Oct. 12, 1937. C. F. BURGESS 2,095,657

LENS MOUNTING

Filed Aug. 17, 1936

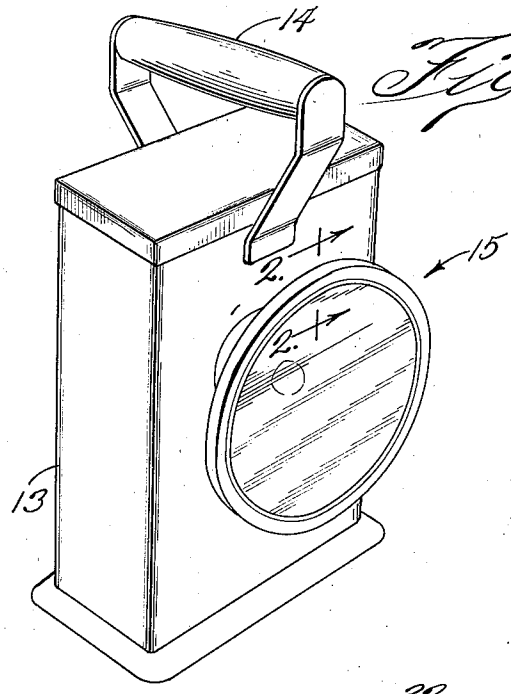


Fig. 1.

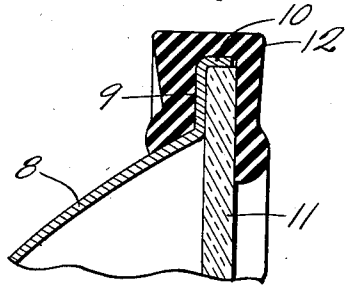


Fig. 2.

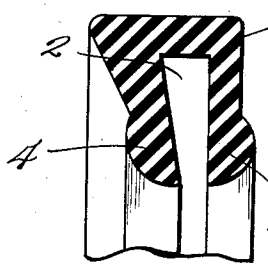


Fig. 3.

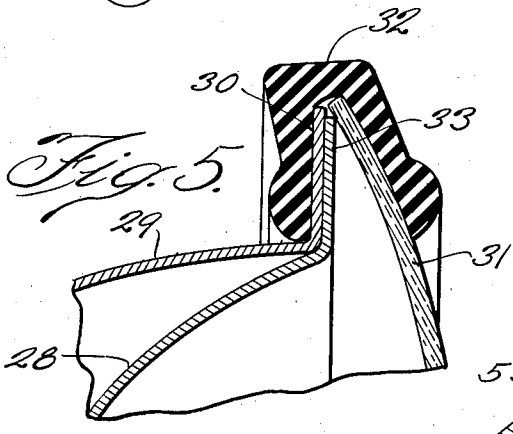


Fig. 5.

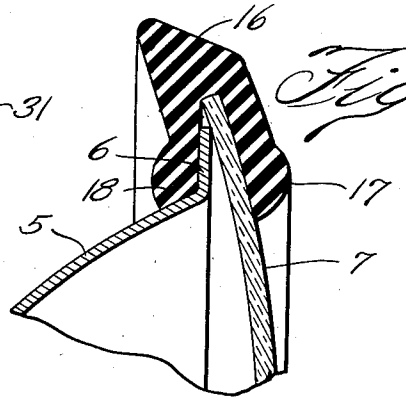


Fig. 4.

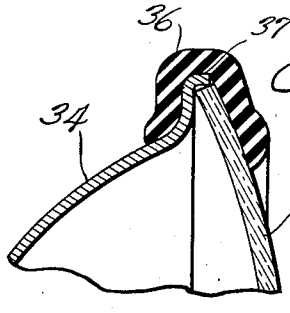


Fig. 6.

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Patented Oct. 12, 1937 2,095,657

UNITED STATES PATENT OFFICE

2,095,657

LENS MOUNTING

Charles F. Burgess, Bokeelia, Fla., assignor to Burgess Battery Company, Freeport, Ill., a corporation of Wisconsin

Application August 17, 1936, Serial No. 96,330

1 Claim. (Cl. 240—41.5)

My invention relates to means for mounting a lens at the open end of a reflector by means of a ring made of rubber or similar flexible material and especially reflectors and lenses used on battery lanterns and hand lamps.

The objects of my invention are to provide, by means of a grooved rubber lens ring which envelops the marginal portion of the reflector and marginal portion of the lens, a simple and easy method of removing the lens from the open end of the reflector to permit replacement of the bulb, a weatherproof connection between the lens and the reflector, and a construction which serves as a bumper or shock absorber to protect the lens and reflector or reflector housing.

Further objects and advantages will become apparent from the following detailed description which is to be taken in conjunction with the accompanying drawing, wherein;

Fig. 1 is a perspective view of a hand lantern incorporating the rubber lens ring of my invention;

Fig. 2 is an enlarged partial sectional view of the rubber lens ring, lens and reflector on 2—2 of Fig. 1;

Fig. 3 is an enlarged partial sectional view of one form of the grooved rubber ring of my invention;

Figs. 4, 5, and 6 show enlarged partial sectional views of constructions to which my invention has been applied.

In the conventional types of battery operated hand lamps the lens usually is mounted in a lamp casing at one end of the tubular battery housing, for example as illustrated in Charles F. Burgess Patents Nos. 1,403,538 and 1,336,067. Various types of construction are used for mounting the lens in the lamp casing. Similar methods are used for mounting the lens in battery operated hand lanterns. In these constructions it has been difficult to mount the lens so that the connection may be made weatherproof by inexpensive means.

I have found that I may simplify the construction of battery hand lamps and obtain a weatherproof connection between the reflector or reflector housing and the lens by means of a resilient grooved rubber ring.

In the conventional types of construction any shock or blow on the edge of the end cap or the metal clamp is transmitted to the lens and may cause it to shatter. The blow may be of sufficient force to mar and deform the edge of the end cap or clamp and even mar or deform the reflector. The rubber ring withstands severe shocks and protects the lens and the reflector against the ordinary abuse to which hand lamps are subjected.

The rubber ring may be of square or rectangular or any other suitable radial section having a suitable interior groove adapted to receive and envelop the marginal portion of the lens and the lens supporting surface or flange. I prefer a ring 1 provided with a tapered groove 2, forming an interiorly grooved or channel-shaped radial section as shown in Fig. 3. The edges of the channel flanges are preferably reenforced by forming these edges as beads 3 and 4. These reenforcing beads prevent tearing of the edges of the channel flanges when the ring is stretched in positioning the ring over the edges of the lens and the lens supporting flange. The beads fit snugly against the lens and supporting flange thereby urging them toward each other and also serve to effect a weatherproof connection between the channel flanges and the lens and reflector.

Figs. 1 and 2 illustrate a battery operated hand lantern equipped with a modification of the lens supporting construction. The lantern comprises a battery housing 13 provided with a carrying handle 14 and a lamp housing 15 mounted on one side of battery housing 13 by any suitable means. The lamp housing comprises a reflector 8 which is provided with a flange 9 having a rim or edge portion 10. The diameter of lens 11 is approximately the same as the internal diameter of the rim and fits within the rim. Grooved rubber ring 12 envelops the marginal portion of lens 11 and supporting flange 9 and rim 10.

The reflector may be parabolic, spherical or of other suitable form. In Fig. 4 the reflector 5 is parabolic in shape and is provided with an outturned flanged edge 6 at its open end to serve as a lens supporting surface. Any desired type of lens may be used. Lens 7 is supported by flange 6. I have found that the silvered surface of the reflector becomes tarnished readily if the grooved rubber ring is allowed to contact the edge of the reflector flange. This undesirable contact is prevented preferably by using a lens having a slightly larger diameter than the diameter of the reflector flange as illustrated in Fig. 4 which thereby prevents the grooved rubber ring from coming in contact with the edge of the reflector flange. Ring 16 is positioned over the edge of lens 7 and the edge of reflector flange 6 in such a manner that the ring envelops the marginal portion of the lens and the reflector flange, the channel web of the ring abutting the lens edge and the channel flanges of the ring urging the lens and supporting flange toward each other. The reenforcing

beads 17 and 18 form a weatherproof connection between lens 7 and reflector flange 6, respectively. In a specific example, the diameter of the reflector flange is 4¾ inches, the diameter of the lens is 4⅞ inches and the outside diameter of the grooved rubber ring is 4$\frac{3}{32}$ inches, the web of the channel shaped section of the ring being $\frac{1}{16}$ inch in thickness.

In assembling a hand lamp embodying my grooved rubber ring, the lens is held in place at the open end of the reflector and in contact with the supporting flange. The grooved ring is then placed in position along a portion of the periphery of the lens and supporting flange by spreading apart the channel flanges of the grooved ring. The ring is gradually worked along the edges of the lens and supporting flange and finally stretched to completely envelop the marginal portion of the lens and the supporting flange.

Although I prefer to use the construction as illustrated in Figs. 2 and 4 and thereby eliminate the usual reflector housing, my invention may be used in the conventional head construction as illustrated in Fig. 5 in which a reflector housing is used. Reflector housing 29 is threaded or otherwise attached to the barrel of the case and is provided with a lens supporting flange 30. The flange 33 of reflector 28 is held between the lens supporting flange 30 and the outer or rim portion of the lens 31. The grooved rubber lens ring 32 is slipped over the assembled lens, reflector and reflector housing and urges them toward each other to thereby form a securely held assembled unit.

In Fig. 6 the reflector or lens support 34 and lens 35 are held by the rubber lens ring 36. In this form the lens edge is turned or bent over and butts against a rim portion 37 of the reflector or lens support. This construction also prevents contact between the rubber lens ring and the silvered portion of the reflector.

The specific constructions illustrated may be modified in various ways. For example, the lens may be of various types in order to obtain a concentration of the light or a dispersion of the light. The lens securing ring of my invention may be applied to various types of lamp casings used in flashlight cases, a few illustrative constructions being shown in United States Patents Nos. 1,336,067, 1,397,646, 1,403,538, and 1,421,399.

Although my invention finds its greatest utility in supporting a lens on a reflector in hand lamps and lanterns, it may be used wherever it is desirable to unite a lens with a support adjacent its edge portion, for example, in gauges and other instruments in which plain glass faces or lenses are used. Although rubber is at the present time the most desirable material that may be used for the grooved member, other materials having similar properties also may be used.

It will be apparent to those skilled in the art that the invention is not limited to the particular examples herein shown and described but is capable of numerous additional modifications and variations. Therefore, I do not wish to be limited except by the scope of the appended claim.

I claim:

The combination of a concave reflector having an out-turned lens-supporting flange at its periphery, a lens supported by said flange, the diameter of said lens being greater than the diameter of said flange, and a tensioned interiorly grooved rubber ring enveloping the adjacent marginal portions of said lens and flange, said marginal portions being within said groove, said grooved rubber member being of such shape that it fits snugly against said lens and support flange and urges them toward each other and having integral rubber reinforcing beads flanking the mouth of said groove.

CHARLES F. BURGESS.