrower than the other, the forward end of said casing having an opening therein adjacent to one of the narrower sides thereof, said casing having an apex at said opening, a lamp socket in said casing adjacent to said opening, a lamp in said socket and exposed at said opening, a pair of cells in juxtaposed relation in said casing and spaced rearwardly from said apex, the wall of said casing sloping gradually from said apex to a point of the remote narrow casing side adjacent to the forward end of said cells to leave a generally

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triangular space beside said lamp and forwardly of said cells, the forward terminal of the first of said cells being in contact with one of the terminals of said lamp, said casing having a fixed internal abutment in said triangular space and adjacent to the forward terminal of the second of said cells, a resilient strip conductive switch member within said casing, said strip extending between said abutment and said forward terminal of said second cell and forwardly into said triangular space and terminating in a free end adjacent to and normally out of contact with the second terminal of said lamp, an exposed switch-operating member located at said sloping wall of said casing and being in cooperative relation with said free end portion of said switch member.

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