

Feb. 7, 1939.

L. S. GREENMUN

2,146,181

LAMP

Filed Sept. 21, 1936

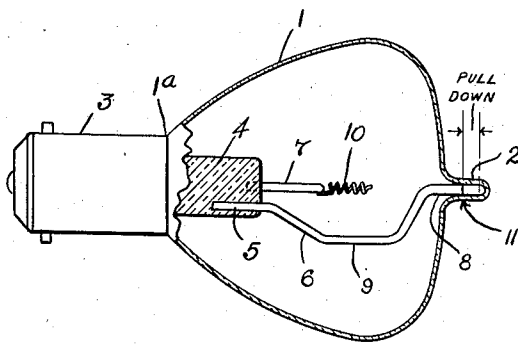


Fig. 1

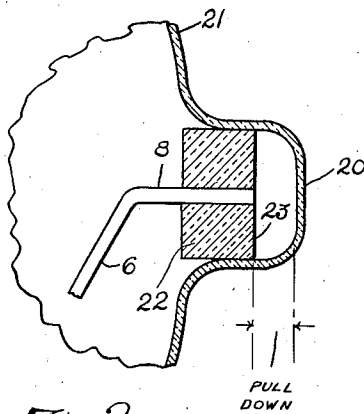


Fig. 2

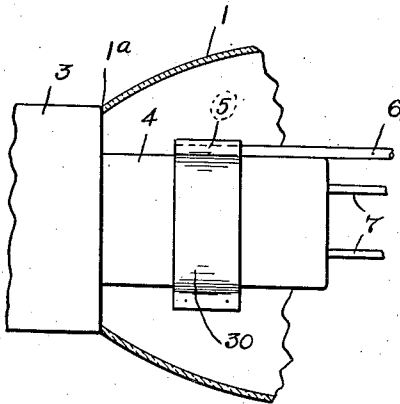


Fig. 3

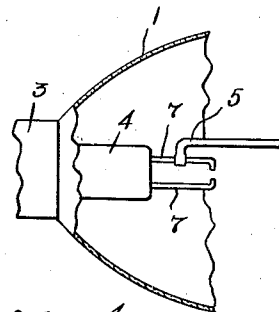


Fig. 4

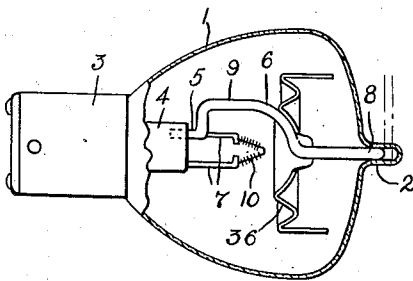


Fig. 6

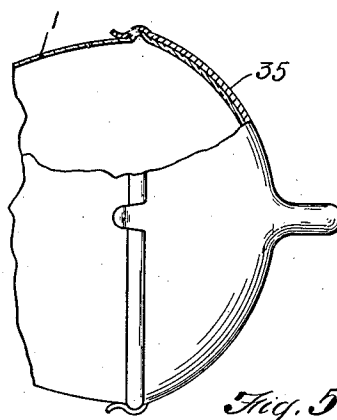


Fig. 5

INVENTOR.

Leo S. Greenmun

BY

Ray, Oberlin & Ray
ATTORNEYS.

UNITED STATES PATENT OFFICE

2,146,181

LAMP

Leo S. Greenmun, Binghamton, N. Y.

Application September 21, 1936, Serial No. 101,720

6 Claims. (Cl. 176—39)

This invention relates, as indicated, to incandescent bulbs, but has reference more particularly to bulbs for use in automobile headlamps.

In the process of manufacturing incandescent bulbs for use in automobile headlamps, it has heretofore been virtually impossible to produce, in commercial quantities and at low cost bulbs in which the filament or source of light was accurately located with reference to the bulb as a whole and with reference to the base of the bulb and the locating pins thereof. Consequently, when such bulbs are used in headlamps embodying the usual parabolic reflector, the filaments are rarely at the proper focal position within the reflector and the light rays are therefore not properly projected from the headlamp.

These difficulties have been referred to at some length in Patent No. 1,992,041, granted to Roper and Brown, in which an attempt has been made to overcome them by cementing the bulb in a socket in the reflector, thereby making it part of the reflector, the bulb being adjusted while the cement is still soft and plastic so as to bring the filament or light source in proper focus with reference to the reflector. This construction is costly and to a large extent impractical because each time that the bulb burns out, an assembly comprising a bulb and a headlamp reflector must be purchased, and at a cost of about two or three times the cost of a bulb alone. Another disadvantage of this construction is that should the bulb burn out or fail on the road, the car operator is obliged to continue to drive without lights until he reaches a garage which has in stock the special reflector and bulb assembly.

Attempts have also been made to overcome the inaccuracies in the bulb manufacture by inserting the finished bulb into a flanged mounting collar, adjusting the bulb with reference to the flange until the filament or source of light is accurately positioned with reference to the flange and then soldering the collar to the base of the bulb. This locates the filament or source of light accurately with reference to the base, but the cost of manufacture of the bulb is increased to a considerable extent and the use of a reflector having a special expensive form of mounting is necessitated.

The present invention has as its primary object the provision of a bulb for automobile headlamps which has incorporated therein means which not only assists in accurately locating the filament or light source in proper relation to the bulb as a whole and particularly to the base thereof, but which strengthens and rigidifies the

filament supporting structure within the bulb so as to preclude breakage of such structure as well as the filament during handling and use of the bulb.

Another object of the invention is to provide a bulb of the character described which is adapted for use with conventional reflectors without necessitating the use of flanged mounting collars or other external auxiliary devices for insuring accurate placement of the filament with reference to the reflector.

A further object of the invention is to provide a bulb of the character described which can be manufactured in commercial quantities at a cost not appreciably greater than the cost of manufacturing bulbs of the type now generally in use for automobile headlamps.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain structure embodying the invention, such disclosed means constituting, however, but one of various structural forms in which the principle of the invention may be used.

In said annexed drawing:

Fig. 1 is a view, partly in cross-section and partly in elevation, showing a conventional form of bulb embodying the novel features of the invention;

Fig. 2 is a view of a fragment of a bulb embodying a slightly modified form of tip;

Fig. 3 is a view of a fragment of a bulb embodying a somewhat different mounting for the filament piloting member;

Fig. 4 is a view similar to Fig. 3, but showing a different form of mounting the filament piloting member;

Fig. 5 is a view of a bulb having an auxiliary reflector mounted externally thereon;

Fig. 6 is a view of a bulb having an auxiliary reflector mounted internally thereof.

Referring to that form of the invention shown in Fig. 1, there is disclosed a bulb 1 having a hollow central tip 2, this tip being about $\frac{1}{4}$ " in length and being formed in the bulb during the process of blowing the same. In practice, no difficulty is encountered in forming the bulb with such tip portion extending axially of the bulb, and moreover, since the bulb has a shoulder 1a which seats squarely on the metallic base 3 of the bulb, no difficulty is ordinarily encountered in so cementing the bulb within the said me-

tallic base that it is coaxial with the latter. Consequently, when the bulb is cemented to the base 3, the tip 2 will be in axial alignment with the axis of said base.

5 Secured to the glass stem 4 of the filament supporting assembly, in any suitable manner, as by fusing the base end 5 thereof within such stem is a member 6, preferably formed of nickel wire, and which I term a filament piloting member.
 10 The base 5 of such member is substantially parallel with the axis of the glass stem 4 and with the filament supports 7, and the free end 8 thereof is in alignment with the axis of the stem 4 and extends into the hollow tip 2 of the bulb, having a slip fit therein. The intermediate portion 9 of this member is offset from the portions 5 and 8 and is spaced from the filament 10 of the bulb a sufficient distance to avoid being heated or otherwise affected by such filament.
 15 In the process of manufacture of the bulb, and prior to the fusion of the flared base of the glass stem 4 to the base of the bulb 1, the filament supporting assembly is subjected to a "pull down" operation, that is, it is pulled to the left as indicated in Fig. 1, in order to locate the filament at such position that it will be in proper focus when the bulb is later used in a headlamp reflector. During this "pull down" operation, the member 6 serves to pilot or guide the filament supporting assembly, so that the filament will not deviate from its central position with respect to the walls of the bulb. For this purpose, the tip 2 must be of substantial length, as stated, and the forward end 8 of the filament piloting wire must be free to slide in the tip 2 and of such length that after the "pull down" a considerable portion thereof remains in such tip, as shown, and assists in strengthening and rigidifying the filament supporting assembly so as to preclude breakage thereof as well as of the filament during subsequent handling and use of the bulb. The member 6 also assists in locating the filament in proper focal position within the bulb, as the extent of the "pull down" may be gauged by the registry of the end of the wire with a mark 11 on the tip 2 of the bulb.

20 It is thus apparent that a bulb has been provided in which the filament or light source is accurately located in relation to the bulb as a whole and particularly to the base thereof, and in which the filament supporting structure is strengthened so as to preclude breakage of such structure as well as the filament during handling and use of the bulb. It is further apparent that the bulb is adapted for use with conventional headlamp reflectors without the use of flanged mounting collars or other external auxiliary devices for insuring accurate placement of the filament with respect to the reflector, and that the bulb can be manufactured in commercial quantities at a cost not appreciably greater than the cost of manufacturing bulbs of the type now generally used in automobile headlamps.

25 In that form of the invention shown in Fig. 2, the hollow central tip 20 of the bulb 21 is of larger diameter than the tip 2 of the bulb shown in Fig. 1, and secured within and fused to the inner wall of this tip is a glass bushing 22 having a central aperture for the reception of the end 8 of the filament piloting member. In practice, the bushing may be so positioned that its outer end 23 will indicate the limit of the "pull down", in which case, the end of the member 8 will be flush with such end surface of the bushing when the pull-down has been completed.

In that form of the invention shown in Fig. 3, the base 5 of the filament centralizing member is secured to the glass stem 4 as by a metallic collar 30 which encircles such glass stem. This is desirable when the invention is to be utilized in connection with filament supporting assemblies which have already been completed.

In that form of the invention shown in Fig. 4, the base 5 of the filament piloting member is carried by and fused to one of the filament supports 7. This form of the invention may also be utilized in connection with filament supporting assemblies which have already been completed.

15 Due to the difficulties which have been experienced in manufacturing bulbs in which the filament is accurately located with reference to the bulb and base thereof, it has heretofore been impossible to use or attempt to utilize the various types of auxiliary reflectors such as have been developed for use in connection with bulbs of this type, as the use of such reflectors depends on their being properly located with reference to the filament.

20 As a result of the present invention, therefore, it becomes possible to utilize such auxiliary reflectors with confidence that the forwardly directed rays from the filament will be properly redirected to the main reflector and produce the desired screen image.

25 One of these auxiliary reflectors, designated by reference numeral 35 and designed for attachment to the outer surface of the bulb is shown in Fig. 5.

30 In Fig. 6, there is shown another type of auxiliary reflector 36, which is mounted within the bulb and, in this case, the forward end 8 of the filament piloting member may be utilized as a support for such reflector and also as a convenient means for centralizing the reflector as well as locating it accurately at a desired distance with reference to the filament.

35 Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the structure herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

40 I therefore particularly point out and distinctly claim as my invention:

1. A bulb having a central tip portion, a filament, filament supporting means, a member extending from said filament supporting means in to said tip portion of the bulb, said member functioning to guide said filament and supporting means during the bulb manufacturing operations, and means associated with said tip portion of the bulb for indicating the extent of entry of said member into said tip portion for locating the filament in proper focal position within the bulb.

60 2. A bulb having a central tip portion, filament supporting means therein, a filament supported thereby, means extending from said filament supporting means to a point within said tip portion of the bulb, the portion of said last-named means extending into said tip portion of the bulb being substantially in alignment with said filament supporting means, and means associated with said tip portion of the bulb for indicating the extent of entry of said last-named means into said tip portion for locating the filament in desired focal position within the bulb.

65 3. A bulb having a hollow central tip, filament supporting means extending into said bulb, a filament supported thereby, and a filament guid- 75

ing member disposed within said bulb and adjacent said filament, said member having a base portion substantially parallel with said filament supporting means and an end portion extending into said tip and movable in said tip during the bulb assembling operations, said member serving to centralize and locate the filament with reference to the bulb, and means associated with said bulb tip for affording visual indication of the position of said end portion within said tip for locating said filament in desired focal position within said bulb.

4. A bulb having a hollow central tip, filament supporting means extending into said bulb, a filament supported thereby, a filament centralizing member disposed within said bulb, and a reflector in focal relation with said filament carried by said member.

5. A bulb having a hollow central tip, filament supporting means extending into said bulb and including wire filament supports, a filament supported by the ends of said wire filament supports, and a single metallic member secured to and extending from at least one of said wire filament supports to a point within said hollow central tip, said member serving to centralize and locate the filament with reference to the bulb.

6. A bulb having a hollow central tip, "pull-down" indicating means associated with said tip, a filament assembly comprising a filament and filament centralizing member, said member extending into said tip, and said indicating means determining the position of said member with respect to said tip when said filament is in proper focal position within the bulb.

LEO S. GREENMUN.