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(54) **LED lamp**

bigger top opening, a smaller bottom opening and a round sidewall, a plurality of grooves (12) is defined in the round sidewall. A power supply unit (51, 52, 53) being made of planar transformer is accommodated into the support frame (2) and applies constant current scheme to supply current for the LED beam lamp.



Description

FIELD OF THE INVENTION

[0001] The present invention relates to semiconducting lighting devices. More particularly, the present invention relates to a LED beam lamp.

BACKGROUND OF THE INVENTION

[0002] Nowadays LEDs (Light-emitting Diode) is used as light source in beam lamps, which have high lumen efficiency and benefit energy conservation and environmental protection. Therefore, LED beam lamps are widely used in our lives. However the conventional LED lamps have some disadvantages.

[0003] First, the LED keeps generating heat during lighting but it is difficult to dissipate the heat.

[0004] Second, if the heat can not be dissipated timely the LED and the driving circuit in the lamp are easily burned down and bring potential safety troubles. The last but not the least, the range of the lighting angle is often small and difficult to gain appreciable lighting performance.

SUMMARY OF THE INVENTION

[0005] The purpose of the present invention is to provide a LED beam lamp with high heat dissipating performance and steady lighting performance.

[0006] One embodiment of the present invention provides a LED beam lamp, which includes a mainbody and a support frame attached to the mainbody. The mainbody includes a board for mounting at least one LED and a light transmitting device. The mainbody is configured to a lookalike round platform and has a bigger top opening, a smaller bottom opening and a round sidewall, a plurality of grooves is defined in the round sidewall. A power supply unit being made of planar transformer is accommodated into the support frame and applies constant current scheme to supply current for the LED beam lamp.

[0007] The LED beam lamp in accordance with the present invention has unique heat dissipating structure, which enhances heat dissipating speed and provides a solution of heat dissipating difficulty for products in present market. Furthermore, the LED beam lamp applies inner power supply unit and constant current scheme so that the lighting becomes steadier and higher qualified, meanwhile the working life of the LED beam lamp is extended.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1 is an exploded perspective view of a LED beam lamp in first embodiment in accordance with the present invention;

[0009] FIG. 2 is a perspective view of the assembled LED beam lamp in the first embodiment in accordance

with the present invention;

[0010] FIG. 3 is an exploded perspective view of a LED beam lamp in second embodiment in accordance with the present invention;

5 **[0011]** FIG. 4 is a perspective view of the assembled LED beam lamp in the second embodiment in accordance with the present invention;

[0012] FIG. 5 is an exploded perspective view of a LED beam lamp in third embodiment in accordance with the present invention; and

10 **[0013]** FIG. 6 is a perspective view of the assembled LED beam lamp in the third embodiment in accordance with the present invention.

15 DETAILED DESCRIPTION OF THE INVENTION

[0014] Referring to Fig.1 and Fig.2, a LED beam lamp in first embodiment in accordance with the present invention comprises a mainbody 1 and a support frame 2 attached to the mainbody 1. The mainbody 1 is configured to a lookalike round platform. The mainbody 1 is made of aluminium alloy material. The mainbody 1 has a bigger top opening, a smaller bottom opening and a round sidewall. A plurality of grooves 12 is defined in the round sidewall in parallel. A board 3 is accommodated in the mainbody 1 for mounting LED. A light transmitting device 4 is mounted onto the bigger top opening of the mainbody 1. The light transmitting device 4 comprises a reflecting cup 8 and a glass piece 9 covering onto the reflecting cup 8. A power supply unit 51 being made of planar transformer is accommodated into the support frame 2. The power supply unit 51 applies constant current scheme to supply working current for the LED beam lamp. In this embodiment, three LEDs are mounted into the board 3. The support frame 2 has a pin cap 61 at one end thereof so as to mount the LED beam lamp into a corresponding lampholder.

[0015] Referring to Fig.3 and Fig.4, a LED beam lamp in second embodiment in accordance with the present invention comprises a mainbody 1 and a support frame 2 attached to the mainbody 1. The mainbody 1 is configured to a lookalike round platform. The mainbody 1 is made of aluminium alloy material. The mainbody 1 has a bigger top opening, a smaller bottom opening and a round sidewall. A plurality of grooves 12 is defined in the round sidewall in parallel. A board 3 is accommodated in the mainbody 1 for mounting LED. A light transmitting device 4 is mounted onto the bigger top opening of the mainbody 1. The light transmitting device 4 comprises a reflecting cup 8 and a glass piece 9 covering onto the reflecting cup 8. A power supply unit 52 being made of planar transformer is accommodated into the support frame 2. The power supply unit 52 applies constant current scheme to supply working current for the LED beam lamp. In this embodiment, three LEDs are mounted into the board 3. The support frame 2 has a bayonet cap 62 at one end thereof so as to mount the LED beam lamp into a corresponding lampholder.

[0016] Referring to Fig. 5 and Fig. 6, a LED beam lamp in third embodiment in accordance with the present invention comprises a mainbody 1 and a support frame 2 attached to the mainbody 1. The mainbody 1 is configured to a lookalike round platform and made of aluminium alloy material. The mainbody 1 has a bigger top opening, a smaller bottom opening and a round sidewall. A plurality of grooves 12 is defined in the round sidewall in parallel. A board 3 is accommodated in the mainbody 1 for mounting LED. A light transmitting device 4 is mounted onto the bigger top opening of the mainbody 1. The light transmitting device 4 is a spherical lens 10. The surface of the spherical lens 10 is covered with PMMA (Polymethyl Methacrylate) material which has more than 93 percent light transmission rate so it has excellent light efficiency. A power supply unit 53 being made of planar transformer is accommodated into the support frame 2. The power supply unit 53 applies constant current scheme to supply working current for the LED beam lamp. In this embodiment, three LEDs are mounted into the board 3. The support frame 2 has a screw cap 7 at one end thereof so as to mount the LED beam lamp into a corresponding lampholder.

[0017] In above-mentioned embodiments, LEDs in various colors can be mounted in the LED beam lamp to obtain various vision effect.

Claims

1. A LED beam lamp, comprising:

a mainbody (1) comprising a board (3) for mounting at least one LED and a light transmitting device (4), and
a support frame (2) attached to the mainbody (1),
the LED beam lamp being **characterized in that**
A power supply unit (51, 52, 53) being made of planar transformer is accommodated into the support frame (2) and applies constant current scheme to supply current for the LED beam lamp.

2. The LED beam lamp as claimed in claim 1, wherein the mainbody (1) is configured to a lookalike round platform and has a bigger top opening, a smaller bottom opening and a round sidewall, and a plurality of grooves (12) is defined in the round sidewall.

3. The LED beam lamp as claimed in claim 1, wherein the mainbody (1) is made of aluminium alloy material.

4. The LED beam lamp as claimed in claim 1, wherein the support frame (2) has a pin cap (61) at one end thereof for mounting the LED beam lamp into a cor-

responding lampholder.

5. The LED beam lamp as claimed in claim 1, wherein the support frame (2) has a bayonet cap (62) at one end thereof to mount the LED beam lamp into a corresponding lampholder.

6. The LED beam lamp as claimed in claim 1, wherein the support frame (2) has a screw cap (7) at one end thereof to mount the LED beam lamp into a corresponding lampholder.

7. The LED beam lamp as claimed in claim 1, wherein the light transmitting device (4) comprises a reflecting cup (8) and a glass piece (9) covering onto the reflecting cup (8).

8. The LED beam lamp as claimed in claim 1, wherein the light transmitting device (4) may be a spherical lens 10.

9. A LED beam lamp, comprising:

a mainbody (1) comprising a board (3) for mounting at least one LED and a light transmitting device (4), and
a support frame (2) attached to the mainbody (1),
the LED beam lamp being **characterized in that**
the mainbody (1) is configured to a lookalike round platform and has a bigger top opening, a smaller bottom opening and a sidewall, and a plurality of grooves (12) is defined in the round sidewall.

10. The LED beam lamp as claimed in claim 1, wherein a power supply unit (51, 52, 53) being made of planar transformer is accommodated into the support frame (2) and applies constant current scheme to supply current for the LED beam lamp.

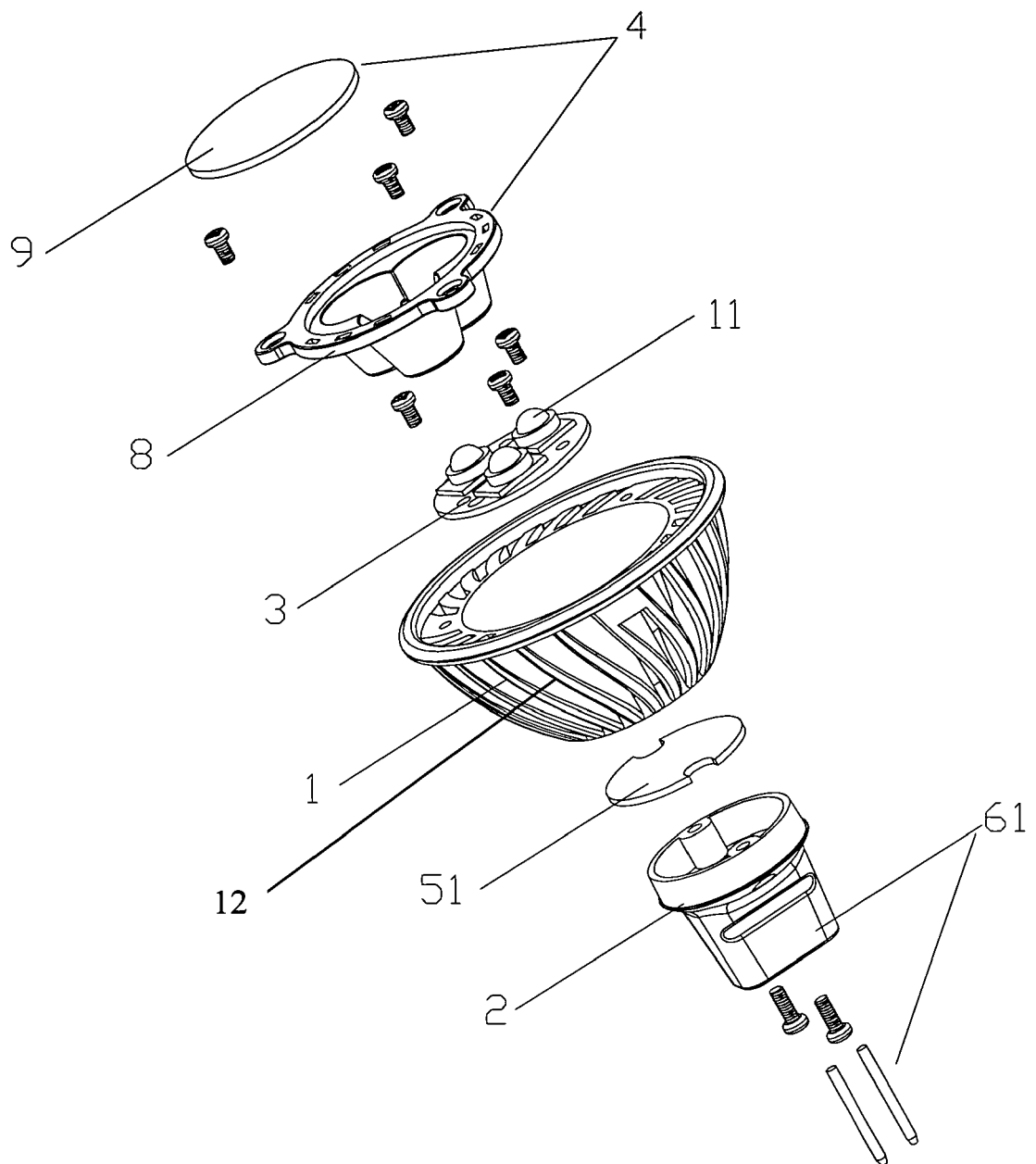


FIG. 1

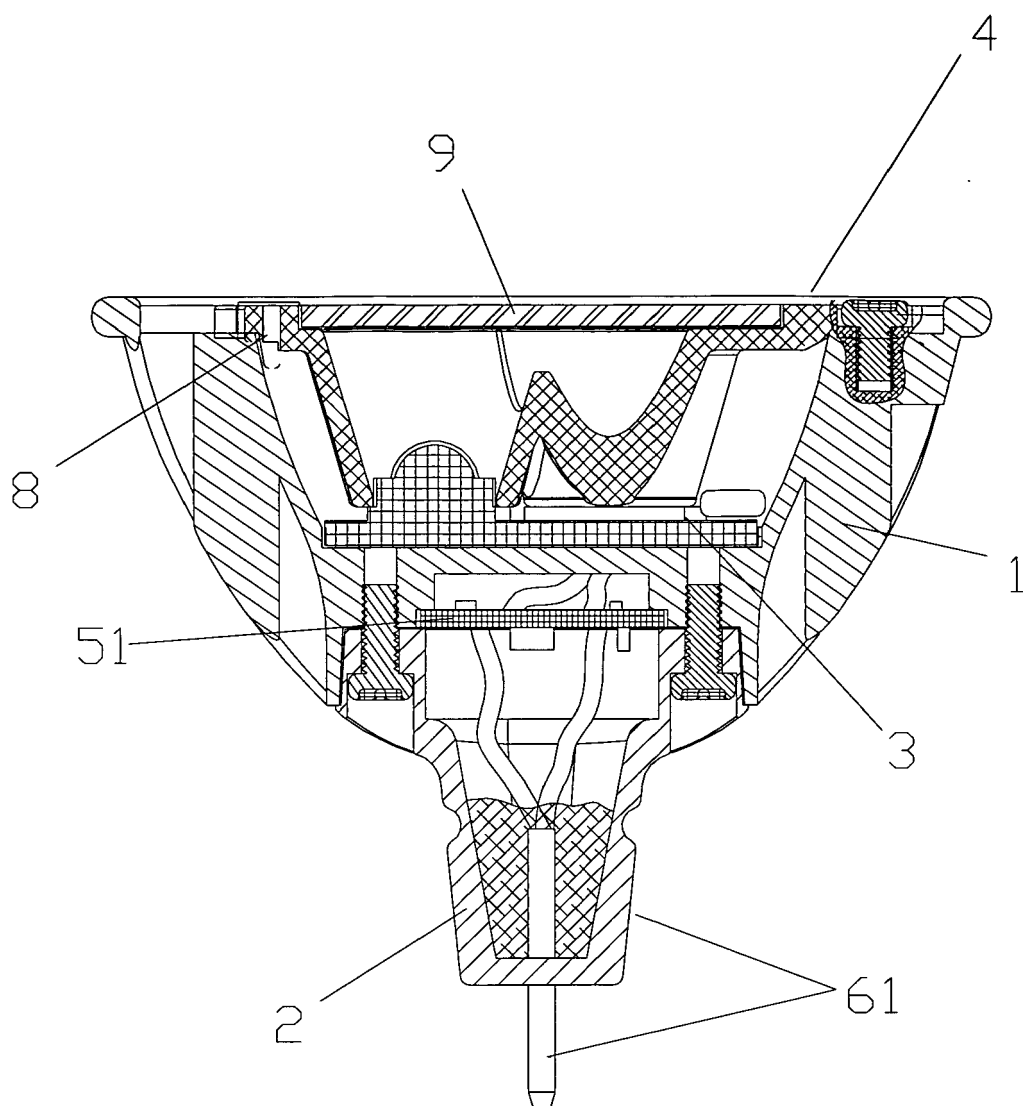


FIG. 2

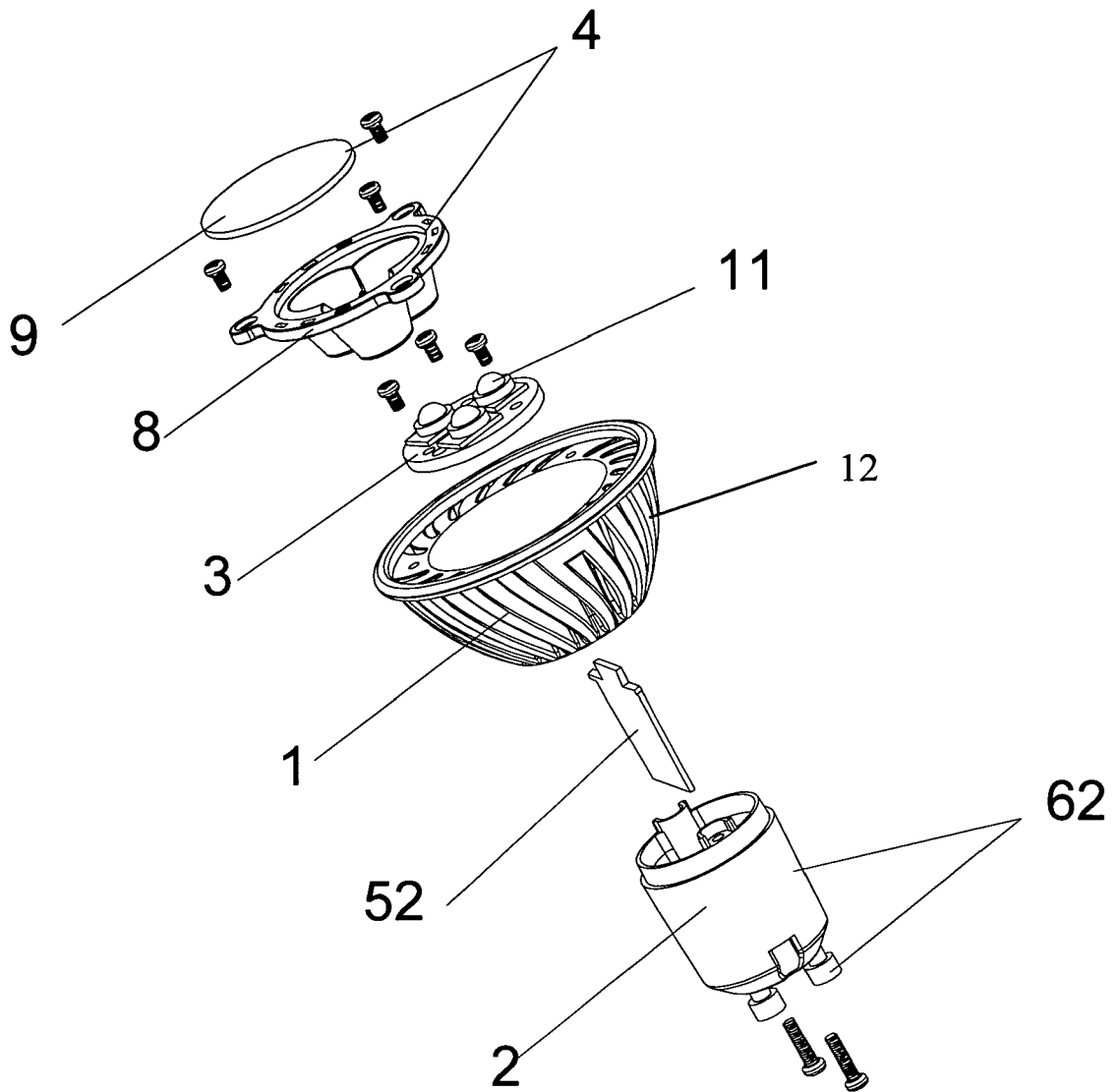


FIG. 3

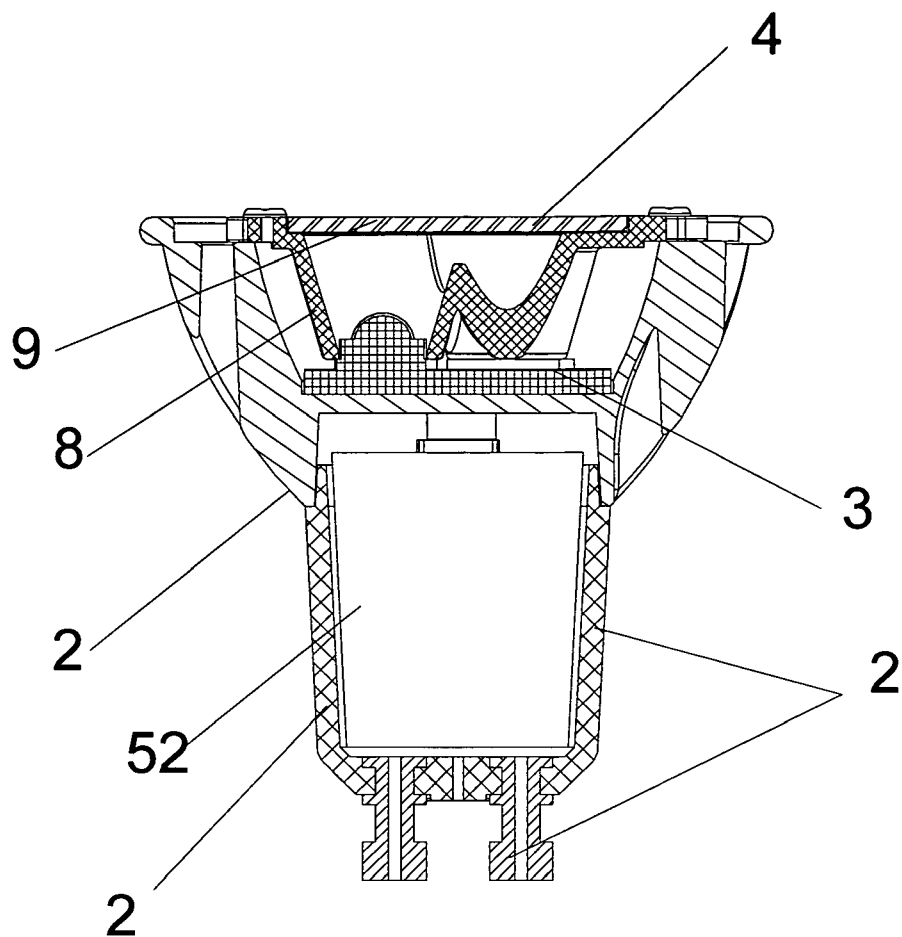


FIG. 4

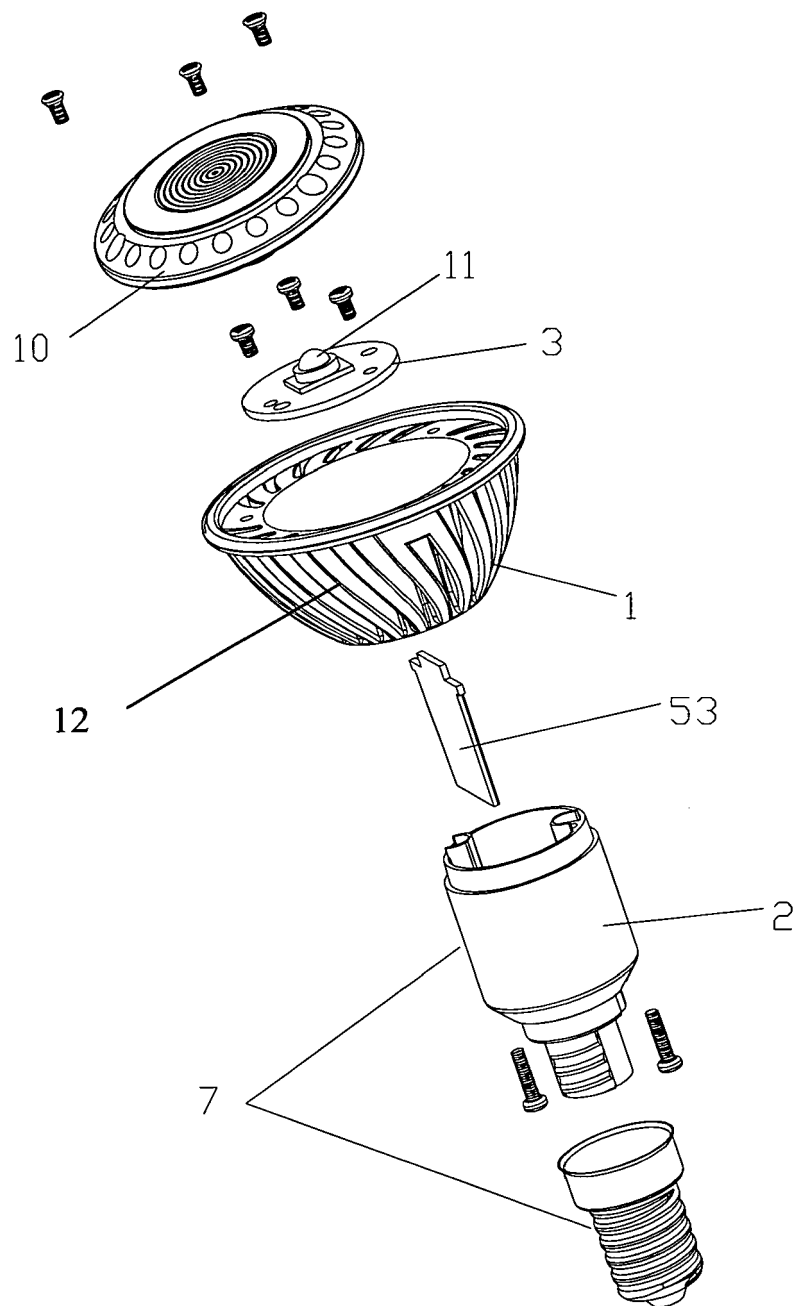


FIG. 5

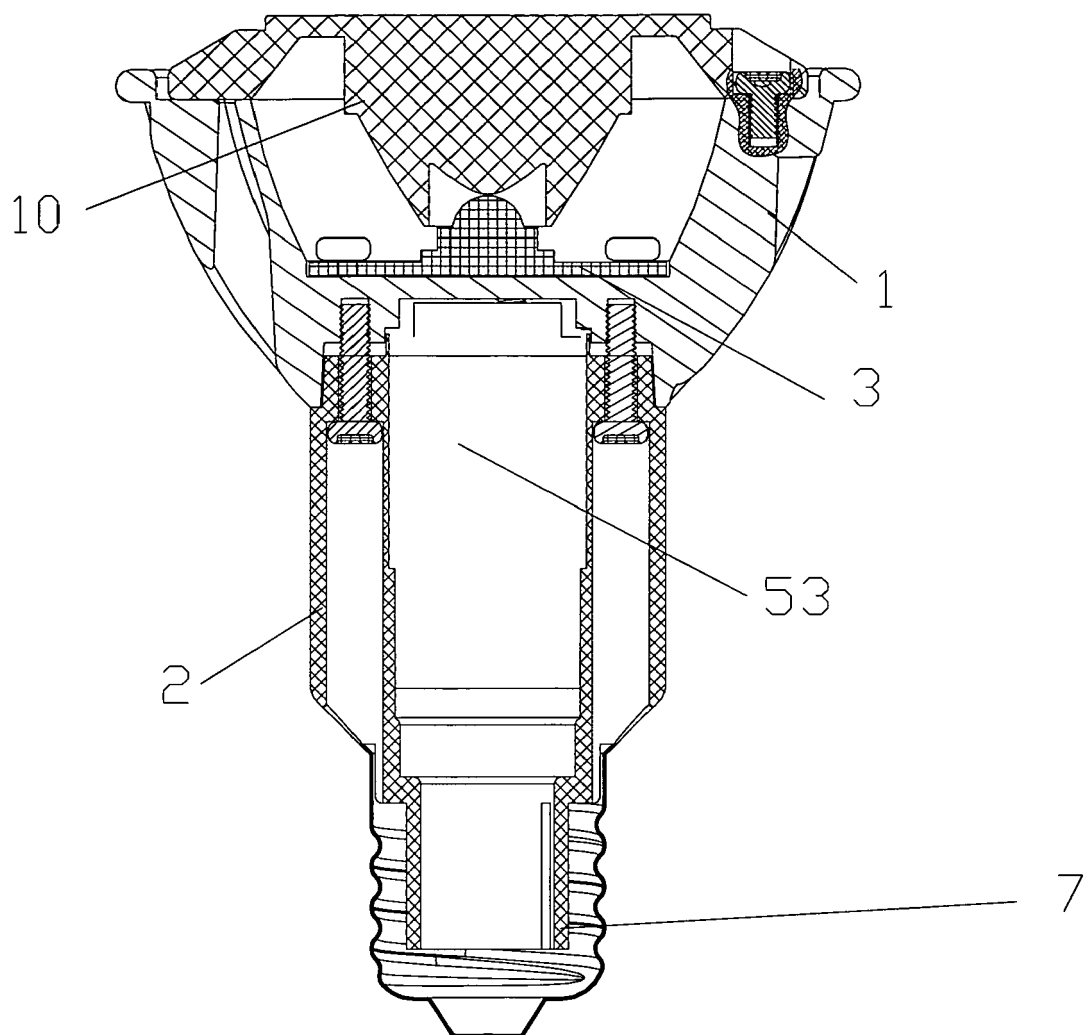


FIG. 6



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 08 00 1210

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 20 2007 003679 U1 (HONG KUAN TECHNOLOGY CO LTD [TW]) 16 May 2007 (2007-05-16) * paragraphs [0020], [0022], [0026], [0028], [0029]; figures 3,4 *	1-10	INV. F21K7/00
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X	WO 2007/146566 A (LIGHTING SCIENCE GROUP CORP [US]; MAXIK FREDRIC S [US]; GARRITY PAUL J) 21 December 2007 (2007-12-21) * figures 13,14 * * page 2, lines 32-34 * * page 3, lines 1-5,12-18 * * page 4, lines 15-21 * * page 7, lines 5-31 *	1-10	
X	US 2004/066142 A1 (STIMAC TOMISLAV J [US] ET AL) 8 April 2004 (2004-04-08) * paragraphs [0004], [0030], [0033] - [0035], [0038] - [0040]; figures 1,2a,2b,2c *	1-7,9,10	TECHNICAL FIELDS SEARCHED (IPC) F21K
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 2 June 2008	Examiner Chao, Oscar
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	

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 08 00 1210

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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