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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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 24

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BOARD OF PATENT APPEALS
AND INTERFERENCES

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RICHARD S. SUSSMANN and CORNELIUS PHAAL

Appeal No. 94-0739
Application 07/819,441[1]

HEARD: November 14, 1996

Before MEISTER, ABRAMS and STAAB, *Administrative Patent Judges*.

MEISTER, *Administrative Patent Judge*.

DECISION ON APPEAL

Ricardo S. Sussmann and Cornelius Phaal (the appellants) appeal from the final rejection of claims 11, 13 and 15-19, the only claims remaining in the application.[2] We reverse.

[1] Application for patent filed January 10, 1992.

[2] Claims 11 and 13 have been amended subsequent to final rejection.

The appellants' invention pertains to a wire drawing die blank comprising a polycrystalline CVD diamond body. According to the specification

> [t]he growth process of [a] CVD diamond can be tailored to produce layers with a preferred crystallographic orientation. This orientation can, for example, be (111), (110) or (100). It is known that the wear rate is strongly dependent on the orientation of diamond. Thus, the preferred orientation can be chosen to increase the wear resistance of the diamond body. For example, for diamond layers the orientation may be such that most of the crystallites have a (111) crystallographic axis in the plane of the layer. [See page 4.]

Independent claim 11 is further illustrative of the appealed subject matter and reads as follows:

> 11. A wire drawing die blank comprising a polycrystalline CVD diamond body comprised of a layer of polycrystalline CVD diamond having a concentration of boron dopant atoms in excess of 1200ppm, wherein the orientation of the polycrystalline CVD diamond has most of the crystallites aligned with a (111) crystallographic axis in the plane of the layer, and a support to which the polycrystalline CVD diamond body is secured around its periphery.

The references relied on by the examiner are:

Schachner et al. (Schachner)	4,707,384	Nov. 17, 1987
Okuzumi et al. (Okuzumi)	4,884,476	Dec. 05, 1989
Nakamura et al. (Nakamura)	5,020,394	Jun. 04, 1991
Phaal et al. (Phaal)	5,033,334	Jul. 23, 1991

Hirabayashi et al., "Triangular Structures on (111) Surfaces of Diamond Crystals Synthesized by the Hot-Filament CVD Method" Japanese Journal of Applied Physics, Volume 29, No. 10, October 1990, pp. L1901-L1903 (Hirabayashi).

Claims 11, 13 and 15-19 are rejected under 35 U.S.C. § 103 as being unpatentable over Phaal in view of either Okuzumi or Nakamura and Schachner. It is the examiner's position that:

> Phaal et al teaches using a braze or mechanical means to hold a diamond wire in a support (abstract). Okuzumi et al (abstract) and Nakamura et al (abstract) both teach diamond bodies formed by CVD on a substrate that is removed after the diamond formation. Schachner et al teaches the use of boron to improve CVD diamond in tools (column 5, lines 1-10, column 5, lines 40-50, example 8, claim 11). The instant invention claims a CVD diamond wire die with dopant boron and most of the crystallites aligned with a (1,1,1) axis. It would have been obvious to one of ordinary skill in the art to form a diamond wire die by CVD for the support of Phaal et al in order to eliminate sintering because of the teachings of Okuzumi et al or Nakamura et al.... It further would have been obvious to one of ordinary skill in the art to use boron in the diamond of Phaal et al as modified above in order to improve the diamond tool life because of the teachings of Schachner et al. The type of diamond produced by the processes of Okuzumi et al and Nakamura et al is [a] diamond with mostly (1,1,1) crystallites. As evidence of this the examiner relies on the article by Hirabayashi[3] which states in the first section introduction that a cubo-octahedron is the most typical form of diamond produced

[3] We must point out that the examiner's reliance on Hirabayashi is totally improper and inappropriate since this reference is not included in the statement of the rejection. If a reference is relied upon in any capacity to support a rejection, the reference should be positively included in the statement of the rejection. See Manual of Patent Examining Procedure (M.P.E.P.) 706.02(j); *In re Hoch*, 428 F.2d 1341, 1342n.3, 166 USPQ 406, 707n.3 (CCPA 1970) and *Ex parte Raske*, 28 USPQ2d 1304-05 (BPAI 1993).

> by CVD and that this diamond has eight faces at a (1,1,1) orientation for every six faces at a (1,0,0) orientation. [See answer, pages 3 and 4.]

We will not support the examiner's position. It is true Phaal teaches that wire drawing dies having diamond bodies may be secured to a support by brazing and Schachner teaches a wire drawing die which includes a polycrystalline diamond "body" (see the sentence bridging columns 6 and 7) that is formed by a CVD process. We also agree with the examiner that Schachner fairly suggests his polycrystalline diamond body may include boron dopant atoms in order to improve the properties of the diamond body. We cannot, however, agree with the examiner that there is anything in the combined teachings of Phaal, Okuzumi, Nakamura and Schachner which would suggest that the polycrystalline CVD diamond have "**most** of the crystallites aligned "**with a (111) crystallographic axis in the plane of the layer**" (emphasis ours) as independent claim 11 expressly sets forth. With respect to this limitation, the appellants' specification states that

> [t]he orientation of the diamond in the polycrystalline CVD diamond layer 10 may be such that most of the crystallites have a (111) crystallographic axis in the plane, i.e. **parallel** to the surfaces 14, 16 of the layer 10. [See page 6, emphasis ours.]

Thus, when read in light of the specification,[4] it is readily apparent that the above noted limitation in claim 11 requires that one of the faces at a 111 orientation on most of crystallites must be parallel to the surfaces 14, 16 of the layer 10.

The examiner apparently believes that the limitation in question is satisfied because (1) the cubo-octahedron is the most "typical" form of diamond produced by CVD and (2) this diamond has eight faces at a 111 orientation for every six faces at a 100 orientation. However, it simply does not follow from these facts alone that **most** of the crystallites will be aligned in such a manner that **one of the faces** at the 111 orientation will in fact be **in the plane of the layer** as claimed. Indeed, depending upon the orientation of crystallites, one of the faces at the 100 orientation on most of the crystallites could just as well be "in the plane of the layer." This being the case, we will not sustain the examiner's rejection of the appealed claims under 35 U.S.C. § 103.

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[4] Terms in a claim should be interpreted in a manner consistent with the specification and construed as those skilled in the art would construe them (*see In re Bond*, 910 F.2d 831, 833, 15 USPQ2d 1566, 1567 (Fed. Cir. 1990), *Specialty Composites v. Cabot Corp.*, 845 F.2d 981, 986, 6 USPQ2d 1601, 1604 (Fed. Cir. 1988) and *In re Sneed*, 710 F.2d 1544, 1548, 218 USPQ 385, 388 (Fed. Cir. 1983)).

The decision of the examiner is reversed.

REVERSED

JAMES M. MEISTER Administrative Patent Judge	BOARD OF PATENT APPEALS AND INTERFERENCES
NEAL E. ABRAMS Administrative Patent Judge	
LAWRENCE J. STAAB Administrative Patent Judge	

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