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(54) **LUMINAIRE**

LEUCHTE

LUMINAIRE

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(73) Proprietor: **Zopoise Technology (Zhuzhou) Co., Ltd.**

Zhuzhou Hunan 412003 (CN)

(72) Inventors:

- **PI, Bruce**
Zhuzhou (CN)

- **ZHAO, Baohong**
Zhuzhou (CN)

- **HUANG, Shichang**
Zhuzhou (CN)

(74) Representative: **Renaudo, Adrien Hanouar**

Patendibüroo Käosaar OÜ
Tähe 94
50107 Tartu (EE)

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Description

FIELD

[0001] Embodiments of the present disclosure belong to the field of illumination technologies, and specifically relate to a luminaire.

BACKGROUND

[0002] Tri-proof lights refer to luminaires with water-proof, dust-proof and anti-corrosion functions, which are generally used in industrial illumination demanding places with strong corrosion, heavy dust and a risk of exposure to rain, such as power plants, steel plants, petrochemical plants, ships, venues, parking lots, and basements.

[0003] Most of the existing tri-proof lights are long-strip-shaped, and has the maximum illumination angle of generally about 180 degrees. In some large illumination places with requirements for a larger illumination angle, two or more lights need to work together, which brings great trouble to the installation and management of luminaires. In addition, these luminaires generally adopt a single illumination mode, and do not have a color temperature conversion function, so that they cannot be adapted to the illumination requirements of different work contents in an illumination place, thereby degrading the user experience.

[0004] Prior art Document D1 (CN 213237010 U) generally discloses a three-proofing lamp capable of emitting light by 360 degrees, and specifically discloses that the 360-degree luminous tri-proof lamp which comprises a PC lampshade, an aluminum substrate and an LED lamp panel, the PC lampshade is a round PC diffusion profile, the aluminum substrate is in a regular hexagon shape, the LED lamp panel is fixed on the aluminum substrate, the aluminum substrate is fixed in the center of the PC lampshade, end covers are arranged at the two ends of the PC lampshade, a driving plate is arranged in one end cover, and the LED lamp panel is arranged on the other end cover. And the driving plate is electrically connected with the LED lamp panel through welding of a welding wire (see ABSTRACT of D1). Prior art Document D2 (US 2018/101088 A1) generally discloses a 360-degree production light, and specifically discloses that a production light is provided to be attached to the bottom of a camera, via a threaded aperture, typically used to mount a camera to a tripod; and the production light is configured to emit light about a 360-degree angle via a light emitting diode (LED) array (see ABSTRACT of D2).

[0005] Prior art Document D3 (CN 203868931 U) generally discloses a LED sound control colorful revolving lamp, and specifically discloses that the LED sound control colorful revolving lamp comprises a detachable sculpture, a transparent cylinder, an LED lamp band, a built-in metal pipe, a lower cabinet, a low-speed drive motor, a Bluetooth player, a transformer, a sound control panel,

a low-voltage converter, a transparent particle element, a power switch and a remote control, wherein the detachable sculpture is arranged at the top end of the transparent cylinder and is connected with the built-in metal pipe; the LED lamp band is wound around the outer edge of the built-in metal pipe; the built-in metal pipe is arranged in the middle of the transparent cylinder; the bottom end of the built-in metal pipe is connected with the low-speed drive motor (see ABSTRACT of D3).

[0006] Prior art Document D4 (WO 2017/030511 A1) generally discloses a type of led tube, and specifically discloses that the central cylinder (1) and the LED element (2) are surrounded by a light softening tube (3), which is in turn provided with connection end caps (6) to provide electrical connection to the LED tube; the end caps (6) are provided with magnetic attachment means (4) to connect multiple similar tubes on an end-to-end configuration; and the LED tube is developed for use in the cinema, television, or photography sector for the purpose of general illumination at places such as homes, offices, etc (see ABSTRACT of D4).

[0007] Prior art Document D5 (CN 207674123 U) generally discloses a lamp of variable colour temperature, and specifically discloses that the lamp of variable colour temperature includes the power at least, still includes a plurality of wires, a plurality of copper needle, a plurality of end cover, lamp shade, lamp carrier, emitting diode, lamp body and the control unit, the control unit locate inside the lamp body, emitting diode emitting diode bond in lamp support surface, the lamp carrier bond in surface of lamp body the end cover be equipped with the opening, the copper needle passes through the opening and pegs graft with the end cover, first copper needle is pegged graft with first end cover, second copper needle is pegged graft with the second end cover, surface of lamp body coating have the insulating hot material layer of loosing, provide one kind color of light be abundant, the heat dissipation is good, a lamp of variable colour temperature of safe and reliable and the mixing of colors of accessible switch and mixing of colors temperature (see ABSTRACT of D5).

SUMMARY

[0008] In view of the above, embodiments of the present disclosure provide a luminaire for solving at least one technical problem of the existing tri-proof lights.

[0009] The embodiments of the present disclosure provide a luminaire including:

a lampshade of a cylindrical structure and a heat sink of a cylindrical structure, the heat sink being arranged inside the lampshade; and

a light source assembly, including a soft substrate and LED light sources, wherein the LED light source is arranged on the soft substrate, one surface, facing away from the LED light sources, of the soft substrate is attached to an outer wall of the heat sink and is

wrapped around the outer wall of the heat sink, the LED light sources are separated from an inner wall of the lampshade by a threshold distance; where a plurality of rows of LED light sources are arranged on the soft substrate on a periphery of the heat sink along a length direction of the heat sink, and the LED light sources in the same row are arranged in a wave shape along the length direction of the heat sink.

[0010] Further, the distance between each of the LED light sources and the inner wall of the lampshade is equal.

[0011] Further, the luminaire includes a power supply assembly, and the power supply assembly includes a fixed plate and a power supply;

the fixed plate is arranged in an inner cavity of the heat sink and is capable of sliding back and forth along the length direction of the heat sink; and the power supply is arranged on the fixed plate and is electrically connected with the soft substrate.

[0012] Further, a heat conducting rubber pad is arranged between one surface, facing away from the fixed plate, of the power supply and the heat sink.

[0013] Further, the luminaire includes two end caps and two sealing rings, wherein the two end caps are respectively arranged at two ends of the lampshade, and the two sealing rings are respectively arranged between the two ends of the lampshade and the two end caps. Further, outer walls of the two end caps are provided with a mounting ring for connecting an external structure.

[0014] Further, an end surface of one end cap is provided with a waterproof connector for electrically connecting the power supply.

[0015] Further, an end surface of the other end cap is provided with a dial switch electrically connected with the power supply.

[0016] Further, each of the LED light sources includes LED chips of at least two color temperatures, and the dial switch controls the LED chips of different color temperatures to be turned on or turned off.

[0017] Further, the soft substrate includes at least two illumination areas, and the dial switch controls the LED light sources in different illumination areas to be turned on or turned off.

[0018] According to the luminaire provided in the embodiments of the present disclosure, the heat sink of a cylindrical structure is arranged inside the lampshade of a cylindrical structure, the soft substrate is attached to the outer wall of the heat sink and is wrapped around the outer wall of the heat sink, and the LED light sources are arranged on the surface, facing away from the heat sink, of the soft substrate and are separated from the inner wall of the lampshade by a threshold distance, so that a light source bar capable of emitting light at 360 degrees may be formed, the illumination angle of the luminaire is increased, and the luminaire may be adapted to the requirements of large illumination places for a larger illu-

mination angle.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] In order to describe the technical solutions in the embodiments of the present disclosure or the prior art more clearly, the drawings required to be used for descriptions about the embodiments or the prior art will be simply introduced below. It is apparent that the drawings described below are some embodiments of the present disclosure. Those of ordinary skill in the art may further obtain other drawings according to these drawings without creative work.

FIG. 1 is a schematic stereostructure diagram of a luminaire according to an embodiment of the present disclosure;

FIG. 2 is a schematic expanded diagram of a light source assembly of a luminaire according to an embodiment of the present disclosure;

FIG. 3 is a schematic sectional diagram of a luminaire according to an embodiment of the present disclosure;

FIG. 4 is a schematic stereostructure exploded diagram of a luminaire according to an embodiment of the present disclosure;

FIG. 5a is a schematic diagram of an illumination mode of a luminaire according to an embodiment of the present disclosure;

FIG. 5b is a schematic diagram of another illumination mode of a luminaire according to an embodiment of the present disclosure;

FIG. 5c is a schematic diagram of another illumination mode of a luminaire according to an embodiment of the present disclosure;

FIG. 5d is a schematic diagram of another illumination mode of a luminaire according to an embodiment of the present disclosure; and

FIG. 5e is a schematic diagram of another illumination mode of a luminaire according to an embodiment of the present disclosure.

DETAILED DESCRIPTION OF EXAMPLE EMBODIMENTS

[0020] The implement of the present disclosure will be described in detail with reference to the accompanying drawings and embodiments, so as to fully understand and implement the implementation process of how to apply technical means to solve technical problems and achieve technical effects in the present disclosure.

[0021] For example, certain words are used in the description and claims to refer to specific components. Those skilled in the art should understand that hardware manufacturers may use different terms to refer to the same component. This specification and claims do not use differences in names as a way to distinguish components, but use differences in functions of components

as a criterion. "Including" mentioned throughout the description and claims is an inclusive term, therefore, it should be interpreted as "including but not limited to". "Substantially" means that within a range of acceptable errors, those skilled in the art may solve the technical problem and may substantially achieve the technical effect within a certain range of errors. Furthermore, the term of "connection" includes any direct and indirect means of connection herein. Therefore, if it is described in the article that a first device is connected with a second device, it means that the first device may be directly connected with the second device, or indirectly connected to the second device by other device. The following description is the preferred modes of execution for the present disclosure, and the description still aims at illustrating the general principles of the present disclosure, but it is not intended to limit the scope of the present disclosure. The protection scope of the present disclosure shall be subject to the defined by the appended claims.

[0022] It is also to be noted that terms "include", "contain" or any other variants thereof are intended to include nonexclusive inclusions, thereby ensuring that a commodity or system including a series of elements not only includes those elements but also includes other elements which are not clearly listed or further includes elements intrinsic to the commodity or the system. Under the condition of no more restrictions, an element defined by statement "including a/an" does not exclude existence of another element which is the same in a commodity or system including the element.

Detailed Embodiments

[0023] Referring to FIG. 1, which is a schematic stereostructure diagram of a luminaire according to an embodiment of the present disclosure, the luminaire includes a lampshade 10, a heat sink 20, and a light source assembly 30.

[0024] The lampshade 10 and the heat sink 20 are both of a cylindrical structure, and the heat sink 20 is arranged inside the lampshade 10.

[0025] The light source assembly 30 includes a soft substrate 310 and LED light sources 320, the LED light sources 320 are arranged on the soft substrate 310, one surface, facing away from the LED light sources 320, of the soft substrate 310 is attached to an outer wall of the heat sink 20 and is wrapped around the outer wall of the heat sink 20, and the LED light sources 320 are separated from an inner wall of the lampshade 10 by a threshold distance.

[0026] Specifically, the lampshade 10 includes, but is not limited to, a milk-white shade or a striped shade, is made of a material which includes, but is not limited to, a PVC material, a PC material, a glass material, an acrylic material, etc., and is typically in a cylindrical shape, but may also be of a hollow prism structure, and it is only emphasized here that the lampshade 10 has a cylindrical

appearance, and the heat sink 20 is arranged in a hollow structure of the lampshade 10 of a cylindrical structure.

[0027] The light source assembly 30 is arranged between the lampshade 10 and the heat sink 20. Specifically, the soft substrate 310 is arranged on an outer surface of the heat sink 20. The soft substrate 310 here includes, but is not limited to, a flexible PCB board. One surface of the soft substrate 310 is attached to the outer wall of the heat sink 20. A specific connection manner includes, but is not limited to, fixed connection with the outer wall of the heat sink 20 via plastic rivets. The other surface of the soft substrate 310 is used for arranging the LED light sources 320 to allow the LED light sources 320 to form a light-emitting surface on the surface, facing away from the heat sink 20, of the soft substrate 310. The soft substrate 310 is wrapped around the outer wall of the heat sink 20, so that the light source assembly 30 forms a light-emitting bar on a periphery of the heat sink 20, the luminaire forms a light source bar capable of emitting light at 360 degrees. Accordingly, the illumination angle of the luminaire is increased, and the luminaire is adapted to the requirements of large illumination places for a larger illumination angle.

[0028] In addition, the LED light sources 320 are separated from the inner wall of the lampshade 10 by a threshold distance, which makes the light transmitted from the lampshade 10 softer, and at the same time, facilitates air circulation so as to effectively dissipate heat from the LED light sources 320. The service life of the LED light sources 320 is improved accordingly. Furthermore, the heat sink 20 is also of a hollow cylindrical structure, which facilitates the formation of a passage for air circulation in the heat sink 20, facilitates the formation of passages for air circulation at inner and outer sides of a laminated structure formed by the heat sink 20 and the LED light sources 320, improves the heat dissipation performance of the heat sink 20, enables the heat sink 20 to effectively dissipate heat from the light source assembly 30, and effectively prolongs the service life of the light source assembly 30.

[0029] Further, referring to FIG. 2, according to the invention, a plurality of rows of LED light sources 320 are arranged on the soft substrate 310 on the periphery of the heat sink 20 along a length direction of the heat sink 20, and the LED light sources 320 in the same row are arranged in a wave shape along the length direction of the heat sink 20.

[0030] Specifically, the plurality of rows of LED light sources 320 are arranged on the soft substrate 310, a specific arrangement direction is the length direction of the heat sink 20, i.e., an arrow direction shown in the drawings, two adjacent rows of LED light sources 320 are spaced apart at an interval, and the LED light sources 320 in the same row are arranged in a wave shape along the length direction of the heat sink 20, namely, when the luminaire is horizontally placed along a length direction thereof, the LED light sources 320 in the same row are not at the same horizontal height, and can be seen

as a wave shape having an alternating pattern of crests and troughs (a wavy curve shown in the figure). This design may avoid the formation of a dark shadow due to the uniform arrangement of light sources when the luminaire rotates, thereby improving the illumination effect of the luminaire.

[0031] More further, the distance between each of the LED light sources 320 and the inner wall of the lampshade 10 is equal.

[0032] Specifically, the lampshade 10 and the heat sink 20 may be structurally regarded as two concentric cylinders, such that the distance between the lampshade 10 and the heat sink 20 is equal everywhere therebetween. When the light source assembly 30 is fixed to the outer wall of the heat sink 20, the distances between the plurality of LED light sources 320 in the light source assembly 30 and the inner wall of the lampshade 10 are equal, so that the light source assembly may emit light at 360 degrees, the emitted light may have a more uniform brightness around the luminaire, and then the use experience of the luminaire is improved.

[0033] In addition, referring to FIG. 3, in other preferred embodiments of the present disclosure, the luminaire further includes a power supply assembly 40, and the power supply assembly 40 includes a fixed plate 410 and a power supply 420;

the fixed plate 410 is arranged in an inner cavity of the heat sink 20 and may slide back and forth along the length direction of the heat sink 20; and
the power supply 420 is arranged on the fixed plate 410 and is electrically connected with the soft substrate 310.

[0034] Specifically, an inner wall of the heat sink 20 of a cylindrical structure is provided with two grooves 210 arranged opposite to each other, two opposite edges of the fixed plate 410 protrude into the grooves 210. The grooves 210 are arranged along the length direction of the heat sink 20 to form a slideway, so that the fixed plate 410 may slide back and forth along the length direction of the heat sink 20 to complete the installation or removal of the fixed plate 410. The power supply 420 is arranged on the fixed plate 410 and is electrically connected with the soft substrate 310 on the outer wall of the heat sink 20, and a specific connection manner herein includes, but is not limited to, connection via electrically conductive wires or electrical connecting pieces.

[0035] Further, a heat conducting rubber pad 430 is arranged between one surface, facing away from the fixed plate 410, of the power supply 420 and the heat sink 20.

[0036] Here, in order to improve the efficiency of transferring heat generated by the power supply 420 during operation to the heat sink 20, the heat conducting rubber pad 430 is arranged between the power supply 420 and the heat sink 20. Specifically, the inner wall of the heat sink 20 on the surface, facing away from the fixed plate

410, of the power supply 420 extends to form a heat conducting portion 220, the heat conducting portion 220 includes a first edge 2201 parallel to the surface, facing away from the fixed plate 410, of the power supply 420 and a second edge 2202 perpendicular to the surface, facing away from the fixed plate 410, of the power supply 420, two ends of the second edge 2202 are respectively connected with the first edge 2201 and the inner wall of the heat sink 20, and the heat conducting rubber pad 430 is clamped between the first edge 2201 and the surface, facing away from the fixed plate 410, of the power supply 420. The contact area between the power supply 420 and the heat sink 20 may be increased by the first edge 2201, thereby improving the heat conduction efficiency; and in addition, the second edge 2202 perpendicular to the first edge 2201 may increase the contact area with the air on the one hand and does not affect the air circulation in the heat sink 20 on the other hand, thereby improving the efficiency of heat transfer between the heat sink 20 and the air.

[0037] In addition, referring to FIG. 4, in other preferred embodiments of the present disclosure, the luminaire further includes two end caps 50 and two sealing rings 60, the two end caps 50 are respectively arranged at two ends of the lampshade 10, and the two sealing rings 60 are respectively arranged between the two ends of the lampshade 10 and the two end caps 50.

[0038] Specifically, the two end caps 50 are respectively arranged at the left and right ends of the lampshade 10 of a cylindrical structure, and the sealing rings 60 are respectively arranged between the end caps 50 and the ends of the lampshade 10. Here, the left and right ends of the lampshade 10 are closed by the two end caps 50, so that the light source assembly 30 and the power supply assembly 40 are placed in a relatively closed space, which facilitates the improvement of the use safety and use quality of the luminaire.

[0039] Furthermore, the tightness of the above-mentioned relatively closed space may be further improved by the two sealing rings 60, which further facilitates the improvement of the use safety and use quality of the luminaire.

[0040] Further, in order to facilitate the installation of the luminaire, mounting rings 70 for connecting external structures are arranged on outer walls of the two end caps 50.

[0041] Specifically, the mounting ring 70 surrounds the outer wall of the end cap 50, and has a bracket 710 for connecting an external structure, the bracket 710 may be connected to an external mounting position via connecting pieces such as fixed screws to achieve wall mounting, or may be connected to an external mounting position via connecting pieces such as lifting chains to achieve lifting.

[0042] Further, a waterproof connector 80 for electrically connecting the power supply 420 is arranged at an end surface of one end cap 50.

[0043] Specifically, a first mounting hole 510 is formed

on the end surface of one of the end caps 50, the waterproof connector 80 for electrically connecting the power supply 420 and an external circuit is arranged in the first mounting hole 510, and the airtightness of the luminaire may be further improved by the waterproof connector 80, so that the luminaire may be more adapted to relatively wet environments such as the outdoors, the adaptability of the luminaire to the environment is improved, and the use quality of the luminaire is improved.

[0044] In addition, an end surface of the other end cap 50 is provided with a dial switch 90 electrically connected with the power supply 420.

[0045] Specifically, a second mounting hole 520 is formed on the end surface of the other end cap 50, the dial switch 90 is arranged in the second mounting hole 520 and is electrically connected with the power supply 420 in the heat sink 20, and the dial switch 90 is used for controlling the luminaire, and the control here includes, but is not limited to, on/off control, light bright/dark control, color temperature control and on/off area control of the light source assembly 30.

[0046] Further, each of the LED light sources 320 includes LED chips 3201 of at least two color temperatures, and the LED chips 3201 of different color temperatures may be controlled to be turned on or off by the dial switch 90.

[0047] Specifically, referring to FIG. 2, one LED light source 320 is provided with the LED chips 3201 of at least two color temperatures, and two color temperatures (3000 K and 6000 K respectively) are illustrated as an example in the figure, but in practice, there may also be the LED chips 3201 of three, four and even more color temperatures, and the LED chips 3201 of different color temperatures may be controlled to be turn on or off by the dial switch 90, so that the luminaire may be switched in multiple color temperature modes, the luminaire may be adapted to the illumination requirements of different work contents in the same illumination place, and the user experience is improved. Meanwhile, the number of light sources is reduced to save costs; the product size and inventory are also reduced to avoid waste of resources.

[0048] More further, referring to FIG. 2, the soft substrate 310 includes at least two illumination areas 3101, and the LED light sources 320 in different illumination areas 3101 may be controlled to be turned on or off by the dial switch 90.

[0049] Specifically, the soft substrate 310 of the embodiments of the present disclosure has two illumination areas 3101, which may be denoted as an upper half area and a lower half area of the soft substrate 310, but the number of the illumination areas 3101 of the embodiments of the present disclosure is not limited thereto, and in practice, more illumination areas 3101 may be included. Here, the LED light sources 320 in the upper half area and the lower half area may be controlled to be turned on or off by the dial switch 90 to form a semi-emission mode as shown in FIGs. 5a and 5b and a full emission

mode as shown in FIG. 5c.

[0050] In addition, the dial switch 90 may also control the lighting or extinguishing of the LED chips 3201 with different color temperatures of the LED light sources 320 in different illumination areas 3101 to form a mixed emission mode as shown in FIGs. 5d and 5e. As shown in the drawings, the LED light sources 320 in one illumination area 3101 are in a first color temperature mode, and the LED light sources 320 in the other one illumination area 3101 are in a second color temperature mode, so that the illumination modes of the luminaire are increased, and the use quality of the luminaire is improved. It is to be understood that term used in the embodiments of the present disclosure is for the purpose of describing the specific embodiments, rather than limiting the present application. The singular forms "a", "an", "the" and "said" used in the embodiments of the present application and the appended claims also include multiple forms. Generally, "multiple" includes at least two unless the context clearly indicates other meanings, but does not exclude the situation of including at least one.

[0051] It is to be understood that term "and/or" used in the present disclosure is only an association relationship describing associated objects and represents existence of three relationships. For example, A and/or B may represent three conditions, i.e., independent existence of A, coexistence of A and B and independent existence of B. In addition, character "/" in the present disclosure usually represents that previous and next associated objects form an "or" relationship.

[0052] It should be understood that although the terms first, second, third, etc. may be used to describe certain components in the embodiments of the present disclosure, these components should not be limited only to those terms. These terms are only used to distinguish the components from each other. For example, a first certain component may also be referred to as a second certain component without departing from the scope of the embodiments of the present disclosure. Similarly, a second component may also be referred to as a first certain component.

[0053] Depending on the context, the words "if" and "in case of" used herein may be interpreted to mean "when" or "while" or "in response to determining" or "in response to monitoring". Similarly, depending on the context, the phrase "if determined" or "if monitored (conditions or events stated)" can be interpreted as "when determined" or "in response to determination" or "when monitored (stated condition or event)" or "in response to monitor (conditions or events stated)".

[0054] In the embodiments of the present disclosure, "substantially equal to", "substantially perpendicular to", "substantially symmetrical", etc. mean that the macroscopic size or relative positional relationship between the two features is extremely close to the relationship described. However, it is clear to those skilled in the art that the positional relationship of an object is difficult to be constrained at a small scale or even a microscopic angle

due to the existence of objective factors such as errors and tolerances. Therefore, even if there is a slight error in the size and positional relationship between the two, it does not have a great influence on the realization of the technical effect of the present disclosure.

[0055] It should also be noted that the terms "including", "containing" or any other variations thereof are intended to encompass a non-exclusive inclusion, such that the item or system including a series of elements includes not only those elements but also other elements not explicitly listed, or elements that are inherent to such item or system. In the absence of more restrictions, an element defined by the phrase "including one..." does not exclude the existence of additional identical elements in the item or system that includes the element.

[0056] In the above-described embodiments, although the above method is illustrated and described as a series of acts for the purpose of simplifying the explanation, those skilled in the art will understand and appreciate that these methods are not limited by the order of actions, because in one or more embodiments, some acts may occur in a different order and/or concurrently with other acts from the illustration and description herein or illustrated or described herein, but which may be understood by those skilled in the art. Those skilled in the art will appreciate that information, signals, and data may be represented using any of a variety of different technologies and techniques. For example, the data, instructions, commands, information, signals, bits (bits), symbols, and chips referenced throughout the above description may be by voltage, current, electromagnetic waves, magnetic fields or magnetic particles, light fields or optical particles, or any combination thereof to represent.

[0057] Those skilled in the art will further appreciate that the various illustrative logical blocks, modules, units, circuits, and algorithm steps described in connection with the embodiments disclosed herein may be implemented as electronic hardware, computer software, or the combination of both. To clearly illustrate this interchangeability of hardware and software, various illustrative components, blocks, modules, units, circuits, and steps are described above generally in the form of their functionality. Whether such functionality is implemented as hardware or software depends on the particular application and design constraints imposed on the overall system. The skilled person will be able to implement the described functionality in a different manner for each particular application, but such implementation decisions should not be interpreted as causing a departure from the scope of the invention.

[0058] In addition, it should be understood by those skilled in the art that the embodiments of the present disclosure provide numerous technical details in order to provide the reader with a better understanding of the present disclosure. However, even without these technical details and various changes and modifications based on the above embodiments, the technical solutions claimed in the claims of the present disclosure can be

substantially realized. Therefore, in practical applications, various changes in the above-described embodiments may be made in the form and details without departing from the scope of the invention, as defined by the appended claims.

Claims

1. A luminaire, comprising:
 - a lampshade (10) of a cylindrical structure and a heat sink (20) of a cylindrical structure, the heat sink (20) being arranged inside the lampshade (10); and
 - a light source assembly (30) comprising a soft substrate (310) and LED light sources (320), wherein the LED light sources (320) are arranged on the soft substrate (310), one surface, facing away from the LED light sources (320), of the soft substrate (310) is attached to an outer wall of the heat sink (20) and is wrapped around the outer wall of the heat sink (20), and the LED light sources (320) are separated from an inner wall of the lampshade (10) by a threshold distance;
 - wherein a plurality of rows of LED light sources (320) are arranged on the soft substrate (310) on a periphery of the heat sink (20) along a length direction of the heat sink (20), **characterized in that** the LED light sources (320) in the same row are arranged in a wave shape along the length direction of the heat sink (20).
2. The luminaire according to claim 1, wherein the distance between each of the LED light sources (320) and the inner wall of the lampshade (10) is equal.
3. The luminaire according to claim 1 or 2, further comprising a power supply assembly (40); wherein the power supply assembly (40) comprises a fixed plate (410) and a power supply (420);
 - the fixed plate (410) is arranged in an inner cavity of the heat sink (20) and capable of sliding back and forth along the length direction of the heat sink (20); and
 - the power supply (420) is arranged on the fixed plate (410) and electrically connected with the soft substrate (310).
4. The luminaire according to claim 3, wherein a heat conducting rubber pad (430) is arranged between one surface, facing away from the fixed plate (410), of the power supply (420) and the heat sink (20).
5. The luminaire according to claim 3, further comprising two end caps (50) and two sealing rings (60),

wherein the two end caps (50) are respectively arranged at two ends of the lampshade (10), and the two sealing rings (60) are respectively arranged between the two ends of the lampshade (10) and the two end caps (50).

6. The luminaire according to claim 5, wherein outer walls of the two end caps (50) are provided with a mounting ring (70) for connecting an external structure.
7. The luminaire according to claim 6, wherein an end surface of one end cap is provided with a waterproof connector (80) for electrically connecting the power supply (420).
8. The luminaire according to claim 7, wherein an end surface of the other end cap is provided with a dial switch electrically connected with the power supply (420).
9. The luminaire according to claim 8, wherein each of the LED light sources (320) comprises LED chips (3201) of at least two color temperatures, and the dial switch controls the LED chips (3201) of different color temperatures to be turned on or turned off.
10. The luminaire according to claim 8, wherein the soft substrate (310) comprises at least two illumination areas, and the dial switch (90) controls the LED light sources (320) in different illumination areas to be turned on or turned off.

Patentansprüche

1. Eine Leuchte, umfassend:

einen Lampenschirm (10) mit zylindrischer Form und einen Kühlkörper (20) mit zylindrischer Form, wobei der Kühlkörper (20) innerhalb des Lampenschirms (10) angeordnet ist; und
eine Lichtquellenvorrichtung (30), die ein weiches Substrat (310) und LED-Lichtquellen (320) umfasst, wobei die LED-Lichtquellen (320) auf dem weichen Substrat (310) angeordnet sind, eine von den LED-Lichtquellen (320) abgewandte Oberfläche des weichen Substrats (310) an einer Außenwand des Kühlkörpers (20) befestigt ist und um die Außenwand des Kühlkörpers (20) gewickelt ist, und die LED-Lichtquellen (320) von der Innenwand des Lampenschirms (10) durch einen Schwellenabstand getrennt sind;
wobei mehrere Reihen von LED-Lichtquellen (320) auf dem weichen Substrat (310) an der Außenseite des Kühlkörpers (20) entlang der

Längsrichtung des Kühlkörpers (20) angeordnet sind, **dadurch gekennzeichnet, dass** die LED-Lichtquellen (320) in der gleichen Reihe in einer Wellenform entlang der Längsrichtung des Kühlkörpers (20) angeordnet sind.

2. Die Leuchte nach Anspruch 1, wobei der Abstand zwischen jeder der LED-Lichtquellen (320) und der Innenwand des Lampenschirms (10) gleich ist.
3. Die Leuchte nach Anspruch 1 oder 2, die ferner eine Stromversorgungseinheit (40) umfasst, wobei die Stromversorgungseinheit (40) eine feste Platte (410) und eine Stromquelle (420) umfasst;
die feste Platte (410) ist in dem inneren Hohlraum des Kühlkörpers (20) angeordnet und kann entlang der Längsrichtung des Kühlkörpers (20) hin und her gleiten; und die Stromquelle (420) ist auf der festen Platte (410) angeordnet und elektrisch mit dem weichen Substrat (310) verbunden.
4. Die Leuchte nach Anspruch 3, wobei ein wärmeleitendes Gummipolster (430) zwischen der von der festen Platte (410) abgewandten Oberfläche der Stromquelle (420) und dem Kühlkörper (20) angeordnet ist.
5. Die Leuchte nach Anspruch 3, die weiterhin zwei Endkappen (50) und zwei Dichtungsringe (60) umfasst, wobei die beiden Endkappen (50) jeweils an zwei Enden des Lampenschirms (10) angeordnet sind und die beiden Dichtungsringe (60) jeweils zwischen den beiden Enden des Lampenschirms (10) und den beiden Endkappen (50) angeordnet sind.
6. Die Leuchte nach Anspruch 5, wobei die Außenwände der beiden Endkappen (50) mit einem Befestigungsring (70) zum Anschluss an eine externe Konstruktion versehen sind.
7. Die Leuchte nach Anspruch 6, wobei an der äußeren Oberfläche von der Endkappe ein wasserdichter Stecker (80) für den elektrischen Anschluss der Stromquelle (420) vorgesehen ist.
8. Die Leuchte nach Anspruch 7, wobei an der äußeren Oberfläche von der anderen Endkappe ein Wählschalter vorgesehen ist, der elektrisch mit der Stromquelle (420) verbunden ist.
9. Die Leuchte nach Anspruch 8, wobei jede der LED-Lichtquellen (320) LED-Chips (3201) mit mindestens zwei Farbtemperaturen umfasst und der Wählschalter das Ein- oder Ausschalten der LED-Chips (3201) mit unterschiedlichen Farbtemperaturen steuert.

10. Die Leuchte nach Anspruch 8, wobei das weiche Substrat (310) mindestens zwei Beleuchtungsbereiche umfasst und der Wahlschalter (90) das Ein- und Ausschalten der LED-Lichtquellen (320) in verschiedenen Beleuchtungsbereichen steuert.

Revendications

1. Luminaire, comprenant :

un abat-jour (10) d'une structure cylindrique et un dissipateur thermique (20) d'une structure cylindrique, le dissipateur thermique (20) étant disposé à l'intérieur de l'abat-jour (10) ; et un assemblage de source lumineuse (30) comprenant un substrat souple (310) et des sources lumineuses à LED (320), dans lequel les sources lumineuses à LED (320) sont disposées sur le substrat souple (310), une surface, opposée aux sources lumineuses à LED (320), du substrat souple (310) est fixée à une paroi extérieure du dissipateur thermique (20) et enroulée autour de la paroi extérieure du dissipateur thermique (20), et les sources lumineuses à LED (320) sont séparées d'une paroi intérieure de l'abat-jour (10) par une distance seuil ; dans lequel une pluralité de rangées de sources lumineuses à LED (320) se trouve arrangée sur le substrat souple (310) sur une périphérie du dissipateur thermique (20) le long d'une direction de la longueur du dissipateur thermique (20), **caractérisé en ce que** les sources lumineuses à LED (320) de la même rangée sont disposées en forme d'onde le long de la direction de la longueur du dissipateur thermique (20).

2. Le luminaire selon la revendication 1, dans lequel la distance entre chacune des sources lumineuses à LED (320) et la paroi intérieure de l'abat-jour (10) est égale.

3. Le luminaire selon la revendication 1 ou 2, comprenant en outre un assemblage d'alimentation électrique (40) ; dans lequel l'assemblage d'alimentation électrique (40) comprend une plaque fixe (410) et une alimentation électrique (420) ;

la plaque fixe (410) est disposée dans une cavité interne du dissipateur thermique (20) et est capable de coulisser d'avant en arrière le long de la direction de la longueur du dissipateur thermique (20) ; et l'alimentation électrique (420) est disposée sur la plaque fixe (410) et est connectée électriquement au substrat souple (310).

4. Le luminaire selon la revendication 3, dans lequel

un tampon en caoutchouc conducteur de chaleur (430) est disposé entre une surface, opposée à la plaque fixe (410), de l'alimentation électrique (420) et du dissipateur thermique (20).

5. Le luminaire selon la revendication 3, comprenant en outre deux embouts (50) et deux bagues d'étanchéité (60), dans lequel les deux embouts (50) sont respectivement disposés aux deux extrémités de l'abat-jour (10), et les deux bagues d'étanchéité (60) sont respectivement disposées entre les deux extrémités de l'abat-jour (10) et les deux embouts (50).

6. Le luminaire selon la revendication 5, dans lequel les parois extérieures des deux embouts (50) sont pourvues d'une bague de montage (70) pour assurer la connexion avec la structure externe.

7. Le luminaire selon la revendication 6, dans lequel une surface d'extrémité d'un embout est pourvue d'un connecteur étanche (80) pour assurer la connexion électrique avec l'alimentation électrique (420).

8. Le luminaire selon la revendication 7, dans lequel une surface d'extrémité de l'autre embout est munie d'un commutateur à cadran relié électriquement à l'alimentation électrique (420).

9. Le luminaire selon la revendication 8, dans lequel chacune des sources lumineuses à LED (320) comprend des puces à LED (3201) d'au moins deux températures de couleur, et le commutateur à cadran commande l'allumage ou l'extinction des puces à LED (3201) de différentes températures de couleur.

10. Le luminaire selon la revendication 8, dans lequel le substrat souple (310) comprend au moins deux zones d'éclairage, et le commutateur à cadran (90) commande l'allumage ou l'extinction des sources lumineuses à LED (320) dans différentes zones d'éclairage.

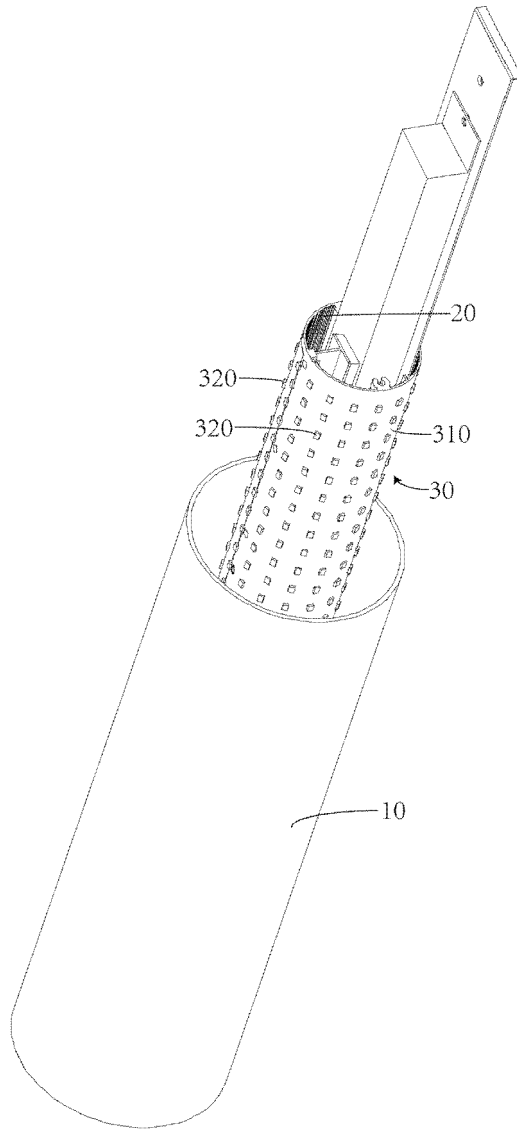


FIGURE 1

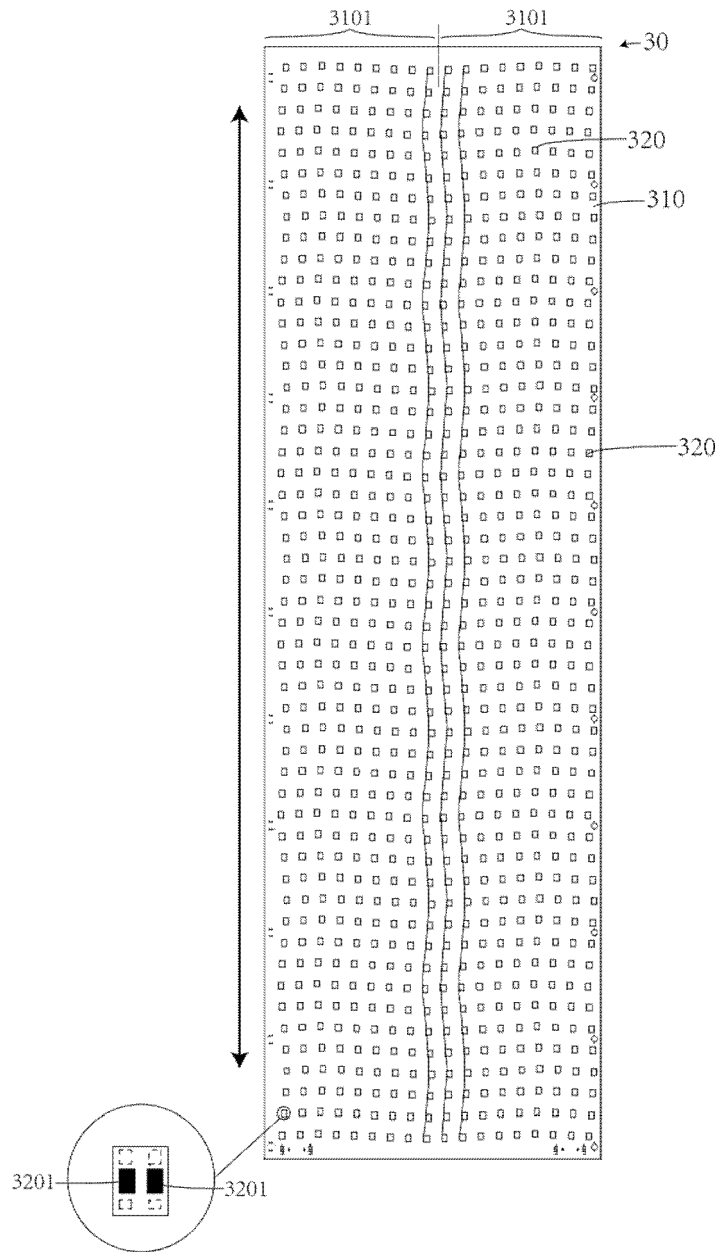


FIGURE 2

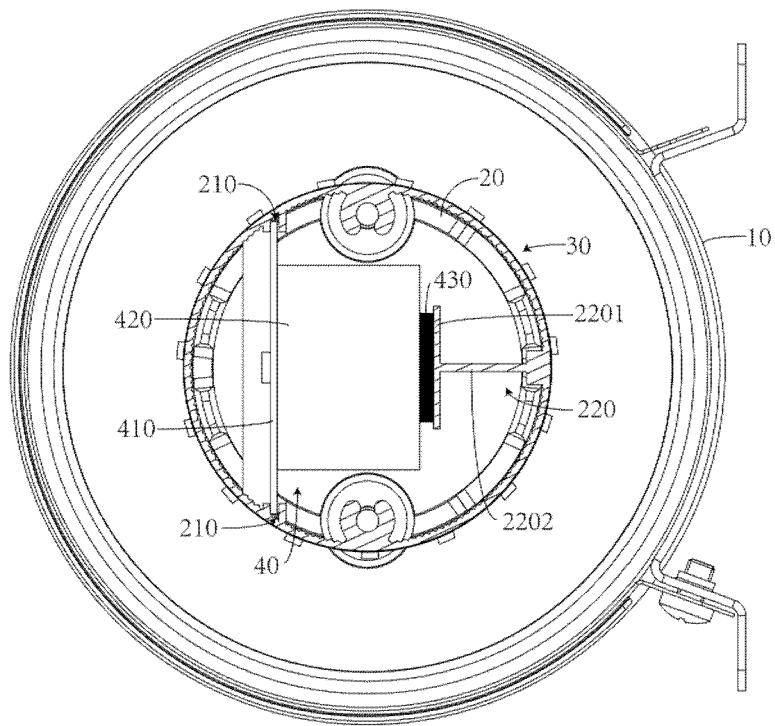


FIGURE 3

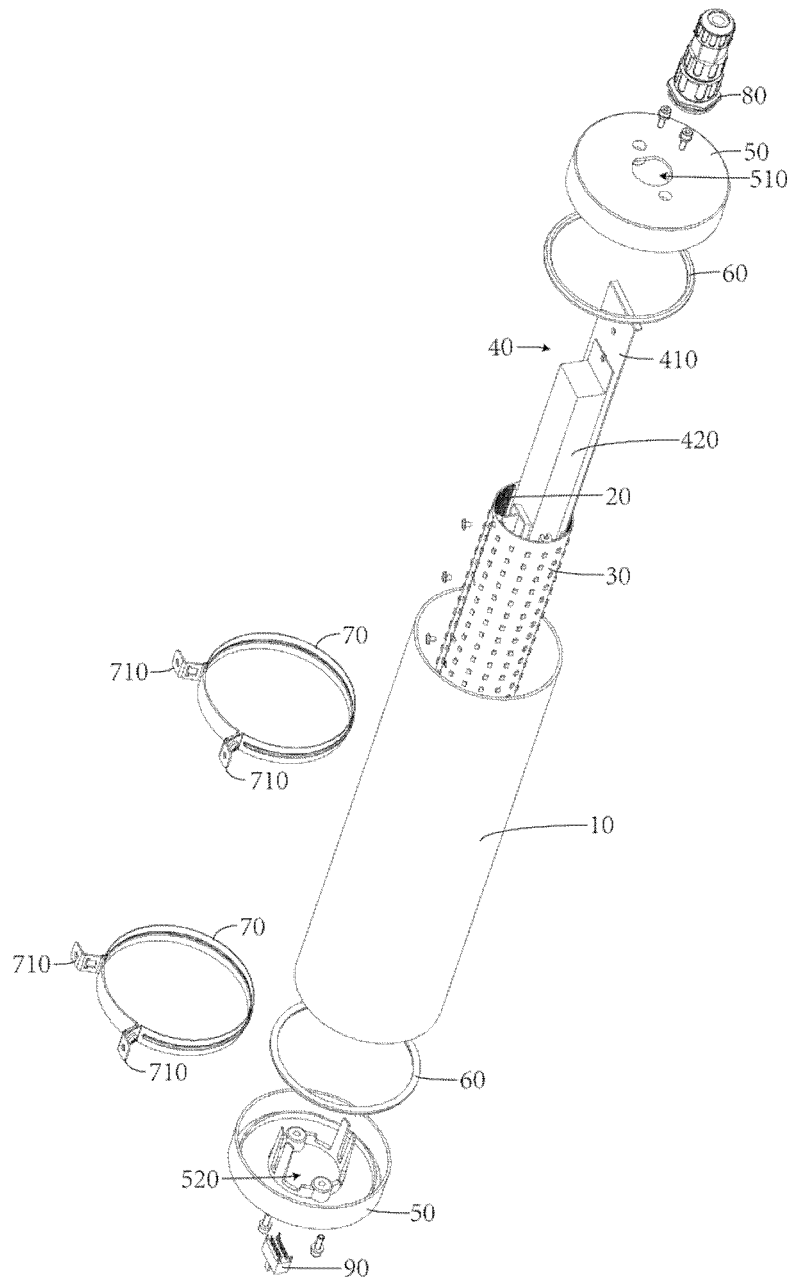


FIGURE 4

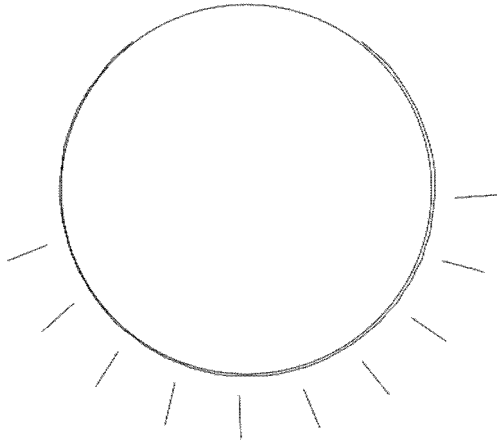


FIGURE 5a

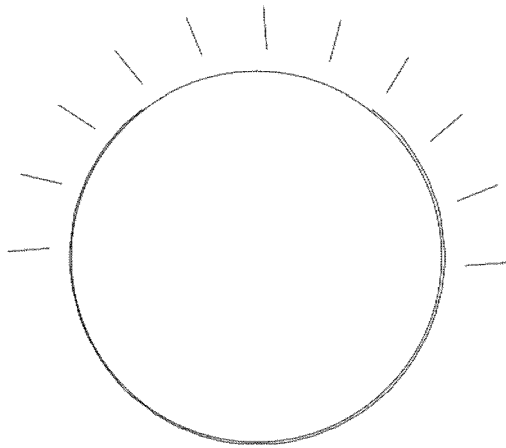


FIGURE 5b

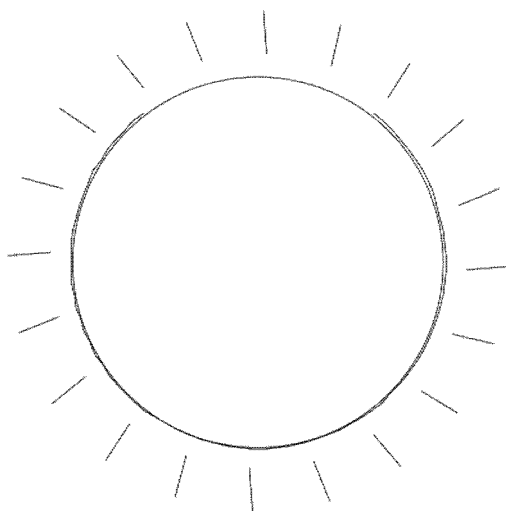


FIGURE 5c

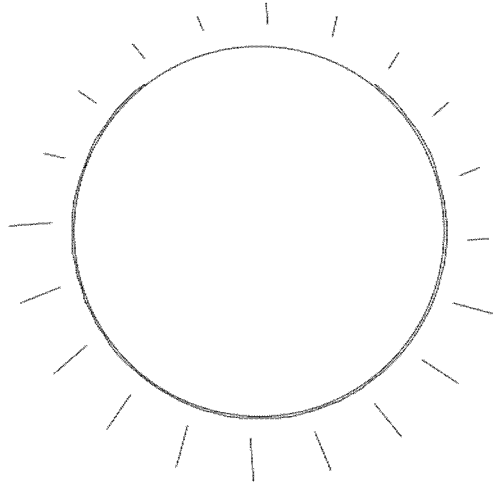


FIGURE 5d

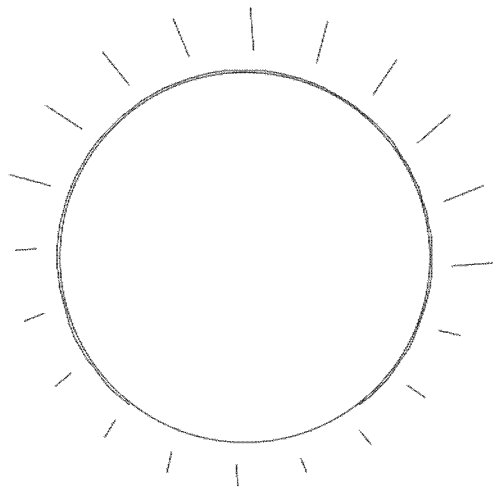


FIGURE 5e

REFERENCES CITED IN THE DESCRIPTION

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