

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) Publication number:

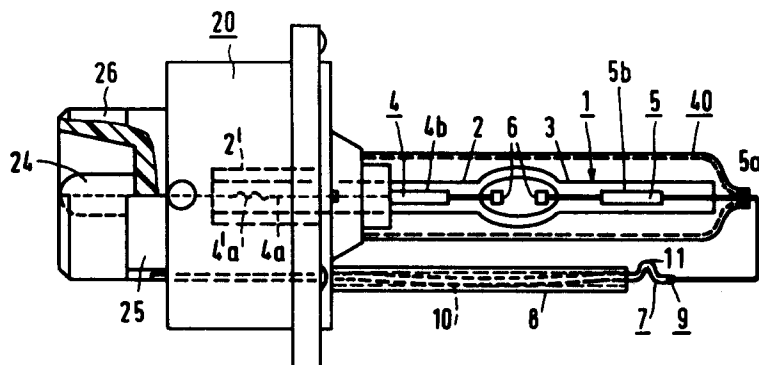
0 579 326 A1

(12)

EUROPEAN PATENT APPLICATION(21) Application number: **93202022.5**(51) Int. Cl.⁵: **H01J 5/56**(22) Date of filing: **09.07.93**(30) Priority: **13.07.92 EP 92202134**(43) Date of publication of application:
19.01.94 Bulletin 94/03(84) Designated Contracting States:
BE DE ES FR GB IT NL SE(71) Applicant: **PHILIPS ELECTRONICS N.V.**
Groenewoudseweg 1
NL-5621 BA Eindhoven(NL)(84) **BE ES FR GB IT NL SE**(71) Applicant: **Philips Patentverwaltung GmbH**
Wendenstrasse 35c
D-20097 Hamburg(DE)(84) **DE**(72) Inventor: **Dorsemagen, Bernardus Hugo Maria**
Alfred**c/o Int. Octrooibureau B.V.,****Prof. Holstlaan 6****NL-5656 AA Eindhoven(NL)**Inventor: **Westemeyer, Manfred****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) **Capped electric lamp.**

(57) The capped electric lamp has a quartz glass lamp vessel (1) with a first neck-shaped portion (2) which is kept fixed by the cap (20). First (4) and second (5) current supply conductors (4, 5) emanate from the neck-shaped portions (2 resp. 3) and are connected to contact members (24 resp. 25) of the cap, the second supply conductor (5) *via* a connect-

ing conductor (7). The joint of the connection conductor (7) to a molybdenum end portion (5a) of the second supply conductor (5) is a butt weld (9). The joint is solid and reliable. An insulator tube (8) may be present around the connection conductor (7) and fixation means (10, 11) may be present to immobilize the tube.

**FIG.1****EP 0 579 326 A1**

The invention relates to a capped electric lamp comprising:

a quartz-glass lamp vessel with a first and a second neck-shaped portion in mutually opposed arrangement and comprising seals through which a first and a second current supply conductor, respectively, extend to an electric element arranged in the lamp vessel;

a connection conductor which has a welded connection to the second current supply conductor outside the lamp vessel;

a lamp cap of insulating material inside which the lamp vessel is fixed to the first neck-shaped portion and which comprises contact members to which the first current supply conductor and the connection conductor, respectively, are connected.

Such a lamp, in which the electric element is a pair of electrodes, is known from US 5 051 658. The lamp is suitable for use as a light source in optical systems, for example, as a vehicle head lamp.

The connection conductor in the known lamp is laid transversely over the second current supply conductor and is connected thereto in this crossed position by means of a resistance weld.

It was found that the weld is not reliable. The weld is not of a reproducible quality and may have, for example, only a small size and be brittle, so that the connection is broken, for example, in the case of a fluctuating mechanical load, for example, under the influence of shocks or vibrations. The lamp will then fail prematurely.

It is an object of the invention to provide an electric lamp of the kind mentioned in the opening paragraph in which the said risk of premature failure is counteracted and the connection conductor has a satisfactory connection to the second current supply conductor.

According to the invention, this object is achieved in that the weld of the connection conductor is a butt weld to a molybdenum end portion of the second current supply conductor.

The butt weld in the lamp according to the invention was found to be reliable and strong, also in the case of mechanized manufacture.

The electric element may be a pair of electrodes in an ionisable gas, but may alternatively be an incandescent body, for example, in an inert gas comprising a halogen.

It may be desirable to provide the connection conductor with an electrically insulating screen laterally of the lamp vessel, for example, to prevent detrimental effects of corona discharges which may occur when the lamp is ignited at a high voltage and a high frequency. Such a screen may alternatively be desirable for counteracting the disappearance of small ions, such as sodium, from the lamp vessel owing to photoemission.

It is easy for this purpose to provide a tube of insulating material around the connection conductor. The tube, however, may rattle or shift around said conductor.

In a favourable embodiment, the lamp according to the invention comprises means for fixation of the tube.

It is favourable when the connection conductor has a curvature in the tube, which curvature lies in the tube clamping against said tube. Both axial and transversal movements of the tube around the conductor are counteracted thereby.

An alternative possibility is that the conductor, instead of or in addition to the former solution, comprises a stop for the tube between the tube and the welded joint, for example, a clamped or welded sleeve provided around the conductor. Very convenient, however, is a kink in the conductor. This may hamper an axial displacement and, depending on its position, also a transversal movement.

An outer envelope may be present around the lamp vessel. This envelope may be coupled to the first neck-shaped portion, for example, by means of a narrowed portion in this envelope.

The contact members at the lamp cap may be formed, for example, as pins, strips, bushes, etc., or a combination thereof, so as to cooperate with a connector which is connected to a supply source. It is also possible, however for an insulated cable to be fastened to each of the contact members with electrical conduction, which cables issue from a screen cover fastened to the lamp cap. Detachable electric connections can thus be moved to the supply source in this manner.

The lamp cap may consist of, for example, a synthetic resin, for example, a thermoplastic synthetic resin such as polyether imide, polyether sulphone, polyphenylene sulphide, polyether etherketone, polypropylene oxide, polyamide imide, polyimide, polybutylene terephthalate, which may be charged with powdery or fibrous substances such as, for example, glass, chalk. The lamp cap may be integral with or form part of a reflector for the light generated by the lamp.

Embodiments of the capped electric lamp according to the invention are shown in the drawings, in which

Fig. 1 shows a first embodiment in side elevation; and

Fig. 2 shows a second embodiment in side elevation.

In Fig. 1, the capped electric lamp has a quartz glass lamp vessel 1 with a first 2 and a second neck-shaped portion 3 in mutually opposed arrangement and with seals through which respective current supply conductors 4, 5 extend to an electric element 6 arranged in the lamp vessel. This ele-

ment in the Fig. is a pair of electrodes in an ionisable gas.

A connection conductor 7, for example, made of nickel/manganese, for example nickel/manganese 98/2 by weight, has a weld 9 to the second current supply conductor 5 outside the lamp vessel 1. The lamp vessel 1 is fixed to the first neck-shaped portion 2 inside a lamp cap 20 of insulating material. The lamp cap has contact members 24, 25 to which the first current supply conductor 4 and the connection conductor 7, respectively, are connected. In the Fig., the lamp vessel has an outer envelope 40. The contact member 24 is a central pin, surrounded by an annular contact 25 at the outside of a collar 26. The lamp cap can cooperate with a bayonet connector.

The weld 9 of the connection conductor 7 is a butt weld to a molybdenum end portion 5a of the second current supply conductor 5.

The end portion 5a in the Fig. is connected to a metal foil 5b, for example made of molybdenum, to which an electrode 6 is welded.

The connection conductor 7 is surrounded by a tube 8 of insulating material, for example of ceramic material such as, for example, steatite or aluminium oxide, and comprises means 10, 11 for fixing this tube 8 immovably.

In Fig. 1, the connection conductor 7 has a curvature 10 which lies with clamping action in the tube 8. The connection conductor 7 in addition has a stop 11 for the tube between the tube 8 and the weld 9. The stop 11 is a kink in the connection conductor 7.

The first current supply conductor 4 has an end portion 4a with an undulated portion 4a' therein which is connected to a metal foil 4b to which an electrode 6 is welded. The portion 4a' lies in an open tubular end portion 2' of the first neck-shaped portion 2 and offers said conductor expansion and contraction possibilities independently of its surroundings.

In Fig. 2, a similar lamp vessel has a lamp cap 30 with contact members 34, 35 at cables 37 issuing from the lamp cap to the exterior. A kink 11 in the connection conductor 7 is present for immovably fixing the tube 8 of insulating material.

Claims

1. A capped electric lamp comprising
 - a quartz-glass lamp vessel (1) with a first (2) and a second neck-shaped portion (3) in mutually opposed arrangement and comprising seals through which a first (4) and a second current supply conductor (5), respectively, extend to an electric element (6) arranged in the lamp vessel;
 - a connection conductor (7) which has a

welded connection (9) to the second current supply conductor (5) outside the lamp vessel (1);

a lamp cap (20) of insulating material inside which the lamp vessel (1) is fixed to the first neck-shaped portion (2) and which comprises contact members (24, 25) to which the first current supply conductor (4) and the connection conductor (7), respectively, are connected;

characterized in that the weld (9) of the connection conductor is a butt weld (9) to a molybdenum end portion (5a) of the second current supply conductor (5).

2. A capped electric lamp as claimed in Claim 1, characterized in that the connection conductor (7) is surrounded by a tube (8) of insulating material and comprises means (10, 11) for fixing this tube (8) immovably.
3. A capped electric lamp as claimed in Claim 2, characterized in that the connection conductor (7) has a curvature (10) which lies with clamping action in the tube (8).
4. A capped electric lamp as claimed in Claim 2 or 3, characterized in that the connection conductor (7) has a stop (11) for the tube (8) between said tube and the weld (9).
5. A capped electric lamp as claimed in Claim 4, characterized in that the stop (11) is a kink in the connection conductor (7).

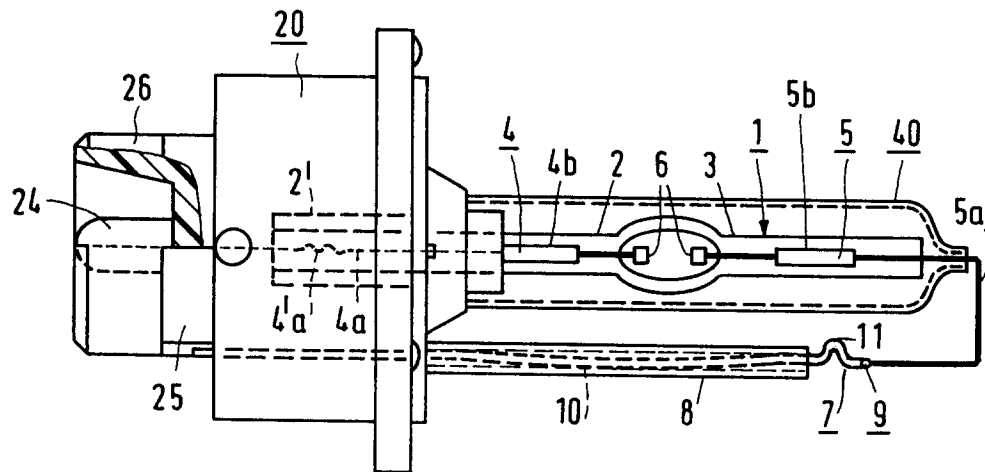


FIG. 1

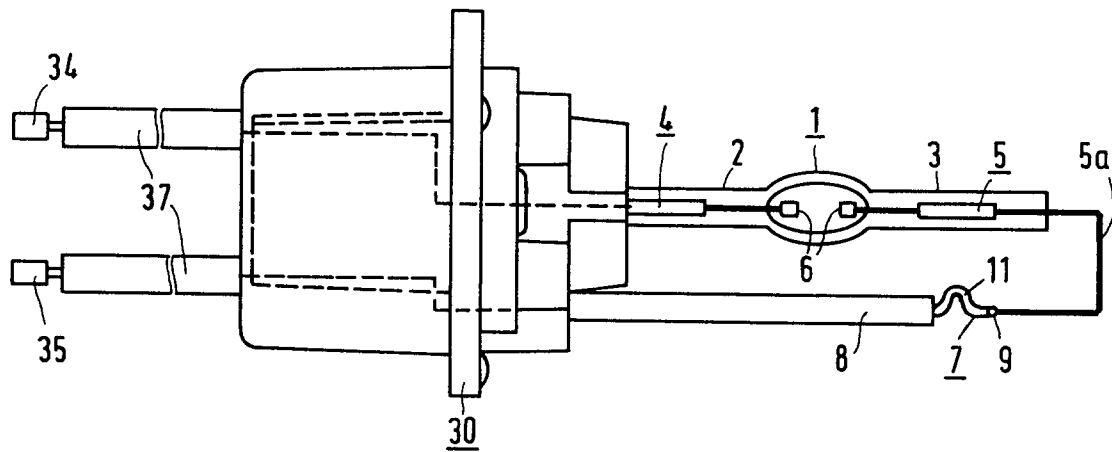


FIG. 2



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 93 20 2022

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	EP-A-0 478 058 (PHILIPS) * abstract * * claim 1 * * column 5, line 26 - line 34; figures 1-4 * ---	1,2	H01J5/56
A	EP-A-0 321 866 (PATENT-TREUHAND-GESELLSCHAFT) * claims 1,11 * * column 5, line 8 - line 20; figures 1,2 * ---	1,2	
A	GB-A-2 002 954 (GENERAL ELECTRIC COMPANY) * page 1, paragraph 1 * * page 1, line 69 - line 114; figures 1,2 * ---	1	
A	EP-A-0 224 954 (PHILIPS) * abstract * * column 8, line 44 - line 58; figures 5,6 * ---	1	
A	PATENT ABSTRACTS OF JAPAN vol. 15, no. 326 (E-1102)20 August 1991 & JP-A-03 122 941 (KOITO MFG) 24 May 1991 * abstract * -----	4	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 25 OCTOBER 1993	Examiner GREISER N.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			