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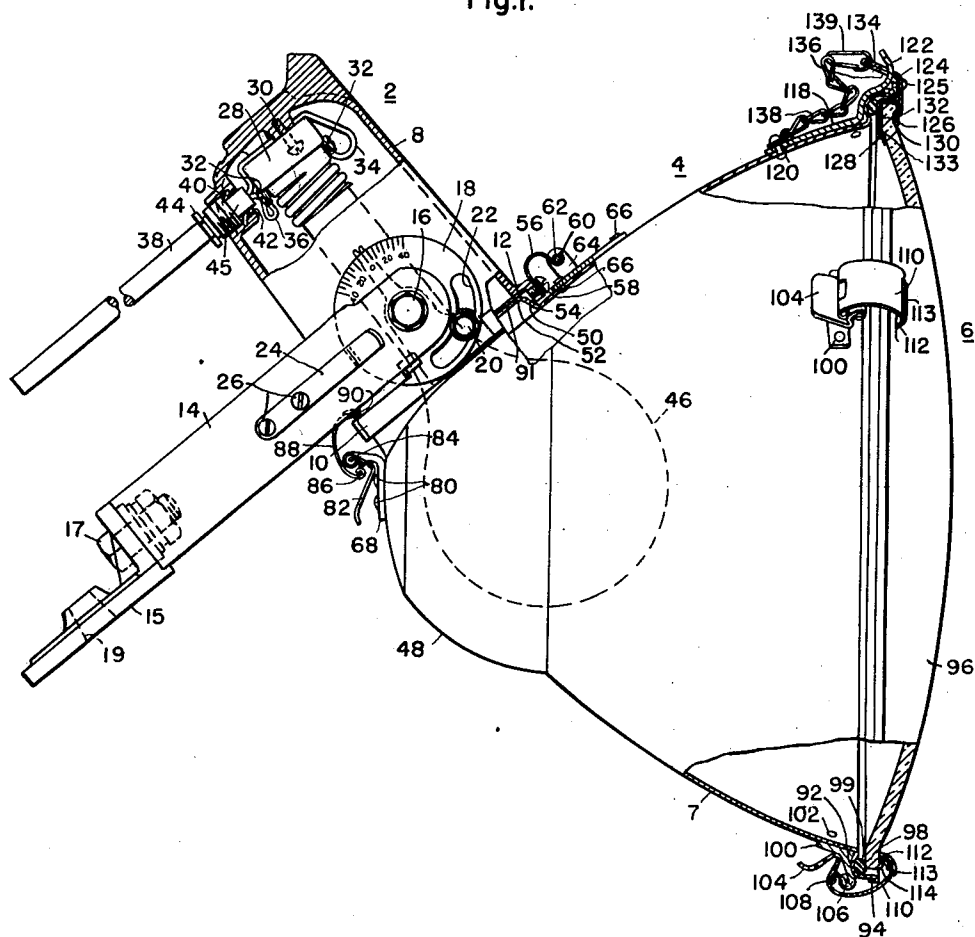
2,769,082

LIGHTING FIXTURE

Filed March 30, 1953

2 Sheets-Sheet 1

Fig. 1.



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2 Sheets-Sheet 2

Fig. 2.

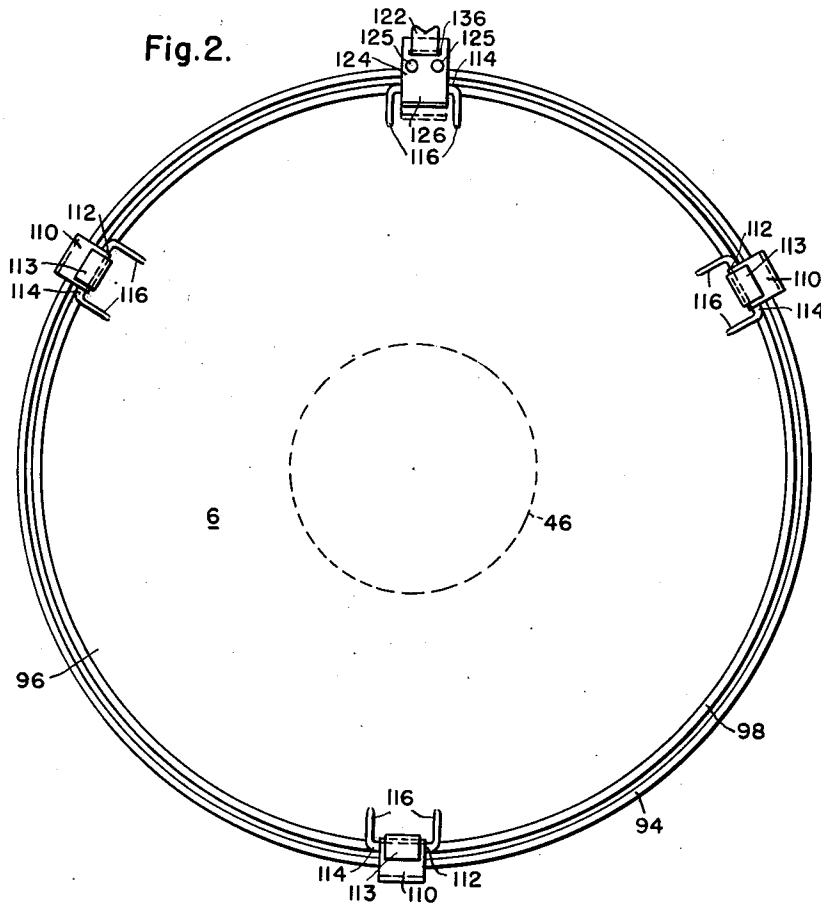


Fig. 3.

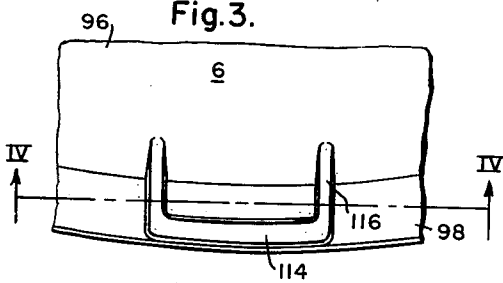
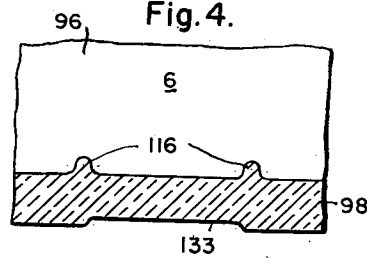


Fig. 4.



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LIGHTING FIXTURE

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Application March 30, 1953, Serial No. 345,525

5 Claims. (Cl. 240—41)

This invention relates to lighting fixtures generally, and more particularly to fixtures having multi-part enclosures, the parts of which are capable of ready assembly and disassembly to facilitate servicing of the fixture and lamp replacement.

Fixtures which have transparent closures and reflectors usually mount the closure so that it can be removed in order to clean the fixture and closure, and for lamp replacement purposes. However, in doing this the closures have required a separate frame, and where the fixture is to be mounted outdoors, at least two weatherproof gaskets are required. In addition, no provision has been made for adequate maintenance or replacement of the reflector especially where it comprises part of the fixture enclosure, short of replacement of substantially the entire fixture or disassembly of fixed securing means.

Accordingly, one object of this invention is to provide a lighting fixture which has a novel frameless type of readily removable transparent closure.

Another object of this invention is to provide in a lighting fixture of the type having a reflector constituting a part of the fixture housing, a novel removable assembly of the reflector in the fixture, permitting ready removal and replacement of the reflector.

A more general object of this invention is to provide a novel multi-part lighting fixture permitting ready assembly and disassembly of the parts of the fixture to facilitate maintenance and replacement of the parts and/or lamp.

Another object of this invention is to provide a novel lighting fixture including a lamp holder portion adapted to be mounted on a support, and a reflector readily detachably mounted on the lamp holder portion.

Still another object of this invention is to provide a novel lighting fixture including a lamp holder portion adapted to be mounted on a support, a reflector readily detachably mounted on the lamp holder portion, and a frameless door readily detachably mounted on the reflector.

These and other objects of this invention will become more apparent upon consideration of the following detailed description of a preferred embodiment thereof, when taken in connection with the attached drawings in which:

Fig. 1 is a side elevational view of a lighting fixture constructed in accordance with this invention, with parts of the fixture being broken away and shown in section;

Fig. 2 is a front elevational view of the lighting fixture shown in Fig. 1;

Fig. 3 is an enlarged front elevational view of a part of the door employed in the lighting fixture shown in Figs. 1 and 2, and;

Fig. 4 is a partial sectional view of the lighting fixture door taken substantially on the line IV—IV of Fig. 3.

This invention contemplates a lighting fixture composed of a plurality of separate parts, and one feature of the invention has to do particularly with fixtures adapted for outdoor mounting, such as floodlights, where it is necessary that the fixture be sealed against the entrance

of moisture or other deleterious elements which may be present in the atmosphere. In accordance with this feature of the invention, the separable parts of the fixture are arranged to be readily sealed in a weather-tight manner, and in a manner to facilitate servicing the fixture, including cleaning and replacement of parts, as well as facilitating initial installation of the fixture. One part of the invention has to do with the provision of a novel form of transparent door in a manner such that it may readily be assembled and disassembled to the fixture in sealed relation if desired, without the use of a separate frame for the door.

The illustrative embodiment of the invention shown on the drawings comprises a lighting fixture having a housing socket assembly 2, a reflector assembly 4 and a door 6, which are all capable of being releasably assembled together in a manner to provide a sealed weather-tight enclosure. The housing socket assembly comprises a socket housing casting 8 which is generally cup-shaped in form, having an open end joined to the reflector 7 proper. The reflector 7 is formed of a single piece of material capable of having a reflecting surface formed thereon, such for example as spun aluminum, and is generally flared outwardly in section and is joined to the socket housing 8 at the inner end of the reflector at one side. The door assembly 6 includes a transparent concave or convex door member 96 formed of transparent material, such as glass or the like.

The open end of the socket housing 8 is formed with a flange 10 which is offset outwardly to provide a shoulder 12 between the flange and the side wall of the socket housing 8. The entire lighting fixture is adapted to be supported at the socket housing 8, for example as by a U-shaped supporting bracket 14 which receives the socket housing 8 and is adjustably secured thereto, as by pivot bolts 16 in each side of the socket housing 8. This permits relative pivotal movement of the lighting fixture with respect to the supporting bracket 14. The right portion of the supporting bracket 14 may have an angled mounting bracket 15 secured thereto, as by a bolt 17, and the bracket is provided with a mounting aperture 19, by means of which it may be suitably bolted to any desired support. If desired, an indicator disk 18 may be rotatably mounted on one of the pivot studs 16 and be provided with an arcuate slot 22 for receiving a bolt 20 for securing the indicator disk 18 at various desired angular positions relative to the socket housing 8. A leaf spring latch member 24 may be employed for securing the lighting fixture in predetermined angular relation with respect to the supporting bracket 14, with the latch 24 being secured to the mounting bracket 14, as by screws 26, and adapted to engage through an opening in the mounting bracket 14 into a notch (not shown) in the indicating disk 18. The particular mode of mounting the lighting fixture forms no part of this invention and it is more particularly described and claimed in the copending application of Edward L. Beach and Merle E. Keck, Serial No. 345,396, on Lighting Fixture, filed March 30, 1953, and assigned to the same assignee as this invention. Accordingly, for a more complete description of the mounting of the lighting fixture and the manner in which it may be adjusted to various angular positions, reference is hereby made to the above-mentioned copending application.

The socket housing 8 is adapted to support interiorly thereof lamp holding means, illustratively shown in this embodiment of the invention as comprising a screw type of lamp socket 28, which is secured to the bottom wall of the socket housing 8, as for example by screws 30. The lamp socket 8 has its own terminal screws 32 to which electrical supply conductors 34 and 36 may be secured. The supply conductors preferably emanate from a cable having a sheath 38 of waterproof material, such as lead

or a non-metallic waterproof material, and the cable enters the socket housing 8 through a side opening 40 in the socket housing 2 having an inner shoulder 42. In order to seal the point of entrance of the cable into socket housing 8, there is provided a threaded bushing 44 adapted to receive the cable and be threaded into the opening 40 in the socket housing 8, there being compressible packing material 45 interposed between the bushing 44 and the shoulder 42 such, for example, as a packing material having a rubber or asbestos base, so that when the bushing is tightened the material 45 will be deformed into intimate engagement with the socket housing 8 and the cable sheath 33 to seal the opening in the socket housing 8.

A light source 46 is shown as being supported by the lamp socket 28, and comprises in the illustrative embodiment of the invention, an incandescent lamp. In this regard, however, it is desired to point out that the invention is not limited to this type of light source or to the particular type of lamp socket illustrated, as the invention is equally applicable to other types of lamps and lamp supports. It will be noted that the lamp 46 extends into the reflector assembly 4, and particularly that the latter may be provided with a generally hemispherical inner end portion 48 into which the lamp extends from an opening at the inner end of the reflector assembly 4 but at one side thereof.

The reflector assembly 4 and socket housing 8 are secured together at the opening through which the lamp extends into the reflector assembly 4. For this purpose the reflector 7 has an opening corresponding to the opening in the housing 8, which is defined by an outwardly extending flange 50 which terminates in an inwardly extending lip 52. The lip 52 defines the opening 54 in the reflector which is adapted to align with the opening in the housing 8 when the reflector and housing are secured together.

The securing means employed for the socket housing 8 and reflector assembly 4 comprises a generally U-shaped leaf spring hinge member 56, having one end secured to the flange 10 of the socket housing, as by screws 58, and having the other end formed into a hook 60, for receiving a pivot pin 62 supported on a bracket 64. The pivot pin supporting bracket 64 is provided with spaced arms which are spanned by the pivot pin 62, and the bracket is secured to the reflector 7 by having its base secured to the outer surface of the reflector 7, for example as by rivets 66. The spring hinge member 66 is formed of any suitable resilient material, such for example as stainless steel.

At a point opposite the spring hinge relative to the juncture of the socket housing 8 and the reflector assembly 4, there is provided an angled supporting bracket 68, one leg of which is secured to the reflector 7 substantially at the innermost end thereof, as by rivets 80. The other leg of the angled bracket 68 projects outwardly for supporting an angled manually operable toggle member 82, as by a pivot pin 84. The toggle lever 82 is in turn pivotally connected at an intermediate point, as by a pivot pin 86, with one end of a leaf spring toggle clamping lever 88, the other end of which has a nose 90 for engagement with the outside of shoulder 12 on the socket housing 8. If desired, the nose 90 of the toggle clamping lever 88 may be covered with a suitable resilient shielding material, such as rubber or the like, to prevent damage to the outer surface of the socket housing at the point of engagement therewith. It will be noted that a gasket 91 is preferably interposed between the shoulder 12 of the socket housing 8, and the lip 52 around the opening in the reflector assembly 4, and the purpose of the hinge spring 56 and spring clamping lever 88 is to maintain these parts of the socket housing 8 and the reflector assembly 4 under spring pressure exerted on the gasket 91 interposed between them to provide a waterproof sealed joint. The gasket 91 may

be made of any desired compressible sealing material, such as a rubber or asbestos composition.

The reflector assembly 4 is shown assembled with the socket housing 8 in sealed relation in Fig. 1 of the drawing, with both the hinge spring 56 and spring clamping lever 88 being stressed to exert pressure on the sealing gasket 91 between these two parts. Referring particularly to the spring clamping lever 88, it will be noted that at the position of the parts shown in Fig. 1, the toggle levers 82 and 88 have their common pivot pin 86 positioned to the right of a center line connecting the supporting pivot pin 84 for the lever 82, and the point of engagement of the lever 88 with the socket housing 8. This maintains the toggle levers at the position shown, with the manually operable lever 82 held against a portion of the angled supporting bracket 68 as a stop therefor. When it is desired to release the clamping lever 88, it is merely necessary to manually grasp the lever 82 and move it outwardly about its pivot pin 84 to bring the common pivot point 86 of the two levers to the left of the center line connecting the pivot pin 84 and the point of engagement of lever 88 with the socket housing. This will release the stress in the clamping lever 88 and permit its disengagement from the socket housing, so that the entire reflector assembly 4 may then be pivotally moved about the hinge pin 62 as a center. If it is desired to entirely remove the reflector assembly 4 from the socket housing 8 after removal of lamp 46, the former may simply be lifted to remove the hinge pin 62 from the hook 60. This obviously permits ready removal of the reflector assembly 4 for cleaning purposes or for replacement with a different type of reflector. Reassembly of a reflector assembly 4 with a socket housing 8 is equally easy, in that it is merely necessary to lift the reflector assembly 4 to position its pivot pin 62 in the hook 60 of the spring hinge 56, and then rotate the reflector assembly toward the socket housing 8 until the spring clamp lever 88 can be hooked over the shoulder 12 of the socket housing, whereupon the joint between them with the gasket 91 interposed therebetween may again be placed under pressure to seal the joint, by rotating the manually operable toggle lever 82 downwardly in a counterclockwise direction to move to the right and move the common toggle lever pivot 86 back across the center line joining the pivot pin 84 and the point of engagement of toggle lever 88 with the socket housing, to the original position shown in Fig. 1.

The outer end of the reflector assembly 4 is formed to engage the door 6, by having a recessed shoulder 92 formed integrally with the reflector 7 and extending outwardly therefrom to terminate in a flange 94. The door 6, as previously stated, is formed of a transparent material 96, such as glass or the like, and is especially adapted for assembly with the reflector 7 without the use of any frame for the transparent material. Thus, the door is provided with an integral peripheral flange 98 adapted to engage a gasket 99 which is, in turn, adapted to seat in the recess of the reflector shoulder 92, to seal the joint between the reflector 7 and door 6. The gasket 99 may be formed of any suitable compressible material similar to the gasket 91 referred to above.

In order to secure the door 6 in pressure engagement with the gasket 99, there is provided a plurality of clamps substantially equally spaced about the periphery of the door and illustratively disclosed herein as being three in number (Fig. 2). These door clamps are generally similar to the releasable spring clamps 82, 88 employed for securing the reflector assembly 4 to the socket housing 8. The specific form of clamp illustrated here is adapted to be mounted by means of a bracket 100 which is secured to the reflector 7, as by rivets 102, and has an outwardly projecting arm for pivotally supporting a manually operable toggle lever 104, as by a pivot pin 106. The manually operable toggle lever 104 is pivoted at an intermediate point, as by a pivot pin 108, to one

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end of a leaf spring toggle clamp 110 which is bowed in form, and like the spring toggle lever 88, is formed of any desired spring material, such as a stainless steel. The outer end of the spring toggle member 110 is provided with a nose 112 for engaging the outer surface of door flange 98 and it preferably is covered by a resilient gasket material 113, such as rubber or the like.

The action of the spring clamps 104, 110 is substantially the same as the action described above of the spring clamps 82, 88, and accordingly will not be repeated in detail except to point out that when the clamps are in clamping position, as illustrated in Fig. 1 of the drawings, the spring toggle levers 110 are stressed to thereby exert predetermined pressure on the gasket 99 located between the joint of the door 96 and reflector 7. Moreover, at this time the common pivot pin 108 of the toggle levers 104 and 110 lies inwardly of a center line connecting the pivot pin 106 for the toggle lever 104, and the point of engagement of the spring toggle lever with the cover, to thereby maintain the manually operable toggle lever 104 inwardly in engagement with the supporting bracket 100. In order to prevent accident movement of the nose 112 of the spring toggle lever 110 in a direction outwardly of the door to disengage the same, and to insure proper positioning thereof, the door is preferably provided with an integral rib 114 on the outer side thereof along the periphery of the door flange 98, and with inwardly extending integral ribs 116 (Figs. 2 to 4) at each end of the outer rib 114, with the nose 112 of each of the spring clamping levers adapted to engage the door flange 98 within the confines of integral door ribs 114 and 116.

The door 96 may also be removably hinged to the reflector 4, by a hinge arrangement illustratively shown in the preferred embodiment of the invention as being located at the top of the lighting fixture. The hinge comprises an angular hinge bracket 118 having one portion secured to the upper side of the reflector 7, as by rivets 120, and having its outer end angularly bent over the recessed shoulder 92 of the reflector, and then bent outwardly and reduced in width, to form a hinge tongue portion 122. If desired, the outer edge of the hinge portion 122 may be notched, as illustrated in Fig. 2, to provide a sight by means of which the lighting fixture may be aimed and adjusted about its pivotal mounting studs 16. The door 96 is provided with a hinge clip 124 formed of a resilient material, such as stainless steel strip, which is bent back upon itself at the outer end and riveted together as at 125, whereupon the ends of the strip are separated to form one leg 128 for engaging the inner side of the adjacent edge of the door 96, and another leg 126 formed to engage the outer surface at the outer edge of door 96. Preferably, a compressible sheet material 130, such as rubber or the like, is interposed between the material of door 96 and the hinge clip 124 to prevent damage to the transparent material of the door, and integral ribs 114 and 116 are formed on the door at a position to receive the hinge clip 124, with the outer leg 126 of the clip being bent at 132 to conform to the shape of rib 114 and thus prevent withdrawal of the hinge clip. Also, in order that the inner leg 128 of the door hinge clip does not project outwardly of the inner surface of the door, and particularly the door flange 98, the latter is preferably grooved as at 133 (Fig. 4) for receiving the inner leg 128 of the hinge clip, so that it will lie flush with the inner surface of the door flange 98. The outer end of the door hinge clip 124 is angularly bent and has a pivot opening 136 for receiving the hinge tongue 122 of the hinge bracket 118.

It will now be apparent that upon release of the clamps comprising levers 104, 110, which secure the door 6 to the reflector assembly 4, the door will still be supported from the reflector assembly 6 by the hinge bracket 118 and hinge clip 124, and the door may be

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opened by pivotal movement about the point of engagement of hinge bracket 118 and hinge clip 124, for replacement of the lamp 46, or for the purpose of cleaning. Of course, if it is desired to replace the door 6 or to remove it entirely, it may be easily lifted upwardly to clear the hinge tongue portion 122 of hinge bracket 118, and be entirely removed from the lighting fixture. It may be reassembled with the reflector assembly, or a new door assembled very easily by simply dropping the hinge clip 124 over the hinge portion 122 of bracket 118, and securing the spring clamps comprising levers 104, 110 in the position shown in Fig. 1, where they maintain the gasket 99 between the door 6 and reflector 7 under pressure engagement.

If desired, a flexible chain 138 or the like may be provided joining the parts of the lighting fixture which are releasably connected together, for the purpose of preventing accidental removal of the parts when they have been released from clamping engagement. While such a captive chain 138 is illustrated on the drawing only in connection with the door 6 and reflector assembly 4, a similar chain could be provided connecting the reflector assembly 4 and the socket housing 8 in a similar way. Of course when it is desired to entirely remove the parts of the lighting fixture, the captive means, such as chain 138, may be simply unhooked by means of its spring clasp 139, from one of the parts it engages, and in the illustrative embodiment the chain 138 may be unhooked from the aperture in the upper end 134 of the hinge clip 124 in which it engages, the other end of the chain being secured to the reflector by one of the rivets 120.

It is believed apparent from the foregoing that this invention comprehends from one aspect, the provision of a weather-tight lighting fixture having a transparent cover which does not require a frame but which nevertheless may be removably secured to the reflector part of the fixture in a weather-tight manner to permit ready access to the interior of the fixture for replacing the light source and for other servicing purposes, such as cleaning. This invention also comprehends a lighting fixture employing a reflector which is removable from the socket mounting for the light source in a simple manner, and yet can be clamped in a weather-tight fashion to the socket housing, all for the purpose of permitting ready access to the fixture for cleaning it or replacing it entirely. Finally, it is apparent that the particular construction of lighting fixture comprising this invention facilitates installation because it is possible to mount the lamp socket housing separately at the desired location, and the body portion of the fixture comprising the reflector and door, may be later assembled after the installation of the socket housing and wiring thereof are completed.

Having described a preferred embodiment of the invention, in accordance with the patent statutes, it is desired to point out that this is merely illustrative of the invention, and should not be considered as limiting the invention to the specific details thereof. Thus, the frameless door construction may be used in other types of lighting fixtures, the number of spring clamps employed may be varied, the invention may be employed with other light sources than the incandescent light specifically disclosed herein, and many other changes and modifications of the essential features of the invention may be made without departing from the true spirit and scope of the invention. Accordingly, it is desired that the invention be interpreted as broadly as possible.

We claim as our invention:

1. A lighting fixture having only three parts releasably secured together in a weatherproof manner comprising, a hollow one-piece supporting member having an opening, lamp holding means mounted in said supporting member for supporting a lamp with at least a portion thereof extending through and located outside of said

opening in the supporting member, means on said supporting member for mounting said supporting member directly on a support, a reflector having an opening adjacent one end adapted to be aligned with the opening in said supporting member, a compressible sealing gasket positioned between surfaces on said supporting member and reflector surrounding said openings, means for releasably clamping said reflector to said supporting member with said openings in alignment and including a resilient part which is stressed when the reflector and supporting member are clamped together to maintain said gasket under predetermined pressure, to maintain said gasket under pressure, said reflector flaring outwardly from said opening to a relatively large opening adjacent its opposite end through which light is transmitted to the exterior, a door of transparent material for said relatively large opening, a second compressible sealing gasket adapted to be positioned between surfaces on said reflector and door which surround the relatively large reflector opening, and means for releasably clamping said door to said reflector in position where it closes said relatively large opening and said second sealing gasket is maintained under pressure and including a resilient part which is stressed when the door and reflector are clamped together to maintain said second gasket under predetermined pressure, a pair of hinge means each of which comprises separable parts connecting said supporting member to said reflector and said reflector to said door, respectively.

2. A lighting fixture comprising, a hollow one-piece supporting member having an opening, lamp holding means mounted in said supporting member for supporting a lamp with at least a portion thereof extending through and located outside of said opening in the supporting member, means on said supporting member for mounting said supporting member directly on a support, a reflector having an opening adjacent one end adapted to be aligned with the opening in said supporting member, a compressible gasket located between the supporting member and reflector adjacent the openings therein, means for releasably clamping said reflector to said supporting member with said openings in alignment and including a resilient part which is stressed when the reflector and supporting member are clamped together to maintain said gasket under predetermined pressure, said reflector flaring outwardly from said opening to a relatively large opening adjacent its opposite end through which light is transmitted to the exterior, a door of transparent material for said relatively large opening, a second compressible gasket located between surfaces on the reflector and door surrounding said relatively large opening, means for releasably clamping said door to said reflector in position where it closes said relatively large opening and including a resilient part which is stressed when the door and reflector are clamped together to maintain said second gasket under predetermined pressure, and a pair of hinge means at the same side of said fixture and connecting said supporting member to said reflector and the reflector to said door, respectively.

3. A lighting fixture comprising, a hollow body having means for supporting a lamp therein and having an outwardly flaring reflector portion terminating in an opening through which light is transmitted, a frameless

door of one piece of transparent material for said opening, said reflector portion having a flange surrounding said opening, a compressible gasket adapted to seat on said flange, an integral rim on said door adapted to be disposed opposite said flange when the door is closed, and a plurality of spaced resilient clamping means movably mounted on said reflector portion and releasably directly engageable with said rim for securing said door to said reflector portion with said rim directly engaging said gasket under pressure, a plurality of generally U-shaped projections on the outer side of said door with the bight portion of each projection located adjacent the outer edge of the door and the arms thereof extending inwardly of the door, and said projections being spaced to receive said clamping means, respectively.

4. A lighting fixture comprising, a hollow body having means for supporting a lamp therein and having an outwardly flaring reflector portion terminating in an opening through which light is transmitted, a door of transparent material for said opening, said reflector portion having a fixed flange surrounding said opening, a compressible gasket adapted to seat on said flange, an integral rim on said door adapted to be disposed opposite said flange when the door is closed, a hinge for said door comprising one part secured to said reflector portion and another part having a clamp having a form complementary to the form of the rim portion of said door to directly frictionally engage the latter, a recess formed in the inner surface of said rim portion to receive the inner leg of said clamp flush with said inner surface, and releasable means for securing said door to said reflector portion with said rim directly engaging said gasket under pressure.

5. A lighting fixture comprising, a hollow body having means for supporting a lamp therein and having an outwardly flaring reflector portion terminating in an opening through which light is transmitted, a door of transparent material for said opening, said reflector portion having a fixed flange surrounding said opening, a compressible gasket adapted to seat on said flange, an integral rim on said door adapted to be disposed opposite said flange when the door is closed, a hinge for said door comprising one part secured to said reflector portion and another part having a generally U-shaped clamp having a form complementary to the form of the rim portion of said door to directly frictionally receive the latter, a recess formed in the inner surface of said rim portion to receive the inner leg of said clamp flush with said inner surface, and releasable means for securing said door to said reflector portion with said rim directly engaging said gasket under pressure.

References Cited in the file of this patent

UNITED STATES PATENTS

422,592	Holman	Mar. 4, 1890
1,641,681	Kircher	Sept. 6, 1927
1,960,854	Sawin	May 29, 1934
2,011,868	Michel	Aug. 20, 1935
2,180,982	Foulds	Nov. 21, 1939
2,279,595	Phillips	Apr. 14, 1942
2,327,820	Rogers	Aug. 24, 1943