

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 13

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KOYA OHIRA

Appeal No. 1999-0608
Application No. 08/571,471¹

ON BRIEF

Before CALVERT, PATE and BAHR, Administrative Patent Judges.
BAHR, Administrative Patent Judge.

¹ Application for patent filed December 13, 1995.

Appeal No. 1999-0608
Application No. 08/571,471

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1 through 3, which are all of the claims pending in this application.

We AFFIRM and enter new rejections under 37 CFR § 1.196(b).

BACKGROUND

The appellant's invention relates to a rolling bearing for supporting a shaft of a hand-piece to which a dental rotary cutting tool is attached. It is important to appellant that the bearing comprise a retainer which is a sintered polyimide member formed by sintering a polyimide resin powder, having 5-20% by volume pores, and a fluorinated oil impregnated into the sintered member and filling the pores. A copy of the claims on appeal is contained in the appendix to the appellant's brief.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Dan'hata	JP 02-118216	May 2, 1990
Matsumoto	JP 03-272320	Dec. 4, 1991 ²

Appellant's Admitted Prior Art on pages 2, 3 and 6 of the specification (APA)³

References made of record by this panel of the Board are:

Manwiller	4,238,538	Dec. 9, 1980
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² Copies of English language translations of Dan'hata and Matsumoto, prepared by the Patent and Trademark Office, are appended hereto.

³ Appellant has not challenged the examiner's characterization of this subject matter as admitted prior art.

Moriguchi

JP 05-043884

Jul. 2, 1993⁴

The following rejection is before us for review.

Claims 1 through 3 stand rejected under 35 U.S.C. § 103 as being unpatentable over appellant's APA in view of Matsumoto and Dan'hata.

Reference is made to the brief (Paper No. 9) and reply brief (Paper No. 11) and the answer (Paper No. 10) for the respective positions of the appellant and the examiner with regard to the merits of this rejection.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellant's specification and claims, to the applied prior art references, and to the respective positions articulated by the appellant and the examiner. As a consequence of our review, we make the determinations which follow.

⁴ This is the examined Japanese patent publication mentioned on page 2 of the appellant's specification. An English language translation of this reference, prepared by the Patent and Trademark Office, is appended hereto.

Before addressing the examiner's rejections based upon prior art, it is essential that the claimed subject matter be fully understood. Analysis of whether a claim is patentable over the prior art under 35 U.S.C. §§ 102 and 103 begins with a determination of the scope of the claim. The properly interpreted claim must then be compared with the prior art. Claim interpretation must begin with the language of the claim itself. See Smithkline Diagnostics, Inc. v. Helena Laboratories Corp., 859 F.2d 878, 882, 8 USPQ2d 1468, 1472 (Fed. Cir. 1988). Accordingly, we will initially direct our attention to appellant's claim 1 to derive an understanding of the scope and content thereof.

Claim 1 recites, *inter alia*, a "retainer being a **substantially** polyimide sintered member formed by sintering a polyimide resin powder" (emphasis added).

The term "substantially" is a term of degree. When a word of degree is used, such as the term "substantially" in claim 1, it is necessary to determine whether the specification provides some standard for measuring that degree. See Seattle Box Company, Inc. v. Industrial Crating &

Packing, Inc., 731 F.2d 818, 826, 221 USPQ 568, 573-74 (Fed. Cir. 1984).

Having carefully reviewed appellant's specification, including the original claims, we find that, with the exception of claim 1⁵, the term "substantially" is not used. Appellant's specification states: (1) on page 5, a polyimide (PI) resin known as MELDIN™ made by Dixon may be used as the resin of the invention; (2) on page 7, the inventive retainer of Example 1 was made by immersing a porous PI member (MELDIN 8100 by Dixon, 17% porosity) in fluorinated oil; (3) on page 9, the inventive retainer of Example 2 was formed from a porous PI member (MELDIN 9000 by Dixon, 20% porosity) and (4) on page 9, the inventive retainer of Example 3 was formed from a porous member of PI resin (UIP-S by Ube Kosan, 8% porosity).

While these portions of the specification disclose a polyimide resin retainer, they do not provide explicit guidelines defining the terminology "substantially polyimide" as used in claim 1. Furthermore, there are no guidelines that

⁵ Claim 1 was first amended to include the term "substantially" in Paper No. 6.

would be implicit to one skilled in the art defining the term "substantially" as used in the terminology "substantially polyimide" that would enable one skilled in the art to ascertain what is meant by "substantially." For example, one cannot ascertain with any certainty whether the polyamideimide resin of the APA (or the Moriguchi patent publication mentioned therein) is "substantially polyimide" or whether the resin taught by Dan'hata comprising 20 to 40% polyimide resin is "substantially polyimide." Absent such guidelines, we are of the opinion that a skilled person would not be able to determine the metes and bounds of the claimed invention with the precision required by the second paragraph of 35 U.S.C. § 112.⁶

Accordingly, it is our opinion that claim 1 is indefinite for failing to particularly point out and distinctly claim the invention. Thus, we enter a new ground of rejection of claim

⁶ The fundamental purpose of a patent claim is to define the scope of protection and hence what the claim precludes others from doing. All things considered, because a patentee has the right to exclude others from making, using and selling the invention covered by a United States letters patent, the public must be apprised of what the patent covers, so that those who approach the area circumscribed by the claims of a patent may more readily and accurately determine the boundaries of protection in evaluating the possibility of infringement and dominance. See In re Hammack, 427 F.2d 1378, 1382, 166 USPQ 204, 208 (CCPA 1970).

1, and claims 2 and 3 which depend therefrom, under 35 U.S.C. § 112, second paragraph, as set forth *infra*.

Next we turn to the examiner's rejection of claims 1 through 3 under 35 U.S.C. § 103 as being unpatentable over appellant's APA in view of Matsumoto and Dan'hata. We recognize the inconsistency implicit in our holding that claims 1 through 3 are rejectable under 35 U.S.C. § 112, second paragraph, as failing to particularly point out and distinctly claim the invention with a holding that these claims are unpatentable under 35 U.S.C. § 103. Normally, when substantial confusion exists as to the interpretation of a claim and no reasonably definite meaning can be ascribed to the terms in a claim, a determination as to patentability under 35 U.S.C. § 103 is not made. See In re Steele, 305 F.2d 859, 134 USPQ 292 (CCPA 1962) and In re Wilson, 424 F.2d 1382, 165 USPQ 494 (CCPA 1970). However, in this instance, we consider it to be desirable to avoid the inefficiency of piecemeal appellate review. See Ex parte Ionescu, 222 USPQ 537 (Bd. App. 1984). Therefore, in the interest of judicial economy, we interpret "substantially polyimide" in appellant's claim 1 as requiring a retainer formed from a material

containing polyimide resin and, for the reasons set forth below, conclude that the combined teachings of appellant's APA, Matsumoto and Dan'hata are sufficient to have suggested to one of ordinary skill in the art at the time of appellant's invention the subject matter of the appealed claims.

The APA discussed on page 2 of the appellant's specification discloses a rolling bearing comprising a retainer made of a polyamideimide resin and impregnated with a completely fluorinated oil.

Dan'hata discloses a sliding material for use in a bearing comprising a mixture of 40 to 70% of an ethylene tetrafluoride resin (PTFE), 20 to 40% polyimide resin as a heat-resistant resin and a solid lubricant resin (translation, pages 3 and 4). The sliding material has a porosity of 10 to 20%. According to Dan'hata, the resulting material is a wear-resistant material having outstanding frictional characteristics and improved holding capacity for lubricating oils, as compared with PTFE alone.

Matsumoto discloses molding and sintering of a mixture of boron carbide and mesophase carbon spherocrystal (translation, page 2).

We find the combined teachings of appellant's APA and Dan'hata sufficient, even without the teachings of Matsumoto, to have suggested modification of the APA retainer by replacing the polyamideimide resin with the PTFE-polyimide-lubricant resin mixture having a porosity of 10 to 20% as taught by Dan'hata to obtain a sliding material having desirable wear resistance, friction properties and oil holding capacity. Further, we consider the inclusion of 20 to 40% polyimide resin in the retainer material sufficient to meet the limitation in claim 1 that the retainer be a "substantially polyimide" member, given our interpretation of "substantially polyimide" as requiring a retainer formed from a material containing polyimide resin.

Appellant's argument on page 5 of the brief that "[t]here is no teaching, suggestion, or disclosure in any of the art of record that sintering of a polyimide resin powder formed body is even possible" cannot be an argument that sintering of polymer resins such as polyamideimides and polyimides is not known in the art, as appellant's own specification (page 2) indicates that NTN Corporation proposed use of a sintered polyamideimide resin (Moriguchi translation, page 7) as a

bearing holder in the Moriguchi patent publication 05-043884 and as appellant has not challenged the examiner's characterization of this disclosure as admitted prior art. Moreover, although Dan'hata does not use the term "sinter," the processing of the resin material disclosed in the last seven lines of the first full paragraph of page 5 of the translation thereof appears to us to inherently be a sintering process. Thus, in our opinion, the combined teachings of appellant's APA and Dan'hata, even without the teachings of Matsumoto, would have suggested to one of ordinary skill in the art at the time of the appellant's invention sintering of the polyimide-containing resin material taught by Dan'hata to form the sliding material having a porosity of 10 to 20%.

Accordingly, we shall sustain the examiner's 35 U.S.C. § 103 rejection of claim 1, and claims 2 and 3 which stand or fall therewith according to page 4 of the appellant's brief. See In re Nielson, 816 F.2d 1567, 1572, 2 USPQ2d 1525, 1528 (Fed. Cir. 1987) and 37 CFR §§ 1.192(c)(7) and 1.192(c)(8)(iv).

NEW GROUNDS OF REJECTION

Pursuant to the provisions of 37 CFR § 1.196(b), we enter the following new grounds of rejection:

1. Claims 1 through 3 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which appellant regards as the invention.

As discussed above and incorporated herein, our review of the appellant's specification leads us to conclude that one of ordinary skill in the art would not be able to understand the metes and bounds of the terminology "substantially polyimide" in independent claim 1. As claims 2 and 3 depend from claim 1 and thus incorporate all of the limitations therein, these claims are likewise indefinite.

2. Claims 1 through 3 are rejected under 35 U.S.C. § 103 as being unpatentable over the admitted prior art of Figure 1 as described on page 1, third paragraph, of the appellant's specification in view of Manwiller and Moriguchi.

According to Figure 1 and page 1 of the appellant's specification, a conventional, or prior art, dental hand-piece comprises a rolling bearing assembly (2), including a retainer (1) disposed between inner and outer members, for rotatably

supporting a shaft (4) on which a dental cutting tool (3) is detachably mounted. This admitted prior art does not specify the material of the retainer (1).

Manwiller discloses sintered polyimide resin articles (column 8, lines 60-68) which have desirable electrical, physical and chemical characteristics, such as corrosion resistance and resistance to melting upon exposure to high temperatures for extended periods of time, such that they retain their strength and exhibit excellent response to work-loading at elevated temperatures for prolonged periods of time (column 7, line 65, to column 8, line 13). Manwiller further teaches that such articles are useful "as high temperature mechanical and electrical parts, such as bearings and seals, particularly those requiring low thermal expansion" (column 13, lines 52-55).

The selection of a known material based upon its suitability for the intended use is a design consideration within the skill of the art. In re Leshin, 277 F.2d 197, 199, 125 USPQ 416, 418 (CCPA 1960).

It would have been obvious to one of ordinary skill in the art to use a sintered polyimide resin as the retainer material in the rolling bearing of appellant's admitted prior art in view of the teaching by Manwiller of the desirable strength and temperature and wear resistance properties of sintered polyimide resins and of their suitability for use in bearings.

Further, Moriguchi discloses the impregnation of a sintered polymer bearing holder with fluorinated oils such as perfluoropolyether and perfluoropolyalkylether to render the bearing holder self-lubricating. Moriguchi further teaches that a 7 to 17 percent volume percentage of continuous pores is desirable so as to optimize the oil retention percentage of the retainer (translation, page 6).

In view of the teachings of Moriguchi, it would have been obvious to one of ordinary skill in the art at the time of appellant's invention to have further modified the sintered polyimide retainer of appellant's admitted prior art (as already modified in view of Manwiller, as discussed above) by impregnating it with a fluorinated oil such as perfluoropolyether or perfluoropolyalkylether to render the

retainer self-lubricating and by providing a 7 to 17 percent volume percentage of continuous pores in the sintered polyimide retainer so as to optimize the oil retention percentage of the retainer.

CONCLUSION

To summarize, the decision of the examiner to reject claims 1 through 3 under 35 U.S.C. § 103 is affirmed. New rejections of claims 1 through 3 under 35 U.S.C. §§ 112, second paragraph, and 103 are added pursuant to the provisions of 37 CFR § 1.196(b).

In addition to affirming the examiner's rejection of one or more claims, this decision contains new grounds of rejection pursuant to 37 CFR § 1.196(b) (amended effective Dec. 1, 1997, by final rule notice, 62 Fed. Reg. 53131, 53197 (Oct. 10, 1997), 1203 Off. Gaz. Pat. Office 63, 122 (Oct. 21, 1997)). 37 CFR § 1.196(b) provides, "A new ground of rejection shall not be considered final for purposes of judicial review."

Regarding any affirmed rejection, 37 CFR § 1.197(b) provides:

(b) Appellant may file a single request for rehearing within two months from the date of the original decision

37 CFR § 1.196(b) also provides that the appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new grounds of rejection to avoid termination of proceedings (37 CFR § 1.197(c)) as to the rejected claims:

(1) Submit an appropriate amendment of the claims so rejected or a showing of facts relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the application will be remanded to the examiner. . . .

(2) Request that the application be reheard under § 1.197(b) by the Board of Patent Appeals and Interferences upon the same record. . . .

Should the appellant elect to prosecute further before the Primary Examiner pursuant to 37 CFR § 1.196(b)(1), in order to preserve the right to seek review under 35 U.S.C. §§ 141 or 145 with respect to the affirmed rejection, the effective date of the affirmance is deferred until conclusion of the prosecution before the examiner unless, as a mere incident to the limited prosecution, the affirmed rejection is overcome.

If the appellant elects prosecution before the examiner and this does not result in allowance of the application, abandonment or a second appeal, this case should be returned to the Board of Patent Appeals and Interferences for final action on the affirmed rejection, including any timely request for rehearing thereof.

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

AFFIRMED; 37 CFR § 1.196(b)

IAN A. CALVERT)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
WILLIAM F. PATE III)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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Appeal No. 1999-0608
Application No. 08/571,471

Page 19

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