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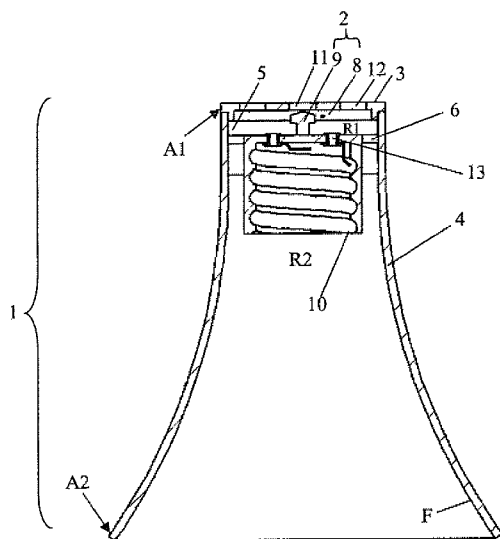


Figure 2

(57) Abstract: The present invention relates to a lamp holder for a lamp body (100), comprising a housing (1), characterized in that, the lamp holder further comprises a active cooling component (2) and the housing comprises a first cavity (R1) for accommodating the active cooling component (2) and a second cavity (R2) for accommodating the lamp body (100), and the first cavity (R1) is in air communication with the second cavity (R2). The lamp holder of the present invention has the advantages of strong universality, low cost, simple structure and easy installation, and enables uniform heat dissipation of the lamp body. In addition, the present invention further relates to an illuminating device having the lamp holder.

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Description

Lamp Holder and Illuminating Device Comprising the Lamp
Holder

5

Technical Field

The present invention relates to a lamp holder and an illuminating device comprising the lamp holder.

Background Art

10 With the development of illumination technology, the illuminating devices are more and more frequently used in various environments. As the power of the illuminating device is gradually increased, how to cool the illuminating devices, especially LED retrofit lamps, becomes an indispensable problem. In general, the cooling effects of the illuminating devices are affected in the following cases, for example, the case in which the cooling area is limited due to the structural space of the illuminating device, the case in which it is impossible to form sufficient air convection paths inside
15 the illuminating device, and the case in which the encapsulation process which may result in too high temperature of an electronic device is used. If the junction temperature of an LED is too high, it definitely affects the lifespan and light output of the LED.

25 In the prior art, some illuminating devices are provided with a fan for actively dissipating heat when the illuminating devices work with great power. However, as in these illuminating devices, the fan is directly installed on the lamp holder in an open manner, or is installed to surround the lamp
30 holder, dust will be easily brought, with the air flow, into

the illuminating devices without obstruct, which causes negative effects on the drivers.

Summary of the invention

In order to solve the above problems, the present invention provides a lamp holder for an illuminating device. The lamp holder is simple in structure, low in costs, can be easily installed, has strong universality, and has favorable dust-proof and heat dissipation effects. In addition, the present invention further provides an illuminating device having the lamp holder.

The lamp holder provided by the present invention comprises a housing, characterized in that, the lamp holder further comprises a active cooling component and the housing comprises a first cavity for accommodating the active cooling component and a second cavity for accommodating the lamp body, and the first cavity is in air communication with the second cavity. In the present invention, it is preferred that the cooling component and the lamp body are separately installed in the two cavities in air communication with each other, which, on the one hand, can favorably dissipate heat for the lamp body installed in the lamp holder, and on the other hand, can prevent dust from directly entering an illuminating device, especially a driver, due to air flow caused by the cooling component.

According to a preferred design scheme of the present invention, the housing comprises an end cover and a circumferential wall, a partition plate is provided in a cavity defined by the end cover and the circumferential wall for partitioning the cavity into the first cavity and the second cavity. The partition plate provided in a cavity defined by the end

cover can achieve the effect of space partition in the housing. The partition plate is preferably in parallel with the end cover to partition the space defined by the end cover and the circumferential wall into the first cavity accommodating the cooling component and the open second cavity for accommodating the lamp body, wherein the first cavity has a smaller volume than the second cavity.

According to a preferred design scheme of the present invention, the partition plate is provided with a plurality of first through holes allowing air communication between the first cavity and the second cavity in a region adjacent to the circumferential wall. Through these first through holes, the air flow caused by the cooling component can smoothly go through the first cavity and the second cavity, such that an air circulation is formed between the first cavity and the second cavity in the lamp holder, and further between the lamp holder and the outside environment.

According to a preferred design scheme of the present invention, in the second cavity, a flow guide region allowing air flow is formed between the circumferential wall of the housing and a circumferential profile of the lamp body, the flow guide region is in air communication with the first through holes. The flow guide region so defined surrounds the lamp body by a large area. Thus, through the air flow of the flow guide region, it is possible to take away heat generated by the lamp body as much as possible, so as to improve cooling effect. Moreover, by means of the circumferential wall shading and protecting the lamp body, it is possible to prevent dust in the outside environment from swarming into the lamp body.

Preferably, the first through holes are uniformly distrib-

uted. By providing the first through holes uniformly on the partition plate, uniform air communication can be achieved between the second cavity and the first cavity, in particular, between the flow guide region and the first cavity, which prevents local overheating of the lamp holder.

According to a preferred design scheme of the present invention, the cooling component is a fan including a rotation shaft, the fan is fixed on the partition plate by means of the rotation shaft. Air flow can be caused in the first cavity by driving the fan, which further causes air flow in the second cavity. Moreover, as the fan and the rotation shaft both have a simple structure, it is easy to install and maintain the fan and the rotation shaft. Of course, within the scope of the present invention, the cooling component may be other components capable of achieving the cooling effect.

According to a preferred design scheme of the present invention, an inner circumference surface of the circumferential wall, which defines the second cavity, is partially designed as a reflective surface for reflecting emergent light from the lamp body. The inner circumference surface, especially an inner circumference surface at the range of an open end of the second cavity can be designed as a reflective surface, which can be achieved, for example, by coating reflective materials, by disposing a reflective layer, or by other appropriate methods. As the lamp body is installed in the second cavity, the reflective surface can reflect light from the lamp body, so as to avoid light loss due to shading by the circumferential wall.

According to a preferred design scheme of the present invention, the lamp holder further comprises an electrical connection portion for the lamp body provided in the second cavity,

the electrical connection portion is provided on one side surface of the partition plate facing the second cavity, and projects from the side surface. By means of the electrical connection portion, the lamp body can be fixed in the second cavity, and an end portion of the lamp body for connecting a power supply is electrically connected with a power supply component in the lamp holder.

According to a preferred design scheme of the present invention, a circumference surface of the electrical connection portion for connecting the lamp body is provided with threads. Such connection portion is used for connecting a lamp body having, for example, an E27 base. Of course, the electrical connection portion can be particularly designed for connecting a lamp body having, for example, a GU10 base or other types of bases.

According to a preferred design scheme of the present invention, the rotation shaft is designed as a hollow shaft accommodating power supply lines for the fan and the lamp body. If the power supply lines are directly placed in the first cavity instead of the rotation shaft, it may affect the rotation of the fan and may cause damage to the power supply lines.

According to a preferred design scheme of the present invention, a positioning hole for fixing the rotation shaft and second through holes for air flow are opened on the center of the end cover. The second through holes opened on the end cover enable the air flow which goes through the first and second cavities to smoothly go through the end cover, so as to form an air cooling circulation between the outside environment and the whole lamp holder. The positioning hole opened on the center of the end cover can be pressed against, for example, a conic top surface of the rotation shaft, to

favorably sandwich the rotation shaft between the end cover and the partition plate, so as to fix the fan.

According to a preferred design scheme of the present invention, the fan is a fan capable of being directly driven by a DC power supply. Preferably, the fan is a fan integrated with
5 a transformer.

According to a preferred design scheme of the present invention, the circumferential wall of the housing is designed in a horn shape with a small diameter end and a large diameter
10 end, wherein the small diameter end is connected with the end cover, and the large diameter end is an open to environment. The circumferential wall which is designed in a horn shape corresponds to the circumferential profile of a conventional bulb, such that the lamp holder according to the present in-
15 vention is applicable to most of the lamp bodies.

Another object of the present invention is achieved by an illuminating device comprising a lamp holder of the above type and a lamp body. The illuminating device has a simple structure, and has favorable dustproof and heat dissipation per-
20 formances.

According to a preferred design scheme of the present invention, the lamp body comprises a heat sink which is at least partially located in the second cavity of the lamp holder, such that the air flowing in the second cavity can take heat
25 generated by the heat sink into the first cavity, so as to achieve the object of cooling the lamp body.

According to a preferred design scheme of the present invention, the lamp body is an LED retrofit lamp. As a green energy source, the LED light source is featured by a long ser-

vice life and a high optical efficiency.

Brief Description of the Drawings

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. In the drawings,

Fig. 1 is an exploded three dimensions-view of a lamp holder of the present invention;

Fig. 2 is a sectional view of a lamp holder of the present invention; and

Fig. 3 is a sectional view of an illuminating device of the present invention.

Detailed Description of the Embodiments

Fig. 1 is an exploded three dimensions-view of a lamp holder of the present invention. As apparent from the figure, the lamp holder comprises a housing 1 and a cooling component 2 installed in the housing 1. The housing 1 comprises a circumferential wall 4 having a horn shape, an end cover 3 and a partition plate 5. The end cover 3 covers a small diameter end A1 of the circumferential wall 4, the partition plate 5 is provided in parallel with the end cover 3 in the circumferential wall 4. Thus, the end cover 3, the partition plate 5 and part of the circumferential wall 4 between the

end cover 3 and the partition plate 5 define a first cavity R1 for accommodating the cooling component 2, and the partition plate 5 and the rest part of the circumferential wall 4 define a second cavity R2 for accommodating the lamp body 100 (see Fig. 2 and Fig. 3), the second cavity R2 having an open to environment, viz. a large diameter end A2 of the circumferential wall 4. The cooling component 2 and the lamp body 100 are separately disposed in different cavities, and by means of the circumferential wall 4 shading and protecting the lamp body 100 by a large area, it is possible to prevent dust in the outside environment from swarming into the lamp body 100.

The cooling component 2 here is a fan 8 having a rotation shaft 9. The bottom end of the rotation shaft 9 is fixed on the partition plate 5, and the top end of the rotation shaft 9 is pressed by positioning hole 11 opened on the center of the end cover 3, such that the fan 8 can be sandwiched between the end cover 3 and the partition plate 5. Such simple structure facilitates installation and maintenance of the fan.

It can be further seen from Fig. 1 that, in order to form an air cooling circulation enabling air communication between the first cavity R1, the second cavity R2, and the outside environment, a plurality of second through holes 12 are opened on the end cover in a manner of surrounding the positioning hole 11, and correspondingly, a plurality of first through holes 6 are opened on a circumferential edge region of the partition plate 5. According to the present invention, by driving the cooling component 2, viz. the fan, to rotate, air flow can go through the first through holes 6 and the second through holes 12 within the lamp holder, and then go to the outside environment. In order to enable an even circu-

lation of air flow, the first through holes 6 and the second through holes 12 are preferably distributed uniformly.

Fig. 2 shows a sectional view of the lamp holder of Fig. 1 after being assembled. The positions of the first cavity R1 and the second cavity R2 can be clearly seen from the figure. An electrical connection portion 10 for the lamp body 100 is provided in the second cavity R2, the electrical connection portion 10 is provided on one side surface of the partition plate 5 facing the second cavity R2, and projects from the side surface towards the large diameter end A2. The electrical connection portion 10 comprises two electrically conductive elements 13 for the lamp body 100, which can go through the partition plate 5 to connect to the positive and negative electrodes of the power line. In the present embodiment, the electrical connection portion 10 is designed to connect, for example, a lamp body 100 having an E27 base, and thus, the electrical connection portion 10 is provided with threads on the inner circumference surface. However, according to the present invention, the electrical connection portion 10 can further be designed for connecting, for example, a lamp body 100 having a GU10 base or other types of bases.

Fig. 3 shows an illuminating device of the present invention. The illuminating device comprises a lamp holder and a lamp body 100 installed in the second cavity R2 of the lamp holder. The lamp body 100 here is designed as an LED retrofit lamp, and comprises a bulb 101 as an emergent surface and a side wall 102 designed as a heat sink. For dustproof purpose, the circumferential wall 4 of the housing 1 surrounds and covers the lamp body 100 by a large area, wherein the bulb 101 at least partially projects from the large diameter end A2 of the circumferential wall 4. A flow guide region 7 allowing air flow is formed between the circumferential wall 4

of the housing 1 and a circumferential profile of the lamp body 100, in particular, between the circumferential wall 4 of the housing 1 and a circumferential profile of the side wall 102, and the flow guide region 7 is in air communication with the first through holes 6. As the lamp body 100 will produce a large amount of heat at work, the heat is particularly radiated towards the flow guide region 7 through the side wall 102. Thus, by driving the cooling component 2, air flow in the second cavity R2 can be guided through the flow guide region 7 to the first cavity R1, and further through the second through holes 12 in the end cover 3 to the outside environment. As the second cavity R2 is an open cavity, it facilitates the formation of an air cooling circulation of the outside environment---the second cavity R2---the first cavity R1---the outside environment.

In order to supply power to the fan 8 and the lamp body 100 without affecting the rotation of the fan 8, the power supply lines for the fan 8 and the lamp body 100 can be placed in the rotation shaft 9 which is designed as a hollow shaft. Such design improves compactness of the lamp holder. The fan 8 in the present invention can be either a fan directly driven by a DC power supply, or a fan having a transformer.

In addition, as the lamp body 100 is provided in the second cavity R2, in order to achieve superior heat dissipation effect without affecting the light efficiency of the illuminating device, according to the present invention, the circumferential region of the circumferential wall 4 which faces the emergent surface 101 is designed as a reflective surface F. Reflection can be achieved by coating reflective materials on the circumferential region, by disposing a reflective layer on the circumferential region, or by other ap-

propriate methods.

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
5 various alterations and changes. Any alterations, equivalent substitutions, improvements, within the spirit and principle of the present invention, should be covered in the protection scope of the present invention.

List of reference signs

1	housing
2	cooling component
3	end cover
5	4 circumferential wall
5	partition plate
6	first through holes
7	flow guide region
8	fan
10	9 rotation shaft
10	electrical connection portion
11	positioning hole
12	second through hole
13	electrically conductive element
15	100 lamp body
	101 bulb/emergent surface
	102 heat sink/side wall of lamp body
	A1 small diameter end

A2 large diameter end

F reflective surface

R1 first cavity

R2 second cavity

Claims

1. A lamp holder for a lamp body (100), comprising a housing (1), characterized in that, the lamp holder further comprises a active cooling component (2) and the housing comprises a first cavity (R1) for accommodating the active cooling component (2) and a second cavity (R2) for accommodating the lamp body (100), and the first cavity (R1) is in air communication with the second cavity (R2).
2. The lamp holder according to Claim 1, characterized in that, the housing (1) comprises an end cover (3) and a circumferential wall (4), a partition plate (5) is provided in a cavity defined by the end cover (3) and the circumferential wall (4) for partitioning the cavity into the first cavity (R1) and the second cavity (R2).
3. The lamp holder according to Claim 2, characterized in that, the partition plate (5) is provided with a plurality of first through holes (6) allowing air communication between the first cavity (R1) and the second cavity (R2) in a region adjacent to the circumferential wall (4).
4. The lamp holder according to Claim 3, characterized in that, in the second cavity(R2), a flow guide region (7) allowing air flow is formed between the circumferential wall (4) of the housing (1) and a circumferential profile of the lamp body (100), the flow guide region (7) is in air communication with the first through holes (6).
5. The lamp holder according to Claim 3, characterized in that, the first through holes (6) are uniformly distributed.
6. The lamp holder according to any of Claims 1-5, charac-

terized in that, the cooling component (2) is a fan (8) including a rotation shaft (9), the fan (8) is fixed on the partition plate (5) by means of the rotation shaft (9).

7. The lamp holder according to any of Claims 1-5, characterized in that, an inner circumference surface of the circumferential wall (4), which defines the second cavity (R2), is at least partially designed as a reflective surface (F) for reflecting emergent light from the lamp body (100).

8. The lamp holder according to any of Claims 1-5, characterized in that, the lamp holder further comprises an electrical connection portion (10) for the lamp body (100) provided in the second cavity (R2), the electrical connection portion (10) is provided on one side surface of the partition plate (5) facing the second cavity (R2), and projects from the side surface.

9. The lamp holder according to Claim 8, characterized in that, a circumference surface of the electrical connection portion (10) for connecting the lamp body (100) is provided with threads.

10. The lamp holder according to Claim 6, characterized in that, the rotation shaft (9) is designed as a hollow shaft, power supply lines for the fan (8) and the lamp body (100) are accommodated in the hollow shaft.

11. The lamp holder according to Claim 6, characterized in that, a positioning hole (11) for fixing the rotation shaft (9) and second through holes (12) for air flow are opened on the center of the end cover (3).

12. The lamp holder according to Claim 6, characterized in

that, the fan (8) is a fan capable of being directly driven by a DC power supply.

13. The lamp holder according to Claim 6, characterized in that, the fan (8) is a fan integrated with a transformer.

5 14. The lamp holder according to any of Claims 1-5, characterized in that, the circumferential wall (4) of the housing (1) is designed in a horn shape with a small diameter end (A1) and a large diameter end (A2), wherein the small diameter end (A1) is connected with the end cover (3), and the
10 large diameter end (A2) is an open to environment.

15. An illuminating device comprising a lamp holder according to any of Claims 1-14 and a lamp body (100).

16. The illuminating device according to Claim 15, characterized in that, the lamp body (100) comprises a heat sink
15 (102) which is at least partially located in a second cavity (R2) of the lamp holder.

17. The illuminating device according to Claim 15, characterized in that, the lamp body (100) is an LED retrofit lamp.

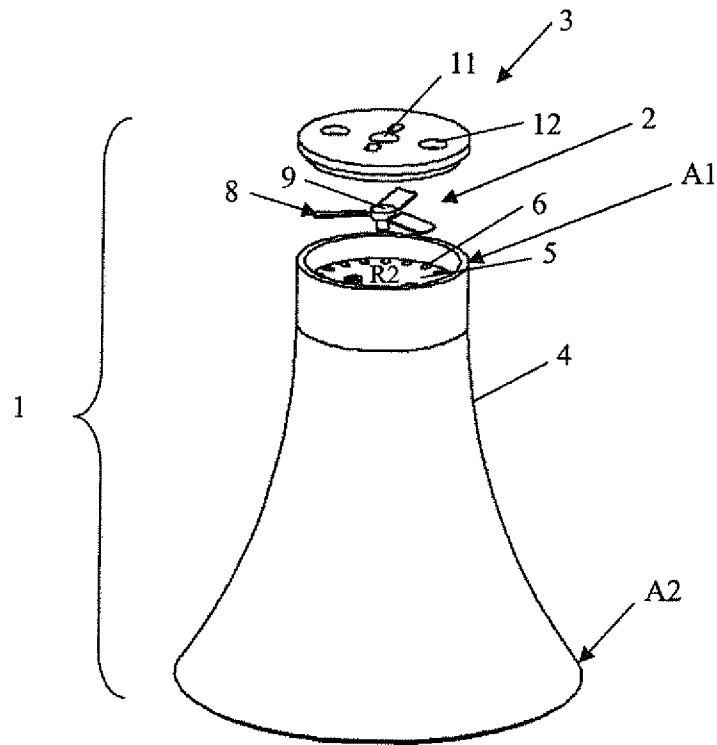


Figure 1

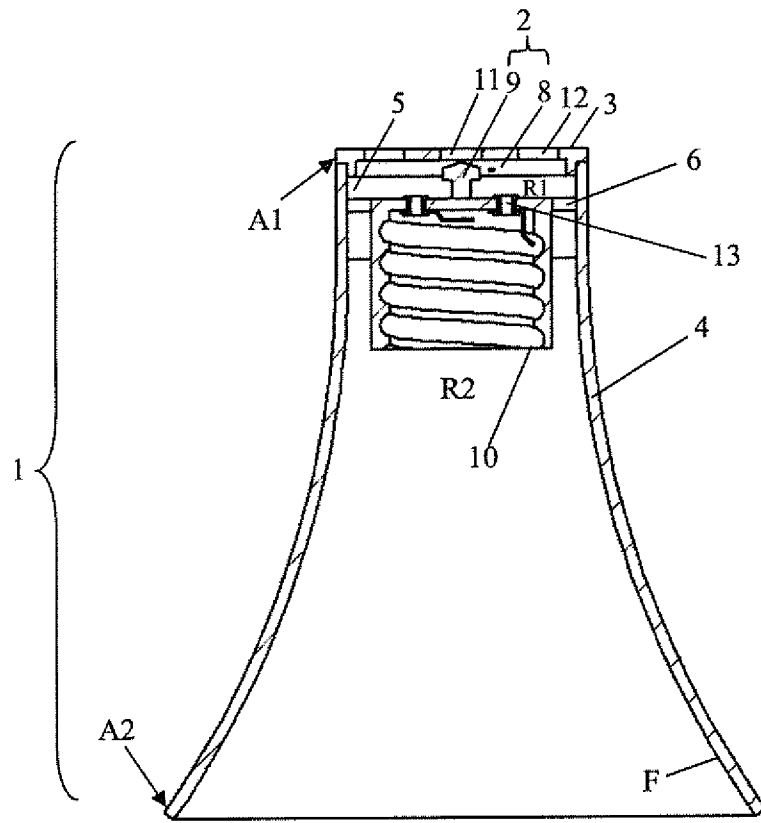


Figure 2

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2013/050222

A. CLASSIFICATION OF SUBJECT MATTER
INV. F21V29/02
ADD.
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
F24F F21V

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Y	figure 2 column 2, line 3 - line 56	17
X	US 2011/280021 A1 (POLLACK JR GEORGE P [US]) 17 November 2011 (2011-11-17) figures 2, 3 paragraphs [0013], [0016]	1,2,7, 14-16
X	US 2005/128769 A1 (GOZUM JOHN E [US] ET AL) 16 June 2005 (2005-06-16)	1,6
Y	figure 4 paragraph [0017]	10,12,13
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Further documents are listed in the continuation of Box C.

See patent family annex.

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- "A" document defining the general state of the art which is not considered to be of particular relevance
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- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

Date of the actual completion of the international search 7 June 2013	Date of mailing of the international search report 17/06/2013
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Sacepe, Nicolas
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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2013/050222

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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