

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(2) is not binding precedent of the Board.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. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte PAUL KLOCEK

Appeal No. 96-0175
Application 07/977,388¹

ON BRIEF

Before KIMLIN, JOHN D. SMITH and WARREN, *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

Decision on Appeal and Opinion

This is an appeal under 35 U.S.C. § 134 from the decision of the examiner refusing to allow claims 1 through 27 as amended subsequent to the final rejection.² Claims 28 through 33, also of record, stand withdrawn from consideration under 37 CFR § 1.142(b).

We have carefully considered the record before us, and based thereon, find that we cannot sustain the ground of rejection of claims 25 through 27 under 35 U.S.C. § 112, first paragraph,

¹ Application for patent filed November 17, 1992. According to appellants, this application is a continuation-in-part of application 07/748,602, filed August 22, 1991, now abandoned.

² Amendment of March 31, 1994 (Paper No. 5).

enablement (answer, pages 3 and 6-7). It is well settled that under § 112, first paragraph, the examiner has the burden of providing a reasonable explanation, supported by the record as a whole, why the assertions as to the scope of objective enablement set forth in the specification are in doubt, including reasons why the description of the invention in the specification would not have enabled one of ordinary skill in this art to practice the claimed invention without undue experimentation, in order to establish a *prima facie* case under the enablement requirement of the first paragraph of § 112. *In re Wright*, 999 F.2d 1557, 1561, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993); *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988); *In re Strahilevitz*, 668 F.2d 1229, 1232, 212 USPQ 561, 563 (CCPA 1982); *In re Angstadt*, 537 F.2d 498, 504, 190 USPQ 214, 219 (CCPA 1976) (“[T]he PTO has the burden of giving reasons, supported by the record as a whole, why the specification is not enabling. *In re Armbruster*, 512 F.2d 676, 185 USPQ 152 (CCPA 1975). Showing that the disclosure entails *undue* experimentation is part of the PTO’s initial burden under *Armbruster*”); *In re Geerdes*, 491 F.2d 1260, 1264, 180 USPQ 789, 793 (CCPA 1974); *In re Marzocchi*, 439 F.2d 220, 223-24, 169 USPQ 367, 369-70 (CCPA 1971). Thus, in order to make out a *prima facie* case under this section of the statute, more is required than the allegation that the “specification refers to an abrupt change of 1 mm only in the case of gallium arsenide not the broadly claimed semiconductors” (answer, page 2). Accordingly, since the examiner has failed to provide any explanation based on the record as a whole why the objective enablement set forth in the specification is in doubt and would not have enabled one of ordinary skill in this art to practice the claimed invention without undue experimentation, he has failed to establish a *prima facie* case under the enablement requirement of the first paragraph of § 112.

We will also not sustain the ground of rejection under 35 U.S.C. § 102 (answer, pages 4 and 7-8) or the grounds of rejection under 35 U.S.C. § 103 (answer, pages 5-6 and 8-9), all of which are based on *Chang et al.*³ The claims on appeal, as represented by claim 1, are drawn to a composition comprising at least a doped bulk semiconductor material which has at least the specified structural

³ The references relied on by the examiner are listed at page 2 of the answer. A discussion of *Willardson et al.* is not necessary to our decision.

characteristics and demonstrates “an abrupt change from electrically conductive to electrically insulative on opposing sides of an interface.” Although not reflected in any claim limitations, appellant does disclose that the doped bulk semiconductor material with the required characteristics can be prepared in a multi-zone furnace in a manner resulting in said material having “essentially two layers” (specification, e.g., pages 5-6, 6-7 and 13-14).

The examiner finds that Chang et al. “teaches a bulk composite of a semiconductor material with a varying shallow dopant profile . . . [that has] progressively increasing concentration from one surface to another” and that “[t]his change *inherently* changes the electrical properties of the crystal from conductive to resistive, note section 4.2” (answer, page 4; emphasis supplied). In response to appellant’s contention that Chang et al. does not teach or suggest doped bulk semiconductor material having the “structure” or “function” characteristics required by the claims (principal brief, pages 5-6), the examiner states that Chang et al. does teach a doped bulk semiconductor material having “an abrupt change of the concentration of the dopant across an interface in the crystal . . . [which] would inherently change the electrical property from conductive to insulating on different sides” (answer, page 7). The examiner relies on “section 4.2 and figure 9” of Chang et al as showing “an abrupt change” in the “dopant profile across the crystal” at a “Rayleigh number (Ra) [of] 10^3 ” (answer, page 7). Appellant points out in his reply brief that the “claims do not require an abrupt change in the dopant concentration across an interface or anywhere else” and that Chang et al. do not “mention that there is an abrupt change from electrically insulating to electrically conducting across an interface” (pages 4-5).

The burden is upon the examiner to establish a reasonable factual basis to support his contention that the doped bulk semiconductor materials of Chang et al. are *identical* to the doped bulk semiconductor material of appealed claim 1 in order to make out a *prima facie* case of anticipation under § 102, and to support his further contention that the claimed doped bulk semiconductor material was *prima facie* obvious under § 103 over the teachings of the reference. *See generally, In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990); *In re Best*, 562 F.2d 1252, 1254-56, 195 USPQ 430, 432-34 (CCPA 1977). In order to carry this burden in the case before us, the examiner must provide in the record evidence and/or scientific reasoning establishing that the prior

art processes taught in Chang et al. indeed produced the claimed doped bulk semiconductor material, as the mere possibility or probability that such a result may be inherent in the processes of this references is not sufficient. *See In re Oelrich*, 666 F.2d 578, 581, 212 USPQ 323, 326 (CCPA 1981); *Ex parte Levy*, 17 USPQ2d 1461, 1462-64 (Bd. Pat. App. & Int. 1990), and cases cited therein; *Ex parte Skinner*, 2 USPQ2d 1788, 1788-89 (Bd. Pat. App. & Int. 1986).

We must agree with appellant that the examiner has failed to identify any teaching or teachings in Chang et al. which would provide a reasonable factual basis supporting his position. Indeed, the examiner has not established by evidence and/or scientific reasoning that the claimed doped bulk semiconductor material is made by the identical or substantially identical process employed by appellant to obtain doped bulk semiconductor material falling within the appealed claims or why the process disclosed in Chang et al. would have been reasonably expected to provide the claimed product. *Spada, supra*; *Best*, 562 F.2d at 1255-56, 195 USPQ at 433-34; *Levy*, 17 USPQ2d at 1464; *Skinner, supra*. We are of the opinion that the necessity for such evidence and scientific reasoning with respect to process identity or identity of product from the Chang et al. process is manifested by the disclosure in this reference that the data reported is based on “theoretical results from computer-aided analysis of the interactions of natural convection and melt/solid interface shape in setting dopant distributions in crystals grown in a vertical Bridgman system” (page 344) which “gives qualitative understanding of fluid flow and dopant segregation in actual growth systems” that can serve as a basis for further investigation (page 363).

The examiner's decision is reversed.

Reversed

EDWARD C. KIMLIN
Administrative Patent Judge

JOHN D. SMITH
Administrative Patent Judge

CHARLES F. WARREN
Administrative Patent Judge

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