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(54) LED bulb

(57) An LED bulb (3) comprises a lamp housing (31), a lamp cap (32), a core tube (33) disposed inside the lamp housing (31), a plurality of LED plates (34) mounted on the core tube (33), and a controller (35) serving to manipulate an on-off operation of the LED plates (34) . Wherein, the controller (35) is substantially disposed inside a room (331) of the core tube (33), and the core tube (33) has one end thereof connected to the lamp cap (32), so as to facilitate a free substitution of the controller (35) and promote the using convenience. The connection of the core tube (33) and the lamp cap (32) serves to radiate the heat created by the LED plates (34) from the core tube (33) toward the lamp cap (32) and the lamp housing (31) for a speedy dissipation and preventing from burning the LED bulb (3) under a high temperature.

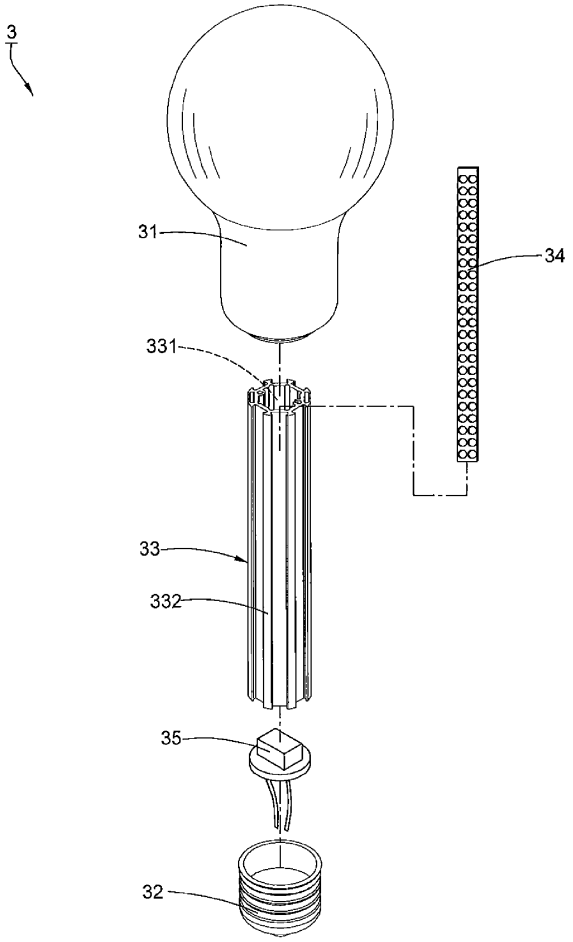

FIG. 2

EP 2 322 843 A1

Description

1. Field of the Invention

[0001] The present invention relates to a bulb structure, particularly to an LED bulb with the preferable heat dissipation.

2. Description of the Related Art

[0002] Fig. **1** discloses a conventional LED bulb **1.** The LED bulb **1** includes a head **11,** a base **12** attached to the head **11**, a shield **13** disposed above the base **12,** a core tube **14** located inside the shield **13,** multiple LED plates **15** disposed on the core tube **14,** a core base **16** inside the base **12** connected to the core tube **14,** and a circuit panel **17** electrically connected to the core base **16**. Wherein, the core tube **14** is formed into a hollow configuration by centralizing with respect to an axis. On the core tube **14,** a plurality of recesses **141** are defined for an embedment of the LED plates **15**. The disposition of the core tube **14** is specialized in lighting; the hollow core tube **14** along with the core base **16** assists in radiating the ensued heat or thermal, therefore the conventional LED bulb **1** substantially obtains effects of illumination and heat dissipation.

[0003] In operation, by virtue of the mutual engagement between the core tube **14** and the core base **16** and the location of the core base 16 set within the lamp cap **12,** the disposition of the lamp cap **12** overly occupies the space and inevitably reduces the illumination of the LED bulb **1,** with the result that the illumination area of the LED plates **15** are affected. Furthermore, although the core base **16** can 1 function as a radiator, the core base **16** wrapped in the lamp cap **12** causes the heat scattered from the core tube **14** to be unable to dissipate. In this manner, the base **12** may not efficiently cool down if the LED bulb **1** still lasts the lighting and the production of heat and may become subject to ignition when the circuit panel **17** and the LED plates **15** are over heated under the high temperature, thus still requiring improvements.

SUMMARY OF THE INVENTION

[0004] The object of the present invention is to provide an LED bulb that can facilitate a convenient replacement without changing the typical appearance, attain a swift dissipation, and decrease the occurrence of ignition as a result of the over-heated LED bulb.

[0005] An LED bulb comprising a lamp housing, a lamp cap engaged with said lamp housing, a core tube disposed inside said lamp housing and providing a room defined at a central thereof, a plurality of LED plates mounted on said core tube, and a controller controlling an on-off operation of said LED plates.

[0006] Characterized in that, said controller is disposed within said room, and said core tube has one end thereof connected to said lamp cap, so as to permit the heat produced by said LED plates to radiate through said core tube, said lamp cap, and said lamp housing.

[0007] In addition to the dissipation, the present invention substantially prevents the ignition of the LED bulb while being subjected to a high temperature.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008]

Fig**. 1** is a schematic view showing a conventional invention;

Fig**. 2** is an exploded view showing a structure of the present invention;

Fig**. 3** is a schematic view showing the present invention in assemblage;

Fig**. 4** is a schematic view showing the present invention in operation;

and

Fig**.** 5 is another perspective view showing the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0009] Figs. **2** and **3** show a first preferred embodiment of the present invention. An LED bulb **3** in accordance with the present invention comprises a lamp housing **31,** a lamp cap **32** engaged with the lamp housing **31,** a core tube **33** disposed inside the lamp housing **31,** a plurality of LED plates **34** mounted on the core tube **33,** and a controller 35 controlling an on-off operation of the LED plates **34;** wherein, the core tube **33** defines a room **331** at a central thereof for accommodating the controller **35.** Herein, the core tube **33** can be formed by any feasible contours, for example, an octagonal core tube **33** is performed in the figures. Preferably, there are multiple ribs **332** defining on an outer periphery of the core tube **33** for engaging with and positioning the LED plates **34.** Furthermore, the core tube **33** has one end thereof connected to the lamp cap **32,** thereby permitting the heat produced by the LED plates **34** to radiate through the core tube **33,** the lamp cap **32,** and the lamp housing **31.** For promoting a swift dissipating efficiency, a colloid member **36** explicitly shown in Figs. **3** and **4** is preferably arranged at a joint of the lamp housing **31** and the lamp cap **31.**

[0010] Referring to Figs. **3** and **4,** after assembling the elements as mentioned above, the controller **35** inside the room **331** of the core tube 33 could preferably adapt to a bulb with a typical appearance, like the style of the LED bulb **1** in Fig. **1** and could dispose without occupying large space. The controller **35** mainly serves to switch the illumination of the LED plates **34** and allows a feasible replacement if necessary, so as to increase the using convenience. When in use, the electrified controller **35**

activates the LED plates **34** to shine, and concurrently, since the LED plates **34** are disposed on the core tube **33** and the core tube **33** is directly connected to the lamp cap **32,** the LED bulb **3** can entirely illuminate without any obstruction, namely to thoroughly perform the brightness of the LED plates **34.** In addition, the core tube **33** as defined connects to the lamp cap **32,** which renders the lamp cap **32** able to substantially contact with the lamp housing **31.** Accordingly, the heat produced by the LED plates **34** could be dispersed from the core tube **33** and traveled through the lamp cap **32** and the lamp housing **31** for expanding the radiating area, so that the LED plates **34** is kept from burning or igniting incurred by the heat made by the LED plates **34** abiding in the LED bulb **3** to cause a high-temperature condition. Therefore, the present invention preferably attains the swift heat dissipation.

[0011] Referring to Fig**. 5,** a second preferred embodiment of the present invention is shown. The LED bulb **3** similarly comprises the lamp housing **31,** the lamp cap **32,** the core tube **33,** the LED plates **34** and the controller **35.** Especially, the lamp housing **31** further includes a transparent portion **311** and a radiating portion **312** whose one end is connected to the transparent portion **311** and the other end is connected to the lamp cap **32.** Moreover, a plurality of radiating ribs **37** are disposed between the radiating portion **312** and the core tube **33** at intervals. Thereby, turning on the LED plates **34** allows the generated heat to be radiated by the core tube **33** and the lamp cap **32.** In addition to the auxiliary radiating function provided by the radiating ribs **37** and the radiating portion **312,** the radiating area of the LED bulb **3** is preferably increased to promote the heat dispersing effect.

[0012] To sum up, the present invention takes advantage of the controller disposed in the core tube, thereby saving the space, permissibly adapting to a bulb with the typical appearance, and allowing a direct replacement for increasing the convenience of using. The connection of the core tube and the lamp cap further integrally performs and exposing the illumination of the LED plates without covering and leads to the heat radiating through the lamp cap and the lamp housing, thus providing a favorable dissipation and preventing the over-heated LED bulb from burning.

[0013] While we have shown and described the embodiment in accordance with the present invention, it should be clear to those skilled in the art that further embodiments may be made without departing from the scope of the present invention.

Claims

1. An LED bulb (3) comprising a lamp housing (31), a lamp cap (32) engaged with said lamp housing (31), a core tube (33) disposed inside said lamp housing (31) and providing a room (331) defined at a central thereof, a plurality of LED plates (34) mounted on said core tube (33), and a controller (35) controlling an on-off operation of said LED plates (34);
characterized in that, said controller (35) being disposed within said room (331), and said core tube (33) having one end thereof connected to said lamp cap (32), so as to permit the heat produced by said LED plates (34) to radiate through said core tube (33), said lamp cap (32), and said lamp housing (31).

2. The LED bulb as claimed in claim 1, wherein said lamp housing (31) includes a transparent portion (311) and a radiating portion (312) whose one end engages with said transparent portion (311) and the other end engages with said lamp cap (32).

3. The LED bulb as claimed in claim 2, wherein, a plurality of radiating ribs (37) are disposed between said radiating portion (312) and said core tube (33) at intervals.

4. The LED bulb as claimed in claim 1, wherein a colloid member is arranged at a connection of said lamp housing (31) and said lamp cap (32).

5. The LED bulb as claimed in claim 2, wherein a colloid member is arranged at a connection of said lamp housing (31) and said lamp cap (32).

6. The LED bulb as claimed in claim 1, wherein a plurality of ribs (332) are defined on an outer periphery of said core tube (33) for engaging with and positioning said LED plates (34).

7. The LED bulb as claimed in claim 2, wherein a plurality of ribs (332) are defined on an outer periphery of said core tube (33) for engaging with and positioning said LED plates (34).

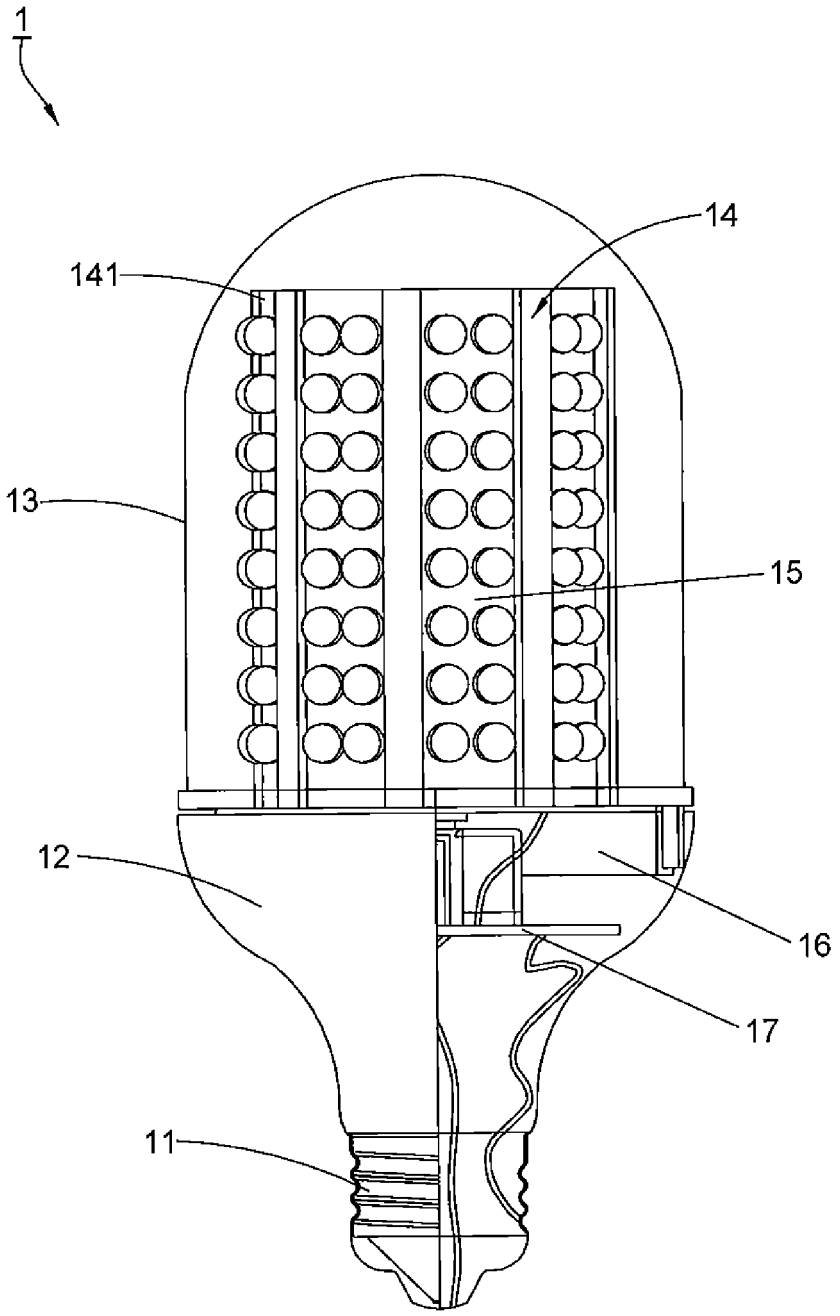

FIG. 1
(PRIOR ART)

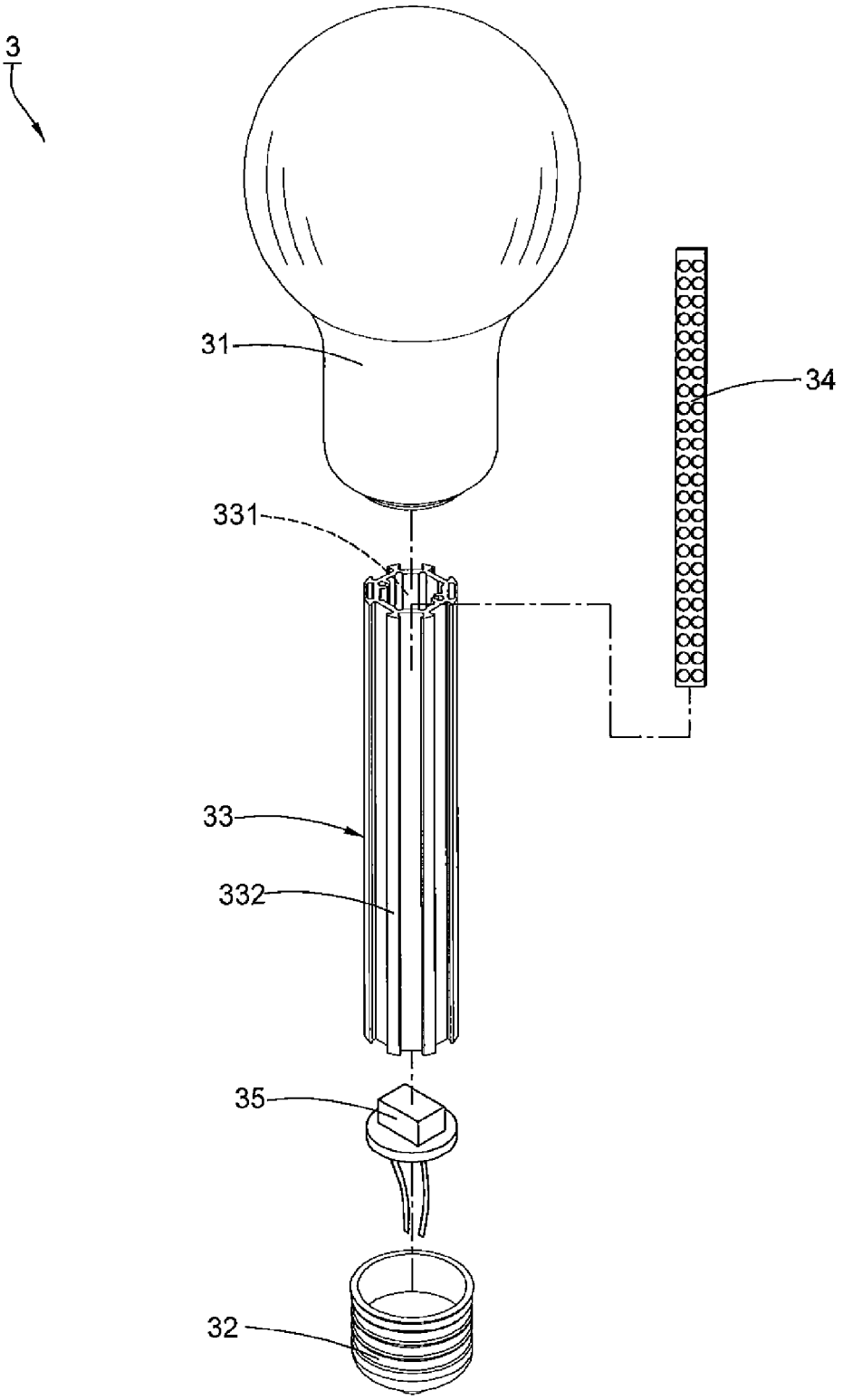

FIG. 2

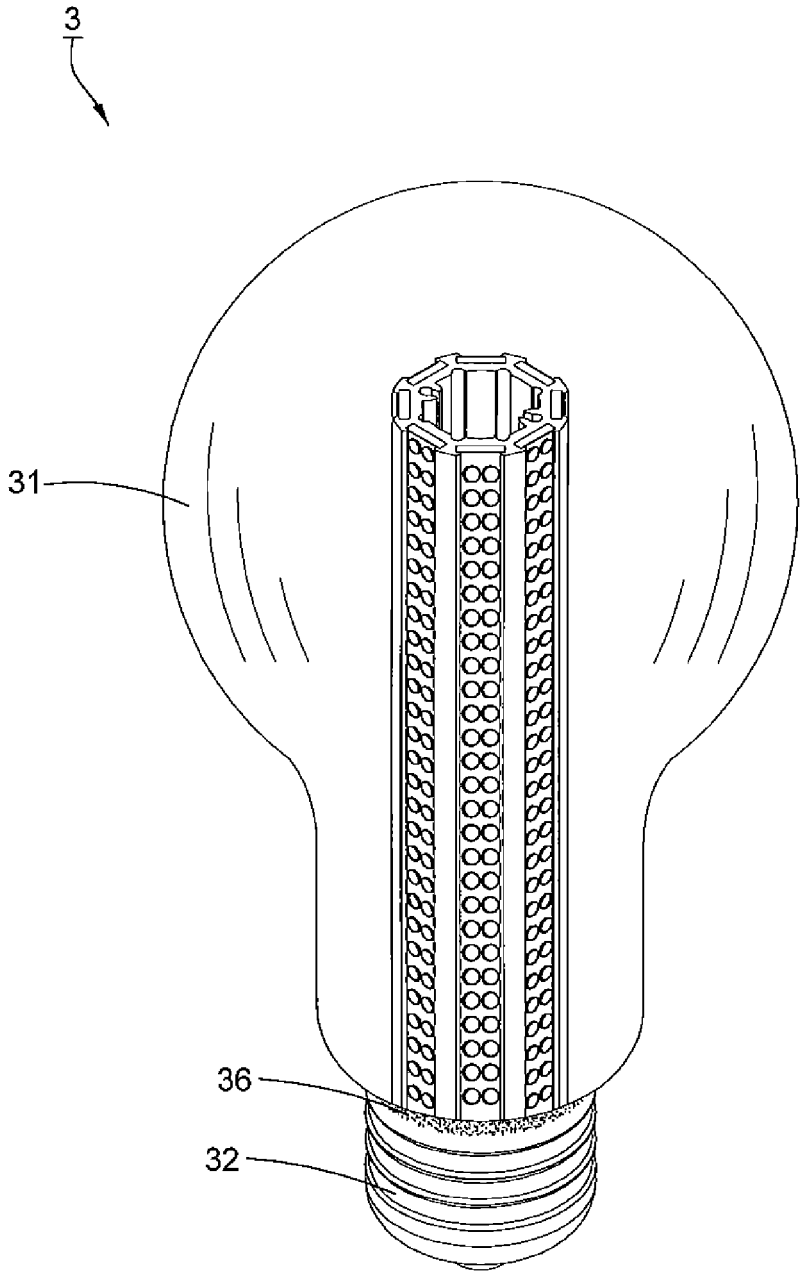

FIG. 3

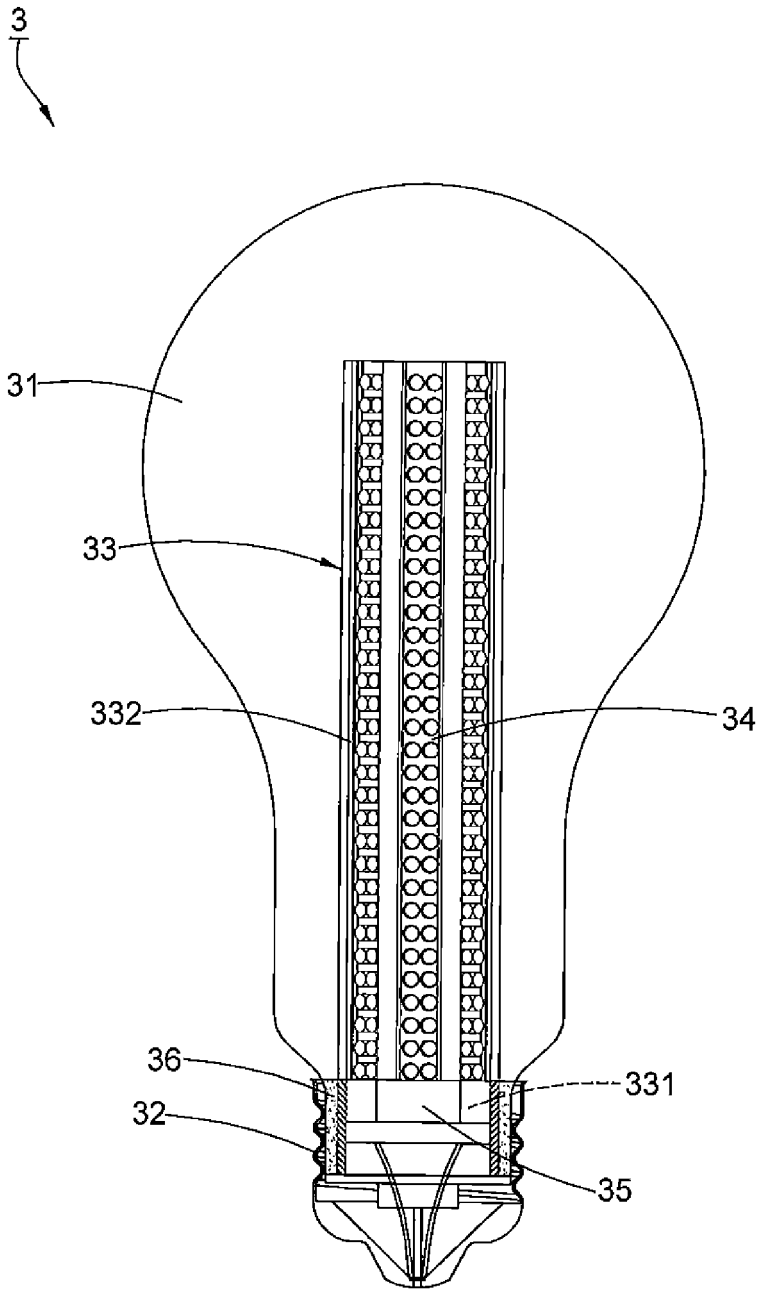

FIG. 4

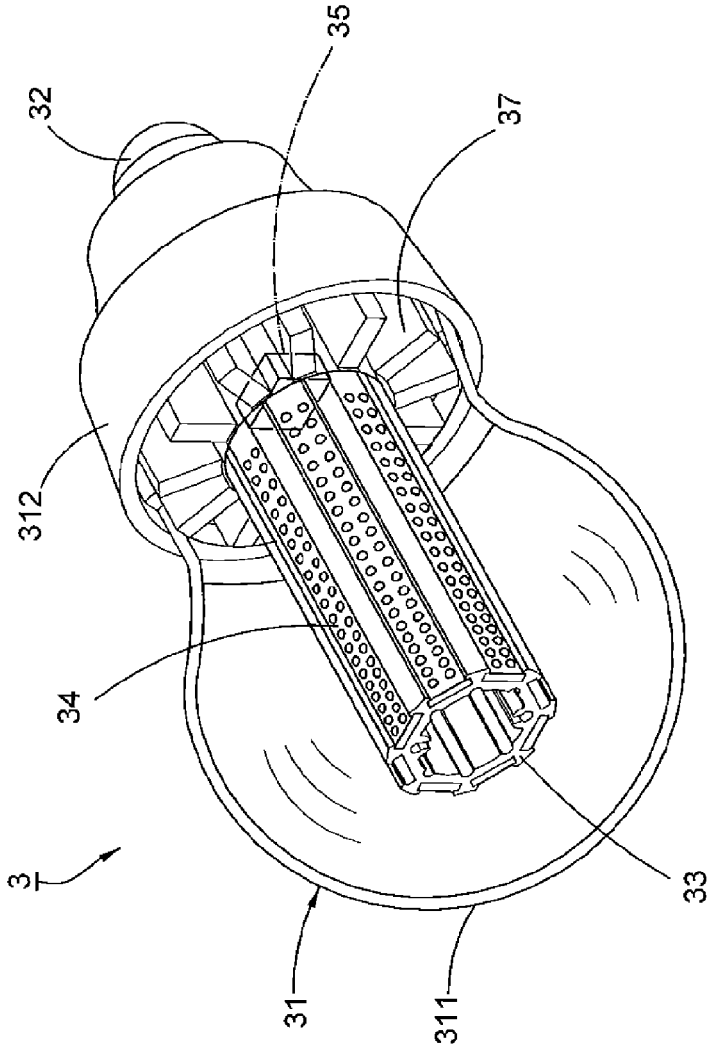

FIG. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 10 16 6306

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 6 621 222 B1 (HONG KUN-LIANG [TW]) 16 September 2003 (2003-09-16) * column 1, line 63 - column 2, line 19; figures 1-3 *	1-7	INV. F21K99/00
A	US 2009/109674 A1 (LODHIE PERVAIZ [US]) 30 April 2009 (2009-04-30) * paragraphs [0016], [0017], [0021]; figure 1 *	1-7	
A	US 2007/159828 A1 (WANG ROBERT [TW]) 12 July 2007 (2007-07-12) * paragraph [0011] - paragraph [0013]; figures 1-3 *	1-7	
A	US 2010/079984 A1 (LIU YOU-XUE [CN]) 1 April 2010 (2010-04-01) * paragraph [0018] - paragraph [0020]; figures 3,5 *	1-7	
A	GB 2 462 815 A (SENSITIVE ELECTRONIC CO LTD [CN]) 24 February 2010 (2010-02-24) * page 5, line 15 - page 10, line 2; figures 3,4,6 *	1-7	TECHNICAL FIELDS SEARCHED (IPC) F21K

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	30 November 2010	Schmid, Klaus

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 10 16 6306

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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30-11-2010

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82