

May 3, 1932.

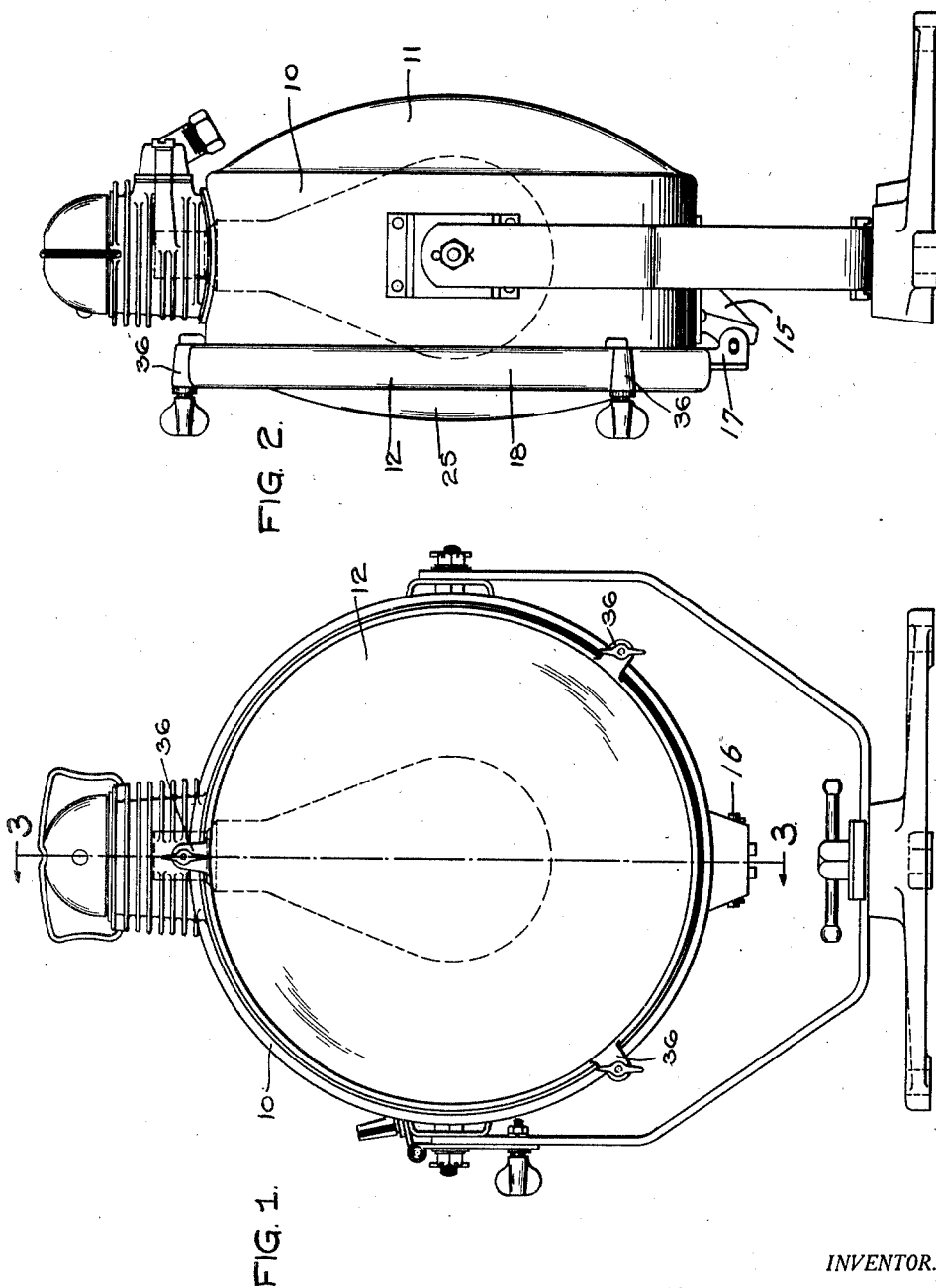
H. J. GRAHAM

1,856,073

LAMP

Filed March 26, 1929

4 Sheets-Sheet 1



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4 Sheets-Sheet 2

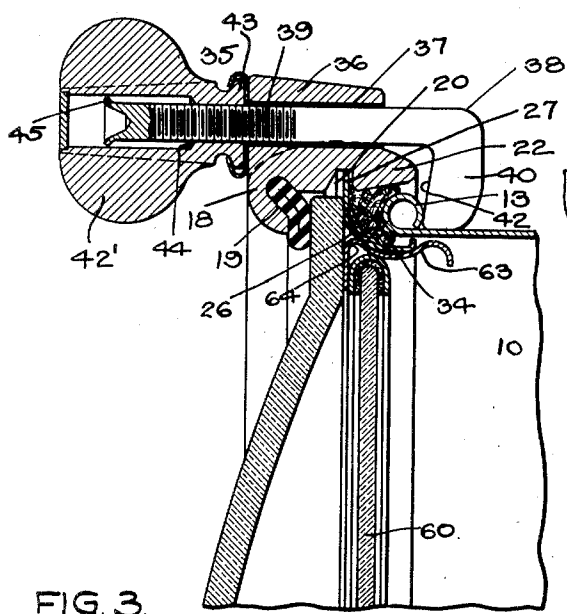


FIG. 3.

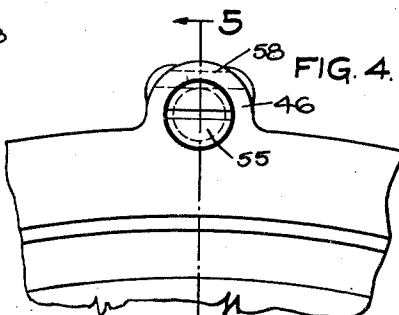


FIG. 4.

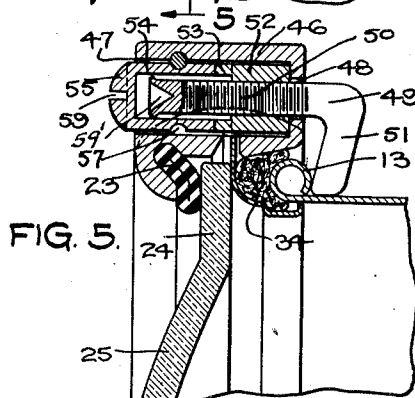


FIG. 5.

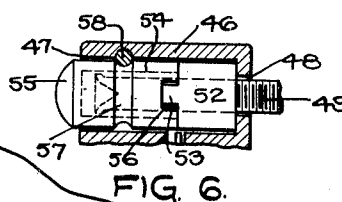
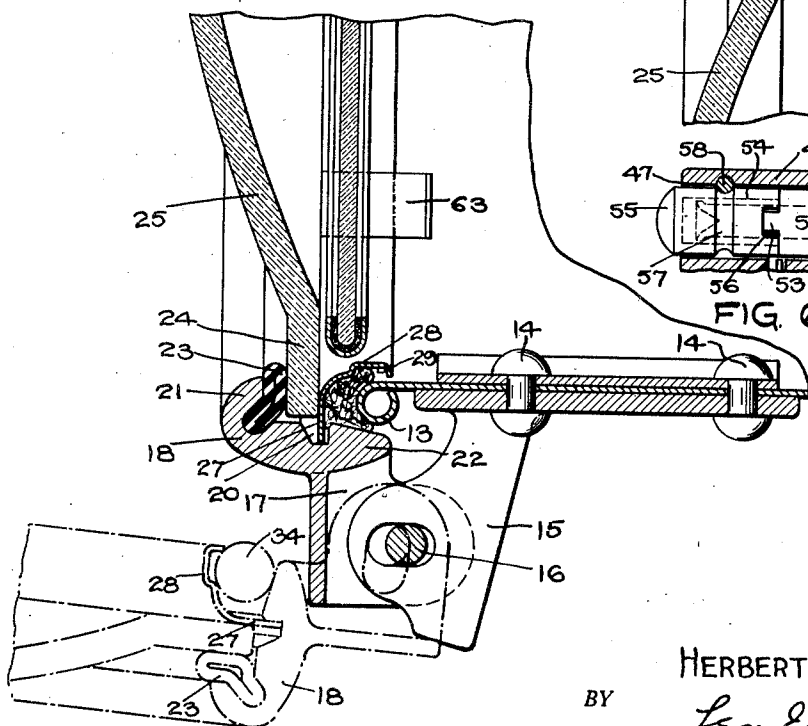


FIG. 6.



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4 Sheets-Sheet 3

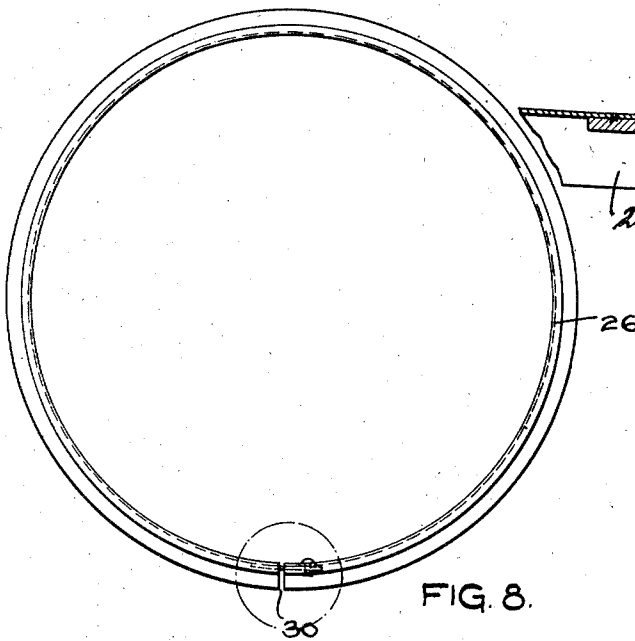


FIG. 8.

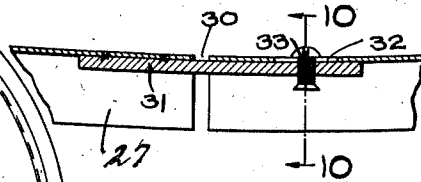


FIG. 9

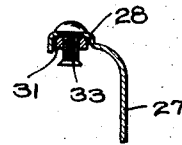


FIG. 10.

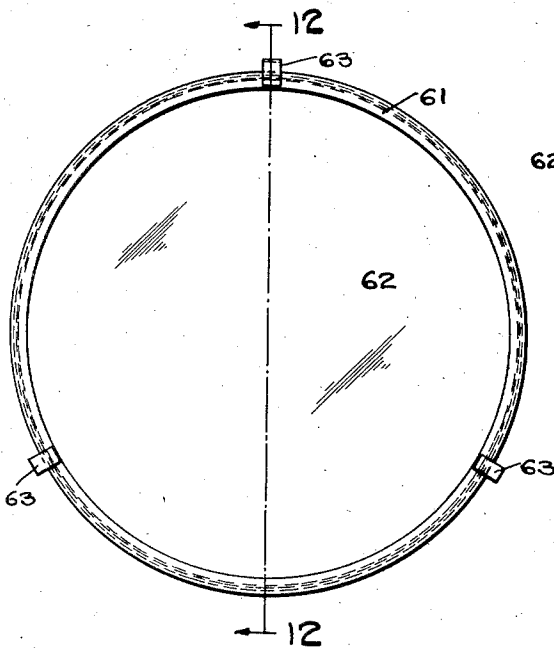


FIG. 11.

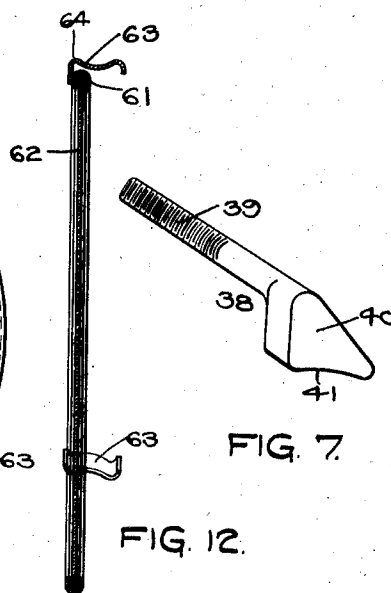


FIG. 12.

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4 Sheets-Sheet 4

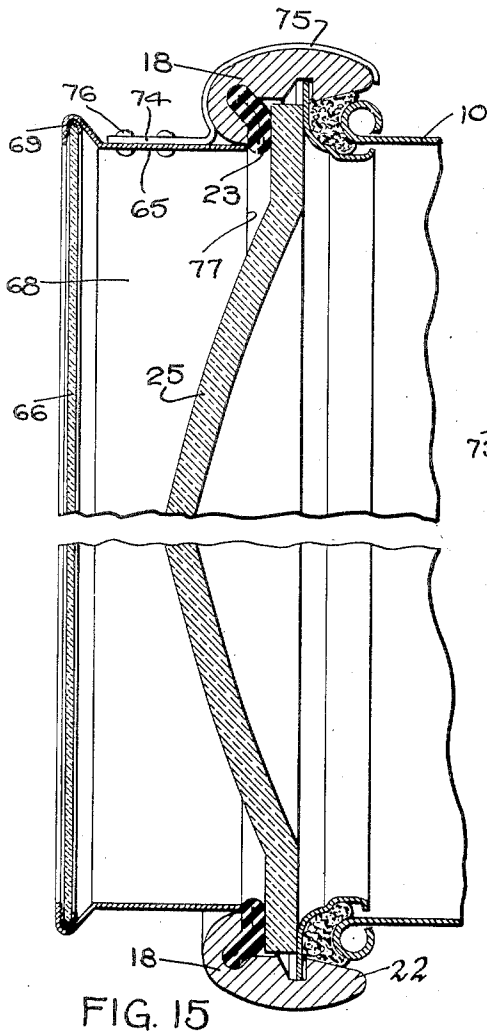


FIG. 15

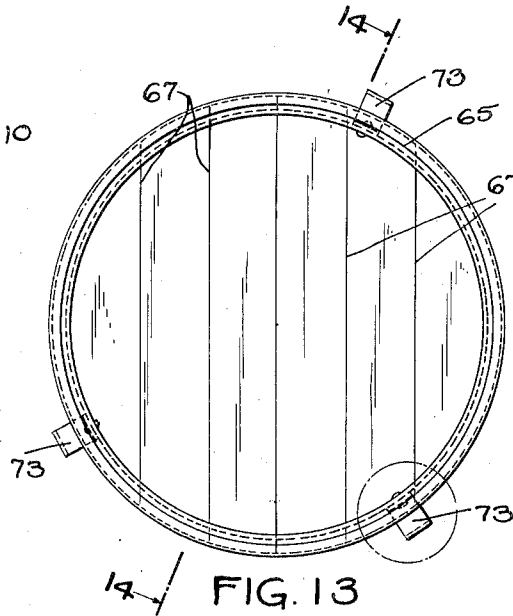


FIG. 13

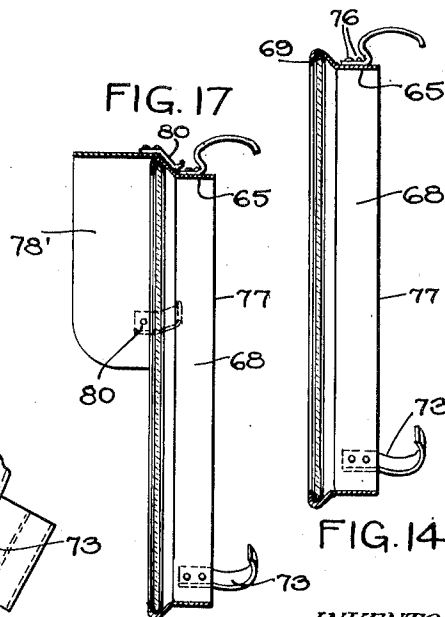


FIG. 14

FIG. 17

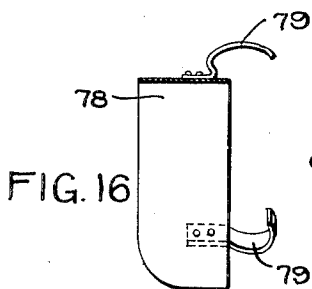


FIG. 16

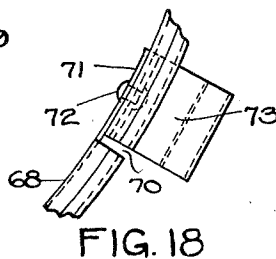


FIG. 18

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# UNITED STATES PATENT OFFICE

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## LAMP

Application filed March 26, 1929. Serial No. 349,921.

This invention relates to electric lamps and more particularly to electrically operated flood lights, search lights, headlights and the like, which are intended for the projection of light over comparatively great distances or areas.

Considerable difficulty has been experienced in obtaining an effective weather-tight seal between the lamp body proper and the closure door through which access is ordinarily had to the interior of the lamp, as well as between the frontal lens of the lamp and its retaining frame. Similarly, certain difficulties have been encountered in connection with the various types of clamping means employed for drawing the closure door into secure position against the lamp body or casing.

The present invention aims to obviate the aforementioned difficulties by the provision of novel means for hermetically sealing the frontal lens within its retaining frame, which latter also constitutes, in the present instance, the frame of the closure door for the lamp body.

A further object of the invention is the provision of means for insuring a hermetic, weatherproof seal between the closure door and the lamp body proper when the former is drawn into closed position.

A still further object of the invention is the provision of improved clamping means which are operable to insure not only positive locking of the closure door in closed position but also a maximum of weathertightness about the juncture between the lamp body and its door. In this connection, the invention has as its further object the provision of door clamping means which are non-removably secured to the closure door and by means of which the said door may be readily and quickly clamped into closed position and as readily released therefrom.

Still another object of the invention is the provision of means for resiliently, yet securely, retaining the frontal lens within the closure door frame whereby the former is effectively cushioned against shocks and the like, said means being compressible when the door is clamped into closed position against

the lamp body to afford a hermetically sealed joint between said door and body as well as between said door and the lens retained thereby.

Still another object of the invention is the provision of a removable color screen which is retained by the closure door in operative association with the frontal lens.

Other objects of the invention will appear more fully hereinafter.

The invention consists substantially in the combination, construction, location and relative arrangement of parts, all as will appear more fully hereinafter, as shown in the accompanying drawings, and as finally pointed out in the appended claims.

In the accompanying drawings, which are merely illustrative of the principles of the present invention:

Figure 1 is a front elevational view of a lamp constructed in accordance with the present invention;

Figure 2 is a side elevational view of the lamp as it appears when viewed from the right of Figure 1;

Figure 3 is a vertical section through the closure door of the lamp and the front portion of the lamp body or casing;

Figure 4 is a front elevational view of a portion of the closure door showing a modified form of clamping means for retaining the door in closed position;

Figure 5 is a view taken on the line 5—5 of Figure 4;

Figure 6 is a side elevation of the clamping means shown in Figure 5, the enclosure therefor being shown in section;

Figure 7 is a perspective view of the door locking dog per se;

Figure 8 is a view of the lens retaining ring;

Figure 9 is an enlarged view of the detail shown within the dotted circle of Figure 8;

Figure 10 is a sectional view taken along line 10—10 of Figure 9;

Figure 11 is a view of the removable color screen;

Figure 12 is a vertical section taken on the line 12—12 of Figure 11;

Figure 13 is a frontal elevation of a modified construction of color screen;

Figure 14 is a vertical section taken on the line 14—14 of Figure 13;

5 Figure 15 is a partial vertical section through the closure door and the front portion of the lamp body, this view being taken on a line corresponding to line 14—14 of Figure 13 and showing the color screen  
10 mounted exteriorly of the frontal lens;

Figure 16 is a vertical sectional view of a quick-detachable hood member or visor adapted to be substituted for the color screen shown in Figure 14;

15 Figure 17 is a vertical sectional view of a color screen similar to that of Figure 15 with which is operatively associated a slightly modified form of visor; and

20 Figure 18 is an enlarged view of the detail shown within the dotted circle of Figure 13.

Referring now to the drawings, and more particularly to Figures 1 to 3, it will be observed that the lamp herein shown comprises a substantially drum-shaped body or casing  
25 10 having a back wall 11. Preferably, this back wall 11, which is dished outwardly to accommodate a suitable reflector (not shown), is formed integrally with the lamp body 10. The latter is provided with a  
30 frontal opening over which is fitted, in the manner to be described more fully herein-after, a front door closure comprehensively designated by the reference numeral 12. As appears most clearly in Figures 3 and 5, the  
35 lamp body 10 is provided about its frontal edge with an annular bead or shoulder 13 preferably formed integrally therewith. Inasmuch as this invention is particularly directed to the front closure door and parts  
40 immediately related thereto it is deemed unnecessary to describe herein any other features of the lamp taken as a whole.

Rigidly secured to the bottom of the lamp body 10, preferably by the rivets 14, are  
45 knuckles 15 to which are connected, by means of a pintle 16, the knuckles 17 of the closure door frame 18. This latter frame 18 is of generally annular form, its cross-section being best shown in Figure 3 wherein it  
50 will be observed that the inner surface thereof is provided with a pair of axially spaced annular grooves or recesses 19 and 20. The groove 19 is inclined such that it presents inwardly and rearwardly of the frame 18 with  
55 the outer wall thereof constituting the frontal lip or flange 21 of the door frame. The groove 20 lies substantially in the medial plane of the frame 18. As appears most clearly in Figure 3, the diameter of the frame  
60 18 is somewhat greater than the overall diameter of the annular bead 13 of the lamp body and when said frame is in closed position the inner portion 22 thereof embraces said bead 13.

65 Suitably secured within the outer and in-

clined recess or groove 19 of the door frame is an annular cushioning gasket 23 which is preferably a rubber tube compressed into the shape shown. This gasket 23 serves both as  
70 a cushioning element for the marginal flange 24 of a lens 25 and as a weathering thereabout to prevent entry of rain water, moisture or the like. The lens 25 is removably held in position against the cushioning gasket 23 by an annular retaining means 26, which,  
75 as shown in Figures 3 and 10, is of substantially angular cross-section having a branch 27 projecting into the inner groove 20 of the frame 18 and a rearwardly extending branch 28 forming an annular seat 29. The lens 25  
80 is retained between the cushioning gasket 23 and the outwardly extending branch 27 of the retaining means 26. This latter means is split, as at 30, (see Figures 8 and 9) to facilitate its insertion in the groove 20 of the door  
85 frame. Suitably mounted within the annular seat 29 adjacent one end of the split ring 26 and secured thereto, preferably by riveting, is a strap 31, a portion of which extends  
90 freely beyond the split 30 to overlie the opposite end of the ring. Formed in this latter end of the ring 26 is an elongated slot or opening 32 through which a suitably headed screw 33 passes into threaded engagement  
95 with the free end of the strap 31. Tightening this screw 33 such that the free end of strap 31 is clamped secured against the adjoining end of the ring 26 insures the attainment of a ring of fixed diameter and thereby  
100 prevents its accidental displacement from the groove 20 of the door frame. To remove the ring it is merely necessary to unloosen the screw 33 whereupon the free end of strap 31 can be moved relatively to its adjoining end  
105 of the ring (this action being permitted by the elongated slot 32) to thereby contract the ring to an extent sufficient to permit its ready removal from the groove 20.

With the lens 25 retained within the door closure frame 18 between the cushioning gasket 23 and the split ring 26, a second cushioning gasket 34 is seated within the annular recess formed between the inner portion 22  
110 of the door frame and the rearwardly extending branch 28 of the split ring 26. When the door is in opened position, as shown by the dotted lines in Fig. 3, this cushioning gasket 34 is of substantially circular cross-section. When, however, this door is closed, that is,  
115 clamped against the lamp body 10, the cushioning 34 is deformed somewhat by reason of its being compressed between the split ring 26 of the closure door and the annular bead 13 provided at the frontal edge of the lamp  
120 body. As the door is drawn more and more tightly against the lamp body, the lens 25, the split ring 26 and the cushioning gasket 34 are all forced into intimate contact with each other and, as a unit, are forced against  
125 the outer cushioning gasket 23. This action  
130

is permitted by reason of the fact that the groove 20 in the door frame 18 is of sufficient width to permit lateral shifting of the split ring 26 therewithin. It will thus be seen that the inner cushioning gasket 34 and the outer cushioning gasket 23 operate conjointly to provide a most effective means for rendering the joints between the lens 25 and the frame 18 and between said frame and the lamp body 10 impervious to the entry of rainwater, moisture and the like, at the same time that they cushion the lens against danger of fracture.

The clamping devices for retaining the closure door in tightly closed position against the lamp body 10 will now be described. As appears most clearly in Figure 1, these clamping devices, designated generally by the numeral 35, are preferably three in number and are uniformly spaced about the marginal edge of the door frame 18. Integrally formed in the said frame 18 and projecting radially therefrom are a series of bosses or projections 36 having bores 37 therein which extend transversely across the plane of the closure door frame. A clamping member or dog 38 having an externally threaded shank 39 and a clamping jaw 40 is operatively associated with each boss 36, the shank 39 thereof being loosely received within the bore 37 of said boss such that its threaded extremity projects forwardly of the frontal edge of the door frame 18. As appears most clearly in Figure 7, the clamping jaw 40 is of substantially triangular shape, the basal edge 41 thereof being arcuately formed to fit snugly against the perimetral surface of the lamp body 10. The inner face 42 of the clamping jaw 40 is arranged to normally engage the rear surface of the annular bead 13 of the lamp body 10 at the same time that the basal edge 41 thereof rests snugly against the perimetral surface of the lamp body.

Threadedly received upon the forwardly extending end of the shank 39 of the clamping member is a wing nut 42' having a flange 43 normally bearing against the outer end of the boss 36. It will be apparent that when the clamping jaw 40 is rotated into position such that the edge 41 thereof contacts with the lamp body 10 while the face 42 lies behind the bead 13 a secure clamping action may be had by tightening the nut 42' upon the threaded shank 39. To release the door it is merely necessary to unloosen the nut 42' sufficiently to permit the clamping jaw 40 to be rotated upwardly and out of engagement with the bead 13 of the lamp body. In order to secure the nut 42' against loss, the outer portion of the bore thereof is enlarged to provide an internal shoulder 44 therewithin. A suitable stop 45 is formed at the extremity of the shank 39, preferably by an upsetting operation, which stop coacts with

the shoulder 44 to prevent total withdrawal of the nut from its shank.

Figures 4, 5 and 6 show a modified construction of door clamping device which may be preferable in certain instances to that heretofore described. In this modified form the door closure frame 18 is again formed with a plurality of circumferentially spaced bosses 46 each of which is provided with a transverse socket 47. The rear wall of each socket 47 is apertured as at 48. The clamping dog 49 is similar to the dogs 38 described in connection with Figure 3 in that it is also provided with a threaded shank 50 and a clamping jaw 51.

The shank 50 of each dog 49 is projected into the interior of its corresponding socket 47 through the aperture 48 and is threadedly engaged by a suitable nut 52 received and arranged for rotation within said socket. One end of this nut 52 abuts against the rear wall of the socket while the opposite end thereof is provided with a pair of diametrically opposed lugs 53. Also received within the socket 48 is a tubular member 54 having a closed end 55 which projects outwardly of the open end of the socket. This tubular member 54 is provided in its inner end with a pair of diametrically opposed slots 56 which are arranged to respectively engage the lugs 53 of the nut 52. As appears most clearly in Figure 5 the member 54 is maintained in spaced out-of-contact relation with the threaded shank of the clamping dog 49. An annular groove 57, provided in the external surface of the member 54, constitutes a seat for a pin 58 extending transversely of the socket 48. The annular groove 57 and the pin 58 cooperate to permit rotation but no axial movement of the tubular member 54 within its socket 48. The closed end 55 of the member 54 is kerfed, as at 59, to accommodate a suitable tool, such as a screw driver or the like, for effecting rotation of the nut 52 by rotation of the member 54. It will be understood that rotation of the nut 52 in one direction or another will cause the clamping jaw 51 to move toward or away from the rear edge of the door closure frame 18 and into and out of engagement with the annular bead or shoulder 13 of the lamp body, the inner end of the shank 50 being upset, as at 59', to limit the longitudinal movement of said shank outwardly through the nut 52.

Figures 11 and 12 are front and side views, respectively, of the removable color screen which is generally designated in Figure 3 by the reference numeral 60. This screen comprises an annular frame 61 within which is suitably glazed a lens 62 of glass or other such transparent or translucent material. The lens 62 is colored as desired, the screen being resiliently seated against the marginal rear surface of the front door lens 25 and within the lens retaining ring 26.

Welded or otherwise suitably secured to the frame 61 of the color screen are a plurality of circumferentially spaced spring fingers 63, the free ends of which project rearwardly of the screen and the front door closure to provide purchase elements for removing the screen from its operative position, as shown in Figure 3. Adjacent their points of securement to the color screen frame the several spring fingers 63 are each provided with resilient radially offset portions 64 by which a snap fit with the lens retaining ring 26 is permitted.

Figures 13 and 14 are front elevational and vertical sectional views, respectively, of a modified construction of color screen assembly which is arranged for mounting exteriorly of the frontal lens 25 and the supporting frame 18 therefor. This modified screen assembly comprises an annular frame 65 within which is received a lens 66 of glass or other such transparent or translucent material, this lens being colored as desired, and being preferably composed of a plurality of sections separated from each other along the lines 67. As clearly appears in Figures 14 and 15, the frame 65 comprises an annular band 68 provided at the outer edge thereof with an integrally formed lens receiving groove 69. Preferably, the grooved section of the frame is split, as at 70, (see Figure 18) to facilitate reception of the lens 66 therewithin while the end 71 of the band 68 is extended beyond its corresponding end of the grooved section for overlapping engagement with the opposite end of the band. A rivet 72 or similar means is employed to secure the overlapping portions of the band 688 together.

Similarly secured to the band 68 are a plurality of circumferentially spaced spring fingers 73, each of these fingers being provided with a substantially flat portion 74 and a radially offset portion 75 curved to a shape corresponding to the external curvature of the door closure frame 18. The flat portion 74 of the spring fingers are secured upon the outer surface of the band 68 preferably by means of the rivets 76, it being observed that the inner edge 77 of the band 68 terminates in a plane intersecting the curved portions 75 of the spring fingers. In order to mount this modified color screen assembly upon the front door closure of the flood-light it is merely necessary to force the assembly axially upon the door frame 18 such that the spring fingers 73 together with the inner edge 77 of band 68 embrace the said frame as shown in Figure 15, the freely disposed extremities of the fingers being intumed to hook behind the inner portion 22 of the door frame 18. Preferably, said inner edge 77 is arranged to abut the inwardly projecting portion of the gasket 23. It will be understood, of course, that the spring fingers 73

are so positioned upon the color screen frame that when the latter is mounted upon the door frame 18 the spring fingers do not interfere with the operation of the door clamping devices.

In certain instances it is desirable to equip the lamp body with a hood member or visor and to this end this invention contemplates the provision of a visor 78 (see Figure 16) having spring fingers 79 secured thereto and operative in the same manner as the fingers 73 previously described. The visor 78 may be quick-detachably mounted upon the door frame 18 in place of and in exactly the same manner as the color screen assembly shown in Figure 15. Figure 17 shows a visor 78' provided with a somewhat modified form of spring finger 80 for detachably mounting the visor upon the color screen assembly, the latter being in turn adapted for detachable mounting upon the door frame 18.

It will be observed that this invention provides an efficient and effective weatherproof seal between the lens and its retaining frame and between the latter and the lamp body. This is accomplished not only by means of the particular arrangement of cushioning and weatherproofing gaskets hereinbefore described but also by means of the particular forms of clamping devices employed to draw the closure door into tightly closed position against the lamp body. Not only is the general arrangement simple in construction but it is also economical to produce and assemble. It is to be noted that certain features of the invention are not particularly restricted to lamps of the special character shown in the drawings since they may be as readily embodied in lamps of smaller size and intended for other uses than those herein set forth. In conclusion, it will be understood that various changes may be made from time to time without departing from the general spirit or principles of the invention and it is accordingly intended to claim the same as indicated by the appended claims.

What is claimed as new and useful is:

1. In a lamp of the character described, a front door closure therefor comprising a substantially annular frame having a pair of axially spaced grooves formed in the inner surface thereof, the outer of said grooves being inclined with respect to the axis of said frame, a compressible gasket received within said outer groove and having a portion projecting exteriorly thereof, a ring received within the inner of said grooves, and a lens arranged with its perimetral edge interposed between said ring and the projecting portion of said gasket, said inner groove being of a width sufficient to permit axial movement of said ring toward said lens and the latter into intimate contact with said gasket upon the application of an external force against said ring.



2. In a lamp of the character described, a front door closure therefor comprising a frame having a pair of axially spaced grooves formed in the inner surface thereof, a compressible gasket received within the outer of said grooves, a ring received within the inner of said grooves, said latter groove being of a width sufficient to permit axial displacement of said ring therewithin, a lens arranged with its marginal edge interposed between said gasket and ring, and compressible material associated with said ring, the latter being provided with means for retaining said material in position independently of said lens.

3. In combination, a lamp body having a frontal opening, a front door closure therefor adapted to seat against the marginal edge defining said opening, said closure comprising a frame provided with an intumed flange at the outer edge thereof and having a pair of axially spaced grooves formed in the inner surface thereof, the outer of said grooves being located in the zone of the angle formed between said frame and flange and being inclined with respect to the plane of the latter, a compressible gasket received within said outer groove, a lens disposed with the outer marginal surface thereof abutting said gasket, retaining means received within the inner of said grooves and arranged to abut the inner marginal surface of said lens, said retaining means being shiftable axially within its groove, and means for drawing said closure tightly against said frontal edge of the lamp body whereby to force said retaining means and said lens axially of said frame with the result that said lens intimately engages said gasket.

4. In combination, a lamp body having a free edge defining an opening affording access to the interior thereof, a closure for said opening comprising a frame, a lens removably positioned within said frame, weatherproofing means interposed between one surface of said lens and said frame for effecting a hermetic seal therebetween, a retaining member interposed between said frame and the opposite surface of said lens to prevent displacement of the latter, said member being provided with an annular portion projecting rearwardly of said lens and a second weatherproofing means carried by the annular portion of said retaining member independently of said lens for effecting a hermetic seal between said frame and said free edge of the lamp body, said retaining member and the weatherproofing means carried thereby being axially shiftable under compression.

5. In combination, a lamp body having a free edge defining an opening affording access to the interior thereof, a closure for said opening comprising a frame, a lens removably positioned within said frame, fixed means on said frame for limiting the axial

displacement of said lens in one direction, means received by and shiftable axially of said frame for limiting the movement of said lens in the opposite direction, said shiftable means being provided with an annular portion substantially concentric with the inner portion of said frame to provide an annular space therebetween, weatherproofing means disposed within said annular space and adapted for engagement with said free edge of the lamp body, and means for drawing said closure into tightly closed position whereby to cause said weatherproofing means to be compressed between said free edge of the lamp body and said frame simultaneously as said shiftable means and said lens are forced, as a unit, axially toward said fixed means.

6. A closure for a lamp body comprising a frame provided with an annular abutment and an annular groove spaced axially with respect to said abutment, a lens retaining ring received within said groove, the latter being of a width sufficient to permit axial shifting of said ring therewithin, a lens removably positioned within said frame and between said abutment and axially shiftable ring, said ring being formed with an axially extending annular flange concentric with said frame, and a weatherproofing gasket disposed within the annular space formed by said frame and flange, said gasket being inherently compressible and arranged for shifting movement with said ring.

7. In combination, a front door closure comprising a frame, a lens received therein, an annulus carried by said frame for preventing displacement of said lens, said annulus being provided with an axially extending annular flange concentric with said frame, a weatherproofing gasket received within the annular space afforded by said flange and frame to thereby constitute said gasket a part of said closure, and a color screen provided with means engageable within the flange for quick-detachably securing the screen therewithin.

8. In combination, a front door closure comprising a frame having a seat for a lens, a lens removably positioned therewithin and against said seat, an annulus operatively associated with said frame for preventing displacement of said lens, said annulus being provided with a flanged portion of gradually decreasing diameter whereby to form with said lens an annular recess of substantially acute angle cross-section, a color screen adapted for positionment in superimposed relation with said lens, and resilient means on said screen adapted to be spring pressed within said recess whereby to retain said color screen in quick-detachable position.

9. In a lamp of the character described, a lamp body having an opening in one side thereof surrounded by an annular shoulder, a

door closure including a frame arranged in embracing relation with respect to said shoulder and a lens adapted to be compressed thereagainst, a plurality of clamping devices  
5 projected axially through circumferentially spaced bores formed in said frame, each of said devices being provided with a clamping jaw adapted to be rotated into and out of engagement with said shoulder and with a  
10 threaded shank projecting forwardly of said frame and terminating short of the frontal plane thereof, and a nut member disposed within each of said bores for threaded engagement with said shank for effecting axial  
15 movement of said devices within their respective bores whereby to cause said lens to be forced against said shoulder.

10. In a lamp of the character described, a lamp body having an opening in one side thereof surrounded by an annular shoulder, a door closure including a frame arranged in embracing relation with respect to said shoulder and a lens adapted to be compressed thereagainst, a plurality of clamping devices  
25 projected axially through circumferentially spaced bores formed in said frame, each of said devices being provided with a clamping jaw adapted to be rotated into and out of engagement with said shoulder and with  
30 a threaded shank projecting forwardly of said frame and terminating short of the frontal plane thereof, a nut member disposed within each of said bores for threaded engagement with said shank for effecting axial  
35 movement of said devices within their respective bores whereby to cause said lens to be forced against said shoulder, and means embracing the free end of each shank for actuating the nut member associated therewith,  
40 said means being further operative to prevent axial movement of said nut member.

11. In combination, a front door closure comprising a frame, a lens received there-  
within, an annulus carried by said frame for  
45 preventing displacement of said lens, said annulus being provided with an annular flange concentric with said frame, a weather-proofing gasket received within the annular  
50 space formed between said flange and frame, a color screen, and spring means operatively associated with the screen and engageable within the flange for quick-detachably securing said screen therewithin.

In testimony whereof I have hereunto affixed my signature.

HERBERT J. GRAHAM.