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(54) **HEAT DISSIPATING DEVICE AND ILLUMINATING DEVICE WITH THE HEAT DISSIPATING
DEVICE**

WÄRMEABLEITENDE VORRICHTUNG UND BELEUCHTUNGSVORRICHTUNG MIT DER
WÄRMEABLEITENDEN VORRICHTUNG

DISPOSITIF DE DISSIPATION DE CHALEUR ET DISPOSITIF D'ÉCLAIRAGE AVEC LE DISPOSITIF
DE DISSIPATION DE CHALEUR

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Description

Technical Field

[0001] The present invention relates to a heat dissipating device and an illuminating device with the heat dissipating device.

Background Art

[0002] High-power light source, especially LED light source, is widely used in modern illuminating devices, as a result, how to improve the heat dissipating effect of the illuminating device has become an important research direction. In order to protect electronic parts inside the illuminating device, the electrically insulating performance of a heat sink in relation to the electronic parts also should be taken into consideration when a heat sink having metal parts is designed. In the prior art, the heat dissipating device can be made from materials having different thermal conductivities. For instance, a bulb for accommodating a light engine and a driver can be made from a thermal conductive plastic, and metal fins are inserted into inside of the bulb for heat dissipation. However, the heat dissipating function of such heat dissipating device is not ideal, and too much cost and assembling are needed for mounting the fins. In one product of the same type of PHILIPS, a heat dissipating device has a cup body for accommodating a light engine, and a bottom surface of the cup body or the whole cup body is made of a metal. On an opposite side of the cup body, an accommodating cavity made from a thermal conductive plastic and extending from a bottom surface thereof is formed, for accommodating a driver that should be in electrical insulation from a light engine. As there is only one metal bottom plate or cup body having good thermal conductivity, only limited heat dissipating effect can be achieved.

[0003] An earlier patent application EP2320133A2 discloses a LED light unit comprising an outer case and a heat radiating body. A space is partitioned between the outer case and the outermost end of the heat radiating body.

Summary of the Invention

[0004] Therefore, one object of the present invention lies in providing a heat dissipating device for illuminating device. The heat dissipating device has a simple structure, good heat dissipating performance and at least partially has electrically insulating property.

[0005] The heat dissipating device for illuminating device in accordance with the present invention comprises a first heat sink, characterized in that the first heat sink comprises a first cup and a second cup superposing on each other, wherein the first heat sink is made from a first thermal conductive material, the heat dissipating device further comprises a second heat sink made from an

insulative second thermal conductive material, the first cup and the second cup are partially covered by the second heat sink, respectively, and the first thermal conductive material has a higher thermal conductivity than the second thermal conductive material.

[0006] The concept of the present invention lies in manufacturing the heat dissipating device utilizing materials having a high thermal conductivity, as much as is possible, as main body, while assuring electrical insulation with part of electronic components provided in the heat dissipating device or electronic components provided near to the heat dissipating device in the illuminating device, so as to realize good heat dissipating effect. Specifically, the heat dissipating device in accordance with the present invention is made from first and second thermal conductive materials, wherein the first thermal conductive material has a better thermal conductivity than the second thermal conductive material, while the second thermal conductive material has characteristics of electrical insulation. In order to enable such heat dissipating device made from multiple materials to have good thermal conductivity, the first thermal conductive material is provided with a big area in the heat dissipating device to form the main part of the heat dissipating device, i.e. main heat dissipating component. Moreover, in order to give attention to the characteristics of electrical insulation at the same time, the first cup and the second cup are partially covered by the second heat sink according to the present invention, that is, the second heat sink that has the electrical insulating effect and can conduct heat partially envelops the first heat sink. The heat dissipating device manufactured in such a manner also can be called "hybrid heat-sink".

[0007] In accordance with one preferred solution of the present invention, the first cup and the second cup superpose on each other such that the first heat sink having a cross section with an H-shaped profile is formed. The first cup and the second cup abut against each other through respective end surfaces thereof so as to form the first heat sink, moreover, open ends of the first and second cups face opposite directions to form, for instance, an upper open end and a low open end of the first heat sink. The first heat sink formed in such a manner can accommodate two components to dissipate heat in the first and the second cups, respectively, so as to dissipate heat therefrom.

[0008] In accordance with the present invention, the second heat sink has a body, and the first cup and the second cup are at least partially covered by the body, respectively. The body, for instance, can cover inner circumferential walls and/or outer circumferential walls and/or inner surfaces of respective bases of the first cup and the second cup, so as to form a profile matching the shape of the first heat sink and to be in good thermal contact with the first heat sink.

[0009] In accordance with one preferred solution of the present invention, the outer circumferential walls of the first cup and the second cup are covered by the body.

As a result, the insulating second heat sink only covers the outer circumferential walls of the first heat sink, and the second heat sink is not on the inner circumferential walls of the first heat sink, i.e. the inner circumferential walls of the first and second cups, and the inner surfaces of the bases facing respective open ends. Via such configuration, components to dissipate heat accommodated in the first and second cups can be in direct, quick and highly effective thermal contact with the first heat sink. Moreover, the heat dissipating device can be, through the second heat sink, in electrically-insulating thermal contact with neighboring components arranged in the illuminating device.

[0010] In accordance with the present invention, the inner circumferential walls and the outer circumferential walls of the first cup and the second cup are imbedded into the body. As a result, by means of the second heat sink, at least part of the first heat sink can be assured to be in electrically-insulating thermal contact with the components to dissipate heat accommodated in the first cup and the second cup.

[0011] In accordance with another preferred solution of the present invention, the second heat sink covers the inner surface of the base of the first cup. Herein, the second heat sink does not cover the inner surface of the base of the second cup. The electrically insulating second heat sink preferably can cover the inner surface of the base of the first cup in a form of extra layer, and the inner surface faces the open end of the first cup. Such multiplex insulation configuration allows the first cup to be completely imbedded into the second heat sink, and electrical insulation between the first cup and electronic component accommodated therein can be assured with the second heat sink. Therefore, there is no need to provide an additional electrically insulating housing for such electronic component. The inner surface of the base of the second cup faces the open end of the second cup, and components to dissipate heat and requiring no electrically insulating protection can be preferably directly mounted on and is in thermal contact with this inner surface, and also can be arranged in the second cup in other manners. Thus, base on good thermal conductivity of the first heat sink, components to dissipate heat can be quickly and effectively cooled.

[0012] In accordance with one preferred solution of the present invention, the first cup and the second cup are made of a metal. Since metal has a higher thermal conductivity than rubber, plastic or other materials, aluminum, copper and other metals having good thermal conductivity can be chosen herein to manufacture the first cup and the second cup.

[0013] In accordance with one preferred solution of the present invention, the first cup and the second cup are made in one piece. In a situation that the first cup and the second cup are of a metal material, they can be made in one piece to become the first heat sink utilizing various suitable processes, which simplifies the manufacturing process and reduces the cost. In addition, since the su-

perposing regions of the first and second cups, i.e. bases of the first and second cups, are also made in one piece, the thermal conductive effect between the first cup and the second cup is enhanced.

[0014] In accordance with one preferred solution of the present invention, the first cup and the second cup are made through a stamping process, respectively. In a situation, for instance, that the first cup and the second cup have similar profiles, large-scale production of such cups can be realized through the stamping process.

[0015] In accordance with one preferred solution of the present invention, the first cup and the second cup are joined by means of thermal conductive glue, by means of which the bases of the first cup and the second cup closely abut against each other as much as is possible and can be in fixed connection. Therefore, the thermal conducting effect between the first cup and the second cup also can be improved.

[0016] In accordance with one preferred solution of the present invention, the second heat sink further comprises a plurality of fins formed on an outer circumferential wall of the body. Heat dissipating area of the heat dissipating device can be increased by forming extra fins, for instance, heat transferred to the second heat sink radiates to surrounding environment in a heat radiation mode.

[0017] In accordance with one preferred solution of the present invention, the plurality of fins and the body are made in one piece. When the fins and the second heat sink can be directly made in one piece, the manufacturing process is simplified. In addition, in another preferred embodiment, the fins are configured as insert-type fins or other parts having suitable structures for arrangement on the outer circumferential wall of the body.

[0018] In accordance with one preferred solution of the present invention, the first heat sink and the second heat sink are made together through an injection molding process, by means of which the second heat sink can be sprayed on the first heat sink and is enabled to have a profile matching the first heat sink.

[0019] In accordance with one preferred solution of the present invention, the second heat sink is made from a thermal conductive plastic. As a result, the second heat sink can have dual properties of thermal conduction and insulation.

[0020] In addition, the present invention further relates to an illuminating device comprising a driver, a light engine, and the heat dissipating device above.

[0021] In accordance with one preferred solution of the present invention, the driver is arranged in the first cup and the light engine is arranged in the second cup. Thus, the driver and the light engine are accommodated by the first and the second cups so as to save the structure space inside the illuminating device. When the illuminating device is in operation, the heat dissipating device also can advantageously transmit outwardly heat generated by the driver and the light engine. Particularly preferably, when the first cup is completely imbedded into the second heat sink, the first cup and the driver can be in electrically-

insulating thermal contact so as to dissipate heat while meeting requirements of electrics security.

Brief Description of the Drawings

[0022] 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 3D exploded diagram of a first embodiment of a heat dissipating device in accordance with the present invention;

Fig. 2 is a cross-section diagram of a second non-claimed embodiment of a heat dissipating device;

Fig. 3 is a cross-section diagram of a third embodiment of a heat dissipating device in accordance with the present invention; and

Fig. 4 is a cross-section diagram of a fourth embodiment of a heat dissipating device in accordance with the present invention.

Detailed Description of the Embodiments

[0023] In the following detailed description, reference is made to the accompanying drawings, which form a part hereof, and in which is shown by way of illustration specific embodiments in which the invention may be practiced. In this regard, directional terminology, such as "top", "bottom", "inner", "outer", is used reference to the orientation of the figures being described. Because components of embodiments of the present invention can be positioned in a number of different orientations, the directional terminology is used for purposes of illustration and is in no way limiting. It is to be understood that other embodiments may be utilized and structural or logical changes may be made without departing from the scope of the present invention. The following detailed description, therefore, is not to be taken in a limiting sense, and the scope of the present invention is defined by the appended claims.

[0024] It is to be understood that the features of the various exemplary embodiments described herein may be combined with each other, unless specifically noted otherwise.

[0025] Fig. 1 shows a first embodiment of a heat dissipating device 100 in accordance with the present invention. The heat dissipating device 100 for an illuminating device (not shown) comprises a first heat sink 1 and a second heat sink 4. In order to quickly and effectively

dissipate heat generated by components such as light engine or driver or the like to dissipate heat in operation, the first heat sink 1 and the second heat sink 4 are made from two materials having different thermal conductivities, respectively. In the present embodiment, the first heat sink 1 having good thermal conductivity is configured as a first cup 2 and a second cup 3 that are arranged opposite to each other, wherein open ends of the two cups face opposite directions for accommodating the components to dissipate heat, respectively; and another material having a slightly low thermal conductivity, preferably having electrically insulating characteristic, is used to manufacture the second heat sink 4. The first cup 2 and the second cup 3 herein are particularly partially covered by the second heat sink 4 such that the first heat sink 1 having a high thermal conductivity is assembled at a big area with the electrically insulating second heat sink 4 for use, thereby the heat dissipating device 100 has an ideal heat dissipating effect and the first heat sink 1 can be assured to electrically insulate from components to dissipate heat mounted therein or components surrounding the heat dissipating device 100 in the illuminating device.

[0026] In the present embodiment, the first cup 2 and the second cup 3 are configured as two independent parts and directly closely abut against each other through respective bases thereof. Preferably, on one hand, the first cup 2 and the second cup 3 are made from a metal having a high thermal conductivity, and the metal is, for instance, aluminum, copper or other suitable metal materials. Based on properties of metal material, the first cup 2 and the second cup 3 can be manufactured through a stamping process in production for improving the productive efficiency and reducing the manufacturing cost. And on the other hand, a thermal conductive plastic is preferably chosen as a thermal conductive material having electrically insulting performance to manufacture the second heat sink 4. In order to integrate the first heat sink 1 and the second heat sink 4 and to assure good thermal transfer therebetween, a body 5 covering the second heat sink 4 can be formed on at least an outer circumferential wall 7 of the first heat sink 1 through an injection molding process, as a result, the body 5 has a shape matching an outer profile of the first heat sink 1. In the present embodiment, in order to further improve the heat dissipating effect of the heat dissipating device 100, a plurality of additional fins 10 are formed on an outer circumferential wall of the body 5 for increasing the thermal contact area between the heat dissipating device 100 and the external environment. The fins 10 can be advantageously formed on the body 5 in one piece.

[0027] In an embodiment not shown, the fins 10 and the body 5 are formed independently, and mechanical linking structures such as slot and connecting piece are formed on the fins 10 or the body 5 to assemble the fins 10 and the body 5 together.

[0028] In an embodiment not shown, the first cup 2 and the second cup 3 can be advantageously in fixed thermal-

conductive connection through bases thereof utilizing, for instance, thermal conductive glue.

[0029] Fig. 2 is a cross-section diagram of a second embodiment of a heat dissipating device. In the present embodiment, the first cup 2 and the second cup 3 are made into an H-shaped first heat sink 1 in an integral manner, and the first heat sink 1 is covered by the body 5 of the second heat sink 4 through an insert-injection process or a similar process. As a result, a hybrid heat dissipating device structure characterized by "outer plastic and inner metal" as shown in the cross-section diagram is accomplished. The second heat sink 4 made from a thermal conductive plastic herein is an outer housing of the heat dissipating device 100, and then the heat dissipating device 100 can electrically insulate from other components arranged surrounding or near to the heat dissipating device 100 in the illuminating device.

[0030] Fig. 3 is a cross-section diagram of a third embodiment of a heat dissipating device 100 in accordance with the present invention. The third embodiment is different from the embodiment shown in Fig. 2 in that circumferential walls of the first cup 2 and the second 3 are completely imbedded into the body 5 made from a thermal conductive plastic, i.e. the thermal conductive plastic completely covers the inner circumferential walls 6 and the outer circumferential walls 7 of the first heat sink 1. Accordingly, an electrically-insulating thermal contact can be assured between the inner circumferential walls 6 of the first cup 2 and the second cup 3 and part of components to dissipate heat accommodated therein, and bases of the first cup 2 and the second cup 3 are in direct thermal contact with another part of the components to dissipate heat. Taking electric properties of respective components to dissipate heat, the heat dissipating device 100 having such structure can be in safe and highly-effective pertinent thermal contact with respective components to dissipate heat.

[0031] Fig. 4 is a cross-section diagram of a fourth embodiment of a heat dissipating device in accordance with the present invention. The fourth embodiment is different from the embodiment shown in Fig. 3 in that apart from the inner circumferential walls 6 and the outer circumferential walls 7 of the first heat sink 1 being completely imbedded into the body 5, a bottom surface of the base of the first cup 2, i.e. an inner surface 8 facing the open end, is also imbedded into the body 5, and an inner surface 9 of the base of the second cup 3 is not covered by the body 5. The electrically insulating first cup 2 is particularly suitable to accommodate components such as driver or the like, and therefore, there is no need to provide an additional prior insulating housing for the driver accommodated therein.

[0032] In addition, while a particular feature or aspect of an embodiment of the invention may have been disclosed with respect to only one of several implementations, such feature or aspect may be combined with one or more other features or aspects of the other implementations for any given or particular application. Further-

more, to the extent that the terms "include", "have", "with", or other variants thereof are used in either the detailed description or the claims, such terms are intended to be inclusive in a manner similar to the term "comprise".

[0033] 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.

10 List of reference signs

[0034]

1	first heat sink
2	first cup
3	second cup
4	second heat sink
5	body
6	inner circumferential wall
7	outer circumferential wall
8	inner surface of base of first cup
9	inner surface of base of second cup
10	fin
100	heat dissipating device

Claims

1. A heat dissipating device (100) for an illuminating device, comprising a first heat sink (1), wherein the first heat sink (1) comprises a first cup (2) and a second cup (3) superposing on each other, wherein the first heat sink (1) is made from a first thermal conductive material, the heat dissipating device (100) further comprises a second heat sink (4) made from an insulative second thermal conductive material, the first cup (2) and the second cup (3) are partially covered by the second heat sink (4), respectively, and the first thermal conductive material has a higher thermal conductivity than the second thermal conductive material, **characterized in that** the second heat sink (4) has a body (5), inner circumferential walls (6) and outer circumferential walls (7) of the first cup (2) and the second cup (3) are imbedded into the body (5).
2. The heat dissipating device (100) according to Claim 1, **characterized in that** the first cup (2) and the second cup (3) superpose on each other such that the first heat sink (1) having a cross section with an H-shaped profile is formed.
3. The heat dissipating device (100) according to Claim 1, **characterized in that** the second heat sink (4) covers an inner surface (8) of a base of the first cup (2).
4. The heat dissipating device (100) according to Claim

- 1, **characterized in that** the first cup (2) and the second cup (3) are made of a metal.
5. The heat dissipating device (100) according to Claim 4, **characterized in that** the first cup (2) and the second cup (3) are made in one piece. 5
6. The heat dissipating device (100) according to Claim 4, **characterized in that** the first cup (2) and the second cup (3) are made through a stamping process, respectively. 10
7. The heat dissipating device (100) according to Claim 4, **characterized in that** the first cup (2) and the second cup (3) are joined by means of thermal conductive glue. 15
8. The heat dissipating device (100) according to any of Claims 1-7, **characterized in that** the second heat sink (4) further comprises a plurality of fins (10) formed on an outer circumferential wall of the body (5). 20
9. The heat dissipating device (100) according to Claim 8, **characterized in that** the plurality of fins (10) and the body (5) are made in one piece. 25
10. The heat dissipating device (100) according to Claim 1, **characterized in that** the first heat sink (1) and the second heat sink (4) are made together through an injection molding process. 30
11. The heat dissipating device (100) according to Claim 1, **characterized in that** the second heat sink (4) is made from a thermal conductive plastic. 35
12. An illuminating device comprising a driver and a light engine, **characterized by** further comprising the heat dissipating device (100) according to any of Claims 1-11. 40
13. The illuminating device according to Claim 12, **characterized in that** the driver is arranged in the first cup (2) and the light engine is arranged in the second cup (3). 45

Patentansprüche

1. Wärmeableitvorrichtung (100) für eine Beleuchtungs- 50
vorrichtung, die einen ersten Kühlkörper (1) umfasst, wobei der erste Kühlkörper (1) einen ersten Becher (2) und einen zweiten Becher (3), die einander überlagern, umfasst, wobei der erste Kühlkörper (1) aus einem ersten wärmeleitenden Material hergestellt ist, wobei die Wärmeableitvorrichtung (100) ferner einen zweiten Kühlkörper (4) umfasst, der aus einem isolierenden zweiten wärmeleitenden Material

hergestellt ist, wobei der erste Becher (2) und der zweite Becher (3) jeweils teilweise von dem zweiten Kühlkörper (4) bedeckt sind, und das erste wärmeleitende Material eine höhere Wärmeleitfähigkeit als das zweite wärmeleitende Material aufweist, **dadurch gekennzeichnet, dass** der zweite Kühlkörper (4) einen Körper (5) aufweist, wobei innere umlaufende Wände (6) und äußere umlaufende Wände (7) des ersten Bechers (2) und des zweiten Bechers (3) in dem Körper (5) eingebettet sind.

2. Wärmeableitvorrichtung (100) nach Anspruch 1, **dadurch gekennzeichnet, dass** der erste Becher (2) und der zweite Becher (3) einander derart überlagern, dass der erste Kühlkörper (1) mit einem Querschnitt mit einem H-förmigen Profil gebildet ist.
3. Wärmeableitvorrichtung (100) nach Anspruch 1, **dadurch gekennzeichnet, dass** der zweite Kühlkörper (4) eine Innenfläche (8) eines Bodens des ersten Bechers (2) abdeckt.
4. Wärmeableitvorrichtung (100) nach Anspruch 1, **dadurch gekennzeichnet, dass** der erste Becher (2) und der zweite Becher (3) aus einem Metall hergestellt sind.
5. Wärmeableitvorrichtung (100) nach Anspruch 4, **dadurch gekennzeichnet, dass** der erste Becher (2) und der zweite Becher (3) einstückig hergestellt sind.
6. Wärmeableitvorrichtung (100) nach Anspruch 4, **dadurch gekennzeichnet, dass** der erste Becher (2) und der zweite Becher (3) jeweils durch ein Stanzverfahren hergestellt sind.
7. Wärmeableitvorrichtung (100) nach Anspruch 4, **dadurch gekennzeichnet, dass** der erste Becher (2) und der zweite Becher (3) mittels eines wärmeleitfähigen Klebers verbunden sind.
8. Wärmeableitvorrichtung (100) nach einem der Ansprüche 1-7, **dadurch gekennzeichnet, dass** der zweite Kühlkörper (4) ferner eine Vielzahl von Rippen (10) umfasst, die an einer äußeren umlaufenden Wand des Körpers (5) gebildet sind.
9. Wärmeableitvorrichtung (100) nach Anspruch 8, **dadurch gekennzeichnet, dass** die Vielzahl von Rippen (10) und der Körper (5) einstückig hergestellt sind.
10. Wärmeableitvorrichtung (100) nach Anspruch 1, **dadurch gekennzeichnet, dass** der erste Kühlkörper (1) und der zweite Kühlkörper (4) zusammen durch ein Spritzgussverfahren hergestellt sind.
11. Wärmeableitvorrichtung (100) nach Anspruch 1, **da-**

durch gekennzeichnet, dass die zweite Kühlkörper (4) aus einem wärmeleitfähigen Kunststoff hergestellt ist.

12. Beleuchtungsvorrichtung, die einen Treiber und einen Lichtgenerator umfasst, die ferner **gekennzeichnet durch** Umfassen der Wärmeableitvorrichtung (100) nach einem der Ansprüche 1-11 .
13. Beleuchtungsvorrichtung nach Anspruch 12, **dadurch gekennzeichnet, dass** der Treiber in dem ersten Becher (2) angeordnet ist und der Lichtgenerator in dem zweiten Becher (3) angeordnet ist.

Revendications

1. Dispositif de dissipation de chaleur (100) pour un dispositif d'éclairage, comprenant un premier dissipateur thermique (1), dans lequel le premier dissipateur thermique (1) comprend une première coupelle (2) et une seconde coupelle (3) se superposant l'une à l'autre, dans lequel le premier dissipateur thermique (1) est constitué d'un premier matériau thermoconducteur, le dispositif de dissipation de chaleur (100) comprend un second dissipateur thermique (4) constitué d'un second matériau thermoconducteur isolant, la première coupelle (2) et la seconde coupelle (3) sont partiellement couvertes par le second puits thermique (4), respectivement, et le premier matériau thermoconducteur a une thermoconductibilité supérieure à celle du second matériau thermoconducteur, **caractérisé en ce que** le second dissipateur thermique (4) a un corps (5), des parois circonférentielles internes (6) et des parois circonférentielles externes (7) de la première coupelle (2) et de la seconde coupelle (3) sont enrobées dans le corps (5).
2. Dispositif de dissipation de chaleur (100) selon la revendication 1, **caractérisé en ce que** la première coupelle (2) et la seconde coupelle (3) se superposent l'une à l'autre de sorte que soit formé le premier dissipateur thermique (1) ayant une section transversale avec un profil en H.
3. Dispositif de dissipation de chaleur (100) selon la revendication 1, **caractérisé en ce que** le second dissipateur thermique (4) couvre une surface interne (8) d'une base de la première coupelle (2).
4. Dispositif de dissipation de chaleur (100) selon la revendication 1, **caractérisé en ce que** la première coupelle (2) et la seconde coupelle (3) sont constituées d'un métal.
5. Dispositif de dissipation de chaleur (100) selon la revendication 4, **caractérisé en ce que** la première

coupelle (2) et la seconde coupelle (3) sont fabriquées en une seule pièce.

6. Dispositif de dissipation de chaleur (100) selon la revendication 4, **caractérisé en ce que** la première coupelle (2) et la seconde coupelle (3) sont fabriquées par un procédé de poinçonnage, respectivement.
7. Dispositif de dissipation de chaleur (100) selon la revendication 4, **caractérisé en ce que** la première coupelle (2) et la seconde coupelle (3) sont jointes au moyen d'une colle thermoconductrice.
8. Dispositif de dissipation de chaleur (100) selon l'une quelconque des revendications 1 à 7, **caractérisé en ce que** le second dissipateur thermique (4) comprend en outre une pluralité d'ailettes formées sur la paroi circonférentielle externe du corps (5).
9. Dispositif de dissipation de chaleur (100) selon la revendication 8, **caractérisé en ce que** la pluralité d'ailettes (10) et le corps (5) sont fabriqués en une seule pièce.
10. Dispositif de dissipation de chaleur (100) selon la revendication 1, **caractérisé en ce que** le premier dissipateur thermique (1) et le second dissipateur thermique (4) sont fabriqués ensemble par un procédé de moulage par injection.
11. Dispositif de dissipation de chaleur (100) selon la revendication 1, **caractérisé en ce que** le second dissipateur thermique (4) est constitué d'une matière plastique thermoconductrice.
12. Dispositif d'éclairage comprenant un pilote et un moteur de lumière, **caractérisé en ce qu'il** comprend en outre le dispositif de dissipation de chaleur (100) selon l'une quelconque des revendications 1 à 11.
13. Dispositif d'éclairage selon la revendication 12, **caractérisé en ce que** le pilote est agencé dans la première coupelle (2) et le moteur de lumière est agencé dans la seconde coupelle (3).

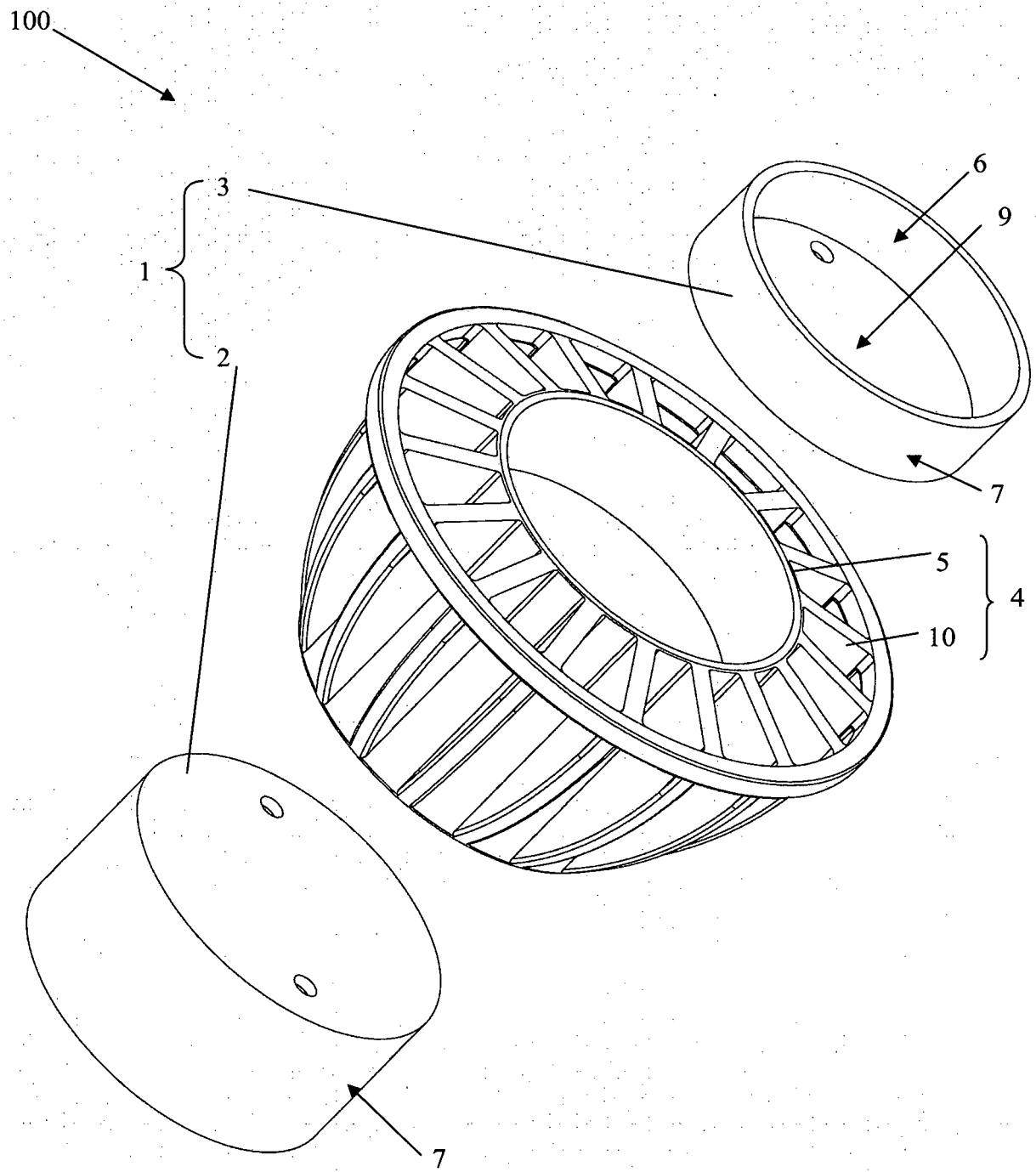


Figure 1

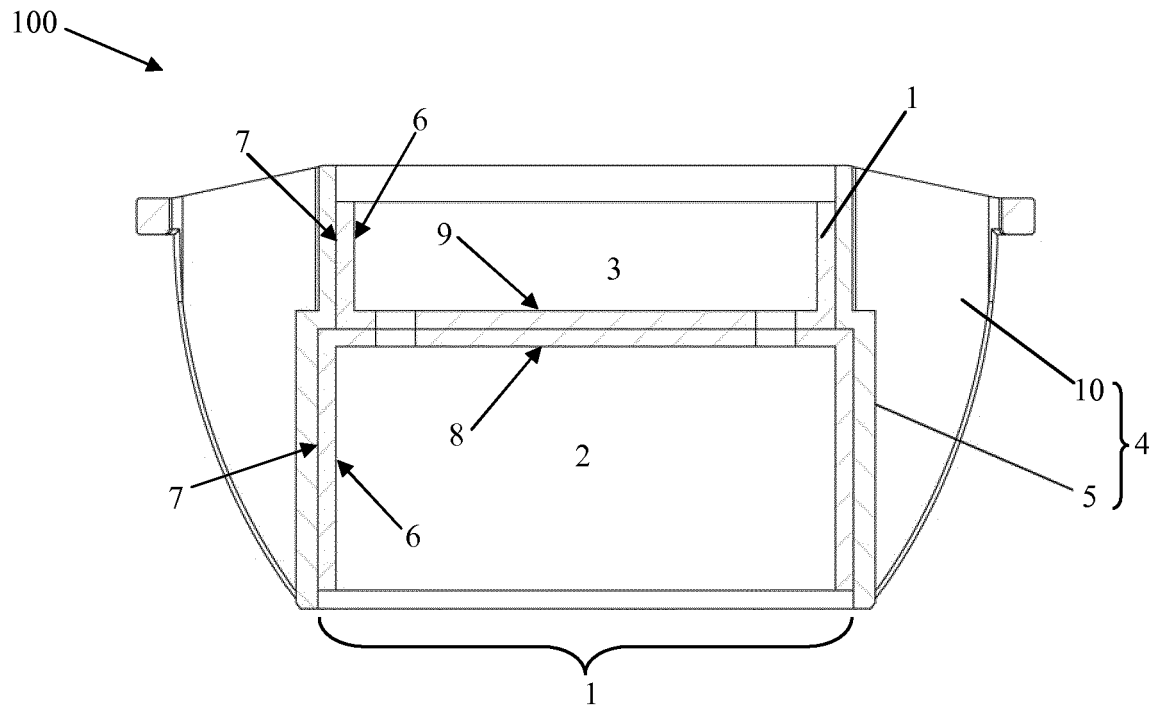


Figure 2

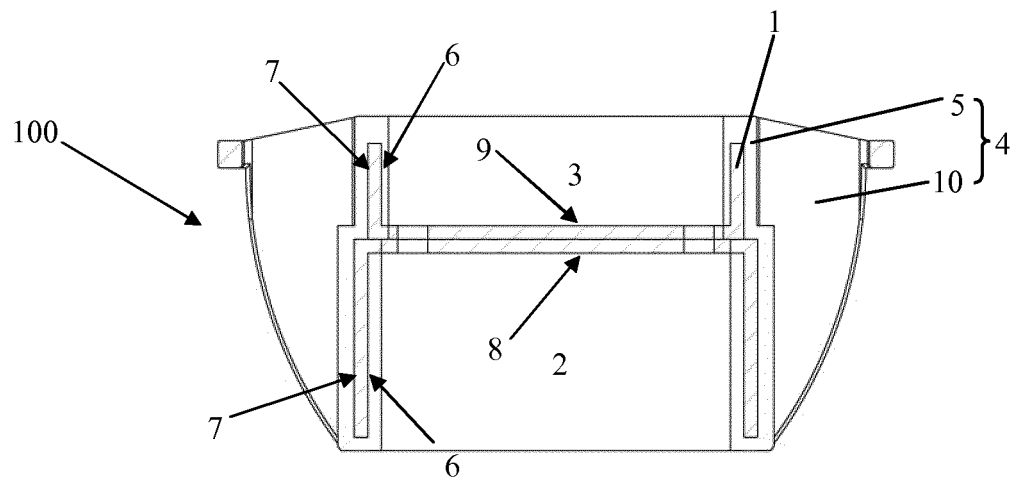


Figure 3

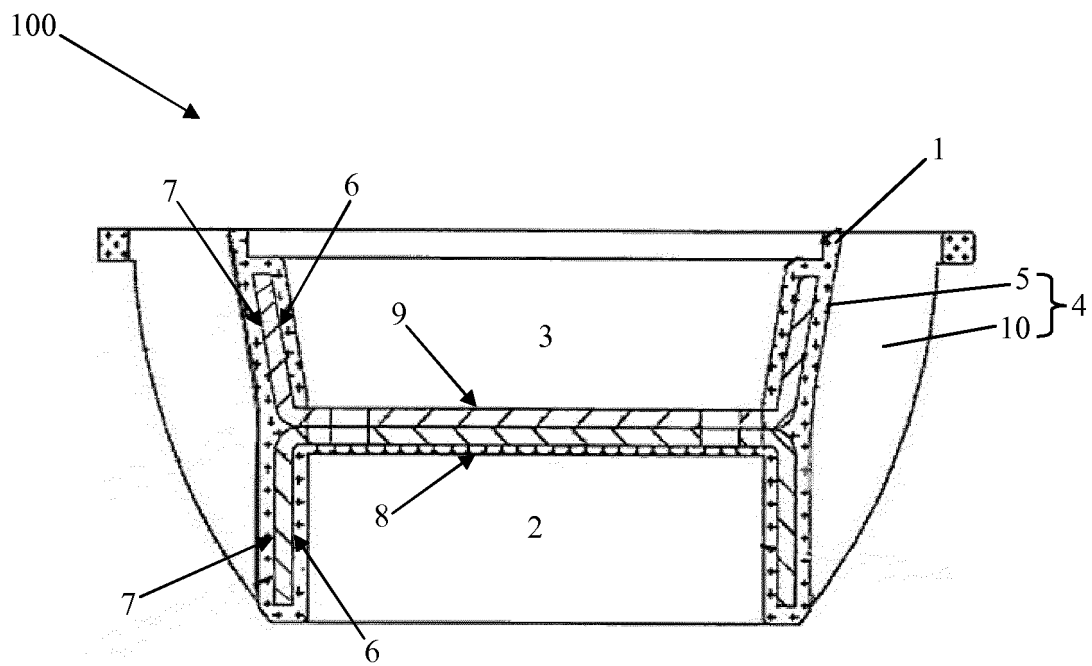


Figure 4

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 2320133 A2 [0003]