

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: John K. Roberts

Confirmation No.: 7137

Serial No.: 13/657,141

Group Art Unit: 2878

Filed: October 22, 2012

Examiner: Francis M. LeGasse, Jr.

For: SOLID STATE LUMINAIRES FOR GENERAL ILLUMINATION

Date: May 5, 2014

Mail Stop RCE

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

**AMENDMENT, REQUEST FOR CONTINUED EXAMINATION AND RESPONSE
TO OFFICE ACTION DATED NOVEMBER 4, 2014**

Sir:

Responsive to the Office Action dated November 4, 2014, please amend the above-identified application as shown.

If any extension of time for the accompanying response or submission is required, Applicant requests that this be considered a petition therefor. The Commissioner is hereby authorized to charge any additional fee, which may be required, or credit any refund, to our Deposit Account No. 50-0220.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 6 of this paper.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of the Claims:

1. (Currently Amended) A lighting panel, comprising:
at least one substrate having a first side parallel to a principal plane of the lighting panel;
a plurality of solid state lighting devices arranged on the first side of the at least one substrate and configured to emit light;
a reflector sheet on the first side of the at least one substrate, wherein the reflector sheet comprises a lambertian reflector configured to reflect and scatter light incident thereon in a range of directions; ~~and~~
a brightness enhancement film on the reflector sheet, wherein the reflector sheet is arranged between the at least one substrate and the brightness enhancement film and the brightness enhancement film is configured to preferentially emit light having a first orientation from the lighting panel and to preferentially reflect light having a second orientation, different from the first orientation, back into the lighting panel, and
a generally planar diffuser sheet between the reflector sheet and the brightness enhancement film, wherein the light having the second orientation that is reflected back into the lighting panel is recycled within at least the diffuser sheet.
2. (Canceled).
3. (Original) The lighting panel of Claim 1, wherein the reflector sheet includes a plurality of apertures therethrough, wherein respective ones of the plurality of apertures aligned with corresponding ones of the plurality of solid state lighting devices.
4. (Original) The lighting panel of Claim 3, wherein respective ones of the apertures include angled sidewalls to thereby form reflective optical cavities around the

corresponding ones of the plurality of solid state lighting devices.

5. (Original) The lighting panel of Claim 1, wherein the reflector sheet comprises a plastic foam.

6. (Original) The lighting panel of Claim 1, further comprising a diffuser sheet between the reflector sheet and the brightness enhancement film.

7. (Original) The lighting panel of Claim 1, wherein the brightness enhancement film comprises a plurality of three dimensional light extraction features configured to bend at least some light rays passing through the brightness enhancement film toward the direction normal to the principal plane of the lighting panel.

8. (Original) The lighting panel of Claim 7, wherein the light extraction features are random features.

9. (Original) The lighting panel of Claim 7, wherein the brightness enhancement film is configured to limit direct emission from the lighting panel of light emitted by the plurality of solid state light emitting devices to thereby encourage light recycling/diffusion in the lighting panel.

10. (Original) The lighting panel of Claim 7, wherein the light extraction features comprise fresnel-type lenses.

11. (Original) The lighting panel of Claim 7, wherein the brightness enhancement film is configured to substantially collimate light emitted by the lighting panel.

12. (Original) The lighting panel of Claim 1, further comprising a heatsink panel on a second side of the at least one substrate opposite to the first side and configured to draw

heat away from the at least one substrate in a direction opposite to a direction of light emission from the at least one substrate.

13. (Original) The lighting panel of Claim 12, wherein the heatsink panel comprises black anodized aluminum.

14. (Original) The lighting panel of Claim 13, wherein the heatsink panel comprises a plurality of heatsink features configured to reduce a thermal resistance of the heatsink panel.

15. (Original) The lighting panel of Claim 14, wherein the plurality of heatsink features comprise cooling fins.

16. (Original) The lighting panel of Claim 14, wherein respective ones of the plurality of heatsink features are aligned with corresponding ones of the plurality of solid state light emitting devices.

17. (Currently Amended) A luminaire adapted for general illumination, the luminaire comprising:

a lighting panel including at least one substrate, a plurality of solid state lighting devices electrically connected in a string and arranged on a first side of the at least one substrate and configured to emit light at a dominant wavelength, a reflector sheet on the first side of the at least one substrate, wherein the reflector sheet comprises a lambertian reflector configured to reflect and scatter light incident thereon in a range of directions, and a brightness enhancement film on the reflector sheet, wherein the reflector sheet is arranged between the at least one substrate and the brightness enhancement film and extends along a principal plane of the lighting panel;

a current supply circuit configured to supply an on-state drive current to the string in response to a control signal;

a photosensor arranged to receive light from at least one of the plurality of solid state lighting devices; and

a control system configured to receive an output signal from the photosensor and to adjust the control signal responsive to the output signal of the photosensor to thereby adjust an average current supplied to the string by the current supply circuit.

18. (Original) The luminaire of Claim 17, wherein the current supply circuit comprises a closed loop variable voltage boost converter current source.

19. (Original) The luminaire of Claim 17, wherein the control system is configured to sample the output of the photosensor when current is not being supplied to the string of solid state lighting devices to obtain an ambient light value.

20. (Original) The luminaire of Claim 19, wherein the control system is configured to decrease average current to the string as the ambient light value increases.

21. (Original) The luminaire of Claim 17, wherein the control system is configured to sample the photosensor during an interval in which current is being supplied to the string in order to obtain a brightness value.

22. (Original) The luminaire of Claim 21, wherein the control system is configured to decrease the average current to the first string as the brightness value increases.

23. (Original) The luminaire of Claim 22, wherein the control system is configured to adjust the average current supplied to the string based on the ambient light value and the brightness value.

24. (Original) The luminaire of Claim 23, wherein the control system is configured to adjust the average current supplied to the string based on a difference between

the ambient light value and the brightness value.

25. (Original) The luminaire of Claim 23, wherein the control system is configured to adjust the average current supplied to the string based on a ratio of the ambient light value and the brightness value.

26. (Original) The luminaire of Claim 23, wherein the control system is configured to maintain an average luminosity of the first string independent of an ambient/background illumination.

27. (Original) The luminaire of Claim 23, wherein the control system is configured to maintain a relationship between an ambient/background illumination and an average luminosity of the string by providing a first feedback signal with respect to the ambient light value and a second feedback signal with respect to the brightness value.

28. (Original) The luminaire of Claim 17, wherein the control signal comprises a pulse width modulation (PWM) signal, and wherein the control system is configured to control an average current supplied to the string by varying a duty cycle of the PWM signal.

29. (Original) The luminaire of Claim 17, wherein the control system is configured to control an average current supplied to the string by varying a pulse frequency of the control signal.

30. (Original) The luminaire of Claim 17, wherein the current supply circuit is configured to maintain the on-state current supplied to the string at a substantially constant value even as the average current supplied to the string is varied.

31. (Original) The luminaire of Claim 17, wherein the control system comprises:
a color management unit coupled to the photosensor and configured to sample

and process the output signal of the photosensor and to provide the processed output signal to the control system.

32. (Original) The luminaire of Claim 17, further comprising:
a temperature sensor configured to sense a temperature associated with the lighting panel, wherein the control system is configured to adjust an average current supplied to the first string in response to a change in the sensed temperature.

33. (Previously Presented) The lighting panel of Claim 1, wherein the reflector sheet is a planar reflector sheet arranged parallel to the principal plane of the lighting panel.

REMARKS

This Amendment is in response to the Office Action of April 15, 2013 (the Action). Claims 1, 3-32 stand rejected based on the ground of nonstatutory of double patenting based on Claims 1-6, 8-25, 27-29 and 31-33 of U.S. Patent No. 8,294,075 in view of U.S. Patent Publication No. 2003/0112521 to Gardiner (Gardiner). Claims 1, 2, 6 and 33 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2006/0083023 to Ayabe et al (Ayabe) in view of Gardiner. Claims 17, 19-21, 28, 31, 32 and 33 stand rejected under 35 U.S.C. § 103(a) as being anticipated by U.S. Patent Publication No. 2007/0188425 to Saccomanno (Saccomanno) in view of Gardiner. Claim 3-4 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ayabe in view of Gardiner and U.S. Patent Publication No. 2004/0218390 to Holman et al. (Holman). Claim 5 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Ayabe in view of Gardiner and U.S. Patent Publication No. 2004/0264179 to Clark (Clark). Claims 7-11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ayabe in view of Gardiner and Allen et al. (Allen). Claim 12 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Ayabe in view of Gardiner and U.S. Patent No. 6,799,864 to Bohner et al. (Bohner). Claims 13-16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ayabe in view of Gardiner, Bohner and U.S. Patent Publication No. 2007/0146644 to Ma et al. (Ma). Claims 18, 19, 29 and 30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Saccomanno in view of Gardiner and U.S. Patent No. 7,276,861 to Shteynberg (Shteynberg). Claims 22-27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Saccomanno in view of Gardiner and U.S. Patent Publication No. 2005/0135441 to Ng et al. (Ng).

A Request for Continued Examination is filed concurrently herewith. Reconsideration is respectfully requested in view of the amendments above and the remarks that follow.

Double Patenting

Claims 1, 3-32 stand rejected based on the ground of nonstatutory of double patenting based on Claims 1-6, 8-25, 27-29 and 31-33 of U.S. Patent No. 8,294,075 in view of U.S. Patent Publication No. 2003/0112521 to Gardiner (Gardiner).

To reduce issues for further consideration and to expedite prosecution, a Terminal Disclaimer is being submitted concurrently herewith. Accordingly, all double patenting rejections have been overcome. Applicant notes the submission of the Terminal Disclaimer should not be construed as an admission with respect to the double patenting rejection, as the Terminal Disclaimer has been submitted merely to advance prosecution of the present application.

Applicant requests that the double patenting rejection be withdrawn for at least the reasons discussed above.

The Rejections Under 35 U.S.C. 103

Claim 1

Claim 1 as amended recites as follows (emphasis added):

A lighting panel, comprising:
at least one substrate having a first side parallel to a principal plane of the lighting panel;
a plurality of solid state lighting devices arranged on the first side of the at least one substrate and configured to emit light;
a reflector sheet on the first side of the at least one substrate, wherein the reflector sheet comprises a lambertian reflector configured to reflect and scatter light incident thereon in a range of directions;
a brightness enhancement film on the reflector sheet, wherein the reflector sheet is arranged between the at least one substrate and the brightness enhancement film and the brightness enhancement film is configured to preferentially emit light having a first orientation from the lighting panel and to preferentially reflect light having a second orientation, different from the first orientation, back into the lighting panel, and
a generally planar diffuser sheet between the reflector sheet and the brightness enhancement film, wherein the light having the second orientation that is reflected back into the lighting panel is recycled within at least the diffuser sheet.

Support for the above amendments may be found, for example, in Figures 6-7 and paragraph [0086]. As illustrated in Figures 6-7 and as discussed in paragraph [0086], the light that is reflected back into the lighting panel is recycled within at least the diffuser sheet, which in some embodiments, may result in a relatively low-profile panel.

In contrast, Ayabe discuss a configuration in which the light is recycled in an open cavity 24 (Figure 2) or in a bowl- or dish-shaped molded unit 54 (paragraph [0091]; Figures 10-17 and 19-23). Ayabe apparently requires either a relatively high-profile cavity or molded unit for light recycling. Nothing in Ayabe discloses or suggests a generally planar diffuser sheet between the reflector sheet and the brightness enhancement film such that the light having the second orientation that is reflected back into the lighting panel is recycled within at least the diffuser sheet as recited in Claim 1. This recitation is also not disclosed by Gardiner, which is cited with respect to the lambertian reflector sheet.

The recitations discussed above are also not disclosed by Holman, Clark, Allen, Bohner, Ma, Shteynberg, or Ng, which are cited with respect to certain dependent claims.

For at least the above reasons, Applicant requests the rejections of Claims 1, 3-16 and 33 be withdrawn.

Claim 17

Claim 17 as amended recites as follows (emphasis added):

A luminaire adapted for general illumination, the luminaire comprising:

a lighting panel including at least one substrate, a plurality of solid state lighting devices electrically connected in a string and arranged on a first side of the at least one substrate and configured to emit light at a dominant wavelength, a reflector sheet on the first side of the at least one substrate, wherein the reflector sheet comprises a lambertian reflector configured to reflect and scatter light incident thereon in a range of directions, and a brightness enhancement film on the reflector sheet, wherein the reflector sheet is arranged between the at least one substrate and the brightness enhancement film and extends along a principal plane of the lighting panel;

a current supply circuit configured to supply an on-state drive current to the string in response to a control signal;

a photosensor arranged to receive light from at least one of

the plurality of solid state lighting devices; and
a control system configured to receive an output signal from the
photosensor and to adjust the control signal responsive to the output signal
of the photosensor to thereby adjust an average current supplied to the
string by the current supply circuit.

Accordingly, Claim 17 recites that the reflector sheet is arranged between the at least one
substrate and the brightness enhancement film and extends along a principal plane of the lighting
panel. Support for the above amendments may be found, for example, in Figures 6-7 of the
application.

In contrast, the reflective surface 505 of Saccomanno extends perpendicular to both the
panel on which the light sources 100 are mounted as well as the brightness enhancing film 575.
See Saccomanno Figure 5. Applicant notes that Claim 17 is directed to a luminaire adapted for
general illumination while Saccomanno is directed to a system for controlling light sources for an
LCD backlight. See Saccomanno, paragraph [0025]: "FIG. 1 illustrates an exemplary
embodiment of a set (e.g., an array) of light sources 100, which may comprise, for example,
LEDs, OLEDs, etc. in a backlighting arrangement for supplying light to a LCD panel." As stated
by Saccomanno: "In the exemplary embodiment of FIG. 5, the light from the LEDs 100 travels
through air until striking light management films 575." Saccomanno, paragraph [0039]. That is,
Saccomanno uses the reflector sheets 505, which are perpendicular to the panel and the BEF 575,
to form a light mixing chamber in a direct backlighting arrangement.

In contrast, Applicants have discovered that no such mixing chamber may be necessary,
and the reflector sheet can be placed parallel to the principal plane of the lighting panel.

The recitations discussed above are also not disclosed by Holman, Clark, Allen, Bohner,
Ma, Shteynberg, or Ng, which are cited with respect to certain dependent claims.

For at least the above reasons, Applicant requests the rejections of Claims 17 and 18-32
be withdrawn.

CONCLUSION

Accordingly, Applicant submits that the present application is in condition for
allowance and the same is earnestly solicited. Should the Examiner have any matters

Attorney Docket No. 5308.657CT2
Application Serial No. 13/657,141
Filed: October 22, 2012
Page 12

outstanding of resolution, he is encouraged to telephone the undersigned at 919-854-1400 for expeditious handling.

Respectfully submitted,

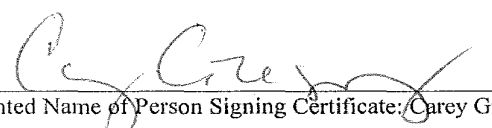


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CERTIFICATION OF TRANSMISSION

I hereby certify that this correspondence is being transmitted via the Office electronic filing system in accordance with § 1.6(a)(4) to the U.S. Patent and Trademark Office on May 5, 2014.

Signature: 
Typed or Printed Name of Person Signing Certificate: Carey Gregory

Electronic Acknowledgement Receipt

EFS ID:	18940876
Application Number:	13657141
International Application Number:	
Confirmation Number:	7137
Title of Invention:	Solid State Luminaires for General Illumination
First Named Inventor/Applicant Name:	John K. Roberts
Customer Number:	65106
Filer:	Laura Marie Kelley/Carey Gregory
Filer Authorized By:	Laura Marie Kelley
Attorney Docket Number:	5308-657CT2
Receipt Date:	05-MAY-2014
Filing Date:	22-OCT-2012
Time Stamp:	14:16:21
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$2760
RAM confirmation Number	557
Deposit Account	500220
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Bytes	Multi Page	Pages (if appl.)
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Petitioner Hisense USA Corporation

1	Request for Continued Examination (RCE)	5308-657CT2_RCE.pdf	165967 67a83851d037235c58d122c3684cd6e1213bbe1	no	1
Warnings:					
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2	Terminal Disclaimer Filed	5308-657CT2_TD.pdf	150502 4a45d4c6297752256cc5fb3ee81c460b9bf04ee2	no	1
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3		5308-657CT2_Amendment.pdf	1055969 a7d46d14d46e57402e6f7ecd2f9aa0e05100385e	yes	12
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	Amendment Submitted/Entered with Filing of CPA/RCE		1	1	
	Claims		2	7	
	Applicant Arguments/Remarks Made in an Amendment		8	12	
Warnings:					
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4		5308-657CT2_POA.pdf	408609 d8d51654a5b3493da2ead4cb335f687a4f94687f	yes	3
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	Assignee showing of ownership per 37 CFR 3.73.		2	3	
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: John K. Roberts

Confirmation No.: 7137

Serial No.: 13/657,141

Group Art Unit: 2878

Filed: October 22, 2012

Examiner: Francis M. LeGasse, Jr.

For: SOLID STATE LUMINAIRES FOR GENERAL ILLUMINATION

Date: August 21, 2014

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

AMENDMENT AND RESPONSE TO OFFICE ACTION DATED MAY 22, 2014

Sir:

Responsive to the Office Action dated May 22, 2014, please amend the above-identified application as shown.

If any extension of time for the accompanying response or submission is required, Applicant requests that this be considered a petition therefor. The Commissioner is hereby authorized to charge any additional fee, which may be required, or credit any refund, to our Deposit Account No. 50-0220.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 8 of this paper.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of the Claims:

1. (Previously Presented) A lighting panel, comprising:
at least one substrate having a first side parallel to a principal plane of the lighting panel;
a plurality of solid state lighting devices arranged on the first side of the at least one substrate and configured to emit light;
a reflector sheet on the first side of the at least one substrate, wherein the reflector sheet comprises a lambertian reflector configured to reflect and scatter light incident thereon in a range of directions;
a brightness enhancement film on the reflector sheet, wherein the reflector sheet is arranged between the at least one substrate and the brightness enhancement film and the brightness enhancement film is configured to preferentially emit light having a first orientation from the lighting panel and to preferentially reflect light having a second orientation, different from the first orientation, back into the lighting panel, and
a generally planar diffuser sheet between the reflector sheet and the brightness enhancement film, wherein the light having the second orientation that is reflected back into the lighting panel is recycled within at least the diffuser sheet.
2. (Canceled).
3. (Original) The lighting panel of Claim 1, wherein the reflector sheet includes a plurality of apertures therethrough, wherein respective ones of the plurality of apertures aligned with corresponding ones of the plurality of solid state lighting devices.
4. (Original) The lighting panel of Claim 3, wherein respective ones of the apertures include angled sidewalls to thereby form reflective optical cavities around the

corresponding ones of the plurality of solid state lighting devices.

5. (Original) The lighting panel of Claim 1, wherein the reflector sheet comprises a plastic foam.

6. (Original) The lighting panel of Claim 1, further comprising a diffuser sheet between the reflector sheet and the brightness enhancement film.

7. (Original) The lighting panel of Claim 1, wherein the brightness enhancement film comprises a plurality of three dimensional light extraction features configured to bend at least some light rays passing through the brightness enhancement film toward the direction normal to the principal plane of the lighting panel.

8. (Original) The lighting panel of Claim 7, wherein the light extraction features are random features.

9. (Original) The lighting panel of Claim 7, wherein the brightness enhancement film is configured to limit direct emission from the lighting panel of light emitted by the plurality of solid state light emitting devices to thereby encourage light recycling/diffusion in the lighting panel..

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13. (Original) The lighting panel of Claim 12, wherein the heatsink panel comprises black anodized aluminum.

14. (Original) The lighting panel of Claim 13, wherein the heatsink panel comprises a plurality of heatsink features configured to reduce a thermal resistance of the heatsink panel.

15. (Original) The lighting panel of Claim 14, wherein the plurality of heatsink features comprise cooling fins.

16. (Original) The lighting panel of Claim 14, wherein respective ones of the plurality of heatsink features are aligned with corresponding ones of the plurality of solid state light emitting devices.

17. (Currently Amended) A luminaire adapted for general illumination, the luminaire comprising:

a lighting panel including at least one substrate, a plurality of solid state lighting devices electrically connected in a string and arranged on a first side of the at least one substrate and configured to emit light at a dominant wavelength, a reflector sheet on the first side of the at least one substrate, wherein the reflector sheet comprises a lambertian reflector configured to reflect and scatter light incident thereon in a range of directions, and a brightness enhancement film on the reflector sheet, wherein a longitudinal side of the at least one substrate defines a principal plane of the lighting panel, and the reflector sheet is arranged between the at least one substrate and the brightness enhancement film and such that a longitudinal side of the reflector sheet extends along [[a]] the principal plane of the lighting panel;

a current supply circuit configured to supply an on-state drive current to the string in response to a control signal;

a photosensor arranged to receive light from at least one of the plurality of solid state lighting devices; and

a control system configured to receive an output signal from the photosensor and to adjust the control signal responsive to the output signal of the photosensor to thereby adjust an average current supplied to the string by the current supply circuit.

18. (Original) The luminaire of Claim 17, wherein the current supply circuit comprises a closed loop variable voltage boost converter current source.

19. (Original) The luminaire of Claim 17, wherein the control system is configured to sample the output of the photosensor when current is not being supplied to the string of solid state lighting devices to obtain an ambient light value.

20. (Original) The luminaire of Claim 19, wherein the control system is configured to decrease average current to the string as the ambient light value increases.

21. (Original) The luminaire of Claim 17, wherein the control system is configured to sample the photosensor during an interval in which current is being supplied to the string in order to obtain a brightness value.

22. (Original) The luminaire of Claim 21, wherein the control system is configured to decrease the average current to the first string as the brightness value increases.

23. (Original) The luminaire of Claim 22, wherein the control system is configured to adjust the average current supplied to the string based on the ambient light value and the brightness value.

24. (Original) The luminaire of Claim 23, wherein the control system is configured to adjust the average current supplied to the string based on a difference between the ambient light value and the brightness value.

25. (Original) The luminaire of Claim 23, wherein the control system is configured to adjust the average current supplied to the string based on a ratio of the ambient light value and the brightness value.

26. (Original) The luminaire of Claim 23, wherein the control system is configured to maintain an average luminosity of the first string independent of an ambient/background illumination.

27. (Original) The luminaire of Claim 23, wherein the control system is configured to maintain a relationship between an ambient/background illumination and an average luminosity of the string by providing a first feedback signal with respect to the ambient light value and a second feedback signal with respect to the brightness value.

28. (Original) The luminaire of Claim 17, wherein the control signal comprises a pulse width modulation (PWM) signal, and wherein the control system is configured to control an average current supplied to the string by varying a duty cycle of the PWM signal.

29. (Original) The luminaire of Claim 17, wherein the control system is configured to control an average current supplied to the string by varying a pulse frequency of the control signal.

30. (Original) The luminaire of Claim 17, wherein the current supply circuit is configured to maintain the on-state current supplied to the string at a substantially constant value even as the average current supplied to the string is varied.

31. (Original) The luminaire of Claim 17, wherein the control system comprises:
a color management unit coupled to the photosensor and configured to sample and process the output signal of the photosensor and to provide the processed output signal to the control system.

32. (Original) The luminaire of Claim 17, further comprising:
a temperature sensor configured to sense a temperature associated with the lighting panel, wherein the control system is configured to adjust an average current supplied to the first string in response to a change in the sensed temperature.

33. (Previously Presented) The lighting panel of Claim 1, wherein the reflector sheet is a planar reflector sheet arranged parallel to the principal plane of the lighting panel.

34. (New) The luminaire of Claim 17, further comprising a generally planar diffuser sheet between the reflector sheet and the brightness enhancement film, wherein the brightness enhancement film is configured to preferentially emit light having a first orientation from the lighting panel and to preferentially reflect light having a second orientation, different from the first orientation, back into the lighting panel, and the light having the second orientation that is reflected back into the lighting panel is recycled within at least the diffuser sheet.

REMARKS

This Amendment is in response to the Office Action of May 22, 2014 (the Action).

Applicants note with appreciation that Claims 1, 3-16 and 33 are allowed.

Claims 17, 19-21, 28, 31 and 32 stand rejected under 35 U.S.C. § 103(a) as being anticipated by U.S. Patent Publication No. 2007/0188425 to Saccomanno (Saccomanno) in view of U.S. Patent Publication No. 2003/0112521 to Gardiner (Gardiner). Claims 18, 29 and 30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Saccomanno in view of Gardiner and U.S. Patent No. 7,276,861 to Shteynberg (Shteynberg). Claims 22-27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Saccomanno in view of Gardiner and U.S. Patent Publication No. 2005/0135441 to Ng et al. (Ng).

Reconsideration is respectfully requested in view of the amendments above and the remarks that follow.

Rejections under 35 U.S.C. 103(a)

Claim 17

Claim 17 as amended recites as follows (emphasis added):

A luminaire adapted for general illumination, the luminaire comprising:

a lighting panel including at least one substrate, a plurality of solid state lighting devices electrically connected in a string and arranged on a first side of the at least one substrate and configured to emit light at a dominant wavelength, a reflector sheet on the first side of the at least one substrate, wherein the reflector sheet comprises a lambertian reflector configured to reflect and scatter light incident thereon in a range of directions, and a brightness enhancement film on the reflector sheet, wherein a longitudinal side of the at least one substrate defines a principal plane of the lighting panel, and the reflector sheet is arranged between the at least one substrate and the brightness enhancement film such that a longitudinal side of the reflector sheet extends along the principal plane of the lighting panel;

a current supply circuit configured to supply an on-state drive current to the string in response to a control signal;

a photosensor arranged to receive light from at least one of the plurality of solid state lighting devices; and

a control system configured to receive an output signal from the photosensor and to adjust the control signal responsive to the output signal of the photosensor to thereby adjust an average current supplied to the string by the current supply circuit.

Support for the above amendments may be found, for example, in Figures 6-7 of the application.

The Action takes the position that the reflective surface 505 of Saccomanno is analogous to the reflector sheet recited in Claim 17. *See* the Action, page 3. Figure 5 of Saccomanno is reproduced below.

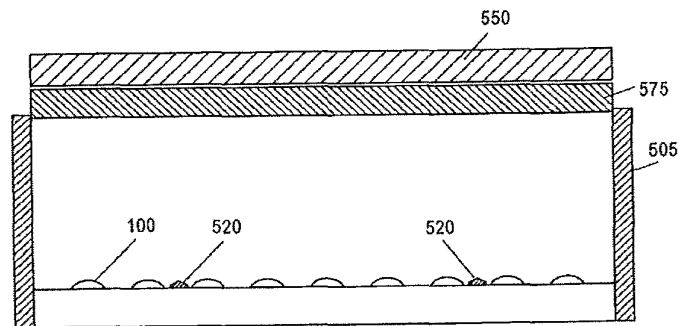


FIG. 5

Applicant's paper dated May 5, 2014, notes that the reflective surface 505 of Saccomanno extends perpendicular to both the panel on which the light sources 100 are mounted as well as the brightness enhancing film 575, and therefore, the reflective surface of Saccomanno does not satisfy the recitation in Claim 17 that the reflector sheet extends along a principal plane of the lighting panel. In support of the rejection, the Action states as follows: "Applicant doesn't define the principal plane. Further, Applicant doesn't take into account the thickness of the reflector. The reflector has two planes. Applicant fails to define the principal plane." *See* the Action, page 4.

Applicant submits that the definition of the principal plane of the lighting panel is clear, and that the term "extends" clearly refers to the longitudinal side of the reflector sheet. However, in order to expedite prosecution, Applicant is amending Claim 17 to recite that "a longitudinal side of the at least one substrate defines a principal plane of the lighting panel, and the reflector sheet is arranged between the at least one substrate and the brightness enhancement film such

that a longitudinal side of the reflector sheet extends along the principal plane of the lighting panel.”

As stated by Saccomanno: "In the exemplary embodiment of FIG. 5, the light from the LEDs 100 travels through air until striking light management films 575." Saccomanno, paragraph [0039]. That is, Saccomanno uses the reflector sheets 505, which are perpendicular to the panel and the BEF 575, to form a light mixing chamber in a direct backlighting arrangement. In contrast, Applicants have discovered that no such mixing chamber may be necessary, and the reflector sheet can be placed parallel to the principal plane of the lighting panel.

The recitations discussed above are also not disclosed or rendered obvious by Garner, which is cited as allegedly disclosing a lambertian reflector. In addition, the recitations discussed above are not disclosed or rendered obvious by Shteynberg or Ng, which are cited with respect to certain dependent claims.

For at least the above reasons, Applicant requests the rejections of Claims 17 and 18-32 be withdrawn.

New Claim 34

Claim 34 depends from Claim 17 and is patentable at least per the patentability of Claim 17 discussed above. In addition, Claim 34 is separately patentable for at least the following reasons. Claim 33 recites as follows:

34. The luminaire of Claim 17, further comprising a generally planar diffuser sheet between the reflector sheet and the brightness enhancement film, wherein the brightness enhancement film is configured to preferentially emit light having a first orientation from the lighting panel and to preferentially reflect light having a second orientation, different from the first orientation, back into the lighting panel, and the light having the second orientation that is reflected back into the lighting panel is recycled within at least the diffuser sheet.

Applicant submits that the recitations of new Claim 34 are separately patentable at least per the indication of allowability of analogous subject matter on page 11 of the Action. Accordingly, Applicant requests an indication of the patentability of Claim 34.

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CONCLUSION

Applicant submits that the present application is in condition for allowance and the same is earnestly solicited. Should the Examiner have any matters outstanding of resolution, he is encouraged to telephone the undersigned at 919-854-1400 for expeditious handling.

Respectfully submitted,

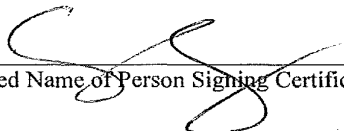


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EFS ID:	19926651
Application Number:	13657141
International Application Number:	
Confirmation Number:	7137
Title of Invention:	Solid State Luminaires for General Illumination
First Named Inventor/Applicant Name:	John K. Roberts
Customer Number:	65106
Filer:	Laura Marie Kelley/Carey Gregory
Filer Authorized By:	Laura Marie Kelley
Attorney Docket Number:	5308-657CT2
Receipt Date:	21-AUG-2014
Filing Date:	22-OCT-2012
Time Stamp:	13:40:41
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$80
RAM confirmation Number	12267
Deposit Account	500220
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Bytes	Multi Page	Pages (if appl.)
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Petitioner Hisense USA Corporation

1		5308-657CT2_Amendment.pdf	987848 7fba69ad33e329cda681e19a9f539569d35f0d93	yes	11				
	Multipart Description/PDF files in .zip description								
	Document Description		Start	End					
	Amendment/Req. Reconsideration-After Non-Final Reject		1	1					
	Claims		2	7					
	Applicant Arguments/Remarks Made in an Amendment		8	11					
Warnings:									
Information:									
2	Fee Worksheet (SB06)	fee-info.pdf	29895 6dd744620330bcbf160bbe4d57a15df6d547bea69	no	2				
Warnings:									
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Total Files Size (in bytes):			1017743						
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