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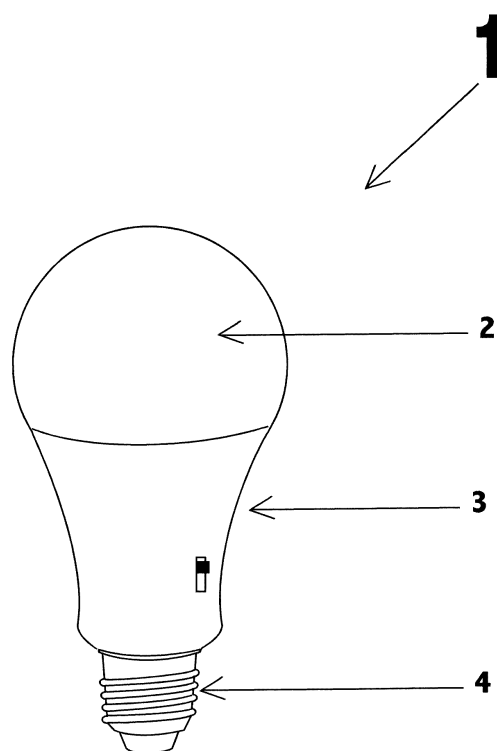
(71) Applicant: **Petriccione, Alessandro**
80131 Napoli (IT)

(72) Inventor: **Petriccione, Alessandro**
80131 Napoli (IT)

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(54) **TRIS MULTITONE LED LAMP WITH INTEGRATED CONTROL UNIT LEVER**

(57) The present invention is about a LED light bulb (1) with a multi-tone control unit (3E) and an integrated lever (3F), that allow passing easily from a lighter shade of light to a darker one by directly operating the lever (3F) placed on the containing base (3) of the bulb (1).



Description

[0001] This invention is applied in the technical field of light bulbs and in the lighting of rooms and relates to a LED light bulb with an integrated system that allows passing easily from a lighter shade of light, to an average and, finally, to a more warm one.

[0002] At the current state of the art the possible choices are:

- light bulbs reproducing a single shade of light, commonly divided into warm light, natural light or white light;
- Systems with switch to be activated several times to get the preferred light shade, till the switch-off.

[0003] The current state of the art, therefore, provides only a two-tier system, applied to the bulb and to the switches which, if operated repeatedly, are able to change the light of the bulbs and switch from one shade to another.

[0004] Therefore you need to install a special switch or devices (remote management of the lamps through special "Apps" from smartphones, tablets, etc.) to integrate the one installed in the bulbs.

[0005] This technical solution has proved to be limited and in any case unsuccessful because, in order to pass from one shade of light to another, you must flip the switch several times going through all the shades of light foreseen by the bulb and, in any case, it is not susceptible to be applied to a system that does not include a switch or other technology.

[0006] Moreover, the current state of the art involves a series of problems that the present invention aims to solve definitively. In fact, the wide range of LED bulbs on the market and the technical limitation of them in reproducing a single tone of light (warm-natural-white), according to the above, imposes to choose the bulb with the light tone that best suits to your needs, at the moment of the purchase; besides if you want to switch to a different tone from the one chosen at the time of purchase, you will have to buy a new bulb with a different tone of light. Such a vast choice and diversity of products on the market, means that retailers need to stock a number (n) of LED bulbs with a warm tone, a number (n) of LED bulbs with natural tone, and number (n) of LED bulbs with a white tone. The goal of the present invention is to allow buying a single product with a light tone to be changed as desired, avoiding the need of buying three different products (bulb with warm, medium and cold light), and resorting to too expensive and / or difficult technologies to access and manage.

[0007] The technical problems the present invention wants to solve are:

- Frequent breakage of the switch, which is subject to inevitable malfunctions due to repeated stress;
- To avoid stressing the switch several times to

change the tone and intensity of the light with the definitive switching off of it;

- To avoid installing technologies that need an expert or other technologies that are not easily accessible (e.g. mobile applications);
- Limited applicability.

[0008] The present invention applies a technology which is integrated directly to the bulb, which allows to choose the tone of light, simply by moving the integrated lever on the desired and clearly indicated tone of light, so that you don't need to install a suitable switch and without operating the switch several times to turn off the light permanently.

[0009] The invention consists of a LED light bulb (1) which can be installed like normal light bulbs, with a multitone control unit (3E) inside; it is operated by the lever (3F) placed on the base (3) and directly connected to the color temperature change switch (3E4), and can reproduce three shades of light (warm, natural, white);

[0010] The special characteristics of the invention allow choosing the desired tone of light directly from the bulb (1) leaving it unchanged and modifying it as desired, simply by placing the lever (3F) on the containing base (3), on the desired light shade - 3200K, 4000K, and 6500K - indicated on the containing base (3). With this technology, directly applied to the bulb (1), you will only need to install the bulb in a common lamp holder (of any kind and attack) and operate the switch to a normal on / off way, to electrify the bulb; The light bulb (1) will choose the desired light tone directly according to the integrated lever (3F) position on the base (3). The selected light tone will be the same until you decide to get another light tone by moving the lever (3F) to a new desired tone.

[0011] Further characteristics and advantages of the invention will be better explained in the description of the device according to the invention, here illustrated only to indicate and not to be imitated in the attached drawings, where:

Figure 1 and Figure 2 show the device according to the invention (1) in a perspective view of all its components;

Figure 3 illustrates the device according to the invention (1) in a side view;

[0012] According to the aforementioned figures, the device according to the invention (1), generally indicated with the reference number (1), has a cover with standard satin finish (2) and a bulb holder base (4) (any various kinds and fitting), both fixed with gluing material (adhesives, silicone or other) to the containing base (3). In particular, the containing base (3) houses an aluminum led board (3A) (of various kinds and shapes), on which 3200K (3A1) and a 6500K led chip (3A2) insist; the chips number vary according to the characteristics of the bulb, and placed on a heat sink (3B), all connected to the multitone control unit (3E) with a clamp (3C) and 3 output

cables (3D). The multi-tone control unit (3E) is composed of a capacitor (3E5), an inductor (3E6), a resistor (3E7), and a color temperature change switch (3E4), an electrolytic capacitor (3E3), a transformer (3E2) and input cables (3E8).

[0013] Figure 4 illustrates the operating principle of the tris multi-tone LED bulb (1) with an integrated lever (3F) and the multi-tone control unit (3E):

- when the lever (3F) placed on the containing base (3) and directly connected to the color temperature changeover switch (3E4), is placed on the 6500K tone, the 6500K led chips (3A2), on the aluminum led board (3A), light at 100% and the temperature / tone is 6500K, stable;
- when the lever (3F) placed on the containing base (3) and directly connected to the color temperature changeover switch (3E4), is positioned on the 3200K tone, the 3200K led chips (3A1), on the aluminum led board (3A), light at 100% and the temperature / tone is 3200K, stable;
- when the lever (3F) on the containing base (3) and directly connected to the color temperature changeover switch (3E4), is positioned on the 4000K tone, both the 3200K (3A1) and 6500K (3A2) led chips on the aluminum board (3A) light up simultaneously at a 50% intensity and, using the principles of the additive color theory, the light tone emitted through the standard satin finish cover (2) stands at an intermediate tone and becomes 4000K, thanks to a mix of the 2-color tones.

[0014] What just described makes the device according to the invention (1) unique, capable of generating a 4000K light tone without having 4000K LED chips installed inside. This result is achieved through a combination of tones - 3200K and 6500K - and thanks to the multi-tone control unit (3E), that, specifically designed, transmits the electric impulse to both the 3200K (3A1) and 6500K (3A2) led chips; they light up simultaneously, each with a 50% intensity through the cover (2), generating a 4000K light tone.

[0015] From what has been described it is evident that the device, according to the invention, achieves the pre-set aims. The device of the invention is susceptible of several modifications and variations, which are all within the scope of the inventive concept expressed in the attached claims. All the details may be replaced by other technically equivalent elements, and the materials may be different according to requirements, without departing from the scope of protection of the present invention.

[0016] Although the invention has been described with particular reference to the attached figures, the references numbers used in the description and in the claims are meant to improve the intelligence of the invention and do not constitute any limitation to the claimed scope of protection.

Claims

1. Tris multi-tone led bulb with lever and integrated control unit (1), including:

- A standard satin finish cover (2),
- A containing base (3);
- A lever (3F);
- An aluminum led board (3A);
- A heat sink (3B)
- a multi-tone control unit (3E), operating the electronic components suitable for operating the 3200K (3A1) and 6500K (3A2) led chips alternately and / or simultaneously;
- A bulb base (4) of various types and connections;

and **characterized in that**, by moving the lever (3F), placed on the containing base (3), you can change the emitted light tone, in the three variants 3200K - 4000K - 6500K. Moving said lever (3F) on the 3200K tone, clearly indicated on the containing base (3), the multi-tone control unit (3E), specifically programmed, operates only the electronic components suitable for operating the 3200K LED chips (3A1) placed on the aluminum LED board (3A); moving the said lever (3F) on the 6500K tone, clearly indicated on the containing base (3), the multi-tone control unit (3E) operates only the electronic components suitable for operating the 6500K led chips (3A2) placed on the aluminum led board (3A); moving said lever (3F) on 4000K tone, clearly indicated on the containing base (3), the multi-tone control unit (3E) operates the electronic components suitable for the functioning of the 3200K (3A1) and 6500K (3A2) led chips, placed on the aluminum led board (3A) which, lighting up simultaneously, both at a power of 50%, produce a 4000K light tone.

2. Tris multi-tone LED bulb with lever and integrated control unit (1), according to claim 1, in which the lamp holder base (4) is directly connected to the multi-tone control unit (3E) through two input cables (3E8);

3. Tris multi-tone LED bulb with a lever and an integrated control unit (1), according to claims 1 and 2, in which the multi-tone control unit (3E) is composed of a capacitor (3E5), an inductor (3E6), a resistor (3E7), a color temperature switch (3E4), an electrolytic capacitor (3E3), a transformer (3E2), so that the electrical impulse is processed and transferred to the aluminum LED board (3A);

4. Tris multi-tone LED light bulb with lever and integrated control unit (1), according to claims 1, 2, 3, in which three output cables (3E8) and a terminal (3C) connect the said multi-tone control unit (3E) to the

LED board (3A) and the heat sink (3B);

5. Tris multi-tone LED light bulb with lever and integrated control unit (1), according to claims 1, 2, 3 and 4, in which the aluminum led board (3A) (of various material and shape), placed on the heat sink (3B), is equipped with 3200K LED chips (3A1) and 6500K LED chips (3A2), both in several numbers, according to the technical and dimensional characteristics of the bulb; the chips, once received the electric pulse processed by the multi-tone control unit (3E), light up alternatively and / or simultaneously according to the position of the lever (3F) on the corresponding tone indicator 3200K - 4000K - 6500K;
6. Tris multi-tone LED light bulb with lever and integrated control unit (1), according to claims 1, 2, 3, 4 and 5, in which the lever (3F) is directly connected to the color temperature change switch (3E4) so that the position of the lever (3F) on the 3200K tone, the 4000K tone or the 6500K tone will start a different processing process of the electrical pulse by the multi-tone control unit (3E);
7. Tris multi-tone LED light bulb with lever and integrated control unit (1), according to claims 1, 2, 3, 4, 5 and 6, in which the containing base (3), hollow inside, houses the multi-tone control unit (3E) and is equipped with a housing corridor for the aluminum LED board (3A) and the heat sink (3B); the external surface of the containing base (3) has a rectangular-shaped opening to allow the lever (3F) to be operated, which is directly connected to the multi-tone control unit (3E) through the color temperature change switch (3E4);
8. Tris multi-tone LED light bulb with lever and integrated control unit (1), according to claims 1, 2, 3, 4, 5, 6 and 7, in which the containing base (3) is directly connected to the standard satin finish cover (2), and to the bulb holder base (4), by common gluing materials (adhesives, silicone or other).

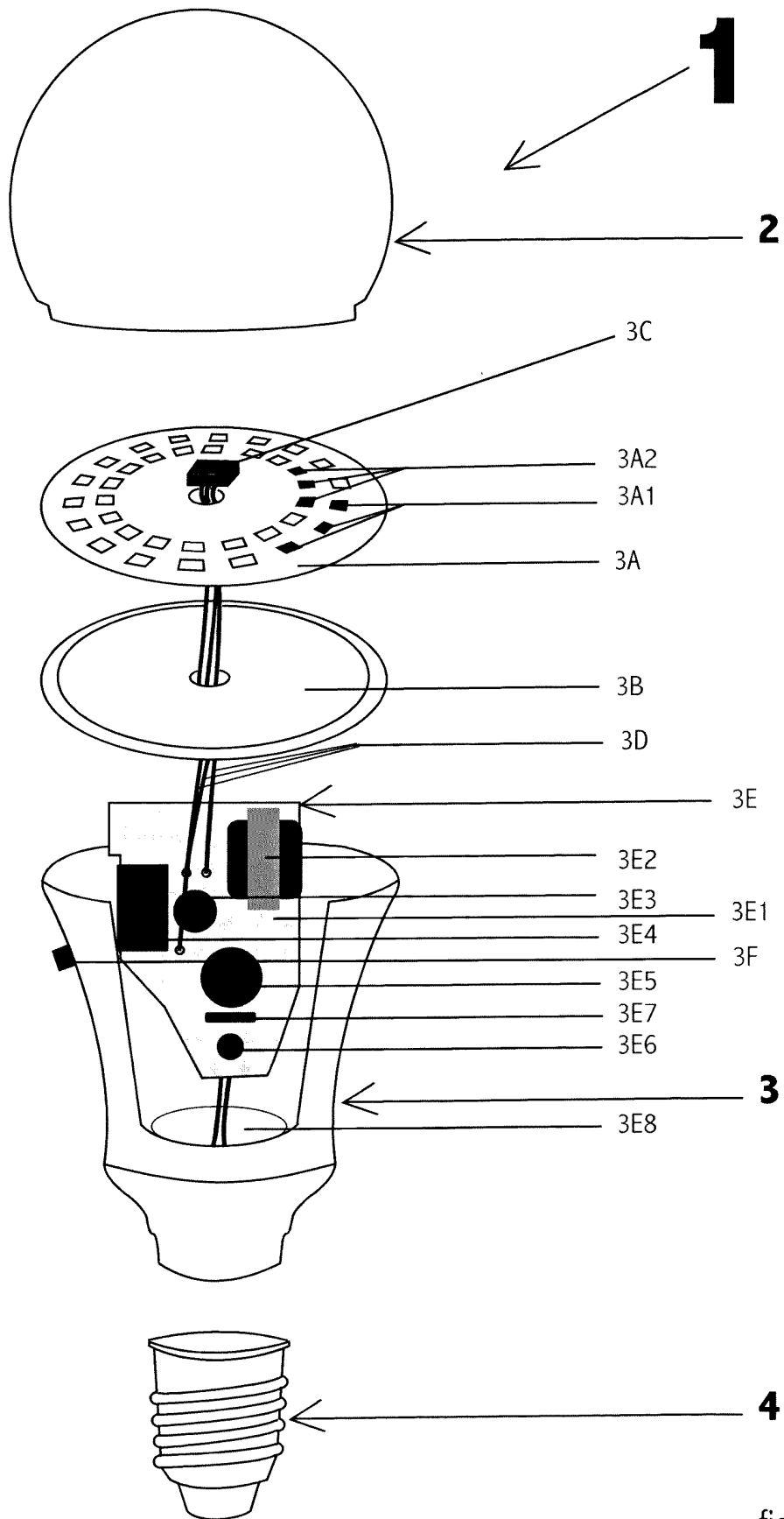


fig. 1

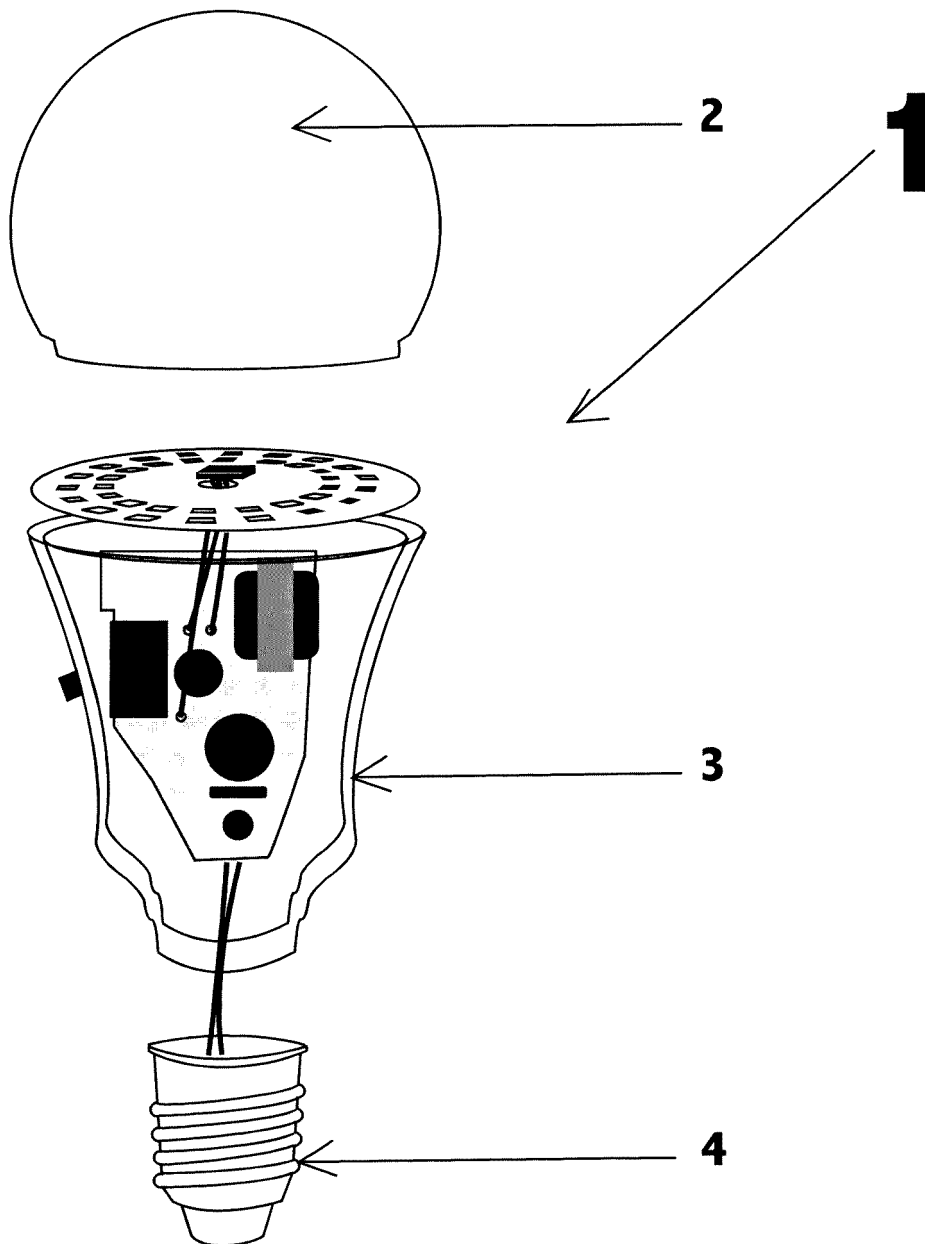


fig . 2

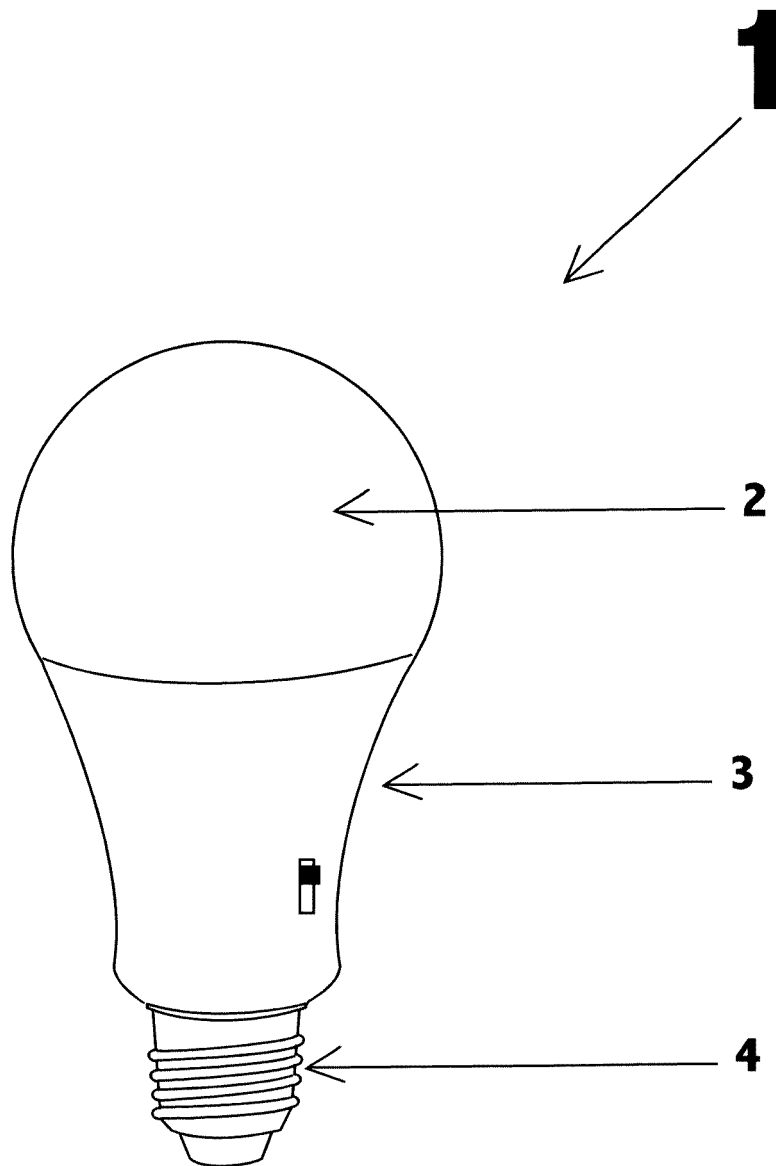


fig. 3

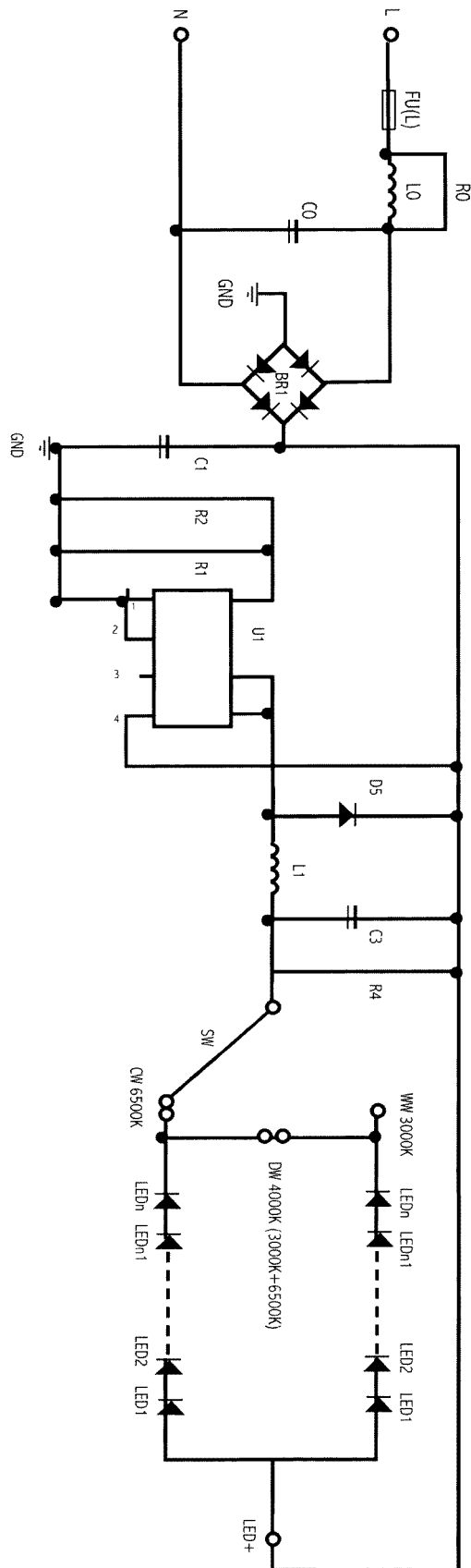


fig. 4



EUROPEAN SEARCH REPORT

Application Number
EP 19 42 5091

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			TECHNICAL FIELDS SEARCHED (IPC)
			F21K F21V F21Y H05B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 28 February 2020	Examiner Menn, Patrick
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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