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(54) LAMP

(57) The invention relates to a lamp comprising light source accessory (1), the light source accessory (1) is provided with tact switch (11); lamp cover (2), the lamp cover (2) and the light source accessory (1) are connected; the lamp cover (2) is provided with fulcrum (21) which can be in contact with the light source accessory (1), and when the lamp cover (2) is pressed, The fulcrum (21) is in contact with the light source accessory (1) under pressure and generates downward pressure on the light source accessory (1), which causes the tact switch (11) to be squeezed to make the lamp conduct. Compared with the prior art, the lamp provided by the present invention has a simple structure and convenient operation.

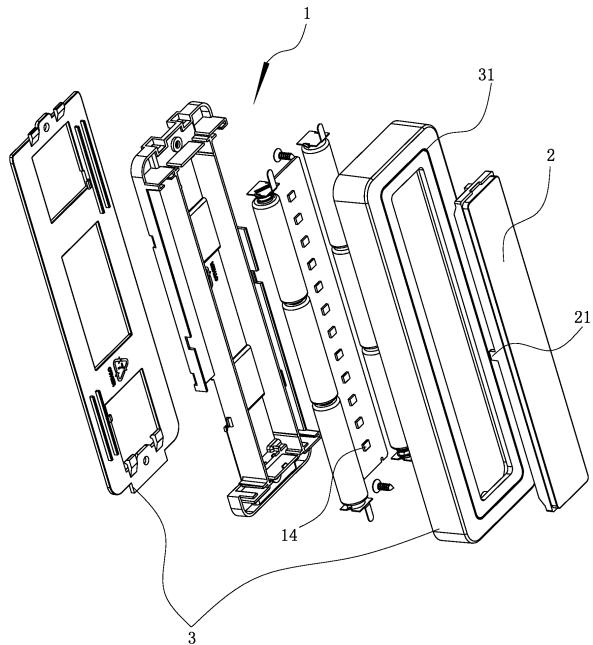


FIG. 2

Description**RELATED APPLICATION**

[0001] This application claims priority to a Chinese Patent Application No. CN 201810364224.9, filed on April 20, 2018.

FIELD OF THE TECHNOLOGY

[0002] The present invention relates to electronic equipment field, with particular emphasis on a lamp.

BACKGROUND OF THE INVENTION

[0003] LED lamps have gradually replaced incandescent lamps because of their low power consumption and low pollution, making them a common lighting device for everyday life. Tact switch is popular trend in this kind of lamps.

[0004] For example, the utility model patent CN206669376U "an LED lamp with a sensitive switch" disclosed the lamp, the LED lamp comprises a front housing provided with lamp bead at the upper end, and the front housing is provided with a mounting groove outside the translucent cover, the upper end in the mounting groove is provided with a collar, and a tact switch is arranged between the collar and the mounting groove, and a guide groove is integrally formed on the upper end of the mounting groove, and a return spring connecting the front housing and the collar is arranged in the guide groove.

[0005] The device can turn the lamp on or off by tact switch at different positions, and at the same time, the lamp body is reset after the tact switch is pressed by the return spring.

BRIEF SUMMARY OF THE INVENTION

[0006] The applicant has found that when the tact switch type lamp is turned on and off, the user needs to apply pressure from the corresponding position where the tact switch is placed, so that the lamp can be turned on or off, causing certain inconvenience; if it is desired to achieve that the lamp can be turned on from different angles, a plurality of tact switches in different directions or a tact switch with multiple angles should be set, the production cost will increase; at the same time, after pressing the tact switch, the lamp cannot realize switch reset without the help of other external devices such as springs, so most of the patents use the same reset device as the above documents to overcome this disadvantage, but this will cause the structure to be complicated, resulting in inconvenient production, and secondly, the production cost will be increased.

[0007] In view of the above problems, the present invention aims to provide a lamp which can allow users to turn on and off the lamp from multiple angles without

setting a tact switch from multiple angles.

[0008] The purpose of the invention is also to provide a lamp which can realize the lamp switch reset without the aid of other external reset devices.

[0009] In order to achieve the above purposes, the technical scheme of the invention is: a lamp includes:

light source accessory, the light source accessory being provided with tact switch;
lamp cover, the lamp cover being connected to the light source accessory;
characterized in that:

the lamp cover is provided with fulcrum that can be in contact with the light source accessory, and when the lamp cover is pressed, the fulcrum is in contact with the light source accessory under pressure and downward pressure is generated on the light source accessory which causes the tact switch to be squeezed to turn the lamp on.

advantageously, the tact switch can be automatically reset after being extruded, and the reset generates reverse thrust on the lamp cover, and the lamp cover can generate upward movement and reset under the action of reverse thrust.

advantageously, the lamp further includes a housing; the lamp cover is in clearance fit with the housing, and the lamp cover can generate a downward movement within the clearance when pressed, and the tact switch can be self-reset after being pressed, the reset generates reverse thrust to the lamp cover, and the lamp cover can be reset by generating upward movement in the clearance under the action of reverse thrust.

advantageously, the housing has a hollow central portion and the top surface has a notch design, and the lamp cover is movable fit with the top surface of the housing.

advantageously, the fulcrum is formed on both flanks of the lamp cover and can be in contact with one side of the light source accessory, and the tact switch is located on the other side of the light source accessory and can be in contact with the bottom surface of the housing.

advantageously, the edge of the lamp cover is designed to be downwardly step, and the edge of the top surface of the housing is correspondingly bending shape; the bending shape is separated from the step surface of the step by a certain gap to allow the edge of the lamp cover to move freely up and down.

advantageously, the light source accessory comprises conductive plate, and power supply component electrically connected to the conductive plate; the conductive plate is provided with patch light emitting component.

[0010] Compared with the prior art, the invention has the advantages that: by adopting the principle of the lever, by setting fulcrum on the lamp cover, tact switch is arranged on the corresponding surface of the light source accessory, and when the lamp cover is pressed, the pressure is transmitted to the light source accessory through the fulcrum, and the tact switch is squeezed to complete the conduction. This design allows pressure to be applied from any angle of the lamp cover, as long as the pressure is appropriate, so that the fulcrum acts on the light source accessory, thereby turning the switch on, but it avoids the problem that the tact switch needs to be set in different directions in the past to realize different angles of operation; the tact switch can recover after the pressure is removed, and will generate thrust to the lamp cover during the self-recovery process, and the lamp cover and the housing clearance fit. Therefore, by using the reverse thrust generated by the tact switch on the lamp cover during the self recovery process of the tact switch, the reverse movement of the lamp cover in the clearance is well realized, thereby realizing the switch reset and reducing the need for the return spring and other components. The design not only makes the structure simple, but also reduces production costs.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The drawings described herein are intended to promote a further understanding of the present invention, as follows:

FIG. 1 is a schematic diagram of an embodiment of the invention.

FIG. 2 shows the explosion structure of FIG. 1.

FIG. 3 shows another angular explosion structure of FIG. 1.

FIG. 4 is a sectional view of FIG. 1.

DETAILED DESCRIPTION OF THE INVENTION

[0012] Embodiments of the invention are described in detail below, Examples of the embodiments are shown in the appended drawings in which consistently identical or similar labels represent identical or similar elements or elements having the same or similar function. The embodiments described below by reference to the drawings are exemplary and are only used for the interpretation of the invention and cannot be understood to be a limitation of the invention.

[0013] FIG. 1 shows an embodiment of the lamp of the present invention. As shown in FIG. 1, the lamp comprises light source accessory 1 and lamp cover 2 connected to the light source accessory 1, and the light source accessory 1 is provided with tact switch 11.

[0014] In the past, the lamps could be turned on and off from different angles by setting the tact switches at different angles. Although such a design is feasible, the number of tact switches is increased, resulting in an in-

crease in the overall production cost of the lamps.

[0015] The present application has improved this point. Specifically, the lamp cover 2 is provided with fulcrum 21 that can be in contact with the light source accessory 1. The fulcrum 21 does not normally contact the light source accessory 1, but if pressure is applied to the lamp cover 2, then the fulcrum will move downward with the pressure, and then contact with the light source accessory, and squeeze the light source accessory, and the tact switch located thereon will be squeezed thereby, so that the circuit is turned on and the lamp is turned on. In the case of switch reset, the characteristics of self-recovery of tact switch 11 are cleverly utilized. The tact switch 11 can be automatically reset after being extruded, and the recovery generates reverse thrust on the lamp cover, and the lamp cover can generate upward movement and reset under the action of reverse thrust, so as to easily realize the lamp switch reset.

[0016] Specifically, in the embodiment, the lamp further includes housing 3, and the lamp cover 2 is in clearance fit with the housing 3. In an initial stage, the lamp cover 2 is pressed, and the fulcrum 21 can contact the light source accessory 1 under pressure and generate pressure on the light source accessory, and the pressure causes the tact switch 11 to be squeezed to turn on the lamp; When the external pressure is withdrawn, the tact switch 11 will reset itself due to its own characteristics, and during its resetting process, it will generate upward thrust on lamp cover 2, and the lamp cover 2 can generate upward movement in the clearance under the action of reverse thrust and reset, thus realizing the switch restoration. This design allows the user to apply pressure from any angle of the lamp cover as long as the pressure is adequate enough to cause the fulcrum to act on the light source accessory, thereby turning the switch on, thereby reducing the number of tact switches.

[0017] It should be mentioned that the position of the fulcrum and the tact switch of the present invention is not only the structure shown in this embodiment, but also the structure of other positions, for example, it may be such a structure below:

[0018] A fulcrum is formed on the side of the lamp cover opposite to the light source accessory, and the tact switch is also located on the side of the light source accessory opposite to the lamp cover, and the fulcrum corresponds to the tact switch, the lamp cover is freely connected with the light source accessory. When downward pressure is applied to the lamp cover, the fulcrum will move downward under the action of pressure and then contact the tact switch, and squeeze the tact switch. The tact switch will be pressed under this action to conduct. When the applied external pressure is removed, the tact switch will move upward under the action of its own restoring force, and generate upward thrust on the fulcrum, and then the lamp cover will move upward under the action of this thrust, thereby achieving the reset.

[0019] As an improvement, the housing 3 is hollow in the middle and has a 31 notch design on the top surface,

and the lamp cover 2 is movable fit with the top surface 31 of the housing 3; the fulcrum 21 is formed on both flanks of the lamp cover 2 and can be in contact with one side of the light source accessory 1, and the tact switch 11 is located on the other side of the light source accessory 1 and can be in contact with the bottom surface of the housing 3, as shown in FIG. 2-3.

[0020] In order to effectively achieve the upper and lower free movement of the lamp cover, referring to FIG. 4, the lamp cover 2 is provided with a step-shaped downward edge design, and the edge of the top surface 31 of the housing 3 is correspondingly bending shape; The bending shape is separated from the step surface of the step by a certain gap to allow the edge of the lamp cover 2 to move freely up and down.

see FIG. 2-4, the light source accessory 1 includes conductive plate 12, and power supply component 13 electrically connected to the conductive plate 12. The conductive plate 12 is provided with patch light emitting component 14. Of course, other light emitting devices are also possible.

[0021] Through the above design, the purpose of the user can turned on the lamp from any angle of the lamp cover only by the lever principle; at the same time, the switch reset function is realized by using the tact switch to recover itself after the pressure is removed, which simplifies the structure and reduces the production cost.

[0022] The above disclosure has been described by way of example and in terms of exemplary embodiment, and it is to be understood that the disclosure is not limited thereto. Rather, any modifications, equivalent alternatives or improvement etc. within the spirit of the invention are encompassed within the scope of the invention as set forth in the appended claims.

Claims

1. A lamp, the lamp comprising light source accessory (1), the light source accessory (1) being provided with tact switch (11); lamp cover (2), the lamp cover (2) being connected to the light source accessory (1); **characterized in that:** the lamp cover (2) is provided with fulcrum (21) that can be in contact with the light source accessory (1), and when the lamp cover (2) is pressed, the fulcrum (21) is in contact with the light source accessory (1) under pressure and downward pressure is generated on the light source accessory (1) which causes the tact switch (11) to be squeezed to turn the lamp on.
2. The lamp of claim 1, wherein the tact switch (11) can be automatically reset after being extruded, and the reset generates reverse thrust on the lamp cover (2), and the lamp cover (2) can generate upward movement and reset under the action of reverse thrust

3. The lamp of claim 1, wherein the lamp further includes a housing (3); the lamp cover (2) is in clearance fit with the housing (3), and the lamp cover (2) can generate a downward movement within the clearance when pressed, and the tact switch (11) can be self-reset after being pressed, the reset generates reverse thrust to the lamp cover (2), and the lamp cover (2) can be reset by generating upward movement in the clearance under the action of reverse thrust.
4. The lamp of claim 3, wherein the housing (3) has a hollow central portion and the top surface (31) has a notch design, and the lamp cover (2) is movable fit with the top surface (31) of the housing (3).
5. The lamp of claim 4, wherein the fulcrum (21) is formed on both flanks of the lamp cover (2) and can be in contact with one side of the light source accessory (1), and the tact switch (11) is located on the other side of the light source accessory (1) and can be in contact with the bottom surface of the housing (3).
6. The lamp of claim 4, wherein the edge of the lamp cover (2) is designed to be downwardly step, and the edge of the top surface (31) of the housing (3) is correspondingly bending shape; the bending shape is separated from the step surface of the step by a certain gap to allow the edge of the lamp cover (2) to move freely up and down.
7. The lamp of claim 1 or 2 or 3, wherein the light source accessory (1) comprises conductive plate (12), and power supply component (13) electrically connected to the conductive plate (12); the conductive plate (12) is provided with patch light emitting component (14).

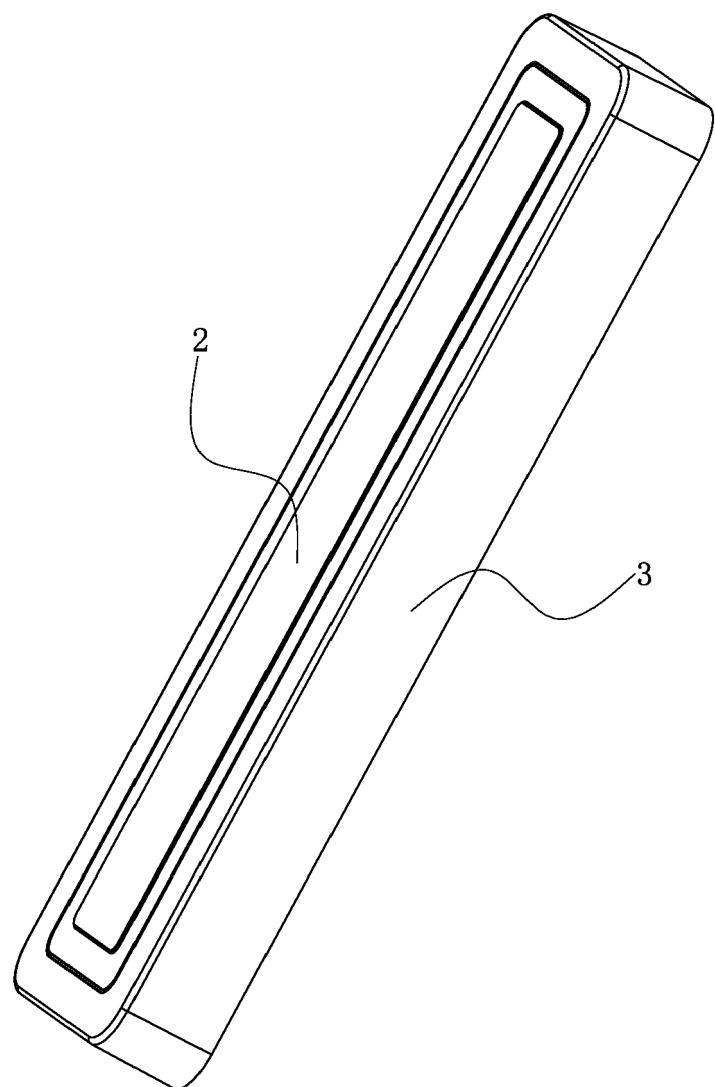


FIG. 1

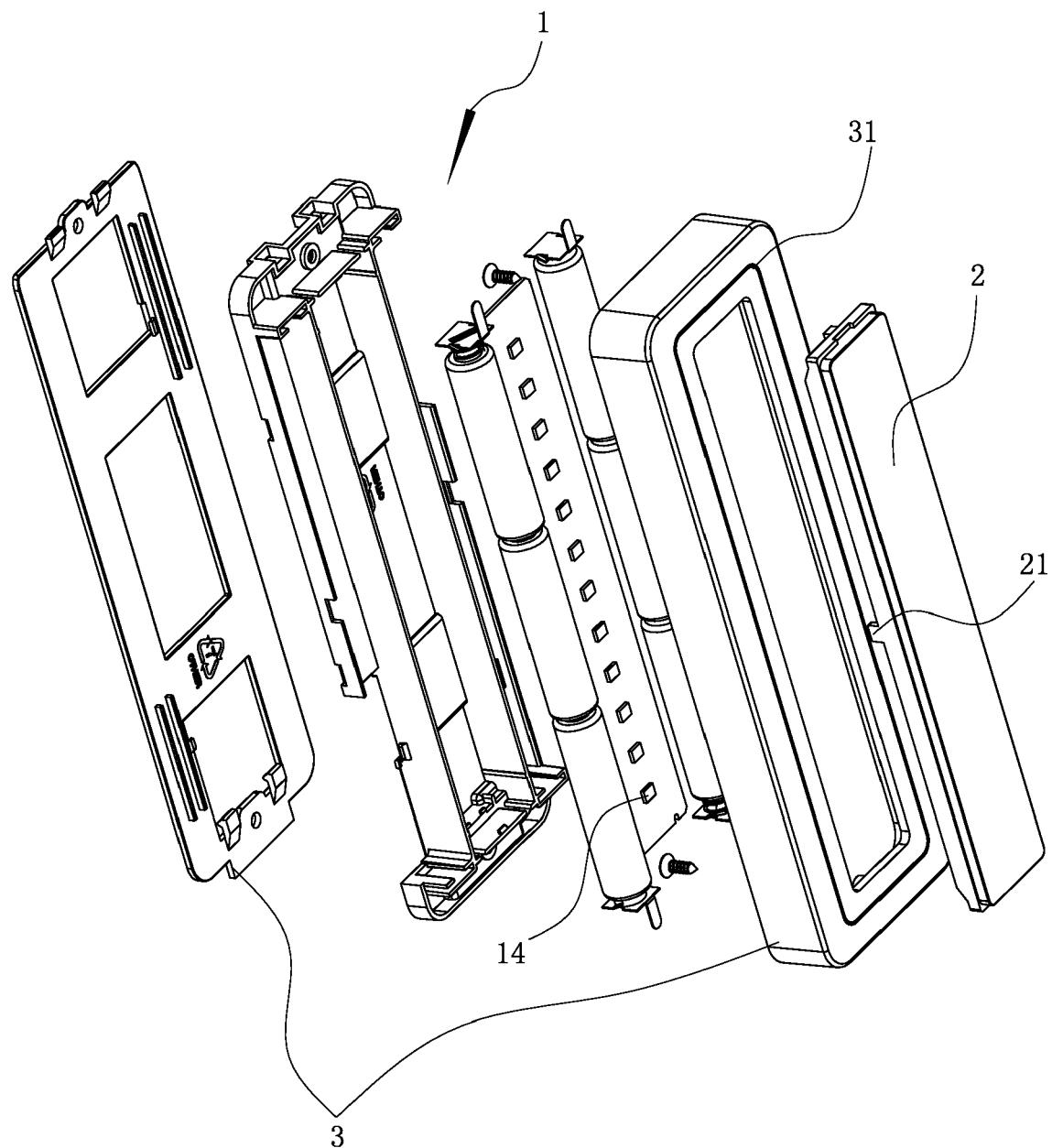


FIG. 2

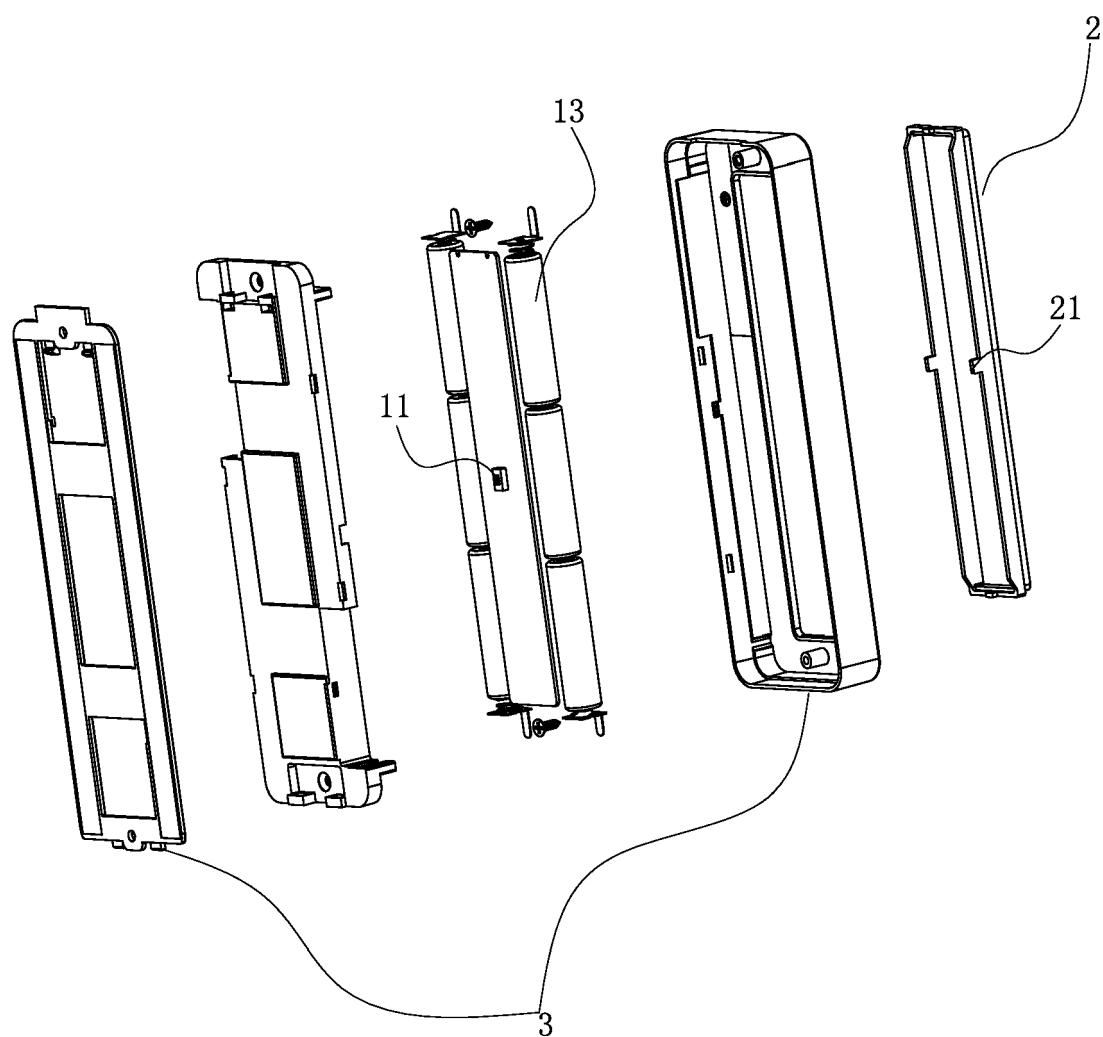


FIG. 3

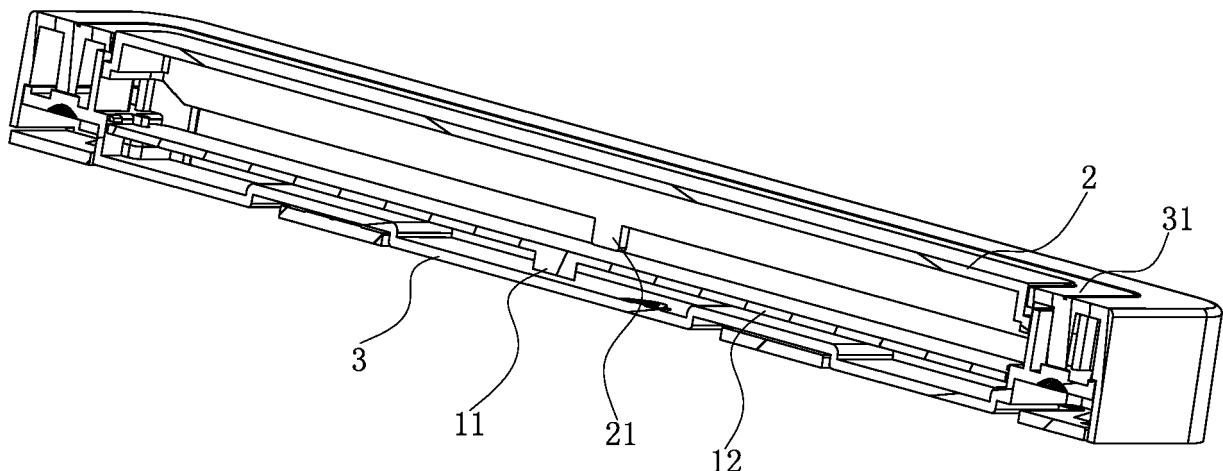


FIG. 4



EUROPEAN SEARCH REPORT

Application Number

EP 19 17 0174

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
10	X US 6 288 498 B1 (CHENG CHEN-AN [TW]) 11 September 2001 (2001-09-11) * column 2, line 53 - column 3, line 23 * * figures 3-5 * ----- A CN 104 515 101 A (WANJIONG LIN) 15 April 2015 (2015-04-15) * figures 1-3 * ----- A EP 2 194 316 A1 (YUEN JOHN SE-KIT [CN]) 9 June 2010 (2010-06-09) * paragraphs [0043], [0050] - [0052], [0059] * * figures 8, 10 * ----- A US 2002/067616 A1 (SOGA HISASHI [JP] ET AL) 6 June 2002 (2002-06-06) * paragraph [0026] * * figure 4 * ----- A FR 2 741 938 A1 (SIDLER GMBH & CO [DE]) 6 June 1997 (1997-06-06) * figure 2 * -----	1,7 2,3 1,2 3-7 1-4,6,7 1	INV. F21V23/04 F21S9/02 ADD. F21Y115/10
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50	2 The present search report has been drawn up for all claims		
55	Place of search The Hague	Date of completion of the search 20 June 2019	Examiner Allen, Katie
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 19 17 0174

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

20-06-2019

10	Patent document cited in search report	Publication date	Patent family member(s)			Publication date
	US 6288498	B1	11-09-2001	NONE		
15	CN 104515101	A	15-04-2015	NONE		
	EP 2194316	A1	09-06-2010	NONE		
20	US 2002067616	A1	06-06-2002	CA	2363897 A1	05-06-2002
				CN	1357467 A	10-07-2002
				DE	10159647 A1	25-07-2002
				GB	2369880 A	12-06-2002
				JP	2002172977 A	18-06-2002
				US	2002067616 A1	06-06-2002
25	FR 2741938	A1	06-06-1997	DE	19544807 A1	05-06-1997
				FR	2741938 A1	06-06-1997
30						
35						
40						
45						
50						
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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CN 201810364224 [0001]
- CN 206669376 U [0004]