

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 11

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte THOMAS M. MATVIYA AND RICHARD A. HAYDEN

Appeal No. 1997-1536
Application 08/342,817¹

ON BRIEF

Before METZ, LIEBERMAN and SPIEGEL, Administrative Patent Judges.

METZ, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the examiner's refusal to allow claims 1 through 11, all the claims remaining in this application.

THE INVENTION

¹ Application for patent filed November 21, 1994.

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The claimed invention is directed a process for preparing a carbonaceous char from bituminous coal or a bituminous material wherein a carbonized and oxidized bituminous coal or bituminous material is contacted with a nitrogen-containing material such as urea and at least one of sucrose or fructose and contacting the nitrogen and sucrose or fructose treated material at a temperature above 700EC to provide a carbonaceous char. According to appellants, the carbonaceous char so-produced possesses catalytic activity.

Claims 1 and 10 are believed to be adequately representative of the appealed subject matter and are reproduced below for a more facile understanding of appellants' invention.

Claim 1. A process for the manufacture of a carbonaceous char which comprises the steps of:

a. carbonizing a bituminous coal or a bituminous material at temperatures below 700EC;

b. oxidizing said carbonized bituminous coal or bituminous material at temperatures below 700EC during or after said carbonization,

c. contacting the carbonized and oxidized bituminous coal or bituminous material with a nitrogen-containing compound and at least one of sucrose or fructose and, during or after said contacting, increasing

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the temperature to above 700EC, to provide said carbonaceous char.

Claim 10. The carbonaceous char prepared by the process of claim 1.

THE REJECTIONS

Claim 5 stands rejected under 35 U.S.C. § 112, second paragraph. Claims 1 through 11 stand rejected under 35 U.S.C. § 103 as being unpatentable from the disclosure of Hayden considered with Bearden, Jr., et al. Claims 10 and 11 stand rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103 as being obvious over Marten. Claims 1 through 11 stand rejected under the judicially created doctrine of obviousness-type double patenting over claims 1 through 14 of Hayden considered with Bearden, Jr., et al. Claims 10 and 11 stand rejected under the judicially created doctrine of obviousness-type double patenting over claims 1 through 4 of Matviya et al.

OPINION

We begin our opinion by analyzing the scope and content of appellants' claims on appeal. The claims are directed to a process which "comprises" various steps. As "comprising" claims, the appealed claims do not exclude any other steps or

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ingredients, including both those disclosed but not claimed by appellants and those neither disclosed nor contemplated by appellants. In re Baxter, 656 F.2d 679, 686, 210 USPQ 795, 802 (CCPA 1981). The language "at least one" used to describe the sucrose or fructose components leaves the process open to the inclusion of either or both of sucrose or fructose. There are also no amounts or proportions recited in claim 1 for any of the components utilized in the process. Accordingly, the claims are

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not limited to any particular amount or proportion for any of the recited ingredients utilized in steps (a) through (c).

Claims 10 and 11 are claims to the carbonaceous char prepared by appellants' process and are so-called product-by-process claims. It is by now well-understood that, even though a product-by-process is defined by the process steps by which the product is made, determination of patentability is based on the product itself. In re Thorpe, 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985). As the court stated in Thorpe, 777 F.2d at 697, 227 USPQ at 966:

The patentability of a product does not depend on its method of production. ***In re Pilkington***, 411 F.2d 1345, 1348, 162 USPQ 145, 147 (CCPA 1969). If the product in a product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. (citations omitted).

Nevertheless, we are not free to ignore the process by which appellants' product is made in considering the prior art because we must consider all appellants' claim limitations in reaching our final determination of patentability.

THE REFERENCES

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The references of record which are being relied on by the examiner as evidence of lack of novelty and as evidence of obviousness are:

Bearden, Jr., et al. (Bearden)	4,604,190	August 5, 1986
Marten	4,963,513	October 16, 1990
Matviya et al. (Matviya)	5,356,849	October 16, 1994
Hayden	5,444,031	August 22, 1995 (filed January 21, 1993)

Bearden discloses catalysts useful in processes for hydroconverting carbonaceous materials such as hydrocarbonaceous oils and coal (column 1, lines 10 through 13). The catalyst is prepared by a process which comprises (a) adding a water soluble polyhydroxy compound to an aqueous solution of chromic acid (CrO_3); (b) forming a mixture of a hydrocarbon material and at least a portion of the mixture from step (a); and, (c) heating the mixture resulting from step (b) in the presence of a hydrogen sulfide-containing gas to produce a slurry comprising said hydrocarbon material and a solid chromium-containing catalyst (column 1, lines 50 through 64). Useful water soluble polyhydroxy compounds include sucrose (column 2, lines 13 through 22). The

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hydrocarbonaceous material to which the mixture of chromic acid and water soluble polyhydroxy compound may be added includes hydrocarbons boiling above 350°F (column 2, lines 23 through 44). The mixture of hydrocarbonaceous material and water soluble polyhydroxy compound are treated with hydrogen sulfide-containing gas at a temperature of from 500°F (260°C) to 1000°F (538°C) to convert the chromium catalyst precursor to a solid chromium-containing catalyst dispersed in the hydrocarbonaceous material (column 2, lines 45 through 55). The catalyst precursor may be prepared in a hydrocarbon material which is a suitable hydrocarbonaceous chargestock for the hydrocarbon conversion for which the chromium-containing catalyst is prepared for use (column 2, lines 55 through 64). When the chromium-containing catalyst is to be used for coal liquefaction and the chargestock comprises coal and a hydrocarbon diluent, the mixture of aliphatic water soluble polyhydroxy material and aqueous chromic acid may be added to the hydrocarbon diluent and converted to the solid catalyst before or after the coal is added (column 2, line 64 through column 3, line 3). Suitable hydrocarbon-containing

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carbonaceous chargestocks include coal and coal slurries in a hydrocarbon diluent. By "coal", patentees intend anthracite, bituminous, semi-bituminous, lignite and peat (column 3, line 54 through column 4, line 5).

Marten is directed to the conversion of relatively low-value coal and gypsum to valuable gas streams and solid products (column 1, lines 6 through 11). The process includes reacting coal in a coal gasification zone in the presence of oxygen and sulfur dioxide-containing atmosphere under partial coal gasification conditions to produce carbonaceous char and a crude coal gas stream (column 2, lines 5 through 9). The carbonaceous char is fed into a gypsum reactor to produce sulfur dioxide-containing gas (column 3, lines 7 through 42). The first step in the process produces carbonaceous char and a crude gas stream (column 3, lines 43 through 59; column 4, lines 45 through 52; column 6, lines 57 and 58). Suitable coals include lignite, subbituminous and bituminous (column 5, lines 1 and 2). The coal has a residence time in the oxygen-lean atmosphere of the gasifier sufficient to produce a gaseous effluent and carbonaceous char (column 5, lines 48

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through 51).

Matviya discloses stable, catalytically-active high temperature carbonaceous char capable of rapidly decomposing hydrogen peroxide in aqueous solutions (column 1, lines 5 through 8). The chars are prepared from an inexpensive and abundant nitrogen-poor feedstock such as bituminous coal or a bituminous coal-like carbonaceous material (column 2, lines 43 through 57). The feedstock material is pulverized and mixed if necessary with a small amount of a suitable binder and then extensively oxidized at temperatures less than 700EC until additional gains in catalytic activity are no longer evident (column 2, lines 58 through 65). The oxidized low temperature char is then exposed to a nitrogen-containing compound such as urea during the initial calcination, preferably between 850EC and 950EC in the presence of the nitrogen-containing compound and preferably under an inert gas (column 3, lines 1 through 18). The calcined char is then cooled in an oxygen-free or inert atmosphere to a temperature less than 400EC (column 3, lines 19 through 29).

Hayden discloses a process for the production of a

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carbonaceous char having significant catalytic properties wherein the char is produced directly from an inexpensive and abundant nitrogen-poor feedstock such as bituminous coal (column 2, lines 34 through 49). The feedstock material is pulverized and mixed, if necessary, with a binder material and then extensively oxidized with an inexpensive abundant oxidant such as air at temperatures less than 700EC until additional gains in catalytic activity of the final product are no longer evident (column 2, lines 50 through 65). The char is then exposed to an inexpensive abundant non-toxic nitrogen-containing compound such as urea during the initial calcination by heating the char to between 850EC and 950EC in the presence of the nitrogen-containing compound (column 2, line 66 through column 3, line 16). The nitrogen-treated char is then activated at temperatures above 700EC in steam and/or carbon dioxide (column 3, lines 17 through 31).

THE REJECTION UNDER 35 U.S.C. § 112

It is the examiner's position, as stated at page 3 of his Answer, that the claim terminology in claim 5 which defines the nitrogen-containing compound of claim 1 in terms of its

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"formal oxidation number" is indefinite and unclear "since the assignment of formal oxidation number can be subjective and/or arbitrary." Appellants' response to the examiner's stated position is found on page 5 of their brief wherein they urge:

Applicants contend that the assignment of formal oxidation numbers is neither subjective nor arbitrary. The assignment follows a set of self-consistent rules well known to those skilled in the chemical arts.

However, neither the examiner's stated position nor appellants' response to the examiner's position aid us in our determination of the issue raised, that is, what are the metes and bounds of claim 5.

At page 5 of their specification, appellants disclose urea as exemplary of the "inexpensive, abundant, and relatively non-toxic nitrogen-containing compound" used in the claimed process. In Example 1, urea is utilized. In Example 2, urea is utilized. In Example 3, urea was utilized. No other nitrogen-containing compounds are disclosed or even suggested by appellants. Does the claim terminology include pyridine, phenylenediamine, hydrazine, ethylenediaminetetraacetic acid or nitro benzene? We are simply left to conjecture what is intended by the terminology

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in claim 5.

Although appellants have argued that what is encompassed by claim 5 would have been understood by a person of ordinary skill in the art based on "self-consistent rules", appellants have neither directed us to where in their disclosure these rules are set forth nor the evidence which forms the basis of their argument. While it is understood that an applicant for patent may be his own lexicographer, an applicant for patent may only be his own lexicographer where the definition applicant intends for a particular claim term, especially when that definition is different from the conventional, art-recognized definition, is clearly set forth in applicant's specification. Beachcombers, Int'l Inc. v. WildeWood Creative Products, Inc. 31 F.3d 1154, 1158, 31 USPQ2d 1653 (Fed. Cir. 1994); ZMI Corp. v. Cardiac Resuscitator corp., 844 F.2d 1576, 1579, 6 USPQ2d 1557, 1560 (Fed. Cir. 1988); Envirotech Corp. v. Al George, Inc., 730 F.2d 753, 759, 221 USPQ 473, 477 (Fed. Cir. 1984). On this record, appellants have failed to adequately and clearly define what they intend by the terminology "a formal oxidation number less than 0."

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Accordingly, we affirm the rejection of claim 5.

THE REJECTIONS UNDER 35 U.S.C. §§ 102 AND 103

Although stated as separate rejections, the rejection of claims 1 through 11 under 35 U.S.C. § 103 and on the grounds of the judicially created doctrine of obviousness double patenting over Hayden considered with Bearden are founded on the same rationale. The stated rationale is that it would have been obvious to a person of ordinary skill in the art to have further included sucrose in the process disclosed by Hayden, which differs from the claimed process in not requiring sucrose or fructose in combination with urea for treating carbonaceous chars prepared from bituminous coal, because Bearden discloses "mixing a material such as sucrose and Cr with a bituminous/coal material in order to make a more effective catalyst material." See page 3 of the Answer.

The examiner has concluded that it would have been obvious to further include sucrose in Hayden's process "because doing so provides the 'carbonaceous char having catalytic activity' required by Hayden claim 1." Id. Nevertheless, nothing in Hayden teaches or suggests that the

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therein disclosed process may be improved by the further addition of sucrose, or any other material, to the urea solution used for improving the properties of the char prepared by Hayden's process. And while we disagree with appellants' interpretation of Bearden's disclosure at column 2, line 64 through column 3, line 3 (Bearden does provide for mixing the aqueous chromic acid and sucrose containing solution with a charge of coal in a hydrocarbon diluent and preparing the catalyst *in situ*), Bearden's catalyst, whatever its nature, is not described as a carbonaceous char. Additionally, while we agree appellants' claims do not exclude chromium, Bearden's chromium-containing catalyst is used in so-called "hydrocarbon conversion" processes which are hydrogenation reactions not the oxidation reactions in which appellants' catalysts are useful.

We are unable to find any factual basis in this record which supports the examiner's position for further including the sucrose of Bearden in the process of Hayden. Accordingly, we shall reverse both the rejection under 35 U.S.C. § 103 and the rejection over the same prior art on the judicially

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created grounds of obviousness double patenting.

Claims 10 and 11 are rejected under 35 U.S.C. § 102 as anticipated by or, in the alternative, under 35 U.S.C. 103 as being obvious over Marten. Whether rejected under 35 U.S.C. § 102, as "anticipated" or under 35 U.S.C. § 103 as "obvious", the rationale is the same and one of the predecessors to our reviewing court has sanctioned the practice of rejecting the claims alternatively under both 35 U.S.C. §§ 102 and 103 where, as here, the Patent and Trademark Office (PTO) does not have the ability to prepare and compare the prior art with what is claimed.

As the court held in In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433, 434 (CCPA 1977):

"Where, as here, the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product....Whether the rejection is based on 'inherency' under 35 U.S.C. § 102, on 'prima facie obviousness' under 35 U.S.C. § 103, jointly or alternatively, the burden of proof is the same and its fairness is evidenced by the PTO's inability to manufacture products or to obtain and compare prior art products." [footnotes and citations omitted]

In response to the examiner's observation that the high

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temperature treatment in step (c) would be expected to destroy the sugar and urea leaving only carbon appellants state at page 9 of their brief that they:

agree that "the high temperature treatment in step c of the instant Claim 1 will destroy the sugar and urea, leaving only the carbon."

Thus, appellants have conceded that Marten's chars and appellants' chars would be expected to be at least essentially the same, that is, carbon. Appellants have simply not established on this record that the claimed process produces a "carbonaceous char" different from or unobvious over the "carbonaceous char" prepared by the process of Marten.

In reaching this conclusion, we have not overlooked appellants' entreaty found on pages 9 and 10 of their brief that "Examples 2 and 3 of the specification" show carbonaceous chars prepared with "no impregnant", an apparent allusion to appellants' specification, and are evidence that appellants' process produces carbonaceous chars which are, in fact, different from the carbonaceous chars of Marten. However, the discussion at pages 9 and 10 is at best confusing as it is primarily directed to a discussion of the carbonaceous chars

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of Hayden. Suffice it to say that there is no probative comparison for the catalytic activity of the carbonaceous chars of Marten with appellants' carbonaceous chars' catalytic activity. Thus, there is no basis in the evidence of record for appellants' conclusion that their chars, "due to their enhanced catalytic activity, are patentably distinct from those of Marten."

We have also considered appellants' data found in Tables 1 through 3 of their specification in reaching our conclusion that appellants have failed to distinguish their carbonaceous chars from the carbonaceous chars of Marten. However, the data found therein are not self-explanatory. Appellants, as the party asserting the claimed invention yields unexpected or improved results compared to the prior art, bear the burden of establishing that any comparison is truly probative and that any argued results obtained are indeed unexpected or improved. In re Klosak, 455 F.2d 1077, 1080, 173 USPQ 14, 16 (CCPA 1972). In re Hoch, 428 F.2d 1341, 1343, 1344, 166 USPQ 406, 409 (CCPA 1970).

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In submitting evidence asserted to establish unexpected or improved results, there is also a burden on the party submitting the evidence to indicate how the proposed comparison claimed to represent their claimed invention is considered to relate to the examples intended to represent the prior art and, particularly, how the examples said to be representative of the prior art do, in fact, represent the scope of the prior art. See In re Borkowski, 505 F.2d 713, 718, 719, 184 USPQ 29, 33 (CCPA 1974); In re Goodman, 476 F.2d 1365, 1369, 177 USPQ 574, 577 (CCPA 1973). This appellants have not done. Accordingly, we affirm the examiner's rejection of claims 10 and 11 over Marten.

THE OBVIOUSNESS DOUBLE PATENTING REJECTION

Appellants have argued on page 11 of their brief, based on the examples in the aforementioned Tables, that the claimed carbonaceous chars of claims 10 and 11 "can be patentably distinct from those of U.S. Patent No. 5,356,849." Appellants also concede immediately thereafter that "it is conceivable that carbonaceous chars may be produced by the present

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invention that fall within the range claimed by U.S. Patent No. 5,356,849." On page 11 of their brief, appellants express their willingness to file the necessary terminal disclaimer "upon an indication of allowability with respect to Claim 10 and 11."

We consider appellants' expressed willingness to file the necessary terminal disclaimer coupled with their admission that the carbonaceous chars produced by the claimed process fall within the range of the carbonaceous chars produced by Matviya to be a concession of the propriety of the examiner's rejection. Since, on this record, no terminal disclaimer has been filed we shall, *pro forma*, affirm the examiner's rejection.

OTHER ISSUES

In Paper Number 10, filed on November 27, 1996, appellants filed a notice that they had filed a continuation-in-part of this application. That application, Serial Number 08/757,212, filed on November 27, 1996, has matured to U.S. Patent Number 5,827,795, issued on October 27, 1998. All the claims in said process are claims to a process for preparing

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catalytically active carbonaceous chars by carbonizing bituminous materials, oxidizing the carbonized material and contacting the carbonized and oxidized material with a nitrogen-containing compound (urea) and an "organic aliphatic ether-alcohol compound." Claim 6 claims the "organic aliphatic ether-alcohol compound" to be polyoxyethylene glycol.

While we do not believe sugars would be denoted to the skilled organic chemist by the claim language "organic aliphatic ether-alcohol compound", in column 3, lines 6 and 7, appellants have defined said term as embracing "saccharides, such as sucrose and ribose." Accordingly, the examiner and appellants should consider whether claims 1 through 11 are patentable over the claims of appellants' U.S. Patent Number 5,827,795 based on the judicially created doctrine of obviousness double patenting.

SUMMARY

The decision of the examiner rejecting claim 5 under 35 U.S.C. § 112, second paragraph, is **affirmed**. The examiner's decision rejecting claims 1 through 11 under 35

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U.S.C. § 103 as being unpatentable from the disclosure of Hayden considered with Bearden is **reversed**. The examiner's decision rejecting claims 10 and 11 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103 as being obvious over Marten is **affirmed**. The examiner's decision rejecting claims 1 through 11 under the judicially created doctrine of obviousness-type double patenting over claims 1 through 14 of Hayden considered with Bearden is **reversed**. The examiner's decision rejecting claims 10 and 11 under the judicially created doctrine of obviousness-type double patenting over claims 1 through 4 Matviya is **affirmed**.

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

The decision of the examiner is **AFFIRMED-IN-PART**.

AFFIRMED-IN-PART.

	ANDREW H. METZ)	
	Administrative Patent Judge)	
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)	BOARD OF PATENT
	PAUL LIEBERMAN)	APPEALS
	Administrative Patent Judge)	AND
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