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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/750,417	06/25/2015	Jung Kyu PARK	SAM-54194	2266
74712	7590	06/09/2016		
Muir Patent Law, PLLC P.O. Box 1213 9913 Georgetown Pike, Suite 200 Great Falls, VA 22066			EXAMINER REAMES, MATTHEW L	
			ART UNIT 2893	PAPER NUMBER
			NOTIFICATION DATE 06/09/2016	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pto@muirpatentconsulting.com
cofficeaction@apcoll.com

Office Action Summary	Application No. 14/750,417	Applicant(s) PARK ET AL.	
	Examiner Matthew Reames	Art Unit 2893	AIA (First Inventor to File) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4/28/2016.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

- 5) ☒ Claim(s) 1-20 is/are pending in the application.
5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1-20 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

- a) ☐ All b) ☐ Some** c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
Paper No(s)/Mail Date ____.
- 3) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 4) ☐ Other: ____.

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112(a):

(a) IN GENERAL.—The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.

The following is a quotation of the first paragraph of pre-AIA 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 1 15 and 16 rejected under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor or a joint inventor, or for pre-AIA the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant does not have support for the entire bottom surface of the lead frame is flat.
4. Further as to claim 15, applicant does not have support to limit the conductive material to be different (see *ICU Medical v. Alaris Medical System* (Fed. Cir. 2009)). A recitation of one example does not give coverage for an entire range. Applicant has only

described the conductive fill as being Ag epoxy but there is no limit on it actually ever being necessarily different from the lead frame. As such this is new matter.

5. The following is a quotation of 35 U.S.C. 112(b):
(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 1-20 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention.

7. As to claim 1 15 and 16 what is the outside of the package? Is it included as part of the device or not? Further how flat is flat?

8. As to claim 15 how different is different?

As to claim 3 it is unclear what is meant by surround, the recess is under and part of the mounting area how can it surround if it below the other element?

- b. As to claim 5, how reflective is reflective. Everything has some reflectivity.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102 of this title, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person

having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-6, 10-14, and 16-20 rejected under 35 U.S.C. 103 as being unpatentable over Wang (20090316315) in view of admitted prior art in further of Seo (20100270571) and Lee (20130001599).

a. As to claim 1 and 16, Wang teaches. A light emitting device package comprising: a lead frame having one surface with a recess portion (item 10a figure 2e) provided therein and including a first mounting region positioned on the one surface where 5a is mounted) and a second mounting region positioned in the recess portion (where 3a is mounted); a light emitting device mounted on the first mounting region and electrically connected to the lead frame (item 5a); and a esd mounted on the second mounting region and connected to the lead frame by a wire (item 3a and wire), wherein the wire is positioned within the recess portion and is disposed to have a height lower than the first mounting region (figure 3e).

Wang does not explicitly teach the esd is a zener diode.

However applicant acknowledges it was known to use a Zener diode as a esd.

Therefore it would been obvious to one of ordinary skill in the art at the time to use a zener diode since it was structural equivalent to any other esd further it would have been obvious to incorporate existing technology providing a cost benefit.

The bottom of the lead frame being exposed from an outer surface of the package and the bottom that is exposed is completely flat.

Wang does not explicitly teach this.

Seo teach it an exposed bottom surface (see e.g. item 122)

Lee teaches a flat bottom lead frame with a recess (item 12 recess).

Further it was known to provide heat sinks at the bottom of the device and/or to form surface mount packages.

Therefore it would have been further obvious to one of ordinary skill in the art at the time of the invention to provide a bottom portion of the lead frame exposed and providing a flat surface.

One would have been so motivated to provide surface mount capabilities and or to allow for direct connection to a heat ink to reduce heat.

c. As to claim 3, Wang teaches wherein the recess portion is disposed to surround the first mounting region (see e.g. figure).

d. As to claim 4 and 18, Wang teaches further comprising an encapsulant filling the recess and covering the Zener diode and the wire and covered by the LED (item 4a).

e. As to claim 5, Wang teaches a reflective package but does not teach a reflective powder.

However it was known to produce flective encapsulants by adding reflective powder into the encapsulant.

Therefore it would have been obvious to one of ordinary skill in the art to form the 2nd package 4a by using an encapsulant and reflective powder.

One would have been so motivated since it was functionally equivalent to other reflective materials and allow standard encapsulation techniques to be used providing a cost benefit.

f. As to claim 6, Wang teaches wherein the recess portion is recessed from the one surface of the lead frame and has a bottom surface forming a step with respect to the first mounting region (figure 3e step is non limiting and the diagonal face can be consider a step).

g. As to claim 10 and 20, Applicant recites a region penetrating through the lead frame, and includes a conductive material partially filling the penetrated region. This appears to be product by process since the lead frame is a conductive material. Thus it would be impossible to determine the difference between a hole filled the material removed there from. As such Wang teaches wherein the second mounting region is a region penetrating through the lead frame, and includes a conductive material partially filling the penetrated region to provide a bottom surface of the second mounting region on which the Zener diode is mounted (the lead frame).

f. As to claim 11, Wang teaches teach wherein the Zener diode has a first electrode disposed on a lower surface thereof and a second electrode disposed on an upper surface thereof, and the first electrode is connected to one region of the lead frame through the bottom surface of the recess portion and the second

electrode is connected to the other region of the lead frame through the wire (see e.g. associated figure).

g. As to claim 12, Wang teaches wherein the lead frame comprises separated first and second lead frames, and the recess portion is disposed in at least one of the first and second lead frames (see e.g. figure).

h. As to claim 13, Wang teaches wherein the second mounting region is positioned on one side of either of the first and second lead frames (see e.g. figure 2e).

i. As to claim 14 Wang encapsulant 4a binds at least the top portions moreover portions of (further 2a/2b can be without limitation be considered part of encapsulant).

j. As to claim 19, the phrase lens is not per se limit Wang structure could be considered a lens however assuming arguendo that lens means shaped surface.

Wang does not teach this.

However it was known to provide lens for optical shaping.

One would have been obvious to one of ordinary skill in the art at the time of invention to provide a lens for optical shaping.

1. Claims 7-9 rejected under 35 U.S.C. 103 as being unpatentable over Wang in view of Kim (20110220949).

a. As to claim 7, Wang does not teach wherein a bottom surface of the second mounting region has a level lower than the other region of the bottom surface of the recess portion.

Kim teaches it was known to form a multiple recess/cavities.

Since there are no unexpected result for the double cavity it would have been further obvious to one of ordinary skill in the art at the time of the invention to have formed the Zener diode in a double cavity with the Zener diode at the bottom and being connected at the higher elevation to provide more space above the zener diode.

b. As to claim 8, Wang/Kim/modified (Wang/Kim) teach wherein the Zener diode has a first electrode disposed on a lower surface thereof and a second electrode disposed on an upper surface thereof, and the first electrode is connected to one region of the lead frame through the bottom surface of the recess portion and the second electrode is connected to the other region of the lead frame through the wire (see e.g. associated figures).

c. As to claim 9, Wang/Kim wherein the Zener diode is attached to the bottom surface of the second mounting region by a conductive material (the lead fame is conductive).

Response to Arguments

11. Applicant's arguments with respect to claim 1-20 have been considered but are moot because the arguments do not apply to any of the references being used in the current rejection.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew Reames whose telephone number is (571)272-2408. The examiner can normally be reached on M-Th 6:00 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571)272-1664. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew Reames/
Primary Examiner, Art Unit 2893