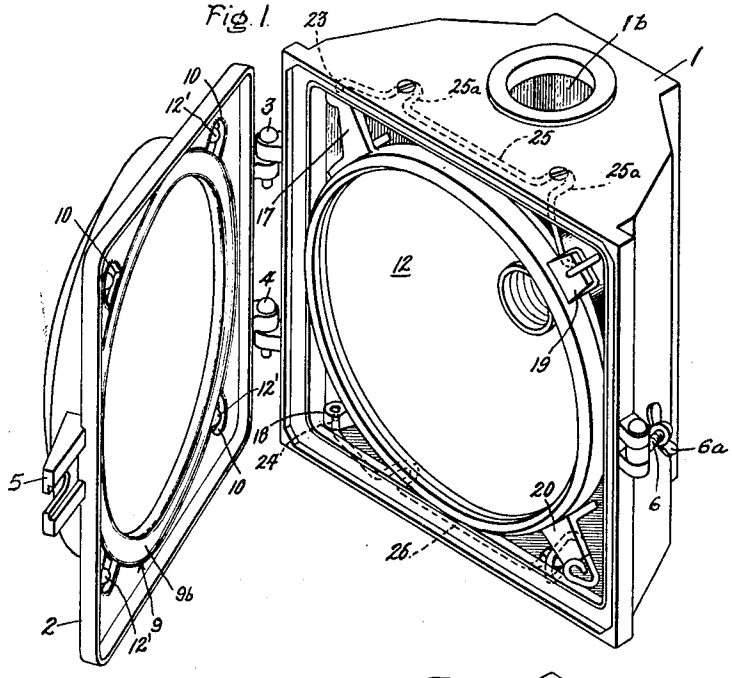
Dec. 19, 1950 R. A. REID 2,534,992

LIGHTING UNIT

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Fig. 1.



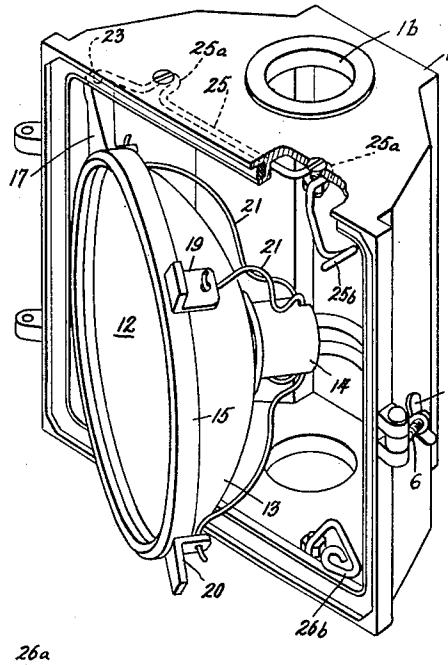


Fig. 2.

Fig. 5.

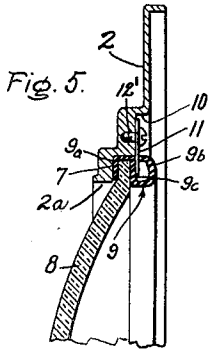
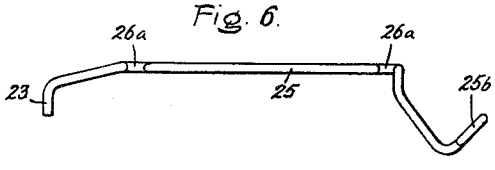


Fig. 6.



Inventor:
Ralph A. Reid,
by Claude H. Mott
His Attorney.

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Fig. 3.

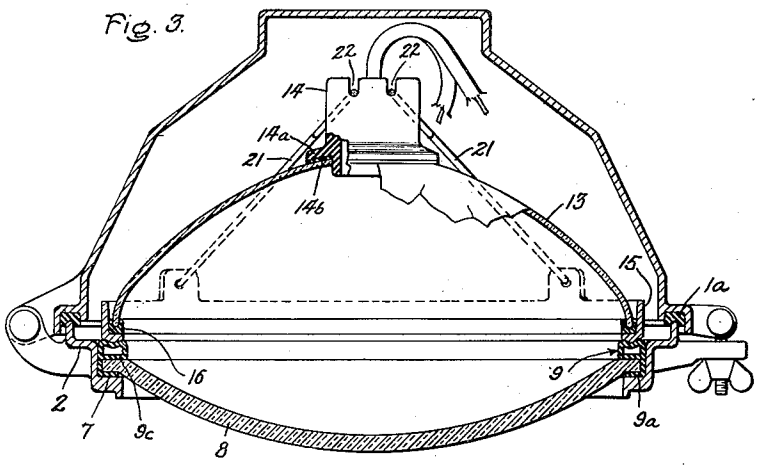
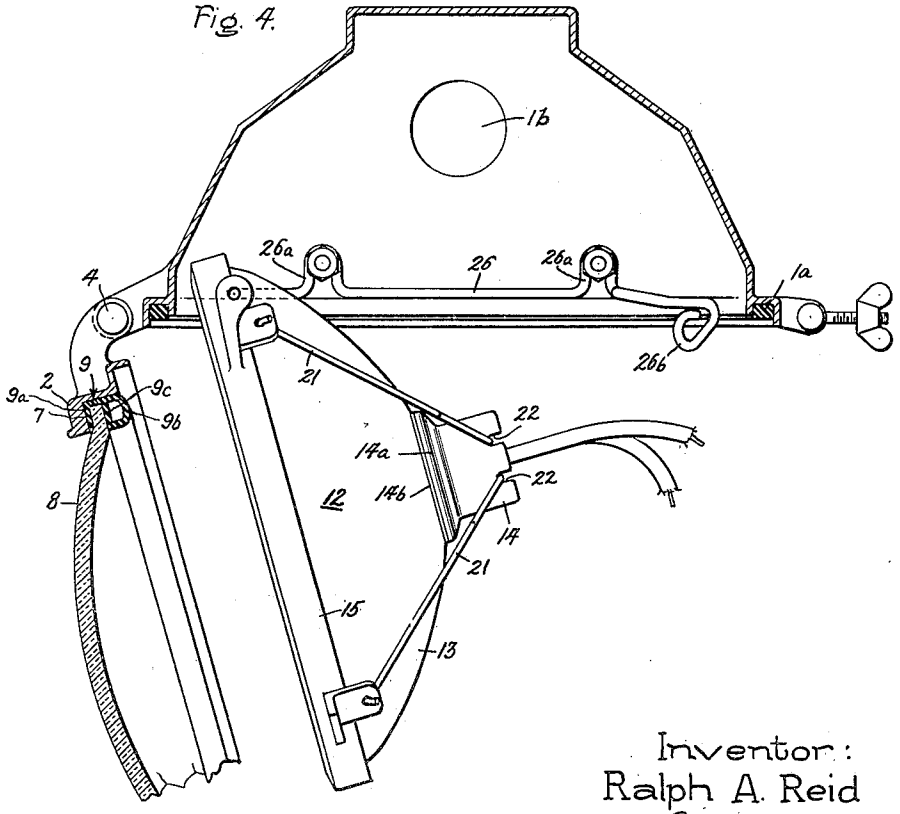


Fig. 4.



Inventor:
Ralph A. Reid
by Claude H. Mott
His Attorney.

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LIGHTING UNIT

Ralph A. Reid, Beverly, Mass., assignor to General Electric Company, a corporation of New York

Application May 11, 1948, Serial No. 26,260

5 Claims. (Cl. 177—337)

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My invention relates to lighting units, and more particularly to signal lamps of the type comprising a lamp and reflector assembly pivotally mounted within a housing, the housing having a door provided with a door glass or lens. Such signal lamps are commonly used in traffic signal systems, and the like.

It is a general object of my invention to provide a new and improved signal lamp of the foregoing type which is simple and inexpensive in structure, and easily assembled and serviced.

It is a further object of my invention to provide, in a lamp of the foregoing type, an assembly composed of a minimum number of parts and which is substantially shock-proof and dust-proof.

It is a still further and specific object of my invention to provide, in a lighting unit door glass or lens assembly, an integral mounting and closure gasket which, though simple and inexpensive in structure and assembly, is effective and durable in service.

In carrying out my invention in one form, I provide a housing having an opening in one side thereof, the housing being provided with a hinged door having a door glass or lens mounted therein. The lens is set into an internal peripheral recess around the door glass opening, and is provided at its edge with an integral mounting and closure gasket. My improved gasket comprises a U-shaped portion embracing the edge of the lens, and a hollow air-core closure portion overlying the inner periphery of the lens and joined to the U-shaped mounting portion by a common intermediate wall. The reflector assembly comprises a conoidal reflector, a rigid rim member and a lamp socket, the reflector being clamped between the rim and lamp base. The reflector assembly is pivotally mounted within the housing by means of a pair of radially projecting lugs on the reflector rim. These lugs are hinged on a pair of pivot pins which are fixed in the housing on a mounting of limited resilience and along an axis substantially in the plane of the open side of the housing. Resilient latch means are provided for normally retaining the reflector assembly in position with the reflector rim substantially in the plane of the open side of the housing, so that when the housing door is closed, the lens gasket seats against the reflector rim.

My invention itself will be better understood and its various objects and advantages further appreciated by referring now to the following detailed specification taken in conjunction with

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the accompanying drawing, in which Fig. 1 is a perspective view of a signal lamp embodying my invention; Fig. 2 is a perspective view of the same lamp with the door removed and showing the reflector assembly swung partially out of the housing; Fig. 3 is a cross sectional top view of the housing showing the reflector assembly in its normal position and the door closed; Fig. 4 is a cross sectional top view showing the door open and the reflector assembly swung out of the housing; Fig. 5 is a fragmentary cross sectional view of the housing door illustrating the lens-mounting arrangement; and Fig. 6 is a front elevational view of the resilient and integral reflector hinging and latching member.

Referring now to the drawing, the signal lamp, shown by way of illustration of one embodiment of my invention, comprises a housing 1 provided with an opening in one side thereof, and a door 2 hinged to the housing at 3 and 4 and arranged to close and seal the open side of the housing. To seal the door opening, a gasket 1*a*, preferably of woven cotton wicking or the like, is fixed in a peripheral channel at the open side of the housing, the edge of the door 2 seating against the gasket 1*a* when the door is closed. The door gasket 1*a* is shown in Figs. 3 and 4, but is omitted in Figs. 1 and 2 in the interest of clarity of illustration. The door 2 is provided with a central lens opening 2*a* (Fig. 5), and the housing 1 is provided with inlet openings 1*b*. The door and housing are provided, on the side opposite the door hinges, with a door lock comprising a pair of latch jaws 5 on the door, and a bolt 6 swingably mounted on the housing and carrying a wing nut 6*a*. The housing 1 and door 2 may be formed of any suitable material, but preferably are die-cast aluminum.

As clearly shown at Figs. 3, 4 and 5, the door 2 is internally recessed at 7 around the periphery of the lens opening 2*a*. A lens 8 is set into the recess 7 and sealed in position by a gasket 9. The gasket 9 is preferably formed of natural or artificial rubber, or the like, and comprises a mounting portion 9*a* of U-shaped cross section moulded integrally with a closure portion 9*b* of hollow tubular configuration, the mounting and closure portions of the gasket having a common intermediate wall 9*c*. The gasket 9 is mounted upon the lens with the U-shaped mounting portion embracing the edge of the lens, so that the hollow tubular portion 9*b* overlies the inner periphery of the lens. The recess 7 serves primarily to locate the lens in the door, but is preferably somewhat deeper than the width of the

mounting portion 9a of the gasket 9. The tubular or closure gasket portion 9b is crowned on the side facing the housing 1, and the purpose of the hollow crown portion will be more fully described hereinafter.

It will, of course, be understood by those skilled in the art that the door glass 8 may be flat or curved, plain or rippled, clear or colored, and may or may not be provided with refracting prisms. In using the term "lens" throughout this specification and the appended claims, I intend to cover any of the foregoing types of glassware.

Adjacent the lens recess 7, the door 2 is provided with four shallow recesses 10 to accommodate clamping clips 11. The clips 11 are flat metal strips clamped to the door, as by screws 12'. The ends of the clips 11 protrude through apertures in the outer peripheral wall of the gasket portion 9b and enter the hollow interior of the gasket in overlapping clamping relation with the lens 8, thereby to hold the lens in place in the door without interfering with the crowned inner surface of the gasket portion 9b.

Within the housing 1, there is pivotally mounted a reflector assembly 12. This assembly is mounted for swinging movement into and out of the housing 1 for repair, access to terminal boards, and the like. The reflector assembly 12 comprises a conoidal reflector 13 having a base portion accommodating a lamp socket 14, and having an open mouth fitting into a rigid annular rim member 15. While my invention is not limited to any particular form of reflector, the reflector 13 itself may suitably be silvered glass or the like. As best shown at Figs. 2 and 3, the lamp socket 14, which is preferably formed of a moulded plastic insulating material, fits into an aperture in the base of the reflector 13 and is provided with an annular flange 14a overlying the back of the reflector. The joint between the lamp socket 14 and the reflector 13 is sealed against the entrance of moisture and dust by an annular ring gasket 14b formed of moisture-proofed paper, or the like.

The reflector rim 15 is L-shaped in cross section, as shown at Fig. 3, and fits over a channel-shaped compressible gasket 16 of natural or artificial rubber which embraces the open mouth of the reflector 13. The front wall of the rim member 15 is ridged to make a tight-seal when seated against the air-core gasket portion 9b on the door. The rim 15 is provided around its periphery with four angular lugs 17, 18, 19 and 20, each lug having an axially rearwardly extending portion provided with an aperture to accommodate the ends of a pair of clamping wires or bails 21. The bails 21 are each hooked at their ends into one pair of the lugs 17, 18, 19, and 20, the center portion of each bail being seated in one of a pair of slots 22 in the rear surface of the lamp 14. The bails 21 thus serve as clamps to hold the reflector assembly together.

The rim lugs 17 and 18 are each provided with relatively long radially extending portions serving as pivot arms for the reflector assembly. These pivot arms are rotatably mounted upon a pair of wire pivot pins 23 and 24. Each pivot pin, 23 and 24, is formed integrally with one of a pair of combined hinging and latching members 25 and 26. The member 25 is shown in front view at Fig. 6.

The members 25 and 26 are formed of stiff wire and are complementary in shape. The wires 25 and 26 are each provided intermediate their ends with a pair of loops 25a and 26a, respectively, the loops of each pair lying in the same plane to provide for bolting of the wires to the housing 1. One end of each wire extends in cantilever fashion from its point of attachment to the housing and is turned over at the tip to form the pivot pins 23 and 24. The other end of each wire extends generally circumferentially of the reflector rim 15 and is coiled over at the end, as at 25b and 26b, to form a spring latch and stop arranged for engagement with the rim lugs 19 and 20, respectively. The pivot pins 23 and 24 engage the rim lugs 17 and 18, respectively, along a pivotal axis substantially in the plane of the open side of the housing 1.

The oppositely extending ends of the hinging and latching wires 25 and 26, which serve as pivotal supports and latching stops, respectively, for the reflector assembly 12, act also as cantilever shock arms of limited resilience. Both the pivot extensions and the latch extensions of the wires 25 and 26 are rigid relative to the air-core gasket portion 9b, but are sufficiently resilient to protect the reflector assembly 12 from severe shock, such as from dropping, or the like.

It will now be observed that in the normal closed position of the signal lamp, the reflector assembly 12 is held latched in the housing with the reflector rim 15 substantially in the plane of the open side of the housing, and the reflector is so positioned that the rim 15 seats against the air-core gasket section 9b. Due to the relative rigidity of the hinging and latching wires 25 and 26, the reflector assembly remains fixed in position and the air core gasket 9b is compressed when the door 2 is closed. The crowned shape of the air core gasket 9b ensures complete sealing against the reflector rim 15. When the door is opened, as at Figs. 1 and 4, the reflector assembly 12 may be unlatched and swung outwardly, as at Figs. 2 and 4, to facilitate installation and repair. Because of the complete gasketing of both the reflector assembly and the housing, my signal lamp is substantially dust-tight, light-tight, and moisture-proof. This effective dust seal prevents convection currents of air, which otherwise would cause the deposit of dirt upon the reflector. Moreover, the reflector hinging and latching members 25 and 26, while simple, inexpensive, and readily assembled, provide an excellent shock mounting for relatively fragile glass reflectors.

While I have described only a preferred embodiment of my invention by way of illustration, many modifications will occur to those skilled in the art and I, therefore, wish to have it understood that I intend in the appended claims to cover all such modifications as fall within the true spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A lighting unit comprising a reflector assembly having an open mouth defined by a rim portion, a closure member including a door having a lens opening therein, a lens mounted in said opening, a resilient air-core gasket overlying the inner periphery of said lens in position to seat upon said rim when said door is closed, and a plurality of clips mounted upon said door and piercing said gasket transversely in overlapping clamping relation with the edge of said lens, thereby to hold said lens in place in said opening without interfering with seating of said gasket against said rim.

2. A lighting unit comprising a reflector assembly having an open mouth defined by a rim

portion, a closure member including a door having a lens opening therein, said door being internally recessed about the periphery of said opening, a lens seated in said recess, a resilient air-core gasket overlying the inner periphery of said lens in position to seat upon said rim when said door is closed, and a plurality of clips mounted upon said door and piercing said air-core gasket transversely in overlapping clamping relation with said lens, thereby to hold said lens in place in said door and to hold said gasket in place on said lens without interfering with seating of said gasket against said rim when said door is closed.

3. A lighting unit comprising a reflector assembly having an open mouth defined by a rim portion, a closure member including a door having a lens opening therein, said door being internally recessed about the periphery of said opening and having a plurality of shallow recesses adjacent said peripheral recess, a lens mounted in said peripheral recess, an integral mounting and closure gasket interposed between said lens and said door in said peripheral recess, said gasket comprising a channel-shaped mounting portion embracing the edge of said lens and a hollow tubular closure portion overlying the inner periphery of said lens and having one wall common with said mounting portion, said peripheral recess being deeper than the width of said channel-shaped gasket portion, and a plurality of clips mounted upon said door in said shallow recesses and extending in transverse piercing relation into said tubular gasket and into overlapping clamping relation with the edge of said lens, whereby said lugs hold said lens in place in said door without interfering with the seating of said gasket against said rim portion when said door is closed.

4. A signal lamp comprising a housing having an opening in one side thereof, a door having a lens opening therein and being hinged to said housing, a lens mounted in said door and having a resilient air-core gasket extending around its inner periphery, a plurality of clips attached to said door and piercing said air core gasket transversely in overlapping clamping relation with said lens, a reflector assembly having an open mouth defined by a rigid annular rim member, spring mounted pivot means rotatably supporting said rim member on an axis substantially

in the plane of said opening thereby to permit swinging of said reflector assembly into and out of said housing, and spring mounted latch means for holding said rim member in a normal position substantially in said plane and in position to engage and depress said air-core gasket when said door is closed, said spring mounting means being rigid relative to said gasket but resiliently deformable under shock thereby to protect said reflector assembly against breakage by shock.

5. A signal lamp comprising a housing having an opening in one side thereof, a door having a lens opening therein and being hinged to said housing to close said opening, said door having a lens mounted therein and provided with a resilient air-core gasket around its inner periphery, a plurality of clips attached to said door and piercing said air core gasket transversely in overlapping clamping relation with said lens, a reflector assembly hinged in said housing and having an open mouth, defined by a rigid annular rim member, resiliently mounted pivot means rotatably supporting said rim member upon an axis substantially in the plane of said opening, and resilient latch means holding said rim member in a normal position substantially in said plane and in position to engage said air-core gasket when said door is closed, said resilient pivot and latch means being sufficiently rigid to compress said gasket upon closure of said door but resiliently deformable under shock, whereby when said door is closed said gasket seals against said rim member without appreciably deforming said pivot or latch means.

RALPH A. REID.

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