

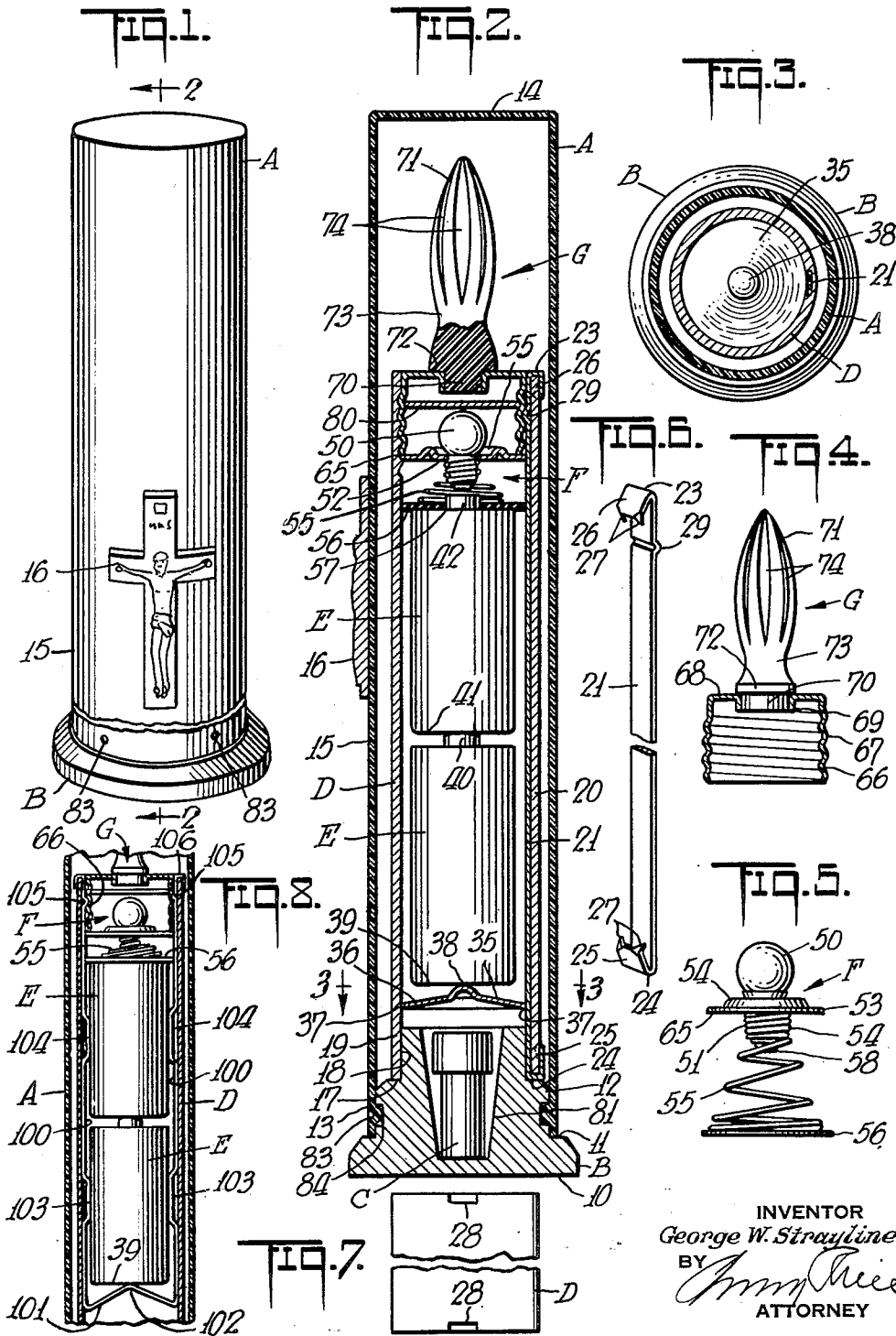
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BATTERY OPERATED CANDLE

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BATTERY OPERATED CANDLE

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8 Claims. (Cl. 240—10.64)

The present invention relates to a battery operated candle and it particularly relates to a battery operated candle which may be utilized in connection with church services or for other purposes in a community house, public gathering hall or even in the household.

The present invention will be particularly described in connection with its operation to battery operated candles which may be used for pageants, churches, schools and the like, and particularly for sacramental purposes.

It is among the objects of the present invention to provide a simple, inexpensive, readily constructed, durable battery operated candle which will eliminate any fire hazard and at the same time will lend itself particularly for sacramental purposes, or for wide utilization in connection with religious celebrations or ceremonies in either the church or home.

Another objection is to provide a novel flashlight device which will simulate a candle and which will have a durable and ornamental appearance.

Still further objects and advantages will appear in the more detailed description set forth below, it being understood, however, that this more detailed description is given by way of illustration and explanation only and not by way of limitation, since various changes therein may be made by those skilled in the art without departing from the scope and spirit of the present invention.

In accomplishing the above objects it has been found most satisfactory, according to one embodiment of the present invention, to provide a tubular plastic or stiff paper receptacle which may be so covered or colored as to imitate a candle, which may be made translucent so as to give the same effect when illuminated as if made of tallow or wax. This tube is made of an insulating material and is desirably mounted upon a base which will hold it upright, which base may also serve to receive a receptacle as well as being provided with a recess to hold a vial or bottle. The tubular cover may be closed, and it then may be fitted on the base to enclose the entire assemblage, and it also may be made of a plastic material or of fibre or paper so treated or made as to be partly or semi-translucent.

The central tube is desirably provided with a series of small diameter size dry cells with a bulb at the top of the tube suitably fitted into a receptacle therefor.

The tube at the top thereof is desirably provided with a plastic material cut in the form of a flame, which will have the light refracting properties of an acrylic resin, and will be made of materials known as Lucite or Plexiglas, or one of the methyl methacrylate class of resins.

Suitable connectors are provided to establish the electrical circuit within the inside top from the batteries to the bulb, and the flame shaped refractor is desirably placed so its base is directly above the bulb. If desired, colored light filters may be positioned between the bulb and the flame shaped acrylic refractor so as to give the desired lighting effect to the flame. The light may be readily turned on or off by turning the top, or imitation flame, to the right or to the left to establish or break the contact connections.

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arrangement of parts as hereinafter more specifically described, and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modi-

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fications can be resorted to which fall within the scope of the claims hereunto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views:

5 Fig. 1 is a front perspective view of an assembly including the battery operated candle of the present invention.

Fig. 2 is a vertical diametral sectional view taken upon the line 2—2 of Fig. 1.

10 Fig. 3 is a transverse horizontal sectional view upon the line 3—3 of Fig. 2.

Fig. 4 is a side sectional view of the acrylate resin flame shaped refractor with its screw base removed from the assembly of Figs. 1 and 2.

15 Fig. 5 is a side elevational view of the bulb carrier and spring sub-assembly removed from the main assembly of Figs. 1 and 2.

Fig. 6 is an inside perspective view of a metal conducting strip positioned inside the candle-like cylindrical body of the interior member, upon an enlarged scale as compared to Fig. 2.

20 Fig. 7 is a side elevational view of the body broken away to conserve space, showing the notches at the top and bottom thereof in which the ends of the strip of Fig. 6 are received.

25 Fig. 8 is a fragmentary vertical side sectional view similar to Fig. 2 of an alternative construction but upon a smaller scale, showing a double contact strip arrangement arranged to hold the batteries in position and prevent rattling.

30 Referring to Figs. 1 to 5, there is shown an assembly of battery operated candle with cover in which the cover A, which may be of transparent or translucent material, is mounted upon a base B, which may be of a crystal, metal or stone material, the base B may receive a vial C of a liquid material.

35 Also mounted on base B is an inside tubular member D of either translucent or opaque material forming the simulated body of the candle.

40 Within the candle body D are the batteries E. Above the batteries E is the bulb assembly F shown by itself in Fig. 5.

Above the bulb assembly F is the flame shaped refractor G.

45 Referring particularly to Fig. 2 the base B has a flat bottom 10.

Above the bottom 10 is the shoulder 11 and the reduced diameter portion 12 which receives the lower portion 13 of the cover A.

50 The cover A will extend above and enclose the entire assembly and it has a top wall 14. The side wall 15 may carry the crucifix 16 or some other sacramental object.

55 Above the shoulder 11 on the base B is another shoulder 17. Above the shoulder 17 is the reduced diameter portion 18 which receives the lower end 19 of the candle body member D.

The candle body member D at one side 20 thereof receives a metal conducting strip 21. At the top and bottom of the side 20 of the tube D thereof recesses or notches 28 through which extend the upper end 23 and the lower end 24 of the conductor strip 21.

60 The ends 25 and 26 of the conductor strip are desirably pressed down flat against the outside wall of the tube D. At the ends of the strip 21 are the teeth or tangs 27 which bite into the material of the tube D to hold the strip 21 firmly in position.

The conductor strip 21 has a groove or radius portion 29 which will serve as a thread engagement member.

70 Within the tube D there is positioned a metal disk 35 which is normally inserted in dome condition and then flattened to the position shown at 35 in Fig. 2.

This will result in the edges 36 biting into the interior of the tube D at 37.

75 The plate 35 will have an upwardly projecting central boss 38 which will contact the zinc base 39 of the lower battery E. The disk 35 will establish contact between the base 39 of the lower battery E and the metal conductor strip 21.

80 The central pole or carbon of the lower battery E will contact the base 41 of the upper battery E.

The upper battery E will have a central pole or carbon contact 42, which will contact the bulb assembly F.

The batteries E will be enclosed in a paper or other insulating sleeves to prevent electrical contact between them and the metal strip 21.

The bulb sub-assembly shown in the main assembly in Fig. 2, and separately in Fig. 5, consists of a bulb 50 having a screw base 51 which projects through the opening 52 in the reflector member 53.

The reflector plate 53 may be of polished or plated metal and it has an intermediate ridge 54 forming an interior recess 55 which projects the light upwardly toward the refractor G.

The base 51 of the bulb 50 will be screwed into the small diameter spring 54 at the top of the conical spring 55. The base of the conical spring 55 will be attached to the insulating washer by cement or in some other satisfactory manner. The insulating plate 56 has a central opening 57 for the upper carbon contact 42.

In the assembly as shown in Fig. 2, the spring 55 will be compressed as shown in Fig. 2 so that the end 58 of the bulb will contact the pole 42 of the upper battery E.

At the same time the lower battery E will contact the dimple 38 in the plate 35, which is in contact with the metal strip 21.

The periphery 65 of the reflector plate 53 will be pressed in contact with and will establish an electrical circuit at 65 with the lower end 66 of the screw shell 67. The screw shell 67 is designed to be threaded into the upper end of the tube D by engagement with the projection 29 on the metal strip 21.

The screw shell 67 has an inturned flange 68 with a downturned central portion 69. The flange 69 forms a receptacle for the base 70 of the flame shaped refractor 71. The shoulder 72 will limit the insertion of the refractor 71 into the recess formed by the flange 69.

Desirably the flange 69 is exteriorly serrated to better grip the reduced diameter portion 70 of the refractor 71.

The refractor 71 desirably has a polished surface at 73. In this polished surface are cut the flutes 74, the side edges of which are not polished but are left rough.

With a methyl methacrylate resin forming the refractor 71, these rough flutes 74 will give a most unusual and artistic candle effect closely imitating a flame and giving the appearance of a burning candle. The bulb 50 may be positioned directly below the base 70 of the refractor 71 to give a clear candle flame effect.

However, where desired, a colored transparent sheet 80 may be inserted between the bulb 50 and the base 70 to give different colored effects to the candle.

This film 80 may be of gelatin or transparent plastic disk material.

In the base B itself the recess 81 may be made sufficiently deep to receive a vial or bottle of any desired material. The lower portion of the cover A may be provided with indents at 83 to fit recesses 84 in the sides of the base B to hold the cover A firmly in position.

The light 50 and the flame 71 may be readily turned on and off by screwing or unscrewing the shell 67 of the assembly G. This will break or establish the contact between the pole 42 and the end 58 of the bulb 50.

The assembly shown in Figs. 1 and 2 gives a most ornamental and desirable simulation of a candle without any danger connected therewith. The battery E may be made of varying size and capacity to enable achievement of the desired burning period.

By turning the flame element 71 it is possible to make or break the circuit and establish the light or to turn it out. The member 71 may be used as a handle as it will not turn relatively to the shell 67 because of the serrated connection at 70.

At the same time the element 71 will project the light from its unpolished grooves 74.

The reflector 53 will fit snugly on the base 51 of the bulb 50 and establish contact between the bulb and the shell 67 and the strip 21.

The insulating plate 56 will center the upper battery E and will prevent contact between the spring 55 and the strip 21.

The plate or washer 56 will center the battery E and will prevent contact between the spring 55 and the outside shell of the battery E.

The base of the spring 55 may desirably be made sufficiently wide so that there will be a contact between the

lower wide portion of the spring 55 and the contact strip 21. To assure this the edges of the plate or washer 56 may be cut off adjacent the contact strip 21 and the base of the spring 55 may be caused to extend beyond such cut off portion to contact the strip 21 or the strip 21 may be provided with another ridge such as 29 to contact the base of the spring 55.

In constructing the device of the present invention, the tubing D may be made of an extruded plastic or of a roll of parchment paper rendered translucent to simulate the body of a burning candle.

The notches 28 are then cut in the ends thereof and the strip 21 is positioned and its ends carrying the teeth 27 are pressed down into the outside of the body of the cylindrical member D.

The disk 35, which is more peaked than shown in Fig. 2, is inserted and then it is flattened and spread so that its edges 36 will cut into the inside of the wall of the tube D and also may contact with the strip 21.

The batteries E may be dropped in position and then the lamp assembly of Fig. 5 may be placed in the top of the tube D. Before or after this time, the tube may be inserted upon the base B.

The refractor unit of Fig. 4, with or without a suitable color disk 80, may then be screwed into the upper end of the tube D, compressing the spring 55.

Toward the end of the compression a slight turn more of the member G will establish contact between the lamp 50 and the pole 42 of the battery and light the lamp 50.

The lamp 50 may then be turned on or off by quarter turn of the refractor 71, which is fixed to the screw shell 66 and knurling 70.

The cover A may then be placed in position and held more or less firmly in position by operation of the indents 83 of the notches 84.

In the construction of Fig. 8 the same candle shell D, batteries E and outer casing A may be employed.

It is also possible to use the same lamp assembly F, conical spring 55 and washer 56, together with the flame assembly G.

In the construction of Fig. 8, however, the double contact strip 100 acts both as an anti-rattling strip and also to form a support for the column of batteries E.

As shown in Fig. 8, instead of the plate 35 of Fig. 2, the base 101 of the U-shaped strip 100 has a peak portion 102 which contacts the base 39 of the lower battery E.

The sides of the U-shaped contact spring 100 have inturned portions 103 and 104 which contact the sides of the batteries E and hold them in place. There may be provided inwardly directed ridges 105 which serve as the ridge 29 of the strip 21 of Fig. 6 to engage the threaded shell 66 of the flame assembly G.

The upper ends of the strip 100 are turned over as indicated at 106 and fit in slots such as are shown at 28 in Fig. 7.

The U-shaped connector strip or saddle 100 of Fig. 8 will hold the batteries tightly in the casing during shipment, preventing rattling, and if desired, another U-shaped strip at right angles to the strip 100 may be employed in the embodiment of Fig. 8.

These extra supporting yokes 100 are particularly suitable where the candle is of extra length and carries three, four, five, or even six flashlight batteries.

If desired, although not preferred, the casings D and A may be made elongated so as to carry several parallel rows of batteries or they may be made of extra large diameter so as to permit a central core of flashlight batteries E encircled by six rows of flashlight batteries each connected to the other.

The weight of the batteries on the peak 102 and the yoke 100 will force the strip tightly against the interior walls of the casing D and will also press the embossments tightly against the side walls E.

The yoke 100 of Fig. 8 will also eliminate the extra plate 35 of Fig. 2.

The whole design is highly desirable and may be widely utilized in churches in connection with many festivals and also in and about the household.

As many changes could be made in the above battery operated candle and many widely different embodiments of this invention could be made without departing from the scope of the claims, it is intended that all matter contained in the above description shall be interpreted as illustrative and not in a limiting sense.

Having now particularly described and ascertained

the nature of the invention, and in what manner the same is to be performed, what is claimed is:

1. A battery controlled candle assembly for use in churches, schools, homes, pageants and the like, comprising a shouldered recessed base, an insulating upright tube to receive a plurality of small diameter cylindrical dry cells, a plurality of small diameter cylindrical dry cells positioned in said tube, said tube simulating the exterior of a candle and mounted on said base, a metal conductor strip running up one side of said tube, and clamped to the inside length of the tube by clamping means at the top and bottom of the tube, a metal contact stop disk forming a false bottom for said tube above the lower end thereof for stopping and establishing a bottom connection between the dry cells and the conductor strip, a top bulb assembly inserted in the upper end of the tube, and an upper end cap carrying a flame shaped refractor positioned above the assembly and closing off the upper end of the tube, said upright tube being notched at the top and bottom to receive the ends of the conductor strip and the ends of said conductor strip being provided with corner teeth to stick into and engage the outside wall of said tube.

2. A battery controlled candle assembly for use in churches, schools, homes, pageants and the like, comprising a shouldered recessed base, an insulating upright tube to receive a plurality of small diameter cylindrical dry cells, a plurality of small diameter cylindrical dry cells positioned in said tube, said tube simulating the exterior of a candle and mounted on said base, a metal conductor strip running up one side of said tube, and clamped to the inside length of the tube by clamping means at the top and bottom of the tube, a metal contact stop disk forming a false bottom for said tube above the lower end thereof for stopping and establishing a bottom connection between the dry cells and the conductor strip, a top bulb assembly inserted in the upper end of the tube, and an upper end cap carrying a flame shaped refractor positioned above the assembly and closing off the upper end of the tube, said strip having a ridge adjacent the top of the tube and said cap being threaded to engage said ridge and to be screwed into the upper end of said tube, said upright tube being notched at the top and bottom to receive the ends of the conductor strip and the ends of said conductor strip being provided with corner teeth to stick into and engage the outside wall of said tube.

3. A battery controlled candle assembly for use in churches, schools, homes, pageants and the like, comprising a shouldered recessed base, an insulating upright tube to receive a plurality of small diameter cylindrical dry cells, a plurality of small diameter cylindrical dry cells positioned in said tube, said tube simulating the exterior of a candle and mounted on said base, a metal conductor strip running up one side of said tube and clamped to the inside length of the tube by clamping means at the top and bottom of the tube, a metal contact stop disk forming a false bottom for said tube above the lower end thereof for stopping and establishing a bottom connection between the dry cells and the conductor strip, a top bulb assembly inserted in the upper end of the tube, and an upper end cap carrying a flame shaped refractor positioned above the assembly and closing off the upper end of the tube, said refractor consisting of a flame shaped piece of methyl methacrylate resin having a smooth exterior face and roughened vertical grooves, said upright tube being notched at the top and bottom to receive the ends of the conductor strip and the ends of said conductor strip being provided with corner teeth to stick into and engage the outside wall of said tube.

4. A battery controlled candle assembly for use in churches, schools, homes, pageants and the like, comprising a shouldered recessed base, an insulating upright tube to receive a plurality of small diameter cylindrical dry cells a plurality of small diameter cylindrical dry cells positioned in said tube, said tube simulating the exterior of a candle and mounted on said base, a metal conductor strip running up one side of said tube, and clamped to the inside length of the tube by clamping means at the top and bottom of the tube, a metal contact stop disk forming a false bottom for said tube above the lower end thereof for stopping and establishing a bottom connection between the dry cells and the conductor strip, a top bulb assembly inserted in the upper end of the tube, and an upper end cap carrying a flame shaped refractor positioned above the assembly and closing off the upper end

of the tube, said upper end cap serving as a switch to turn on and off the candle, said upright tube being notched at the top and bottom to receive the ends of the conductor strip and the ends of said conductor strip being provided with corner teeth to stick into and engage the outside wall of said tube.

5. A battery controlled candle assembly for use in churches, schools, homes, pageants and the like, comprising a shouldered recessed base, an insulating upright tube to receive a plurality of small diameter cylindrical dry cells, a plurality of small diameter cylindrical dry cells positioned in said tube, said tube simulating the exterior of a candle and mounted on said base, a metal conductor strip running up one side of said tube, and clamped to the inside length of the tube by clamping means at the top and bottom of the tube, a metal contact stop disk forming a false bottom for said tube above the lower end thereof for stopping and establishing a bottom connection between the dry cells and the conductor strip, a top bulb assembly inserted in the upper end of the tube, and an upper end cap carrying a flame shaped refractor positioned above the assembly and closing off the upper end of the tube, said top bulb assembly consisting of a plate below the bulb in contact with the screw base of the bulb and serving as a reflector to reflect the light of the bulb on to said refractor, said upright tube being notched at the top and bottom to receive the ends of the conductor strip and the ends of said conductor strip being provided with corner teeth to stick into and engage the outside wall of said tube.

6. A battery controlled candle assembly for use in churches, schools, homes, pageants and the like, comprising a shouldered recessed base, an insulating upright tube to receive a plurality of small diameter cylindrical dry cells, a plurality of small diameter cylindrical dry cells positioned in said tube, said tube simulating the exterior of a candle and mounted on said base, a metal conductor strip running up one side of said tube, and clamped to the inside length of the tube by clamping means at the top and bottom of the tube, a metal contact stop disk forming a false bottom for said tube above the lower end thereof for stopping and establishing a bottom connection between the dry cells and the conductor strip, a top bulb assembly inserted in the upper end of the tube, and an upper end cap carrying a flame shaped refractor positioned above the assembly and closing off the upper end of the tube, and colored inserts between the bulb assembly and the refractor, said upright tube being notched at the top and bottom to receive the ends of the conductor strip and the ends of said conductor strip being provided with corner teeth to stick into and engage the outside wall of said tube.

7. A battery controlled candle assembly for use in churches, schools, homes, pageants and the like, comprising a shouldered recessed base, an insulating upright tube to receive a plurality of small diameter cylindrical dry cells, a plurality of small diameter cylindrical dry cells positioned in said tube, said tube simulating the exterior of a candle and mounted on said base, a metal conductor strip running up one side of said tube, and clamped to the inside length of the tube by clamping means at the top and bottom of the tube, a metal contact stop disk forming a false bottom for said tube above the lower end thereof for stopping and establishing a bottom connection between the dry cells and the conductor strip, a top bulb assembly inserted in the upper end of the tube, and an upper end cap carrying a flame shaped refractor positioned above the assembly and closing off the upper end of the tube and a transparent cover and casing encircling said candle assembly and also mounted on said base, said upright tube being notched at the top and bottom to receive the ends of the conductor strip and the ends of said conductor strip being provided with corner teeth to stick into and engage the outside wall of said tube.

8. An electric battery candle device comprising a stepped circular base, an upright tubular enclosure mounted on said base, a circular spring disk lodged in the lower end of said enclosure and forming a bottom closure and the peripheral edges of the disk engaging the interior of said enclosure, two short cylindrical dry cells positioned in series on top of one another and on said spring disk, a plate carrying an incandescent light bulb and a conical spring positioned on top of said dry cells, a screw cap carrying a synthetic plastic simulated flame at the upper end of said enclosure and closing the top of said enclosure

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and an elongated metal conductor strip extending the full length of the interior of the enclosure and electrically connecting the dry cells and the light bulb, said conical spring having its wide end pressing down on the dry cells and its narrow end engaging the base of the bulb and said strip having a ridge and said screw cap engaging said ridge and the upper and lower ends of said strip being turned over the ends of said enclosure and having teeth at their ends to engage the outside of the upper and lower ends of said enclosure.

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