

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte John Adam Edmond

Appeal 2008-6202
Application 11/037,965
Technology Center 2800

Decided: January 13, 2009

Before EDWARD C. KIMLIN, CATHERINE Q. TIMM,
and MARK NAGUMO, *Administrative Patent Judges*.

KIMLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-42. Claim 1 is illustrative:

1. A light emitting diode with advantageous output on a per unit area basis, said diode comprising: an area of 100,000 square microns or less; a forward voltage of less than 4.0 volts a radiant flux of at least 24 milliwatts at 20 milliamps drive current; and a dominant wavelength between about 395 and 540 nanometers.

In addition to the admitted prior art found in Appellant's Specification, the Examiner relies upon the following references in the rejection of the appealed claims (Ans. 3):

Slater, Jr. et al.	US 2002/0123164 A1	Sep. 2002
Härle	Proc. SPIE, Vol. 5187, pg 34-40	Jan. 2004
APA (admitted prior art)	US Application 11/037,965	Filed 1/18/2005

Appellant's claimed invention is directed to a light emitting diode having the recited properties, e.g., an area of 100,000 square microns or less, a forward voltage of less than 4.0 volts, etc. The diode comprises a conductive silicon carbide substrate and respective p-type and n-type Group III nitride layers on the silicon carbide substrate.

Appealed claims 13-21, 34, 36, 37, and 39-42 stand rejected under 35 U.S.C. § 102 (b) as being anticipated by Slater. In addition, the Examiner has lodged the following rejections under 35 U.S.C. § 103(a):

- (a) claims 1-8 and 10-12 over Slater in view of Härle,
- (b) claims 22-33 over Slater in view of Härle and the APA, and
- (c) claims 35 and 38 over Slater in view of the APA.

The Examiner has withdrawn the rejection of claims 1-42 under 35 U.S.C. § 112, first paragraph.

Appellant has not presented separate, substantive arguments for any particular claim on appeal. Accordingly, the groups of claims separately rejected by the Examiner stand or fall together.

We have thoroughly reviewed each of Appellant's arguments for patentability. However, we are in complete agreement with the Examiner's reasoned analysis and application of the prior art, as well as his cogent and thorough disposition of the arguments raised by Appellant. Accordingly, we

will adopt the Examiner's reasoning as our own in sustaining the rejections of record and we add the following for emphasis only.

We consider first the Examiner's § 102 rejection over Slater. There is no dispute that Slater, like Appellant, describes a light emitting diode comprising a silicon carbide substrate and respective p-type and n-type Group III nitride layers on the substrate that together with the substrate define a die. Nor is there any dispute that Slater also describes ohmic contacts in a vertical orientation with respect to the silicon carbide substrate and said nitride layers. The dispute arises over the Examiner's finding that, since the structure of Slater's diode substantially corresponds to the structure of Appellant's diode, Slater's diode would inherently possess the properties recited in the appealed claims. In particular, it is the Examiner's position that "Figure 3 of Slater is identical to Figure 4 of the present application, in both structure and materials" (Ans. 5, second para.).

It is well settled that when a claimed product reasonably appears to be substantially the same as a product disclosed by the prior art, the burden is on the Applicant to prove that the prior art product does not necessarily or inherently possess characteristics attributed to the claimed product. To place this burden upon an Applicant is eminently fair and reasonable since the USPTO is not able to test the properties of prior art products. *See In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990), *In re Best*, 562 F.2d 1252, 1255 (CCPA 1977).

In the present case, Appellant has not proffered any objective evidence which demonstrates that light emitting diodes within the scope of the appealed claims possess properties and characteristics that are patentably distinct from those exhibited by the light emitting diodes fairly described by

Slater. However, Appellant advances the argument that “the LED in Figure 4 of the present invention has a mirror layer 54 between the active layer 53 and in ohmic contact 55 . . . [w]hereas Figure 3 of Slater discloses a reflector layer 240 between an active layer 130 and a p-type layer 140” (App. Br. 8, last para. to 9, first para.). Appellant concludes, therefore, that “the LED depicted in Figure 4 of the present application does not correspond to the packaged LED as depicted in Figure 3 of Slater” (App. Br. 9, first para.). Appellant submits that “[t]hose of ordinary skill in the art know that changing the position of a mirror and a reflection layer in a diode or an LED lamp can result in varying its optical properties and characteristics” (*id.*). Based on this asserted lack of correspondence between the claimed and Slater structures, Appellant maintains that the diode of Slater does not inherently possess the claimed properties.

Appellant’s argument is not persuasive because it has been effectively rebutted by the Examiner’s finding that reflector layer 240 of Slater is only an **optional** feature of the referenced light emitting diode. As explained by the Examiner, Slater’s diode *sans* reflective layer 240 is the embodiment relied upon in support of the reasonable conclusion that Slater describes a light emitting diode possessing the claimed properties. Appellant has not refuted this argument of the Examiner, nor the Examiner’s rationale that “even if reflector 240 were left in Slater, the structure would still be active layer 170 (incl. 240) / mirror layer 150 / ohmic contact 220, which is identical to the active layer 53 / mirror layer 54 / ohmic contact 55 structure of the present invention” (Ans. 15, first para.). The Examiner notes that reflector 240 of Slater is another Group III nitride layer.

Turning to the § 103 rejection of claims 1-8 and 10-12 over Slater in view of Härle, the Examiner acknowledges that Slater does not expressly describe the recited area for the diode. However, as pointed out by the Examiner, Härle discloses a chip size of 84,100 square microns as having improved light extraction when compared to larger-sized chips. Accordingly, we find no error in the Examiner's legal conclusion that it would have been obvious for one of ordinary skill in the art to size the chip of Slater in accordance with the Härle disclosure to achieve an improvement in light extraction.

Appellant maintains that a larger chip still produces more total radiant flux than a smaller chip and that "Härle neither teaches nor suggests that shrinking a diode will cause it to produce more light" (App. Br. 10, second to last para.). However, notwithstanding the fact that a larger chip produces more light than a smaller chip, the Examiner's "rationale for obviousness relied upon is 'improved light extraction' and not the total radiant flux" (Ans. 16, second to last para.). Härle evidences that it was known in the art to size light emitting diodes in accordance with the claimed dimensions for improving light extraction.

Appellant submits that "the present invention is significant (and thus unexpected) because to date, reducing the size of the Group III nitride device has tended to increase its forward voltage and reduce its radiant flux" (App. Br. 12, second para.). Appellant asserts that "Figure 7 has ample data to indicate improved properties as claimed in the present application" (*id.*). However, Appellant has not set forth the requisite analysis of the Specification data to establish that the results would be considered truly unexpected by one of ordinary skill in the art. *In re Merck & Co., Inc.*, 800

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F.2d. 1091, 1099 (Fed. Cir. 1986); *In re Klosak*, 455 F.2d 1077, 1080 (CCPA 1972). Indeed, Appellant has failed to offer any substantive analysis of the Specification data which would support the assertion of unexpected results. Manifestly, it is not within the province of this Board to independently ferret out data from the record and interpret it in a light most favorable to the Applicant. It is by now axiomatic that the burden of establishing unexpected results rests on the party asserting them. Appellant's arguments in the Brief pertaining to unexpected results are no substitute for objective evidence supporting the same. *In re Pearson*, 494 F.2d. 1399, 1405 (CCPA 1974).

In conclusion, based on the foregoing and the reasons well stated by the Examiner, the Examiner's decision rejecting the appealed claims is affirmed.

No time period for taking any subsequent action in connection with this appeal maybe extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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