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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MIKHAIL V. KISIN and
HUSSEIN S. EL-GHOROURY

Appeal 2015-007414
Application 13/014,002
Technology Center 2800

Before BRADLEY R. GARRIS, TERRY J. OWENS, and
MICHAEL G. McMANUS, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

The Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1–14. We have jurisdiction under 35 U.S.C. § 6(b).

The Invention

The Appellants claim a solid state light emitting device. Claim 1 is illustrative:

> 1. A solid state light emitting device fabricated using III-nitride alloy materials on either polar, semi-polar or non-polar crystal orientation and comprising:
>
> a substrate;
>
> a P-cladding region;
>
> an N-cladding region;

> multiple layers forming an optical confinement region between the P-cladding region and the N-cladding region, the multiple layers being grouped into a P-doped waveguide layer, an electron blocking layer, an active multiple quantum well region, and an N-doped waveguide region, the active multiple quantum well region being further comprised of multiple layers to form multiple quantum wells and barrier layers, the band-gaps associated with the N-doped waveguide region and the barrier layers being realized through the incorporation of indium and/or aluminum in said layers, the multiple quantum well depth not being in excess of 100 me V for holes and 200 me V for electrons.

The References

Ubukata	US 6,434,178 B1	Aug. 13, 2002
Lee	US 7,058,105 B2	June 6, 2006

The Rejections

The claims stand rejected as follows: claims 1–14 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement, claims 1–5, 13 and 14 under 35 U.S.C. § 103 over Lee,[1] and claims 6–12 under 35 U.S.C. § 103 over Lee in view of Ubukata.

OPINION

We reverse the rejection under 35 U.S.C. § 112, first paragraph, written description requirement and affirm the rejections under 35 U.S.C. § 103.

[1] The Examiner also relies upon Nagahama (US 2004/0051107 A1, published Mar. 18, 2004) (Ans. 5). Because the Appellants respond to the Examiner's arguments regarding Nagahama (Reply Br. 3–6), we likewise consider that reference.

Rejection under 35 U.S.C. § 112, first paragraph

To comply with the 35 U.S.C. § 112, first paragraph, written description requirement, an applicant's specification must "convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention." *Carnegie Mellon Univ. v. Hoffmann-La Roche Inc.*, 541 F.3d 1115, 1122 (Fed. Cir. 2008) (quoting *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563–64 (Fed. Cir. 1991)).

The Examiner finds that the Appellants' Specification fails to provide adequate written descriptive support for "the multiple quantum well depth not being in excess of 100 me V for holes and 200 me V for electrons" in claim 1 because, in the Examiner's view, the Specification indicates that sufficient carrier confinement in excess of 100 meV for holes and 200 meV for electrons is required for the device to be operable (Final Act.7; Ans. 3–4).

The relevant disclosure in the Appellants' Specification is "with sufficient carrier confinement occurring when the MQW [multiple quantum well] depth is in excess of 100 meV for holes and 200 meV for electrons, the active region MQWs of our benchmark layouts C-1 and M-1 [Fig. 3] are always non-uniformly populated" (Spec. 17:9–12). That disclosure does not mean that the MQW depth must be in excess of 100 meV for holes and 200 meV for electrons for the device to be operable but, rather, means that if the active region MQW depth is in excess of 100 meV for holes and 200 meV for electrons, the carrier confinement is sufficient that the carrier population always is non-uniform. Hence, the Specification would have conveyed with reasonable clarity to one of ordinary skill in the art that the Appellants were in possession of a device wherein the desired carrier

population uniformity is achieved by the MQW depth being not in excess of 100 meV for holes and 200 meV for electrons (Spec. 7:13–16, 18:18–22).

Accordingly, we reverse the rejection under 35 U.S.C. § 112, first paragraph, written description requirement.

Rejections under 35 U.S.C. § 103

The Appellants argue the claims as a group (App. Br. 7–15). We therefore limit our discussion to one claim, i.e., claim 1, which is the sole independent claim. Claims 2–14 stand or fall with that claim. *See* 37 C.F.R. § 41.37(c)(1)(iv) (2012).

Nagahama discloses a nitride semiconductor light emitting device comprising a multiple quantum well active layer having In- and Al-containing well and barrier layers which compositionally are similar to those of the Appellants (Nagahama, ¶¶ 1, 14, 16, 88; Spec. 10:10–15). First and second barrier layers (2*a*, 2*b*) confine carriers into a well layer, and third and fourth barrier layers (2*c*, 2*d*) disperse and confine carriers into each well layer (¶ 157; Fig. 14A, 14B) such that "carriers are suitably dispersed, injected and confined in each well layer in a plurality of well layers" (¶ 159). "Preferably, by adopting approximately the same composition, band gap energy and thickness, the approximately uniform function are imparted [sic] to internal barrier layers and, thus, carriers are suitably injected in respective well layers" (¶ 160). Nagahama's carrier population, therefore, appears to be uniform.

The Appellants indicate that carrier population uniformity requires a multiple quantum well depth which is not in excess of 100 meV for holes and 200 meV for electrons (Spec. 17:9–12). Because Nagahama's carrier population appears to be uniform, Nagahama's device, like the Appellants'

device, appears to have a multiple quantum well depth which is not in excess of 100 meV for holes and 200 meV for electrons.

The Appellants assert that Nagahama does not disclose a connection between MQW carrier confinement and MQW carrier population uniformity (Reply Br. 5).

The Appellants' Specification states that "[t]he features of the active region design which affect the carrier confinement also affect the MQW population uniformity" (Spec. 18:6–7). Likewise, Nagahama's MQW carrier dispersion and confinement (¶¶ 157, 159, 160) appear to affect MQW carrier population uniformity.

The Appellants assert that "the generally accepted precise definition of the term 'disperse' used by Nagahama's [sic] is to 'scatter' or 'distribute widely' while the generally accepted precise definition of the term 'uniform' used in our disclosure is the property of 'not varying or changing' or 'conforming to a given standard'" (Reply Br. 6).

The Appellants provide no evidence that their Specification's term "uniform" can mean "conforming to a given standard". The Appellants' mere assertion to that effect cannot take the place of evidence. *See In re De Blauwe*, 736 F.2d 699, 705 (Fed. Cir. 1984). That meaning appears to apply to something like a military uniform and, therefore, appears to be irrelevant.

As for the meaning "not varying or changing", Nagahama's dispersion, injection and confinement of carriers in each quantum well layer in a plurality of quantum well layers (¶ 159) appears to provide a carrier population which, in the same manner as the Appellants' quantum well carrier injection and confinement (Spec. 8:3–7, 18:6–7, 18:18–22, 20:23 – 21:4), does not vary or change among the quantum well layers.

"[W]hen the PTO shows sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990). The Appellants have not met that burden. Thus, we are not persuaded of reversible error in the rejections under 35 U.S.C. § 103.

DECISION/ORDER

The rejection of claims 1–14 under 35 U.S.C. § 112, first paragraph, written description requirement is reversed. The rejections under 35 U.S.C. § 103 of claims 1–5, 13 and 14 over Lee and claims 6-12 over Lee in view of Ubukata are affirmed.

It is ordered that the Examiner's decision is affirmed.

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

AFFIRMED