

July 1, 1930.

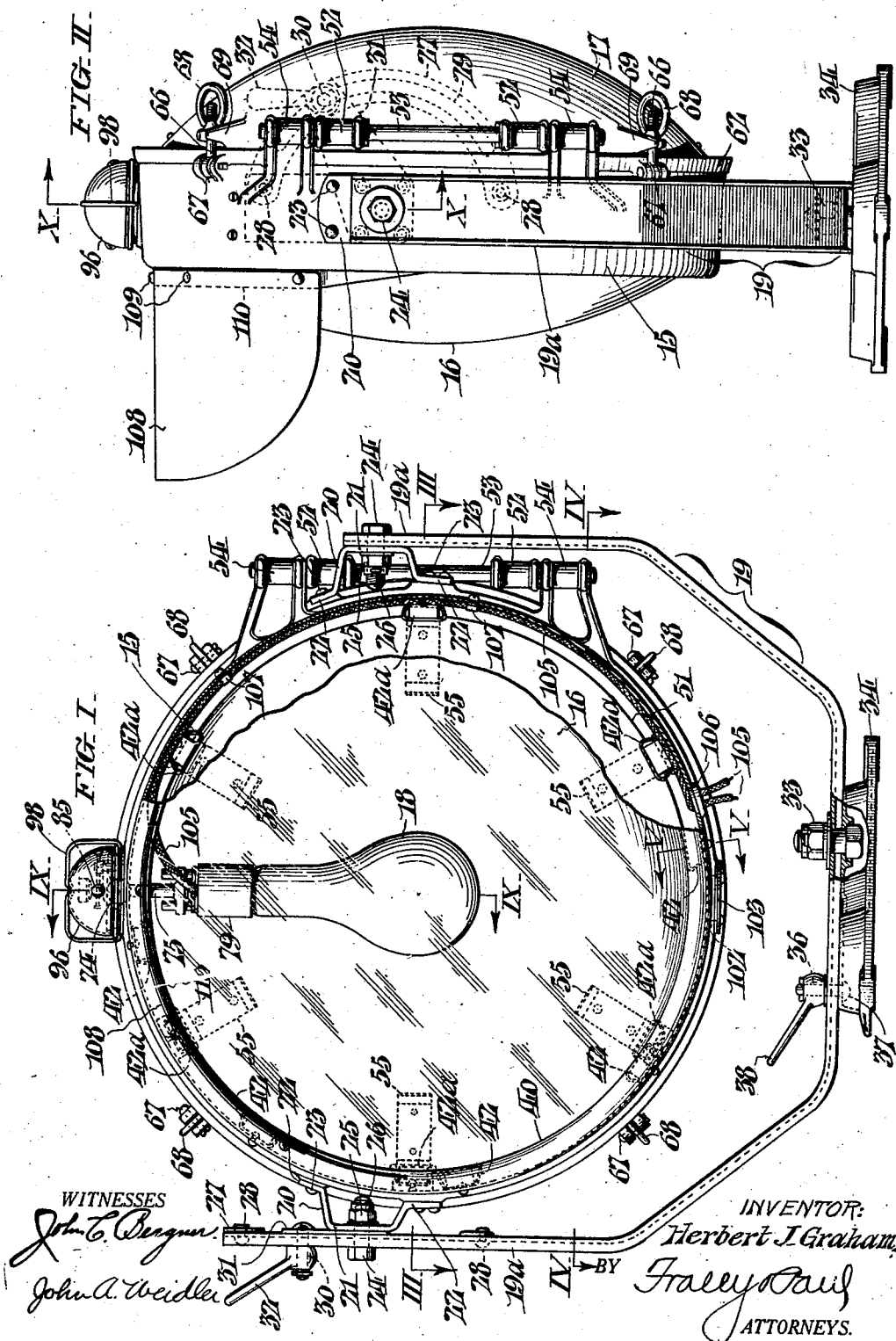
H. J. GRAHAM

1,768,757

LAMP

Filed July 5, 1927

3 Sheets-Sheet 1



July 1, 1930.

H. J. GRAHAM

1,768,757

LAMP

Filed July 5, 1927

3 Sheets-Sheet 2

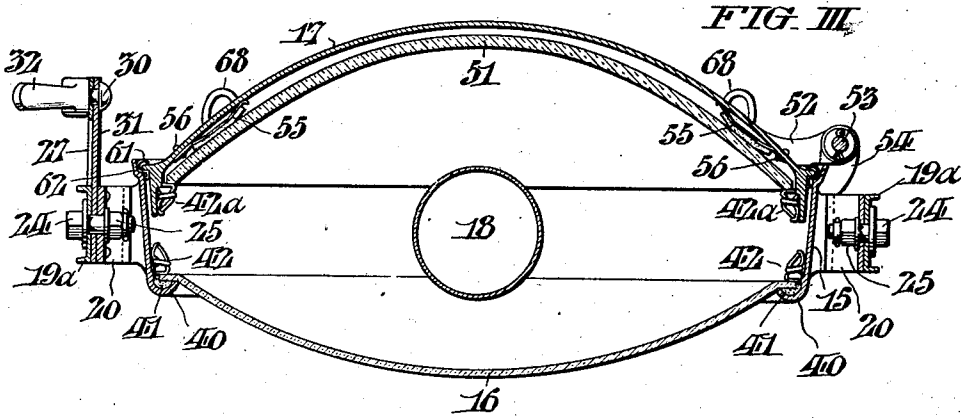


FIG. VIII.

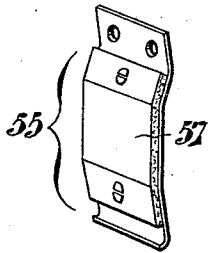


FIG. V.

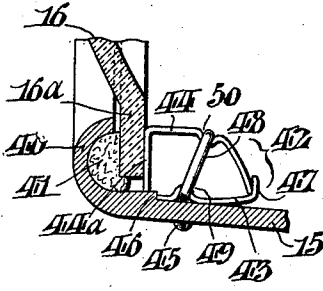


FIG. VI.

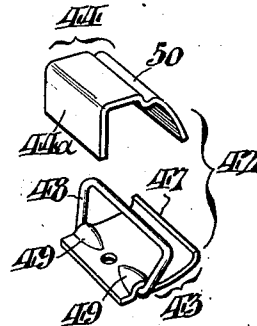
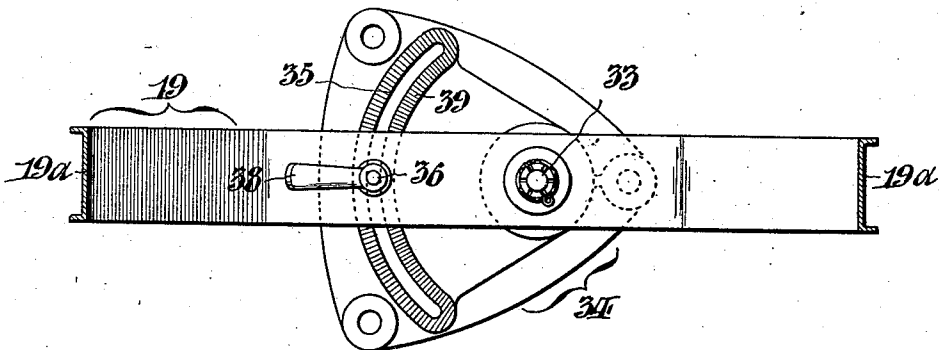
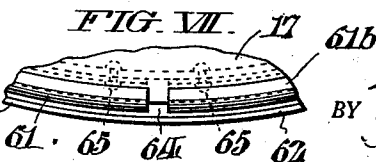


FIG. IV.



WITNESSES
John C. Bergner
John A. Weidner



INVENTOR:
Herbert J. Graham,
BY Fraley & Paul
ATTORNEYS.

July 1, 1930.

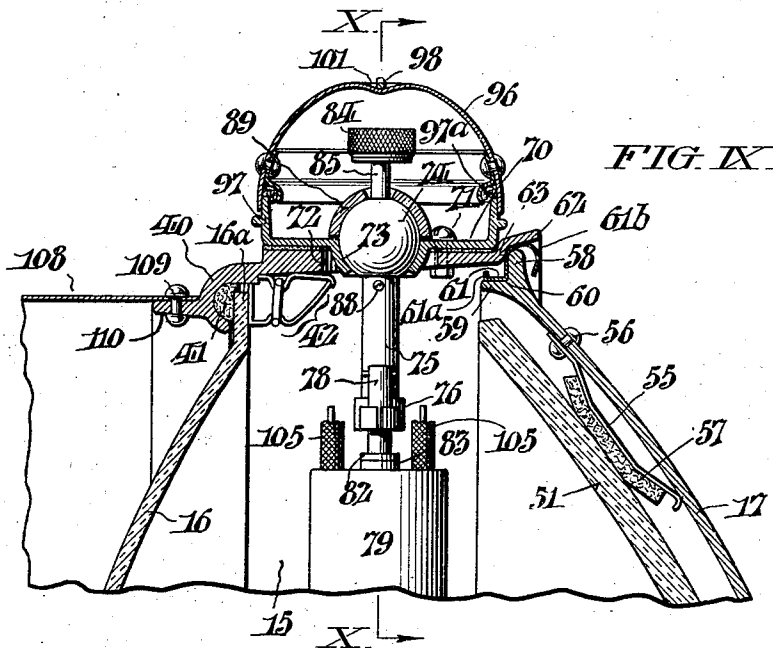
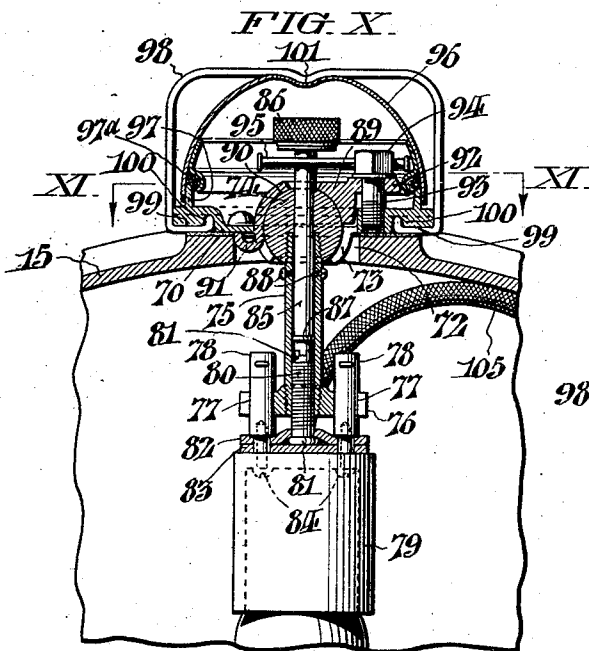
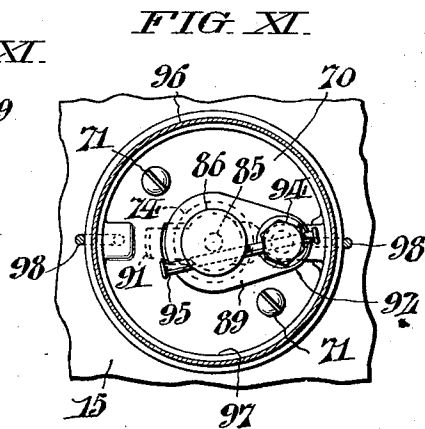
H. J. GRAHAM

1,768,757

LAMP

Filed July 5, 1927

3 Sheets-Sheet 3



WITNESSES
John C. Bergner.
John A. Weidler

INVENTOR:
Herbert J. Graham,
 BY *Frederick Paul*
 ATTORNEYS.

UNITED STATES PATENT OFFICE

HERBERT J. GRAHAM, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO ELECTRIC SERVICE SUPPLIES COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA

LAMP

Application filed July 5, 1927. Serial No. 203,629.

This invention relates to lamps or lights, and, more particularly to electrically-operated search or flood lights of comparatively large size intended for luminary projection over great distances or areas, for example in lighting railroad yards, stock yards, ship yards, etc.

Amongst the objects of the present invention are to facilitate universal adjustment of the lamp body with relation to its support for directional projection of the illumination; to enable quick and accurate focal adjustment of the illuminating bulb with respect to the reflector from the exterior of the lamp; to enable access to the reflector without requiring removal of the illuminating bulb or disturbance of its focal adjustment; to insure weather tightness about the frontal lens as well as about the juncture between the lamp body and its closure door, and in the latter connection to provide for trapping and draining-off accumulation of rain water; to enable ready removal of the frontal lens for cleaning or replacement purposes; and in a like manner to facilitate withdrawal of the reflector as well as to afford the latter protection, especially when constructed from frangible material, against fracture from shocks or jars.

A further object of my invention is to attain the above desiderata in a lamp structure which is conducive to economic manufacture, i. e. capable of mass production without requiring extensive machining either in the fabrication of its parts, or in the subsequent assembling of them.

Other objects and attendant advantages of my invention will be readily apparent from the detailed description hereinafter of the typical embodiment depicted in the accompanying drawings.

Fig. I shows a front elevation of the lamp with a portion broken away and in section at one side, to expose important details of the interior.

Fig. II is a side elevation of the lamp as it appears when viewed from the right of Fig. I.

Fig. III is a staggered horizontal section

of the structure, taken in accordance with the arrows III—III in Fig. I.

Fig. IV is a similar sectional view taken at a lower horizontal plane, as indicated by the arrows IV—IV in Fig. I.

Fig. V shows a detail sectional view taken locally, as indicated at V—V in Fig. I, and showing the means for retaining the frontal lens in place.

Fig. VI is a perspective view of the parts constituting the retaining means illustrated in Fig. V.

Fig. VII is a fragmentary view showing certain details at the lower part of the back of the lamp body.

Fig. VIII is a perspective view of one of the padded spring fingers by which the removable reflector is yieldingly cushioned at the back.

Fig. IX is a local section, taken as indicated by the arrows IX—IX in Fig. I, showing the means whereby the illuminating bulb can be focally adjusted with respect to the reflector.

Fig. X is a fragmentary sectional view taken locally, as indicated by the arrows X—X in Figs. II and IX; and,

Fig. XI is a plan sectional view, taken in accordance with the arrows XI—XI in Fig. X.

The lamp herein shown has an annular body portion 15 cast to the cross sectional configuration shown in Figs. III and IX and forming, in conjunction with the convex lens 16 at the front, and a door 17 at the back, a protective housing for the illuminating means, in the present instance an incandescent electric bulb 18. The lamp body 15 is sustained, with capacity for angular adjustment in a vertical plane, by a bracket 19 which is fashioned to U-shaped configuration preferably from channel bar stock as shown. The pivotal connections between the lamp body portion 15 and the upstanding arms 19^a of the bracket 19 are made with the aid of fittings 20 bent to the form shown in Fig. I from strip metal with arches 21 medially between opposite end feet 22, said feet being pierced for attachment to the lamp body 15 at the sides by means of

rivets or screws 23. The arched portions 21 of the fittings 20 are centrally apertured for passage of the pivot bolts 24 which extend through aligned openings near the upper ends of the upstanding extremities 19^a of the bracket 19, the nut heads 25 associated with said bolts occupying the arches of the fittings 20, as best shown in Fig. I, and being retained against loosening by cotter pins 26. To the tallest of the upstanding extremities 19^a of the bracket 19 (in this case the one at the left in Fig. I) is attached a die-stamped arcuate segment 27, the same having its ends pierced to take securing rivets 28. This segment 27 has a substantially semi-circular medial arcuate slot 29 (Fig. II) that is concentric with the pivotal bolt axis 24 of the lamp body portion 15, and guides a clamp bolt 30 at the end of an arm 31 separately attached to the pivot fitting 20 at the corresponding side of the lamp structure. The outer end of the bolt 30 is threaded for engagement by a clamp handle 32 (Fig. I) whereof the boss engages the contiguous face of the segment 27 (which may be roughened or transversely serrated) to securely hold the lamp body portion 15 in the desired position of adjustment. As shown in Figs. I, II and IV, the bracket 19 has an off-center swivel connection at 33 with a somewhat triangular supporting base 34 which is of hollow construction and formed with a slot 35 that is concentric with the swivel center 33 to guide a clamp bolt 36. The head 37 of this bolt 36 overlaps the edges of the slot 35 within the hollow base 34, while its protruding end is threaded to take a clamp handle 38 to clamp the bottom of the bracket 19 against the serrated margin 39 at the outside of said slot. Thus by swinging the bracket 19 on its swivel axis 33, the lamp body can be angularly adjusted in a horizontal plane to any position required, and the adjustment fixed by tightening up on the clamp handle 38. Referring now more particularly to Figs. III, V and IX, it will be noted that the annular portion 15 of the lamp body has an inwardly-rounded bead or flange 40 about its frontal opening affording a recess for an annular cushioning gasket 41 which serves both as a cushioning for the peripheral flange 16^a of the lens 16 and a weathering thereabout to prevent entry of rain water or moisture. The lens 16 is removably held in position against the cushioning gasket 41 by retaining means 42, which, as shown in Fig. I, are circumferentially arranged at intervals around the interior of the lamp body portion 15. Each such retaining means 42 comprises (see Fig. VI) a tongue 43 of springy metal, and a detachable clip 44 also of springy metal. The tongue 43 is aper-

tured centrally near its front edge for passage of a screw or rivet 45, Fig. V, by which it is secured with said front edge resting square against a circumferential shoulder 46 within the lamp body portion 15, the opposite end of the tongue 43 being thus left free for yielding spring action. In the assembled position of the retaining means 42, the rear edge of the detachable clip 44 engages behind an upturned heel flange 47 at the free end of the tongue 43, so that the laterally turned face 44^a at the forward end of said clip is held in yielding contact with the peripheral flange 16^a of the lens 16 at the back. The clip 44 is held against displacement in the relation just described, by means of a spring wire bail 48 having its ends pivotally engaged in aligned joggled receiving offsets 49, at opposite side edges near the front of the tongue 43 (Fig. VI), and its cross bar engaging a transverse depression 50 in the clip 44 with a snap fit. In removing the clip 44, pressure is applied to the outer portion of the spring bail 48 so that it can be swung backward about its pivotal connection in the tongue 43 (the tongue yielding to such action) and the clip 44 lifted out. With the foregoing arrangement, obviously very little time is required in removing the lens 16 for replacement or other purposes.

As shown in Figs. II and III, the door 17 closing the lamp body at the back is concaved so as to conform to the removable reflector 51 which it carries, said door having at one side a pair of laterally-extending vertically-spaced horizontal arms 52 to engage a hinge pintle 53 that is supported, at opposite ends, by bearing arms 54 reaching rearward from the corresponding side of the body portion 15 to meet the arms 52 aforementioned.

The reflector 51 is preferably made from frangible material such as glass or porcelain; and in order to protect it against injury from shocks or jars, I provide cushioning means in the form of spring fingers 55 which are arranged at intervals about the door 17 to extend radially inward from their anchorages where rivets 56 are employed for the purpose of securing them, see Fig. IX. These fingers 55 are bent from comparatively thin strip metal to the configuration shown in Fig. VIII, and each is faced with a padding of felt or like material over the region where it contacts with the back of the reflector 51. To hold the reflector 51 in place, I preferably employ retaining means 42^a which will be observed from Fig. III as identical with those by which the frontal lens 16 is secured, one such retaining device being used in association with each of the cushioning fingers 55, see Fig. I.

In order to effect a weather tight seal between the hinged door 17 and the body por-

tion 15 and to carry off any accumulation of rain water at the juncture, I make provisions as follows:—As shown in Figs. III, VII and IX, the door 17 has a peripheral flange 58 as well as an annular flange 59, the two jointly forming an angular circumferential shoulder 60. Applied about this angular shoulder 60 is an annulus 61 fashioned from very thin spring sheet metal to the cross-sectional, or what may for convenience be termed “revert-gutter” form shown in Fig. IX; that is to say, with an angular channelled portion or gutter 61^a to fit the shoulder 60 and a rolled portion 61^b that extends outward over and beyond the flange 58 of the door 17 with capacity for circumferential expansion to yieldingly engage within a projecting edge flange 62 around the rear of the body portion 15, said edge flange defining a reducing taper approach to a seat 63 against which the door 17 closes. The rolled portion 61^b of the annulus 61 thus forms a weather tight juncture between the door 17 and the lamp body portion 15. From Fig. VII it will be observed that the annulus 61 is split at the bottom, as at 64, for drainage of rain water from its rolled circumferential portion 61^b, as well as from the gutter 61^a, in the event of water leakage past the closure. Two screws 65 are used adjacent the split 64 as the sole means for securing the annulus 61 to the flange 59. The door 17 is held closed, and the rolled portion 61^b of the annulus 61 maintained in compression, by latching bolts 66 which are pivotally connected to the lamp body portion 15 at 67, and equipped with ring nuts 68 to engage clevised lugs 69 on the door 17.

The provisions for adjusting the incandescent bulb 18, as shown in Figs IX to XI inclusive, comprise a circular plate 70 which is secured by means of screws 71 over an opening 72 in the top of the lamp body portion 15. At its center the plate 70 has an apertured semi-spherical depression 73 which serves as a seat for a ball 74 having an inward tubular extension 75 terminating in a cross head 76. This cross head 76 is apertured at 77, 77 to guide studs 78 projecting upward from the socket 79 for the illuminating bulb 18. By this arrangement, the bulb 18 is rendered adjustable radially of the lamp body through the aid of a screw 80 that engages an internal thread in the lower end of the tubular extension 75 and has its head 81 lodged, with capacity for independent rotation, between companion cross pieces 82, 83 whereof the ends are correspondingly apertured to take the reduced shouldered portions of the guide studs 78, and with the latter secured to the socket 79 by screws 84, see Fig. X. The upper end of the adjusting screw 80 is slotted for engagement by the flattened inner extremity of a manipulating stem 85 that extends axially

through the ball 74 and tube 75 from the exterior of the lamp body portion 15, and at its outer end is equipped with a knurled finger knob 86. A circumferentially-projecting spring band 87 lodged in a groove about the manipulating stem 85 near its inner end, serves in cooperation with stop screws 88 let into the side of the tube 75, to normally prevent withdrawal of said stem. The ball 74, it will be seen, permits angular adjustment of the illuminating bulb 18 in all directions so that the latter can be positioned accurately with regard to the reflector 51 as required to determine the proper focus and, accordingly, the maximum projection of light from the lamp. For the purpose of securely holding the illuminating bulb 18 in the desired adjusted position, I provide a bridge piece 89 having an apertured semi-spherical recess 90 to constitute the upper half of the socket for the ball 74. The bridge piece 89 is hooked, as at 91, for fulcrum engagement beneath the plate 70, and a lateral extension 92 thereof is pierced for passage of a clamp screw 93 taking into said plate at the opposite side. The head 94 of the clamp screw 93 is diametrically apertured for traverse of a slidable handle rod 95. The function of protecting the manipulating stem 85, the clamp screw 93 as well as other associated parts from the weather, is vested in a dome like cover 96 which fits over an annular flange 97 of the plate 70 and is retained in position by a bail 98, with imposition of pressure to maintain an internally supported ring gasket 97^a in fluid tight engagement with the rim of said flange. The trunnions of the bail 98 are pivotally engaged in diametral recesses 99 in the lower face of the plate 70 (see Fig. X), and have their ends upturned to engage behind retaining shoulders 100 in the recesses. The bail 98 is made of spring wire and yieldingly engages a central depression 101 in the dome cover 96 with a snap fit, this feature being clearly illustrated in Figs. IX and X. In order that the adjusting means for the bulb 18 may, if desired, be transferred to the lower part of the lamp, the body portion 15 is provided at that region with an auxiliary opening 102 which is normally closed by a removable cover plate 103, (Fig. I). To adjust the illuminating bulb 18, the bail 98 is first swung downward and the protective cover 96 removed. The clamp screw 93 is thereupon loosened to release the ball 74, then, by combined rotation and angular swinging of the stem 85, the bulb 18 is moved about until the proper focus is had. The clamp screw 93 is thereupon tightened with imposition of pressure upon the ball 74 to restrain it against subsequent displacement, and the protective cover 96 again finally replaced.

The current carrying conductors 105 (Fig. 130

I) enter the lamp through a bushed opening 106 in the lower part of the lamp body portion 15 near the bottom, and extend around one side of the latter to the bulb socket 79. Suitable clips 107 serve to hold the conductors 105 in place with provision of adequate slack to permit adjustment of the illuminating bulb 18 in the manner hereinbefore explained.

The lamp may be equipped with a visor such as shown at 108 in Figs. I and II, the same being cut from sheet metal and attached by means of screws or rivets 109 to an integral flange 110 projecting forwardly around the upper part of the lamp body portion 15.

It is to be particularly observed that the lamp of my invention, with the exception of the body portion 15, the door 17 and the base 34, is constructed from stock material cut or bent to shape, and that therefore very little machining is required except for the drilling and tapping of holes. This feature is obviously conducive to economic manufacture which is a very important consideration in connection with lamps of comparatively large sizes, more especially useful for the purposes mentioned in the introductory part of this specification. It is however to be noted that certain features of my invention are not particularly restricted to lamps of this special character, since they may be as readily embodied in lamps of smaller size and intended for other uses than those herein set forth.

Having thus described my invention, I claim:

1. A lamp of the character described comprising a hollow body to enclose an illuminating means, a lens closing a frontal opening of the lamp body, a reflector, and a carrier therefor closing-in the back of the lamp body; in combination with a number of circumferentially arranged retaining means to hold the lens and reflector in place, each such retaining means including a flexible tongue adapted to be secured to the lamp body or reflector carrier aforesaid, and a detachable clip with one end engaging behind a heel flange of the flexible tongue for maintenance of a bearing face at its other end in contact with the lens or reflector.

2. A lamp of the character described comprising a hollow body to enclose an illuminating means, a lens closing a frontal opening in the lamp body, a reflector, and a carrier therefor closing-in the back of the lamp body; in combination with a number of circumferentially arranged retaining means to hold the lens and the reflector in place, each such retaining means including a flexible tongue adapted to be secured to the lamp body, a detachable clip with one end engaging behind a heel flange of the flexible tongue for maintenance of a bearing face at its

other end in contact with the lens or reflector, and a retaining bail swingable over the clip to normally hold it in place.

3. A lamp of the character described comprising a hollow body to enclose an illuminating means, a lens closing a frontal opening in the lamp body, a reflector, and a carrier therefor closing-in the back of the lamp body; in combination with a number of circumferentially arranged retaining means to hold the lens and reflector in place, each such retaining means including a flexible tongue adapted to be secured to the lamp body or reflector carrier aforesaid, a detachable clip with one end engaging behind a heel flange of the flexible tongue for maintenance of a bearing face at its other end in contact with the lens or reflector, and a retaining bail pivoted by the flexible tongue and adapted to engage with a snap fit in a recess of the detachable clip.

4. A lamp of the character described comprising a hollow body to enclose an illuminating means, a removable reflector of frangible material supported by a closure for the hollow body, spring fingers with cushioning pads arranged about the closure to cushion the reflector, and associated retainers comprising co-operative fixed and detachable yielding components to hold said reflector in place against the spring fingers aforesaid.

5. A lamp of the character described comprising a hollow body to enclose an illuminating means, a removable reflector of frangible material supported by a closure for the hollow body, spring fingers with cushioning pads arranged radially about the closure to cushion the reflector, and retainer devices each comprising co-operative fixed and detachable springy components individually associated with the spring fingers to hold the reflector in place.

6. A lamp of the character described comprising a hollow body to enclose an illuminating means, a reflector carrying door permitting access to the interior, and a yielding metallic weathering element of revert-gutter cross-section extending circumferentially about the door and forming a fluid tight seal with the lamp body.

7. A lamp of the character described comprising a hollow body to enclose an illuminating means, a reflector carrying door permitting access to the interior, and a yielding metallic weathering split-annulus extending circumferentially about the door and effecting a fluid tight seal with the body portion, said annulus embracing paralleling revert-gutter sections to catch and carry off rain water collecting on either side of the door.

8. A lamp of the character described comprising a hollow body, a reflector carrying door adapted to close circumferentially

against a seat surrounded by a projecting edge flange of the body, said flange defining a tapered approach to the seat, and a split metallic annulus of revert-gutter cross-section secured around the edge of the door with yielding circumferential projection therebeyond to effect a weather-tight seal through cooperation with the tapered approach afforded by the flange aforesaid.

opposite end of the holder in contact with said lens.

In testimony whereof, I have hereunto signed my name at Philadelphia, Pennsylvania, this 24th day of June 1927.

HERBERT J. GRAHAM.

9. A lamp of the character described comprising a hollow body, a reflector carrying door adapted to close circumferentially against a seat surrounded by a projecting edge flange of the body, said flange defining a tapered approach to the seat, and a split metallic annulus secured around the door, said annulus embodying a channel-section portion secured to the door and a rolled-over yieldable revert-projection overlapping the circumferential edge thereof to effect a weather-tight seal through cooperation with the tapered approach afforded by the flange aforesaid, and also serving as a gutter to catch and carry off rain water.

10. A lamp of the character described comprising a body, a reflector carrying door adapted to close circumferentially against a seat surrounded by a projecting edge flange of the body, said flange defining a tapered approach to the seat, and a metallic annulus embodying revert-gutter sections, one of which is secured around the door, while the other has capacity for circumferential expansion to cooperate with the tapered approach afforded by the flange aforesaid in effecting a weather-tight seal.

11. In a lamp of the type described the combination of a body, lighting means positionally adjustable within the lamp body, a lens at the front of the body, a reflector carrying door closing the rear of the body thereby to enable access to the reflector without necessity for disturbing the adjustment of the lighting means aforesaid, means enabling positional adjustment of the lighting means, and split metallic annulus embodying a channel-section with a paralleling revert rolled-over gutter section, the latter insuring weather-tightness between the lamp body and closure door, and both sections serving to trap and drain off any accumulation of moisture.

12. A lamp of the character described comprising a hollow body having a frontal opening, an illuminating means housed within said body, a lens covering said frontal opening, retaining means for securing said lens in position including a flexible tongue having a heel flange adapted to be secured to the hollow body adjacent the outer edge of the lens, and a detachable holder having one end engageable behind the heel flange of the flexible tongue for maintaining the

75

80

85

90

95

100

105

110

115

120

125

130