

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



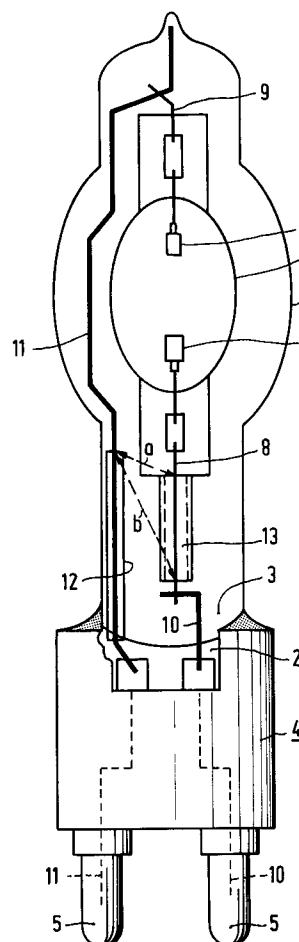
(11) Publication number:

0 517 304 A2

(12)

EUROPEAN PATENT APPLICATION(21) Application number: **92201518.5**(51) Int. Cl.⁵: **H01J 61/00**(22) Date of filing: **29.05.92**(30) Priority: **04.06.91 EP 91201374**(43) Date of publication of application:
09.12.92 Bulletin 92/50(84) Designated Contracting States:
BE DE FR GB IT NL(71) Applicant: **N.V. Philips' Gloeilampenfabrieken**
Groenewoudseweg 1
NL-5621 BA Eindhoven(NL)(72) Inventor: **Vervoort, Josef Jan-Baptist Maria**
c/o INT. OCTROOIBUREAU B.V. Prof.
Holstlaan 6
NL-5656 AA Eindhoven(NL)(74) Representative: **Rooda, Hans et al**
INTERNATIONAAL OCTROOIBUREAU B.V.
Prof. Holstlaan 6
NL-5656 AA Eindhoven(NL)(54) **High-pressure gas discharge lamp.**

(57) The high pressure discharge lamp has a discharge vessel (6) within an outer bulb (1). A portion of a current supply conductor (11) is enveloped by an insulator (12) at the area where said conductor issues from the seal (2) of the outer bulb (1). An adjacent current lead (8) is enveloped by an insulator (13) which is fastened to the discharge vessel (6) where said conductor leaves the discharge vessel. Flash-over within the outer envelope upon the application of a high voltage to re-ignite the lamp in the hot state is thereby counteracted.

**EP 0 517 304 A2**

The invention relates to a high-pressure gas discharge lamp comprising:

an outer bulb which is closed in a vacuum-tight manner and has a seal at a first end thereof;

a lamp cap which is provided with contacts and in which the first end of the outer bulb is fixed;

a discharge vessel which is closed in a vacuum-tight manner and is provided with an ionizable filling and with electrodes which are connected to a first and a second current lead, which leads issue from the discharge vessel adjacent to and remote from the first end of the outer bulb, respectively;

a first and a second current supply conductor which are connected to respective contacts of the lamp cap and which extend through the seal at the first end of the outer bulb to the first and second current lead, respectively, a portion of the second current supply conductor being enveloped by an insulator inside the outer bulb, which insulator is anchored in the seal of the outer bulb.

Such a high pressure gas discharge lamp is known from EP 0 381 279.

It has been found that it is not impossible in the known lamp, depending on its geometry, for flash-over to take place between the current supply conductors in the outer bulb when a high voltage is applied for igniting the lamp while it is still hot owing to a previous burning period. The lamp cannot be ignited then until the moment at which, after further cooling down, a lower voltage is sufficient for ignition. The geometry of the lamp may be determined by various factors, among them the power to be consumed by the lamp.

The invention has for its object to provide a high pressure discharge lamp of the kind described in the opening paragraph in which the risk of flash-over in the outer bulb is counteracted.

According to the invention, this object is realized in that the first current lead is enveloped by an insulator at the area where it issues from the discharge vessel, which insulator is fastened to the discharge vessel.

Owing to this measure, the spacing between bare portions of the second current supply conductor on the one hand and of the first current lead on the other hand is greater than in the absence of the insulator around said current lead. The risk of an applied voltage leading to flash-over instead of causing the lamp to ignite is thus considerably reduced.

The relevant insulator, for example a ceramic tube, may be fixed to the discharge vessel by means of, for example, an adhesive, for example with an enamel. Alternatively, a glass insulator may be used. A glass, for example quartz glass, tube may be connected to the discharge vessel, for example by means of fusion.

An embodiment of the lamp according to the invention is shown in side elevation in the drawing.

The high-pressure gas discharge lamp in the drawing has a vacuum-tight outer bulb 1 with a seal 2 at a first end 3. A lamp cap 4 provided with contacts 5 is fixed around the first end of the outer bulb. A discharge vessel 6 is closed in a vacuum-tight manner and provided with an ionizable filling and with electrodes 7 which are connected to a first 8 and a second 9 current lead, which issue from the discharge vessel adjacent to and remote from the first end 3 of the outer bulb 1, respectively, said discharge vessel being accommodated in the outer bulb. A first 10 and a second 11 current supply conductor, which are connected to respective contacts 5 of the lamp cap 4, extend through the seal 2 at the first end 3 of the outer bulb 1 to the first 8 and second 9 current lead. A portion of the second current supply conductor 11 in this case is enveloped by an insulator 12 inside the outer bulb 1, which insulator is anchored in the seal 2 of the outer bulb 1.

The first current lead 8 is enveloped by an insulator 13, which is fastened to the discharge vessel 6, at the area where it issues from the discharge vessel 6. The insulator in the Figure is a quartz glass tube which is fused to the discharge vessel.

In the Figure, the spacing between bare portions of the second current supply conductor 11 and the first current lead 8, which would be a without the measure according to the invention, is increased to b. As a result, flash-over between said conductors is prevented also during lamp re-ignition in the hot state. A similar wide spacing between bare portions is not possible in the geometry of the known lamp, since the insulator 12 cannot extend to beyond the bend in the second current supply conductor 11. The use of a much longer insulator 12, moreover, would involve the risk of fracture thereof and complications in the manufacture of the lamp.

Instead of quartz glass, a glass with an SiO₂ content of, for example, 95% by weight or more, or hard glass could be used for the insulator 13.

The discharge vessel 6 may have a filling of, for example, a rare earth bromide, mercury, mercury bromide and/or mercury iodide, cesium iodide and rare gas, for example, argon/krypton with a pressure of, for example, 80 mbar. The lamp may have a spacing between the electrodes of, for example, more than 15 mm, for example 20 mm or more, and consume a power of a few kW, for example 4000 W. In the cold state, the lamp may be capable of ignition at, for example, 2000 V, but when the pressure in the lamp is comparatively high as a result of recent extinction of the lamp, a voltage of several tens of kV, for example 65 kV,

may be necessary for igniting the lamp anew.

Claims

1. A high-pressure gas discharge lamp comprising: 5
 - an outer bulb (1) which is closed in a vacuum-tight manner and has a seal (2) at a first end (3) thereof;
 - a lamp cap (4) which is provided with contacts (5) and in which the first end (3) of the outer bulb (1) is fixed; 10
 - a discharge vessel (6) which is closed in a vacuum-tight manner and is provided with an ionizable filling and with electrodes (7) which are connected to a first (8) and a second (9) current lead, which leads issue from the discharge vessel adjacent to and remote from the first end (3) of the outer bulb (1), respectively; 15
 - a first (10) and a second (11) current supply conductor which are connected to respective contacts (5) of the lamp cap (4) and which extend through the seal (2) at the first end (3) of the outer bulb (1) to the first (8) and second (9) current lead, respectively, a portion of the second current supply conductor (11) being enveloped by an insulator (12) inside the outer bulb (1), which insulator (12) is anchored in the seal (2) of the outer bulb (1), 20
 - characterized in that the first current lead (8) is enveloped by an insulator (13) at the area where it issues from the discharge vessel (6), which insulator (13) is fastened to the discharge vessel. 25
2. A high-pressure gas discharge lamp as claimed in Claim 1, characterized in that the first current lead (8) is enveloped by a glass tube (13) which is fused to the discharge vessel (6). 30

35

45

50

55

