

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors: Michael Miskin and Robert L. Kottritsch
Applicant: Lynk Labs, Inc.
Title: MULTI-VOLTAGE AND MULTI-BRIGHTNESS LED LIGHTING
DEVICES AND METHODS OF USING SAME
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Examiner: Crystal L. Hammond Group Art Unit: 2844
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Costa Mesa, California

September 12, 2019

Mail Stop Amendment

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

RESPONSE TO OFFICE ACTION

Dear Examiner:

Applicant submits this response in reply to the Office Action dated August 12, 2019 in the above-identified patent application.

HAYNES AND BOONE, LLP
600 Anton Blvd., Suite 700
Costa Mesa, CA 92626

TEL (949) 202-3000
FAX (949) 202-3001

IN THE CLAIMS

The following are claims 1 to 21:

1. (Previously Presented) An LED lighting device comprising:
 - a first operating LED circuit and at least one additional LED circuit, wherein at least one of the first operating LED circuit or the at least one additional LED circuit includes at least two LEDs connected in either series or parallel
 - a switch that is selectable by a user and configured to at least one of independently switch on or off at least one of the first LED circuit or the at least one additional LED circuit, or switch at least one of the first LED circuit or the at least one additional LED circuit to a different level of brightness; and
 - a driver connected to the first operating LED circuit and the at least one LED circuit; wherein the LED lighting device is configured to connect to an AC mains power source;
 - wherein the driver has an output voltage lower than the AC mains power source and a frequency higher than the AC mains power source; and
 - wherein the first operating LED circuit and the at least one additional LED circuit both have a forward voltage of 6V or greater.
2. (Previously Presented) The LED lighting device of claim 1 wherein the first operating LED circuit and the at least one additional LED circuit are mounted on a reflective substrate.
3. (Previously Presented) The LED lighting device of claim 1, further comprising:
 - a light changing or enhancing substance that includes phosphor or nano-crystals, wherein the first LED circuit and the at least one additional LED circuit are integrated with the light changing or enhancing substance in an LED package.

4. (Original) The LED lighting device of claim 1 having a standard lamp electrical base.

5. (Original) The LED lighting device of claim 1 further comprising a bridge rectifier.

6. (Previously Presented) A multi-brightness LED lighting device comprising:
a first LED circuit and at least one additional LED circuit, wherein the first LED circuit and the at least one additional LED circuit are connected in parallel; and wherein each of the first LED circuit and the at least one additional LED circuit includes at least two LEDs connected in series; and

a switch that is selectable by a user and configured to at least one of independently switch on or off at least one of the first LED circuit or the at least one additional LED circuit;
wherein the LED lighting device is configured to connect to an AC voltage power source; and

wherein the first LED circuit and the at least one additional LED circuit are mounted on an insulating substrate.

7. (Previously Presented) The multi-brightness LED lighting device of claim 6, wherein the insulating substrate comprises sapphire.

8. (Previously Presented) The multi-brightness LED lighting device of claim 6, further comprising:

a light changing or enhancing substance that includes phosphor or nano-crystals, wherein the first LED circuit and the at least one additional LED circuit are integrated with the light changing or enhancing substance in an LED package.

9. (Previously Presented) The multi-brightness LED lighting device of claim 6 further comprising a driver that has an output with a frequency higher than the AC voltage power source.

10. (Previously Presented) The multi-brightness LED lighting device of claim 9 wherein at least one capacitor is connected to the output of the driver.

11. (Previously Presented) An LED lighting device comprising:
a first LED circuit and at least one additional LED circuit, each of the first LED circuit and the at least one additional LED circuit including at least two LEDs connected in series or parallel; and

a switch, wherein switching of the switch is selectable by a user to independently switch on or off at least one of the first LED circuit or the at least one additional LED circuit, wherein the LED lighting device is configured to connect to an AC voltage power source; and

wherein the first LED circuit, the at least one additional LED circuit, and the switch are integrated within or onto an LED package.

12. (Previously Presented) The LED lighting device of claim 11, wherein the LED package includes a heat sink and a lens.

13. (Previously Presented) The LED lighting device of claim 11, wherein said first LED circuit and said at least one additional circuit are mounted on a reflective substrate.

14. (Previously Presented) The LED lighting device of claim 11, wherein said LED package includes a bridge rectifier and a driver.

15. (Previously Presented) The LED lighting device of claim 11, wherein the AC voltage power source is a mains power source, and wherein the LED lighting device is configured to be coupled to a dimmer switch, wherein the dimmer switch adjusts a voltage of the mains power source to dim the first LED circuit or the at least one additional LED circuit regardless of a user's selection via the switch.

16. (Cancelled)

17. (Previously Presented) An LED lighting device comprising:
a first operating LED circuit and at least one additional LED circuit, wherein at least one of the first operating LED circuit or the at least one additional LED circuit includes at least two LEDs connected in either series or parallel; and
a switch capable of switching the at least one additional LED circuit on or off, wherein switching of the at least one additional LED circuit is selectable by a user switching the switch;
wherein the LED lighting device is configured to connect to an AC mains power source; and
wherein the first operating LED circuit and the at least one additional LED circuit are mounted on a substrate including a heat sink.

18. (Previously Presented) The LED lighting device of claim 17, further comprising:
a light changing or enhancing substance that includes phosphor or nano-crystals.

19. (Cancelled)

20. (Previously Presented) The LED lighting device of claim 17, wherein the LED lighting device is configured to be coupled to an LED driver with a 12V output.

21. (Previously Presented) The LED lighting device of claim 17 further comprising:
a dimmer switch configured to adjust a voltage of the AC voltage power source to dim the first operating LED circuit or the at least one additional LED circuit regardless of a user's selection via the switch.

REMARKS

Applicant submits this Response in reply to the Office Action dated August 12, 2019 in the above-identified patent application.

Status of Claims

Claims 1-15 and 17, 18, 20, and 21 are pending. No claims are amended. Claims 16 and 19 were previously cancelled. No new matter is added.

Rejections Under 35 U.S.C. § 102

Claims 1-6, 8-15, 17, 18, 20, and 21 stand rejected under pre-AIA 35 U.S.C. § 102(a) as being allegedly anticipated by U.S. Patent Publication No. 2008/0130288 (“Catalone”). Claims 1, 6, 11 and 17 are independent claims. Applicant respectfully traverses these rejections.

Claim 1:

Applicant respectfully submits that contrary to the Office Action’s interpretation, Catalone fails to disclose each and every element of claim 1. Specifically, Catalone fails to disclose at least “***wherein the driver has an output voltage lower than the AC mains power source and a frequency higher than the AC mains power source***” and “***wherein the first operating LED circuit and the at least one additional LED circuit both have a forward voltage of 6V or greater.***”

First, Catalone never discloses a driver having a frequency that is higher than an AC mains power source. In fact, Catalone never even uses the word “frequency.” Further, Catalone does not include any disclosure that would imply that its driver has a frequency. The Office Action cites paragraphs 13, 14, and 53 of Catalone as providing the disclosure for the above-emphasized features of claim 1. But these paragraphs of Catalone, however, do not disclose a driver having a frequency that is higher than an AC mains power source. Rather, Catalone discloses that “LEDs can only operate over a relatively narrow operating voltage, typically from about 2 to 4 Volts” and that “voltage regulation is required to convert the range of available line voltages, and in some instances battery voltages, into levels that are useful

for powering the LEDs.” *Catalone*, paragraph [0013]. Catalone goes on to disclose that “[v]oltage regulation is accomplished using electronic circuitry, such as surface mounted electrical components that are mounted to a printed circuit board (PCB).” *Catalone*, paragraph [0014]. But nowhere does Catalone disclose that the driver has a frequency that is higher than an AC mains power source.

Applicant respectfully submits that the Office Action’s interpretation of Catalone is based upon the improper reasoning that “LED voltages are typically lower than household voltages and since typical mains power source frequency is 60 Hz, the frequency would need to be increased to reach the visible light spectrum frequencies.” *Office Action*, page 3. The wavelength of light emitted by an LED in an LED circuit is not directly tied to the output frequency of the driver that is connected to that LED circuit to provide power to the LED circuit. For example, an LED in an LED circuit emitting light in the visible light spectrum is not dependent on the frequency of the output of the driver connected to that LED circuit. Neither does Catalone so allege. Thus, Catalone fails to disclose a driver having a frequency that is higher than an AC mains power source.

Second, Catalone fails to disclose that a first operating LED circuit and at least one additional LED circuit both have a forward voltage of 6V or greater, as required by claim 1. The Office Action cites to paragraphs 5, 15, 56, 65, and 66 of Catalone as allegedly disclosing this feature. But Applicant respectfully submits that none of these paragraphs disclose a first operating LED circuit and at least one additional LED circuit both have a forward voltage of 6V or greater.

- Paragraph 5 of Catalone is directed to the operating voltages of legacy halogen bulbs, not LEDs.
- Paragraph 15 of Catalone discusses techniques for dimming LEDs and other non-incandescent lighting.
- Paragraph 56 of Catalone generally describes power conditioning circuitry and rectifying AC power to DC power to suit a desired voltage.
- Paragraph 65 of Catalone discusses the differences between mains voltage power supplies and battery power supplies
- Paragraph 66 of Catalone describes a technique for controlling the current to two LEDs with no description of the forward voltage of the two LEDs.

These cited portions of Catalone never disclose LED circuits having forward voltages of 6V or greater. Accordingly, Catalone fails to disclose that a first operating LED circuit and at least one additional LED circuit both have a forward voltage of 6V or greater.

Because Catalone fails to disclose the above-emphasized features of claim 1 and because the reasoning relied on in the Office Action was improper, Applicant respectfully submits that claim 1 is allowable over Catalone.

Further, claims 2-5, which depend from and include the subject matter of Catalone, are therefore also allowable for at least the same reasons as those discussed above with respect to claim 1.

Claim 6:

Applicant respectfully submits that contrary to the Office Action's interpretation, Catalone also fails to disclose each and every element of claim 6. Specifically, Catalone fails to disclose at least ***“a switch that is selectable by a user and configured to at least one of independently switch on or off at least one of the first LED circuit or the at least one additional LED circuit.”***

The Office Action cites to paragraphs 52-55 of Catalone as allegedly disclosing the above-emphasized features of claim 6. But paragraph 52 of Catalone discloses “[a] timer to adjust the color and illumination level according to some preset or user-adjustable schedule.” And paragraph 55 of Catalone discloses “[a] switch that is user accessible that allows a switching of illumination characteristics such [as] intensity, color continuous or flashing illumination modes.” While these paragraphs describe two examples of user control of a lighting device (in one case via a switch), neither example describes a user using a switch to independently switch on or off circuit 205 or circuit 206 of Catalone. Changing the illumination characteristics of a lighting device via a switch, as contemplated by Catalone, implies that the LED circuit in the lighting device is on and the switch is used to control the illumination of the lighting device while the LED circuit is on. This is not the same as a user-controlled switch that allows an end user to independently turn off a first LED circuit or at least one additional LED circuit, which are both in an LED lighting device.

Thus, Catalone fails to disclose the above-emphasized features of claim 16. Accordingly, claim 6 is allowable over Catalone. Further, claims 8-10, which depend from

and include the subject matter of claim 6, are therefore also allowable for at least the same reasons as those discussed above with respect to claim 6.

Claim 11:

Applicant respectfully submits that contrary to the Office Action's interpretation, Catalone fails to disclose each and every element of claim 11. For example, as discussed above, Catalone fails to disclose at least ***“a switch, wherein switching of the switch is selectable by a user to independently switch on or off at least one of the first LED circuit or the at least one additional LED circuit.”***

Further, Catalone fails to disclose ***“wherein the first LED circuit, the at least one additional LED circuit, and the switch are integrated within or onto an LED package.”*** The Office Action generally relies on paragraphs 51-57 of Catalone to provide support for the assertion that Catalone discloses these features. But the cited portion of Catalone discloses that “[t]his illuminating device [in Figure 2] is intended to have the same form fit and function as the incandescent illumination device of Figure 1 and as such has a similar electrical connector 201 and similarly shaped transparent or translucent envelope 202.” *Catalone*, paragraph [0051]. A legacy incandescent light bulb would not have a switch built into it. Rather, a switch (or timer, photocell, or “signaling function”) would have been an external control for a legacy incandescent bulb. While paragraph 55 of Catalone does mention a switch that is “user accessible,” Catalone never discloses a switch that is integrated in the same package as Catalone's circuits 205 and 206, which the Examiner equates to the “first LED circuit” and the “at least one additional LED circuit” of claim 11.

Thus, Catalone fails to disclose the above-emphasized features of claim 11. Accordingly, claim 11 is allowable over Catalone. Further, claims 12-15, which depend from and include the subject matter of claim 11, are therefore also allowable for at least the same reasons as those discussed above with respect to claim 11.

Claim 17:

Applicant respectfully submits that Catalone fails to disclose each and every element of claim 17. Claim 17 includes features analogous to the above-emphasized features of claims 6 and 11. Specifically, claim 17 recites “a switch capable of switching the at least one additional LED circuit on or off, wherein switching of the at least one additional LED circuit is selectable by a user switching the switch.” As previously discussed above with respect to claims 6 and 11, Catalone fails to disclose these features. Therefore, claim 17 is allowable for at least the same reasons as those discussed above with respect to claims 6 and 11. Further, claims 18, 20, and 21, which depend from and include the subject matter of claim 17, are allowable for at least the same reasons as those discussed above with respect to claims 6, 11, and 17.

For all of the foregoing reasons, Applicant respectfully requests that the rejections of claims 1-6, 8-15, 17, 18, 20, and 21 under § 102 over Catalone be withdrawn.

Rejections Under 35 U.S.C. § 103

Claim 7 stands rejected under pre-AIA 35 U.S.C. § 103(a) as being allegedly unpatentable over Catalone in view of U.S. Patent Publication No. 2008/0203405 (“Rooymans”). Claim 7 depends from and includes the subject matter of independent claim 6. As previously discussed, Catalone fails to disclose, teach, or suggest each and every element of claim 6. Rooymans fails to remedy the deficiencies of Catalone. Nor does the Office Action so allege. The Office Action relies on Rooymans as disclosing that an insulating substrate comprises sapphire. *Office Action*, page 7. But Rooymans does not teach or suggest “***a switch that is selectable by a user and configured to at least one of independently switch on or off at least one of the first LED circuit or the at least one additional LED circuit.***”

Claim 7 is therefore allowable. Applicant therefore respectfully requests that the rejection of claim 7 under § 103 over Catalone and Rooymans be withdrawn.

Conclusion

Applicant respectfully submits that all pending claims are in proper form for allowance. Reconsideration and withdrawal of all objections and rejections are respectfully requested and a timely Notice of Allowance is solicited.

Authorization is given to charge any fees due or credit any overpayments in regards to this communication to deposit account 08-1394. If the Examiner has any questions or concerns, a telephone call to the undersigned at (949) 202-3013 is welcomed and encouraged.

Certificate of Transmission

I hereby certify that this correspondence is being electronically transmitted via EFS Web to the Commissioner for Patents, on the date stated below.

/Candy Sanders/
Candy Sanders

September 12, 2019
Date

Respectfully submitted,

/Brent A. Folsom/

Brent A. Folsom
Attorney for Applicant
Reg. No. 43,614