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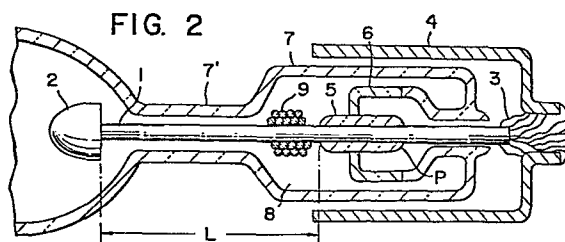
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54 A discharge lamp.

57 There is provided a short arc type rare gas discharge lamp which operates on a large current and in which a heat radiating member 9 is firmly mounted on a current supply rod 1 between a small-diametered portion 7' of a stem 7 and a glass bead portion 5, in order to lower the temperature of the glass bead portion 5, thereby to prevent breakage of the glass bead portion 5 when the length of the discharge lamp is small or is reduced.



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A DISCHARGE LAMP

The present invention relates to a discharge lamp, and more particularly, but not exclusively, to a short arc type rare gas discharge lamp which operates on a relatively large current.

Conventional discharge lamps of this aforesaid type were introduced formerly, for example, in Japanese Utility Model Publication No. 22231/61, and more recently in Japanese Patent Publication No. 26074/78.

Fig. 1 illustrates the general arrangement of an example of this type of discharge lamp. An electrode 2 is attached to the inner end of a current supply rod 1, the outer end of which is connected to a cylindrical metal base 4 through an intermediate lead 3. A sealing structure for the discharge lamp is composed of a glass bead portion 5 provided on the surface of the current supply rod 1, a graded seal glass portion 6 and a stem 7. In order to support the heavy electrode 2, a portion of the stem 7 is drawn into a small-diametered portion 7'. The current supply rod 1 and the electrode 2 are supported by the glass bead portion 5 and the small-diametered portion 7'. In Figure 1 (and 2 and 3) the small-diametered portion 7' of the stem 7, and the adjacent portion of the current supply rod 1, are shown for the sake of clarity to be largely spaced apart. In practice, however, they are maintained in very closely spaced relation and in loose contact with each other. In this way the current supply rod 1 may thermally expand relatively freely, whilst at the same time being supported.

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The small-diametered portion 7' is formed by drawing the stem 7 after heating it by means of a burner. In this case, a space 8 is provided in the stem 7 between the small-diametered portion 7' and the glass bead portion 5 so as not to exert a bad thermal influence on the latter. During operation of the discharge lamp, the current supply rod 1 is heated by Joule heat or the like, resulting in the glass bead portion 5 being also heated.

If one wishes to reduce or keep short the length of a discharge lamp of the above construction, it is important how the temperature of the thermally weak glass bead portion 5 is lowered. It is general practice in the prior art to increase the distance L between the glass bead portion 5 and the electrode 2, which of course defeats the initial object of reducing or keeping short the length of the lamp. Alternatively, one may provide a radiating hole in the base 4 or employ an adhesive binder of good thermal conductivity for attaching the base 4 to the stem. However, none of such conventional methods is satisfactory.

According to the present invention there is provided a discharge lamp in which a heat-radiator member is mounted on a current supply rod between a small-diametered portion of a stem and a bead portion.

A preferred embodiment of the present invention provides a short arc type rare gas discharge lamp which is designed to effectively keep low the temperature of its glass bead portion whilst at the same time permitting the distance between the glass bead portion and the electrode to be reduced or kept short.

For a better understanding of the invention and to show how it may be put into practice, reference will now be made by way of example to the accompanying drawing in which:

Fig. 1 is a sectional view showing the principal part of a conventional discharge lamp;

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Fig. 2 is a sectional view illustrating the principal part of an embodiment of discharge lamp according to the present invention; and

Fig. 3 is a sectional view illustrating the principal part of another embodiment of the present invention.

Fig. 1 has already been described in detail.

Fig. 2 is explanatory of an embodiment of the present invention, the major part of which is identical with the prior art embodiment of Fig. 1. Reference numeral 9 indicates a tungsten wire closely wound in two layers on the current supply rod 1 between the glass bead portion 5 and the small-diametered portion 7' of the stem 7.

Fig. 3 is explanatory of another embodiment of the present invention. Reference numeral 10 designates a cylindrical metal member firmly fixed on the current supply rod 1 between the glass bead portion 5 and the small-diametered portion 7'. The cylindrical metal member 10 has formed on the outer peripheral surface thereof disc-shaped radiation fins 10'.

In either case, heat conveyed to the tungsten wire 9 or the radiation fins 10' is effectively radiated in the space 8. For example, in the case of a xenon short arc lamp with a rated power consumption of 2 Kw, the temperature of the glass bead portion could be lowered about 60°C. The temperature measurement point is indicated by P.

As applied specifically to the illustrated embodiments, the present invention employs lowering the temperature of the glass bead portion 5 by making positive use of the space 8 which is formed in the vicinity of the glass bead portion 5, and by mounting a radiating member 9 or 10" on the current supply rod 1 between the glass bead portion 5 and the small-diametered portion 7' of the stem 7. As a result of this, there may be provided a discharge lamp in which the distance L between the electrode 2 and the glass bead portion 5

may be smaller than in a prior art discharge lamp. In the presently illustrated embodiments, L is drawn equal in all cases merely for convenience.

Furthermore, since the radiating member 9
5 or 10' is disposed in space 8 which has not been utilized in the past, the overall length of the lamp may be reduced or kept short with practically no necessity of changing the external appearance and the shape of the lamp. Accordingly, the present invention may be of great
10 utility in practical use.

It will be apparent that many modifications and variations may be effected without departing from the scope of the novel concepts of this invention as defined by the following claims.

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Claims:

1. A discharge lamp in which a heat-radiator member is mounted on a current supply rod between a small-diametered portion of a stem and a bead portion.
2. A discharge lamp according to claim 1, wherein the heat-radiator member is a metal member which is wound on the current supply rod in the manner of a coil.
3. A discharge lamp according to claim 1, wherein the heat-radiator member is a cylindrical metal member having radiation fins on its outer peripheral surface.
4. A discharge lamp according to any preceding claim, wherein said bead is a glass bead.
5. A discharge lamp according to any preceding claims, which is a short arc type rare gas discharge lamp.

FIG. 1

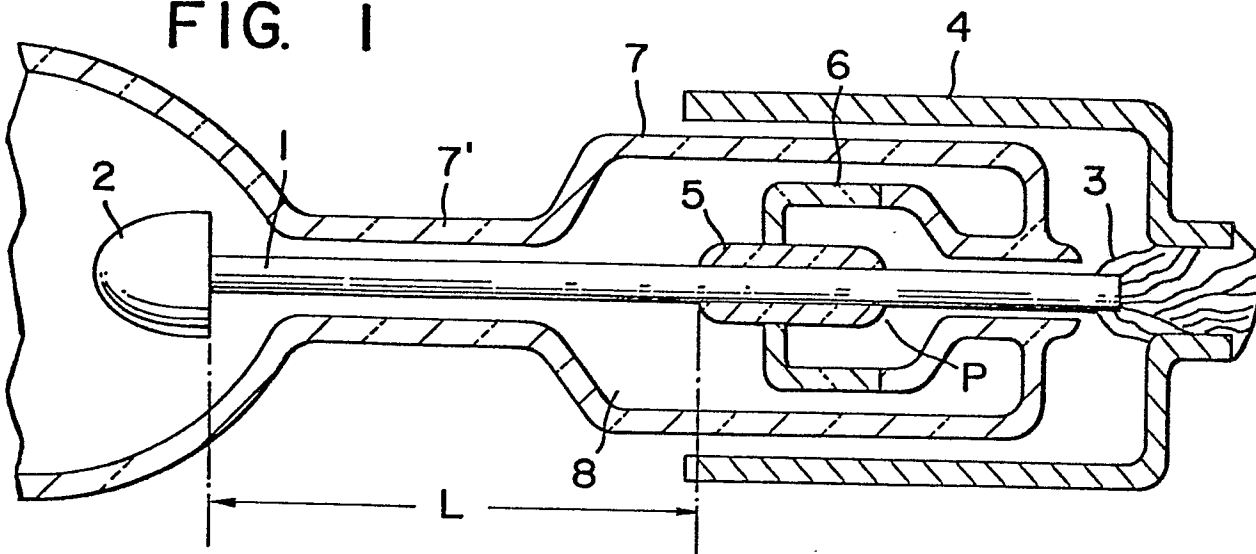


FIG. 2

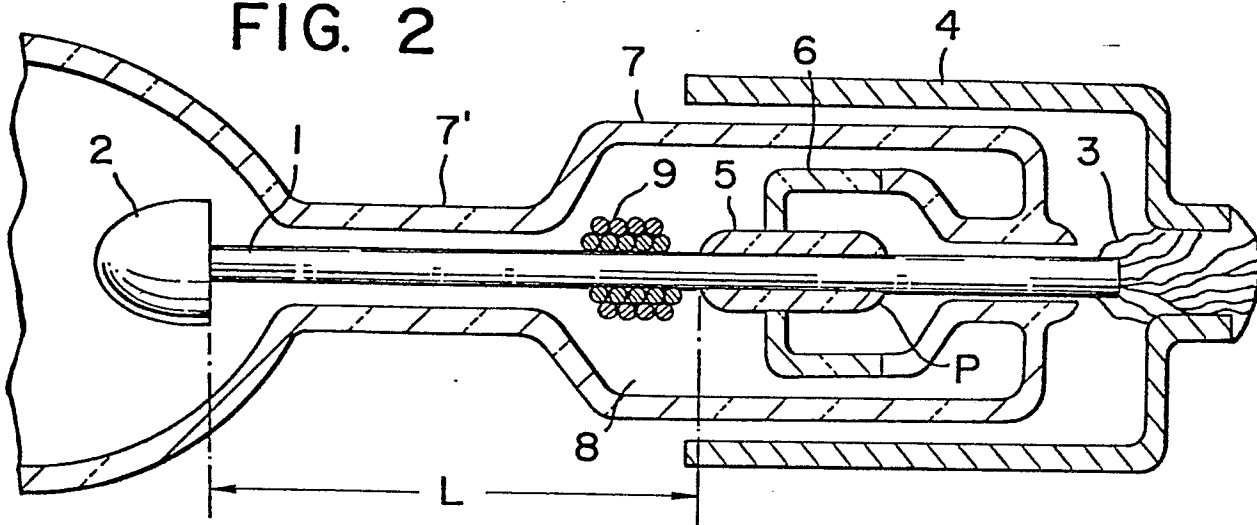


FIG. 3

