

[54] SEALED LAMP UNITS

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[22] Filed: **Apr. 30, 1971**

[21] Appl. No.: **139,150**

Related U.S. Application Data

[63] Continuation of Ser. No. 780,459, Dec. 2, 1968,
abandoned.

Foreign Application Priority Data

Dec. 13, 1967 Great Britain..... 56,716/67

[52] U.S. Cl..... **240/7.5, 240/11.2, 240/41.2,**
240/103

[51] Int. Cl..... **B63b 45/04**

[58] Field of Search..... 240/7.5, 7.15, 7.25,
240/11, 11.2 R, 41.3, 103

[56]

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[57]

ABSTRACT

The two ends of a cylindrical glass tube are sealed by lid members which are drawn together by a short knurled screw-head passing through a central hole in the top lid and engaging threads in a roof portion of an internal screen-forming housing which, by a bottom flange, is secured to the bottom lid.

4 Claims, 2 Drawing Figures

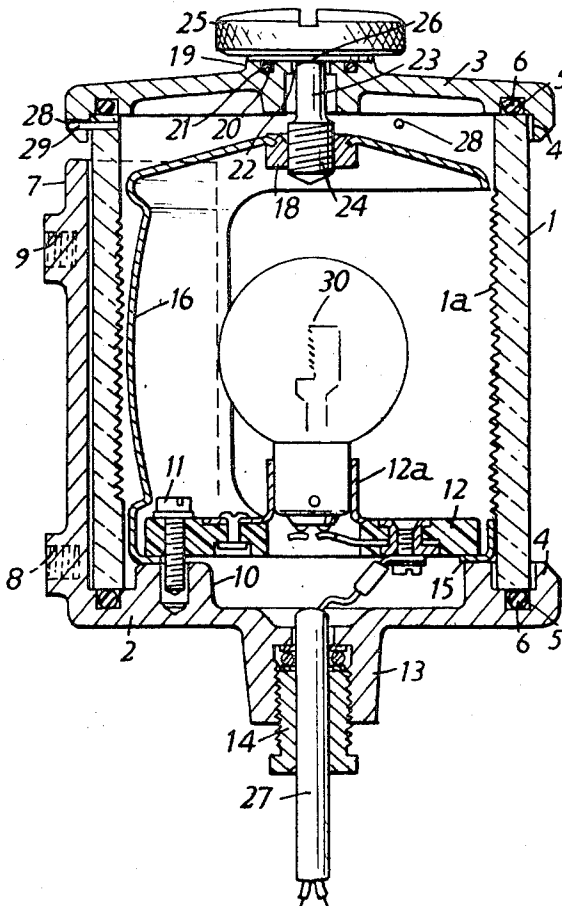


Fig.1.

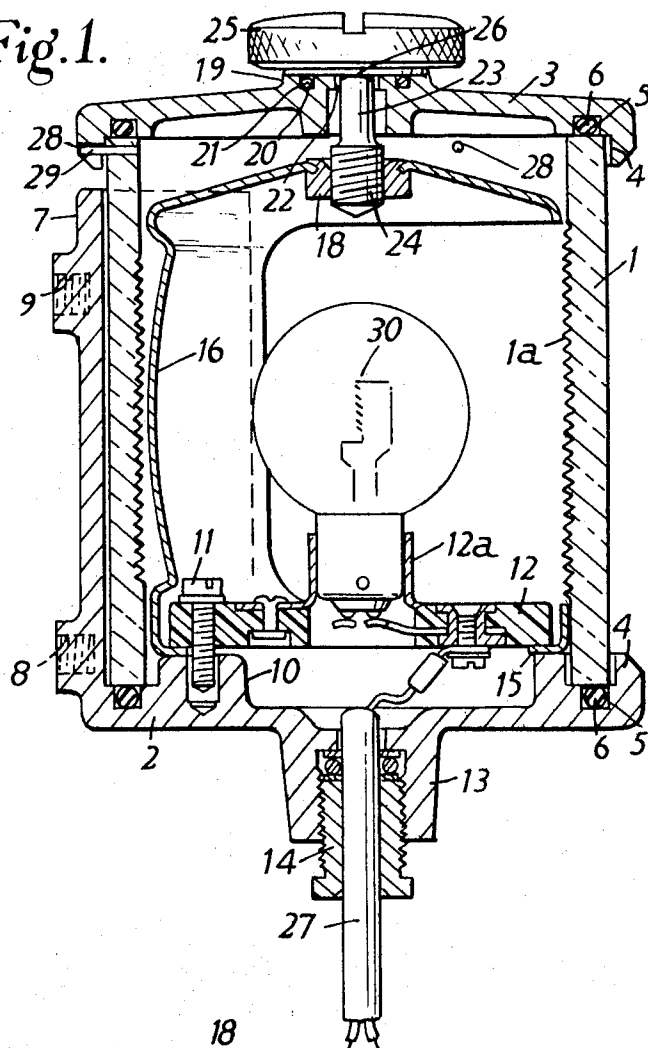
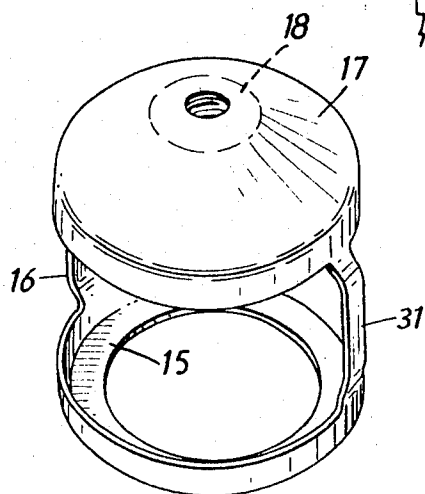


Fig.2.



SEALED LAMP UNITS

This is a continuation of application Ser. No. 780459 filed Dec. 2, 1968, now abandoned.

This invention relates to sealed lamp units of the kind having an internal light shield and is more particularly though not exclusively intended for use in so-called navigation lights for shipping. It has for an object to provide an improved sealed lamp unit of the said kind which, in addition to being watertight, is also robust, is easy to open and close, and has a minimum number of external parts.

According to the invention the lamp unit comprises a tube of glass or other transparent or translucent material, the two ends of which are closed by end members suitably sealed to the ends of the tube, and a stress-transmitting internal housing attached to one of the end members at one end of the tube and including a portion adjacent to the other end of the tube which, axially of the tube is provided with a fixing element, preferably a screw-threaded bore or bayonet socket, for co-operation with complementary fixing elements, preferably a clamping screw, projecting through a centre aperture of the other end member and provided, at the outer side of said other end member, with a manipulation element having a shoulder for cooperation with the outer side of the said other end member to clamp the two end members into sealing contact with the transparent or translucent tube while also itself making sealing contact with said other end member round the hole. Preferably the wall of the stress-transmitting housing is shaped to form a light shield restricting the light outlet to the desired direction, thus minimizing the amount of material employed exclusively for the transmission of the stress between the lids. The light shield is preferably made to reflect and, if desired, focus the light striking it.

If desired, the arrangement of the fixing means might be reversed, the housing being equipped with a stud projecting through the central bore of said one end member to co-operate with a screw-threaded bore or bayonet socket in a tightening nut or wheel member outside the end member. For optimum sealing this bore is preferably formed as a socket bore, for example by forming a hand wheel integral with a thimble portion covering the outer end of the screw-threaded bore in the wheel body proper, thus permitting the stud to project beyond the thickness of the wheel proper into the cavity of the thimble member.

The accompanying drawing illustrates one form of wall-mounted navigation light constructed in accordance with the present invention.

FIG. 1 is an elevation in axial section along the centre of the light shield, and

FIG. 2 is a perspective view of the combined light-shield and stress-transmitting housing.

Referring now to the drawing, the illustrated navigation light comprises a cylindrical tube 1 of red, green or white glass closed at its two ends respectively by a bottom lid or end member 2 and a top lid or end member 3. The inner surface of the tube 1 is preferably shaped, as indicated at 1a to produce a prism effect increasing the visual impact of the lamp. Each lid is formed with a circular locating shoulder 4 for the tube 1 and with an annular channel 5 for accommodation of an O-ring seal 6. The top lid 3 is secured to the tube 1 by three hollow cross-pins 28, whose central bores 29

permit breathing of the lamp. The bottom lid is formed integral with an attachment panel 7, which is formed with a raised, flat-surfaced mounting portion 8, in which screw-threaded socket bores 9 are provided for co-operation with attachment screws extending through, for example, a suitable wall panel of a ship. At its inner side the bottom lid is formed with three bosses 10 which have screw-threaded bores for engagement by fastening screws 11 by which a base plate 12 of insulating material for a lamp-holder 12a is attached, and at its centre the bottom lid 2 is provided with an outwardly projecting boss 13 equipped with a cable-admission gland 14 for an electric cable 27 leading to the lamp-holder 12a. Interposed between the lamp-holder base plate 12 and the bosses 10 so as to be clamped into position by the lamp-holder assembly is a bottom flange 15 integral with a light-shield element of light-reflecting sheet material in the form of a generally part-cylindrical wall portion 16. This light-shield element 16 surrounds the lamp holder and extends upwardly from the flange 15; it is formed, for focussing purposes, with a concavely curved profile. At its upper end the wall portion 16 is integrally joined to a domed roof portion 17 having at its centre a nut element 18 and, as shown in FIG. 2, a further element 31 similar to but narrower than the light-shield element 16 may be arranged to integrally connect the bottom flange 15 to the roof portion 17 at a point diametrically opposite to the light-shield element 16. The top lid 3 is provided at its centre with a boss 19 having a smooth flat outer end surface, in which an annular groove 20 is provided for accommodating an O-ring 21. An axial through bore 22 of the boss 19 rotatably guides the stem portion 23 of a clamping screw. This stem portion connects a screw-threaded portion which is of greater diameter than the stem and co-operates with the screw threads of the nut 18, with a large-diameter knurled head portion 25 at the outer end of the stem. A flat-ended boss 26 at the under side of the head 25 serves for supporting and sealing co-operation with the upper end of the boss 19 of the upper lid 3.

It will be readily appreciated that when the head portion 25 is turned to tighten the threads 24 in the nut 18, the resulting pull of the screw transmitted by the stem 23, will force its boss 26 into facial engagement with the boss portion 19 of the top lid 3, drawing this lid towards the bottom lid 2 and thus tightly sealing the latter against the ends of the tube 1, while also sealing the outer end of the bore in the boss 19 by compression of the O-ring 20. The same action will also tighten the seal between the top lid 3 and the other end of the tube 1 if the pins 28 should permit any slight relative movement.

It will also be observed that, since the lower flange 15 of the light-shield housing 15, 16, 17 is secured in position merely by being clamped between the lamp holder 12 and the bottom lid 2, the light-shield housing may, before clamping, be turned about its axis to place the light-shield element 16 in a desired angular position relative to the fixing flange 7, while it is also possible to replace, for example, the illustrated light-shield housing by a modified light-shield housing in which the angle round the axis covered by the light-shield element is chosen according to requirements. Furthermore, the fixing flange 7, which is shown as extending upwardly from the bottom lid 2, might alternatively be arranged to extend downwardly from the bottom lid 2

or to form a co-planar extension of its. The unit is therefore highly adaptable.

What we claim is:

1. A sealed lamp unit, more particularly for use as a navigation light, which comprises: a tube of light-pervious material spaced around a central axis; two end members respectively sealing against the two ends of said tube; a lamp holder secured to one of said end members for holding a lamp internally of said tube substantially on the central axis of the tube; a light-shield member including a light-shield element of sheet material bent to partially surround said central axis and lamp holder along a circle generated about said central axis and arranged inside of and closely adjacent to said tube and having a specular surface facing towards said lamp holder, said light-shield member including a connecting member closely adjacent and secured to said one end member, and a fastening member closely adjacent to said other end member; a fastener supported in said other end member substantially coaxially with said tube and operable for engagement with said fastening member to transmit axial force between said end members through said light-shield element for sealing the end members to the respective ends of the tube.

2. A lamp unit as claimed in claim 1, wherein said fastening member has a screw-threaded bore and said other end member has a central aperture, the fastener comprising a clamping screw projecting through said central aperture and having, at the outer side of said other end member, a manipulation element formed with a shoulder for co-operation with said outer side of the said other end member.

3. A sealed lamp unit as claimed in claim 1, in which said light-shield member includes a further element of sheet material arranged with its surface substantially normal to its radial distance from the axis of the tube, at a position substantially diametrically opposite the centre of said light-shield element relative to the axis of the tube, and extending from said connecting member to said fastening member so as to transmit axial tension forces between said connecting and fastening members.

4. A sealed lamp unit as claimed in claim 3, in which said light-shield element, said connecting member, said fastening member and said further element jointly form one integral body of sheet material.

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