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(The above columns are to be filled by this Office)

Utility Model Specification

I. Title of the Utility Model	Chinese	An LED Searchlight
	English	
II. Inventor (2 persons in total)	Name (Chinese)	1. Lin Bing-Kun 2. Cai Qi-Rui
	Name (English)	1. 2.
	Nationality (Chinese and English)	1.Republic of China TW 2.Republic of China TW
III. Applicant (2 persons in total)	Designation or Name (Chinese)	1. Lin Bing-Kun 2. Cai Qi-Rui
	Designation or Name (English)	1. 2.
	Nationality (Chinese and English)	1.Republic of China TW 2.Republic of China TW
	Residence (Place of Business) (Chinese)	1. Floor 4, No. 8, Lane 19, Alley 50, Wuxing Street, Taipei City (this address is different from the one used in the previous application filed to the Office) 2. Floor 5, No. 1, Lane 18, Alley 218, Section 5, Roosevelt Road, Taipei City (this address is different from the one used in the previous application filed to the Office)
	Residence (Place of Business) (English)	1. Null 2. Null
	Representative (Chinese)	1. 2.
	Representative (English)	1. 2.



I. An patent application has been filed for this case in

__country (region)

Application Date

Case Number

Claim for the international priority specified in Article 27, Paragraph 1 applicable mutatis mutandis under Article 108 of the Patent Act.

None

II. ☐ Claim for the domestic priority specified in Article 29, Paragraph 1 applicable mutatis mutandis under Article 108 of the Patent Act.

Application Case Number:

Date:

None

III. Claim in this case complies with the facts stipulated in Article 94, Paragraph 2 ☐ Subparagraph 1 or Subparagraph 2 of the Patent Act, and the date of occurrence of the facts is:



IV. Description of the Invention (1)

[Technical Field]

The present invention relates to a design of a searchlight, specifically, a searchlight using LEDs with a heat dissipation unit.

[Prior Art]

At present, the general searchlights on the market mainly use conventional bulbs as lighting elements. The conventional bulbs mainly use internal lamp filaments (tungsten wires with high ignition points) for heating through electric currents so as to reach a high temperature (about 2500°C), and with the visible light produced through thermal radiation, the lighting effect is achieved.

For the heating of the lamp filaments, when charged particles flow in the lamp filaments, the electric energy is converted to the heat energy of the lamp filaments through collision and the temperature of the lamp filaments will gradually increase, and when the input heat energy is equal to the thermal radiation power of the lamp filaments, heat balance is reached, leading to production of visible light.

However, as the bulbs operates mainly through converting electric energy to heat energy, they often become black and even burn out after used for a period of time, and therefore have a relatively short service life. At same time, as sizes of the bulbs are relatively large, the use of the bulbs is easily subject to space limitations.

Therefore, with the emergence of LEDs, the bulbs have gradually lost ground. Today, many light-emitting elements in the searchlights have been replaced by the LEDs thanks to their small size, long service life and good brightness. Hence, the idea of the present invention is to use LEDs to replace bulbs as light-emitting elements of a searchlight.



IV. Description of the Invention (2)

[Summary of the Utility Model]

In view of the above-mentioned problems, the inventors of the present invention have spent



many years gaining rich experiences in the research, design, manufacturing, etc. of the product, actively invested tremendous effort and energy in the research and development, and eventually developed the present invention, "an LED searchlight," with a great success.

The present invention, "an LED searchlight," mainly comprises a heat dissipation unit, a power supply unit, and a light-emitting unit composed of a plurality of LEDs, wherein the back of the heat dissipation unit is provided with a plurality of heat dissipation fins, the power supply unit is arranged at a back end of the heat dissipation unit, and the light-emitting unit is arranged at a front end of the heat dissipation unit; and at the same time, the power supply unit is connected with the light-emitting unit through circuits to provide power to drive the LEDs on the light-emitting unit, in order for them to emit light, thereby achieving the lighting effect.

The primary purpose of the present invention is: replace bulbs with the light-emitting unit composed of a plurality of LEDs, thereby prolonging the service life and improving the lighting effect of the searchlight, and at the same time, enabling the searchlight to feature small size.

The secondary purpose of the present invention is: increase the heat energy released during the operation of the searchlight through the heat dissipation fins at the back end of the heat dissipation unit, thereby prolonging the service life of the LEDs.

[Embodiments]

To make it easy for the examiners to understand the content of the present invention and the functions that can be achieved by the present invention, the detailed descriptions are made with reference to the drawings as follows:

For the structural composition of the present invention, "an LED searchlight," refer to Figure 1 and Figure 2. The LED searchlight (10) mainly comprises a heat dissipation unit (20), a power supply unit (30), and a light-emitting unit (40), wherein:



IV. Description of the Invention (3)

The rear of the heat dissipation unit (20) is provided with a plurality of heat dissipation fins (21), and the heat dissipation unit (20) further comprises baffle plates (22) arranged on both sides and a light-transmissive plate (23) arranged at the front end, and at the same time, a housing space is formed by the baffle plates (22) on both sides and the light-transmissive plate (23) at the front end as well as the heat dissipation unit (20).

The power supply unit (30) is arranged at the back end of the heat dissipation unit (20) to provide power.

The light-emitting unit (40) is composed of a plurality of LEDs (41) and is arranged in the



housing space at the front end of the heat dissipation unit (20). In the present embodiment, a circuit board (42) is arranged behind each LED (41), and the LEDs (41) are fixed on the heat dissipation unit (20) through the circuit boards (42); and the circuit boards (42) are connected to the power supply unit (30) through circuits, respectively. At the same time, an outer side of each LED (41) may be further covered with a cover body (43); and a front end of each cover body (43) can be further provided with a cover plate (44), the cover plate (44) is fixed on the heat dissipation unit (20), and then the cover bodies (43) are fixed on the LEDs (41). At the same time, the cover plate (44) is provided with a through hole (45) at a part corresponding to each cover body (43), so that the light produced by the LEDs (41) passes through the cover bodies (43) and is released outward through the through holes (45).

When the power provided through the power supply unit (30) passes through each circuit board (42), it drives each LED (41) in order for it to emit light, and the light emitted by the LEDs (41) is converged after passing through the cover bodies (43), and the converged light passes through the through holes (45) on the cover plate (44) and the light-transmissive plate (23) at the front end of the heat dissipation unit (20) before being released outward, thereby achieving the lighting effect; and at the same time, the heat energy produced when the LEDs (41) are driven is transmitted to the heat dissipation unit (20), and undergoes heat exchanges with air through the heat dissipation fins (21) at the back end of the heat dissipation unit (20), thereby effectively achieving the heat dissipation effect, and prolonging the service life of the LEDs (41).



IV. Description of the Invention (4)

It is worth mentioning that the number of LEDs (41) on the light-emitting unit (40) can be changed according to different purposes, for example, a larger number of LEDs (41) can be used when a better lighting effect is required, and a smaller number of LEDs (41) may be adopted when the requirement for lighting effect is moderate. This allows the LED searchlight (10) to be applied more broadly. At the same time, the size of the LED searchlight (10) may be changed according to the number of LEDs (41), allowing more flexibility in use.

Moreover, the back end of the heat dissipation unit (20) is provided with a plurality of heat dissipation fins (21), thereby increasing the heat dissipation effect of the LED searchlight (10) through the heat dissipation fins (21), enabling the heat energy released by the LEDs (41) to be rapidly released, thereby prolonging the service life of the LEDs (41) and the LED searchlight (10) at the same time.

In addition, the heat dissipation unit (20) may further be provided with a grab handle (24), the two ends of the grab handle (24) are fixed on two corresponding sides of the heat dissipation unit (20), thereby making it easy for users to lift the unit and use the LED searchlight (10); at the same time, the grab handle (24) may further be provided with a slotted hole (25), so that the LED searchlight (10) can be fixed to the wall surface through the slotted hole (25), thereby being used for emergency lighting.



IV. Description of the Invention (5)

At the same time, the power supply unit (30) can further use a battery to provide power, or be connected with a general power line to be directly plugged into a general plug [sic: socket], thereby achieving the purpose of providing power. However, when the power supply unit is connected to the power line, the power supply unit needs to be further provided with a transformer inside, so as to convert a current of 110 Volts into a current acceptable to the LEDs (41) to avoid burning of the LEDs (41) due to overly large currents.

In addition, as shown in Figure 3, the LEDs (41) can further be fully integrated on the circuit board (42), thereby being fixed on the heat dissipation unit (20) through the circuit board (42) and being connected to the power supply unit (30) through circuits, and at the same time, the LEDs (41) are driven, in order to emit light. As a result, the assembly steps are simplified, the assembly time is saved and productivity is increased.

In conclusion, the present invention, "an LED searchlight," can achieve the effect of rapid heat dissipation through the heat dissipation fins (21) in addition to the use of

LEDs (41) to replace conventional bulbs and prolong the service life of the LEDs (41) in addition to prolonging of the service life of the LED searchlight (10). Furthermore, the LED searchlight (10) features a diversified design and can be applied to a variety of occasions to meet different needs, demonstrating the characteristic of diversification.

However, the above-mentioned terms are for the convenience of describing the technical content of the present invention, rather than limiting the scope of the claims in this case. Therefore, any equivalent component conversion and substitution made in accordance with the spirit of the present invention of this case shall fall within the scope of protection of this case.



IV. Description of the Invention (6)

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Brief Description of the Drawings

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[Brief Description of the Drawings]

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Figure 1 is a schematic diagram of the present invention.

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Figure 2 is a functional decomposition diagram of the present invention.

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Figure 3 is a functional decomposition diagram of another embodiment of the present

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invention.

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[Description of Symbols of Main Elements]

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(10) LED searchlight

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(20) Heat dissipation unit

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(21) Heat dissipation fin

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(22) Baffle plate

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(23) Light-transmissive plate

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(24) Grab handle

21

(25) Slotted hole

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(30) Power supply unit

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(40) Light-emitting unit

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(41) LED

26

(42) Circuit board

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(43) Cover body

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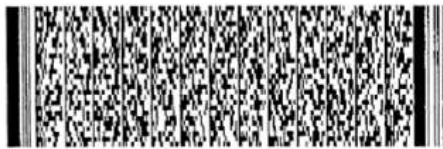
(44) Cover plate



1 (45) Through hole

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5 IV. Abstract in Chinese (Title of the Invention: An LED Searchlight)

6 The present invention relates to a design of a searchlight, specifically, a
7 searchlight using LEDs with a heat dissipation unit. The LED searchlight comprises
8 the heat dissipation unit, a power supply unit, and a light-emitting unit composed of a
9 plurality of LEDs, wherein the back of the heat dissipation unit is provided with a
10 plurality of heat dissipation fins, the power supply unit is arranged at a back end of the
11 heat dissipation unit, and the light-emitting unit is arranged at a front end of the heat
12 dissipation unit; and at the same time, the power supply unit is connected with the
13 light-emitting unit through circuits to provide power to drive the LEDs on the light-



1 emitting unit, in order for them to emit light, thereby achieving the lighting effect.

2 V. Abstract in English (Title of the Invention:)



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4 VI. Designated Representative Figure

5 (I) The representative figure of this case is: Figure 2

6 (II) Brief Description of Symbols of Components in Representative Figure of This Case:

7 (10) LED searchlight

8 (20) Heat dissipation unit

9 (21) Heat dissipation fin

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11 (22) Baffle plate

12 (23) Light-transmissive plate

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14 (24) Grab handle

15 (25) Slotted hole

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17 (40) Light-emitting unit

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12 V. Claims

13 1. An LED searchlight , comprising:



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- 1 a heat dissipation unit, with the rear being provided with a plurality of heat dissipation fins;
2 a power supply unit, arranged at a back end of the heat dissipation unit to provide power; and
3 a light-emitting unit, composed of a plurality of LEDs and arranged at a front end of the heat
4 dissipation unit, wherein the rear of each LED is provided with a circuit board at the same time,
5 the LEDs are fixed on the heat dissipation unit through the circuit boards, and are connected
6 with the power supply unit through circuits to provide power through the power supply unit to
7 drive the LEDs, in order for them to emit light, thereby achieving the lighting effect.
- 8 2. The LED searchlight according to claim 1, wherein the heat dissipation unit further comprises
9 baffle plates arranged on both sides and a light-transmissive plate arranged at the front end, and
10 a housing space is formed by the baffle plates on both sides and the light-transmissive plate at
11 the front end as well as the heat dissipation unit for the light-emitting unit to be arranged therein.
- 12 3. The LED searchlight according to claim 2, wherein the heat dissipation unit is further provided
13 with a grab handle, and the two ends of the grab handle are fixed on two corresponding sides of
14 the heat dissipation unit, thereby making it easy for users to lift the unit.
- 15 4. The LED searchlight according to claim 3, wherein the grab handle is further provided with a
16 slotted hole, so that the LED searchlight can be fixed to a wall surface through the slotted hole.
- 17 5. The LED searchlight according to claim 1, wherein an outer side of each LED can further be
18 covered with a cover body; the front end of each cover body is further provided with a cover
19 plate which is fixed on the heat dissipation unit, thereby fixing the cover bodies to the LEDs;
20 and at the same time, the cover plates are provided with a through hole at a part corresponding
21 to each cover body, so that the light produced by the LEDs can pass through the cover bodies to
22 be released outward through the through holes.



V. Claims

- 25 V. Claims
- 26 6. The LED searchlight according to claim 1, wherein the power supply unit further provides power
27 through a battery.
- 28 7. The LED searchlight according to claim 1, wherein the power supply unit is further connected to
29 a power line to be directly plugged into a plug [sic: socket], thereby achieving the effect of



1 providing power.

2 8. An LED searchlight , comprising:

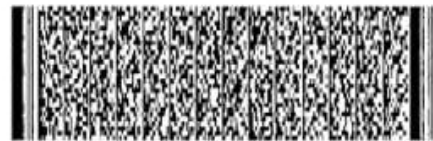
3 a heat dissipation unit, with the rear being provided with a plurality of heat dissipation fins;

4 a power supply unit, arranged at a back end of the heat dissipation unit to provide power ; and

5 a light-emitting unit, composed of a plurality of LEDs and arranged at a front end of the heat
6 dissipation unit, wherein each LED is integrated on a circuit board at the same time, the LEDs
7 are fixed on the heat dissipation unit through the circuit boards, and are connected with the
8 power supply unit through circuits to provide power through the power supply unit to drive the
9 LEDs, in order for them to emit light, thereby achieving the lighting effect.

10 9. The LED searchlight according to claim 8, wherein the heat dissipation unit further comprises
11 baffle plates arranged on both sides and a light-transmissive plate arranged at the front end, and
12 a housing space is formed by the baffle plates on both sides and the light-transmissive plate at
13 the front end as well as the heat dissipation unit for the light-emitting unit to be arranged therein.

14 10. The LED searchlight according to claim 9, wherein the heat dissipation unit is further provided
15 with a grab handle, and the two ends of the grab handle are fixed on two corresponding sides
16 of the heat dissipation unit, thereby making it easy for users to lift the unit.



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20 V. Claims

21 11. The LED searchlight according to claim 10, wherein the grab handle is further
22 provided with a slotted hole, so that the LED searchlight can be fixed to a wall
23 surface through the slotted hole.

24 12. The LED searchlight according to claim 8, wherein an outer side of each LED
25 can further be covered with a cover body; the front end of each cover body is
26 further provided with a cover plate which is fixed to the heat dissipation unit,

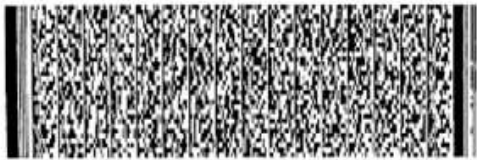


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1 thereby fixing the cover bodies to the LEDs; and at the same time, the cover
2 plates are provided with a through hole at a part corresponding to each cover
3 body, so that the light produced by the LEDs can pass through the cover bodies
4 to be released outward through the through holes.

5 13. The LED searchlight according to claim 8, wherein the power supply unit further
6 provides power through a battery.

7 14. The LED searchlight according to claim 8, wherein the power supply unit is
8 further connected to a power line to be directly plugged into a plug [sic: socket],
9 thereby achieving the effect of providing power.



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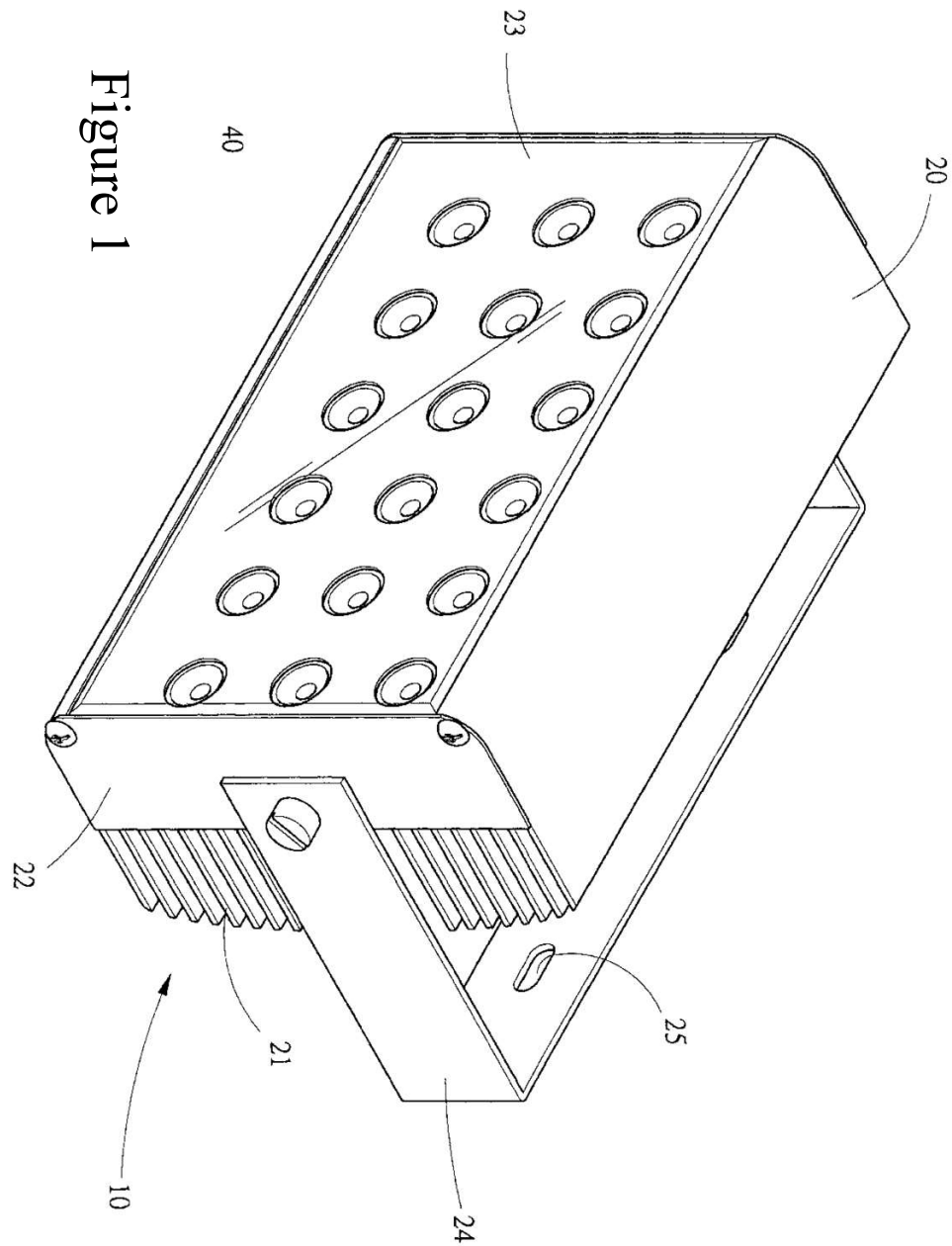
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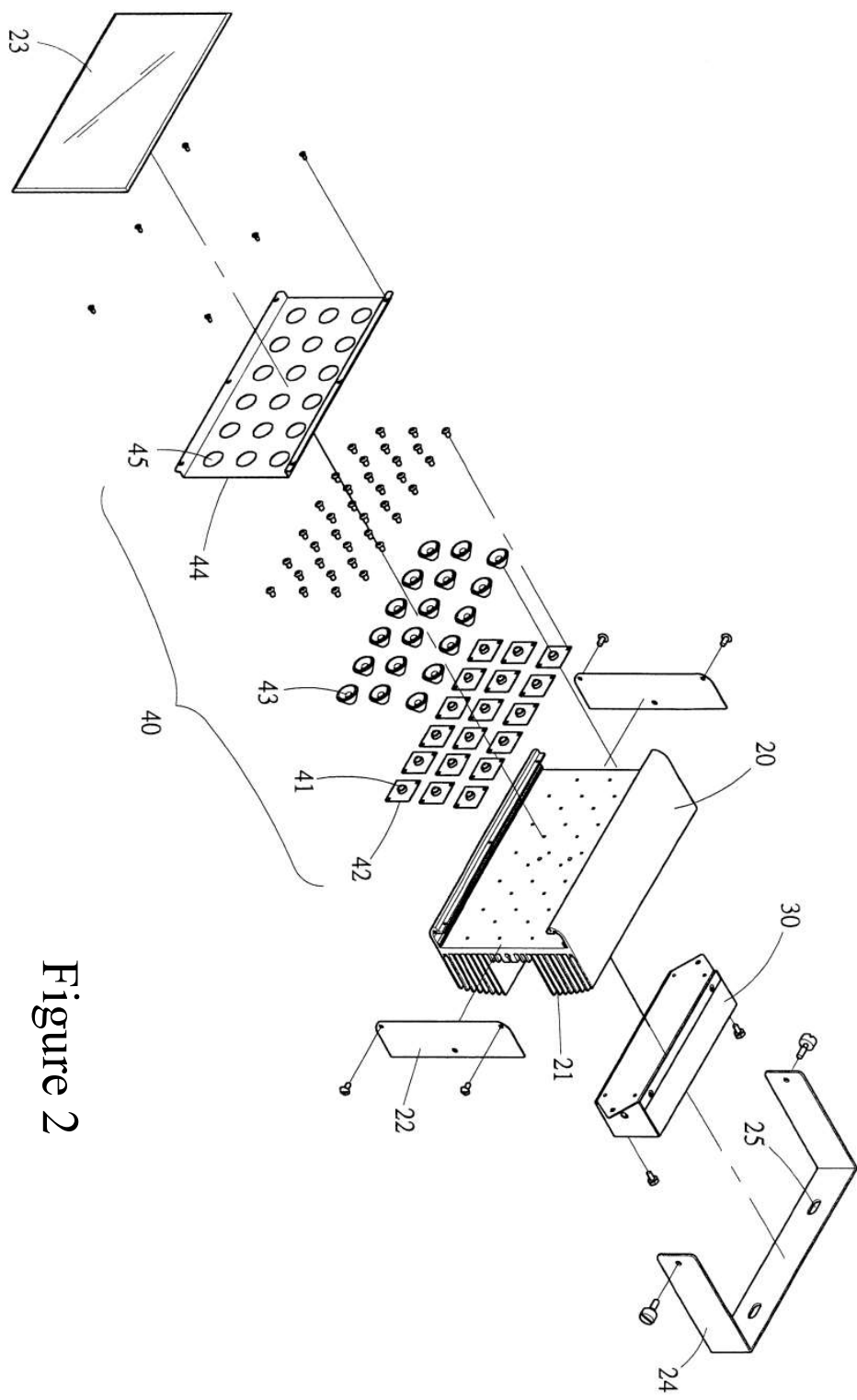


Figure 2



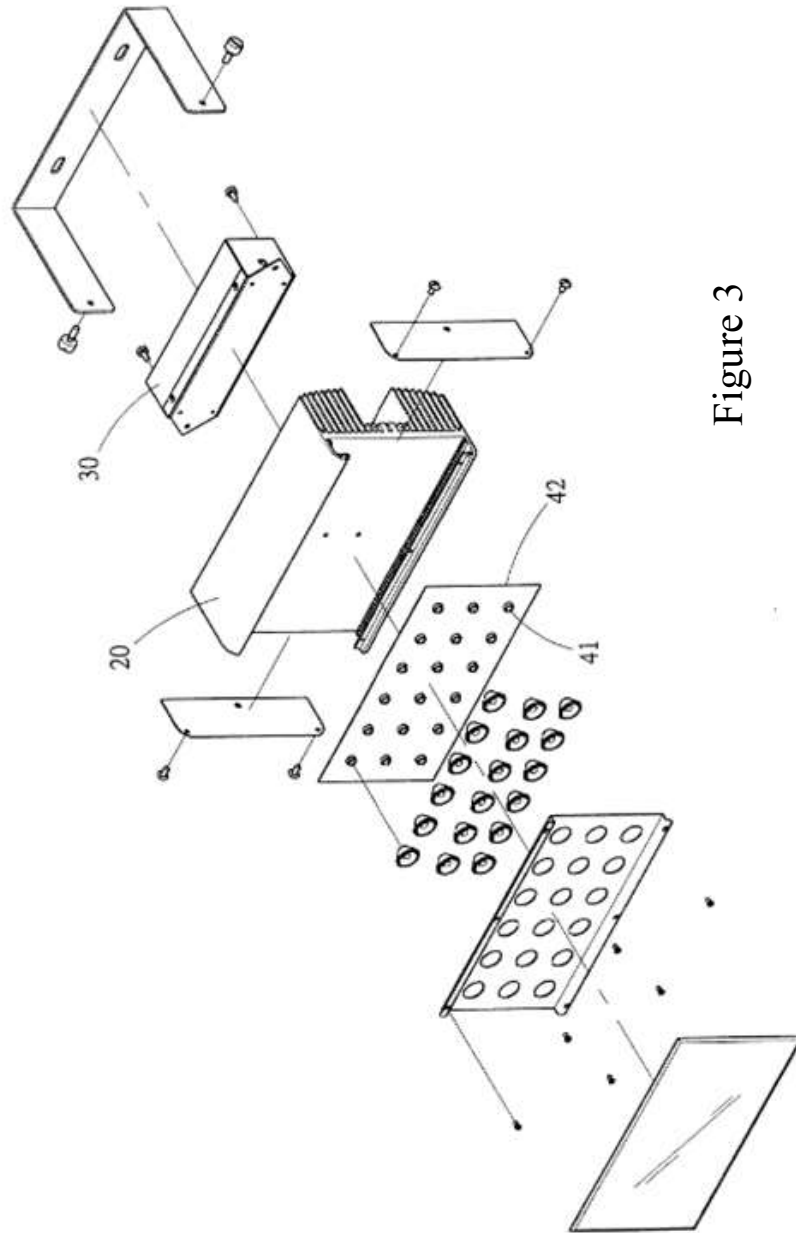


Figure 3

[11] Certificate No.: M277876
[45] Publication Date: 10/11/2005
[51] Int. Cl.⁷: F21V29/00
H01L33/00

Utility Model 5 Pages in total

[54] Name: LED searchlight device

[21] Application No.: 094204571 [22] Application Date: 3/24/2005

[72] Inventor(s):
Lin Bing-Kun
Cai Qi-Rui

[71] Applicant(s):
Lin Bing-Kun
Floor 4, No. 8, Lane 19, Alley 50, Wuxing Street, Xinyi District, Taipei City
Cai Qi-Rui
Floor 5, No. 1, Lane 18, Alley 218, Section 5, Roosevelt Road, Wenshan District, Taipei City

[74] Representative:

[57] Scope of patent application:

1. An LED searchlight, comprising:
a heat dissipation unit, with the rear being provided with a plurality of heat dissipation fins;
a power supply unit, arranged at a back end of the heat dissipation unit to provide power; and
a light-emitting unit, composed of a plurality of LEDs and arranged at a front end of the heat dissipation unit, wherein the rear of each LED is provided with a circuit board at the same time, the LEDs are fixed on the heat dissipation unit through the circuit boards, and are connected with the power supply unit through

circuits to provide power through the power supply unit to drive the LEDs, in order for them to emit light, thereby achieving the lighting effect.

2. The LED searchlight according to claim 1, wherein the heat dissipation unit further comprises baffle plates arranged on both sides and a light-transmissive plate arranged at the front end, and a housing space is formed by the baffle plates on both sides and the light-transmissive plate at the front end as well as the heat dissipation unit for the light-emitting unit to be arranged therein.

3. The LED searchlight according to claim 2, wherein the heat dissipation unit is further provided with a grab handle, and the two ends of the grab handle are fixed on two corresponding sides of the heat dissipation unit, thereby making it easy for users to lift the unit.

4. The LED searchlight according to claim 3, wherein the grab handle is further provided with a slotted hole, so that the LED searchlight can be fixed to a wall surface through the slotted hole.

5. The LED searchlight according to claim 1, wherein an outer side of each LED can further be covered with a cover body; the front end of each cover body is further provided with a cover plate which is fixed on the heat dissipation unit, thereby fixing the cover bodies to the LEDs; and at the same time, the cover plates are provided with a through hole at a part corresponding to each cover body, so that the light produced by the LEDs can pass through the cover bodies to be released outward through the through holes.

6. The LED searchlight according to claim 1, wherein the power supply unit further provides power through a battery.

7. The LED searchlight according to claim 1, wherein the power supply unit is further connected to a power line to be directly plugged into a plug [sic: socket], thereby achieving the effect of providing power.

8. An LED searchlight, comprising:
a heat dissipation unit, with the rear being provided with a plurality of heat dissipation fins;
a power supply unit, arranged at a back end of the heat dissipation unit to provide power; and
a light-emitting unit, composed of a plurality of LEDs and arranged at a front end of the heat dissipation unit, wherein each LED is integrated on a circuit board at the same time, the LEDs are fixed on the heat dissipation unit through the circuit boards, and are connected with the power supply unit through circuits to provide power through the power supply unit to drive the LEDs, in order for them to emit light, thereby achieving the lighting effect.

9. The LED searchlight according to claim 8, wherein the heat dissipation unit further comprises baffle plates arranged on both sides and a light-transmissive plate arranged at the front end, and a housing space is formed by the baffle plates on both sides and the light-transmissive plate at the front end as well as the heat dissipation unit for the light-emitting unit to be arranged therein.

10. The LED searchlight according to claim 9, wherein the heat dissipation unit is further provided with a grab handle, and the two ends of the grab handle are fixed on two corresponding sides of the heat dissipation unit, thereby making it easy for users to lift the unit.

11. The LED searchlight according to claim 10, wherein the grab handle is further provided with a slotted hole, so that the LED searchlight can be fixed to a wall surface through the slotted hole.

12. The LED searchlight according to claim 8, wherein an outer side of each LED can further be covered with a cover body; the front end of each cover body is further provided with a cover plate which is fixed to the heat dissipation unit, thereby fixing the cover bodies to the LEDs; and at the same time, the cover plates are provided with a through hole at a part corresponding to each cover body, so that the light produced by the LEDs can pass through the cover bodies to be released outward through the through holes.

13. The LED searchlight according to claim 8, wherein the power supply unit further provides power through a battery.

14. The LED searchlight according to claim 8, wherein the power supply unit is further connected to a power line to be directly plugged into a plug [sic: socket], thereby achieving the effect of providing power.

The Figures are briefly explained: the first figure is the diagram of this invention. The second figure is the illustration of this invention. The third figure is the illustration of another embodiment of this invention.

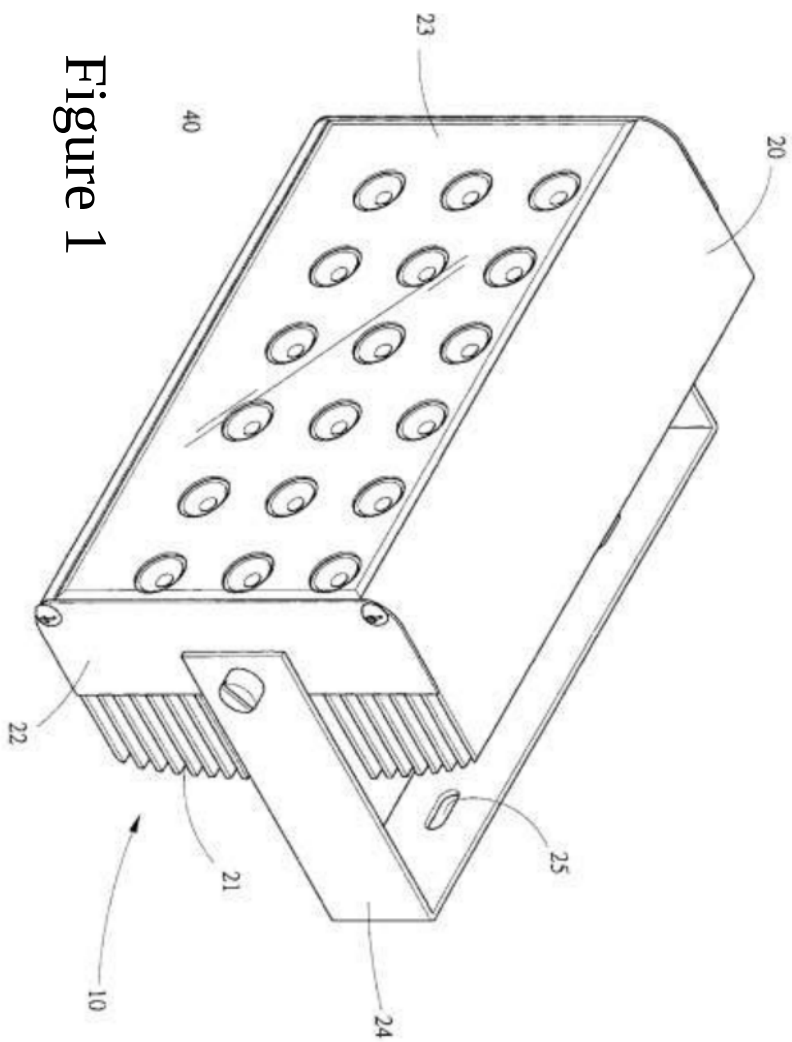


Figure 1

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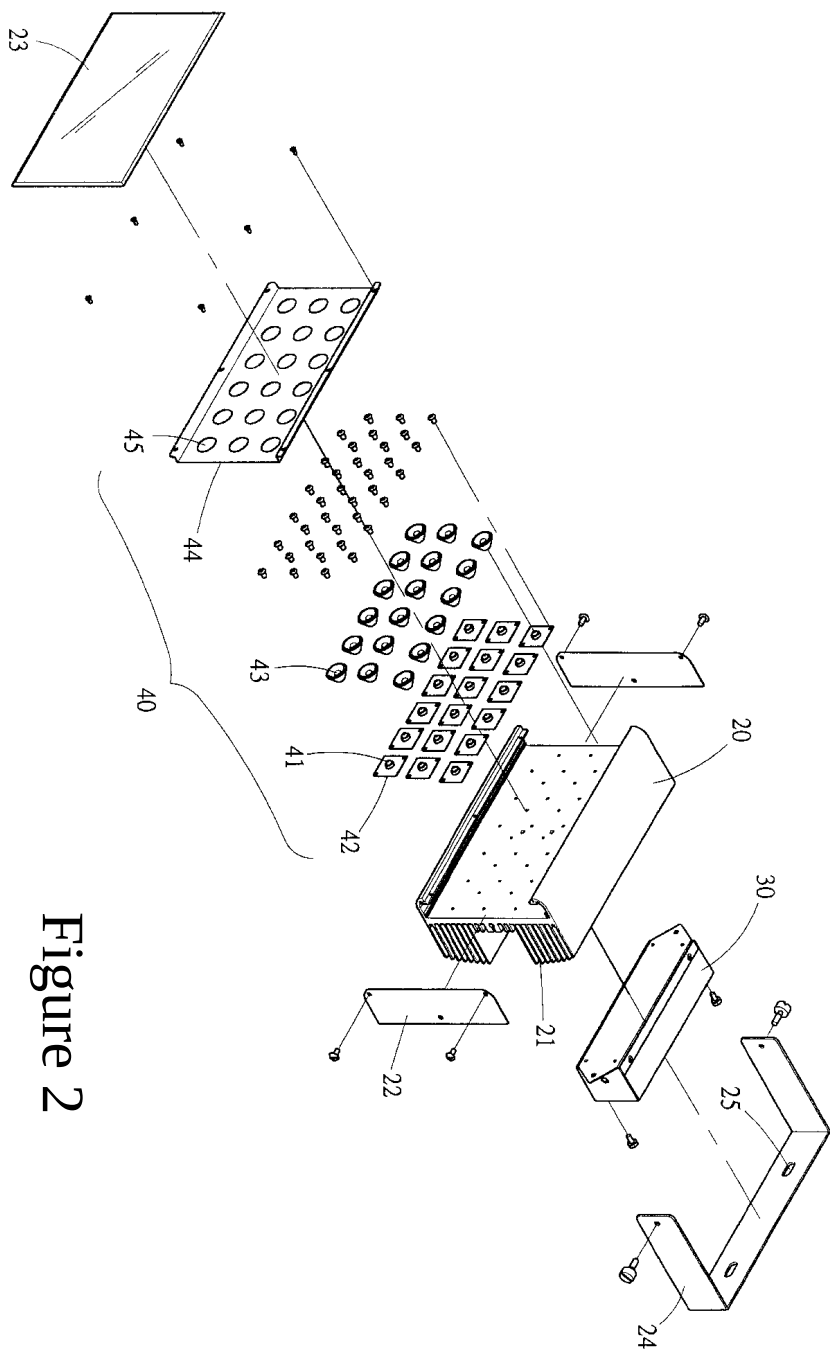


Figure 2

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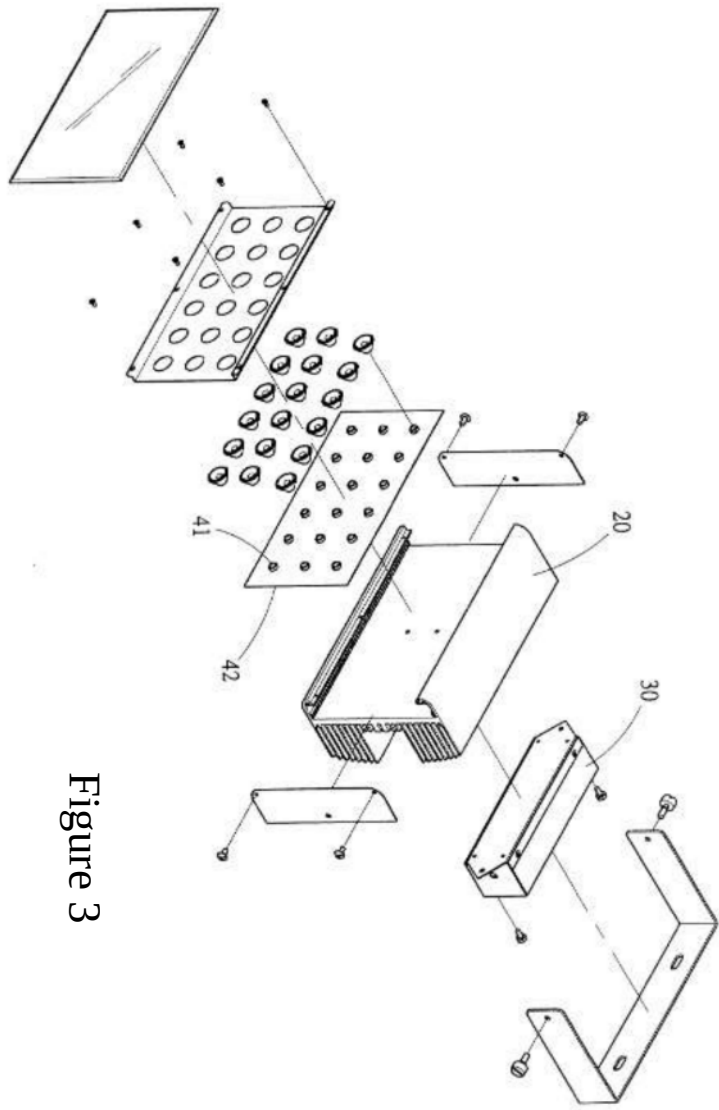


Figure 3

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Date: April 7, 2025

I, Ellen Zhou, a translator fluent in the English and Chinese languages, on behalf of Hogan Lovells, do solemnly and sincerely declare that the following is, to the best of my knowledge and belief, a true and correct translation of the documents listed below in a form that reflects the intention and meaning of the original text.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

The documents are designated as:

- Lin TWM277876U_Original_document_20240826034749
- TWBA-M277876

Ellen Zhou

Signature

Ellen Zhou

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