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Inventeur(s):
LU Guangchuan – Guangzhou City (Chine)

(43)

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Mandataire(s):
ZHAOffice SPRL – 5030 GEMBLOUX (Belgique)

(47)

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Titulaire(s):
Guangzhou Chunyuan Technology Co., Ltd –
Guangzhou City (Chine)

(54)

SOLAR-BASED ENERGY-SAVING TYPE LIGHT-EMITTING DIODE (LED) GARDEN LAMP.

- 57 The present invention provides a solar-based energy-saving type light-emitting diode (LED) garden lamp which comprises a lamp body, a plurality of supporting rods and a strut and further comprises a cleaning assembly, a solar panel and a storage power supply. The cleaning assembly comprises an outer left frame, an outer right frame, a motor, driving gears, driven gears, a first transmission shaft, a second transmission shaft, a left transmission chain, a right transmission chain, a cross rod and a cleaning sponge strip. The outer left frame and the outer right frame are arranged on the two sides of the lamp body respectively, a top plate is disposed above both the outer left frame and the outer right frame, the two ends of the cross rod are connected with the left transmission chain and the right transmission chain respectively, and the cross rod is disposed below the lamp body and provided with the cleaning sponge strip for cleaning the lamp body. The solar-based energy-saving type LED garden lamp is reasonable in structural design, the garden lamp exceeding the human height can be cleaned quickly, climbing operation is not required, auxiliary tools do not need to be used, and the garden lamp is safe and saves labor; electric energy is provided for the cleaning assembly through solar energy, and the garden lamp is environmentally friendly and saves energy.

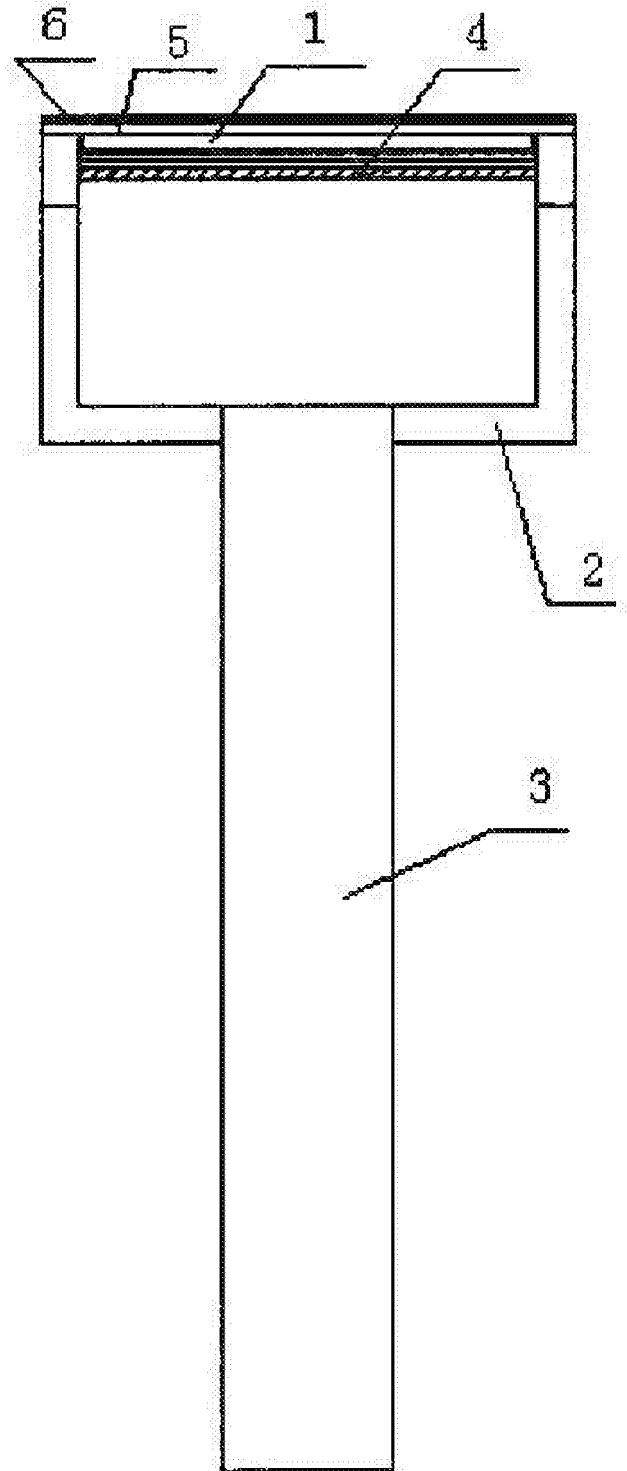


FIG. 1

SOLAR-BASED ENERGY-SAVING TYPE LIGHT-EMITTING DIODE (LED) GARDEN LAMP

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BACKGROUND

Technical Field

The present invention relates to a solar-based energy-saving type light-emitting diode (LED) garden lamp.

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Related Art

As one of frequently-used outdoor lamps, a garden lamp can provide necessary lighting and living convenience, improve residents' sense of safety, can make urban highlights prominent and show bright styles, and thus the garden lamp has been used till now and has been developed into a mature industrial chain.

At present, in the process of using the garden lamp, after a certain time, a light-transmitting shade of the garden lamp is easily stained with impurities such as dust, so that the light-transmitting shade needs to be cleaned by workers. For the garden lamp with the height exceeding the human height, the workers need to be assisted with tools to clean the garden lamp, so that potential risks exist, and the operation is inconvenient and wastes time and labor.

The aforementioned problems should be considered and solved in the garden lamp design process.

Summary

The objective of the present invention is to provide a solar-based energy-saving type light-emitting diode (LED) garden lamp to solve the problems that in the prior art, for a garden lamp with the height exceeding the human height, workers need to be assisted with tools to clean the garden lamp, so that potential risks exist, and the operation is inconvenient and wastes time and labor.

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The technical solution of the present invention is as follows:

A solar-based energy-saving type LED garden lamp, comprising a lamp body, a plurality of supporting rods and a strut, where one end of each supporting rod is connected with the end of the strut respectively, the other end of each supporting rod is connected with the lamp body respectively, and the lamp body is a flat plate lamp; the solar-based energy-saving type LED garden lamp further comprises a cleaning assembly, a solar panel and a storage power supply, where the cleaning assembly comprises an outer left frame, an outer right frame, a motor, driving gears, driven gears, a first transmission shaft, a second transmission shaft, a left transmission chain, a right transmission chain, a cross rod and a cleaning sponge strip. The outer left frame and the outer right frame are arranged on the two sides of the lamp body respectively, a top plate is disposed above both the outer left frame and the outer right frame, the lamp body is fixed to the top plate, and the first transmission shaft is connected with a rotating shaft of the motor; the first transmission shaft and the second transmission shaft are disposed at the two ends of the lamp body respectively, the two ends of the first transmission shaft are vertically connected with the outer left frame and the outer right frame respectively through bearings, and the two ends of the first transmission shaft are provided with the driving gears respectively; the two ends of the second transmission shaft are vertically connected with the outer left frame and the outer right frame respectively through bearings and provided with the driven gears respectively, the left transmission chain meshes with the driving gear and the driven gear on the same left side respectively, and the right transmission chain meshes with the driving gear and the driven gear on the same right side respectively; the two ends of the cross rod are connected with the left transmission chain and the right transmission chain respectively, the cross rod is disposed below the lamp body and provided with the cleaning sponge strip for cleaning the lamp body, and the solar panel is arranged on the top plate; the storage power supply and the motor are jointly disposed in the outer left frame, the motor is connected with the storage power supply through a starting and shutdown switch, the storage power supply is connected with the solar

panel, and the starting and shutdown switch is disposed on the strut.

Furthermore, the driving gear and the driven gear on the same left side and the left transmission chain are disposed in the outer left frame, and the side of the outer left frame is provided with a first annular through hole for movement of the cross rod; the driving gear and the driven gear on the same right side and the right transmission chain are disposed in the outer right frame, and the side of the outer right frame is provided with a second annular through hole for movement of the cross rod.

Furthermore, the lamp body comprises a casing, an LED light source module, a driver and a light-transmitting shade. The casing and the light-transmitting shade form a light source chamber, and the LED light source module is disposed in the light source chamber and connected with the driver through a wire.

Furthermore, the cross rod is made of a transparent material.

The present invention has the beneficial effects that according to the solar-based energy-saving type LED garden lamp, by arranging the cleaning assembly, the light-transmitting shade of the lamp body can be cleaned conveniently, and the impurities such as the dust on the light-transmitting shade are removed simply and conveniently; climbing tools such as a ladder do not need to be used, the cleaning control over the light-transmitting shade can be performed from the ground through the starting and shutdown switch, the garden lamp saves time and labor, and the problem that it is inconvenient to clean the garden lamp during use due to a high height is solved. According to the solar-based energy-saving type LED garden lamp, by the arrangement of the solar panel and the storage power supply, electric energy is provided for the motor, and thus the goal of energy saving is achieved. The solar-based energy-saving type LED garden lamp is reasonable in structural design, the garden lamp exceeding the human height can be cleaned quickly, climbing operation is not required, auxiliary tools do not need to be used, and the garden lamp is safe and saves labor; electric energy is provided for the cleaning assembly through solar energy, and the garden lamp is environmentally friendly and saves energy.

Brief Description of Drawings

FIG. 1 is a structural schematic diagram of an embodiment of the present invention; and

FIG. 2 is a structural schematic diagram of a lamp body, a cleaning assembly, a solar panel and a storage power supply in an embodiment.

Description of Embodiments

A solar-based energy-saving type light-emitting diode (LED) garden lamp, as shown in FIG. 1, comprises a lamp body 1, a plurality of supporting rods 2 and a strut 3, where one end of each supporting rod 2 is connected with the end of the strut 3 respectively, the other end of each supporting rod 2 is connected with the lamp body 1 respectively, and the lamp body 1 is a flat plate lamp; the solar-based energy-saving type LED garden lamp further comprises a cleaning assembly 4, a solar panel 6 and a storage power supply 7; as shown in FIG. 2, the cleaning assembly 4 comprises an outer left frame 41, an outer right frame 42, a motor 43, driving gears 44, driven gears, a first transmission shaft 45, a second transmission shaft, a left transmission chain, a right transmission chain, a cross rod 46 and a cleaning sponge strip 47. The outer left frame 41 and the outer right frame 42 are arranged on the two sides of the lamp body 1 respectively, a top plate 5 is disposed above both the outer left frame 41 and the outer right frame 42, the lamp body 1 is fixed to the top plate 5, and the first transmission shaft 45 is connected with a rotating shaft of the motor 43; the first transmission shaft 45 and the second transmission shaft are disposed at the two ends of the lamp body 1 respectively, the two ends of the first transmission shaft 45 are vertically connected with the outer left frame 41 and the outer right frame 42 respectively through bearings, and the two ends of the first transmission shaft 45 are provided with the driving gears 44 respectively; the two ends of the second transmission shaft are vertically connected with the outer left frame 41 and the outer right frame 42 respectively through bearings and provided with the driven gears respectively, the left transmission

chain meshes with the driving gear 44 and the driven gear on the same left side respectively, and the right transmission chain meshes with the driving gear 44 and the driven gear on the same right side respectively; the two ends of the cross rod 46 are connected with the left transmission chain and the right transmission chain respectively, the cross rod 46 is disposed below the lamp body 1 and provided with the cleaning sponge strip 47 for cleaning the lamp body 1, and the solar panel 6 is arranged on the top plate 5; the storage power supply 7 and the motor 43 are jointly disposed in the outer left frame 41, the motor 43 is connected with the storage power supply 7 through a starting and shutdown switch, the storage power supply 7 is connected with the solar panel 6, and the starting and shutdown switch is disposed on the strut 3.

According to the solar-based energy-saving type LED garden lamp, by arranging the cleaning assembly 4, the light-transmitting shade of the lamp body 1 can be cleaned conveniently, and the impurities such as the dust on the light-transmitting shade are removed simply and conveniently; auxiliary tools such as a ladder do not need to be used, the cleaning control over the light-transmitting shade can be performed from the ground through the starting and shutdown switch, the garden lamp saves time and labor, and the problem that it is inconvenient to clean the garden lamp during use due to a high height is solved. According to the solar-based energy-saving type LED garden lamp, by the arrangement of the solar panel 6 and the storage power supply 7, electric energy is provided for the motor 43, and thus the goal of energy saving is achieved. The solar-based energy-saving type LED garden lamp is reasonable in structural design, the garden lamp exceeding the human height can be cleaned quickly, climbing operation is not required, the auxiliary tools do not need to be used, and the garden lamp is safe and saves labor; electric energy is provided for the cleaning assembly through solar energy, and the garden lamp is environmentally friendly and saves energy.

The driving gear 44 and the driven gear on the same left side and the left transmission chain are disposed in the outer left frame 41, and the side of the outer left frame 41 is provided with a first annular through hole for movement of the cross

rod 46; the driving gear 44 and the driven gear on the same right side and the right transmission chain are disposed in the outer right frame 42, and the side of the outer right frame 42 is provided with a second annular through hole for movement of the cross rod 46.

5 The lamp body 1 comprises a casing, an LED light source module, a driver and a light-transmitting shade. The casing and the light-transmitting shade form a light source chamber, and the LED light source module is disposed in the light source chamber and connected with the driver through a wire.

10 The cross rod 46 is made of a transparent material. To some extent, the shading of the lamp body 1 by the cross rod 46 is avoided. The motor is connected with the power supply through the starting and shutdown switch, and the starting and shutdown switch is arranged on the strut 3. Workers can control the motor 3 from the ground through the starting and shutdown switch conveniently and safety.

Revendications

1. Lampe de jardin solaire à LED à économie d'énergie, comprenant un corps de lampe (1), une pluralité de tiges de support (2) et une entretoise (3), une extré-
- 5 mité de chaque tige de support (2) étant reliée respectivement à l'extrémité de l'entretoise (3), l'autre extrémité de chaque tige de support (2) étant reliée respectivement au corps de lampe (1), et le corps de lampe (1) étant une lampe plate; la lampe de jardin solaire à LED à économie d'énergie comprenant en outre un ensemble de nettoyage (4) , un panneau solaire (6) et une alimentation de
- 10 stockage (7), dans laquelle l'ensemble de nettoyage (4) comprend un cadre extérieur gauche (41), un cadre extérieur droit (42), un moteur (43), des engrenages d'entraînement (44), des engrenages entraînés, un premier arbre de transmission (45), un second arbre de transmission, une chaîne de transmission gauche, une chaîne de transmission droite, une barre transversale (46) et une bande à éponge
- 15 de nettoyage (47) ; le cadre extérieur gauche (41) et le cadre extérieur droit (42) étant respectivement disposés sur les deux côtés du corps de lampe (1), une plaque supérieure (5) est disposée au-dessus du cadre extérieur gauche (41) et du cadre extérieur droit (42), le corps de lampe (1) étant fixé à la plaque supérieure (5), et le premier arbre de transmission (45) étant relié à un arbre rotatif
- 20 du moteur (43) ; le premier arbre de transmission (45) et le deuxième arbre de transmission sont respectivement disposés aux deux extrémités du corps de lampe (1), les deux extrémités du premier arbre de transmission (45) sont reliées verticalement avec le cadre extérieur gauche (41) et le cadre extérieur droit (42) respectivement par des paliers, et les deux extrémités du premier arbre de transmission (45) sont pourvus respectivement des engrenages d'entraînement (44) ;
- 25 les deux extrémités du deuxième arbre de transmission sont reliées verticalement respectivement avec le cadre extérieur gauche (41) et le cadre extérieur droit (42) par des paliers et sont munis respectivement des engrenages entraînés, la chaîne de transmission gauche s'engrène avec l'engrenage d'entraînement (44) et l'engrenage entraîné sur le même côté gauche respectivement, et la chaîne de transmission droite s'engrène avec l'engrenage d'entraînement et l'engrenage entraîné sur le même côté droit respectivement ; les deux extrémités de la barre transversale (46) sont reliées respectivement à la chaîne de transmission gauche
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- et à la chaîne de transmission droite, la barre transversale (46) étant disposée au-dessous du corps de lampe (1) et étant munie de la bande à éponge de nettoyage (47) pour nettoyer le corps de lampe, et le panneau solaire (6) est disposé sur la plaque supérieure (5) ; l'alimentation de stockage (7) et le moteur (43) sont disposés conjointement dans le cadre extérieur gauche (41), le moteur (43) étant connecté à l'alimentation de stockage (7) par l'intermédiaire d'un commutateur de démarrage et d'arrêt, l'alimentation de stockage étant connectée au panneau solaire (6), et le commutateur de démarrage et d'arrêt étant disposé sur l'entretoise (3).
- 10 2. Lampe de jardin solaire à LED à économie d'énergie selon la revendication 1, dans laquelle l'engrenage d'entraînement (44) et l'engrenage entraîné sur le même côté gauche et la chaîne de transmission gauche sont disposés dans le cadre extérieur gauche (41), et le côté du cadre extérieur gauche (41) est pourvu d'un premier orifice traversant annulaire pour le déplacement de la barre transversale (46) ; l'engrenage d'entraînement (44) et l'engrenage entraîné sur le même côté
- 15 droit et la chaîne de transmission droite sont disposés dans le cadre extérieur droit (42), et le côté du cadre extérieur droit (42) est pourvu d'un second orifice annulaire pour le déplacement de la barre transversale (46).
- 20 3. Lampe de jardin solaire à LED à économie d'énergie selon la revendication 1, dans laquelle le corps de lampe (1) comprend un boîtier, un module de source lumineuse LED, une commande et un écran transmettant la lumière ; le boîtier et l'écran transmettant la lumière forment une chambre de source lumineuse, et le module de source lumineuse LED est disposé dans la chambre de source lumineuse et est relié à la commande par un fil métallique.
- 25 4. Lampe de jardin solaire à LED à économie d'énergie selon l'une quelconque des revendications 1 à 3, dans laquelle la barre transversale (46) est fabriquée en un matériau transparent.

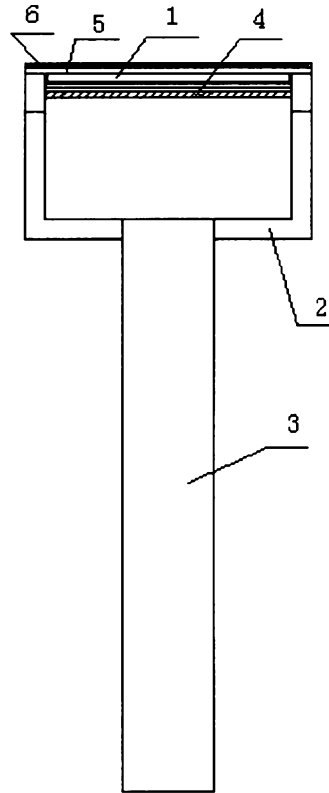


FIG. 1

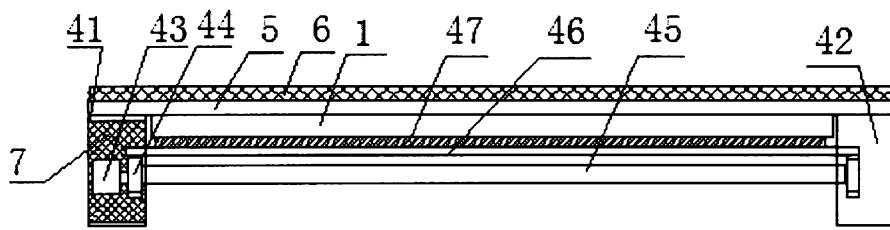


FIG. 2

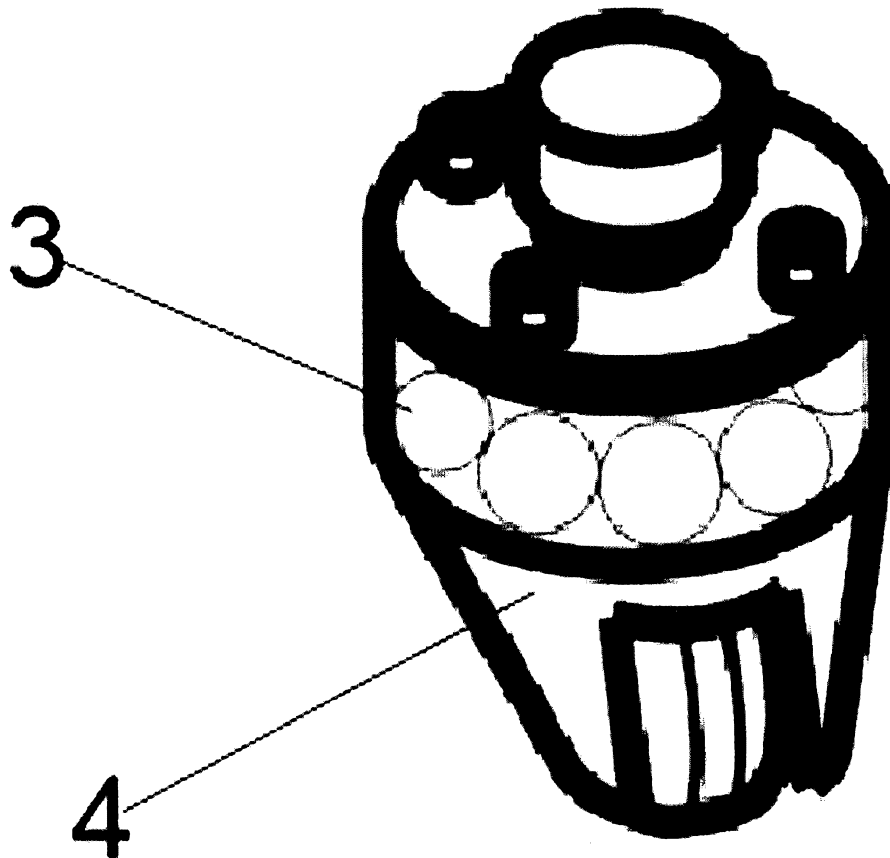


FIG. 3

ABSTRACT**SOLAR-BASED ENERGY-SAVING TYPE LIGHT-EMITTING DIODE (LED)
GARDEN LAMP**

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The present invention provides a solar-based energy-saving type light-emitting diode (LED) garden lamp which comprises a lamp body, a plurality of supporting rods and a strut and further comprises a cleaning assembly, a solar panel and a storage power supply. The cleaning assembly comprises an outer left frame, an
10 outer right frame, a motor, driving gears, driven gears, a first transmission shaft, a second transmission shaft, a left transmission chain, a right transmission chain, a cross rod and a cleaning sponge strip. The outer left frame and the outer right frame are arranged on the two sides of the lamp body respectively, a top plate is disposed above both the outer left frame and the outer right frame, the two ends of the cross
15 rod are connected with the left transmission chain and the right transmission chain respectively, and the cross rod is disposed below the lamp body and provided with the cleaning sponge strip for cleaning the lamp body. The solar-based energy-saving type LED garden lamp is reasonable in structural design, the garden lamp exceeding the human height can be cleaned quickly, climbing operation is not
20 required, auxiliary tools do not need to be used, and the garden lamp is safe and saves labor; electric energy is provided for the cleaning assembly through solar energy, and the garden lamp is environmentally friendly and saves energy.