Feb. 21, 1933. H. A. DOUGLAS 1,898,295

LAMP ASSEMBLY MEANS

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Fig. 1.

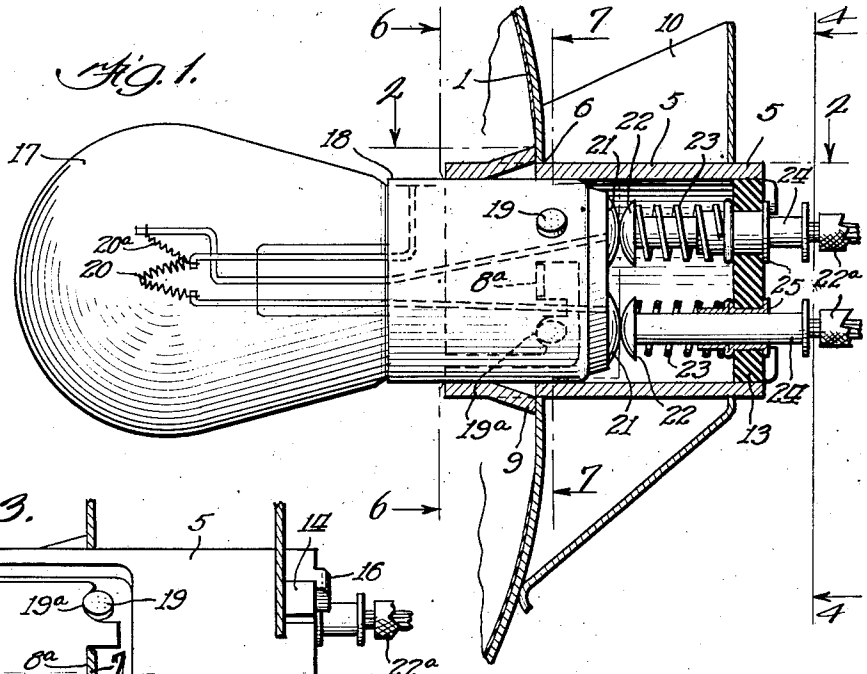



Fig. 3.

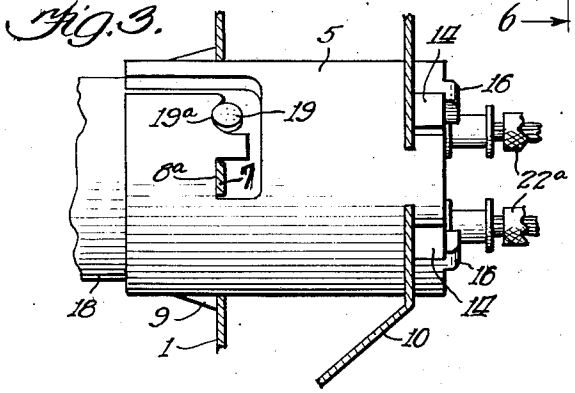



Fig. 2.

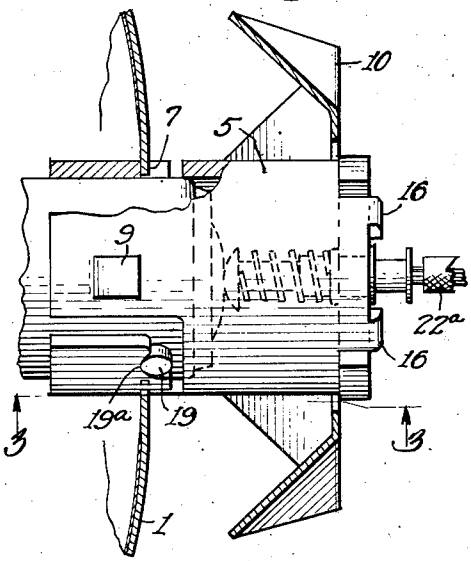
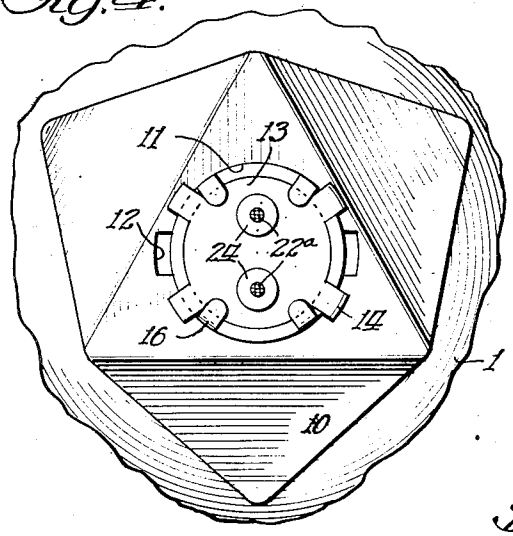



Fig. 4.




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Fig. 5.

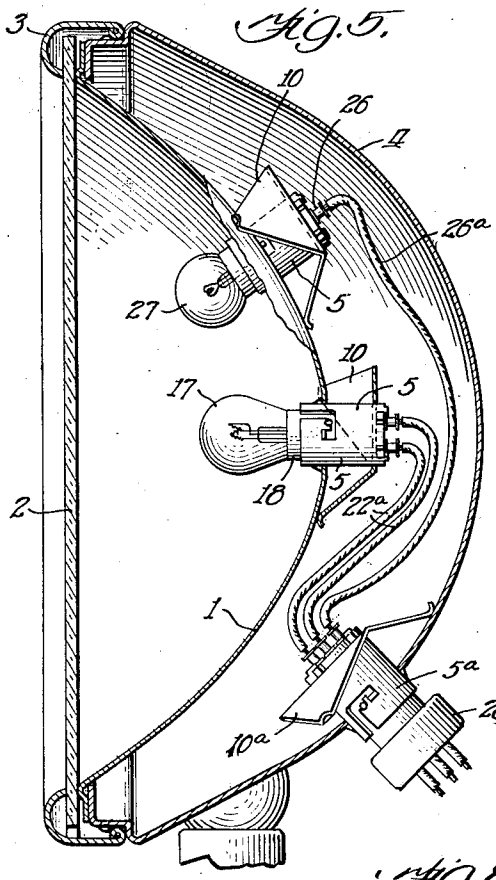



Fig. 6.

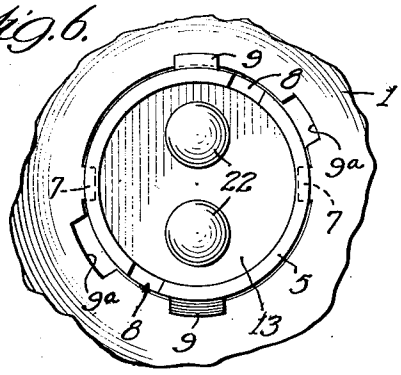



Fig. 7.

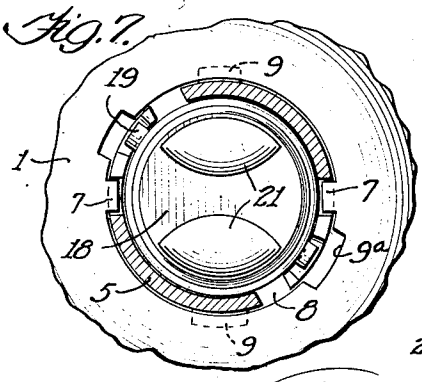
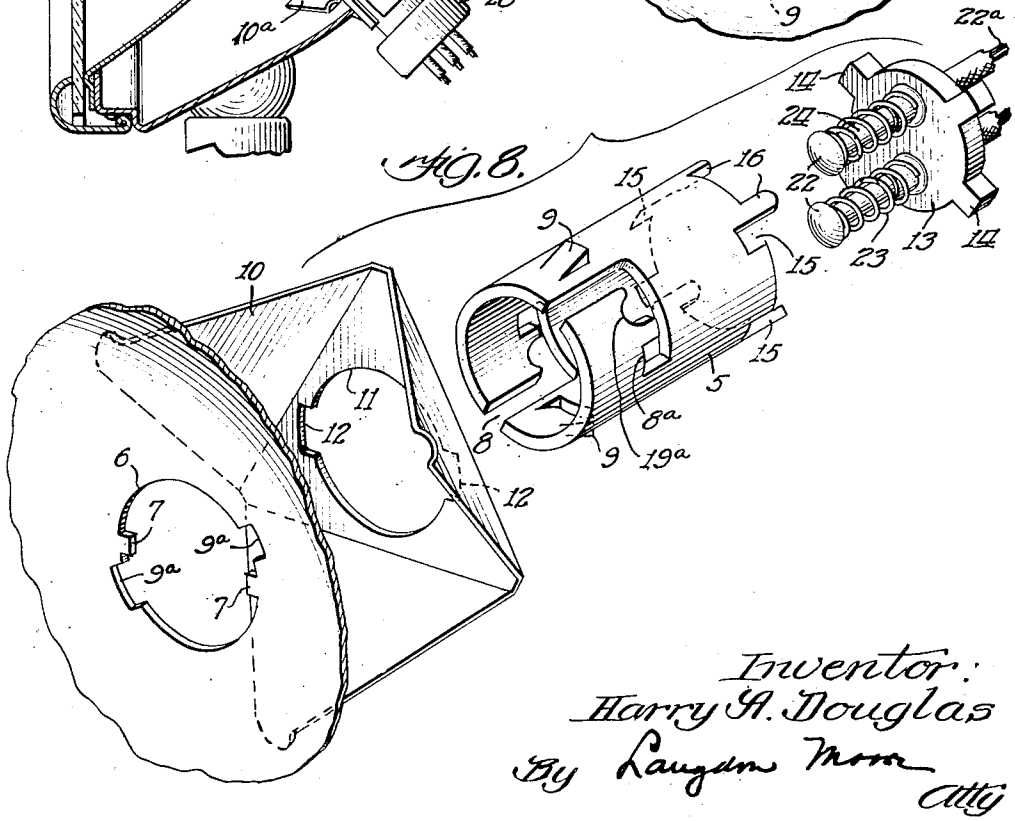



Fig. 8.




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Patented Feb. 21, 1933 1,898,295

# UNITED STATES PATENT OFFICE

HARRY A. DOUGLAS, OF BRONSON, MICHIGAN

## LAMP ASSEMBLY MEANS

Application filed January 30, 1931. Serial No. 512,372.

My invention relates to lamp assembly means more particularly for incandescent lamps and their mountings in which the lamps are associated with such mountings through the intermediation of sockets carried by the mountings. The invention is of particular service in connection with automobile headlights which are inclusive of concave reflectors. One of the objects of the invention is the provision of a simplified structure for maintaining the sockets normal to the reflector at all times. Another object of the invention is the provision of means for positively positioning the sockets rotatively with respect to the reflector. The reflector may be parabolic and in one aspect the invention is inclusive of improved means for securing coincidence between the lighting center of the lamp filament and the focus of the reflector.

My invention may be understood from the illustrative construction shown in the accompanying drawings in which—

Figure 1 is a sectional view through a portion of a reflector showing my invention applied thereto, the lamp and terminal contacts being shown in elevation;

Figure 2 is a sectional view taken on the line 2—2 of Figure 1;

Figure 3 is a side elevation of a socket embodying my invention, with a fragmentary portion of a lamp base located therein, associated parts being shown in section;

Figure 4 is a sectional view taken on the line 4—4 of Fig. 1;

Figure 5 is a vertical section through a headlight, somewhat reduced in size, embodying my invention;

Figure 6 is a section on the line 6—6 of Figure 1, with the lamp removed;

Figure 7 is a section taken on the line 7—7 of Figure 1, and

Figure 8 is a perspective view of parts in separated relation.

The headlight here shown to illustrate one embodiment of my invention, is inclusive of a parabolic reflector 1 (Figure 5) appropriately formed of sheet metal, the concave reflecting face of which is covered by a light transmitting closure 2, which may be of glass. This closure is held against the front of the reflector by an assembling ring 3 which also serves to assemble the reflector with a concave back 4. The parts 2, 3 and 4 may be of conventional character and need not be further described.

The embodiment of the invention illustrated is inclusive of cylindrical metal lamp sockets 5, each adapted to be passed through a circular opening in the reflector. One of the openings 6 in the reflector may be located in the crown of the reflector, and one of the sockets 5 passed therethrough. The opening 6 in the crown of the reflector is essentially of the diameter of the socket 5 to receive the socket snugly and is concentric with the principal axis of the reflector. In assembling the socket with the reflector, inward extensions 7 of the portion of the reflector margining the opening 6 pass through bayonet slots 8 in the socket and ultimately, by manipulation of the socket, are received in the innermost seats 8*a* of the bayonet slots, thus positively positioning the socket rotatively with respect to the reflector. Tongues 9 formed by striking portions of the socket 5 obliquely outwardly, are so located as to pass through lateral enlargements 9*a* of the opening 6 when the extensions 7 are passing through the slots 8. When the extensions 7 have been received in the innermost seats 8*a* of the slots 8, the tongues 9 will engage the reflector at the margin of the opening 6. The tongues 9 terminate in a plane which is common to the innermost seats 8*a*, which plane is also perpendicular to the axis of the socket. The tongues 9 together with the seats of the bayonet slots 8*a* are distributed around the axis of the socket less than 180 degrees apart and provide bearing points, in this instance

substantially 90 degrees apart, for the socket on the reflecting surface of the reflector, determining, when the bearing points are pressed against the socket, a position of the socket normal to the reflector. These bearing points are desirably adjacent the forward end of the socket.

In assembling the socket 5 with the reflector, the socket is moved through the opening 6 against the pressure of a leaf spring 10 shown in the form of a tripod having relatively long legs adapted to bear against the rear surface of the reflector at pressure points distributed around the socket axis less than 180 degrees apart. There being at least three such pressure points, a plane is thereby determined, and this plane is parallel to the plane determined by the bearing points 8*a*, 8*a*, 9, 9. Thus the direction of the socket axis is determined by two parallel planes which cut the reflector and which are perpendicular to the socket axis. Since the pressure points of the spring against the reflector are relatively distant from the socket axis, the legs of the spring have a relatively long lever arm effect. In one of the parallel planes, the points 8*a*, 8*a*, 9, 9, define a circle concentric with the socket axis, and in the other of the parallel planes the pressure points of the springs define another circle concentric with the socket axis.

The spring 10 has a central aperture 11 formed in its base through which the socket 5 is passed, this aperture being laterally enlarged as at 12 to permit the spring to pass by the tongues 9. An insulating contact carrier in the form of a disc 13 is mounted in the rear end of the socket 5, the disc 13 having a plurality of segmental shoulder portions 14 which are received in recesses 15 in the end of the socket and which project radially beyond the socket. Prongs 16 extending longitudinally beyond the rear end of the socket are adapted to be turned down to lap the disc 13 and secure it in place. When the socket 5 has been passed through the aperture 11 in the base of the spring 10 and through the opening 6 in the reflector, and the extensions 7 located in the seats 8*a*, against the pressure of the spring 10, the base of the spring bears against the shoulder portions 14 of the disc 13, also in a plane perpendicular to the socket axis, and the legs of the spring are tensioned against the rear surfaces of the reflector. Pressure is thus transmitted through the spring to the socket, pressing the tongues 9 and the seats 8*a* against the reflecting surface of the reflector. Thus the socket is positioned axially with respect to the reflector and the socket is maintained normal to the reflector for the reasons hereinbefore set forth. Since the plane determined by the bearing points of the socket on the reflector and the plane in which the spring presses the socket are spaced apart the greater part of the length of the socket and since these planes are parallel, variations of the socket axis from a line normal to the reflector are guarded against.

When one of the sockets 5 is located in the crown of the reflector, as shown in Figure 1, its axis is maintained coincident with the principal axis of the reflector, for the reasons already set forth. In this location the socket may receive an incandescent lamp 17 having the cylindrical base 18 which fits snugly in the bore of the socket. The base 18 is conveniently provided with lateral enlargements such as the bayonet pins 19 which are received in intermediate seats 19*a* in the bayonet slots 8 in the socket. The intermediate seats 19*a* receiving the bayonet pins 19 are spaced from the focus of the parabolic reflector 1 a distance equal to the distance between the bayonet pins 19 and the lighting center of the lamp filament. The lamp 17 is in this instance a double pole lamp whose filament 20 has both of its terminals connected with lamp contacts 21 upon the rear of the lamp base. The lighting center of the filament 20 is upon the axis of the socket when the parts are properly assembled and is placed exactly upon the focus of the parabolic reflector as will more fully hereinafter appear. A portion 20*a* of this filament is connected between one of the contacts 21 and a metallic sheath which constitutes a part of the lamp base. Well known switching mechanism may be employed whereby all of the filament may serve to create brightest illumination or the portion 20*a* of the filament may be alone employed to secure dim illumination. Each circuit terminal contact 22 is pressed against its complemental contact 21 to secure the mechanical assembly of the incandescent lamp with the socket and also to complete the lamp circuit at the reflector. Each contact 22, which is conventionally connected with an insulated current conducting wire 22*a*, is pressed forwardly by a coiled spring 23 which surrounds the corresponding stem continuation 24 of each contact 22. Each stem 24 slides within a metallic sleeve 25 carried by the insulating disc 13. Since the lamp base 18 is inserted in the socket 5 against the pressure of the springs 23, the springs 23 press the bayonet pins 19 into engagement with the intermediate seats 19*a* of the bayonet slots 8. The lighting center of the lamp filament 20 is thus placed exactly upon the focus of the parabolic reflector 1.

When one of the sockets 5 is located to one side of the principal axis of the reflector, it may be provided with a single terminal contact stem 26 connected with an insulated wire 26*a* and adapted to be pressed against a single contact on the base of the single pole lamp 27, the lamp being included in circuit by being grounded similarly to the lamp 17, as already described.

The plugging in device by which the lamps are connected with a source of current may include a socket 5*a* similar to the socket 5 assembled with the back 4 of the headlight by means of a spring 10*a* similar to the spring 10 and adapted to receive the wires 22*a* and 26*a* and a plug 28 of well known construction.

Such changes may be made as fall within the scope of the following claims without departing from the invention.

Having thus described my invention, I claim:

1. Lamp assembly means including a concave reflector having an opening therethrough, said opening being laterally enlarged at a plurality of spaced apart places; a cylindrical socket adapted to be passed through said opening, said reflector having a plurality of spaced apart inward extensions into said opening; bayonet slots in said socket receiving said extensions; seats in said slots for said extensions; tongues on said socket constructed and arranged to pass through the lateral enlargements of said opening and to bear against the reflecting surface of the reflector in a plane common to said seats, said plane being perpendicular to the axis of the socket; shoulder portions on said socket; a three legged leaf spring bearing against said shoulder portions in a plane perpendicular to the socket axis and tensioned against the rear surface of the reflector, said spring pressing said tongues and said seats into engagement with said reflector.

2. Lamp assembly means including a concave mounting having an opening therethrough, said opening being laterally enlarged at a plurality of spaced apart places; a cylindrical socket adapted to be passed through said opening, said mounting having a plurality of spaced apart inward extensions into said opening; bayonet seats in said socket for said extensions; tongues on said socket constructed and arranged to pass through the lateral enlargements of said opening and to bear against the concave surface of the mounting in a plane common to said seats, said plane being perpendicular to the axis of the socket; and spring means pressing said tongues and seats against said mounting.

3. The structure of claim 1 wherein said seats and said tongues embody four bearing points between the socket and the reflector comprising two diametrically opposite pairs.

4. Lamp assembly means including a mounting having an opening therethrough; a socket in said opening, said socket comprising a metal cylinder having mounted in one end thereof a contact carrier embodying an insulating disc, said disc having segmental shoulder portions passing radially through said cylinder and projecting therebeyond; a tripod spring surrounding said socket and engaging said shoulder portions, said spring adapted to be tensioned against the mounting; and interengaging means between the mounting and the socket held in engagement by the pressure of said spring.

5. The structure of claim 2 in which the tongues terminate in surfaces which are in said plane, said surfaces being oblique to the tongues.

In witness whereof, I hereunto subscribe my name.

HARRY A. DOUGLAS.