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(54) LIGHT-EMITTING ASSEMBLY, LED RETROFIT LAMP AND ASSEMBLING METHOD THEREOF

LICHTEMITTIERENDE ANORDNUNG, NACHGERÜSTETE LED-LAMPE UND MONTAGEVERFAHREN DAFÜR

ENSEMBLE ÉLECTROLUMINESCENT, LAMPE DE CONVERSION À DEL ET PROCÉDÉ D'ASSEMBLAGE ASSOCIÉ

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Description

Technical Field

[0001] The present invention relates to a light-emitting assembly. Such as the light-emitting diode lamp described in document US 2010/0039829 A1 and disclosing the preamble of claim 1. In addition, the present invention further relates to an LED retrofit lamp having the light-emitting assembly and an assembling method thereof.

Background Art

[0002] LED retrofit lamps of the types such as MR16, PAR38, A60 and GX53 are seethingly finding the way of replacing traditional illuminating devices such as incandescent and fluorescent lamps because they are more energy-saving and has a smaller size and a longer service lifetime. With the technology development, LED package itself can reach high efficiency, such as 140lm/W for cold white and 90lm/W for warm white and they are supposed to have a long lifetime as to 50,000 hours, but when the LED is integrated into a retrofit lamp together with an LED driver, a thermal management device and an optical component, the efficiency and service lifetime of the retrofit lamp are highly dependent upon how to design the driver, heat sink device and optical component. Some of the electrical power consumed in the LED is converted to heat rather than light. According to statistics of U.S. Department of Energy, 75% to 85% of energy used to drive the LED is converted to heat, and the heat must be conducted from the LED die to the underlying PCB and heat sink device. If the heat cannot be conducted timely, the light output performance of the LED will be reduced and a color shift will be produced in a short term, and the service lifetime of the LED will be shortened in a long term. And the performance of the heat sink device directly affects the LED illuminating device. A good heat sink device design should be capable of providing favorable local air flow conditions, good radiation between surfaces, low material cost and simpler and easier manufacturing.

[0003] When a traditional MR-16 halogen lamp used as a downlight mounted in a ceiling is replaced, how to well dissipate heat from the LED as the light-emitting assembly becomes a key factor. The traditional MR-16 LED retrofit lamp has problems in two aspects. In one aspect, an outer profile and size of a heat sink of the traditional MR-16 LED retrofit lamp are restricted by a relatively small lamp fixture because, when the traditional halogen light source is replaced by an LED light source, the LED light source must be assured to be capable of being assembled into the lamp fixture of the replaced MR-16 halogen lamp, and meanwhile, the heat sink in coordination with the LED light source also should be assured to be capable of passing through the lamp fixture. However, the lamp fixture generally has a big opening for accommodating the light source and a relatively small rear opening for fixing the heat sink and other components. As a result, the outer profile of the heat sink must be designed to be so small that it can pass through the small opening. But a small heat sink can only allow the LED light source to work at a low power such as 4-5W, thus, the light output capability thereof is poor.

[0004] And in the other aspect, the MR-16 halogen lamp is usually used as a downlight mounted in the ceiling, in which the working environment is close and the air convection condition is poor, thus, the heat sink must be designed to be relatively big for providing good heat dissipation performance. But if a big heat sink cannot be installed into the lamp fixture of the MR-16 halogen lamp from below the ceiling, a user needs to install the heat sink from above the ceiling, which is quite inconvenient. However, it is still quite hard to install such a big heat sink from above the ceiling, and a housing of the MR-16 halogen lamp always needs to be replaced for adaptation to such big heat sink, which increases a user's load in cost.

Summary of the Invention

[0005] In order to solve the above problems, the present invention provides a light-emitting assembly. The light-emitting assembly can replace a light source such as halogen lamp and incandescent lamp in an illuminating device; moreover, a big heat sink having a good heat dissipation performance can be used so that use of a high-power LED light source is allowed. In addition, application of the existing lamp fixture simplifies the installation and reduces the cost. Besides, the present invention further provides an LED retrofit lamp having the light-emitting assembly and an assembling method thereof.

[0006] The first object of the present invention is accomplished via a light-emitting assembly. The light-emitting assembly comprises a housing, a light source provided in the housing and a heat sink provided on an outer surface of the housing, wherein the light-emitting assembly further comprises a holding assembly that comprises a holding rod partially extending from the housing and movable between an initial position and a locking position, wherein the holding rod is inserted into the heat sink in the initial position and presses the heat sink against the outer surface in the locking position. As the heat sink can be installed individually after the housing of the light-emitting assembly is installed in a position where it is to be installed, it is unnecessary to consider the size of the position where the housing of the light-emitting assembly is to be installed when the heat sink is designed, which can prominently improve the heat dissipation performance of the whole light-emitting assembly. Moreover, there is no need to provide a new installation fixture dedicated to the light-emitting assembly for adaptation to the heat sink, thus the cost is reduced. Besides, the light-emitting assembly of the present application has a simpler structure and is more easily assembled.

[0007] Preferably, the holding rod has a cylindrical rod

section, a first stop end and a second stop end that are formed at both ends of the cylindrical rod section, respectively. The cylindrical rod section allows rotation of the holding rod around its own longitudinal axis while allowing extension and movement of the holding rod in the housing. The first stop end and the second stop end serve the function of stopping the holding rod and the heat sink provided on the holding rod, respectively.

[0008] Further preferably, the housing comprises a holding rod assembling cavity for accommodating the holding rod, wherein the holding rod assembling cavity comprises a first cylindrical cavity section and a second cylindrical cavity section, wherein a diameter of the first cylindrical cavity section is bigger than that of the second cylindrical cavity section so as to form a stop flange at a joint between the first cylindrical cavity section and the second cylindrical cavity section. The stop flange cooperates with the first stop end of the holding rod to prevent the holding rod from escaping from the housing.

[0009] Advantageously, the holding assembly further comprises a compression spring that has both ends against the first stop end and the stop flange, respectively. When the heat sink is fixed on the outer surface of the housing by the second stop end, a prestressing force is generated as the compression spring is pressed by the first stop end and the stop flange. The prestressing force is transferred to the heat sink via the second stop end so as to assure the heat sink to be tightly against the outer surface of the housing. This further improves the heat transfer performance between the heat sink and the housing.

[0010] According a preferred solution of the present invention, the second stop end is a flat end and has a length bigger than a diameter of the cylindrical rod section and a width equal to or smaller than the diameter of the cylindrical rod section. Besides, a via is opened in the heat sink through which the holding rod passes, wherein a cross section profile of the via is consistent with a cross section profile of the second stop end. In practical assembling, the second stop end should has a size that can assure the holding rod, in the initial position, to pass through the via of the heat sink and in the locking position, to lock the heat sink.

[0011] Preferably, the holding assembly further comprises a stop nut accommodated in the via and screwed into threads on the cylindrical rod section so as to be pressed against an end surface of the housing defining the holding rod assembling cavity. A compressed degree of the compression spring can be adjusted by screwing the stop screw so that the prestressing force is altered.

[0012] According to the present invention, the housing has a conic section that has the outer surface against which the heat sink is pressed, and the heat sink has an accommodation cavity for accommodating the conic section. This structure assures a contact area as big as is possible between the heat sink and the housing so as to improve the heat transfer efficiency.

[0013] Preferably, the light source is an LED light source that is more energy-saving, has a smaller size and a longer service lifetime, and also can provide very favorable light output efficiency.

[0014] Another object of the present invention is accomplished via an LED retrofit lamp. The LED retrofit lamp comprises a lamp fixture and a light-emitting assembly fixed into the lamp fixture, wherein the light-emitting assembly is the light-emitting assembly mentioned above. The LED retrofit lamp of the present invention uses a lamp fixture of an illuminating device to be replaced thereby, and has a favorable heat dissipation performance, a high power and a low cost, and is easily installed.

[0015] The last object of the present invention is accomplished via an assembling method of the LED retrofit lamp. The assembling method comprises steps of: a) installing a housing with a light source into a lamp fixture from below; b) installing a heat sink into the lamp fixture from above to press the same against an outer surface of the housing; c) enabling a holding rod partially extending from the housing to pass through a via of the heat sink; d) pulling the holding rod in a direction away from the housing so that a second stop end of the holding rod protrudes from the via; and e) rotating the second stop end to press the heat sink against the outer surface. With the assembling method of the present invention, a process of assembling the LED retrofit lamp is simpler and user operations are easier.

Brief Description of the Drawings

[0016] The accompanying drawings constitute a part of the present Description and are used to provide further understanding of the present invention. Such accompanying drawings illustrate the embodiments of the present invention and are used to describe the principles of the present invention together with the Description. In the accompanying drawings the same components are represented by the same reference numbers. As shown in the drawings:

Fig. 1 is a sectional view of an LED retrofit lamp of the present invention; and

Fig. 2 is a schematic diagram of an assembled LED retrofit lamp of the present invention.

Detailed Description of the Embodiments

[0017] Fig. 1 is a sectional view of an LED retrofit lamp of the present invention. It can be seen from Fig. 1 that the LED retrofit lamp comprises a light-emitting assembly and a lamp fixture 7 for fixing the light-emitting assembly. The lamp fixture 7 is an original lamp fixture of an illuminating device to be replaced. As can be further seen form Fig. 1, the light-emitting assembly comprises a housing 1, a light source 2 provided in the housing 1 and a heat sink 3 provided on an outer surface 1c of the housing 1.

It can be further seen from Fig. 1 that the light-emitting assembly further comprises a holding assembly, wherein holding assembly comprises a holding rod 4 that partially extends from the housing 1 and is movable between an initial position and a locking position, wherein the holding rod 4 is inserted into the heat sink 3 in the initial position and presses the heat sink 3 against the outer surface 1c in the locking position. In one solution of the present invention, the light source 2 is an LED light source.

[0018] In the present embodiment, the holding rod 4 has a cylindrical rod section 4a, a first stop end 4b and a second stop end 4c that are formed at both ends of the cylindrical rod section 4a, respectively. The housing 1 comprises a holding rod assembling cavity 1a for accommodating the holding rod 4, wherein the holding rod assembling cavity 1a comprises a first cylindrical cavity section 1a' and a second cylindrical cavity section 1a", wherein a diameter of the first cylindrical cavity section 1a' is bigger than that of the second cylindrical cavity section 1a" so as to form a stop flange 1b at a joint between the first cylindrical cavity section 1a' and the second cylindrical cavity section 1a". Besides, the holding assembly further comprises a compression spring 5 that has both ends against the first stop end 4b and the stop flange 1b, respectively.

[0019] In one solution of the present invention, the second stop end 4c is a flat end and has a length bigger than a diameter of the cylindrical rod section 4a and a width equal to or smaller than the diameter of the cylindrical rod section 4a. In the present embodiment, viewed from a cross section of the holding rod 4, a cross section of the second stop end 4c is elliptical (see Fig. 2), and of course, it also can be rectangular.

[0020] In addition, the heat sink 3 opens a via 3a through which the holding rod 4 passes, wherein a cross section profile of the via 3a is consistent with a cross section profile of the second stop end 4c so as to assure the holding rod to be able to pass through the via 3a.

[0021] It can be further seen from Fig. 1 that the holding assembly further comprises a stop nut 6 accommodated in the via 3a and screwed into threads on the cylindrical rod section 4a so as to be pressed against an end surface of the housing 1 defining the holding rod assembling cavity 1a.

[0022] Further, the housing 1 has a conic section that has the outer surface 1c against which the heat sink 3 is pressed, and the heat sink 3 has an accommodation cavity for accommodating the conic section. In the present embodiment, the heat sink 3 has a wedge-shaped insert section at one side thereof facing the housing 1, and the accommodation cavity is in the insert section. The insert section can be inserted into a space between the housing 1 and the lamp fixture 7, thus a contact area is assured to be as big as is possible between the heat sink 3 and the housing 1. Moreover, the size and profile of the heat sink can be designed according to a practical output efficiency of the light-emitting assembly for satisfying heat dissipation requirements.

[0023] Fig. 2 is a schematic diagram of an assembled LED retrofit lamp of the present invention. As can be seen from Fig. 2, the heat sink 3 has a relatively big size notably bigger than that of the lamp fixture 7. The heat sink 3 obviously cannot be installed into the lamp fixture 7 from below.

[0024] When the LED retrofit lamp of the present invention is used as a downlight, firstly, a housing 1 with a light source 2 is installed into a lamp fixture 7 below a ceiling; then, a heat sink 3 is installed into the lamp fixture 7 above the ceiling to press the same against an outer surface 1c of the housing 1, meanwhile, a holding rod 4 partially extending from the housing 1 is enabled to pass through a via 3a of the heat sink 3; thereafter, the holding rod 4 is pulled in a direction away from the housing 1 so that a second stop end 4c of the holding rod 4 protrudes from the via 3a; and finally, the second stop end 4c is rotated to press the heat sink 3 against the outer surface 1c, thus the assembling process is completed.

[0025] The above is merely preferred embodiments of the present invention but not to limit the present invention. For the person skilled in the art, the present invention may have various alterations and changes.

List of reference signs

[0026]

1	housing
1a	holding rod assembling cavity
1a'	first cylindrical cavity section
1a"	second cylindrical cavity section
1b	stop flange
1c	outer surface
2	light source
3	heat sink
3a	via
4	holding rod
4a	cylindrical rod section
4b	first stop end
4c	second stop end
5	compression spring
6	stop nut

7 lamp fixture

Claims

1. A light-emitting assembly comprising a housing (1), a light source (2) provided in the housing (1) and a heat sink (3) provided on an outer surface (1c) of the housing (1), **characterized in that** the light-emitting assembly further comprises a holding assembly, wherein the holding assembly comprises a holding rod (4) that partially extends from the housing (1) and is movable between an initial position and a locking position, wherein the holding rod (4) is inserted into the heat sink (3) in the initial position and presses the heat sink (3) against the outer surface (1c) in the locking position.

2. The light-emitting assembly according to Claim 1, **characterized in that** the holding rod (4) has a cylindrical rod section (4a), a first stop end (4b) and a second stop end (4c) that are formed at both ends of the cylindrical rod section (4a), respectively.

3. The light-emitting assembly according to Claim 2, **characterized in that** the housing (1) comprises a holding rod assembling cavity (1a) for accommodating the holding rod (4), wherein the holding rod assembling cavity (1a) comprises a first cylindrical cavity section (1a') and a second cylindrical cavity section (1a"), wherein a diameter of the first cylindrical cavity section (1a') is bigger than that of the second cylindrical cavity section (1a") so as to form a stop flange (1b) at a joint between the first cylindrical cavity section (1a') and the second cylindrical cavity section (1a").

4. The light-emitting assembly according to Claim 3, **characterized in that** the holding assembly further comprises a compression spring (5) that has both ends against the first stop end (4b) and the stop flange (lb), respectively.

5. The light-emitting assembly according to Claim 3, **characterized in that** the second stop end (4c) is a flat end and has a length bigger than a diameter of the cylindrical rod section (4a) and a width equal to or smaller than the diameter of the cylindrical rod section (4a).

6. The light-emitting assembly according to Claim 5, **characterized in that** a via (3a) is opened in the heat sink (3) through which the holding rod (4) passes, wherein a cross section profile of the via (3a) is consistent with a cross section profile of the second stop end (4c).

7. The light-emitting assembly according to any one of Claims 2-6, **characterized in that** the holding assembly further comprises a stop nut (6) accommodated in the via (3a) and screwed into threads on the cylindrical rod section (4a) so as to be pressed against an end surface of the housing (1) defining the holding rod assembling cavity (1a).

8. The light-emitting assembly according to any one of Claims 1-6, **characterized in that** the housing (1) has a conic section that has the outer surface (1c) against which the heat sink (3) is pressed, and the heat sink (3) has an accommodation cavity for accommodating the conic section.

9. The light-emitting assembly according to any one of Claims 1-6, **characterized in that** the light source (2) is an LED light source.

10. An LED retrofit lamp comprising a lamp fixture (7) and a light-emitting assembly fixed into the lamp fixture (7), **characterized in that** the light-emitting assembly is the light-emitting assembly according to any one of Claims 1-9.

11. An assembling method of LED retrofit lamp, **characterized by** comprising steps of:

    a) installing a housing (1) with a light source (2) into a lamp fixture (7) from below;
    b) installing a heat sink (3) into the lamp fixture (7) from above to press the same against an outer surface (1c) of the housing (1);
    c) enabling a holding rod (4) partially extending from the housing (1) to pass through a via (3a) of the heat sink (3);
    d) pulling the holding rod (4) in a direction away from the housing (1) so that a second stop end (4c) of the holding rod (4) protrudes from the via (3a); and
    e) rotating the second stop end (4c) to press the heat sink (3) against the outer surface (1c).

Patentansprüche

1. Lichtemittierende Anordnung, umfassend ein Gehäuse (1), eine Lichtquelle (2), die in dem Gehäuse (1) angeordnet ist und eine Wärmesenke (3), die an einer äußeren Oberfläche (1c) des Gehäuses (1) bereitgestellt ist, **dadurch gekennzeichnet, dass** die lichtemittierende Anordnung ferner eine Halteanordnung umfasst, wobei die Halteanordnung eine Haltestange (4) umfasst, die sich teilweise von dem Gehäuse (1) erstreckt und zwischen einer Anfangsposition und einer Verriegelungsposition beweglich ist, wobei die Haltestange (4) in der Anfangsposition in die Wärmesenke (3) eingeführt wird und die Wärmesenke (3) in der Verriegelungsposition gegen die äu-

ßere Oberfläche (1c) drückt.

2. Lichtemittierende Anordnung nach Anspruch 1, **dadurch gekennzeichnet, dass** die Haltestange (4) einen zylindrischen Stangenabschnitt (4a), ein erstes Anschlagende (4b) und ein zweites Anschlagende (4c) aufweist, die an beiden Enden des zylindrischen Stangenabschnitts (4a) ausgebildet sind.

3. Lichtemittierende Anordnung nach Anspruch 2, **dadurch gekennzeichnet, dass** das Gehäuse (1) einen Haltestangen-Anordnungshohlraum (1a) zum Aufnehmen der Haltestange (4) umfasst, wobei der Haltestangen-Anordnungshohlraum (1a) einen ersten zylindrischen Hohlraumabschnitt (1a') und einen zweiten zylindrischen Hohlraumabschnitt (1a'') umfasst, wobei ein Durchmesser des ersten zylindrischen Hohlraumabschnitts (1a') größer als der des zweiten zylindrischen Hohlraumabschnitts (1a'') ist, um einen Anschlagflansch (1b) an einer Verbindung zwischen dem ersten zylindrischen Hohlraumabschnitt (1a') und dem zweiten zylindrischen Hohlraumabschnitt (1a'') zu bilden.

4. Lichtemittierende Anordnung nach Anspruch 3, **dadurch gekennzeichnet, dass** die Halteanordnung ferner eine Kompressionsfeder (5) umfasst, deren beider Enden am ersten Anschlagende (4b) bzw. dem Anschlagflansch (1b) liegen.

5. Lichtemittierende Anordnung nach Anspruch 3, **dadurch gekennzeichnet, dass** das zweite Anschlagende (4c) ein flaches Ende und eine Länge aufweist, die größer als ein Durchmesser des zylindrischen Stangenabschnitts (4a) ist, und eine Breite, die gleich oder kleiner als der Durchmesser des zylindrischen Stangenabschnitts (4a) ist.

6. Lichtemittierende Anordnung nach Anspruch 5, **dadurch gekennzeichnet, dass** eine Durchlass (3a) in der Wärmesenke (3) geöffnet wird, den die Haltestange (4) durchläuft, wobei ein Querschnittsprofil des Durchlasses (3a) mit einem Querschnittsprofil des zweiten Anschlagendes (4c) übereinstimmt.

7. Lichtemittierende Anordnung nach einem der Ansprüche 2 bis 6, **dadurch gekennzeichnet, dass** die Halteanordnung ferner eine Anschlagmutter (6) umfasst, die in dem Durchlass (3a) untergebracht ist und in Gewinde des zylindrischen Stangenabschnitts (4a) derart eingeschraubt wird, um gegen eine Endoberfläche des Gehäuses (1) gepresst zu werden, das den Haltestangen-Anordnungshohlraum (1a) definiert.

8. Lichtemittierende Anordnung nach einem der Ansprüche 1 bis 6, **dadurch gekennzeichnet, dass** das Gehäuse (1) einen konischen Abschnitt aufweist, der die äußere Oberfläche (1c) aufweist, an welche die Wärmesenke (3) gedrückt wird, und wobei die Wärmesenke (3) einen Aufnahmehohlraum zum Aufnehmen des konischen Abschnitts aufweist.

9. Lichtemittierende Anordnung nach einem der Ansprüche 1 bis 6, **dadurch gekennzeichnet, dass** die Lichtquelle (2) eine LED-Lichtquelle ist.

10. Nachgerüstete LED-Lampe, umfassend eine Lampenfassung (7) und eine lichtemittierende Anordnung, die in der Lampenfassung (7) fixiert ist, **dadurch gekennzeichnet, dass** die lichtemittierende Anordnung die lichtemittierende Anordnung nach einem der Ansprüche 1 bis 9 ist.

11. Verfahren zum Anordnen der nachgerüsteten LED-Lampe, **gekennzeichnet durch** das Umfassen der Schritte:

a) Installieren eines Gehäuses (1) mit einer Lichtquelle (2) in einer Lampenfassung (7) von unten;
b) Installieren einer Wärmesenke (3) in der Lampenfassung (7) von oben, um diese gegen eine äußere Oberfläche (1c) des Gehäuses (1) zu drücken;
c) Ermöglichen, dass sich eine Haltestange (4) teilweise aus dem Gehäuse (1) erstreckt, um einen Durchlass (3a) der Wärmesenke (3) zu durchlaufen;
d) Ziehen der Haltestange (4) in einer Richtung weg von dem Gehäuse (1), so dass ein zweites Anschlagende (4c) der Haltestange (4) aus dem Durchlass (3a) vorsteht; und
e) Drehen des zweiten Anschlagendes (4c), um die Wärmesenke (3) gegen die äußere Oberfläche (1c) zu drücken.

Revendications

1. Ensemble électroluminescent comprenant un boîtier (1), une source de lumière (2) prévue dans le boîtier (1), et un puits de chaleur (3) prévu sur une surface extérieure (1c) du boîtier (1), **caractérisé en ce que** l'ensemble électroluminescent comprend en outre un ensemble de maintien, dans lequel l'ensemble de maintien comprend une tige de maintien (4) qui s'étend partiellement à partir du boîtier (1) et qui est mobile entre une position initiale et une position de verrouillage, dans lequel la tige de maintien (4) est insérée dans le puits de chaleur (3) dans la position initiale et presse le puits de chaleur (3) contre la surface extérieure (1c) dans la position de verrouillage.

2. Ensemble électroluminescent selon la revendication 1, **caractérisé en ce que** la tige de maintien (4) pré-

sente une section de tige cylindrique (4a), une première extrémité d'arrêt (4b) et une deuxième extrémité d'arrêt (4c) qui sont formées aux deux extrémités de la section de tige cylindrique (4a), respectivement.

3. Ensemble électroluminescent selon la revendication 2, **caractérisé en ce que** le boîtier (1) comprend une cavité d'assemblage de tige de maintien (1a) destinée à recevoir la tige de maintien (4), dans lequel la cavité d'assemblage de tige de maintien (1a) comprend une première section de cavité cylindrique (1a') et une deuxième section de cavité cylindrique (1a"), dans lequel un diamètre de la première section de cavité cylindrique (1a') est plus grand que celui de la deuxième section de cavité cylindrique (1a") de manière à former une bride d'arrêt (1b) à une jonction entre la première section de cavité cylindrique (1a') et la deuxième section de cavité cylindrique (1a").

4. Ensemble électroluminescent selon la revendication 3, **caractérisé en ce que** l'ensemble de maintien comprend en outre un ressort de compression (5) dont les deux extrémités sont situées contre la première extrémité d'arrêt (4b) et la bride d'arrêt (1b), respectivement.

5. Ensemble électroluminescent selon la revendication 3, **caractérisé en ce que** la deuxième extrémité d'arrêt (4c) est une extrémité plate et présente une longueur plus grande qu'un diamètre de la section de tige cylindrique (4a) et une largeur égale au ou plus petite que le diamètre de la section de tige cylindrique (4a).

6. Ensemble électroluminescent selon la revendication 5, **caractérisé en ce qu'**un trou d'interconnexion (3a) est ouvert dans le puits de chaleur (3), à travers lequel la tige de maintien (4) passe, dans lequel un profil de section transversale du trou d'interconnexion (3a) correspond à un profil de section transversale de la deuxième extrémité d'arrêt (4c).

7. Ensemble électroluminescent selon l'une quelconque des revendications 2 à 6, **caractérisé en ce que** l'ensemble de maintien comprend en outre un écrou d'arrêt (6) reçu dans le trou d'interconnexion (3a) et vissé sur des filets sur la section de tige cylindrique (4a) de manière à être pressé contre une surface d'extrémité du boîtier (1) définissant la cavité d'assemblage de tige de maintien (1a).

8. Ensemble électroluminescent selon l'une quelconque des revendications 1 à 6, **caractérisé en ce que** le boîtier (1) présente une section conique qui possède la surface extérieure (1c) contre laquelle le puits de chaleur (3) est pressé, et le puits de chaleur (3) comporte une cavité de réception destinée à recevoir la section conique.

9. Ensemble électroluminescent selon l'une quelconque des revendications 1 à 6, **caractérisé en ce que** la source de lumière (2) est une source de lumière LED.

10. Lampe de conversion à LED comprenant un dispositif de fixation de lampe (7) et un ensemble électroluminescent fixé dans le dispositif de fixation de lampe (7), **caractérisée en ce que** l'ensemble électroluminescent est l'ensemble électroluminescent selon l'une quelconque des revendications 1 à 9.

11. Procédé d'assemblage d'une lampe de conversion à LED, **caractérisé en ce qu'**il comprend les étapes suivantes:

a) installer un boîtier (1) pourvu d'une source de lumière (2) dans un dispositif de fixation de lampe (7) par le dessous;
b) installer un puits de chaleur (3) dans le dispositif de fixation de lampe (7) par le dessus afin de le presser contre une surface extérieure (1c) du boîtier (1);
c) permettre à une tige de maintien (4) qui s'étend partiellement à partir du boîtier (1) de passer à travers un trou d'interconnexion (3a) du puits de chaleur (3);
d) tirer la tige de maintien (4) dans une direction à l'écart du boîtier (1) de telle sorte qu'une deuxième extrémité d'arrêt (4c) de la tige de maintien (4) fasse saillie hors du trou d'interconnexion (3a); et
e) faire tourner la deuxième extrémité d'arrêt (4c) afin de presser le puits de chaleur (3) contre la surface extérieure (1c).

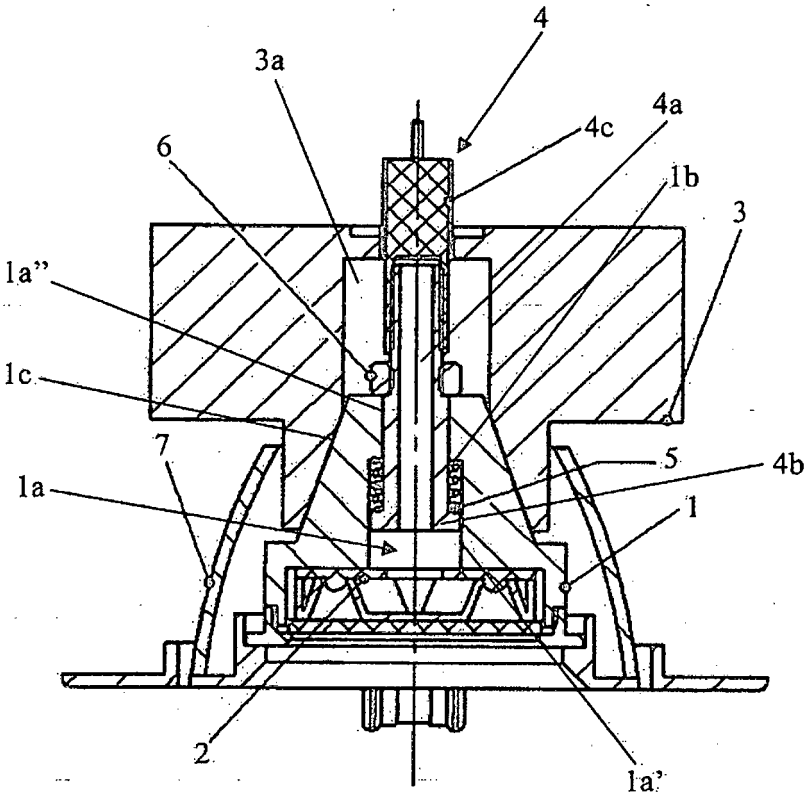

Figure 1

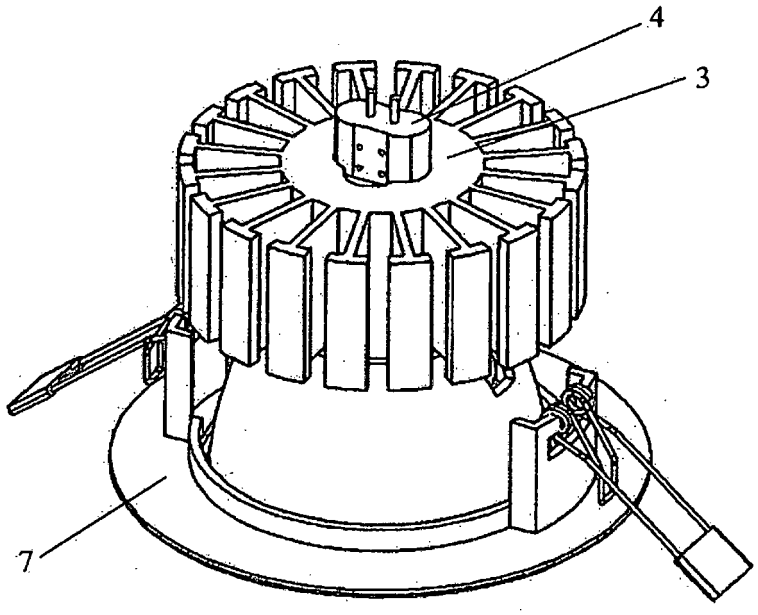

Figure 2

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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