Sept. 9, 1952 R. K. BRAUNSDORFF 2,610,290

PREFOCUSED HEAD LAMP BULB MOUNTING

Filed Dec. 18, 1948

Fig. 1.

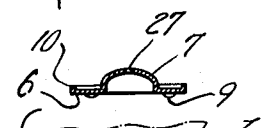


Fig. 2.

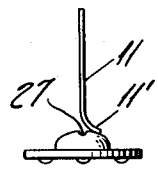


Fig. 3.

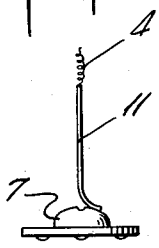
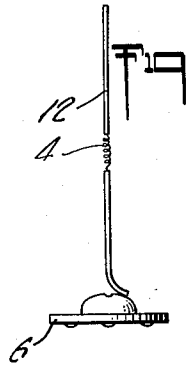


Fig. 4.



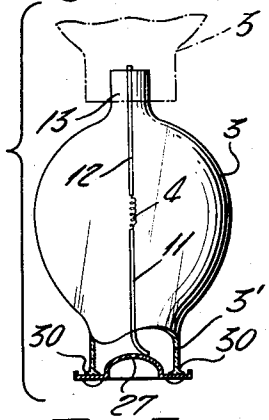


Fig. 5.

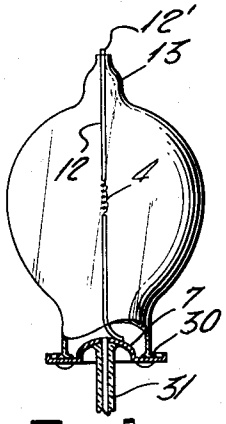


Fig. 6.

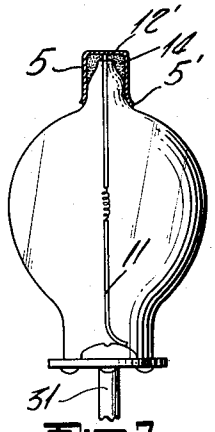


Fig. 7.

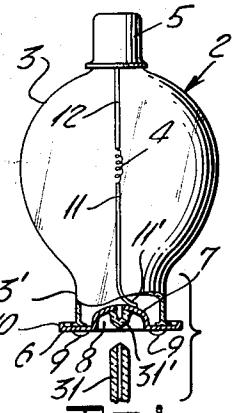


Fig. 8.

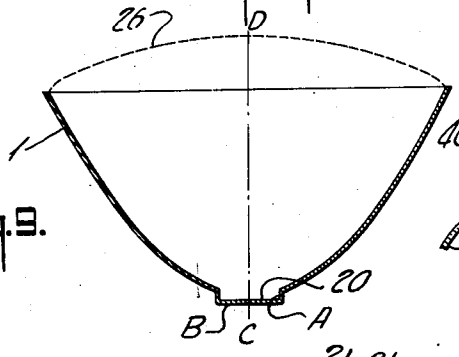


Fig. 9.

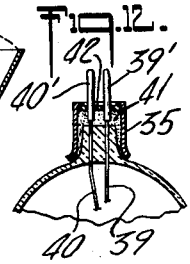


Fig. 12.

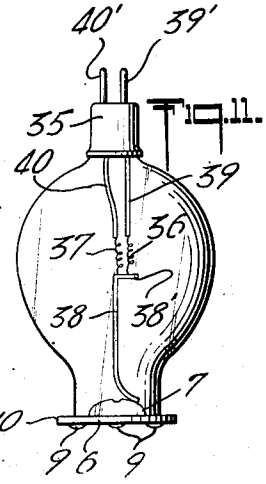


Fig. 11.

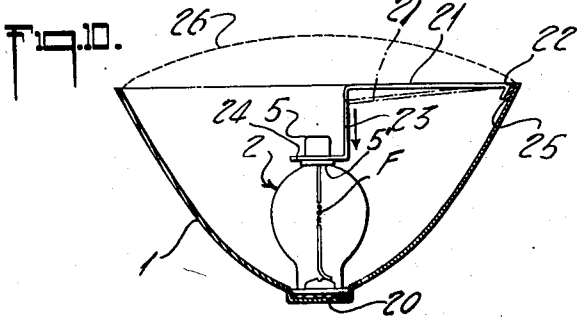


Fig. 10.

INVENTOR
REGINALD K. BRAUNSDORFF
BY
Bartlett, Eyre, Keelr Weymouth
ATTORNEYS

Patented Sept. 9, 1952 2,610,290

UNITED STATES PATENT OFFICE

2,610,290

PREFOCUSED HEAD LAMP BULB MOUNTING

Reginald K. Braunsdorff, East Orange, N. J., assignor to Tung-Sol Lamp Works, Inc., Newark, N. J., a corporation of Delaware

Application December 18, 1948, Serial No. 66,009

4 Claims. (Cl. 240—41)

1

This invention relates to electric projector lamps as, for example, head lamps for motor vehicles although the invention has other applications.

One object of the invention is a novel and improved electric projector lamp unit.

A further object of the invention is a novel and improved electric projector lamp unit of either the single or multifilament type which is characterized by its simplicity in construction and assembly, by its efficiency in projection, by the precision mounting of the incandescent lighting source, and by low cost of manufacture.

Further objects of the invention will hereinafter appear.

For a better understanding of the invention reference may be had to the accompanying drawings forming a part of this application wherein

Figs. 1 to 8 are views schematically illustrating steps in the manufacture of a lamp embodying the invention;

Fig. 9 is a sectional view of a reflector element of the invention;

Fig. 10 is a schematic sectional view of a lamp unit embodying the invention;

Fig. 11 illustrates a modification; and

Fig. 12 is a sectional view through one end of the lamp bulb.

In certain types of conventional projector lamps and particularly of the metallic reflector type, the electric incadescent lamp bulb and the reflector form separate units which are often sold separately and are required to be assembled by the manufacturer of the automobiles upon which the head lamps or projectors are to be mounted or by other users of the projector lamps. There are a number of disadvantages in this conventional practice such, for example, as the necessity of buying two separate units and the assembly thereof, the difficulty of obtaining the exact desired adjustment of the lamp bulb in the reflector and the maintenance of such adjustment once it is made, and other disadvantages.

By my invention I have devised a projector unit in which the disadvantages of the conventional practice mentioned are obviated and which possesses the advantages, among others, of comparatively low cost in manufacture, durable wearing qualities and permanent precision mounting of the electric light source in the reflector.

In Fig. 9 I have illustrated a reflector 1 forming one element of the projector lamp of this invention. This reflector is of metal or any other

2

suitable or conventional material. I have also illustrated this reflector as approximating a parabolic form, but it is understood that the invention is applicable to reflectors not only of the parabolic form but other suitable forms as well as, for example, combinations of parabolic and elliptical shapes and other suitable forms such, for example, as the forms generally used in practice.

In Fig. 8 I have shown an electric incandescent lamp bulb 2 which forms another element of the projector unit of my invention. This embodiment of the incandescent bulb element of the invention comprises a bulb 3, a lighting filament 4 and an electric terminal 5. The bulb 3 is provided with a neck 3' which is fastened and sealed to a metallic disc element 6. This disc 6 has its inner portion compressed or otherwise processed to form a bulbous part 7 projecting up to a point within the neck 3' of the bulb and to form a corresponding recess 8 on the outer portion of the disc. The disc is provided on its outer surface with a multiplicity of small bosses 9, in the particular embodiment shown there being three of these bosses equally and angularly displaced from each other by 120°. Also in the particular embodiment shown the disc 6 is provided with a peened over peripheral edge 10 extending in the direction of the bulb 3. The filament 4 may be of any suitable shape or form but in the particular embodiment shown is illustrated of the straight coiled form with one end fastened to a filament mount support wire 11, and the other end fastened to a filament support wire 12, these support wires being illustrated in the particular embodiment shown as extending generally axially of the lamp bulb 3. The filament support wire 11 is welded or otherwise fastened to the disc 6, namely to the inner surface of the bulbous part 7, the lower end of the wire being bent as indicated at 11' and fastened to the disc at a point eccentrically of the center thereof. The support wire 12 is sealed at one end into the bulb 3 to form an air and pressure tight joint. For this purpose the portion of the bulb 3 opposite the neck 3' is provided with a reduced portion or protuberance 13, the latter being fused in any suitable manner about the support wire 12 at a point adjacent the outer end 12' thereof. This end 12' of the support wire 12 is electrically connected or fastened to the terminal 5 in any suitable manner. In the particular embodiment shown this terminal 5 is of a thimble or cup-like shape fitting over the protuberance 13 and having its rim 5' outwardly

spun or peened over to fit the rounded portion of the bulb 3 adjoining the protruberance 13. The thimble 5 may be mechanically fastened to the bulb 3 in any suitable manner as, for example, by means of a suitable cement 14.

The end of the neck 3' of the bulb is sealed and fastened to the disc 6 in any suitable manner as, for example, by fusing the same thereto. The disc may be of any suitable material as, for example, of one of the conventional iron, nickel, chrome alloys on the market to which the glass of the bulb 3 is readily sealable by fusing. The metallic filament support wires 11 and 12 may be of nickel or other conventional material used in the making of filament support wires.

The reflector 1 is provided on the interior and axially thereof with a recess 20, this recess being formed in any suitable manner out of the metal or other material of which the reflector is made as by pressing, molding, etc. This recess is defined by an annular surface A disposed concentrically with the axis C, D of the reflector and by a plane bottom surface B, disposed at right angles to the axis C, D. The recess surfaces A and B are formed to correspond respectively with the peripheral edge 10 of the disc 6 and the outer surface of the disc 6 or the bosses 9 formed thereon. The filament 4 is precision mounted in the bulb 3 so as to bear a predetermined relationship with the outer surface of the disc 6 and the outer surface of the peripheral edge 10 thereof so that when the lamp bulb is assembled for mounting in the reflector the filament will bear that same predetermined relationship with respect to the annular surfaces A and B. Accordingly by the precision mounting of the filament 4 in the lamp bulb 3 as described, the filament will occupy the desired position with relation to the focal point F by the mere act of assembling and fastening the lamp bulb 2 in the reflector.

Preferably the disc 6 makes a tight or pressed fit within the recess 20 in the reflector with the periphery 10 of the disc firmly and tightly engaging the annular surface A and the bosses 9 engaging the plane surface B. I have provided means however for holding the lamp bulb 2 in position even though the disc does not make a pressed fit in the recess 20. This means comprises a spring arm 21 having its fixed end 22 fastened to the reflector 1 in any suitable manner with the other end of the spring arm 21 engaging the thimble 5 of the lamp bulb 2 and biasing the lamp bulb in the direction of the arrow, namely in the direction of the axis C, D of the reflector. In the particular embodiment shown the spring arm 21 extends inwardly in a direction which is generally radial with the inner portion of the spring arm bent inwardly to form a right angle portion 23, and then bent at right angles to form a portion 24 which is generally parallel with the main body portion of the spring arm 21. The portion 24 is preferably in the form of a fork or collar which straddles or is threaded over the thimble 5 and engaging the periphery 5' thereof. Thus the lamp bulb 2 is firmly and yieldingly engaged by the arm 21 to assist in holding the lamp bulb in its permanent operative relation in the projector unit.

The fixed end 22 of the spring arm 21 is fastened to the reflector element 1 in a manner to have the arm 21 electrically insulated therefrom so that this arm 21 functions also as an electrical connection for the lamp bulb 2 with the other connection being provided between the disc 6 and the reflector 1. I have schematically illustrated at 25 an insulating means between the arm 21 and the reflector 1 and the fastening is also schematically illustrated for convenience in illustration.

The electrical connections from the arm 21 are purposely omitted since such connection or connections form no part of this invention. Similarly I have purposely omitted to illustrate any means for supporting the projector unit in the automobile or other place of use since such mounting forms no part of the present invention. I have illustrated in dotted lines at 26 a suitable cover or lens for the lamp and the details of this cover or lens and its mounting are omitted from the drawings for convenience in illustration since they form no part of the present invention.

The parts of the lamp bulb 2 may be assembled and mounted in any suitable manner. In Figs. 1 to 8 I have illustrated schematically certain of the steps which may be followed in such assembly and mounting. Fig. 1 illustrates the disc 6 which has been preformed in any suitable manner. It is provided with an exhaust opening 27, the latter in the particular embodiment shown being formed in the bulbous part 7 and centrally thereof. In Fig. 2 the filament mount support wire 11 is illustrated as having been suitably fastened as by welding, the support wire having been bent as indicated at 11' to collar the exhaust opening 27. The mounting of the filament 4 with one end fastened to the support wire 11 is shown in Fig. 3 and in Fig. 4 the other support wire 12 is illustrated as having the lower end thereof fastened to the free end of the filament 4. In Fig. 5 the disc and the filament mount are illustrated as having been assembled in the bulb 3 with the peripheral edge of the end of the neck 3' having been fused and sealed to the disc in any suitable or conventional manner, this seal being indicated at 30. Either before, simultaneously with or after the effecting of the seal 30 the support wire 12 is sealed to the bulb 3 by the melting and fusing of the outer end of the protuberance 13 to the support wire 12 at a point adjacent its projecting ends 12'. In Fig. 6 I have illustrated the attachment of a suitable exhaust tube 31 to the under side of the bulbous part 7 of the disc. This exhaust tube 31 may be of glass or any other suitable material which may be sealed to the metallic disc 6. In the particular embodiment shown I have illustrated the exhaust tube 31 as being of glass. After the fusing and sealing of the support wire 12 to the bulb 3 the thimble 5 is then fastened to the protuberance 13 of the bulb as shown in Fig. 7. In Fig. 8 I have illustrated the exhaust tube 31 as having been severed from the disc 7 after the exhaust and pressing of the bulb 3, leaving a sealed portion 31' of the exhaust tube thereof to form a permanent part of the lamp unit. The lamp bulb is sealed off at a point so as to have the portion 31' of the exhaust tube remaining completely within the recess 8 formed by the bulbous part 7. The danger of breaking the exhaust portion 31' during assembly with the reflector element of the projector unit is thereby minimized.

In Figs. 1 to 10 I have illustrated a single filament lamp while in Figs. 11 and 12 I have shown a multi-filament lamp. However, single and multi-filament projector lamps are well known and it is to be understood that the invention does not concern the number of lamp filaments but

rather a lamp structure embodying one or more filaments.

The filaments in the lamp shown in Figs. 10 and 11 are denoted by the numerals **36** and **37**. A single ground wire **38** is provided for both filaments **36** and **37** this ground wire **38** being fastened to the disc **6** as described above with respect to the first embodiment. This ground support wire **38** is provided at its end with a bent portion **38'** and the filaments **36** and **37** are fastened and electrically connected at one end with this portion **38'** of the ground support wire. The filaments **36** and **37** are provided with individual support wires **39** and **40** respectively which extend upwardly and are separately and individually sealed into the protuberance **13** of the bulb **3** as shown in section in Fig. 12. In this embodiment a sleeve **35** is fastened to the protuberance **13** in any suitable manner as by the cement **41** illustrated. These support wires **39** and **40** extend through the insulating cement **41** and are electrically connected with a pair of terminals **39'** and **40'**, respectively, these terminals being mounted in an insulating disc **42**. In this embodiment the lamp bulb may be held in its operative position in the reflector element as described with respect to the embodiment of Figs. 1 to 10 and suitable terminals purposely omitted from the drawings since they form no part of the invention may be made from the terminals **39'** and **40'** to the circuit or circuits controlling them, whereby either of the filaments **36** and **37** or both may be connected in circuit.

I claim:

1. In an electric headlamp, a metallic reflector having an axial recess formed at the rear and on the interior thereof and an electric incandescent filament lamp having the bulb thereof sealed to a closing plate member conforming to and mounted in said recess and at least one filament in the lamp bulb mounted in predetermined relation with respect to the periphery and the bottom of the plate member so as to have the filament accurately mounted at a predetermined point with respect to the focus of the reflector and spring holding means engaging the opposite end of the bulb and biasing it inwardly and holding the same in fixed position, said spring biasing and holding means forming electrical connecting means for energizing the lamp and the reflector forming a ground connection for the lamp.

2. In an electric headlamp, a reflector having an axial recess formed at the rear and on the interior thereof and an electric incandescent filament lamp having the bulb thereof sealed to a closing plate conforming to and mounted in said recess and at least one filament in the lamp bulb mounted in predetermined relation with respect to the periphery and the bottom of the plate member so as to have the filament accurately mounted at a predetermined point with respect to the focus of the reflector and spring holding means engaging the opposite end of the bulb and biasing it inwardly and holding the same in fixed position, said spring biasing and holding means being carried by the reflector and comprising a spring arm extending radially inward and having a fork engaging an electrical contact carried on the opposite end of the lamp bulb.

3. In an electric headlamp, a reflector having an axial recess formed rearwardly and on the inner surface thereof and an electric filament lamp bulb being sealed at one end to a metallic plate conforming to and mounted in said recess, at least one filament in the lamp precision mounted with respect to said plate and said bulb having a reduced outer end having a metallic sleeve thereon and functioning as a contact for the filament, and a metallic spring arm mounted at one end on the interior of the reflector near the periphery thereof and having its other end engaging said sleeve and biasing the lamp into its operative position.

4. In an electric headlamp, a reflector having an axial recess formed rearwardly and on the inner surface thereof and an electric filament lamp bulb being sealed at one end to a metallic plate conforming to and mounted in said recess, at least one filament in the lamp precision mounted with respect to said plate, spring-biasing and holding means engaging the opposite end of the bulb for holding the same in fixed position, and electrical contact means on said opposite end of the bulb serving as terminal means for the lamp, the reflector forming a ground connection for the lamp.

REGINALD K. BRAUNSDORFF.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
Re. 21,150	Lepel	July 11, 1939
1,058,442	Kenyon	Apr. 8, 1913
1,136,404	Buchanan	Apr. 20, 1915
1,675,690	Bohner	July 3, 1928
1,935,440	Found	Nov. 14, 1933
2,063,090	Geiger et al.	Dec. 8, 1936
2,219,770	Falge et al.	Oct. 29, 1940

FOREIGN PATENTS

Number	Country	Date
633,240	France	Jan. 25, 1928