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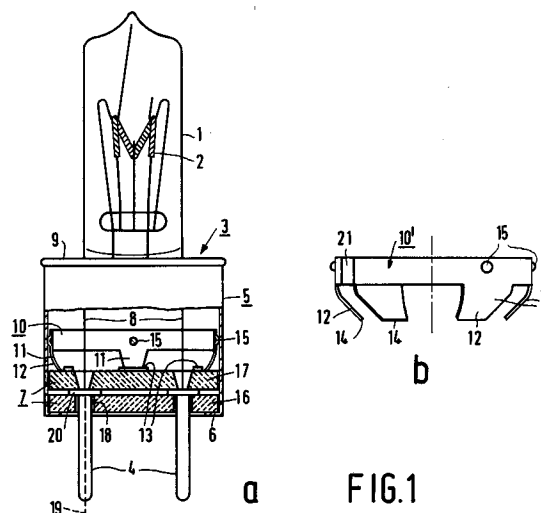
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NL-5656 AA Eindhoven (NL)**(54) **Capped electric lamp.**

(57) The capped electric lamp has a cap (3) comprising a metal shell part (5), an insulator part (7) and electric contacts (4). A metal ring (10) having protruding tongues (11) is secured in the shell part (5), the tongues (11) clampingly pressing against the insulator part (7). The insulator part (7) may comprise a first and a second body (16,17) clamping a transverse portion (20) of an electric contact (4) in between them. The insulator part (7) is rigidly secured in the shell part (5).

**FIG.1****EP 0 533 250 A1**

The invention relates to a capped electric lamp, comprising:

a lamp vessel which is sealed in a vacuumtight manner and in which an electric element is arranged;

a lamp cap provided with electric contacts, connected to the lamp vessel, comprising a metal shell part with an inwardly projecting portion, and comprising an insulator part fastened in the shell part in contact with the inwardly projecting portion thereof, which insulator part carries at least one of the electric contacts;

current supply conductors extending to the electric element and connected to a respective electric contact(s).

Such a lamp is known from *inter alia* DE GM 89 07 108.

In the known lamp, the insulator part of the lamp cap is fastened in the shell part in that the inwardly projecting portion thereof, *i.e.* tags which grip around an end face of the insulator part, cooperates with projections in the shell part which grip into the insulator part at a distance from the end face.

A disadvantage of the known lamp is that it is difficult to connect the insulator part immovably to the shell part, especially when the lamp cap assumes a higher temperature, for example, during lamp operation. The movability of the insulator part is a result of the partial spring-back into its original shape in the case in which projections and/or an inwardly projecting portion were made through deformation of the shell part in the presence of the insulator part in order to fix the insulator part. Differences in thermal coefficient of expansion between the metal of the shell part and the material of the insulator part increase this movability further.

The movable insulator part involves the risk that mechanical forces are exerted on the current supply conductor connected to the electric contact which is supported by the insulator body. This may lead to fracture of this current supply conductor and to a premature failure of the lamp.

It is an object of the invention to provide a capped electric lamp of the kind described in the opening paragraph whose insulator part is securely fastened in the shell part of the lamp cap.

This object is achieved in that a metal ring is present in the lamp cap, fastened against the shell part, from which ring tongues project, of which free end portions press against the insulator part with clamping fit.

The lamp cap of the electric lamp according to the invention is sturdy, simple and reliable. The lamp cap is readily obtained by starting from a metal shell part with an inwardly projecting portion, for example a flanged rim, bent tags, dents, etc. After the insulator part has been inserted into the

shell part, the metal ring is provided and pressed home so as to pre-tension the tongues and cause them to press with clamping fit, after which the ring is fixed. The ring may be fastened to the shell part by means of soldered or welded joints, for example, laser or resistance welds.

It is practical to use an open ring. This may be easily manufactured from plating, for example, from spring steel, while said ring also readily adapts itself to variations in dimensions of the shell part. Such a ring easily allows itself to be pressed home against the shell part, as a result of which, for example, laser and resistance welds can be readily made. The ring may in addition have bulges in the locations where the connections are to be made for an increased assurance of a defined contact between the ring and the shell part in these locations.

The inwardly projecting portion of the shell part is a continuous flanged rim in a favourable embodiment. Such a rim is strong and visually attractive.

The insulator part may be made of synthetic resin, but alternatively of ceramic material. The latter material has the advantage that it does not contain volatile organic components which are capable of polluting an optical system in which the lamp is used.

It is very favourable if the insulator part has seats into each of which a respective free end portion of a tongue presses with an end face.

It is achieved by this that the tongues find an abutment during pressing home of the ring so that they cannot be shifted over the relevant surface of the insulator part, and pressing home do lead to the tags becoming curved. This results in a high pre-tension and thus in a strong clamping fit against the insulator part. A favourable effect of the seats is that together with the tongues they lock the insulator part in the shell part, if the latter is cylindrical, against relative rotation.

The shell part of the lamp cap may be, for example, rectangular, circular, or oval in cross-section. The electric contacts may comprise one or several contact elements supported by the insulator part plus the shell part itself, or consist exclusively of elements supported by the shell part. The electric contacts may be pins, for example, round or flat studs. They may be present at the insulator part during the creation thereof, or they may be fastened to the insulator part after the creation thereof, for example, in that a portion projecting through said part is twisted or flanged.

A favourable embodiment is one in which the insulator part comprises a first and a second body, the first body having a cavity from which an electric contact having a longitudinal direction issues from the lamp cap to the exterior in said longitudinal direction. The electric contact in that case has a lateral portion, transverse to the longitudinal direc-

tion, which is clamped in by the first and the second body. The electric contact may, for example, have an outwardly projecting collar as the lateral portion.

Alternatively, the electric contact may be a metal strip having a bent portion as the lateral portion. It is favourable when the electric contact comprises a tongue which encloses an acute angle with the longitudinal direction, and the second body has a cavity in which said tongue is enclosed with lateral clamping fit against the second body.

The electric contact may have several, for example, two such tongues situated at a distance from one another. The tongue(s) provide(s) an additional fixation transverse to the longitudinal direction. It is favourable when the tongue urges the bend between the contact and its bent portion to become cleared from the first body. A flat position of the bent portion between the two bodies is promoted by this. Alternatively or in addition, however, the first body may be bevelled near the bend, at the entrance of the cavity.

It is obvious that the nature of the electric element is immaterial to the essence of the invention. The electric element may be, for example, an incandescent body, possibly in a gas comprising a halogen, or a discharge path in an ionizable gas.

Embodiments of the lamp according to the invention are shown in the drawing, in which

Fig. 1a shows an embodiment in side elevation with the lamp cap broken away;

Fig. 1b is a modification of the metal ring of Fig. 1a;

Fig. 2a shows an embodiment of the second insulator body taken on the line IIa in Fig. 2b;

Fig. 2b shows a second embodiment of the lamp cap in longitudinal section; and

Fig. 2c is a cross-section taken on the line IIc in Fig. 2a.

In Fig. 1a, the capped electric lamp has a lamp vessel 1 which is sealed in a vacuumtight manner and in which an electric element 2, an incandescent body in the Figure, is arranged. A lamp cap 3 provided with electric contacts 4 is connected to the lamp vessel. The lamp cap has a metal shell part 5 with an inwardly projecting portion 6, a flanged rim in the Figure, and an insulator part 7 fastened in the shell part and in contact with the inwardly projecting portion 6 thereof. The insulator part 7 supports at least one of the electric contacts 4, in the Figure two contacts. A clamping plate 9 forms part of the lamp cap 3. The plate keeps the lamp vessel fixed in an usual manner by means of resilient tags (not visible) and is fastened to the shell part. Current supply conductors 8 extending to the electric element 2 are connected to respective electric contacts 4.

A metal ring 10 is present in the lamp cap 3, fastened against the shell part 5. Tongues 11 project from this ring, pressing with their free end portions 12 against the insulator part 7 with clamping fit. The insulator part 7 has seats 13, in the Figure obtained by means of elevations, into which respective free end portions 12 press each with an end face 14 (see also Fig. 1b).

Owing to the presence of said seats, the tongues 11 were able to curve so as to obtain a strong pre-tension before fastening the ring 10 in the lamp cap 5. Connections with the shell part were subsequently effected by spot-welding.

In the Figure, the insulator part 7 has a first 16 and a second body 17, the first body having a cavity 18 from which an electric contact 4 having a longitudinal direction 19 issues from the lamp cap 3 to the exterior in said longitudinal direction. The electric contact 4 has a lateral portion 20 which is clamped in by the first 16 and the second body 17. The lateral portion in the Figure is a collar at the hollow pin which constitutes the electric contact. Owing to the pressure of the tongues of the metal ring, the two bodies clamp the electric contact in between them, whereby not only a fixed connection between the shell part and the insulator part is achieved, but also between the insulator part and, in the Figure, both electric contacts.

The metal ring 10' of Fig. 1b is open owing to a slot 21, so that the ring cannot only be readily inserted into the lamp cap, but will also lie against the shell part with its bulges 15 when pressed home, so that it can be readily connected to this part.

In Fig. 2a, b, c, parts corresponding to parts from the preceding Figure have reference numerals which are 30 higher, while identical parts have the same reference numerals. The electric contact 34 is a metal strip having a bent portion by way of lateral portion 50. The electric contact 34 comprises a tongue 52 which encloses an acute angle with the longitudinal direction 49. The second body 47 has a cavity 53 in which said tongue 52 is accommodated, with lateral clamping fit against the second body 47. The electric contacts are immovably fixed.

Since the second body 47 presses laterally against the tongue 52, the bend between the contact 34 and the lateral portion 50 thereof clears the first body 46. The contact 34 as a result has a flat, well-defined position in the insulator part 37. A funnel 54 in the second body 47 is capable of guiding a current supply conductor towards a contact 34, so that this conductor can be fastened to said contact within the opening 55 in the first body 46.

Claims

1. A capped electric lamp, comprising:
 - a lamp vessel (1) which is sealed in a vacuumtight manner and in which an electric element (2) is arranged; 5
 - a lamp cap (3) provided with electric contacts (4) connected to the lamp vessel, comprising a metal shell part (5) with an inwardly projecting portion (6), and comprising an insulator part (7) fastened in the shell part in contact with the inwardly projecting portion (6) thereof, which insulator part (7) carries at least one of the electric contacts (4); 10
 - current supply conductors (8) extending to the electric element (2) and connected to a respective electric contact(s) (4); 15
 - characterized in that a metal ring (10) is present in the lamp cap (3), fastened against the shell part (5), from which ring tongues (11) project, free end portions (12) of which press against the insulator part (7) with clamping fit. 20
2. A capped electric lamp as claimed in Claim 1, characterized in that the insulator part (7) has seats (13) into each of which a respective free end portion (12) presses with an end face (14) thereof. 25
3. A capped electric lamp as claimed in Claim 1 or 2, characterized in that the insulator part (7) comprises a first (16) and a second body (17), the first body having a cavity (18) from which an electric contact (4) having a longitudinal direction (19) issues from the lamp cap (3) to the exterior in said longitudinal direction, which electric contact (4) has a lateral portion (20) which is clamped in by the first (16) and the second body (17). 30 35 40
4. A capped electric lamp as claimed in Claim 3, characterized in that the electric contact (34) is a metal strip having a bent portion as the lateral portion (50). 45
5. A capped electric lamp as claimed in Claim 4, characterized in that the electric contact (34) comprises a tongue (52) which encloses an acute angle with the longitudinal direction (49), and the second body (47) has a cavity (53) in which said tongue (52) is enclosed with lateral clamping fit against the second body (47). 50

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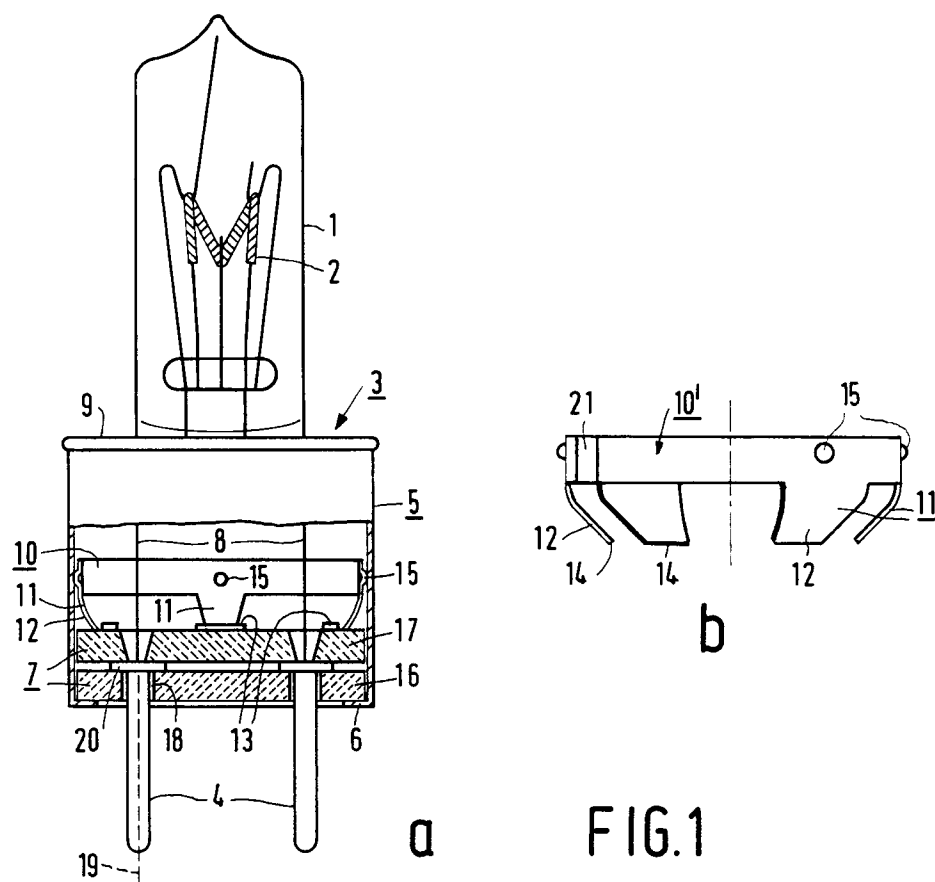


FIG. 1

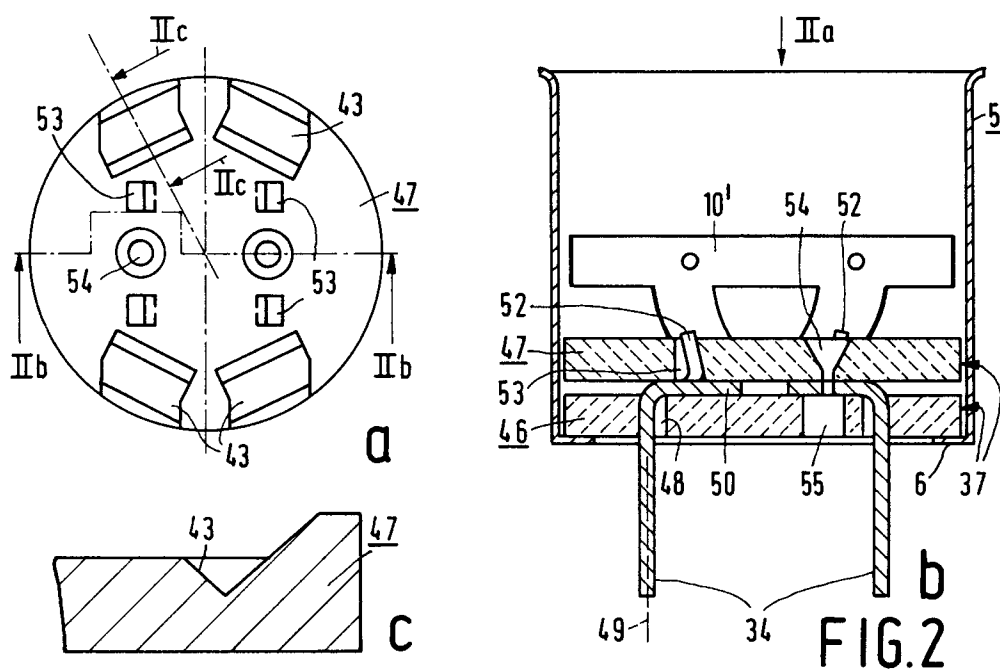


FIG. 2



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EUROPEAN SEARCH REPORT

Application Number

EP 92 20 2752

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)
D,A	DE-U-8 907 108 (PATENT-TREUHAND GESELLSCHAFT FÜR ELEKTRISCHE GLÜHLAMPEN MBH.) * claims; figures * -----	1	H01K1/46 H01J5/50
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			H01K H01J
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 22 DECEMBER 1992	Examiner SCHAUB G.G.
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			