March 8, 1938. H. C. DOANE ET AL 2,110,130

HEADLIGHT BULB MOUNTING

Filed Oct. 30, 1933

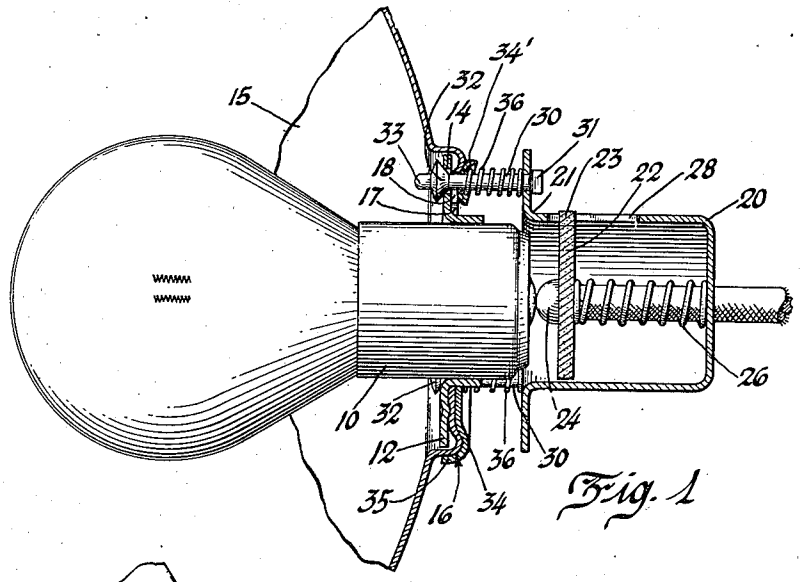


Fig. 1

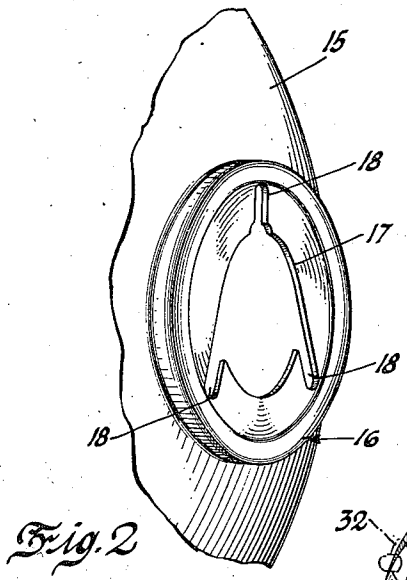


Fig. 2

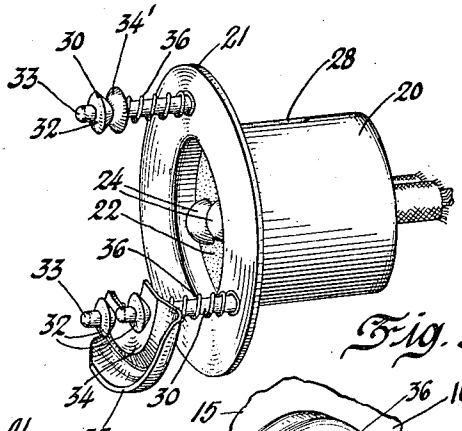


Fig. 3

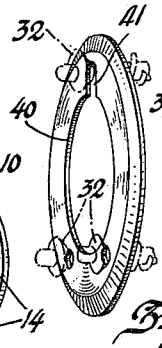


Fig. 5

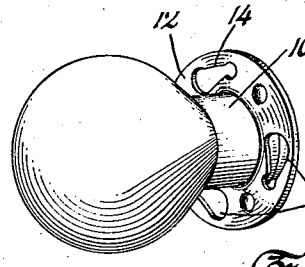


Fig. 4

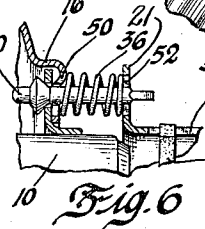


Fig. 6

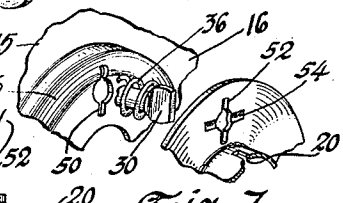


Fig. 7

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UNITED STATES PATENT OFFICE

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HEADLIGHT BULB MOUNTING

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Application October 30, 1933, Serial No. 695,776

20 Claims. (Cl. 240—41)

This invention has to do with a mounting for incandescent lamps equipped with locating rings or other devices to permit greater accuracy in location of the filament in headlamps or other apparatus. The object of the invention is the provision of a mounting for lamps of this type which will permit insertion of the lamp in the same simple way as in the conventional bayonet slot mounting, that is, simply by inserting the lamp in the opening in the reflector or other support, engaging it with securing means, preferably in the form of pins carried by the support, and then securing the lamp in position by giving it a partial rotation.

In the drawing:

Figure 1 is a vertical section showing an incandescent lamp with a locating ring mounted by means of our preferred form of mounting.

Figure 2 is a rear view of the reflector which supports the bulb.

Figure 3 is a perspective view of the assembly used to hold the bulb in the reflector and to supply it with current.

Figure 4 is a perspective view showing the bulb with its locating ring.

Figure 5 is a fragmentary view showing a modification of the washers shown in Figure 3.

Figure 6 is a fragmentary longitudinal section through a somewhat modified form of assembly.

Figure 7 is a fragmentary view showing the parts of Figure 6 disassembled.

In the drawing, 10 indicates the base of an incandescent lamp which may be provided with one or more filaments as is common in headlighting practice. The base 10 is provided with a locating ring 12 having bayonet slots 14 formed therein. The bulb is adapted to be mounted in a reflector 15 having a depressed portion 16 apertured at 17 to permit passage of the base of the bulb. The locating ring 12 is adapted to seat in the bottom of the part 16, as shown. Slots 18 extend outwardly from the aperture 17 to receive the bulb securing means, as hereinafter described.

It will be understood that the locating ring 12 is secured to the base 10 in accurate relation to the filament. This avoids errors which commonly occur in conventional lamps by reason of improper location of the filaments in the course of manufacture. With the filaments accurately located with respect to the ring 12, and the ring 12 accurately located in the reflector by seating in the depressed portion 16, it is apparent that the filaments are positioned in the reflector with extraordinary accuracy.

Our invention consists in securing the lamp in the reflector or other support in so simple a manner that the car user need but insert the bulb in position and give it a partial turn to secure it in place. The preferred construction consists of a holder 20 in the form of a cup-shaped stamping having an out-turned annular flange 21 within which is mounted an insulating disc 22 carrying a contact or contacts 24 and yieldingly pressed outwardly by means of a spring 26 which may encircle the conductor or conductors leading to the contacts. The disc 22 is provided with a projecting portion 23 engaged in a slot 23 in the cup, to prevent rotation as well as to prevent the disc from accidentally slipping out of the cup when the bulb is not in place.

The means for mounting the contact holder on the support consists of a number of circumferentially spaced pins 30 having enlarged conical heads 32 provided with pilot extensions 33, the heads 32 being seated in the slots 18 in the reflector. The pins pass through apertures in the flange 21 of the member 20 and are secured thereto by heading over their ends at 31. Springs 36 surrounding the shanks of the pins, urge the cup away from the reflector. For convenience in assembly we have shown the lowermost pins 30 connected adjacent their conical heads 32 with a washer 34, while a single washer 34' is secured to the other pin in like manner. The washer 34 facilitates assembly by holding two of the pins in proper position for engagement with the slots 18.

The washer 34 preferably is provided with a flange 35 to engage the outer annular wall of the depressed portion 16 of the reflector.

Figures 2 and 3 taken together show the parts before assembly with the reflector. It will be apparent that this assembly is accomplished by seating the conical heads in the outer ends of the slots 18, and to do this it is necessary to tilt the pins slightly inwardly toward the reflector axis, to engage the conical heads with the inner ends of the slots. They thereafter seat in the outer ends of the slots 18, and, of course, when the lamp is inserted, it prevents their escape from the slots. With this assembly made, to mount the lamp in the headlamp it is necessary only to insert the lamp with the enlarged portions of slots 14 over the pins 30, whereupon the lamp may be rotated to seat the heads 32 in the smaller ends of the slots.

Pilots 33 make it easier to effect engagement between the slots 14 and the pins, and prevent the lamp from being inserted in a cocked position.

In Figure 5 we have shown a slight modification in that in place of washers 34, 34', we have shown a single annular washer 40. With this arrangement it is necessary to provide a slot 41 to receive one of the pins, so that the pins still may be bent inwardly in assembling the parts to the reflector.

In Figures 6 and 7 we have shown a further modification, in which the pins 30 are detachably connected with the flange 21 on the cup-shaped holder 20. This makes it possible, if desired, to dispense with the washers 34, 34', and 40. With this construction it is necessary to provide key-hole slots 50 in the bottom of the depression 16 in the reflector, and corresponding key-hole slots 52 in the flange 21. This flange is likewise provided with opposed depressions 54 extending at an angle to the slot 52 to receive the heads of the pins 30.

With this construction the holder 20 is assembled with the reflector by passing the pins 30 through the slots 50 in the reflector, slipping the springs 36 over them, and then inserting the pins through the slots 52 in the flange 21 of the holder 20, and rotating the pins until their heads seat in the depressions 54. Obviously, if desired, the washers 34, 34', or 40, may be used with this construction.

While we have shown and described certain forms which our invention may assume, it will be understood that this disclosure is illustrative only, and that our invention is not limited thereto.

We claim:

1. The combination of a reflector having a central aperture and a plurality of smaller apertures arranged around the central aperture, a lamp having a base adapted to be inserted in the central aperture, locating means secured to the base adapted to seat in the reflector adjacent the central aperture and provided with circumferentially extending slots having large ends and small ends adapted to be successively brought into registration with the smaller apertures in the reflector upon rotation of the lamp about its axis, contact carrying means provided with apertures adapted to be alined with the smaller apertures in the reflector and the slots in the locating means and provided with a contact adapted to engage a contact on the base of the lamp, pins extending through said sets of alined apertures and connecting the lamp and reflector and contact carrying means, resilient means cooperating with the contact carrying means and reflector to apply tension to said pins to cause the latter to hold the locating means in engagement with the reflector, the ends of the pins which engage the slots being provided with heads tapering from the diameter of the shank to a diameter in excess of the diameter of the small ends of the slots in the locating means but less than the diameter of the large ends of the slots, said heads, when the parts are assembled with the reflector and the lamp is removed therefrom, normally protruding beyond the adjacent surface of the reflector to permit ready engagement of the pins by the slots in the locating means of the lamp, whereupon the lamp may be rotated to cause the pins to seat in the small ends of the slots and hold the parts assembled.

2. The combination of a reflector having a central aperture and a plurality of smaller apertures arranged around the central aperture, a lamp having a base adapted to be inserted in the central aperture, locating means secured to the base adapted to seat in the reflector adjacent the central aperture and provided with apertures adapted to register with the smaller apertures in the reflector, contact carrying means provided with apertures adapted to be alined with the smaller apertures in the reflector and locating means, connecting means extending through said sets of alined apertures connecting the lamp and reflector and contact carrying means, resilient means between the contact carrying means and reflector adapted to apply tension to said connecting means to cause the latter to hold the locating means in engagement with the reflector, and a contact associated with the contact carrying means adapted to engage a contact on the lamp base.

3. The combination of a reflector having a central aperture and a plurality of smaller apertures arranged around the central aperture, a lamp having a base adapted to be inserted in the central aperture, locating means secured to the base adapted to seat in the reflector adjacent the central aperture and provided with apertures adapted to register with the smaller apertures in the reflector, a contact carrier provided with apertures adapted to be alined with the smaller apertures in the reflector and locating means, pins extending through said sets of alined apertures and connecting the lamp and reflector and contact carrier, springs surrounding said pins between the reflector and contact carrier holding the locating means in engagement with the reflector, and a yieldingly mounted contact associated with the carrier adapted to engage the contact on the lamp.

4. The combination of a reflector having a depressed portion at its apex provided with a central aperture and with a plurality of smaller apertures arranged around the central aperture, a lamp having a base adapted to be inserted in the central aperture, a locating ring secured to the base adapted to be seated in said depressed portion of the reflector and provided with circumferentially extending slots having large ends and small ends adapted to be successively brought into registration with the smaller apertures in the reflector upon rotation of the lamp about its axis, a contact carrier having an annular flange provided with apertures adapted to be alined with the smaller apertures in the reflector and the slots in the ring, pins extending through said sets of alined apertures, and connecting the lamp and reflector and contact carrier, the ends of the pins which engage the slots having heads of less diameter than the large ends of the slots but of greater diameter than the small ends of the slots, resilient means between the contact carrier and reflector adapted to apply tension to said pins to cause them to clamp the locating ring in the depression in the reflector, and a contact yieldingly mounted within the contact carrier adapted to yieldingly engage the contact on the lamp.

5. The combination of a reflector having a depressed portion at its apex provided with a central aperture and with a plurality of smaller apertures arranged around the central aperture, a lamp having a base adapted to be inserted in the central aperture, a locating ring secured to the base adapted to be seated in said depressed portion of the reflector and provided with circumferentially extending slots having large ends and small ends adapted to be successively brought into registration with the smaller apertures in the reflector upon rotation of the lamp about its axis,

a contact carrier having an annular flange provided with apertures adapted to be alined with the smaller apertures in the reflector and the slots in the ring, pins extending through said sets of alined apertures, and connecting the lamp and reflector and contact carrier, the ends of the pins which engage the slots having heads of less diameter than the large ends of the slots but of greater diameter than the small ends of the slots, resilient means between the contact carrier and reflector adapted to apply tension to said pins to cause them to clamp the locating ring in the depression in the reflector, a contact yieldingly mounted within the contact carrier adapted to yieldingly engage the contact on the lamp, and annular means connecting the free ends of a plurality of said pins for holding them in properly spaced relation to engage a plurality of said sets of apertures.

6. The combination of a reflector having a depressed portion at its apex provided with a central aperture and with a plurality of notches extending from the central aperture, a lamp having a base adapted to be inserted in the central aperture, a locating ring secured to the base adapted to be seated in said depressed portion of the reflector and provided with circumferentially extending slots having large ends and small ends adapted to be successively brought into registration with the notches in the reflector upon rotation of the lamp about its axis, a cup-shaped contact carrier having an annular flange provided with apertures adapted to be alined with the notches in the reflector and the slots in the ring, headed pins extending through said sets of alined openings and connecting the lamp and reflector and contact carrier, the heads being of less diameter than the large ends of the slots but of greater diameter than the small ends of the slots, resilient means between the contact carrier and reflector adapted to apply tension to said pins to cause them to clamp the locating ring in the depression in the reflector, and a contact yieldingly mounted within the contact carrier adapted to yieldingly engage a contact on the lamp.

7. The combination of a reflector having a depressed portion at its apex provided with a central aperture and with a plurality of smaller apertures arranged around the central aperture and communicating therewith, a lamp having a base adapted to be inserted in the central aperture, a locating ring secured to the base adapted to be seated in said depressed portion of the reflector and provided with circumferentially extending slots having large ends and small ends adapted to be successively brought into registration with the smaller apertures in the reflector upon rotation of the lamp about its axis, a cup-shaped contact carrier having an annular flange provided with apertures adapted to be alined with the smaller apertures in the reflector and the slots in the ring, pins extending through said sets of alined apertures, said pins being headed at opposite ends so as to connect the lamp and reflector and contact carrier, the heads of the pins which engage the slots being of less diameter than the large ends of the slots but of greater diameter than the small ends of the slots, coil springs surrounding the pins between the reflector and contact carrier and serving to yieldingly clamp the lamp locating ring in the depression in the reflector, and a contact yieldingly mounted within the contact carrier adapted to engage a contact on the lamp.

8. The combination of a reflector having a depressed portion at its apex provided with a central aperture and with a plurality of smaller apertures arranged around the central aperture and communicating therewith, a lamp having a base adapted to be inserted in the central aperture, a locating ring secured to the base adapted to be seated in said depressed portion of the reflector and provided with circumferentially extending slots having large ends and small ends adapted to be successively brought into registration with the smaller apertures in the reflector upon rotation of the lamp about its axis, a cup-shaped contact carrier having an annular flange provided with apertures adapted to be alined with the smaller apertures in the reflector and the slots in the ring, pins extending through said sets of alined apertures, said pins being headed at opposite ends so as to connect the lamp and reflector and contact carrier, the heads of the pins which engage the slots being of less diameter than the large ends of the slots but of greater diameter than the small ends of the slots, coil springs surrounding the pins between the reflector and contact carrier and serving to yieldingly clamp the lamp locating ring in the depression in the reflector, a contact yieldingly mounted within the contact carrier adapted to engage a contact on the lamp, and means associated with a plurality of said pins for holding them in properly spaced relation to engage a plurality of said sets of apertures.

9. In a fixed focus lamp assembly, the combination with a concave reflector provided with a central recess, and a lamp having a positioning flange engaging said recess and provided with a plurality of segmental slots in said flange, of a contact carrier detachably engaging the rear of said reflector, said carrier comprising two relatively movable members, a spring between said members, and headed pins connecting said members and limiting the relative movement thereof under the tension of said spring, the forward ends of said pins being adapted to pass through registering apertures in said reflector into operative engagement with the slots in said flange.

10. In a lamp assembly, the combination of a concave reflector, a lamp having a securing flange engageable with said reflector, a contact carrier engaging the rear of said reflector, said carrier comprising two relatively movable members, a spring between said members, and headed pins connecting said members and limiting the relative movement thereof under tension of said spring, the forward ends of said pins being adapted to pass through said reflector into operative engagement with said flange, thereby holding said carrier and said lamp in firm engagement with said reflector.

11. In a fixed focus lamp assembly, the combination with a concave reflector provided with a central recess, and a lamp having a positioning flange engaging said recess and provided with a plurality of segmental slots in said flange, of pressing means, detachably engaging said reflector in rear thereof, for pressing said flange into said recess, said pressing means comprising two relatively movable members, a spring between said members, and headed pins connecting said members and limiting the relative movement thereof under the tension of said spring, the forward ends of said pins being adapted to pass through registering apertures in said reflector into operative engagement with the slots in said flange.

12. In a lamp assembly, the combination of a

concave reflector, a lamp having a securing flange engageable with said reflector, pressing means, engaging the rear of said reflector, said pressing means comprising two relatively movable members, a spring between said members, and headed pins connecting said members and limiting the relative movement thereof under tension of said spring, the forward ends of said pins being adapted to pass through said reflector into operative engagement with said flange, thereby holding said means and said lamp in firm engagement with said reflector.

13. A unitary device for connecting an incandescent electric lamp to a mounting, comprising: a carrying member; a plurality of projections swingably carried by said carrying member, normally extending in a direction transverse to the general plane of said carrying member; said projections having lateral extensions at their free ends; and resilient means for biasing said projections into a position in which they have said normal direction, and for biasing said lateral extensions away from said carrying member.

14. In combination: a reflector having a central aperture and a plurality of smaller apertures arranged around said central aperture; a lamp bulb having a base adapted to be inserted in said central aperture; locating means provided on said base, adapted to seat in said reflector adjacent said central aperture; said locating means being provided with circumferentially extending compound apertures having large portions and small portions spaced circumferentially; said compound apertures being so disposed that their circumferential locus is adapted to intersect said smaller apertures; and means cooperable with said bulb to connect the same to said reflector and to make electrical contact with said bulb, said means including parts extending through said smaller apertures and said compound apertures, means for applying tension to said parts to cause said parts to hold said locating means in engagement with said reflector, and a contact adapted to engage a contact on said bulb, said parts being provided with enlarged heads normally protruding beyond the adjacent surface of said reflector and adapted to pass through said large portions but not through said small portions, said enlarged heads including means whereby, when said large portions are passed over said enlarged heads and said bulb is rotated, said heads will become seated in said small portions.

15. In combination: a reflector having a central aperture and a plurality of smaller apertures arranged around said central aperture; a lamp bulb having a base adapted to be inserted in said central aperture; locating means provided on said base, adapted to seat in said reflector adjacent said central aperture; said locating means being provided with apertures adapted to register with said smaller apertures; and means cooperable with said bulb to connect the same to said reflector and to make electrical contact with said bulb, said means including parts extending through said registering apertures, means for applying tension to said parts to cause said parts to hold said locating means in engagement with said reflector, and a contact adapted to engage a contact on said bulb.

16. In combination: a reflector having a depressed portion at its apex provided with a central aperture and with a plurality of smaller apertures arranged around said central aperture; a lamp bulb having a base adapted to be inserted in said central aperture; a locating ring provided on said base, adapted to be seated in said depressed portion of said reflector; said ring being provided with circumferentially extending compound apertures having large portions and small portions spaced circumferentially; said compound apertures being so disposed that their circumferential locus is adapted to intersect said smaller apertures; and means cooperable with said bulb to connect the same to said reflector and to make electrical contact with said bulb, said means including an annular flange having associated therewith parts extending through said smaller apertures and said compound apertures, means for applying tension to said parts to cause said parts to clamp said locating ring in said depression in said reflector, and a contact adapted to engage a contact on said bulb.

17. A unitary device for connecting an incandescent electric lamp to a mounting, comprising: a carrying member; a plurality of projections carried by said carrying member and extending transversely to the general plane of said carrying member; said projections each having a lateral extension at its free end; a washer member on said projections between said lateral extensions and said carrying member; and resilient means biasing said washer member toward said lateral extensions.

18. A unitary device for connecting an incandescent electric lamp to a mounting, comprising: a plurality of pins each having a shank and a head, a carrying member having a plurality of apertures through which said shanks are respectively disposed so that said pins extend in a direction transverse to the general plane of said carrying member; a washer member on said shanks between said carrying member and said heads; resilient means acting on said washer member for biasing said heads away from said carrying member; and means for limiting movement of said heads away from said carrying member.

19. In combination: an incandescent electric lamp having a base, and having an apertured lateral extension on said base; an apertured mounting for said lamp; and a permanently integral unitary device, constructed and arranged to detachably connect said lamp to said mounting; said device including a plurality of pins constructed and arranged to extend through said apertured mounting and through said apertured lateral extension on said base, each pin having a shank and each also having a head constructed and arranged to engage said lateral extension on said lamp base; said unitary device including also a carrying member for said pins having a plurality of apertures through which said shanks are respectively disposed so that said pins extend transversely to the general plane of said mounting, said unitary device including also resilient means constructed and arranged to press said heads against said lateral extension on said lamp base to press said lateral extension against said mounting; and said unitary device and said mounting being relatively so constructed and arranged that said device may be applied to and separated from said mounting as a unit, without disassembly of said unitary device.

20. In combination: an incandescent electric lamp having a base; an apertured mounting for said lamp; means for connecting said lamp to said mounting, including, an apertured lateral extension on said lamp base, a carrying member, a plurality of projections unitarily carried by said carrying member and so carried that said projections extend transversely to the general plane of

said mounting through said apertured mounting and through said apertured lateral extension on said lamp base, said projections each having a lateral extension at its free end constructed and arranged to engage said extension on said lamp base, a washer member on said projections between said carrying member and said lateral extensions on said projections, and resilient means, acting on said washer member and said carrying member, so constructed and arranged that said carrying member is biased away from said mounting and said washer member is biased toward said mounting to press said lateral extension on said lamp base against said mounting.

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