

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 46

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte ALAN C. SEABAUGH

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Appeal No. 1998-1099  
Application No. 08/263,180

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ON BRIEF

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Before HAIRSTON, FLEMING, and BLANKENSHIP, Administrative Patent Judges.

HAIRSTON, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 79 and 81. Claims 80 and 82 are objected to as being dependent upon a rejected base claim, but would be allowable over the prior art of record if rewritten in independent form including

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all of the limitations of the base claim and any intervening claims.

The disclosed invention relates to a hot carrier transistor.

Claim 79 is the only independent claim on appeal, and it reads as follows:

79. A hot carrier transistor, comprising:

(a) an emitter;

(b) a base;

(c) a collector, said collector forming a heterojunction with said base; and

(d) an injector connected between said emitter and said base, said injector including tunneling barriers with bandgap larger than the bandgaps of said emitter and of said base and also including a quantum well between said tunneling barriers with a portion having a bandgap smaller than the bandgaps of said emitter and of said base.

The reference relied on by the examiner is:

Yokoyama  
1987

4,712,121

Dec. 8,

Claims 79 and 81 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Yokoyama or, in the alternative, under 35 U.S.C. § 103 as being unpatentable over Yokoyama.

Reference is made to the brief and the answer for the respective positions of the appellant and the examiner.

OPINION

The 35 U.S.C. § 102(b)/35 U.S.C. § 103 rejections of claims 79 and 81 are reversed.

The examiner has directed our attention to Figure 13 of Yokoyama for a teaching that either anticipates or would have rendered obvious the claimed invention (Answer, page 3).

Figure 13 of Yokoyama is a conduction-energy-band diagram for a hot electron transistor device (column 2, lines 45 through 47). The figure clearly shows that the transistor has an emitter, a base, and a collector. The same holds true for an injector connected between the emitter and the base. The injector includes tunneling barriers 19A1 and 19A2 with bandgap larger than the bandgaps of the emitter and the base. The injector also includes a quantum well 19B between the tunneling barriers with a portion (i.e., the lowermost area of the quantum well) having a bandgap smaller than the bandgap of the emitter. The bandgap of the noted portion of the quantum well is not, however, smaller than the bandgap of the base. Thus, we agree with appellant's argument (Brief, page 4) that Yokoyama neither teaches nor would have suggested "the claim

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79 limitation of the quantum well portion with a bandgap  
smaller than that of both the emitter and base.”

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DECISION

The decision of the examiner rejecting claims 79 and 81  
under 35 U.S.C. § 102(b)/35 U.S.C. § 103 is reversed.

REVERSED

|        |                             |   |               |
|--------|-----------------------------|---|---------------|
|        | Kenneth W. Hairston         | ) |               |
|        | Administrative Patent Judge | ) |               |
|        |                             | ) |               |
|        |                             | ) |               |
|        |                             | ) |               |
|        | Michael R. Fleming          | ) | BOARD OF      |
| PATENT |                             | ) |               |
|        | Administrative Patent Judge | ) | APPEALS AND   |
|        |                             | ) | INTERFERENCES |
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|        |                             | ) |               |
|        | Howard B. Blankenship       | ) |               |
|        | Administrative Patent Judge | ) |               |

KWH:tdl

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