

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMPOSITE MATERIALS TECHNOLOGY, INC.,
Petitioner,

v.

GREATBATCH, LTD.,
Patent Owner.

Case IPR2017-01441
Patent 9,312,075 B1

Before BRYAN F. MOORE, JON B. TORNQUIST, and
ELIZABETH M. ROESEL, *Administrative Patent Judges*.

TORNQUIST, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

Composite Materials Technology, Inc. (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting *inter partes* review of claims 1–18 of U.S. Patent No. 9,312,075 B1 (Ex. 1001, “the ’075 patent”). Greatbatch, Ltd. (“Patent Owner”) filed a Preliminary Response to the Petition (Paper 5, “Prelim. Resp.”). A Reply (Paper 7) and Sur-Reply (Paper 8) were subsequently authorized to allow the parties to address Patent Owner’s request to stay this proceeding in view of pending reissue Application No. 15/596,784.

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314; 37 C.F.R. § 42.4(a). The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted “unless the Director determines . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”

After considering the Petition and the Preliminary Response, we determine that Petitioner has not demonstrated a reasonable likelihood of prevailing with respect to challenged claims 1–18 of the ’075 patent. Accordingly, we do not institute *inter partes* review. Additionally, because we do not institute an *inter partes* review, Patent Owner’s request to stay the current proceeding is moot.

A. *Related Proceeding*

Patent Owner informs us that it filed reissue Application No. 15/596,784 on May 16, 2017, “with the intent of narrowing the scope of the claims in the ’075 patent.” Prelim. Resp. 1.

B. The '075 Patent

The '075 patent discloses a high voltage tantalum anode and a method of manufacturing the same. Ex. 1001, 1:1–2. According to the '075 patent, one purpose of the disclosed method is to fabricate a tantalum anode that is capable of being formed at higher voltages than is known in the prior art. *Id.* at 1:52–55.

In the manufacturing method of the '075 patent, tantalum fibers having a diameter of 0.5 μm to 2.5 μm and a length from 5 μm to 50 μm are formed in a manner disclosed in “U.S. Pat. No. 5,869,169 to Wong et. al.,” which is incorporated by reference in the '075 patent. *Id.* at 6:12–15, 6:31–46. These fibers are then formed into a randomly oriented, porous powder, which is subjected to an agglomeration process, for example, as described in “U.S. Pat. No. 5,217,526 to Fife,” which is incorporated by reference in the '075 patent. *Id.* at 3:59–67, 4:4–5. This agglomerated powder is then pressed into a pellet of a desired shape and sintered to bind the fibers together. *Id.* at 3:67–4:1, 4:5–10, 7:66–8:11. “After sintering, the tantalum body is anodized to a desired formation voltage in an anodizing electrolyte.” *Id.* at 8:36–37. The '075 patent explains that a “suitable anodizing electrolyte” and “anodizing method” are described in “U.S. Pat. No. 6,231,993 to Stephenson et al.,” which is incorporated by reference in the '075 patent. *Id.* at 8:37–40, 8:66–9:3. A preferred formation voltage is from at least 200V up to 550V. *Id.* at 9:10–11; *see also id.* at 1:17–18 (formation voltages up to 550V), 3:43–45 (same).

C. Illustrative Claim

Claim 1 is illustrative of the challenged claims and is reproduced below:

1. A method for providing an anode for a high voltage implantable electrolytic capacitor, the method comprising the steps of:
 - a) providing tantalum fibers having a diameter ranging from 0.5 μm to 2.5 μm and a length ranging from 5 μm to 50 μm ;
 - b) providing a primary tantalum powder as a loosely packed mass of the tantalum fibers;
 - c) agglomerating the primary tantalum powder into a randomly oriented, substantially non-aligned, porous agglomerated tantalum powder;
 - d) pressing the agglomerated tantalum powder into a tantalum pellet of a desired shape;
 - e) sintering the tantalum pellet into a coalesced body of the tantalum fibers to thereby provide a sintered tantalum pellet; and
 - f) anodizing the sintered tantalum pellet to a formation voltage of at least 300 V to form an anode having a dielectric oxide on the tantalum fibers.

Ex. 1001, 13:24–42.

D. The Asserted Grounds of Unpatentability

Petitioner contends claims 1–18 of the '075 patent are unpatentable based on the following grounds (Pet. 6):¹

References	Basis	Claim(s) Challenged
Fife ² and Stephenson ³	§ 103	1–11 and 13–18
Fife, Stephenson, and Liu ⁴	§ 103	12

¹ Petitioner also relies on a declaration from Mr. David Frost (Ex. 1002).

² U.S. Patent No. 5,217,526, issued June 8, 1993 (Ex. 1006).

³ U.S. Patent No. 6,231,993 B1, issued May 15, 2001 (Ex. 1007).

⁴ U.S. Patent No. 6,965,510 B1, issued November 15, 2005 (Ex. 1008).

References	Basis	Claim(s) Challenged
Wong ⁵ and Stephenson	§ 103	1–11 and 13–18
Wong, Stephenson, and Liu	§ 103	12

II. ANALYSIS

A. Claim Construction

In an *inter partes* review, “[a] claim in an unexpired patent . . . shall be given its broadest reasonable construction in light of the specification of the patent in which it appears.” 37 C.F.R. § 42.100(b) (2016); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard).

Although Petitioner identifies various claim limitations it contends are expressly defined in the ’075 patent, neither Petitioner nor Patent Owner asserts that any claim terms are in need of construction. Pet. 4–5; Prelim. Resp. 1–3. And, upon review of the current record, we determine that no claim terms require construction for purposes of this Decision. See *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”).

B. Claims 1–11 and 13–18 over Fife and Stephenson

Petitioner contends the subject matter of claims 1–11 and 13–18 of the ’075 patent would have been obvious over Fife and Stephenson. Pet. 7–15.

1. Fife

Fife discloses “tantalum fibers particularly adapted for use in capacitors.” Ex. 1006, 1:50–51. These fibers are preferably about 0.2 μm to

⁵ U.S. Patent No. 5,869,196, issued February 9, 1999 (Ex. 1009).

about 1 μm in diameter and are up to about 400 microns in length, and most preferably between 50 microns to 100 microns in length. *Id.* at 4:15–21. To form a capacitor, the disclosed fibers are randomized, pressed into pellets, and sintered. *Id.* at 4:24–31, 5:22–40. The resulting pellets are then anodized in a “conventional manner” to form a dielectric layer on the surface of the fibers. *Id.* at 4:32–37, 5:40–42. Fife discloses various formation voltages, but the highest formation voltage disclosed in Fife is 100 volts. *Id.* at 5:40–42, 5:64–65.

2. Stephenson

Stephenson discloses “an electrolytic capacitor including an anode of a valve metal having an improved breakdown voltage.” Ex. 1007, 1:11–14. Stephenson explains that one step in the construction of an electrolytic capacitor is anodizing a sintered porous valve metal structure, such as a tantalum pellet, in an electrolyte to form a dielectric film on the exposed surfaces of the pellet. *Id.* at 1:16–20. Stephenson explains that “[c]onventional practice has been to form the valve metal to a target formation voltage at a constant current,” which is selected based on “the electrolyte, the valve metal powder type and the size of the valve metal structure.” *Id.* at 2:19–22. During this process, electrolyte inside the porous tantalum pellet becomes heated and may cause “hot spots” to form within the pellet. *Id.* at 2:29–35. These “hot spots” are the source of potential cracks and fissures, and are where voltage is likely to breakdown. *Id.* at 2:35–37.

Stephenson discloses a process for avoiding internal “hot spots” by “replacing heated electrolyte inside the anodized structure with fresh material from the anodization electrolyte bath.” *Id.* at 2:48–51. In this way,

Stephenson “ensures that electrolyte conductivity both inside and outside the structure remains relatively constant throughout the anodization process.” *Id.* at 2:51–54.

Stephenson discloses an “exemplary formation protocol for a sodium reduced tantalum powder pellet,” where the protocol comprises a series of seven steps. *Id.* at 3:65–4:31. At each step, the power supply is turned on until the voltage reaches a specified level and then turned off “for about three hours.” *Id.* at 4:10–33. The specified voltage level increases from 75 volts in the first step to 231 volts in the last step. *Id.*

Stephenson also discloses an exemplary formation protocol for “a beam melt tantalum powder pellet,” where the protocol comprises a series of six or seven steps. *Id.* at 4:50–5:31. At each step, the power supply is turned on until the voltage reaches a specified level, the voltage is held at that level for “about three hours,” and then the power supply is turned off “for about one hour.” *Id.* at 5:1–31. The specified voltage level increases from 150 volts in the first step to 380 or 405 volts in the last step. *Id.*

3. Analysis

Petitioner bears the burden to demonstrate both “that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so.” *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367–68 (Fed. Cir. 2016) (quoting *Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1360 (Fed. Cir. 2012)).

Petitioner contends that Fife discloses every limitation recited in steps (a) through (f) of independent claim 1, except for an “anodizing formation

voltage of at least 300 V.” Pet. 7. Petitioner contends, however, that “one of ordinary skill in the art would have been motivated to combine Fife and Stephenson to anodize the sintered tantalum pellet of Fife to a formation voltage of at least 300 V,” because Fife and Stephenson “both relate to the production of tantalum capacitors” and because both references “are applicant admitted prior art (AAPA) mentioned in the specification of the ’075 Patent.” *Id.* (citing Ex. 1001, 3:65, 9:1). Patent Owner does not address Petitioner’s analysis in its Preliminary Response.

Contrary to Petitioner’s arguments, the fact that two references relate to the same general subject matter is not, by itself, sufficient to explain why one of ordinary skill in the art would have sought to modify one reference in view of the other; it demonstrates at most that the two references are in the same field of endeavor. *See In re GPAC Inc.*, 57 F.3d 1573, 1577–78 (Fed. Cir. 1995). Nor is an alleged admission that Fife and Stephenson are prior art to the ’075 patent sufficient to explain why these two references would be combined in a manner necessary to arrive at the claimed invention. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 389, 418–19 (2007) (“[I]nventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.”).

In support of the Petition, Mr. Frost generally reiterates Petitioner’s arguments, stating: “[a] person of ordinary skill in the art would be motivated to combine the teachings of Fife and Stephenson since both Fife and Stephenson relate to methods for producing tantalum electrolytic capacitors, and both Fife and Stephenson constitute admitted prior art mentioned specifically in the ’075 Patent.” Ex. 1002 ¶ 32. Mr. Frost does

not explain, however, why either of these factors would have prompted one of ordinary skill in the art to use Stephenson's higher formation voltages in Fife. Thus, this testimony is entitled to little, if any, weight. See *ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc.*, 694 F.3d 1312, 1328 (Fed. Cir. 2012) (expert testimony regarding motivation to combine is insufficient if it is "generic and bears no relation to any specific combination of prior art elements" and "fails to explain why a person of ordinary skill in the art would have combined elements from specific references *in the way the claimed invention does*"); see also *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 294 (Fed. Cir. 1985) (explaining that "[l]ack of factual support for expert opinion going to factual determinations" may "render the testimony of little probative value").

As Petitioner provides insufficient rationale to explain why one of ordinary skill in the art would have combined the disclosures of Fife and Stephenson in a manner necessary to achieve the claimed invention, it has not demonstrated a reasonable likelihood that the subject matter of claim 1 would have been obvious over those references. And, because challenged claims 2–11 and 13–18 each depend from claim 1, and because the deficiencies in Petitioner's arguments and evidence regarding claim 1 are not remedied by Petitioner's arguments and evidence regarding claims 2–11 and 13–18, Petitioner has likewise not demonstrated a reasonable likelihood that the subject matter of those claims would have been obvious over Fife and Stephenson.⁶

⁶ Petitioner also asserts that claim 12 would have been obvious over Fife, Stephenson, and Liu. Pet. 15–16. Because Petitioner does not further explain in this ground why one of ordinary skill in the art would have combined Fife and Stephenson, Petitioner has not demonstrated a reasonable

C. Claims 1–11 and 13–18 over Wong and Stephenson

Petitioner contends the subject matter of claims 1–11 and 13–18 would have been obvious over Wong and Stephenson. Pet. 16–23.

1. Wong

Wong discloses “the fabrication of fine valve metal filaments for use as porous metal compacts used in the manufacture of electrolytic capacitors.” Ex. 1009, 3:66–4:1. In the disclosed fabrication process, a billet consisting of “an assembly of valve metal filaments, preferably tantalum, separated by a ductile metal, preferably copper,” is “surrounded by one or more layers of metal that form a continuous valve metal sheath.” *Id.* at 4:24–28. This billet is then “reduced in size by conventional means, preferably by hot extrusion and wire drawing, to the point where the filaments are of a diameter less than 5 microns and the thickness of the sheath is 100 microns or less.” *Id.* at 4:30–34. “This composite is then cut into lengths appropriate for capacitor fabrication” and the ductile metal is removed, “preferably by leaching in mineral acids.” *Id.* at 4:36–38.

Wong explains that the result of the leaching step is “[a] number of small bodies of sheathed valve metal filaments,” which “can be made into an anode for an electrolytic capacitor by conventional means, including sintering, anodizing, infiltrating with electrolyte, etc.” *Id.* at 4:38–41, 6:45–51.

2. Analysis

The filaments of the ’075 patent and Wong are produced in essentially the same manner. Pet. 17–22; Ex. 1001, 6:12–15 (explaining that production

likelihood that claim 12 would have been obvious over Fife, Stephenson, and Liu. *Id.*

of the disclosed tantalum filaments is generally described in “U.S. Pat. No. 5,869,196 to Wong et al.”). Petitioner contends that, because “products formed by identical processes cannot have mutually exclusive properties,” “steps (a)-(f), save for the specific anodization voltage,” are taught in Wong. Pet. 17–23 (citing Ex. 1002 ¶ 29). Petitioner further contends that Stephenson discloses the claimed formation voltage and, “for the same reasons detailed above” with respect to Fife and Stephenson, the subject matter of claims 1–11 and 13–18 would therefore have been obvious over Wong and Stephenson. *Id.* at 23.

Step (c) of claim 1 requires “agglomerating the primary tantalum powder into a randomly oriented, substantially non-aligned, porous agglomerated tantalum powder.” Ex. 1001, 13:32–34. Although Petitioner provides evidence that the tantalum powder, or filaments, of Wong are formed using the same general process as is disclosed in the ’075 patent, we are directed to no disclosure in Wong of agglomerating these resulting fibers into a “randomly oriented, substantially non-aligned, porous” powder. Nor does Petitioner explain sufficiently why the “conventional means” of forming an anode, as discussed in Wong, would have suggested to a person of ordinary skill in the art the agglomerating step recited in claim 1(c). *See* Ex. 1009, 6:48–51; Pet. 22.

With respect to the “formation voltage of at least 300 V,” Petitioner again points to Stephenson as disclosing this limitation. Pet. 23. Petitioner does not explain sufficiently, however, why one of ordinary skill in the art would have sought to use Stephenson’s higher formation voltages in conjunction with the filaments of Wong. *See KSR*, 550 U.S. at 418 (“[A] patent composed of several elements is not proved obvious merely by

demonstrating that each of its elements was, independently, known in the prior art.”); *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”). Nor are we persuaded that Petitioner’s arguments set forth above with respect to Fife and Stephenson are any more persuasive when applied to the combination of Wong and Stephenson. Thus, Petitioner has not demonstrated a reasonable likelihood that claims 1–11 and 13–18 would have been obvious over Wong and Stephenson.⁷

III. CONCLUSION

Upon consideration of the Petition and the Preliminary Response, we conclude that Petitioner has not demonstrated a reasonable likelihood that claims 1–18 of the ’075 patent are unpatentable. Accordingly, we do not institute *inter partes* review.

IV. REISSUE APPLICATION

In its Preliminary Response, Patent Owner asks that we stay the current proceeding pending the outcome of reissue application No. 15/596,784. Prelim. Resp. 1. Because we do not institute an *inter partes* review, Patent Owner’s request to stay the current proceeding is moot.

⁷ Petitioner also asserts that claim 12 would have been obvious over Wong, Stephenson, and Liu. Pet. 24. Because Petitioner does not further explain in this ground why one of ordinary skill in the art would have combined Wong and Stephenson, Petitioner has not demonstrated a reasonable likelihood that claim 12 would have been obvious over Wong, Stephenson, and Liu. *Id.*

V. ORDER

It is hereby,

ORDERED that *inter partes* review is not instituted.

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