

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte HAN-TZONG YUAN  
and ALAN C. SEABAUGH

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Appeal No. 95-4959  
Application 08/145,722<sup>1</sup>

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ON BRIEF

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Before THOMAS, KRASS and JERRY SMITH, Administrative Patent Judges.

JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1-23, which constitute all the claims in the application. According to appellants' appeal brief, this appeal is taken only with respect to claims 1-11. Therefore, the appeal is dismissed as to claims 12

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<sup>1</sup> Application for patent filed October 29, 1993. According to appellants, this application is a continuation of Application 07/954,206, filed September 30, 1992, now abandoned.

to 23.

The claimed invention pertains to a multiple peak resonant tunneling diode device having two resonant tunneling diodes connected in parallel.

Representative claim 1 is reproduced as follows:

1. A multiple peak resonant tunneling diode device comprising:  
a first resonant tunneling diode; and  
at least one other resonant tunneling diode in parallel with said first resonant tunneling diode.

The examiner relies on the following references:

Capasso et al. (Capasso)	4,853,753	Aug. 01, 1989
Ando (Japanese Kokai)	63-124578	May 28, 1988

Potter et al. (Potter), "Three-dimensional integration of resonant tunneling structures for signal processing and three-state logic," Appl. Phys. Lett., Vol. 52, No. 25, 20 June 1988, pages 2163-64.

Claims 6-10 stand rejected under 35 U.S.C. § 112, second paragraph, as failing to particularly point out and distinctly claim the subject matter of the invention. Claims 1, 3, 5 and 6 stand rejected under 35 U.S.C. § 102(b) as being anticipated by the disclosure of Capasso. Claim 2 stands rejected under 35 U.S.C. § 103 as being unpatentable over the teachings of

Capasso in view of Ando<sup>2</sup>. Finally, claims 4 and 11 stand rejected under 35 U.S.C. § 103 as being unpatentable over the teachings of Capasso in view of Potter.

Rather than repeat the arguments of appellants or the examiner, we make reference to the briefs and the answer for the respective details thereof.

### 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 prior art rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, the 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.

It is our view, after consideration of the record before us, that claims 6-10 recite the invention in a manner that complies with the second paragraph of 35 U.S.C. § 112. We are also of the view that the invention as recited in claims 1, 3, 5 and 6 is fully met by the disclosure of Capasso. Finally, it is our view that the collective evidence relied upon and the level of skill in the particular art would have suggested to one of ordinary skill in the art the obviousness of the invention as set forth in claims 2, 4 and 11. Accordingly, we affirm-in-part.

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<sup>2</sup> Our understanding of Ando is based on a translation of the document provided by the Translations Branch of the Scientific and Technical Information Center of the Patent and Trademark Office. A copy of this translation is being provided with this decision.

We consider first the rejection of claims 6-10 as not being in compliance with the second paragraph of 35 U.S.C. § 112. According to the examiner, the phrases “a cross-sectional area” and “said cross-sectional area” are not clear because such terms usually imply a vertical cross section whereas the cross section in appellants’ invention is clearly in the horizontal direction [answer, page 3]. Appellants respond that the rejection is improper because the subject matter embraced by the claims is clear [brief, page 4; reply brief, page 3].

A claim must set out and circumscribe a particular area with a reasonable degree of precision and particularity when read in light of the disclosure as it would be by the artisan. In re Moore, 439 F.2d 1232, 1235, 169 USPQ 236, 238 (CCPA 1971); In re Johnson, 558 F.2d 1008, 1015, 194 USPQ 187, 193 (CCPA 1977). Acceptability of the claim language depends on whether one of ordinary skill in the art would understand what is claimed in light of the specification. Seattle Box Co., v. Industrial Crating & Packing, Inc., 731 F.2d 818, 826, 221 USPQ 568, 574 (Fed. Cir. 1984).

When the claims are considered in light of the specification, the direction in which the cross section of claims 6-10 is taken would be clearly apparent to the artisan. In fact, the examiner recognizes the cross-sectional direction recited in these claims, but the examiner believes that a cross section should be taken only in the vertical direction. We see no reason why the clearly recited claimed cross section of the device, which clearly is taken between layers of the device, does not appropriately apprise those persons skilled in the art of the scope of the claimed invention. Since the scope of the subject matter

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covered by claims 6-10 is clear, we do not sustain the rejection of these claims under 35 U.S.C. § 112.

We now consider the rejection of claims 1, 3, 5 and 6 under 35 U.S.C. § 102(b) as being anticipated by the disclosure of Capasso. These claims stand or fall together [brief, pages 2 and 3]. 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.); cert. dismissed, 468 U.S. 1228 (1984); W.L. Gore and Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

With respect to independent claim 1, the examiner refers to Figures 1, 3 and 4 of Capasso and the corresponding description in the patent to support the anticipation of claim 1 [answer, page 4]. Appellants argue that Capasso discloses a three-terminal device while claim 1 recites a two-terminal device comprising at least two parallel resonant tunneling diodes(RTDs) [brief, page 3]. The examiner replies that claim 1 does not include a limitation that the device is a two-terminal device [answer, page 8]. Finally, appellants respond that all diodes are two-terminal

devices so that a recitation of this feature is not necessary [reply brief, page 2]. We find ourselves in agreement with the examiner's position.

Claim 1 recites two RTDs in parallel preceded by a preamble of "[a] multiple peak resonant tunneling diode device comprising:" [note copy of claim 1 above]. This preamble adds nothing structural to the parallel RTDs recited in the body of the claim. Capasso clearly teaches two RTDs connected in parallel. In fact, Capasso clearly describes the functionality of his device as being two RTDs in parallel [note column 4, lines 43-46 and column 5, lines 6-8]. It does not matter what appellants call their device since the elements recited in the body of the claim are clearly disclosed by Capasso. In other words, an old combination of elements cannot be made patentable by simply giving the combination a new name. The two diodes recited in claim 1 are clearly present in the Capasso device.

We also agree with the examiner that there is nothing in the preamble of claim 1 which requires that the device have only two terminals. Although appellants argue that a diode has only two terminals, this limitation does not extend to a diode device. Each of the RTDs in Capasso has two terminals just as in appellants' invention. When a plurality of these two-terminal diodes are interconnected to generate a multiple peak output function, there is no requirement that the

completed device be limited to only two terminals. Appellants are unjustifiably reading their own preferred embodiment into the claim. It should also be noted that a claimed recitation of two terminals can be anticipated by a disclosure of more than two terminals since a small claimed number is encompassed by a disclosed larger number.

Thus, we agree with the examiner that appellants' arguments are not commensurate in scope with the recitations of the claims. We conclude that the invention as recited in claim 1 is fully met by the disclosure of Capasso. Therefore, we sustain the rejection of claims 1, 3, 5 and 6 under 35 U.S.C. § 102.

We now consider the rejection of claim 2 under 35 U.S.C. § 103 as being unpatentable over Capasso in view of Ando. The examiner has pointed out what each of the prior art references teaches, has pointed out the differences between the prior art and the claimed invention, and has reasonably indicated how and why these references would have been modified and/or combined to arrive at the claimed invention [answer, pages 5-6]. The examiner has, therefore, at least satisfied his burden of presenting a prima facie case of obviousness. See In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). The burden is, therefore, upon appellants to come forward with evidence or arguments which persuasively rebut the examiner's prima facie case of obviousness.

Although claim 2 was rejected on different prior art than claim 1, appellants rely on the patentability of claim 1 as the sole basis to overturn the examiner's rejection of claim 2. Since we were not persuaded by appellants' arguments with respect to claim 1, we also are not persuaded by this argument with respect to claim 2. Therefore, we sustain the rejection of claim 2 under 35 U.S.C. § 103.

We now consider the rejection of claims 4 and 11 under 35 U.S.C. § 103 as being unpatentable over Capasso in view of Potter. The examiner has again established a prima facie case of the obviousness of these claims [answer, pages 6-7]. Appellants again rely on the patentability of claim 1 as the only basis to overturn the examiner's rejection of these claims. Therefore, for the same reasons discussed above with respect to claim 2, appellants' arguments are not persuasive of error in the examiner's position. Accordingly, we sustain the rejection of claims 4 and 11 under 35 U.S.C. § 103.

In conclusion, we have sustained each of the examiner's rejections of the claims on prior art, but we have not sustained the rejection under the second paragraph of 35 U.S.C. § 112. Therefore, the decision of the examiner rejecting claims 1-11 is affirmed-in-part.

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

**AFFIRMED-IN-PART**

JAMES D. THOMAS	)	
Administrative Patent Judge	)	
	)	
	)	BOARD OF PATENT
	)	APPEALS AND
ERROL A. KRASS	)	INTERFERENCES
Administrative Patent Judge	)	
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JERRY SMITH	)	
Administrative Patent Judge	)	

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