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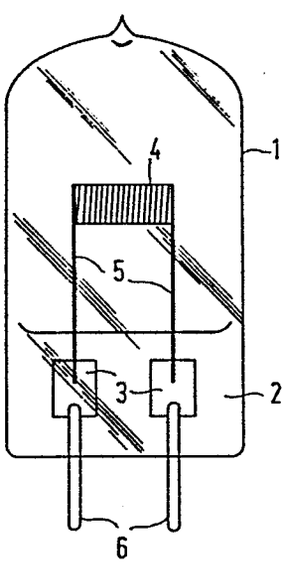
(54) Copless electric lamp.

(57) The copless electric lamp according to the invention has a quartz glass lamp vessel (1), inside which an electric element (4) is arranged, which is connected through internal conductors (5) to metal foils (3) which are embedded in the wall (2) of the lamp vessel. Each of the metal foils (3) has welded to it a respective external current conductor (6). The external current conductors (6) are resistant to corrosion due to the fact that they consist of niobium or tantalum.



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Copless electric lamp.

The invention relates to a copless electric lamp provided with a lamp vessel of quartz glass which is sealed in a vacuum-tight manner and in which an electric element is arranged, metal foils being incorporated in the wall of the lamp vessel, to each of which foils are welded a respective internal current conductor connected to the electric element and a respective external current conductor which serves to make direct electrical contact with a lamp holder. Such a lamp is known from US-PS 4,015,165 (PHN.7884).

Such external current conductors conventionally consist of molybdenum. This metal has the disadvantage that it is susceptible to corrosion, as a result of which the lamp is in poor electrical contact with the connection terminals of the lamp holder. This results in electrical losses and may even lead to the lamp being not capable of operating. In order to avoid this, in the lamp according to the aforementioned United States Patent Specification, the external current conductors consist of molybdenum wires which are incorporated in tubes of, for example, nickel. Thus, a good electrical contact with a lamp holder is ensured. A disadvantage of the known construction, however, is that the cost of the lamp is considerably higher due to the fact that additional component parts are used.

The invention has for its object to provide an electric lamp having external current conductors which are sufficiently resistant to corrosion and which nevertheless have a non-composite structure.

In accordance with the invention, this object is achieved in the lamp described in the opening paragraph in that the external current conductors consist of niobium or tantalum.

The electric element in the lamp according to

the invention may be a pair of electrodes in an ionizable gas or may be a filament, for example in a halogen-containing gas.

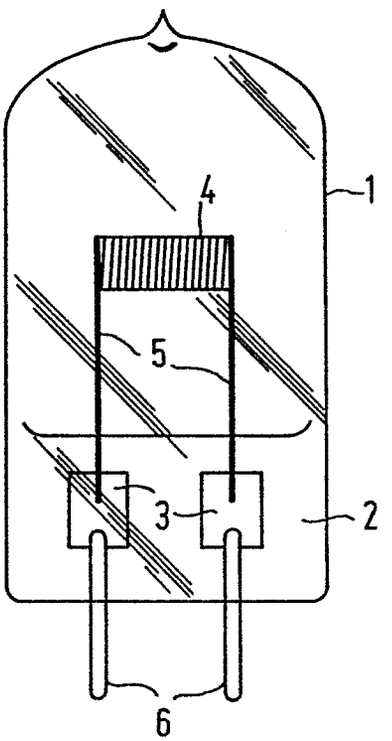
The lamp vessel of quartz glass, the term "quartz glass" being understood to mean glass having an SiO_2 content of at least 95% by weight, has a very small thermal coefficient of expansion. Therefore, the current conductors generally consist of molybdenum or tungsten where they are embedded in the wall of the lamp vessel in a vacuum-tight manner and are in the form of a foil. As compared with other metals, the said metals have a low coefficient of expansion. It is necessary to use foil-shaped conductors in order to ensure that the conductors are embedded in a vacuum-tight manner. Niobium and tantalum in the form of a foil do not ensure a vacuum-tight embedding in quartz glass. In the lamp according to the invention, the external current conductors of niobium or tantalum are therefore welded to the foils. The foils can be incorporated each in a respective seal of the lamp vessel or together in one seal of the lamp vessel.

It has been found that the external conductors of the lamp according to the invention had a high resistance to corrosion. The lamp with niobium external conductors is to be preferred if a high power lamp is concerned because niobium is a better heat conductor than tantalum. The external current conductors may contain the impurities usual for niobium and tantalum, respectively.

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

Molybdenum foils 3 are embedded in the wall 2 of the quartz glass lamp vessel 1 in a vacuum-tight manner. Inside the lamp vessel a filament 4 is arranged as the electric element with internal current conductors 5 connected to the foil 3. Each of the foils 3 has welded to it an external current conductor 6 of tantalum or niobium. The lamp vessel is filled with a mixture of inert gas and hydrobromide and consumes at 12 V a power of 100 W.

A copless electric lamp provided with a quartz glass lamp vessel which is sealed in a vacuum-tight manner and in which an electric element is arranged, metal foils being incorporated in the wall of the lamp vessel, to each of which foils are welded a respective internal current conductor connected to the electric element and a respective external current conductor which serves to make direct electrical contact with a lamp holder, characterized in that the external current conductors consist of niobium or tantalum.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EUROPEAN SEARCH REPORT

0136750
. Application number

EP 84 20 1239

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.4)
D,A	US-A-4 015 165 (HARDIES) * Whole document *	1	H 01 K 1/40 H 01 J 61/36 H 01 J 5/46
A	US-A-3 668 391 (KIMBALL) * Column 2, lines 21-74; figures *	1	
A	GB-A- 808 933 (GENERAL ELECTRIC CO.) * Page 2, lines 17-77; figures 1-3 *	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

H 01 K 1/00
H 01 J 61/00
H 01 J 5/00

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	03-12-1984	SARNEEL A.P.T.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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