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(54) **High-pressure discharge lamp.**

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Description

The invention relates to a high-pressure discharge lamp comprising

- a glass lamp vessel provided with a seal having mutually opposing first and second major faces, mutually opposing smaller side faces, and an end face,
- a pair of electrodes and an ionizable filling in the lamp vessel,
- current supply conductors which extend from the pair of electrodes through the seal at a distance from one another and which issue from the end face of said seal to the exterior.

Such a discharge lamp is known from GB 2,100,404-A.

The known lamp is started with a voltage pulse of several kV, but when started in the hot condition it requires an even higher voltage pulse.

To prevent flash-over taking place along the surface of the seal from one current supply conductor to the other, the current supply conductors are each surrounded by a glass tube which is fused to the seal at the end face thereof. Thus the creepage path between the exposed portions of the said conductors is lengthened.

The known lamp has the disadvantage that the glass tubes are susceptible to fracture. Another disadvantage is that the application of the tubes is difficult and leads to rejects. Especially when the current supply conductors are close together with the object of obtaining a lamp having the smallest possible dimensions, it is difficult to avoid the tube provided first, being damaged during the application of the second tube.

The invention has for its object to provide a lamp of the kind described in the opening paragraph, which is suitable for being ignited on a high-voltage pulse and which is of a simple construction.

According to the invention, this object is achieved in that the seal comprises a recess which runs from the first major face through to the second major face and extends from the end face between the current supply conductors.

Thanks to the recess, the distance between the exposed portions of the current supply conductors measured along the surface of the seal, is increased. This means that the creepage path between the said conductors is also increased, and the risk of flash-over is reduced.

The recess can be easily obtained, while the resistance to fracture of the lamp remains high. The recess may be obtained by providing a saw cut in the seal. In proportion as the recess is wider, however, a larger number of saw cuts has to be made. The saw cuts leave their tracks in the form of a rough surface of the boundary of the recess.

In a favourable embodiment, the boundary of the recess has at least in part a mirroring surface. This embodiment can be realised very easily. In fact, the recess in the seal can be obtained by processing the seal at a high temperature and removing glass at the area where the recess is to be created. This operation may in fact take place by means of profiled pinching blocks, for example, simultaneously with the formation of the seal itself when the relevant glass is softened by a rise in temperature. The pinching blocks may be so shaped and dimensioned in this case, one having a local elevation and the other having a local depression, that the softened glass present at the area of the recess to be formed is pressed away from the seal.

A disadvantage of this, however, is that the pinching blocks are subject to comparatively strong wear during this, since they have to fit together fairly accurately.

It is particularly favourable if the boundary of the recess has only in part a mirroring surface. In this embodiment, the lamp may be obtained very easily through the use of pinching blocks having a long operational life, since they do not or do not substantially have to touch one another. These pinching blocks may be given a local elevation, which leads to a depression at the area where the recess is to be formed. The recess is then easily obtained by sawing into the seal at the area of the depression along the current supply conductors and to break out the glass from between the saw cuts, a mirroring fracture surface being created transverse to the saw cuts and consequently transverse to the direction in which the current supply conductors extend. The boundary of the recess is then mirroring in as far as it has been obtained by the pinching blocks and by breaking out, and dull and coarse in as far as it has been obtained by sawing.

The lamp vessel may simultaneously be the discharge vessel, or alternatively it may surround the discharge vessel as an envelope. The lamp may be a high-pressure mercury discharge lamp, with rare gas as a starting gas and possibly comprising metal halides as a filling constituent. Alternatively, however, the lamp may be a high-pressure sodium discharge lamp or, for example, a high-pressure xenon discharge lamp.

The lamp may be used with the current supply conductors acting as contact pins for making contact with a lampholder. Alternatively, the lamp may be held with its seal in a lamp cap, for example made of ceramic material. This lamp cap may have a slot which extends from the base portion of the lamp cap between the current supply conductors of the lamp, as is the case with the lamp according to the cited GB 2,100,404-A. In that case the current supply conductors are separated from one another in the lamp cap by this slot. Even if the lamp is inserted in a lampholder having an upright wall which enters the slot in the

lamp cap, flash-over between the current supply conductors at very high voltages is not impossible.

In a favourable embodiment, the seal of the lamp vessel is secured in a cavity of a ceramic lamp cap which has a base portion at which contact pins are present, which are connected to the current supply conductors, from which base portion extends a slot into the lamp cap between the current supply conductors, the slot being separated from the interior of the lamp cap by walls which are included in the recess in the seal. The shape of the lamp cap and the recess in the seal of the lamp vessel together provide a spatial separation of exposed portions of the current supply conductors inside the lamp cap, so that flash-over in a capped lamp is effectively counteracted.

This and other aspects of the lamp according to the invention are described and explained with reference to the drawing, in which

Fig. 1 is a first embodiment of a lamp in side elevation,

Fig. 2 is a second embodiment of a lamp in side elevation with a lamp cap in longitudinal section.

In Fig. 1, the high-pressure discharge lamp comprises a glass lamp vessel 1, for example of quartz glass or hard glass, with a seal 2, a pinched seal in the Figure. The seal 2 has a first 3 and a second 4 major face opposing one another, mutually opposing smaller side faces 5, 6, and an end face 7.

Inside the lamp vessel 1 there are a pair of electrodes 8 and an ionizable filling, for example of rare gas, mercury, and metal halides.

Current supply conductors 9, 10 run at a distance from one another from the pair of electrodes 8 through the seal 2 and issue from the end face 7 thereof to the exterior.

The seal 2 has a recess 11 which runs from the first major face 3 up to the second major face 4, and which extends from the end face 7 between the current supply conductors 9, 10.

The recess 11 has a boundary 12, 13, which is partly mirroring. In the lamp shown, the recess 11 is obtained in that the pinched seal 2 is made with pinching blocks, of which at least one, i.e. that block which shaped the major face 3, had an elevated portion at the area of the recess 11. This elevated portion has shaped mirroring surfaces 12′ and 13′ which extend obliquely on the major face 3.

Immediately next to the surfaces 12′ along the current supply conductors 9, 10, the seal 2 of the lamp shown is sawn in in order to obtain saw cuts 12″, which have a dull surface. After that, the glass between the said saw cuts 12″ is broken out, a mirroring fracture surface 13″ being created. The distance between the bright, exposed portions of the current supply conductors 9, 10 measured along the surface of the seal 2 is increased by twice the length of the boundary 12 thanks to the recess 11. The creepage path between these conductors is increased and thus the risk of flash-over is reduced.

In Fig. 2, parts corresponding to parts in Fig. 1 have reference numerals which are 20 higher than those in Fig. 1.

The pair of electrodes 28 in this Figure is surrounded by a discharge vessel 28a arranged inside the lamp vessel 21. The seal 22 of the lamp vessel 21 is secured in a cavity 41 of a ceramic lamp cap 40 which has a base portion 42 at which contact pins 43, 44 are present. These pins are connected to the current supply conductors 29, 30.

In the base portion 42 there is a slot 51 which is separated from the cavity 41 of the lamp cap 40 by walls 52, 53 which are included in the recess 31 of the seal 22.

The walls 52, 53 prevent flash-over taking place between bright portions of the current supply conductors 29, 30 through the slot 51.

The lamps shown may be used in a lampholder which is provided with an upright wall which enters the recess 11 or the slot 51, as the case may be. The lamps may be placed in a reflector and be used for forming a beam of light, for example, for accent lighting or for photographic or film takes.

Claims

1. A high-pressure discharge lamp comprising
   - a glass lamp vessel (1) provided with a seal (2) having mutually opposing first (3) and second (4) major faces, mutually opposing smaller side faces (5, 6), and an end face (7),
   - a pair of electrodes (8) and an ionizable filling in the lamp vessel,
   - current supply conductors (9, 10) which extend from the pair of electrodes (8) through the seal (2) at a distance from one another and which issue from the end face (7) of said seal to the exterior, characterized in that the seal (2) comprises a recess (11) which runs from the first major face (3) through to the second major face (4) and extends from the end face (7) between the current supply conductors (9, 10).

2. A high-pressure discharge lamp as claimed in Claim 1, characterized in that the recess (11) has a boundary (12, 13) of which a part is (12′, 13′, 13″) mirroring.

3. A high-pressure discharge lamp as claimed in Claim 1 or 2, characterized in that the seal (22) of the lamp vessel (21) is secured in a cavity (4) of a ceramic lamp cap (40) which has a base portion (42) at which contact pins (43, 44) are present, which are connected to the current supply

conductors, from which base portion (42) extends a slot (51) into the lamp cap (40) between the current supply conductors (29, 30), the slot (51) being separated from the cavity (41) of the lamp cap (40) by walls (52, 53) which are included in the recess (31) in the seal (22).

Patentansprüche

1. Hochdruckentladungslampe mit
   - einem Glaslampenkolben (1) mit einer Abdichtung (2), mit einander gegenüberliegenden erste (3) und zweite (4) Hauptflächen, einander gegenüberliegenden kleineren Seitenflächen (5, 6) und einer Endfläche (7),
   - einem Elektrodenpaar (8) und einer ionisierbaren Füllung im Lampenkolben,
   - Stromzuführungsleitern (9, 10), die sich von dem Elektrodenpaar (8) durch die Abdichtung (2) in einem Abstand voneinander erstrecken und von der Endfläche (7) der Abdichtung herausführen, dadurch gekennzeichnet, daß die Abdichtung (2) eine Ausnehmung (11) enthält, die von der ersten Hauptfläche (3) durch die zweite Hauptfläche (4) verläuft und sich von der Endfläche (7) zwischen den Stromzuführungsleitern (9, 10) erstreckt.

2. Hochdruckentladungslampe nach Anspruch 1, dadurch gekennzeichnet, daß die Ausnehmung (11) eine Begrenzung (12, 13) hat, von der ein Teil (12′, 13′, 13″) spiegelnd ist.

3. Hochdruckentladungslampe nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß die Abdichtung (22) des Lampenkolbens (21) in einem Hohlraum (4) eines Keramiklampensockels (40) befestigt ist, der einen Basisanteil (42) aufweist, in dem sich Kontaktstifte (43, 44) befinden, die mit den Stromzuführungsleitern verbunden werden, und von diesem Basisanteil (42) sich ein Schlitz (51) in den Lampensockel (40) zwischen den Stromzuführungsleitern (29, 30) erstreckt, und der Schlitz (51) vom Hohlraum (41) des Lampensockels (40) durch Wände (52, 53) getrennt wird, die in die Ausnehmung (31) in der Abdichtung (22) aufgenommen sind.

Revendications

1. Lampe à décharge à haute pression comportant
   - un récipient en verre (1) muni d'une fermeture (2) présentant des première (3) et deuxième (4) faces latérales supérieures mutuellement opposées, des faces latérales inférieures mutuellement opposées (5, 6) et une face terminale (7),
   - une paire d'électrodes (8) disposées dans un remplissage ionisable renfermé dans le récipient de lampe,
   - des conducteurs d'alimentation de courant (9, 10) qui, mutuellement espacés, s'étendent à partir de la paire d'électrodes (8), et traversent la fermeture (2) pour sortir de la face terminale (7) de ladite fermeture vers l'extérieur, caractérisée en ce que la fermeture (2) comporte un évidement (11) qui continue à partir de la première face supérieure (3) jusqu'à la deuxième face supérieure (4) pour s'étendre à partir de la face terminale (7), entre les conducteurs d'alimentation de courant (9, 10).

2. Lampe à décharge à haute pression selon la revendication 1, caractérisée en ce que l'évidement (11) présente une limitation (12, 13) dont une partie (12′, 13′, 13″) est miroitante.

3. Lampe à décharge à haute pression selon la revendication 1 ou 2, caractérisée en ce que la fermeture (22) du récipient de lampe (21) est fixée dans une cavité (4) d'un culot de lampe céramique (40) qui présente une partie de base (42) à laquelle sont présentes des chevilles de contact (43, 44) qui sont reliées aux conducteurs d'alimentation de courant, une fente (51) s'étend à partir de leur partie de base (42) pour entrer dans le culot de lampe (40), entre les conducteurs d'alimentation de courant (29, 30), la fente (51) étant séparée de la cavité (41) du culot de lampe (40) par des parois (52, 53) qui sont incorporées dans l'évidement (31) pratiqué dans la fermeture (22).

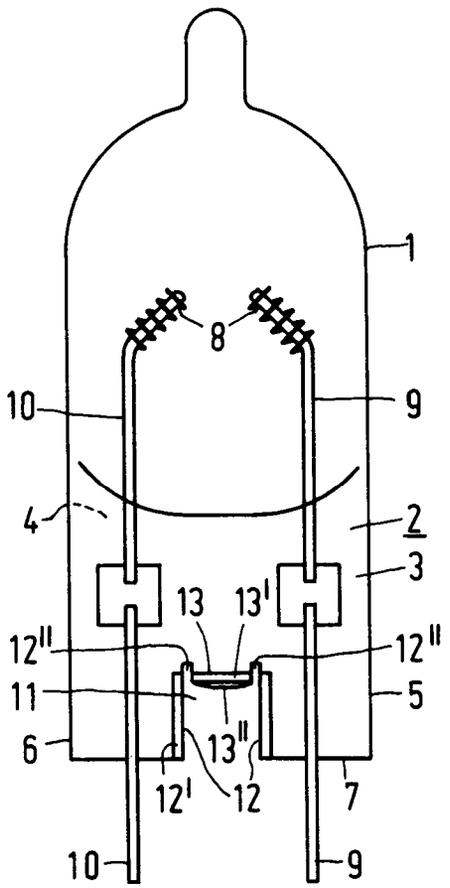

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FIG. 1

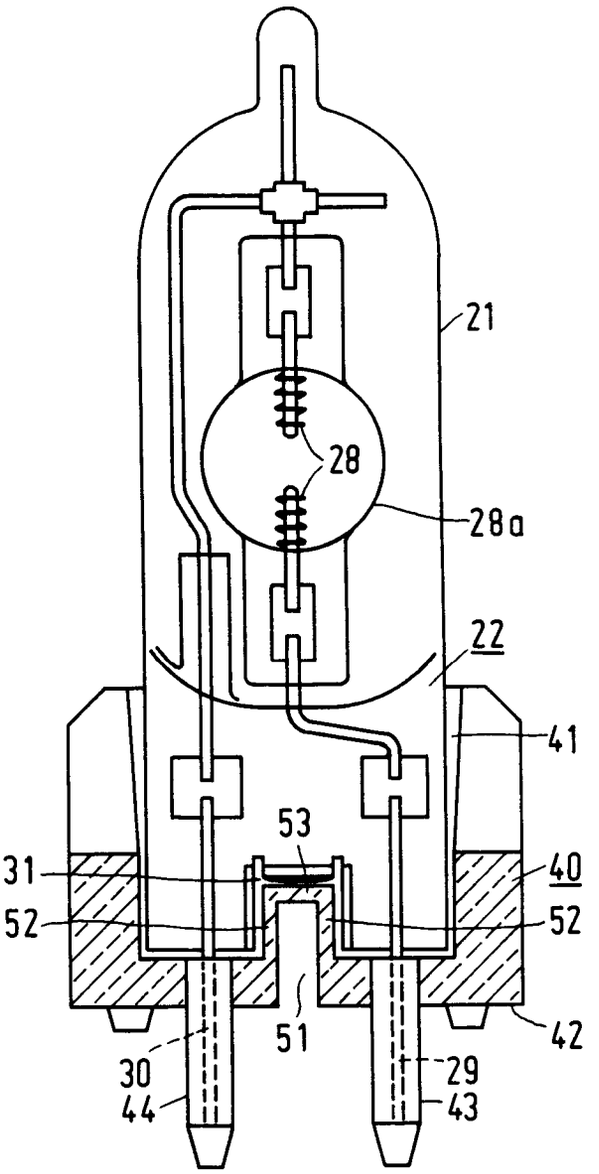

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28a
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FIG. 2