

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte WILLIAM UEI-CHUNG LIU

Appeal No. 96-0019
Application 08/150,742¹

ON BRIEF

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

JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

¹ Application for patent filed November 12, 1993. According to the appellant, this application is a continuation of Application 07/891,315, filed May 29, 1992.

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This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's rejection of claims 24-28. Claims 1-23 have been cancelled. Claims 29-37 have been indicated by the examiner as being allowable.

The claimed invention pertains to a transistor having a plurality of active regions arranged around a central active region. The spacing between active regions is changed as the active regions move away from the central region. The change in spacing is said to modify the temperature distribution at the transistor junctions so that a more uniform temperature can be maintained across the entire transistor.

Representative claim 24 is reproduced as follows:

24. A transistor comprising a plurality of sets of active regions arranged about a central active region, wherein at least two of said sets lie at unequal intervals from said central active region, and further wherein the interval between a set nearest said central region and said central region is approximately 50% larger than the interval between said nearest set and a set next-nearest to said central active region.

The examiner relies on the following references:

Fukino	3,704,398	Nov. 28, 1972
Alderstein	4,939,562	July 03, 1990

Claims 24-28 stand rejected under 35 U.S.C. § 103. As evidence of obviousness the examiner offers Fukino in view of Alderstein.

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

OPINION

We have carefully considered the subject matter on appeal, the rejection advanced by the examiner and the evidence of obviousness relied upon by the examiner as support for the rejection. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellant's arguments set forth in the brief along with the examiner's rationale in support of the rejection and arguments in rebuttal set forth in the examiner's answer.

It is our view, after consideration of the record before us, 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 24-28. Accordingly, we affirm.

Appellant has nominally indicated that the claims on appeal stand or fall together in a single group [brief, page 3]. However, appellant has made separate comments directed to the dependent claims. The extent of appellant's arguments is to

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simply indicate what is recited in the dependent claims without providing any analysis as to why the added limitations patentably distinguish over the applied prior art. Simply pointing out what a claim requires with no attempt to point out how the claim patentably distinguishes over the prior art does not amount to a separate argument for patentability. In re Nielson, 816 F.2d 1567, 1572, 2 USPQ2d 1525, 1528 (Fed. Cir. 1987). Since appellant has failed to appropriately argue the separate patentability of the dependent claims, these claims will stand or fall with the independent claim from which they depend. See In re King, 801 F.2d 1324, 1325, 231 USPQ 136, 137 (Fed. Cir. 1986); In re Sernaker, 702 F.2d 989, 991, 217 USPQ 1, 3 (Fed. Cir. 1983). Accordingly, we will consider the rejection against claim 24 as representative of all the claims on appeal.

With respect to independent claim 24, the examiner cites Fukino as a teaching in the same art to solve the same problem disclosed by appellant. Specifically, Fukino notes that power transistors of the type disclosed and claimed by appellant require large emitter and collector junction areas, and the prior art has addressed this problem by dividing the emitter junction into a plurality of divided active areas [column 1, lines 19-27]. Fukino also notes that when these emitter areas are spaced

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equidistantly apart, the temperature distribution across the active areas is not equal [Id., lines 38-49]. It is the purpose of Fukino to adjust the interval between adjacent emitter junction segments so as to create a substantially uniform junction temperature across the entire transistor.

Although claim 24 does not recite any details regarding the materials of the transistor, the examiner has cited Alderstein to demonstrate that a heterojunction power transistor of the type disclosed by appellant was known in the art. In other words, it is the position of the examiner that Alderstein teaches the prior art transistor before appellant's modification in which the emitter junctions are located at equal intervals from each other. The examiner concludes that it would have been obvious to the artisan to space adjacent emitter junctions at the claimed interval in order to equalize the temperature distribution along the entire transistor [answer, page 3].

Appellant argues that Fukino gives a numerical example of his spacing in which the interval nearest the central region is only 5% larger than the next-nearest interval to the central region. Appellant asserts that the difference between a 5% spacing arrangement and a 50% spacing arrangement is more than a

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mere selection of optimum values and is unobvious [brief, pages 3-4].

The examiner responds that the differences in materials used by appellant and Fukino account for the differences in intervals used, and the artisan would have found appellant's intervals obvious in equalizing temperatures for appellant's prior art transistor [answer, page 3].

We agree with the position taken by the examiner. The artisan would have appreciated that the temperature distribution in a plural emitter junction transistor is affected by all the materials used and by all the dimensions of the various layers. That is, different semiconductor materials, insulating materials and metallic materials have different thermal conductivities and would, therefore, have an effect on the temperature distribution of the transistor. Likewise, the dimensions chosen for the various layers would affect the temperature distribution. Finally, the range of currents for which the transistor was designed would dictate the amounts of heat which would have to be accounted for. All these factors would be taken into account in determining the optimum spacing as taught by Fukino.

Alderstein teaches that transistors constructed of the materials disclosed by appellant were known devices in the prior

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art. Fukino would have suggested to the artisan that the equal emitter junction intervals of Alderstein should be varied in the manner suggested by Fukino so as to equalize the temperature distribution along the entire transistor. The question is whether the claimed 50% interval change would have been obvious to the artisan within the meaning of 35 U.S.C. § 103.

Fukino teaches that the intervals should be adjusted "by means of calculation so that all the collector junctions on the whole surface will exhibit substantially a uniform temperature rise" [column 3, lines 50-52]. Thus, Fukino is attempting to achieve the very same result disclosed by appellant which is to generate a uniform temperature across the transistor. In our view, once a power transistor having specific materials and dimensions exists, the calculation to equalize temperature distribution along the various junctions is straightforward and generally yields a single solution. Thus, we agree with the examiner that the intervals in Fukino differ from the claimed intervals only because they do not involve the exact same transistor. The calculation of the intervals could probably produce just about any result depending on the configuration and dimensions of the Alderstein transistor which is to be modified according to the teachings of Fukino.

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If appellant's claimed intervals equalize temperature distribution as disclosed, and if Fukino's intervals equalize temperature distribution as taught therein, one must conclude that the differences only result from the fact that the Fukino transistor is different from appellant's transistor. Therefore, we are of the view that if appellant's heterojunction transistor with equal junction intervals existed in the prior art, the claimed interval modifications to equalize temperature would have been compelled by the calculations suggested by Fukino. Since all the evidence in this case supports the position that the transistor with equal junction intervals existed in the prior art, we conclude that the claimed intervals for this particular prior art transistor would have been obvious to the artisan when trying to equalize the junction temperatures of this transistor.

For all the reasons just discussed, we sustain the examiner's rejection of independent claim 24. Since dependent claims 25-28 stand or fall with claim 24, supra, we also sustain the rejection of these claims. Accordingly, the decision of the examiner rejecting claims 24-28 is affirmed.

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

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AFFIRMED

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ERROL A. KRASS)	
Administrative Patent Judge)	
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