May 9, 1933. R. M. EATON 1,908,330

ELECTRIC LIGHTING DEVICE

Filed Oct. 12, 1931

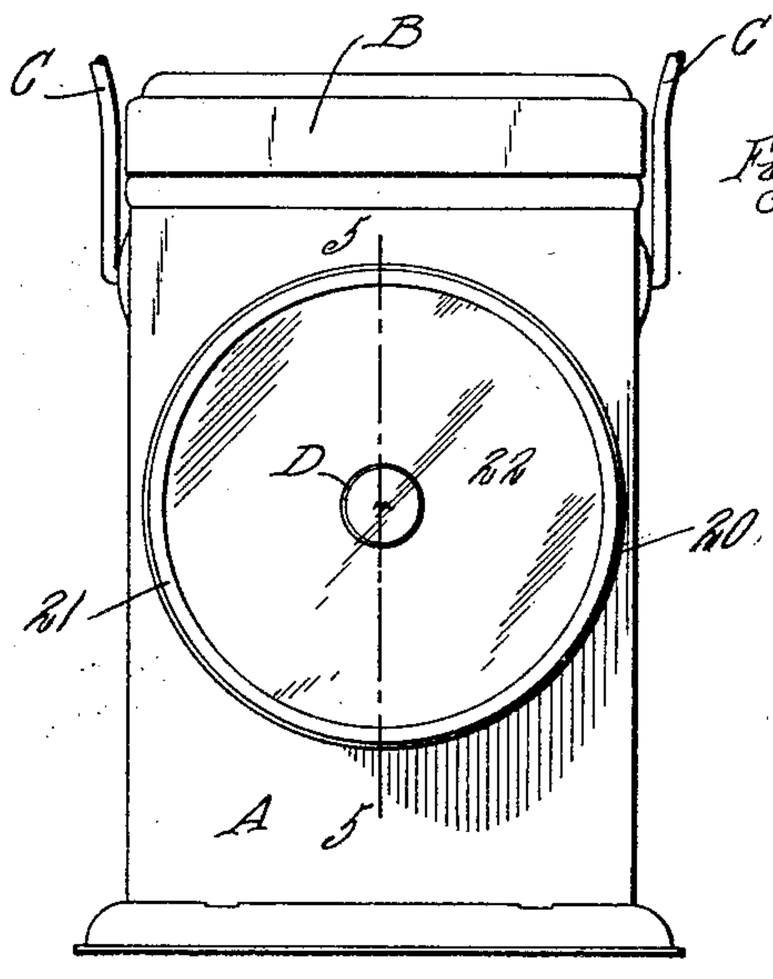

Fig. 1

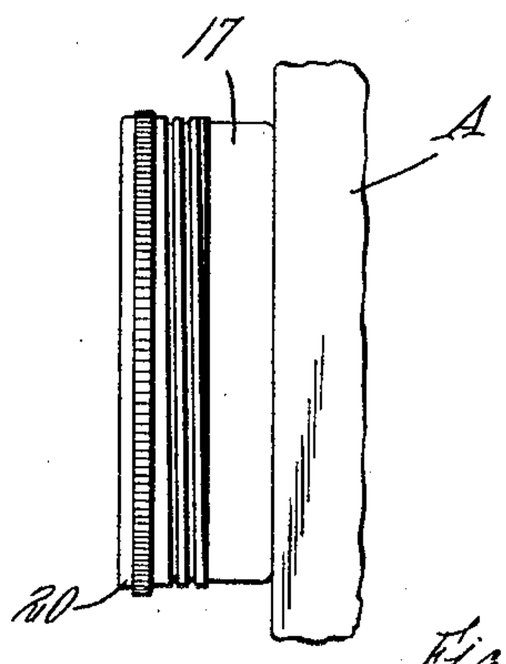

Fig. 2

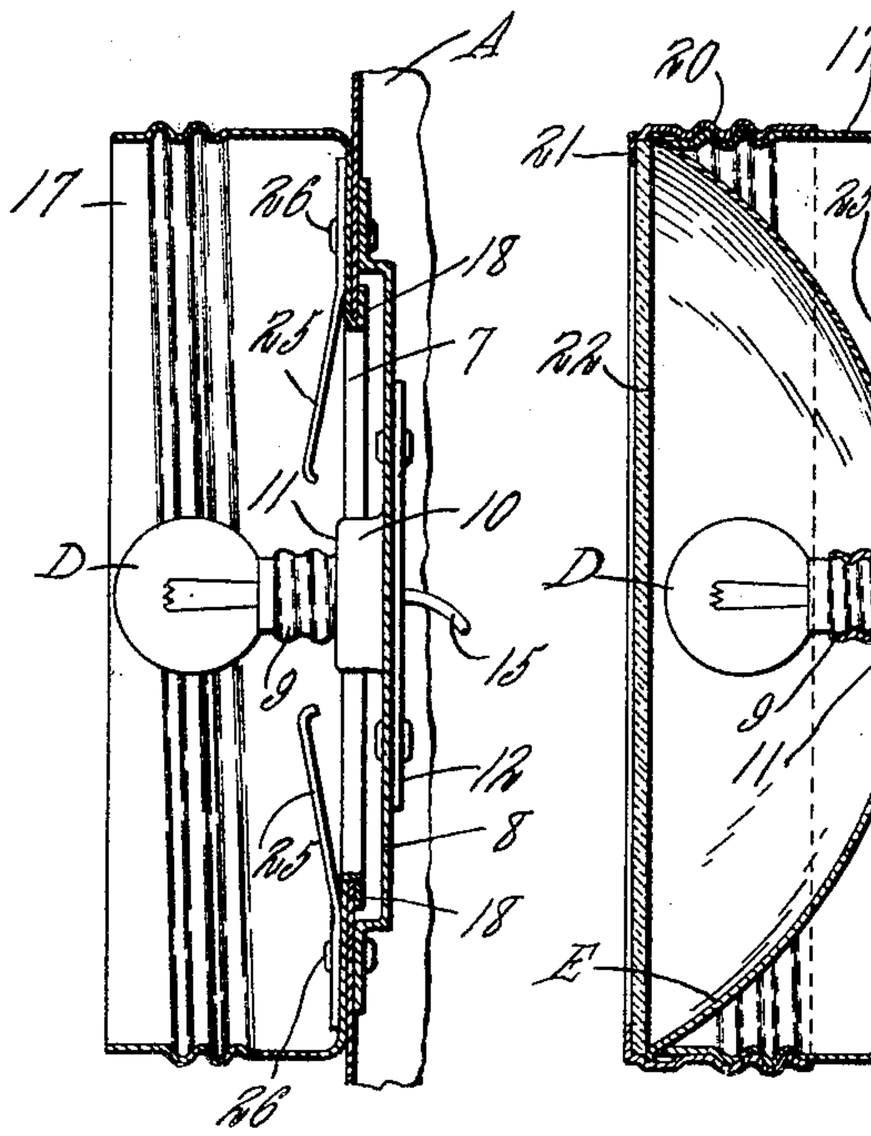

Fig. 4

Fig. 5

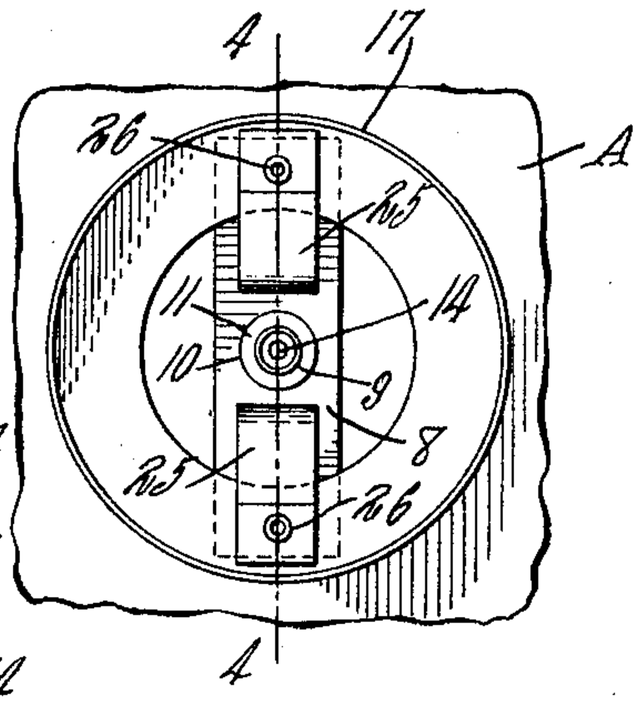

Fig. 3

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UNITED STATES PATENT OFFICE

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ELECTRIC LIGHTING DEVICE

Application filed October 12, 1931. Serial No. 568,326.

This invention relates to portable electric lighting devices or lanterns, and more particularly to that kind which receive their power from primary batteries carried within the lantern.

The objects of this invention are to provide a lantern of this kind with means of improved construction for changing the relationship between the reflector and the light source so that the reflector may be adjusted for either focusing the light into a beam, or for more or less diffusing the light; also to provide a lighting device of this kind with means of improved construction for mounting the reflector on the device; also to improve devices of this kind in other respects hereinafter specified.

In the accompanying drawing:

Fig. 1 is a front elevation of lantern having a focusing or diffusing device embodying this invention, applied thereto;

Fig. 2 is a fragmentary side elevation of the reflector housing of the lantern;

Fig. 3 is a front elevation of the reflector housing of the lantern with the reflector, bezel ring, and light bulb removed therefrom;

Fig. 4 is a fragmentary sectional elevation of the lantern approximately on line 4—4, Fig. 3, and on an enlarged scale;

Fig. 5 is a fragmentary sectional elevation on line 5—5, Fig. 1.

A represents the housing of a lantern which may be of any suitable or desired shape, such as to enable the housing to receive the primary batteries. B represents a cover for the housing, and C a bail by means of which the lantern may be carried. D represents a lamp bulb, or other light source, which, in the construction shown, is mounted in a fixed position with reference to the housing of the lantern. Preferably the front wall of the housing of the lantern is provided with a circular aperture 7 and in the construction shown, this aperture is bridged by a strip of metal or other material 8 to which a lamp socket 9 is suitably secured. In the particular construction shown, the bridge member 8 is provided with a substantially cylindrical boss 10 having its outer edge turned inwardly to form a shoulder 11 to which the lamp socket 9 may be secured. 12 is a strip of insulating material secured to the bridge member 8, and which has a metal contact 14 formed thereon to which a conductor 15 is secured, the metal contact 14 being arranged to contact with the central terminal of the lamp bulb to supply current to the filament in the lamp, the lamp socket itself being ground or connected with the housing of the lantern. Any other means for mounting the bulb or light source in fixed relation to the housing may be employed, if desired.

The reflector housing includes a shell 17 having a cylindrical portion extending outwardly from the front side of the lantern housing and having an inwardly extending flange which is suitably secured to the lamp housing, for example, by turning the edge of this flange inwardly about the edge of the opening 7 in the front wall of the lantern housing, as indicated at 18. The outer portion of the cylindrical part of the reflector housing is preferably screw threaded in any suitable or desired manner, in order to receive a bezel ring 20 which is correspondingly screw threaded and which has an outer flange 21 acting as a shoulder to retain a glass disk or lens 22, which closes the outer or front end of the reflector housing.

The reflector E may be of any suitable or desired shape, such, for example, as a paraboloid shape and the outer edge of the reflector fits within the bezel ring 20. The inner end or middle portion of the reflector is provided with an aperture which may, if desired, be provided with flanges 24 cooperating with the cylindrical boss or projection 10 of the bridge member 8. By means of this arrangement, the inner end of the reflector will be accurately positioned with reference to the light source, while the outer end is similarly correctly positioned by means of the bezel ring. The reflector is so formed that the filament of the bulb or other light source will be approximately in the axis of the reflector. Any other means for positioning the reflector with reference to the light source may be employed.

In lanterns or lighting devices of this kind it is sometimes desirable to concentrate the beam of light in such a manner that it may be thrown upon an object at a considerable distance away, in which case the rays of light should be focused to form a narrow beam. At other times, it is desirable to diffuse the light to a much greater extent so that large objects close to the lantern may be illuminated over an extended area. In order to accomplish this result, the reflector is arranged to be adjusted lengthwise of its axis relatively to the light source. This can be done by turning the bezel ring so that the reflector may be moved lengthwise of its axis by the bezel ring. In order to accomplish this result, resilient means of some kind are employed to yieldingly urge the reflector outwardly toward the bezel ring. In the construction shown for this purpose, a pair of springs 25 are employed, which may be suitably secured to the lantern housing in any suitable or desired manner, for example, by means of rivets 26 which serve not only to connect the springs, but also the bridge member 8 to the lantern housing. The free ends of these springs engage the back face of the reflector and urge the same outwardly toward the bezel ring. The cylindrical portion 10 of the lamp base is made of sufficient length so as to permit of the necessary adjustment of the reflector and to guide the middle portion of the reflector during the adjustment thereof.

The construction described makes it very easy to change the relationship of the reflector to the light source, and consequently, the beam of reflected light can be varied as desired. If, for example, the reflector is of a paraboloid shape, and if the light source is at the focus of the paraboloid, all reflected rays will pass from the reflector parallel to each other, and thus produce a concentrated narrow beam of light capable of illuminating a limited area at a long distance from the lantern. By moving the reflector, so as to place the light source to either side of the focus along the axis of the reflector, the width of the beam may be varied until a very considerable diffusion of light is obtained, capable of illuminating a much larger area at a shorter distance from the illuminating source.

The construction described is rugged, durable and easy to manufacture, and has the advantages that the springs act not only to urge the reflector, at all times toward the bezel ring, so that adjustment of the reflector in either direction is possible by turning the ring, but the springs also serve the further purpose of retaining a uniform tension on the threaded connection of the bezel ring with the reflector housing, so that the bezel ring will remain in any position in which it is set. The springs also prevent rattling of the reflector, glass disk, and bezel ring.

I claim:

1. An electric lantern having a battery casing, a fixed cylindrical reflector housing extending from a side wall of said casing and disposed about an opening therein, a fixed strip extending across said opening and having thereon a lamp socket disposed axially of said housing, a lamp in said socket, a bezel ring upon and having screw threaded engagement with the free end of said reflector housing, a reflector in said housing and having a central hole encircling said lamp socket to guide said reflector lengthwise of and relatively thereto and which reflector extends into operative relation to said bezel ring, and spring fingers fixed in said housing and having free ends extending over said opening and engaging the rear of said reflector for yieldingly maintaining the same in said operative relation to said bezel ring, whereby said reflector can be adjusted lengthwise relatively to said lamp by turning said ring upon and relatively to said fixed housing.

2. An electric lantern having a sheet metal battery casing, a cylindrical, sheet metal reflector housing extending from one side wall thereof and having an annular flange abutting against said wall and extending about an opening therein, a strip extending across said opening and having thereon a lamp socket disposed axially of said housing, a lamp in said socket, a bezel ring upon and having screw-threaded engagement with the free end of said reflector housing, a reflector in said housing and having a central hole encircling said lamp socket to guide said reflector lengthwise of and relatively thereto, said reflector having its edge in operative relation to said bezel ring, spring fingers arranged with an end of each at the flange of said housing and which extend therefrom over said opening to yieldingly engage the back of said reflector to maintain the same in operative relation to said bezel ring for enabling said reflector to be adjusted lengthwise relatively to said lamp by turning said ring on said housing, and a securing device extending through each of said spring finger ends, and through said flange, said casing side wall and said strip to rigidly secure all these parts together.

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