

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

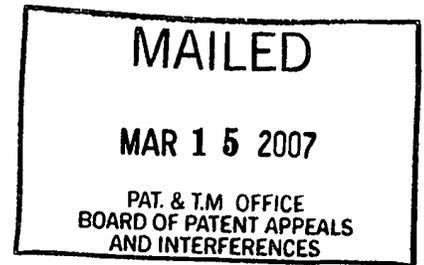
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DAVID P. BOUR, MICHAEL R. T. TAN,
and WILLIAM H. PEREZ

Appeal 2006-2362
Application 10/230,895
Technology Center 2800

Decided: March 15, 2007



Before JAMES D, THOMAS, JOSEPH F. RUGGIERO, and MAHSHID D. SAADAT, *Administrative Patent Judges*.

RUGGIERO, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal involves claims 1-6 and 13-18. Claims 7-12 and 19-20 have been withdrawn from consideration. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 6(b) (2002).

INTRODUCTION

The claims are directed to a method for producing an active region for a long wavelength light emitting device in which a substrate for supporting growth of an indium arsenide phosphide (InAsP) film is initially placed in an organometallic vapor phase (OMVPE) reactor. A quantum well layer of InAsP and a barrier layer adjacent the quantum well layer are then formed at a temperature of less than 520 degrees C. According to Appellants (Specification 4), formation of the quantum well layer and the barrier layer at a temperature of less than 520 degrees C results in fewer dislocations by suppressing relaxation of the layers.

Claim 1 is illustrative:

1. A method for producing an active region for a long wavelength light emitting device, the method comprising:

placing a substrate in an organometallic vapor phase epitaxy (OMVPE) reactor, the substrate for supporting growth of an indium arsenide phosphide (InAsP) film;

forming a quantum well layer of InAsP; and

forming a barrier layer adjacent the quantum well layer, where the quantum well layer and the barrier layer are formed at a temperature of less than 520 degrees C.

The Examiner relies on the following prior art references to show unpatentability:

Kise

US 2003/0008426 A1

Jan. 9, 2003
(filed Jun. 13, 2002)

Wei-Han Wang, Chong-Yi Lee, Ya-De Tian, and Tian-Tsong Shih (Wang),
“The influence of rapid thermal annealing on InAsP strained multiple
quantum well laser diodes grown by metalorganic vapor phase epitaxy,”
2000 IEEE International Symposium on Compound Semiconductors, Oct. 2-
5, 2000, at 407-11.

The rejections as presented by the Examiner are as follows:

1. Claims 1, 3, 5, 13, 15, and 17 are rejected under 35 U.S.C § 102(b) as anticipated by Wang.
2. Claims 2, 4, 6, 14, 16, and 18 are rejected under 35 U.S.C § 103(a) as unpatentable over Wang in view of Kise.

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the Briefs¹ and Answer for the respective details.

OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the Examiner, and the evidence of anticipation and obviousness relied upon by the Examiner as support for the rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, Appellants’ arguments set forth in the Briefs along with the Examiner’s rationale in support of the rejections and arguments in rebuttal set forth in the Examiner’s Answer.

¹ The Appeal Brief (Supplemental) was filed December 21, 2005. In response to the Examiner’s Answer mailed February 15, 2006, a Reply Brief was filed March 31, 2006, which was acknowledged and entered by the Examiner as indicated in the communication dated May 24, 2006.

It is our view, after consideration of the record before us, that the Wang reference does not fully meet the invention as set forth in claims 1, 3, 5, 13, 15, and 17. With respect to the Examiner's 35 U.S.C. § 103(a) rejection, we are also of the view that the evidence relied upon and the level of skill in the particular art would not have suggested to one of ordinary skill in the art the invention as recited in claims 2, 4, 6, 14, 16, and 18. Accordingly, we reverse.

We consider first the rejection of claims 1, 3, 5, 13, 15, and 17 under 35 U.S.C. § 102(b) as being anticipated by Wang. Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. *RCA Corp. v. Applied Digital Data Systems, Inc.*, 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984); *W.L. Gore and Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983).

With respect to the appealed independent claims 1 and 13, the Examiner attempts to read the various limitations on the disclosure of Wang. In particular, the Examiner (Answer 3-4) points to the illustrations in Figures 2 and 3 of Wang as well as the disclosure at pages 407-409 of Wang.

Appellant's arguments in response assert that the Examiner has not shown how each of the claimed features is present in the disclosure of Wang so as to establish a prima facie case of anticipation. After reviewing the Wang reference in light of the arguments of record, we are in general agreement with Appellants' position as stated in the Briefs.

As pointed out by Appellants, the description of the annealing procedure applied to the laser diode in Wang is devoid of any indication as to the growth temperature of the quantum well and barrier layers. Despite this deficiency, the Examiner, nevertheless, relies on the label "As Grown" on the horizontal temperature axis of Wang's Figure 2 to support the contention that Wang's quantum well and barrier layers are in fact formed at temperatures less than 520 degrees C. We find no evidence on the record before us, however, to support such a conclusion. The Examiner must not only make requisite findings, based on the evidence of record, but must also explain the reasoning by which the findings are deemed to support the asserted conclusion. *See In re Lee*, 277 F.3d 1338, 1343, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002).

In our view, the fact that the horizontal axis in Wang's Figure 2 is labeled "RTA Temperature" lends support to Appellant's position that Wang's Figure 2 illustration is not intended to associate growth temperature with the illustrated horizontal temperature scale but, rather, only indicates temperatures upon which rapid thermal annealing takes place. Further, we find compelling the evidence presented by Appellants (Reply Br. 3-4) in the

form of the Antell publication which indicates, that contrary to the Examiner's assertions (Answer 9-10) that annealing must take place at temperatures above the formation temperature, semiconductor material may indeed be annealed at temperatures lower than the growth temperature.

In view of the above discussion, in order for us to sustain the Examiner's rejection, we would need to resort to impermissible speculation or unfounded assumptions or rationales to supply deficiencies in the factual basis of the rejection before us. *In re Warner*, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967). Accordingly, since all of the claim limitations are not present in the disclosure of Wang, we do not sustain the Examiner's 35 U.S.C. § 102(b) rejection of appealed independent claims 1 and 13, nor of claims 3, 5, 15, and 17 dependent thereon.

Turning to a consideration of the Examiner's 35 U.S.C. § 103(a) rejection of dependent claims 2, 4, 6, 14, 16, and 18 based on the combination of Wang and Kise, we do not sustain this rejection as well. The Kise reference has been added to Wang by the Examiner to address the particular mole fraction compositions set forth in these claims. We find nothing, however, in the disclosure of the Kise reference which overcomes the innate deficiencies of Wang discussed *supra*.

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CONCLUSION

In summary, we have not sustained either of the Examiner's rejections of the claims on appeal. Therefore, the decision of the Examiner rejecting claims 1-6 and 13-18 is reversed.

REVERSED

PGC

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