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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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 16

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte YONG S. ZHEN and KENNETH HRDINA

Appeal No. 1996-2530
Application No. 08/246,324

ON BRIEF

Before WINTERS, WILLIAM F. SMITH, and LORIN,
Administrative Patent Judges.

LORIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. ' 134 from the final rejection of claims 1-4, 6, 8, 11-13, 15-19, 27 and 28, all the claims pending in the application.

Background

Claim 1 is illustrative of the subject matter on appeal and reads as follows:

1. A process for producing at least one of ceramic powders and metal powders comprising:
homogeneously incorporating at least one metal cation into a polymeric foam, forming a metal cation-containing foam cell structure;
calcining said metal cation-containing foam cell structure at a calcination temperature and a time required for complete removal of all organics and formation of a crystal phase, producing at least one of an oxide powder and a metal powder; and
recovering said powder.

The reference relied upon by the examiner is:

Wood et al. (Wood) 3,833,386 Sep. 3, 1974

Claims 1-4, 6, 8, 11-13, 15-19, 27 and 28 are rejected under 35 U.S.C. ' 103 over Wood.

Discussion

We have carefully considered the entire record and reviewed the respective positions of the examiner and appellants. For the following reasons, we reverse the rejection under 35 U.S.C. ' 103 over Wood because the examiner has not made out a prima facie case of obviousness.

As a preliminary matter, we note that appealed claim 1 is the only independent claim and is therefore representative of the claims on appeal.

The examiner has the initial burden of establishing a prima facie case of obviousness. In re Oetiker, 977

F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

Under ' 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined.

Graham v. John Deere, 148 USPQ 459, 467 (US 1966).

In determining the scope of the prior art, examiner makes this statement:

Wood discloses a process of preparing a structure containing an organic foam and a metal cation salt in some type of carrier or solvent, adding citric acid and ethylene glycol thereto, heating to dissolve the carrier, and calcining the resultant foam, leaving as a product a ceramic or metal powder (see example 3 of Wood).

Examiner's Answer, p. 3.

In ascertaining the differences between the prior art and the claims at issue, this statement is made:

The appealed claims differ from the prior art [Wood] in that the specific heating and/or calcining temperatures presently claimed are not disclosed in the prior art, and the exact solvents recited in appealed claims 16-18 are not specified in the prior art.

Examiner's Answer, p. 3. With regard to this statement, we point out that claim 1, the representative claim, does not provide specific temperatures or exact solvents. Therefore, this distinction is not determinative of the prima facie case of obviousness.

In resolving the level of ordinary skill in the pertinent art, nothing is stated.

Against this background, the examiner concludes that:

Because the prior art discloses process steps substantially the same as presently claimed, which may be performed using materials substantially the same as those used in the process of the appealed claims and under identical conditions (temperature, etc.), a prima facie case of obviousness has been established between the disclosure of Wood and the invention of the claims on appeal.

While examiner follows the standard Graham v. Deere analysis, it is deficient in one important respect. It does not address all the limitations of the claimed invention; namely, it does not address the fact that, in contrast to Wood, the claimed method specifically calls for

... producing at least one of an oxide powder and a metal powder; and
recovering said powder.

As Appellants have argued, "it is clear throughout the Wood et al. reference that the product produced by the process taught by the Wood et al. patent is a rigid ceramic foam structure," brief, p. 4, and not a powder. From our review of Wood, we agree with appellants that Wood teaches

making and recovering a "structure," whereas "powder" is mentioned only in the context of a starting material and never as a product to be produced and recovered.

In a number of places in the record, examiner has been unequivocal about Wood teaching a powder. For example, the Final rejection (paper no. 7, p. 3) states that "the prior art [i.e., Wood] discloses preparing a ceramic or metal powder." But no such disclosure can be found. Examiner refers to Wood's abstract for a teaching of a "finely divided sinterable" material which "appears to be equivalent to a powder" (final rejection, paper no. 7, p. 4) but, as Wood's abstract makes very clear,¹ this finely divided sinterable material is an additive dispersed in the foam prior to heat treatment and not the product produced or recovered. Also, as cited earlier, in analyzing the scope of the prior art, the examiner's answer (p. 6) states that "Wood discloses a process of preparing a structure ...

¹ "The invention disclosed is for ceramic foam structures prepared by reacting an isocyanate capped polyoxyethylene polyol reactant with large amounts of an aqueous reactant containing finely divided sinterable ceramic material. The resultant foams having the sinterable ceramic material dispersed thereon are heat treated to decompose the carrier foam under firing conditions which sinter the ceramic particles resulting in a rigid ceramic foam structure."

leaving as a product a ceramic or metal powder (see example 3 of Wood)." But this is inaccurate. It clearly states in the example, as in other examples, that the metal powder is added prior to making the foam (col. 10, lines 10-15) and a "sintered metallic foam resulted" (col. 10, lines 18-21). In other words, the powder mentioned in Wood's Example 3 is dispersed in the foam prior to sintering. It is not produced and recovered after calcination, as the claims require.

Examiner's statements notwithstanding, Wood nowhere suggests or discloses making and recovering a powder. The last two steps of the claimed process are not taught in the prior art before us, rendering Wood inadequate to support the prima facie case.

To fill the missing connection between the claimed "powder" and Wood's "structure," examiner attempts to equate the two:

[T]his distinction [between the claimed "powder" and Wood's "structure"] is largely one of semantics. Assuming arguendo that all of the products of Wood are in fact rigid structures, such would not distinguish between the processes of the appealed claims and those of Wood. First, it is unclear precisely how large of a particle would render something a powder, i.e. would the maximum size of a particle be 1 μ m, 1 mm, 1 inch, or even larger sizes? Would these particles be required to be roughly spherical, or could they be polygonal or oblong in shape? More importantly, if one were to hypothetically step on or otherwise apply pressure to one of the structures of Wood, clearly a powdery substance of some sort would result. Thus, no patentable distinction is seen between the shape or structure of the products of Wood and those produced

by the presently claimed process.

Examiner's Answer, p. 6. As we understand it, examiner is arguing that the claimed making and recovering of a powder is prima facie obvious over Wood's structure because:

Wood may be teaching a so-called "powder";

Even if Wood teaches a structure and not a powder,

per se, Wood's structure could be considered a particle (i.e., part of a powder); or,

Even if Wood teaches a structure that is not a particle,

Wood's structure could be converted into a powder.

Examiner's first argument depends on what is meant by "powder" and "structure." In this regard,

[i]t is axiomatic that, in proceedings before the PTO, claims in an application are to be given their broadest reasonable interpretation consistent with the specification. In re Prater, 415 F.2d 1393, 1404, 162 USPQ 541, 550 (CCPA 1969), and that claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art. In re Johnson, 558 F.2d 1008, 1016, 194 USPQ 187, 194 (CCPA 1977).

In re Sneed, 710 F.2d 1544, 1548, 218 USPQ 385, 388 (Fed. Cir. 1983). We therefore turn to appellants' specification to assist us in understanding the meaning of the term "powder." According to the specification

[t]he powders produced in accordance with this process are high purity, uniform, agglomerate-free, submicron or nanometer size, single or multicomponent ceramic/metal powders. Powders produced in accordance with this process range in size from about 2 nanometers to about 0.99 microns.

Specification, p. 9. Appellants seek to make "ceramic powders for use as starting powders for high technology ceramics" (spec. p. 2). Read in light of this disclosure, the claimed process produces and recovers powders composed of small particles. Looking now at Wood, it discloses rigid ceramic foam structures usable as

nuclear reactor components, filters, acoustical insulators, electrical insulators and thermal insulators, noise suppressors or mufflers, components of aircraft and missiles, radomes, circuit bases, wave guides, combustion ports, rocket nozzles and vanes, base support structure for ablation materials, heat exchangers for vehicle afterburners and the like.

Column 7, line 65 to column 8, line 4. Comparing the two - the small particle powder of the claims and the structures of Wood - there is no question that they refer to two completely different things. For this reason, we are unpersuaded by Examiner's argument to the contrary.

Examiner's second argument is equally without merit. Common sense dictates that a structure of the type Wood is making (e.g., filters, components of aircraft, etc.) is not

a particle of the size the claimed method is producing and recovering (i.e., starting powders for high technology ceramics).

Examiner's third argument rests not on prior art to show that it would have been obvious to modify Wood's process to make a powder, but rather on hindsight: "if one were to hypothetically step on or otherwise apply pressure to one of the structures of Wood, clearly a powdery substance of some sort would result." Since A[obviousness can not be established by hindsight combination to produce the claimed invention,@ In re Dance, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998), we are not persuaded by this argument either.

In conclusion, we find that Wood does not disclose the last two steps of the claimed process and that there is no suggestion to modify Wood's process to make and recover a powder. As a result, a prima facie case of obviousness has not been established to show that the claimed process would have been obvious over Wood to one with ordinary skill in this art.

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The rejection under 35 U.S.C. ' 103 is reversed.

REVERSED

SHERMAN D. WINTERS)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
WILLIAM F. SMITH)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
)	
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HUBERT C. LORIN)	
Administrative Patent Judge)	

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