A. P. PAINE.

HANDLAMP.

APPLICATION FILED APR. 2, 1920.

1,398,736.

Patented Nov. 29, 1921.

Fig. 1,

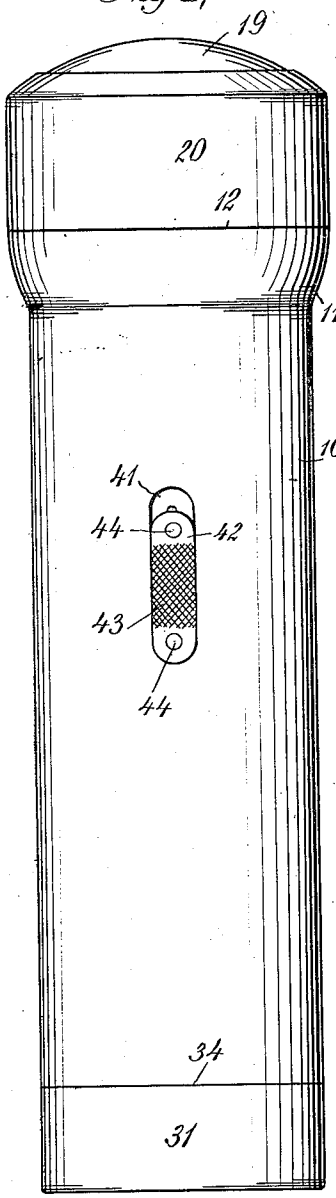


Fig. 2,

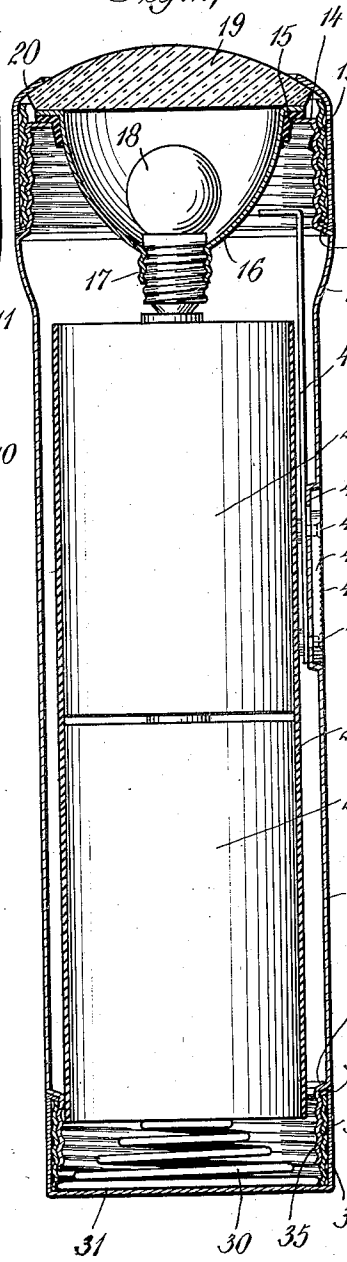


Fig. 4,

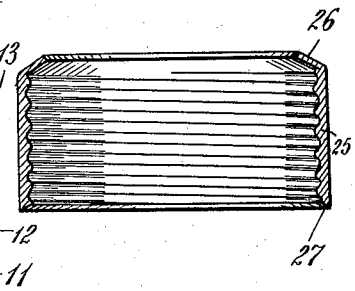


Fig. 3,

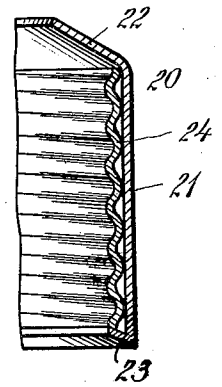
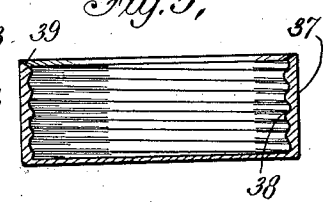


Fig. 5,



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HANDLAMP.

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To all whom it may concern:

Be known that I, ARTHUR P. PAINE, a citizen of the United States, residing at New Haven, in the county of New Haven, State of Connecticut, have invented certain new and useful Improvements in Handlamps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to tubular hand lamps of the type in which a battery composed of a number of dry cells placed end to end and connected in series, is housed within a cylindrical casing and electrically connected to an incandescent bulb carried in a reflector which is mounted at one end of the casing and is surmounted by a lens. The lens and the reflector are usually held in place by a flanged ring screwed upon the end of the casing or in those cases in which the casing is constructed of insulating material upon a collar surrounding and attached to the casing. The battery is adapted to be inserted through the other end of the casing and is held in place by means of a spring within a cap which is screwed upon the end of the casing or upon a collar attached to the latter.

In lamps of this type the threaded portions of both the lens-holding ring and the cap, as well as the casing and the collars forming a part thereof or attached thereto, are made of relatively thin metal, and since the threaded portions of the ring and cap are exposed, they frequently become dented, particularly if the lamp is subjected to hard usage. Not only is the lamp thus disfigured, but the ring and cap cannot easily be removed, and the lamp may even be rendered useless for further service.

In hand lamps of this type a switch must be provided for controlling the lamp circuit. It is customary to place the mechanism of the switch within a housing attached to the outside of the casing. As this housing projects from the casing there is danger that the actuating mechanism of the switch may be accidentally operated, thus causing the lamp to be lighted with consequent wastage of the battery. In order to avoid this difficulty many arrangements have been proposed for locking the actuating mechanism of the switch when the lamp is to be placed within a pocket, a case, or anything within which it is to be carried.

It is an object of this invention to provide a battery hand lamp in which the ring which holds the lens and reflector in place and the cap which holds the battery in the casing are so constructed and so related to the cylindrical casing as to resist the effect of blows directed against them during usage, and also to present a smooth outer surface free from any corrugations produced by screw threads, and therefore imparting to the lamp a more finished and attractive appearance by giving a stream-line effect to the casing and the parts attached thereto.

The invention further provides a switch mechanism having its actuating member substantially flush with the outer face of the casing thereby eliminating the need of a projecting housing and a locking device for the switch and rendering the lamp less liable to accidental lighting when it is being carried.

The particular nature of the invention, as well as other objects and advantages thereof will appear more clearly from a description of certain preferred embodiments as shown in the accompanying drawing in which:—

Figure 1 is an external view of a hand lamp;

Fig. 2 is a longitudinal sectional view of the lamp;

Fig. 3 is an enlarged sectional view of a portion of the ring for holding the lens and reflector in place;

Fig. 4 is a sectional view of a modified form of ring; and

Fig. 5 is a sectional view of a cap for holding the battery in place.

Referring to the drawings 10 denotes a casing preferably of metal and provided with a front flaring end 11. This end of the casing may be of slightly increased diameter as in hand lamps of the so-called "tubular" type, or it may be of relatively greater diameter as in hand lamps of the called "miner's" type. Beyond the outwardly bent portion of the casing the diameter of the latter is reduced, thus forming a shoulder 12 against which the lens-holding ring is adapted to be seated. Beyond the shoulder 12 the casing is formed with screw threads 13 and an inwardly di-

rected flange 14 which carries a ring 15 of insulating material, upon which is seated a reflector 16 provided with a threaded inner end 17 adapted to receive an incandescent bulb 18.

Mounted upon the outer end of the reflector is a lens 19 held in place by a ring 20, which, in the embodiment of the invention shown in Figs. 2 and 3, consists of a cylindrical outer portion 21 provided with an inwardly directed flange 22 adapted to engage the edge of the lens, and a shorter inwardly directed flange 23 which is so inclined with respect to the cylindrical portion 21 that when the ring is in place, this flange will be seated upon the shoulder 12. Within the cylindrical portion 21 is a threaded reinforcing member 24 preferably held permanently in place between the flanges 22 and 23 and adapted to engage the threaded portion 13 of the casing to hold the ring in place thereon. This ring stiffens ring 20 and is itself, fully inclosed and protected from injury.

Instead of the two-piece ring shown in Figs. 2 and 3 and described above, this member may be made of a single piece of metal as shown in Fig. 4, in which case the cylindrical portion 25 will be provided with a smooth outer face and a threaded inner face. The thickness of this portion of the ring should be such as to cause its outer face to lie flush with the outside of the casing when the ring is in place thereon. The thickness of metal thus required for this portion of the ring will make it sufficiently strong to prevent it from becomin dented from blows received during usage. This ring should be provided at one end with a flange 26 adapted to engage the lens, and the other end of the ring should be beveled as at 27 to fit against the shoulder 12 of the casing.

Within the cylindrical casing 10 is a battery composed of a number of dry cells 28 placed end to end and connected in series. They are placed within a carton 29 in the usual manner. The battery is adapted to be held in place within the casing with the carbon electrode of the forward cell in engagement with the lamp, by means of a spring 30 engaging the bottom of the zinc terminal of the rear cell of the battery. The spring is compressed against the battery to hold the latter in place by means of a seamless metal cap 31 which in Fig. 2 is composed of an outer portion 32 having the same external diameter as the casing 10 and provided at its open end with an inwardly extending flange 33 adapted to engage a shoulder 34 which is formed by decreasing the diameter of the casing 10 near its end. This reduced portion of the casing is threaded as at 35 to receive a correspondingly threaded stiffening member 36 which is inserted within the cap 31 and held in place between the closed end of the cap and the flange 33, where it is fully protected from injury.

As in the case of the lens-holding ring, the cap may be constructed of one piece as shown in Fig. 5. In this modified structure the cylindrical portion 37 of the cap is provided with a smooth outer face adapted to lie flush with the outside of the casing 10 when the cap is in place and an inner threaded face 38 adapted to engage the threaded end 35 of the casing. The cap should be of sufficient thickness to resist the effect of blows directed against it, and its edge should be beveled as at 39 to fit tightly against the shoulder 34 when the cap is in place.

In order to control the circuit of the lamp, there is provided a switch consisting of a spring finger 40 placed within the casing and having its forward end bent inwardly to engage the reflector. The casing 10 is provided with an elongated depression or recess 41 within which is mounted a thumb piece 42, the outer face of which lies substantially flush with the outside of the casing and is preferably roughened as at 43, in order that it may be more readily manipulated. The thumb piece 42 is connected to the spring finger 40 by means of studs 44 passing through slots at the bottom of the recess. Preferably the space occupied by the recess, the spring finger 40 and the inner ends of the studs should be sufficient to cause a slight displacement of the battery with respect to the center line of the lamp, as shown in Fig. 2, so that when the lamp is placed upon a flat surface, its tendency to roll will be lessened and it will assume a position in which the thumb piece is on top in position to be conveniently reached when the lamp is picked up.

In the structure shown herein the insulating ring 15 forms a gap in the lamp circuit which can only be closed by advancing the spring finger 40 until its inwardly directed end engages the reflector 16 to complete the lamp circuit from the zinc electrode of the rear cell to the spring 30, cap 31, casing 10, spring finger 40, reflector 16, the outer terminal of the lamp 18, the filament thereof and through the inner terminal to the carbon electrode of the forward cell of the battery.

It will thus be seen that the invention provides a battery hand lamp in which the ends of the body of the lamp are strengthened by a ring and a cap which are internally reinforced, and wherein the threaded portions of the ring and cap are concealed and protected. These and the associated parts are also of sufficient strength to prevent them from becoming dented or other-

wise damaged, even when the lamp is subjected to hard usage. The lamp accordingly possesses a smooth exterior surface free from any corrugations caused by screw threads, and thus presenting a more attractive appearance than the usual types of lamps. The actuating mechanism of the switch lies flush with the casing, thus avoiding the use of projecting housings and lessening the tendency for the lamp to become accidentally lighted while being carried.

While certain preferred embodiments of the invention have been shown and described, it will be understood that various changes in the details of construction may be made without departing from the principle of the invention as defined in the appended claims.

I claim:—

1. A hand lamp comprising a casing adapted to contain a battery and provided at each end with a threaded portion of reduced diameter, a reflector mounted upon one end of the casing, a lamp carried by the reflector, a lens mounted upon the outer edge of the reflector, a ring adapted to be screwed upon the corresponding reduced portion of the casing for clamping the lens and reflector in place, and a cap adapted to be screwed upon the reduced portion at the other end of the casing to hold the battery in place therein, said ring and said cap being formed with smooth outer surfaces adapted to lie flush with the exterior of the casing when the ring and cap are in place thereon.

2. A hand lamp comprising a metallic casing adapted to contain a battery and provided at the front end with an integral threaded portion of reduced diameter terminating in an inwardly directed flange, a reflector seated upon the flange, a lens mounted upon the reflector and a metallic ring for clamping the lens and reflector in place, said ring having a smooth outer face of the same diameter as the portion of the casing adjacent to the reduced portion, and a threaded interior face adapted to be screwed into the threaded portion of the casing.

3. A hand lamp comprising a metallic casing adapted to contain a battery, and provided at the rear end with a smooth cylindrical portion terminating in a threaded portion of reduced diameter, and a metallic cap internally reinforced and threaded on the reinforce to engage the threaded portion of reduced diameter, the internal reinforce being of a thickness to cause the outer surface of the cap to be flush with the smooth cylindrical portion of the casing.

4. A hand lamp comprising a casing adapted to contain a battery and formed at each end with an inclined annular ledge and a threaded portion of reduced diameter, a reflector mounted upon one end of the casing, a lamp carried by the reflector, the casing having an inwardly directed flange against which the reflector bears, a lens mounted upon the outer edge of the reflector, a ring adapted to be screwed upon the corresponding reduced portion of the casing for holding the lens and reflector in place upon the end of the casing, and a cap adapted to be screwed upon the reduced portion at the other end of the casing to hold the battery in place therein, said ring and said cap being formed with smooth outer surfaces adapted to lie flush with the exterior of the casing with the edges of the ring and cap in engagement with the ledges of the casing when the ring and cap are in place thereon.

5. In a tubular hand lamp consisting of a sheet metal casing having screw threads pressed therein at each end and adapted to contain a battery and provided at one end with a reflector, lamp and lens, the combination of a ring for holding the reflector and lens in place on the end of the casing, said casing end having an inwardly directed flange against which the reflector bears, and a cap for holding the battery in the casing, said ring and said cap being provided on their interiors with screw threads adapted to coöperate with the screw threads on the casing, and having smooth cylindrical outer surfaces adapted to lie flush with the exterior of the casing when the ring and cap are in place thereon.

6. In a tubular hand lamp consisting of a sheet metal casing having screw threads pressed therein at each end and adapted to contain a battery and provided at one end with a reflector, lamp and lens, the combination of a ring for holding the reflector and lens in place on the end of the casing, and a cap for holding the battery in the casing, said ring and said cap each consisting of an outer cylindrical member having a smooth exterior face adapted to lie flush with the adjacent portion of the casing and an inner screw threaded member adapted to engage the screw threads of the casing to hold the ring or cap thereon.

7. In a hand lamp, a casing comprising a tubular body having its ends reduced and externally threaded, and a cap and a ring for engaging the said reduced ends, the cap and ring being reinforced internally and threaded at the reinforce for engaging the reduced ends of the casing, said reinforce being of a depth to cause the outer surfaces of the cap and ring to be flush with the outer surface of the casing and to form continuations of said outer surface.

8. In a hand lamp, a casing comprising a tubular body having its ends reduced and externally threaded, and a cap and a ring for engaging the said reduced ends, the cap

and the ring being of substantially the same external diameter as the adjacent end of the casing, and being reinforced internally and threaded on the inner face of the reinforce to engage the reduced ends, said reinforces being sleeves, the cap and ring having inwardly extending flanges engaging the inner ends of the sleeves, and the ring having an inwardly extending flange at its outer end for engaging the outer end of the sleeve,

9. In a hand lamp, a casing adapted to contain a battery, and carrying a lamp, a reflector and a lens, and means for controlling the circuit of the lamp, said means including a thumb piece, the casing having a longitudinally extending depression in which the thumb piece is mounted to slide, said thumb piece having its outer face flush with the surface of the casing, said depression being of a length to be engaged at its ends by the ends of the thumb piece at completion of its movement in each direction.

10. In a hand lamp, a casing adapted to contain a battery, and carrying a lamp, a reflector and a lens, and means for controlling the circuit of the lamp, said means including a thumb piece, the casing having a longitudinally extending depression in which the thumb piece is mounted to slide, said thumb piece having its outer face flush with the surface of the casing, and having means in connection therewith for engaging the battery when in the casing to press said battery away from the thumb piece and off center with respect to the casing.

11. In a hand lamp, a casing comprising a body having one end reduced and externally threaded, a lens holding ring for engaging said end of the body, said ring having a plain outer face and internal threads for engaging the end of the body, the said end of the body having an inwardly directed flange, and the lens and the reflector being clamped between said flanges.

In testimony whereof I affix my signature.

ARTHUR P. PAINE.