Feb. 10, 1931. B. S. REYNOLDS. 1,792,185

BATTERY HAND LAMP

Filed Aug. 1, 1928 2 Sheets-Sheet 1

Fig. 1.

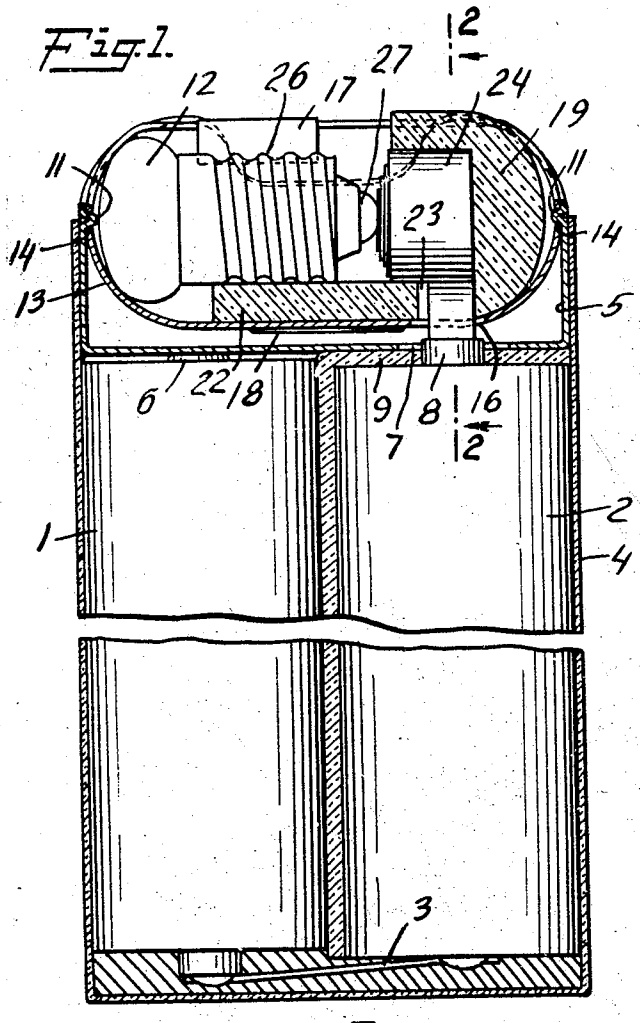


Fig. 2.

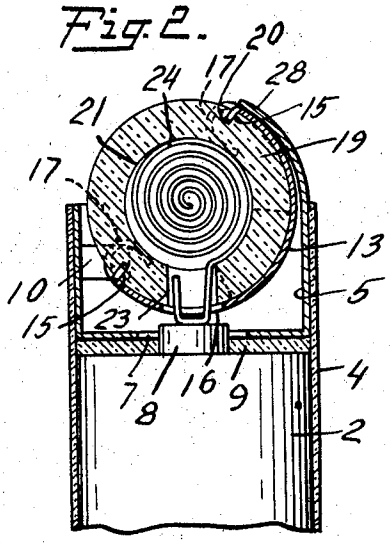


Fig. 3.

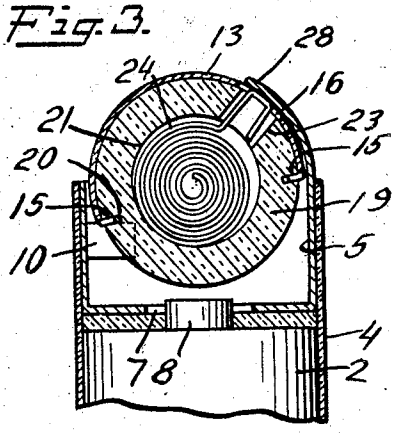


Fig. 5.

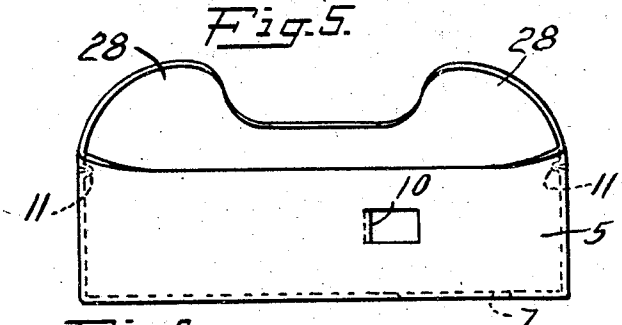


Fig. 6.

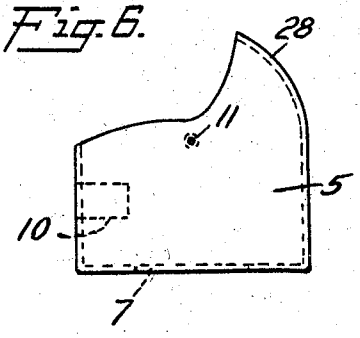
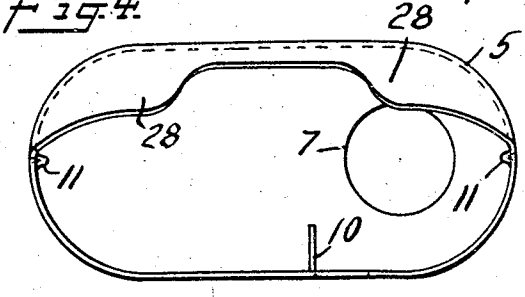


Fig. 4.



INVENTOR

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Fig. 7.

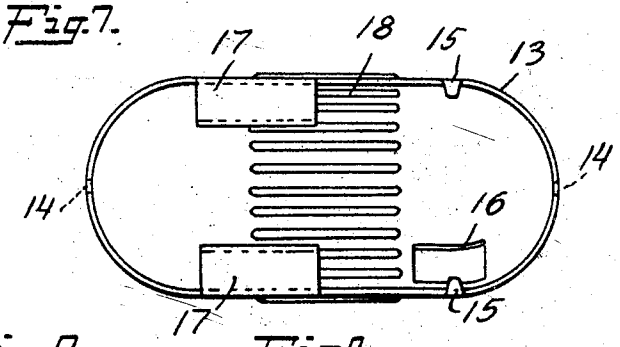


Fig. 11.

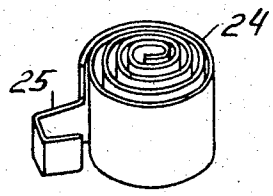


Fig. 9.

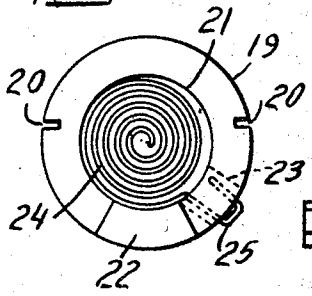


Fig. 8.

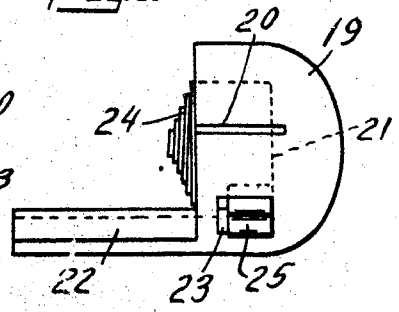


Fig. 13.

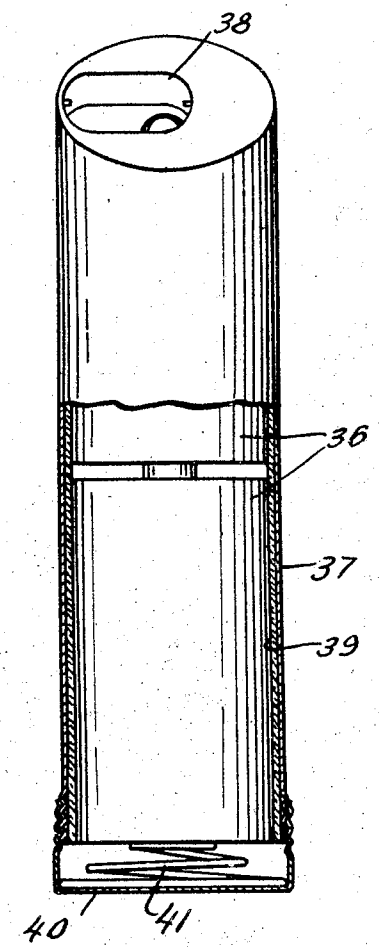


Fig. 10.

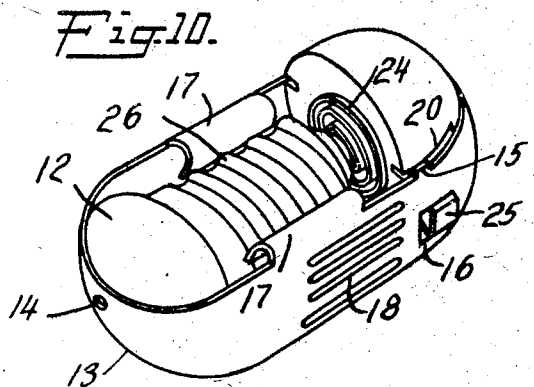
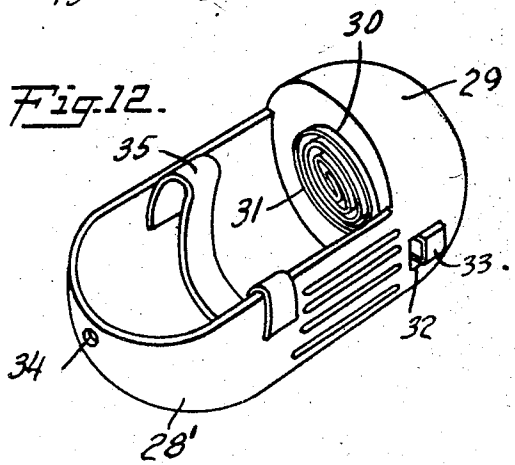


Fig. 12.



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Patented Feb. 10, 1931 1,792,185

UNITED STATES PATENT OFFICE

BENJAMIN S. REYNOLDS, OF MADISON, WISCONSIN, ASSIGNOR TO BURGESS BATTERY COMPANY, OF MADISON, WISCONSIN, A CORPORATION OF WISCONSIN

BATTERY HAND LAMP

Application filed August 1, 1928. Serial No. 296,639.

My invention relates to a battery hand lamp and consists of a dry cell battery with a cup at the top thereof, the cup containing a removable incandescent bulb in a cocoon-like holder so constructed as to be capable of being rotated by the thumb or finger into either the operative or the inoperative position.

It is an object of my invention to provide an improved battery hand lamp which is cheap to construct. Further objects and advantages will be made clear by the following detailed description, which is to be taken in conjunction with the accompanying drawings, wherein:

Fig. 1 represents in part sectional elevation the whole of the battery hand lamp with the incandescent bulb in operative position;

Fig. 2 is a part sectional view along the line 2—2 of Fig. 1 looking in the direction of the arrow with the hand lamp in the operative position;

Fig. 3 is a view similar to Fig. 2 with the hand lamp in the inoperative position;

Figs. 4, 5 and 6 are top, side, and front views respectively of the metallic cup;

Fig. 7 is a plan view of the holder for the incandescent bulb;

Figs. 8 and 9 are side and front views respectively of an insulating member and a coiled metal strip connector contained therein, which, along with the incandescent bulb, fit into the holder, as shown in Fig. 10;

Fig. 10 is a perspective view of the incandescent bulb in its holder;

Fig. 11 is a perspective view of the coiled metal strip connector;

Fig. 12 is a perspective view of a modification of the incandescent bulb holder with the bulb removed; and

Fig. 13 is a part sectional, part perspective view of a modified form of the invention with the bulb holder removed.

In the preferred form of my invention, I enclose a battery consisting of one or more dry cells, 1 and 2, electrically connected, as by connector 3, in a suitable carton 4. The carton may be of paper or metal and it projects above the tops of the dry cells to form an oval cup. In this cup I place a metallic cup 5, which is electrically connected to one of the poles of the battery, preferably by soldering to the negative can, as at 6. An opening 7, in the bottom of the metallic cup 5 allows the other pole, preferably the positive 8, to be exposed. This second pole 8 must be insulated from the cup, as by a sheet of insulating paper 9. In one side of cup 5, preferably at the middle, wing 10 is formed, as by punching in the side of the cup. At the opposite ends of cup 5 inwardly projecting small lugs 11 are formed, as by punching in the ends of the cup 5, or in any other suitable manner.

An incandescent bulb 12, Fig. 10, is removably held in place in and is longitudinally coaxial with a cocoon-shaped holder which consists of a sheet metal backing 13 with holes 14 at the ends, formed by punching or drilling the backing 13. By axis of the bulb is meant the long axis extending from the top of the bulb through the base thereof. The holder is adapted to be arranged in the cup with the lugs 11 received in the holes 14 thus pivotally mounting the holder and permitting it to rotate or oscillate upon the axis of the bulb which is arranged across the top of the cup. Adjacent one end of the holder, as shown in Fig. 7, there are two blunt prongs 15, formed by bending extended points along the edge of backing 13. On one side and adjacent the same end of the backing 13 is an opening 16. The sides of the backing 13 are cut so as to provide extensions 17 adjacent their middle portions. The extensions 17 may be suitably bent as will hereinafter be explained. Corrugations 18 are rolled or punched across the middle of backing 13 to aid in the manipulation of the holder by the thumb or finger.

A semi-spherical insulating member 19 of a material such as bakelite, micarta or the like, is arranged in one end of the holder. This member is provided with grooves 20, and hollowed out to form a cavity 21, as shown by the dotted lines of Fig. 8 and the full lines of Fig. 9. The cavity 21 communicates with an opening 23 extending through one side of the body of the insulating member. The semi-spherical body portion of the insulating member is provided with an extension 22. With-

in the cavity 21 is a partially coiled cone-shaped conducting metal strip 24, having a portion 25 adjacent one end which is adapted to extend through the hole 23 and through the opening 16 in the incandescent bulb holder. Fig. 11 provides a better illustration of metal strip 24.

Fig. 10 illustrates the manner in which the bulb holder and its contents cooperate to form a separable head for the hand lamp. Extensions 17 are bent to exert a spring pressure upon the threaded terminal 26 of the incandescent bulb 12 and hold the latter in place against the extension 22 of the insulating member 19. By gripping the incandescent bulb 12 and pulling it out of the holder the extensions 17 will bend toward the side of the holder and permit the removal of the bulb. The extensions 17 also form a contact with the threaded terminal 26 through the backing 13 and the lugs 11 or the wing 10, as shown in Figs. 2 and 3 respectively, through the cup 5 to the negative pole of the battery at 6.

The insulating member 19 is held in position within the holder by the engagement of prongs 15 with the grooves 20 and the pressure of the end terminal 27 of the incandescent bulb 12 against the resilient cone-shaped coiled metal strip 24. The pressure between the end terminal 27 of the bulb 12 and the coiled strip metal 24 is of a resilient nature due to the fact that the peripheral turn of the coil rests upon the base of cavity 21 while the remaining turns build up in a cone-like manner to an apex where contact is made with terminal 27. Fig. 11 illustrates the manner in which the coiled, spiral strip builds up in a cone-like form. This resilient pressure assists in the easy removal of the bulb 12.

As shown in Figs. 1 and 2, in the operative position, contact is made from the terminal 27 of the incandescent bulb 12 through coiled strip metal 24 and extension 25 through hole 23 in insulating member 19 and opening 16 in backing 13 to the positive pole 8 of the battery. In this position the holder acts as a reflector for the incandescent bulb 12.

The lugs 11 of cup 5 engage holes 14 in the backing 13 and permit a journal action whereby the holder may be rotated on an axis perpendicular to the axis of the cells. The construction here may be reversed. That is, the lugs may be made to extend outwardly from backing 13 and the cup 5 may be provided with holes at its ends. In its operative position, as illustrated in Figs. 1 and 2, one edge of backing 13 is in contact with the lower edge of wing 10 and the general position of the bulb holder is at an angle to the horizontal.

To move the holder from the operative to the inoperative position the holder is rolled by engagement of the thumb or finger with the corrugations on the backing 13 until the opposite edge of backing 13 comes in contact with the upper edge of wing 10, as illustrated in Fig. 3. The upper edge of wing 10 then acts as a stop while the lower edge acts as a stop when the holder is rolled into the operative position.

It is apparent that the portion 25 of the metal strip is out of contact with terminal 8 of the battery and the bulb is, therefore, unlighted. At the point where extensions 17 join the edge of backing 13, the latter rubs the interior of cup 5 and creates friction which is felt by the thumb or finger and serves as an indication that the proper inoperative position has been attained and that the holder has not encountered other obstruction than wing 10. This friction performs the additional service of essentially preventing the accidental movement into the operative position with accompanying exhaustion of the battery.

In the inoperative position, the backing 13 forms a protective covering for the assembly which covering presents a pleasing appearance and may be decorative. One side of the cup 5 is extended to form a plurality of lips 28 as shown in Figs. 4, 5 and 6. In the inoperative position one of the extended lips 28 covers the opening 16 in the holder and prevents undesirable exposure of the portion 25 of the metal strip 24 and promotes the pleasing appearance of the hand lamp.

In a modification of the form of hand lamp thus far described, the metallic backing 13 may be dispensed with and the entire bulb holder may be made of bakelite, micarta, or some similar insulating material, fashioned into a cocoon-shape and hollowed out to accommodate the incandescent bulb in essentially the same manner as is done in my preferred form of the invention. Fig. 12 is an illustration of such a form of construction. The insulating holder 28′ is hollowed out for about two thirds of its length to receive the incandescent bulb.

The solid end portion 29 has a cavity 30 to receive a coiled strip connector 31 and has a hole 32 in its side to permit the exposure of the contact portion 33 of coiled strip connector 31. Small holes 34 may be provided at both ends to cooperate with lugs 11 in cup 5 to permit rolling of the bulb holder with the thumb or finger. Small metal lugs may be imbedded in the ends of the bulb holder 28′ and the holes provided in the ends of cup 5 to cooperate with the lugs to permit the rolling of the holder from inoperative to operative position and vice versa. A metal strip 35 fits around the threaded terminal of the incandescent bulb (not shown) and one end is bent over the rim or edge of the bulb holder. In the operative position this end of strip 35 makes electrical contact with cup 5. The electrical circuit in this form of holder construction is established in a manner similar to that employed by my preferred

holder construction except that strip 35, instead of extensions 17, makes contact with the threaded terminal of the bulb. As an added convenience for the purpose of maintaining the holder positively in an inoperative position a pair of small lugs may be punched from lip 28 so as to engage the end portion 25 of the metal strip 24 and retain it between the lugs.

Fig. 13 illustrates an alternative form of construction. In this construction, one or more dry cells 36, positioned preferably one above another, are connected in series, the whole being encased in a cylindrical, octagonal or other suitably shaped metal casing 37. If desired, the casing may be made partially of paper with suitable electrical connection between the bottom and top metallic portions. The upper end of the casing is recessed and punched at the top to form a cup 38 similar to the cup described in connection with Figs. 4, 5 and 6 of the drawings. A tube 39 of suitable insulating material may be arranged between the cells and the metal casing. The bottom of the casing may be closed by a threaded cap 40. A spring 41 is arranged in the cap and is adapted to contact with the bottom of the zinc can of the lower cell. The holder in the cup 38 is thus connected to one pole of the battery through the casing 37. Either of the incandescent bulb holders heretofore described are adapted to be mounted in the cup 38 in the manner heretofore described and permit contact to be made between the carbon pole 42 of the upper cell and the end terminal of the lamp bulb through the cone-shaped metal strip connector as heretofore described.

While I have described my invention in a specific manner and mentioned but a few variations, it is to be understood that this is my preferred form of construction and that many changes may be made without departing from the spirit and scope of my invention.

I claim:

1. A battery hand lamp comprising a carton, a battery arranged therein, said carton extending above the top of said battery, a metallic cup arranged in said extension, the bottom of said cup being electrically connected to the negative pole of said battery and having an opening for exposing the positive pole and being insulated from said positive pole, one side of said cup being extended to form a plurality of lips, a turned-in wing on the other side of said cup, inwardly projecting lugs at the ends of said cup, a bulb holder rotatively mounted in said cup, said holder having an opening adjacent one end, an insulating member formed so as to fit into the said end of said holder, said insulating member having a cavity therein and a hole communicating with said cavity and with the exterior of said insulating member, and having grooves along the exterior sides of said insulating member, an incandescent bulb removably held in the other end of said holder, a partially coiled cone-shaped metal strip contained within said cavity in contact with the end terminal of said bulb, a portion adjacent one end of said strip extending through said hole in said insulating member and said opening in said holder and contacting with said exposed positive pole when said bulb holder is in the operative position, said holder having narrow extensions to its sides to retain said incandescent bulb in position and to contact with the threaded terminal thereof, and prongs adjacent one end of said holder to engage said grooves in said insulating member and maintain said insulating member in position, the ends of said holder having openings to cooperate with said inwardly projecting lugs of said cup to allow said holder to rotate into the operative and inoperative positions, said holder being so shaped as to form a reflector for said bulb when in the operative position and a frictionally engaged closure for said cup when in the inoperative position.

2. A battery hand lamp comprising a carton, a battery arranged therein, said carton extending above the top of said battery, a metallic cup arranged in the upper part of said carton, said cup being electrically connected to one pole of said battery and having an opening for exposing the other pole and being insulated from said second pole, one side of said cup being extended to form a plurality of lips, said cup being provided with a turned in wing in the other side of said cup, and inwardly projecting lugs at the ends of said cup, a holder rotatively mounted in said cup, said holder having an opening adjacent one end, an insulating member formed so as to fit into the said end of said holder, said insulating member having a cavity and a hole communicating with said cavity and with the exterior of said insulating member, the exterior sides of said insulating member being provided with grooves, an incandescent bulb removably held in the other end of said holder, a partially coiled cone-shaped metal strip contained within said cavity in contact with the end terminal of said bulb, a portion adjacent one end of said strip extending through said hole in said insulating member and said opening in said holder and contacting with said exposed second pole when said holder is in the operative position, said holder having narrow extensions to its sides to retain said incandescent bulb in position and to contact with the threaded terminal thereof, and prongs adjacent one end of said holder to engage said grooves in said insulating member and maintain said insulating member in position, the ends of said holder being provided with openings to cooperate with said inwardly projecting lugs of said cup to allow said

holder to rotate into the operative and inoperative positions, said holder being so shaped as to form a closure for said cup when in the inoperative position.

3. A battery hand lamp comprising a carton, a battery arranged therein, said carton extending above the top of said battery, a cup arranged in the upper part of said carton, said cup being electrically connected to one pole of said battery and having an opening for exposing the other pole and being insulated from said second pole, one side of said cup being extended to form a plurality of lips, inwardly projecting lugs arranged at the ends of said cup, a holder rotatively mounted in said cup, an opening adjacent one end of said holder, an insulating member formed to fit into said holder, said insulating member having a cavity and a hole communicating with said cavity and with the exterior of said insulating member, the exterior sides of said insulating member being provided with grooves, an incandescent bulb removably held in said holder, a partially coiled cone-shaped metal strip contained within said cavity and contacting with the end terminal of said bulb, a portion adjacent one end of said strip extending through said hole in said insulating member and said opening in said holder and contacting with said exposed second pole of the battery when said holder is in the operative position, said holder having narrow extensions to its sides to retain said incandescent bulb in position and to contact with the threaded terminal thereof, and prongs adjacent one end of said holder to engage said grooves in said insulating member and maintain said insulating member in position, the ends of said holder being provided with openings to cooperate with said inwardly projecting lugs on said cup to allow said holder to rotate into the operative and inoperative positions.

4. A battery hand lamp comprising a carton, a battery arranged therein, said carton extending above the top of said battery, a cup arranged in the upper part of said carton, said cup being electrically connected to one pole of said battery and having an opening for exposing the other pole and being insulated from said second pole, inwardly projecting lugs at the ends of said cup, a holder rotatively mounted in said cup, said holder being provided with an opening adjacent one end, an insulating member formed to fit into said holder, said insulating member having a cavity and a hole communicating with said cavity and with the exterior of said insulating member, an incandescent bulb removably held in said holder, and a partially coiled cone-shaped metal strip contained within said cavity in contact with the end terminal of said bulb, said strip extending through said hole in said insulating member and said opening in said holder to contact with said exposed second pole of the battery when the holder is in the operative position, said holder having extensions to its sides to retain said incandescent bulb in position and to contact with the threaded terminal thereof, the ends of said holder being provided with springs to cooperate with said inwardly projecting lugs on said cup to allow said holder to rotate into the operative and inoperative positions.

5. A battery hand lamp comprising a battery, a cup arranged at one end of said battery, said cup being electrically connected to one pole of said battery and having an opening for exposing the other pole and being insulated from said second pole, a holder rotatively mounted in said cup and making electrical contact with said cup, said holder being provided with an opening, an incandescent bulb removably contained in said holder, said holder being electrically connected with the threaded terminal of said incandescent bulb, and a partially coiled, cone-shaped metal strip in contact with one terminal of said bulb, said strip extending through said opening in said holder to contact with said exposed second pole when the holder is in the operative position.

6. In a battery hand lamp, a battery, a cup arranged at one end of said battery, a bulb holder rotatably mounted in said cup, an incandescent bulb mounted in said holder, and a partially coiled, cone-shaped metal strip electrically connecting a terminal of said incandescent bulb with a terminal of said battery when said holder is in the operative position said strip being out of engagement with said terminal when said holder is rotated into an inoperative position.

7. In a battery hand lamp, a battery, a cup at one end of said battery, a bulb holder rotatably mounted in said cup, an incandescent bulb mounted in said holder, and a partially coiled metal strip maintaining resilient pressure between said holder and the end terminal of said incandescent bulb, the inner coils of said strip being built up in a cone-like manner to an apex at the center said strip being out of engagement with said terminal when said holder is rotated into an inoperative position.

8. In a battery hand lamp, a battery, a cup at one end of said battery, a bulb holder rotatably mounted in said cup, an incandescent bulb in said holder, said bulb holder and said bulb being rotatable on the axis of said bulb, and means within said holder to maintain resilient pressure between said holder and the end terminal of said bulb and to connect said end terminal with one pole of said battery when said holder is in the operative position.

9. In a battery hand lamp, a battery, a cup above the top of said battery, a bulb holder rotatably mounted within said cup, an in-

candescent bulb in said holder, means within said holder comprising a partially coiled, cone-shaped metal strip to connect one terminal of said bulb with one pole of said battery when said hand lamp is in the operative position, and means within said cup to connect the other terminal of said bulb to said cup.

10. In a battery hand lamp, a battery, a cup above said battery, a rotatable incandescent bulb holder in said cup, a bulb in said holder, said holder and said bulb being rotatable on the axis of said bulb, and means operated by the rotation of said holder to make and break electrical connection between said battery and said bulb.

11. In a battery hand lamp, a battery, a cup at one end of said battery, a bulb holder in said cup, a bulb in said bulb holder, and lugs in said cup, said holder being provided with holes cooperating with said lugs, said lugs and said holes being so constructed and arranged that said holder may be rotated on the axis of said bulb to bring said bulb into an operative or inoperative position.

12. A bulb holder for a hand lamp comprising an elongated sheet metal member open on one side, a bulb in said shell, means for retaining said bulb in said shell and completing an electric circuit to the screw terminal of said bulb, an insulating member arranged in one end of said shell adapted to receive the base of said bulb, said shell and said insulating member being provided with aligned openings in the side opposite the open side of said shell, and a connecting member extending through said openings and engaging the base terminal of said bulb.

13. A bulb holder for a hand lamp comprising an elongated sheet metal member open on one side, a bulb in said shell, means for retaining said bulb in said shell and completing an electric circuit to the screw terminal of said bulb, an insulating member arranged in one end of said shell adapted to receive the base of said bulb, said shell and said insulating member being provided with aligned openings in the side opposite the open side of said shell, and a partially coiled cone shaped metal strip mounted on said insulating member and engaging the base terminal of said bulb, said metal strip being provided with an extension extending through said openings.

14. In a battery hand lamp, a battery, a bulb holder mounted on said battery, and an incandescent bulb mounted in said holder the axis of said bulb and said holder being arranged transversely of the axis of said battery, said bulb and said holder being adapted to rotate upon the axis of said bulb and said holder, and means controlled by the rotation of said holder to connect and disconnect said bulb and said battery.

15. In a battery hand lamp, a battery, a bulb holder mounted on said battery, and an incandescent bulb mounted in said holder, the axis of said bulb and said holder being arranged transversely of the axis of said battery, said bulb and said holder being adapted to rotate upon the axis of said bulb and said holder, one terminal of said bulb being connected to said battery, the other terminal being adapted to be connected and disconnected by the rotation of said holder.

In testimony whereof I affix my signature.

BENJAMIN S. REYNOLDS.