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(54) **FULL-ANGLE ADJUSTABLE OMNIDIRECTIONAL LAMP**

(57) A full-angle adjustable omnidirectional lamp comprises a housing (1), a light source fixing support (7), a power supply (11), a reflection cup, a panel (8), a panel cover (10), an adjustment apparatus, and a light source. The light source is fixedly mounted right above the light source fixing support (7) by using a sheet; and the panel cover (10), the panel (8), the reflection cup, the light source fixing support (7), and the adjustment means are connected to the housing (1) sequentially from the outside in. The structure features an ingenious design, a small size, convenient use, good heat dispersion, and a wide adjustment angle, and therefore can be widely applied to the adjustment of the angle of light sources.

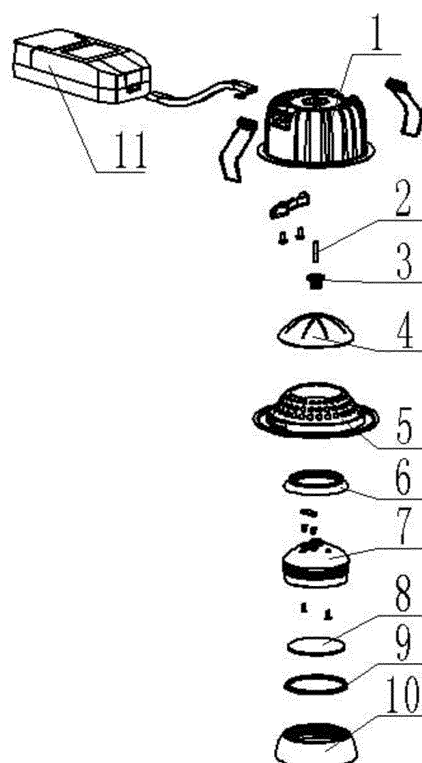


FIG.1

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Description

Technical Field

[0001] The present invention relates to a lighting apparatus and more particularly pertains to a full-angle adjustable omnidirectional lamp.

Background Art

[0002] Omnidirectional lamp is a lighting apparatus using LED as light source. It is a lighting apparatus among LED lights which is capable of full-angle adjustment of lighting area according to needs. It is mainly suitable for use in indoor area and dustproof designs, and is applicable for theatrical lighting, domestic lighting, office lighting, high-class venue lighting, shopping malls, exhibition halls, display cabinets, kitchen cabinets, museums and so forth. The occupation space, the heat dissipation function, and especially the lighting angle of light source of omnidirectional lamps are issues that require special attention during manufacture and installation procedures. Currently, omnidirectional lamps in the marketplace are mainly rotational down lights which occupy a relatively large space and rotate by means of a supplemental rotation device installed external to the lamp body. The lamp body and the external supplemental rotation device are separated, which makes rotation very inconvenient and the rotation angle is limited. As the supplemental rotation device is attached external to the lamp body, heat dispersion is worsened. Therefore, larger space is required when installing the lamps, yet the lighting angle is limited, and thus full-angle lighting is difficult to achieve.

Disclosure of the Invention

[0003] In view of the aforesaid disadvantages now present in the prior art, the present invention provides a full-angle adjustable omnidirectional lamp which features an ingenious design, a small size, convenient use, good heat dispersion, and a wide adjustment angle.

[0004] To attain this, the present invention adopts the following technical scheme:

A full-angle adjustable omnidirectional lamp, characterized in that: it comprises a housing, a light source fixing support, a power supply, a reflection cup, a panel, a panel cover, an adjustment apparatus and a light source; the light source is fixedly mounted right above the light source fixing support by using a press plate; the panel cover, the panel, the reflection cup, the light source fixing support and the adjustment apparatus are connected to the housing sequentially from outside to inside.

[0005] The adjustment apparatus comprises a shaft tube, a limit screw, a rotatable seat, an adjustment spherical surface and a rotatable bushing; the rotatable seat, the adjustment spherical surface and the rotatable bushing are sequentially connected; the limit screw passes through the rotatable seat to connect to a rear portion of

the light source fixing support; the limit screw is a hollow limit screw; the shaft tube is disposed inside a hole in the limit screw.

[0006] Ventilation holes are provided on the adjustment spherical surface; an installation groove is provided on an outer periphery of the adjustment spherical surface; the installation groove is connected to the housing.

[0007] A sealing ring is provided between the panel and the panel cover.

[0008] The shaft tube is a glass fiber tube.

[0009] The housing, the adjustment spherical surface, the light source fixing support and the panel cover are made of aluminum alloy material.

[0010] The reflection cup is an aluminum reflection cup.

[0011] The panel is a glass panel.

[0012] The present invention has the following advantageous effects:

The light source fixing support and the adjustment spherical surface cooperate with each other in form of a hemisphere. Full-angle rotation of the light source is implemented by the shaft tube, the limit screw and the rotational seat. The size of the lamp is greatly reduced, resulting in more aesthetic and simple design, as well as convenient transport and installation. Besides, the housing, the adjustment spherical surface, the light source fixing support and the panel are made of ACD12 material, thus enhancing the heat dispersion capability of the lamp and increasing the operating life of the lamp. Ventilation holes are provided on the adjustment spherical surface to increase heat dispersion area and thus achieve rapid heat dispersion of the lamp and better protection of the lamp. The structure of the present invention features an ingenious design, a small size, convenient use, good heat dispersion, and a wide adjustment angle, and therefore can be widely applied to the adjustment of the angle of light sources.

Brief Description of Drawings

[0013]

FIG. 1 is a disassembling view of the full-angle adjustable omnidirectional lamp of the embodiment of the present invention.

FIG. 2 is a schematic view of the adjustment spherical surface of the embodiment of the present invention.

FIG. 3 is a schematic view of the light source fixing support of the embodiment of the present invention.

FIG. 4 is a schematic view of the rotatable bushing of the embodiment of the present invention.

[0014] In the figures, 1 denotes the housing; 2 denotes the shaft tube; 3 denotes the limit screw; 4 denotes the rotatable seat; 5 denotes the adjustment spherical surface; 6 denotes the rotatable bushing; 7 denotes the light source fixing support; 8 denotes the panel; 9 denotes the

sealing ring; 10 denotes the panel cover; 11 denotes the power supply; 50 denotes the installation groove; 51 denotes the ventilation holes.

Best Mode for Carrying out the Invention

[0015] An embodiment of the present invention is further explained herein with reference to the accompanying figures.

Embodiment 1:

[0016] As illustrated in Figs 1, 2, 3 and 4, the full-angle adjustable omnidirectional lamp comprises a housing 1, a light source fixing support 7, a power supply 11, a reflection cup, a panel 8, a panel cover 10, an adjustment apparatus and a light source. The housing 1, the light source fixing support 7 and the panel cover 8 are made of aluminum alloy material. The panel 8 is a glass panel. The reflection cup is an aluminum reflection cup. The light source is fixedly mounted right above the light source fixing support 7 by using a press plate. The panel cover 10, the panel 8, the reflection cup, the light source fixing support 7 and the adjustment apparatus are connected to the housing 1 sequentially from outside to inside. A sealing ring 9 is provided between the panel 8 and the panel cover 10. The adjustment apparatus comprises a shaft tube 2, a limit screw 3, a rotatable seat 4, an adjustment spherical surface 5 and a rotatable bushing 6. The adjustment spherical surface 5 is made of aluminum alloy material. The shaft tube 2 is a glass fiber tube. The rotatable seat 4, the adjustment spherical surface 5 and the rotatable bushing 6 are sequentially connected. The limit screw 3 passes through the rotatable seat 4 to connect to a rear portion of the light source fixing support 7. The limit screw 3 is a hollow limit screw. The shaft tube 2 is disposed inside a hole in the limit screw 3. Ventilation holes 51 are provided on the adjustment spherical surface 5. An installation groove 50 is provided on an outer periphery of the adjustment spherical surface 5. The installation groove 50 is connected to the housing 1.

[0017] The above embodiment is a preferred embodiment of the present invention. Any other conventional variation and substitution made by a person skilled in the art falls within the scope of protection of the present invention.

Claims

1. A full-angle adjustable omnidirectional lamp, **characterized in that:** it comprises a housing (1), a light source fixing support (7), a power supply (11), a reflection cup, a panel (8), a panel cover (10), an adjustment apparatus and a light source; the light source is fixedly mounted right above the light source fixing support (7) by using a press plate; the panel cover (10), the panel (8), the reflection cup, the light

source fixing support (7) and the adjustment apparatus are connected to the housing (1) sequentially from outside to inside.

2. The full-angle adjustable omnidirectional lamp as in Claim 1, **characterized in that:** the adjustment apparatus comprises a shaft tube (2), a limit screw (3), a rotatable seat (4), an adjustment spherical surface (5) and a rotatable bushing (6); the rotatable seat (4), the adjustment spherical surface (5) and the rotatable bushing (6) are sequentially connected; the limit screw (3) passes through the rotatable seat (4) to connect to a rear portion of the light source fixing support (7); the limit screw (3) is a hollow limit screw; the shaft tube (2) is disposed inside a hole in the limit screw.
3. The full-angle adjustable omnidirectional lamp as in Claim 2, **characterized in that:** ventilation holes are provided on the adjustment spherical surface (5); an installation groove (50) is provided on an outer periphery of the adjustment spherical surface (5); the installation groove (50) is connected to the housing (1).
4. The full-angle adjustable omnidirectional lamp as in Claim 1, **characterized in that:** a sealing ring (9) is provided between the panel (8) and the panel cover (10).
5. The full-angle adjustable omnidirectional lamp as in Claim 2, **characterized in that:** the shaft tube (2) is a glass fiber tube.
6. The full-angle adjustable omnidirectional lamp as in Claim 1, **characterized in that:** the housing (1), the light source fixing support (7) and the panel cover (8) are made of aluminum alloy material.
7. The full-angle adjustable omnidirectional lamp as in Claim 2 or 3, **characterized in that:** the adjustment spherical surface (5) is made of aluminum alloy material.
8. The full-angle adjustable omnidirectional lamp as in Claim 1, **characterized in that:** the reflection cup is an aluminum reflection cup.
9. The full-angle adjustable omnidirectional lamp as in Claim 1, **characterized in that:** the panel (8) is a glass panel.

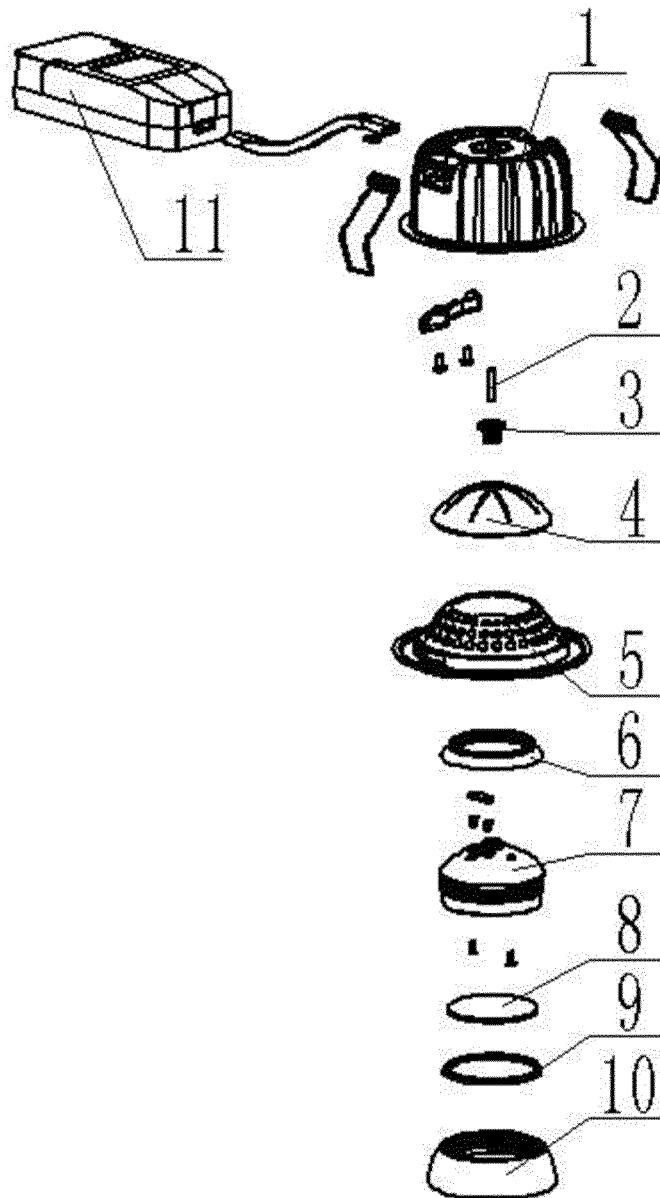


FIG.1

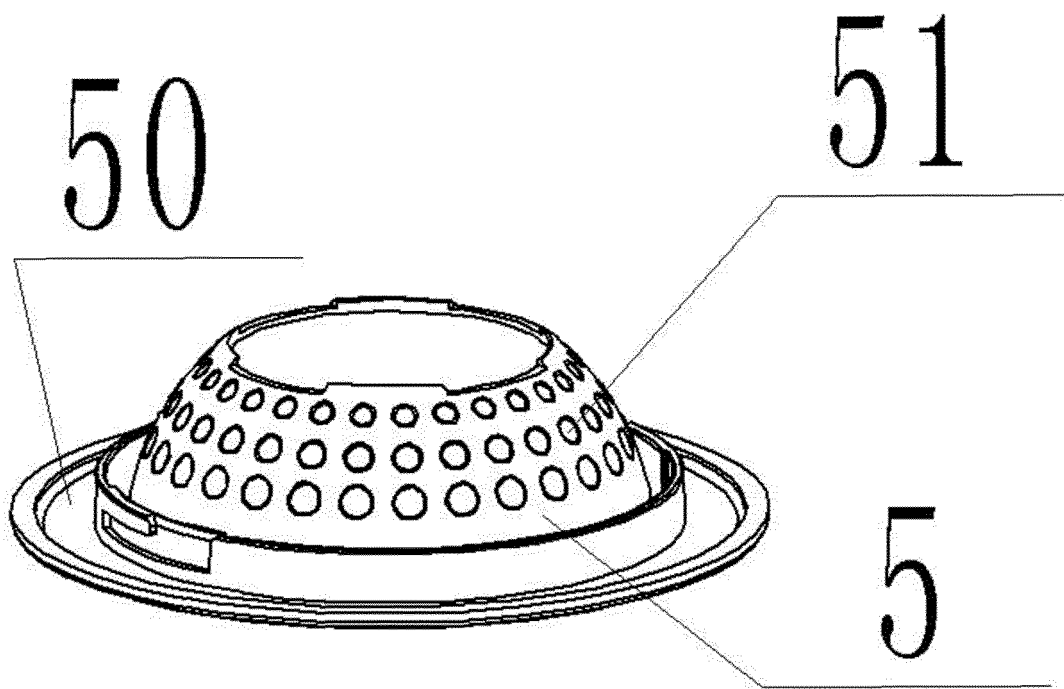


FIG. 2

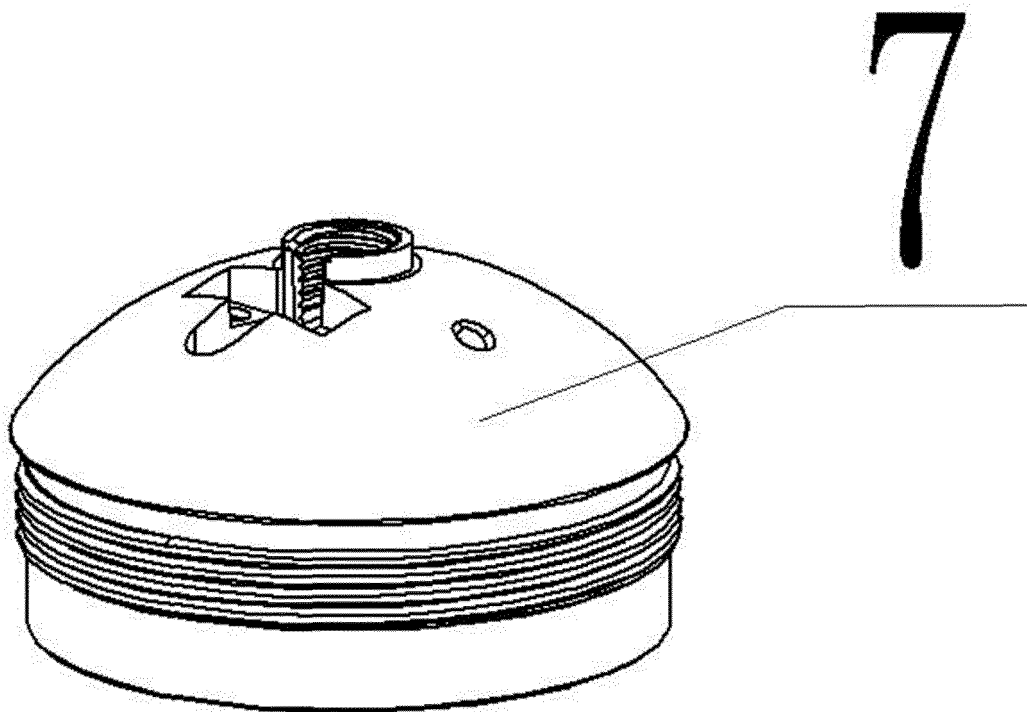


FIG. 3

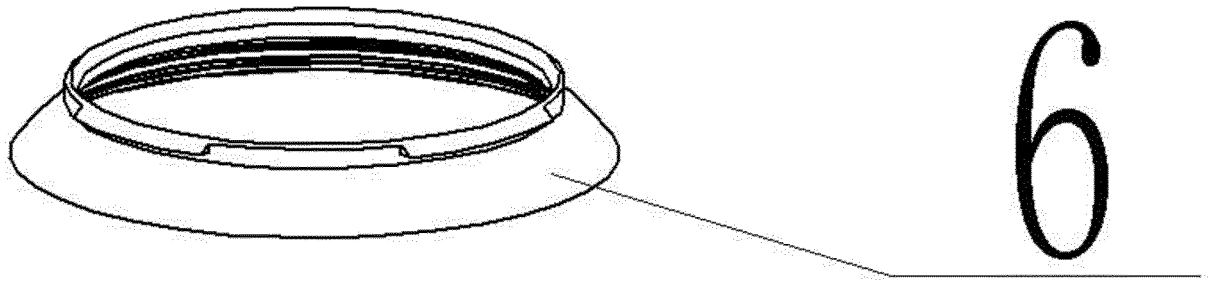


FIG.4

INTERNATIONAL SEARCH REPORT

International application No.
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A. CLASSIFICATION OF SUBJECT MATTER

F21S 2/00 (2016.01) i; F21V 21/14 (2006.01) i; F21V 29/89 (2015.01) i; F21V 29/83 (2015.01) i; F21Y 101/02 (2006.01) i
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)

F21S; F21V; F21Y

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)

CNPAT, CNKI, EPODOC, WPI, CNTXT, WOTXT, US TXT, EPTXT, anglepoise, lamp?, light+, angle?, adjust+, regulat+, fix+, fasten+, seat+, shaft+, axis??, axes??, tube?, lacat+, rotat+, spin+, revolv+, sphere?, ball+, semisphere? halvesphere?, sleeve?, hole?, aperture, feng aihui, peng xiangmin

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 204901394 U (SHENZHEN ZHENHONGQI TECHNOLOGY CO., LTD.) 23 December 2015 (23.12.2015) claims 1-9, description, paragraphs [0005]-[0022] and figures 1-4	1-9
X	CN 203718637 U (ZHUHAI WELLUCK LAMP & LANTERN MFG CO., LTD.) 16 July 2014 (16.07.2014) description, paragraphs [0005]-[0024] and figures 1 and 2	1, 4, 6, 8, 9
X	CN 204005594 U (LING, Zhengyong) 10 December 2014 (10.12.2014) description, paragraphs [0006]-[0019] and figure 1	1, 4, 6, 8, 9
A	CN 201935059 U (LIN, Wanjiong) 17 August 2011 (17.08.2011) the whole document	1-9
A	CN 204328673 U (ZHONGSHAN MEIQI LIGHTING TECHNOLOGY CO., LTD.) 13 May 2015 (13.05.2015) the whole document	1-9

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"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
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

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Name and mailing address of the ISA State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No. (86-10) 62019451	Authorized officer MA, Xin Telephone No. (86-10) 62413464

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International application No.
PCT/CN2016/091066

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 203949038 U (GAO, Zhiwei) 19 November 2014 (19.11.2014) the whole document	1-9
A	CN 202708891 U (SHENZHEN FIER LIGHTING CO., LTD.) 30 January 2013 (30.01.2013) the whole document	1-9
A	CN 204005538 U (GUANGDONG BAOZHAO TECHNOLOGY CO., LTD.) 10 December 2014 (10.12.2014) the whole document	1-9
A	CN 204042644 U (ZHONGSHAN ERMAN LIGHTING CO., LTD.) 24 December 2014 (24.12.2014) the whole document	1-9
A	CN 204005363 U (ZOPOISE TECHNOLOGY ZHUZHOU CO., LTD.) 10 December 2014 (10.12.2014) the whole document	1-9
A	JP 2003331639 A (DAITO KINZOKU K. K.) 21 November 2003 (21.11.2003) the whole document	1-9
A	KR 100910612 B1 (NLIGHT) 04 August 2009 (04.08.2009) the whole document	1-9

Form PCT/ISA/210 (continuation of second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2016/091066

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 204901394 U	23 December 2015	None	
CN 203718637 U	16 July 2014	None	
CN 204005594 U	10 December 2014	None	
CN 201935059 U	17 August 2011	None	
CN 204328673 U	13 May 2015	None	
CN 203949038 U	19 November 2014	None	
CN 202708891 U	30 January 2013	None	
CN 204005538 U	10 December 2014	None	
CN 204042644 U	24 December 2014	None	
CN 204005363 U	10 December 2014	None	
JP 2003331639 A	21 November 2003	None	
KR 100910612 B1	04 August 2009	None	