

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 25

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JOHN L. WHITE

Appeal No. 94-3737
Application 07/796,932¹

ON BRIEF

Before KIMLIN, WEIFFENBACH and PAK, Administrative Patent Judges.
KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-20, all the claims in the present application. Claim 1 is illustrative:

1. In a process for the production of synthetic diamonds wherein silicon carbide as the sole non-diamondaceous source of carbon is heated at superatmospheric pressure while in the diamond-stable region of the pressure-temperature diamond-graphite phase diagram for carbon under conditions which

¹ Application for patent filed November 25, 1991. According to appellant, this application is a continuation-in-part of Application 07/611,792, filed November 13, 1990, now abandoned.

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separates the silicon atoms of the silicon carbide from the carbon atoms thereof and the carbon atoms are converted to synthetic diamond, the thus-produced synthetic diamond is cooled to ambient temperature while it is maintained in the diamond stable region of the diamond graphite phase diagram; and the thus-produced synthetic diamond is isolated from the reaction product; the improvement which comprises heating the silicon carbide to a temperature of up to 1,200°C but below the temperature at which a non-diamondaceous form of elemental carbon is converted to synthetic diamond under the conditions employed, in a matrix which contains a reactant which chemically reacts selectively with the silicon atoms of the silicon carbide and which forms a frangible reaction product when cooled, whereby the carbon atoms which are thus separated from the silicon carbide are converted to synthetic diamond at a temperature below that required to convert elemental carbon to synthetic diamond under the conditions employed; and isolating the synthetic diamond from the frangible reaction product by physical means.

In the rejection of the appealed claims, the examiner relies upon the following references:

Jurewicz et al. (Jurewicz)	5,128,080	July 7, 1992 (filed Aug. 30, 1990)
Shipton (Great Britain patent specification)	971,943	Oct. 7, 1964

Appellant's claimed invention is directed to a process for producing synthetic diamonds which comprises heating silicon carbide in a matrix which contains a material that chemically reacts with the silicon atoms of the silicon carbide. The reacting material can be, inter alia, a metal oxide, a metal salt or a metal hydroxide.

Page 1 of appellant's specification acknowledges that a commercial method developed in the 1950s by General Electric

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Company is employed by the prior art for synthesizing diamonds from, as a starting material, a non-diamondaceous form of elemental carbon. According to appellant, this commercial method employs ultra high temperature and ultra high pressure.

Appellant states at page 4 of the specification that an essential aspect of the present invention is that the disassociation of the silicon carbide is performed in the absence of other sources of non-diamondaceous elemental carbon, which distinguishes appellant's process dramatically from those in which a source of non-diamondaceous form of elemental carbon is essential to the process. We are told that the General Electric process and another patented process require both silicon carbide and a fluorocarbon, whereas still another patented process employs amorphous carbon in combination with silicon carbide. According to page 5 of the specification, "[t]he process of this invention is conducted at a temperature/pressure relationship below that required to convert non-diamondaceous elemental carbon, i.e., amorphous carbon or graphite, to the diamond form."

Appealed claims 1-20 stand finally rejected under 35 U.S.C. § 112, first paragraph, as being based upon a specification that is objected to by the examiner. Appealed claims 1-20 also stand finally rejected under 35 U.S.C. § 112, first and second paragraphs. In addition, claims 1-4 and 14-16 stand finally

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rejected under 35 U.S.C. § 103 as being unpatentable over Shipton.

Upon careful consideration of the opposing arguments presented on appeal, we will not sustain the examiner's rejections for essentially those reasons expressed by appellant.

We consider first the examiner's rejection of the appealed claims under 35 U.S.C. § 112, first paragraph, as being based upon an objectionable specification. The examiner finds confusion "as to when 'elemental carbon' intends to be 'graphite' versus 'carbon atoms'" (page 4 of Answer). However, page 5 of the specification, lines 8-11, defines non-diamondaceous elemental carbon as amorphous carbon or graphite, whereas the nascent carbon atoms described at page 8 of specification, line 7, are those "carbon atoms" that are formed into diamond by appellant's process.

Regarding the examiner's objection that the specification does not give "examples of materials which can be used at 800EC or less," appellant correctly points out that not all embodiments of a disclosed invention need be exemplified to satisfy § 112, first paragraph.

We do not understand the examiner's objection that "Example 1 does not illustrate the invention as originally filed since it is at 1200EC not below it" (page 4 of Answer). As noted by

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appellant, Example 1, which performs the process at 1200EC, is part of the original specification. We also agree with appellant that it is clear from the present specification that Examples 3-14 form synthetic diamond as a product.

We also do not agree with the examiner that the language "superatmospheric pressure" of claim 1 is not supported by the original specification since the language "encompasses pressures slightly above atmospheric which are clearly not contemplated" by appellant (page 4 of Answer). It is well settled that claim language should not be read in a vacuum but in light of the accompanying specification and state of the prior art. Since it is clear to the examiner, upon reading appellant's specification, that pressures slightly above atmospheric are not part of the disclosed invention, it is reasonable to conclude that one of ordinary skill in the art would not interpret "superatmospheric pressure" of claim 1 as including pressure slightly above atmospheric. It must be borne in mind that it is not the function of the claims to specifically exclude possible inoperable embodiments. In re Dinh-Nguyen, 492 F.2d 856, 858-59, 181 USPQ 46, 48 (CCPA 1974). See also In re Kamal, 398 F.2d 867, 872, 158 USPQ 320, 324 (CCPA 1968) and In re Sarett, 327 F.2d 1005, 1019, 140 USPQ 474, 486 (CCPA 1964).

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We now turn to the rejection of the appealed claims under 35 U.S.C. § 112, first and second paragraphs. According to the examiner, "the claimed invention is not described in such full, clear, concise and exact terms as to enable any person skilled in the art to make and use the same, and/or for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention" (page 5 of Answer). According to the examiner, appellant's specification does not enable one of ordinary skill in the art to make a diamond because, in the words of the examiner, "the carbon separated from the SiC is nascent atomic ('elemental') carbon and claim 1 states that the temperature is not sufficiently high to permit diamond formation from 'non-diamondaceous form of elemental carbon' (which clearly describes nascent carbon atoms)" (page 5 of Answer). We can understand the examiner's criticism if claim 1 on appeal is not read in light of the specification. However, the specification discloses that the "non-diamondaceous form of elemental carbon" that is not synthesized into diamond at the claimed temperature is amorphous carbon or graphite (page 5 of specification, lines 8-11). On the other hand, the form of elemental carbon that is transformed into diamond by the claimed process is the nascent atomic carbon resulting from the reaction of silicon carbide and the reactant (page 8 of specification,

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lines 5 et seq.). Although the examiner states "[t]he claims require diamond formation but from a specie which is not elemental carbon" (page 7 of Answer), the appealed claims, taken as a whole in light of the specification, would be understood by one of ordinary skill in the art as a process for synthesizing diamond from nascent carbon atoms at conditions of temperature and pressure that do not convert amorphous carbon or graphite ("elemental carbon") to diamond.

Finally, we consider the examiner's rejection of claims 1-4 and 14-16 under 35 U.S.C. § 103 as being unpatentable over Shipton. In essence, it is the examiner's position that since the reaction steps for preparing mineral active carbons disclosed by Shipton are substantially the same as the claimed process steps, diamond will be formed by the Shipton process "to the extent that it forms in the instant process" (page 6 of Answer). According to the examiner, the combination of silicon carbide and chlorine gas, Shipton's reactants, meets the claim requirement of a "matrix."

There are two basic flaws in the examiner's reasoning. First, the claimed matrix, as defined in the specification, does not include a combination of silicon carbide and chlorine gas. While page 5 of the specification teaches that chlorine gas or hydrogen chloride can be employed as a reactant for silicon

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carbide, the specification teaches that the matrix material is selected from metals, metal oxides, metal hydroxides, etc. (see pages 5 and 6). Secondly, there is no question that Shipton fails to disclose, suggest or even hint that the disclosed process produces diamond, an express requirement of the appealed claims. Shipton specifically discloses that the process produces a carbon residue which, upon dechlorination, is a highly adsorbent active carbon (page 1, lines 51-57). We appreciate that it is a well-settled principle of patent jurisprudence that when a claimed process appears to be substantially the same as a process disclosed by the prior art, the burden is properly upon the applicant to prove that the product of the prior art process does not necessarily or inherently possess characteristics attributed to the product of the claimed process. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). Here, however, we do not have the situation where the process of the prior art is substantially the same as the claimed process, and Shipton is not silent with respect to a property of the product that is claimed by appellant. Shipton describes the properties and characteristics of the product of the disclosed process, and they are surely not diamondaceous.

It is implicit in the examiner's rejections that the examiner believes that appellant's process is inoperable for

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synthesizing diamond. However, it is axiomatic that the Patent and Trademark Office must accept the objective truth of statements in a specification in the absence of compelling evidence or scientific reasoning to the contrary. In re Marzocchi, 439 F.2d 220, 224, 169 USPQ 367, 370 (CCPA 1971). Such evidence or reasoning is lacking in the Examiner's Answer.

In conclusion, based on the foregoing, the examiner's decision rejecting the appealed claims is reversed.

REVERSED

EDWARD C. KIMLIN)	
Administrative Patent Judge)	
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CAMERON WEIFFENBACH)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
)	INTERFERENCES
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