C. MORU.

HEAD LAMP.

APPLICATION FILED NOV. 22, 1916.

1,298,545.

Patented Mar. 25, 1919.

2 SHEETS—SHEET 1.

Fig. 1

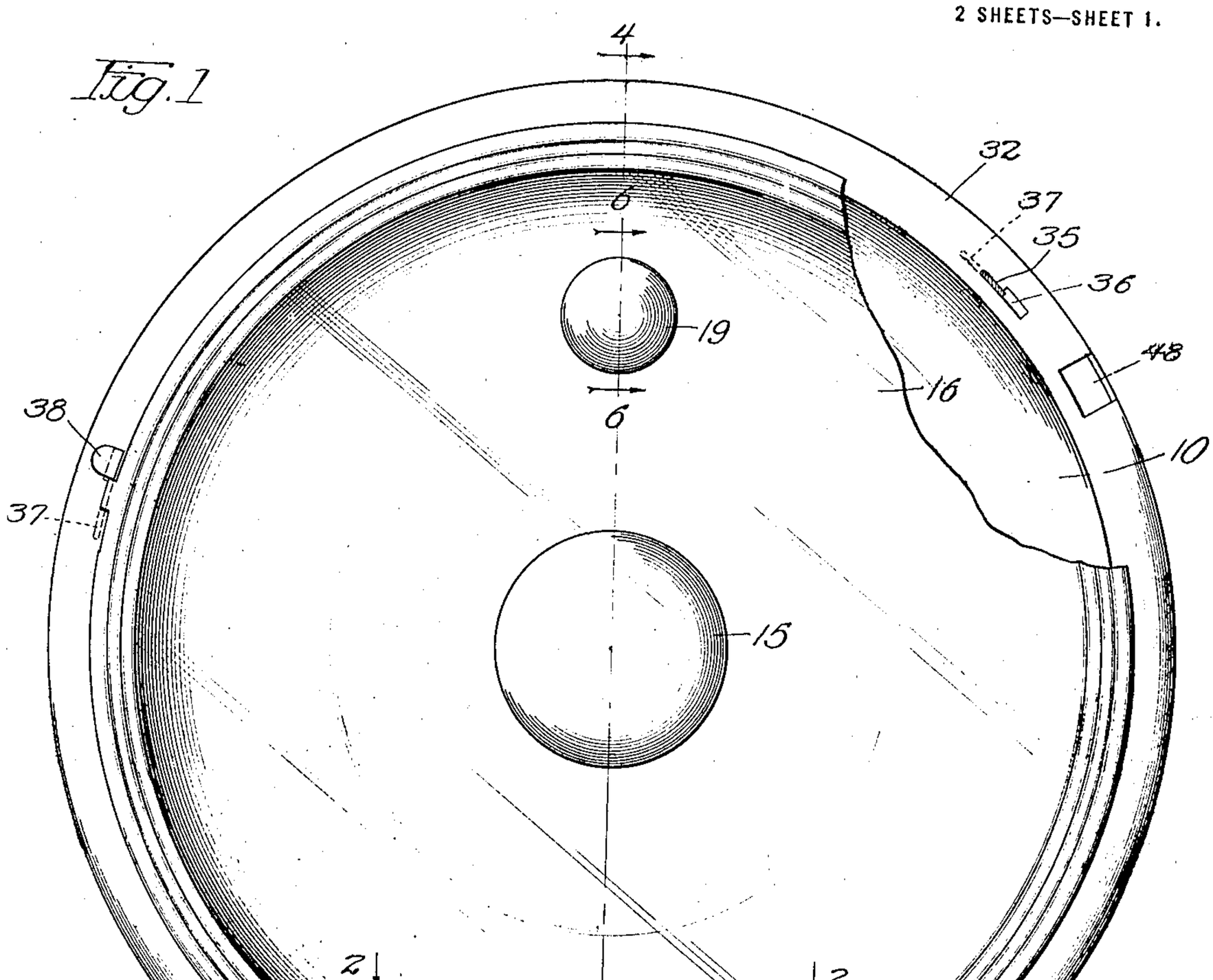
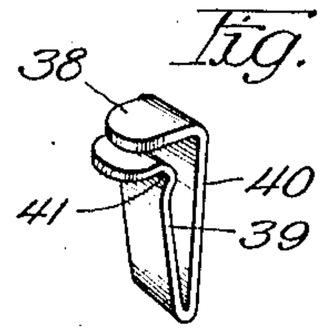
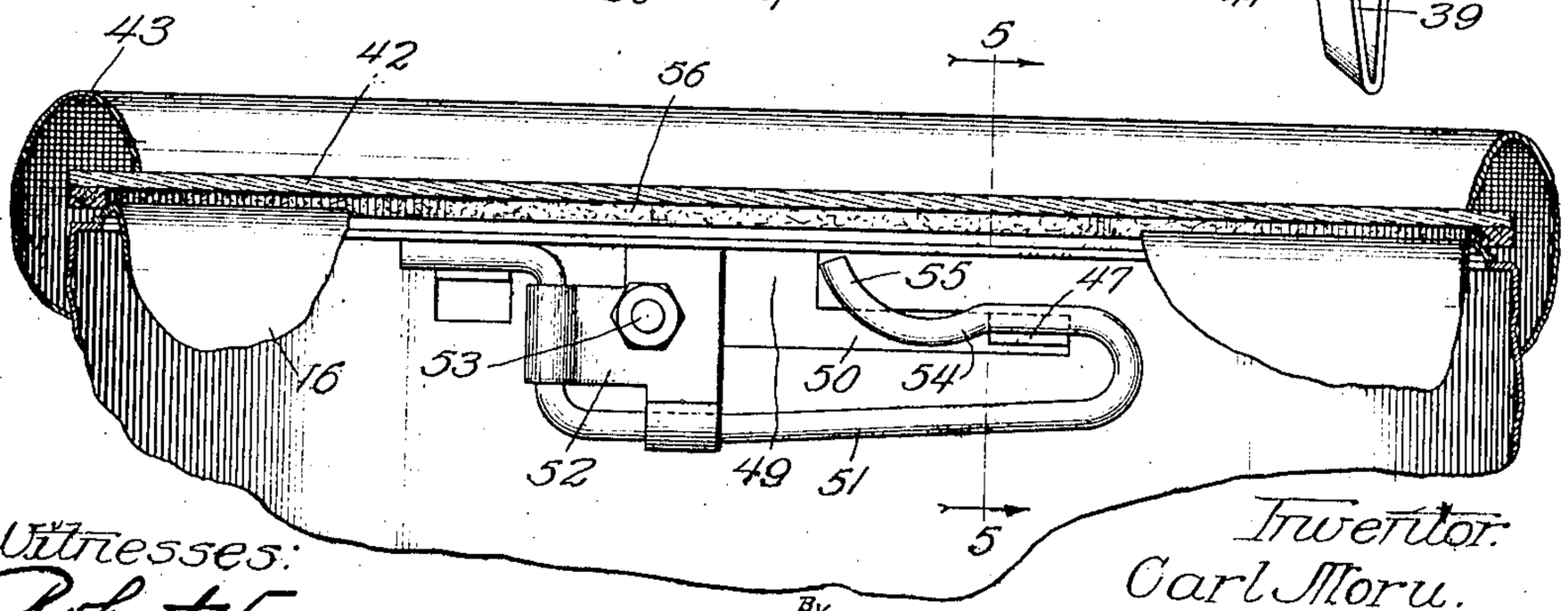


Fig. 2

Fig. 3.





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2 SHEETS—SHEET 2.

Fig. 4.

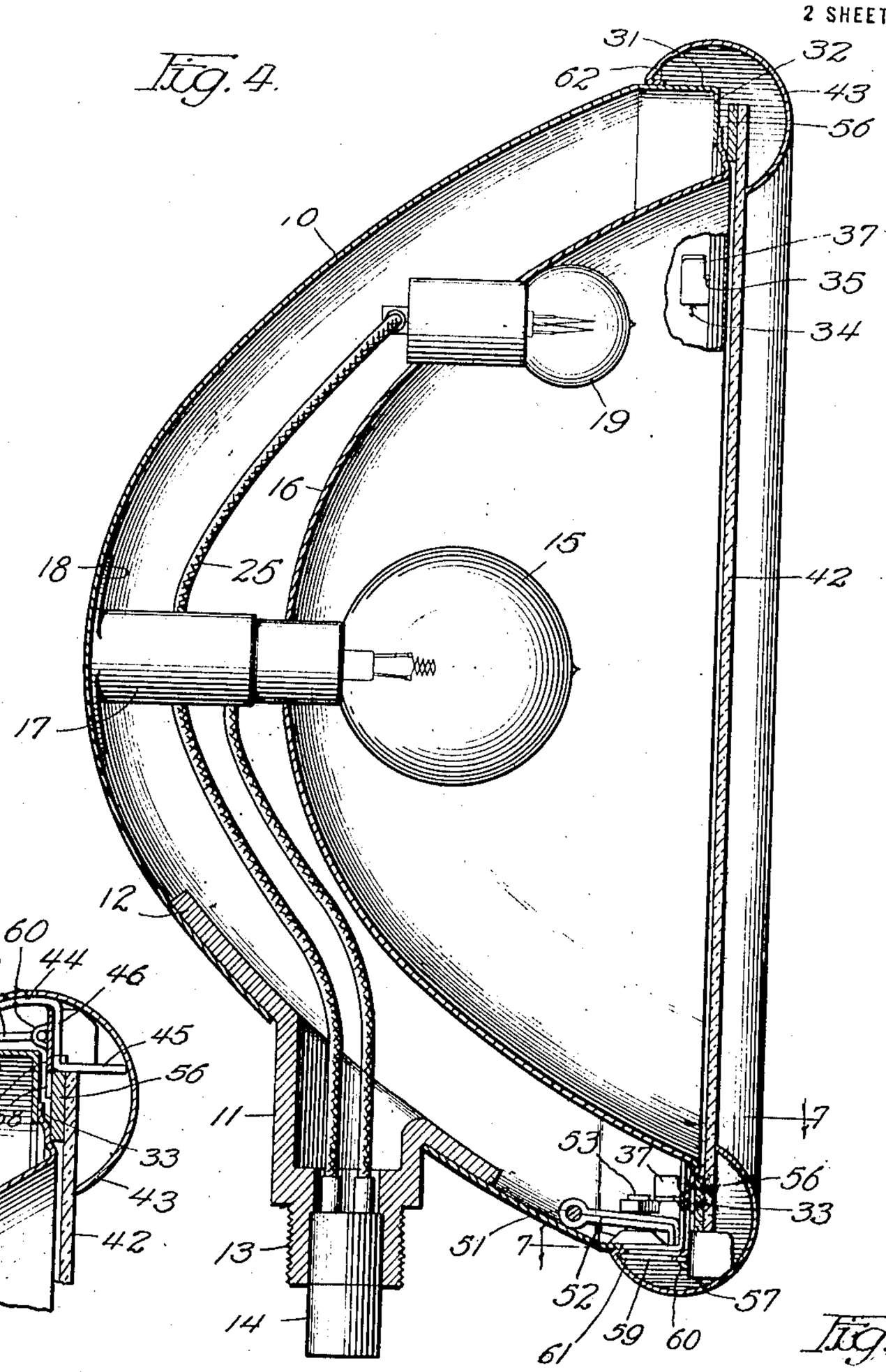


Fig. 5.

Fig. 6.

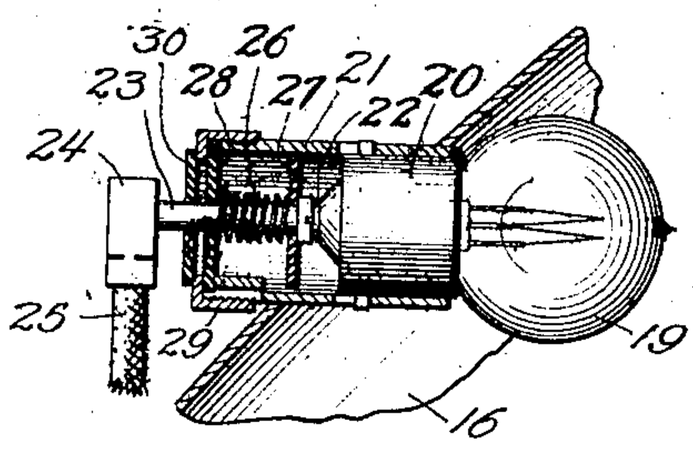
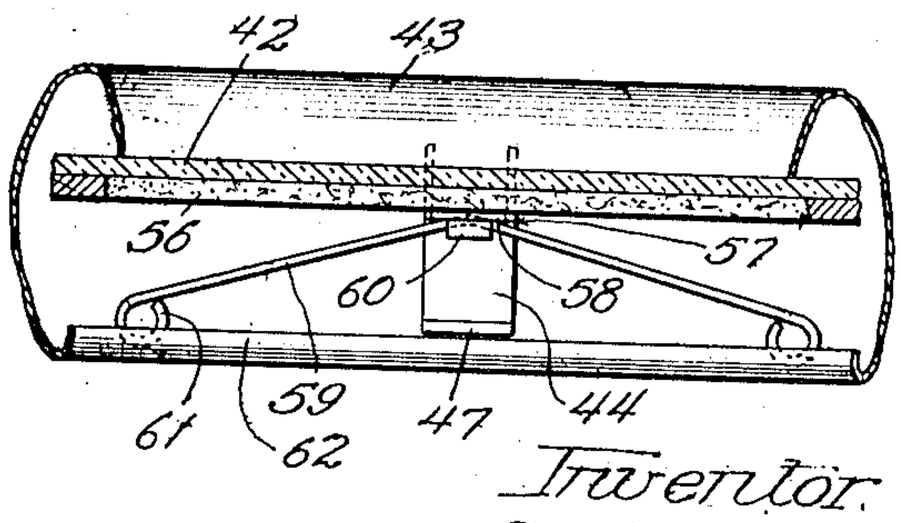


Fig. 7.



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UNITED STATES PATENT OFFICE.

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HEAD-LAMP.

1,298,545. Specification of Letters Patent. Patented Mar. 25, 1919.

Application filed November 22, 1916. Serial No. 132,727.

To all whom it may concern:

Be it known that I, CARL MORU, a citizen of the United States, residing at Kenosha, in the county of Kenosha and State of Wisconsin, have invented certain new and useful Improvements in Head-Lamps, of which the following is a specification.

My invention relates to improvements in head lamps, and, although capable of many applications, is particularly well adapted for use in connection with automobile search lamps of the parabolic type employing an incandescent electric lamp as an illuminant.

Among the salient objects of the invention are, to provide a head lamp in which a parabolic reflector is removably secured in the outer casing by improved, novel, and efficient connecting means so organized that the reflector, while being held securely in position, may be quickly removed without the aid of a tool kit; to provide an improved arrangement for detachably securing the door and glazing of the lamp in place; to provide a construction in which resilient means are employed for maintaining the interior of the lamp sealed against the entrance of dirt, moisture, or injurious gases; to provide an improved construction in which the glazing is detachably secured in the rim of the lamp door; to provide an improved head lamp which shall be efficient, simple in design, and economical in construction; and, in general, to provide an improved head lamp of the character referred to.

In the drawings, which illustrate my invention as applied to an electric automobile head lamp of the parabolic reflector type—

Figure 1 is a front elevation of the lamp, certain parts being broken away;

Fig. 2 is a section taken on the line 2—2 of Fig. 1;

Fig. 3 is a perspective view of the clip for preventing relative rotary movement of the reflector and casing of the lamp shown in Fig. 1;

Fig. 4 is an axial section taken on the line 4—4 of Fig. 1;

Fig. 5 is a section taken on the line 5—5 of Fig. 2;

Fig. 6 is a fragmentary section taken on the line 6—6 of Fig. 1; and

Fig. 7 is a section taken on the line 7—7 of Fig. 4;

Referring to the drawings, 10 represents the outer main casing of the lamp which, as a whole, is supported by a hollow post or prop 11 flanged, as shown at 12, the flanged portion of the prop being soldered to the interior of the casing 10 to render the latter air and moisture proof. The hollow prop 11 is reduced in diameter at its lower end and threaded, as shown at 13, in order to screw into a hollow support (not shown) carried by the vehicle upon which the lamp is mounted. The aperture in said hollow prop 11 is of sufficient diameter to accommodate the connector 14 through which electricity is supplied to the lamp.

In the particular lamp shown and described I employ a pair of lamps, the lamp 15 being situated in the axis of the parabolic reflector 16 and slidably supported in a hollow sleeve 17, the rear end of which is flanged, as shown at 18, and secured to the rear end of the casing 10 by soldering or other means. The parabolic reflector 16 is centrally apertured in order to permit free sliding movement of the lamp 15, the base of which passes through said aperture. The means for slidably and adjustably supporting the lamp 15 in the stationary sleeve 17 will not be described, inasmuch as they are clearly set forth in my United States Patent No. 1,201,405, issued October 17, 1916. The main or central lamp 15 may be operated independently of the subsidiary illuminant 19 and is for the purpose of delivering a parallel or search-light beam when a powerful light is required for driving at high speed over country roads or poorly lighted streets. The subsidiary lamp 19 is located in the upper part of the reflector cavity and a substantial distance from the focal axis of the parabolic reflector so that the light emanating therefrom will be diffused and not concentrated in the form of a beam, a high-powered beam of light being objectionable and illegal in many densely populated communities.

Describing the means for supporting the subsidiary lamp 19 in the reflector, the base 20 of said lamp is of the Ediswan type, fitting within a sleeve 21 secured as by sol-

dering in an aperture cut in the upper portion of the reflector 16. One end of the filament of said lamp 19 is connected directly to the metal frame of the base 20, thereby establishing a circuit to ground or the frame of the car through the metal of the reflector; and the other terminal of the filament is connected to a central contact plate or button 22 carried by the rear end of said base 20 and engaging the head of a plunger screw 23. The rear end of said plunger screw 23 is screwed into a connecting block 24 in which is seated the end of a supply wire 25. The lamp 19 is securely held in position in its socket 21, and an efficient contact is obtained between the plunger screw 23 and the contact plate 22, by means of a coil spring 26 surrounding the plunger screw 23. The central position of the front end of the plunger screw 23 is maintained by means of an insulating washer 27 around the neck of said screw and loosely fitting the interior of the sleeve 21, and the rear end of the spring 26 pushes against another insulating washer 28, which is secured in position over the rear end of the sleeve 21 by means of a threaded, flanged ferrule 29 screwed over the outside of the rear end of said sleeve 21. The outer insulating disk 30 prevents improper contact between the connecting block 24 and the flange of the said metal ferrule member 29.

Describing the means for rigidly securing the parabolic reflector 16 in the casing 10, the latter is cylindrical in shape for a short distance at its front end, as shown at 31, the front end of said cylindrical portion terminating in a radially and inwardly projecting flange 32. The internal diameter of said flange 32 is substantially less than the external diameter of the flange 33 integrally formed on the front end of the parabolic reflector 16, so as to provide a seat for the reflector flange, and there are also perforated in the flange 32 of the casing a series of apertures (in this case three) capable of admitting a corresponding number of hook-shaped lugs 34 formed as integral parts of the reflector flange 33. The said lugs 34 are bent down from the flange of the reflector so as to lie parallel with the cylindrical portion 31 of the outer casing, and are connected to the flange 33 by means of offset neck portions 35. In order to insert the reflector in the casing, the reflector is held in such position that the lugs 34 register with the apertures 36 in the casing flange 32, the reflector is then pushed inwardly in an axial direction until the reflector flange is seated upon the casing flange, after which a slight twisting movement of the reflector with reference to the casing brings the hook portions 37 of the lugs 34 under the metal of the casing flange 32, therebv preventing relative axial movement of the reflector and casing.

In order to prevent possible displacement of the reflector in the casing, consequent upon an accidental twisting movement of the reflector, I insert in the back end of one of the perforations 36, behind the lug 34, a clip or locking member 38. Said slip 38 is formed of a single piece of flat spring metal and has two integrally connected spring limbs 39 and 40 which normally tend to assume the position shown in Fig. 3. When the clip 38 is inserted in one of the apertures 36, the limbs 39 and 40 are forced toward one another by reason of the fact that the slot 36 is narrower than the normal distance between the arms 39 and 40, and when the clip is pushed home, the slight bend or crook 41 in the lesser limb 39 is effective in preventing withdrawal of the clip to unlock the reflector, except by the exercise of considerable manual force.

The front of the lamp opening is sealed and protected by a disk 42 of transparent material, such as glass, which is mounted in and carried by an annular door frame 43. The shape of the cross-section of said door frame is shown best in Figs. 4 and 5, and, preferably for the major portion of its cross-section, constitutes the arc of a circle, thus furnishing an ornamental trim around the glazing opening. The front or inner edge of the door frame 43 is slightly less in diameter than the front diameter of the reflector cavity and is directly engaged by the front face of the glazing 42, while the rear edge of the door frame 43 is reversely bent to form a flange slidably fitting around the slidable portion 31 of the reflector casing.

Describing the means for locking the door frame carrying the glazing to the main body or casing of the lamp,—in the hollow space of said door frame I secure, by soldering or in any other manner, a plurality (in this case three) of hook members 44 constructed of relatively heavy strap metal. Said hook members 44 are bent in such shape as to provide portions 45 extending substantially parallel to the axis of the lamp, intermediate radially projecting parts 46, and rear end portions 47 extending inwardly and radially, said last named portions 47 constituting the actual hooks of the hook members. The ends of the hook portions 47 project inwardly a substantial distance within the cylindrical part 31 of the casing and are arranged to be inserted through apertures 48 when the door carrying said hook portions 47 is moved inwardly in an axial direction. Obviously, the cylindrical portion of the lamp casing must be apertured along its circumference, as shown at 49, the apertures in the flange and cylindrical part 31 of the casing communicating with each other and in effect constituting notches in the rim of the casing. As shown in Fig. 2, said notches 49 are made L-shaped so as to permit a twist-

ing of the door with reference to the casing after the latter parts have been brought together, the hook portions 47 moving into the circumferential portions 50 of said L-shaped openings, thereby preventing axial separation of the door and the casing.

Preferably, in order to prevent accidental displacement of the door with reference to the casing, to allow for inaccuracies in mechanical construction, and to force the door and glazing resiliently toward the reflector, I employ spring means interposed between the hook portions 47 and the casing. Said resilient means take the form of heavy wire springs 51, the rear ends of which are suitably bent to enable the springs 51 to be secured to the inside of the rim of the casing by means of claw-shaped clamps 52 and bolts 53. The front ends of said springs 51 extend along the inside of the cylindrical portion of the casing and are reversely bent in the shape of elongated U's, the terminal portions of the springs each having a slight bow or offset imparted to it, as shown at 54, in order to prevent backward or retrogressive movements of the hook parts 47 after they have been forced into position. It is of course understood that the shape of the U portion of the spring members 51 is such that the front arm of the U bears strongly against the hook portions 47 and thus forces the door firmly toward the reflector, the bow or offset 54 in the spring preventing accidental displacement of the door. When applying the door to the casing and rotating the door to make the lugs 47 enter the circumferential slots 50, the entrance of the hook members 47 is facilitated by a slight curvature or bend 55 on the ends of the spring 51.

In order effectually to seal the reflector cavity against the entrance of dirt, moisture, or noxious vapors, I prefer to interpose between the flange 33 of the reflector and the glazing 42 an annular gasket 56 of some suitable pliable material, such as resilient paper. For convenience in handling the various parts of the lamp, the glazing 42 and the gasket 56 are both secured to and form parts of the door, the frame of which is the annular part 43, as before described.

Describing the means for holding the gasket and the glazing securely in the frame 43 of the door, 57 is a metal clip which, throughout a portion of its length, is channel-shaped in cross-section and has an inward extension 58 which rests upon the inner face of the gasket 56. The gasket is on its outer circumference slightly notched out to accommodate a plurality (in this case three) of the said clips 57, the channel portions of the clips extending into said notches while fitting over and being supported by the intermediate radial portions 46 of the hook portions 44. The clips 57, which thus hold the glazing and gasket in position in the door frame 43, are themselves securely held in position by means of spring wire members 59, the central portions of which extend under partially punched out arches 60 in the tops of the clips 57. The springs 59 are each provided with a pair of arms terminating in eyes 61 which engage behind the narrow reverse flange 62 of the door frame, the normal or unflexed shape of said springs 59 being such that when inserted in the position shown in Fig. 7, they exert considerable pressure upon the clips and hold them securely in place.

The described details of construction are merely illustrative of a specific application of my invention, the scope of which must be determined by reference to the appended claims.

I claim—

1. In a lamp of the class described, the combination of an outer bowl-shaped casing, a parabolic reflector coaxial with and nested within said casing, the casing being provided with a flange intermediate the casing and the reflector, a flat circumferentially extending necked member on the other part coöperating with said flange to secure said parts together, said flange being circumferentially cut away to admit the head of said necked member, said reflector and casing being adapted to be locked together by relative circumferential movement, and a member insertible in said cut behind said neck to prevent relative reverse circumferential movement of said parts.

2. In a lamp of the class described, the combination of an outer bowl-shaped casing, a parabolic reflector coaxial with and nested within said casing, the casing being provided with a flange intermediate casing and the casing, a flat circumferentially extending necked member on the other part coöperating with said flange to secure said parts together, said flange being circumferentially cut away to admit the head of said necked member, said casing and casing being adapted to be locked together by relative circumferential movement, and a removable self-retaining spring clip insertible in said cut behind said neck to prevent relative reverse circumferential movement of said parts.

3. In a lamp of the class described, the combination of an outer bowl-shaped casing provided with an inwardly extending flange, a parabolic reflector nested within said casing and provided with an outwardly extending flange lapping the casing flange, said reflector flange being formed with an inwardly projecting circumferentially extending necked ear, the casing flange being cut away circumferentially to admit said ear, the reflector and casing being capable of relative circumferential rotary movement to cause the head of said necked ear to engage

behind the casing flange, and means for preventing a reverse relative movement of said casing and reflector.

4. In a lamp of the class described, the combination of an annular door frame, the cross-section of said annular door frame being such as to provide a front inwardly facing annular seat for a glazing, a glazing on said seat, a clip supported in the annular door frame and overlapping said glazing, a compression spring interposed between said clip and the rear part of said door frame for maintaining said glazing in engagement with said seat, a gasket interposed between said glazing and said clip, a casing upon which the door frame is slidable, a loose bayonet connection between the frame and casing, and means to take up the loose connection.

5. In a lamp of the class described, the combination of an annular door frame, the cross-section of said annular door frame being such as to provide a front inwardly facing annular seat for a glazing, a glazing on said seat, a clip supported in the annular door frame and overlapping said glazing, a compression spring interposed between said clip and the rear part of said door frame for maintaining said glazing in engagement with said seat, a gasket interposed between said glazing and said clip, said clip being mechanically locked to said annular door to prevent circumferential movement of said clip on said door frame, a casing over which the door fits, a bayonet connection between the door and casing, and yielding means to hold the connection tightly.

6. In a lamp of the class described, the combination of an annular door frame, the cross-section of said annular door frame being such as to provide a rear seat and a front inwardly facing annular seat for a glazing, a glazing on said seat, a clip supported in the annular door frame, and a two-arm wire spring interposed between said clip and the rear part of said door frame for maintaining said glazing in engagement with said seat, the ends of both of said arms being supported by one of said seats.

7. In a lamp, an outer casing and an inner parabolic reflector; a bayonet joint at their outer edges comprising a plurality of slits in the casing, and undercut lugs on the reflector insertible in the slits and rotatable with the reflector to engage the undercut portions; and a removable spring clip insertible in one of the slits behind the lug to prevent reverse rotation of the reflector.

8. In a lamp, an outer casing, an inner parabolic reflector, means forming a bayonet joint at their outer edges, a removable locking clip to prevent relative movement of the casing and reflector, an annular door extending over said outer edges, a glazing seated in said door, spring pressed clips to press the glazing on its seat, means including bayonet slots in said casing and loose-fitting hook members on the door engaging and rotatable in the slots for fastening the door on the casing, and a U-shaped spring one extremity of which is attached to the inside of the casing and the other is formed with a bow and lies substantially parallel with the bayonet slot in the casing to engage the said hook members to prevent their disengagement and to draw them tightly in the slots whereby the door will be drawn inwardly toward the reflector.

9. In a lamp of the class described, an outer casing, an annular door frame, a glazing overlapped on the outer side by the frame, means in connection with the frame for supporting the glazing in the frame, a reflector in the casing having its outer edge adjacent the inside of the glazing, a loose bayonet joint between the casing and door frame, and a spring in connection with the casing for drawing the frame inwardly and the glazing against the edge of the reflector.

10. In a lamp of the class described, an outer casing, an annular door frame, bayonet slots in the casing, bayonet projections from the frame which fit the slots loosely, and a spring attached to the inside of the casing and lying substantially parallel with the bayonet slot and adapted to engage the bayonet projections pressing them inwardly to take up the loose connection and to hold the projections yieldingly in the slots.

11. In a lamp of the class described, an outer casing, an annular door frame, bayonet slots in the casing, bayonet projections from the frame which fit the slots loosely, a U-shaped spring with an angular part at one end, the other end being adapted to engage and draw the projection in the slot, and a fastening claw to engage the angular part of the spring for holding it in the casing.

12. In a lamp of the class described, an outer casing, an inner reflector secured to the casing with an outer peripheral edge, a glazing in front of the reflector, a gasket at the inner edge of the glazing, a frame engaging the outer edge of the glazing and slidable over the casing, a loose bayonet joint including slots in the casing and projections from the frame, and a U-shaped spring attached at one end to the casing and the other end engaging the bayonet projectors to confine it in the slot and to draw frame up tightly with the said washer against the edge of the reflector to make a tight connection.

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