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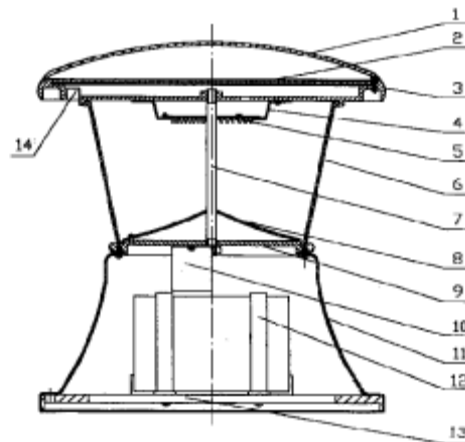
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[54] **Name of Utility Model:** Color-Changing Solar Powered Lamp

[57] **Abstract:**

The present utility model relates to a color-changing solar powered lamp comprising a lamp housing, a lighting control circuit and a light emitting circuit, wherein the lighting control circuit includes a storage cell voltage detection circuit, a solar cell voltage detection circuit and a timer circuit, thereby realizing timed switching off of the lamp and optimal selection of the light emitting time of the illuminant, and thus making it suitable for use in various places and environments and capable of effectively preventing over-discharge of storage cell.



Claims

1. A color-changing solar powered lamp, comprising a lamp housing, a lighting control circuit and a light emitting circuit, the lamp housing including a header cover, solar panels, an upper lid, a lower lid, a transparent lampshade, a reflective board, a control circuit board, a lamp bracket, a lamp base, a key switch, the lighting control circuit including a power supply circuit, a control circuit and an implementer circuit, and the output terminal of the lighting control circuit being connected to the input terminal of the light emitting circuit, characterized in that: the key switch (14) is installed on the upper lid (3); the anode of solar cell 1DC₁ is connected to a resistor 2R₅ and a triode 2BG₂, the collector electrode of the triode 2BG₂ is connected to the input pin 4 of a single chip microprocessor 2IC₁, the anode of storage cell 1DC₂ is connected to a stabilivolt 2WD₁, a resistor 2R₁, a resistor 2R₂ and a triode 2BG₁, and the collector electrode of the triode 2BG₂ is connected to the input pin 3 of the single chip microprocessor 2IC₁; the anode of storage cell 1DC₂ is connected to a resistor 2R₆, a resistor 2R₇ and the input pin 2 of the single chip microprocessor 2IC₁.

2. The color-changing solar powered lamp as defined in claim 1, characterized in that the solar powered lamp is provided with a color-changing illuminant board (5) connected to an illuminant bracket (4) and mounted to the bottom planar surface of the upper lid (3), and the curved surface reflective board (8) is mounted on the top planar surface of the upper lid (9) corresponding to the color-changing illuminant board (5).

3. The color-changing solar powered lamp as defined in claim 1, characterized in that the light emitting circuit comprises three groups of blue, green and red light-emitting diodes 4LED₁~4LED₁₂, 4LED₁₃~4LED₂₄ and 4LED₂₅~4LED₄₄, which are first connected in series and later connected in parallel.

Description

Color-changing Solar Powered Lamp

FIELD

The present utility model relates to solar powered lamps and, more particularly, to an outdoor color-changing solar powered lamp capable of self control and timed switching on and off.

BACKGROUND

At present, solar powered lamps whose lighting and extinguishment are controlled by means of light intensity are increasingly emerging, and as the storage cells of these solar powered lamps are controlled merely by the intensity of sunlight, they are not able to self adjust the timing of their switching on and off and this results in their being lighted all night long or in cloudy days, causing over-discharge of storage cells, shorter cell lifespan and energy wastage.

SUMMARY

Accordingly, the present utility model aims to provide a color-changing solar powered lamp which can be automatically lighted or extinguished according to light intensity and whose timing of switching off can be selected.

To this end, the present utility model adopts the following technical scheme: the color-changing solar powered lamp comprises a lamp housing, a lighting control circuit and a light emitting circuit. The lamp housing includes a header cover, solar panels, an upper lid, an illuminant bracket, an illuminant board, a threaded pipe, a transparent lampshade, a reflective board, a lower lid, a control circuit board, a lamp stand, a storage cell rack, a lamp base and a key switch; the lamp stand is connected to the lamp base and the lower lid, the transparent lampshade and the threaded pipe are

connected to the lower lid and the upper lid respectively, the solar panels and the illuminant bracket are provided respectively above and beneath the upper lid, the illuminant board is mounted on the illuminant bracket, the circular curved header cover is mounted on the upper lid, the reflective board is mounted on the lower lid, the storage cell rack is mounted in the lamp base, the key switch is mounted peripherally on the upper lid, the control circuit board is mounted on the lower lid, the lighting control circuit is mounted on the control circuit board, the lighting control circuit includes a power supply circuit, a control circuit and an implementer circuit, and the output terminal of the lighting control circuit is connected to the input terminal of the light emitting circuit mounted on the illuminant bracket. The lighting control circuit is provided with a storage cell voltage detection circuit, a solar cell voltage detection circuit and a timing circuit; the storage cell voltage detection circuit is provided with a key switch, a stabilivolt, a triode and a bias current protection resistor; the anode of the solar cell is connected to the stabilivolt, the triode and the bias current protection resistor, the output terminal of the triode is connected to the input pin of a single chip microprocessor; the solar cell voltage detection circuit is provided with a triode and bias current protection resistors, the anode of the storage cell is connected to the triode through a bias current protection resistor, the output terminal of the triode is connected to the input pin of a single chip microprocessor; the timing circuit is provided with a key switch and a bias current protection resistor, the key switch is connected to the anode of the storage cell and the output terminal thereof is connected to the input pin of the single chip microprocessor of the control circuit. The output terminal of the single chip microprocessor is connected to the input terminal of the implementer circuit, and the light emitting circuit is actuated by the implementer circuit to emit light.

The technical effects generated by the present utility model are as follows: when the voltage of the storage cell is lower than a set value, the triode of the storage cell voltage detection circuit of the

lighting control circuit is not electrified, causing the single chip microprocessor to input high power level to cease delayed shutdown, so as to avoid lighting the lamp all night long, prevent over discharge of the storage cell and prolong the lifespan. The solar cell voltage detection circuit controls the light emitting circuit to stop work (emitting light) at dawn, thereby overcoming the disadvantage of uncontrollability caused by artificial control and saving manpower and resources. The timing circuit is capable of lighting or extinguishing the light emitting circuit (illuminant) within set time and more rationally selecting the light emitting time of the illuminant, and is thus suitable for use in open spaces and various outdoor environments. The present utility model uses a key switch to provide convenience for transportation, storage and installation, and it also prevents arbitrary switching.

BRIEF DESCRIPTION OF THE DRAWINGS

The present utility model is further illustrated with reference to the accompanying drawings and a preferred embodiment thereof.

Figure 1 is a schematic diagram of the present utility model.

Figure 2 is a circuit schematic of the present utility model.

In the figures, 1 denotes header cover, 2 denotes solar panels, 3 denotes upper lid, 4 denotes illuminant bracket, 5 denotes color-changing illuminant board, 6 denotes transparent lampshade, 7 denotes threaded rod, 8 denotes reflective board, 9 denotes lower lid, 10 denotes control circuit board, 11 denotes lamp housing, 12 denotes storage cell rack, 13 denotes lamp base, and 14 denotes key switch.

DETAILED DESCRIPTION

As shown in Figure 1, the lamp housing 11 of the present utility model is clamped to the lamp base 13, the top of the lamp housing 11 is connected to the lower lid 9 by screws, the lower lid 9 and the upper lid 3 are connected by the threaded pipe 7 disposed therebetween, the circular transparent

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