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Paper 12
Entered: July 7, 2016

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

DEXCOWIN GLOBAL, INC.,
Petitioner,

v.

ARIBEX, INC.,
Patent Owner.

Case IPR2016-00436
Patent 7,496,178 B2

Before JONI Y. CHANG, BRIAN J. McNAMARA, and DANIEL J. GALLIGAN, *Administrative Patent Judges.*

CHANG, *Administrative Patent Judge.*

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

I. INTRODUCTION

Petitioner, Dexcowin Global, Inc. ("Dexco"), filed a corrected Petition requesting an *inter partes* review of claims 1–5, 14, 15, 17, 19, 21, and 23 of U.S. Patent No. 7,496,178 B2 (Ex. 1001, "the '178 patent"). Paper 7 ("Pet."). Patent Owner, Aribex, Inc. ("Aribex"), filed a Preliminary Response. Paper 11 ("Prelim. Resp.").

Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted unless the information presented in the petition "shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." Upon consideration of the Petition and Preliminary Response, we determine that Dexco has not established a reasonable likelihood that it would prevail with respect to any of the challenged claims. Therefore, we do not institute an *inter partes* review as to the challenged claims of the '178 patent.

A. Related Matters

Dexco indicates that it has filed another Petition requesting *inter partes* review on a related patent—U.S. Patent No. 7,224,769. Pet. 40; IPR2016-00440, Papers 1, 7. Aribex indicates that Dexco filed a complaint, on January 8, 2016, for declaratory judgment of non-infringement and invalidity of the '178 patent and U.S. Patent No. 7,224,769 in *Dexcowin Global, Inc. v. Aribex, Inc.*, No. cv-16-00143-FMO (C.D. Cal.). Paper 10, 1.

B. The ’178 patent

The ’178 patent relates to a portable x-ray device having an integrated power system. *Id*. at 1:17–20. Figures 1 and 2 of the ’178 patent illustrate an exemplary device and are reproduced below.

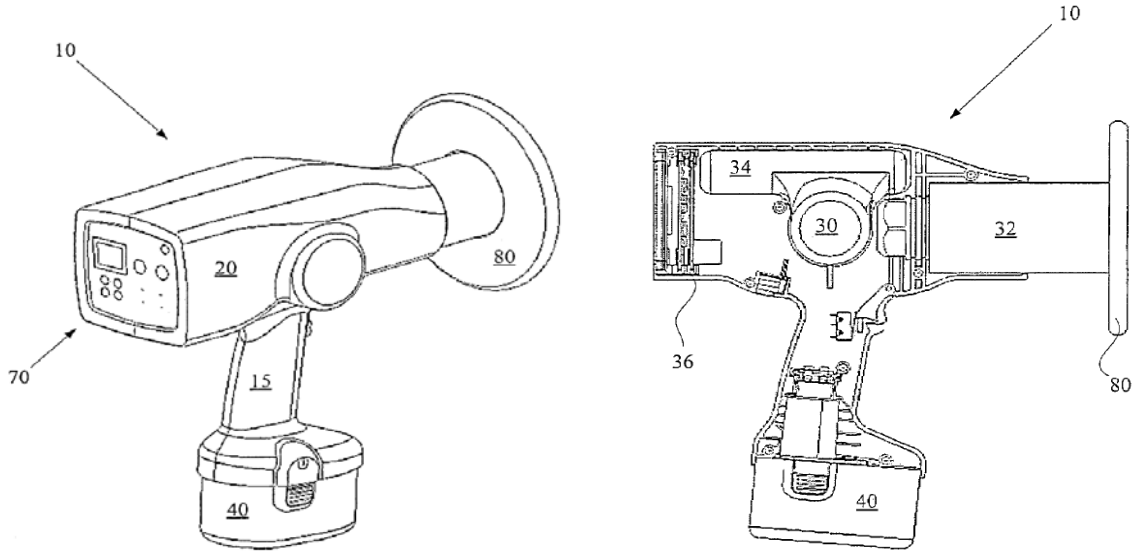

Figure 1 of the ’178 patent shows x-ray device 10 having housing 20, handle 15, power source 40, controller 70, and radiation shielding 80. *Id*. at 3:18–43. Figure 2 of the ’178 patent illustrates a cross section of x-ray device 10 having x-ray tube 30, power supply 34, and x-ray collimator 32. *Id*. The power system of x-ray device 10 comprises power source 40 (e.g., a removable battery module), conversion means, and power supply 34. *Id*. at 3:34–43. The conversion means converts the initial voltage supplied by power source 40 to a converted voltage that is provided to power supply 34. *Id*. at 3:67–4:3. Power supply 34 steps up the converted voltage provided by the conversion means to a voltage that can be used by x-ray tube 30. *Id*. at 4:11–13.

C. Illustrative Claim

Of the challenged claims, claims 1, 14, 17, 19, 21, and 23 are independent. Claims 2–5 depend directly from claim 1, and claim 15 depends directly from claim 14. Claim 1 is illustrative:

> 1. A portable x-ray device, comprising:
>
> a housing with a first portion that contains an x-ray source that is powered by an integrated power system that provides a *continuous, high voltage DC power* and the housing also contains an internal power source; and
>
> wherein the x-ray device has a high current load sufficient for radiographic imaging.

Ex. 1001, 8:53–59 (emphasis added).

D. Prior Art Relied Upon

Dexco relies upon the following prior art references:

Skillicorn	U.S. 5,077,771	Dec. 31, 1991	(Ex. 1012)
Golden	U.S. 5,442,677	Aug. 15, 1995	(Ex. 1013)
Grodzins	U.S. 6,282,260 B1	Aug. 28, 2001	(Ex. 1014)
Topich	U.S. 4,485,433	Nov. 27, 1984	(Ex. 1015)
Kobayashi	JP S58-145098	Aug. 29, 1983	(Ex. 1010, Ex. 1011, English translation)

D.F. SPENCER ET AL., USING THE COCKROFT-WALTON VOLTAGE MULTIPLIER DESIGN IN HANDHELD DEVICES (INEEL PREPRINT 2001) (Ex. 1016, "Spencer").[1]

[1] Aribex argues that Spencer is a preprint of a paper, and that Dexco proffers no evidence to establish that Spencer qualifies as prior art. Prelim. Resp. 26–28. For purposes of this Decision, it is not necessary for us to determine whether Spencer qualifies as prior art because, as discussed below, we deny the grounds asserted by Dexco based on other deficiencies.

E. Asserted Grounds of Unpatentability

Dexco asserts the following grounds of unpatentability:

Challenged Claim(s)	Basis	Reference(s)
3	§ 112	
1, 4, 19 and 21	§ 102(b)[2]	Kobayashi
2, 3, and 14	§ 103(a)	Kobayashi, Skillicorn, Topich, and/or Spencer
15 and 17	§ 103(a)	Kobayashi, Skillicorn, and Golden
5	§ 103(a)	Kobayashi and Grodzins
23	§ 103(a)	Kobayashi, Skillicorn, Golden, and Grodzins

As an initial matter, Dexco asserts that claim 3 is unpatentable for failing to comply with the requirements of 35 U.S.C. § 112, ¶¶ 1, 2, as lacking written description support and as indefinite. Pet. 7–10. A petitioner in an *inter partes* review, however, is not permitted to assert a ground of unpatentability under 35 U.S.C. § 112. Notably, 35 U.S.C. § 311(b) provides that a "petitioner in an inter partes review may request to cancel as unpatentable 1 or more claims of a patent *only on a ground that could be raised under section 102 or 103* and only on the basis of prior art consisting of patents or printed publication." Emphasis added. As such, we

[2] Because the claims at issue have a filing date prior to March 16, 2013, the effective date of the Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) ("AIA"), we apply the pre-AIA version of 35 U.S.C. §§ 102 and 103 in this Decision.

decline to institute an *inter partes* review based on the ground that claim 3 is unpatentable under 35 U.S.C. § 112, as asserted by Dexco.

II. ANALYSIS

A. Level of Ordinary Skill in the Art

Dexco relies upon a Declaration of Dr. David M. Hamby (Ex. 1003), and a Declaration of Mr. Mark I. Montrose (Ex. 1006) for support of its Petition. Dr. Hamby testifies that a person of ordinary skill in *the general art of x-ray devices*, as described in the '178 patent, would have had a Bachelor of Science degree in physics, nuclear engineering, or health physics, or at least five years of experience in x-ray technologies. Ex. 1003 ¶ 12. With respect to electro-mechanical aspects of *power supplies* used for x-ray devices, as described in the '178 patent, Dr. Hamby relies on Mr. Montrose's opinion on the level of ordinary skill in the art. *Id*. In that regard, Mr. Montrose testifies that one of ordinary skill in the art would have had a Bachelor of Science degree in electrical engineering, or at least 2 years of experience in electrical engineering and system design. Ex. 1006 ¶ 7.

In its Preliminary Response, Aribex alleges that Dexco's experts provide conflicting definitions of the level of ordinary skill because Dexco's experts reference two different arts and define the persons of ordinary skill in these arts as having different education and training. Prelim. Resp. 33–35. Aribex argues that Dexco's Petition should be denied for this reason alone. *Id.*

On this record, we are not persuaded by Aribex's arguments. In determining the level of ordinary skill in the art, various factors may be considered, including "type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field." *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). According to the "Field of the Invention" section of the '178 patent, the invention relates to *x-ray devices generally*, and also relates specifically to portable x-ray devices that include *an integrated power system*. Ex. 1001, 1:13–20. Dexco's experts merely recognize that, in the context of the '178 patent, a relevant skilled artisan would have had general knowledge in connection with *x-ray devices* as well as *power systems*. This is consistent with the prior art of record, recognizing the use of a smaller and lighter power system would address one of the problems of designing a portable x-ray device. Ex. 1011 ¶¶ 11–15; Ex. 1012, 1:6–14, 8:8–60; Ex. 1013, 1:6–2:51. Therefore, we do not discern any meaningful conflict in Dexco's definitions, as alleged by Aribex. Ex. 1003 ¶ 12; Ex. 1006 ¶ 7.

For purposes of this Decision, we adopt the definitions of a person of ordinary skill in the art identified by Dr. Hamby and Mr. Montrose, as they are consistent with the Specification of the '178 patent and the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (the prior art itself can reflect the appropriate level of ordinary skill in the art).

B. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs. LLC v. Lee*, No. 15–446, 2016 WL 3369425, at *12 (U.S. June 20, 2016) (adopting the broadest reasonable interpretation standard is a reasonable exercise of the Office's rulemaking authority). Under the broadest reasonable interpretation standard, claim terms generally are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

The parties propose constructions for several claim terms. Pet. 5–7; Prelim. Resp. 16–19. We note that only those terms which are in controversy need to be construed, and only to the extent necessary to resolve the controversy. *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999). For purposes of this Decision, we find it necessary to address only the claim term "continuous, high voltage DC power" and the preamble of claim 3.

"a continuous, high voltage DC power"

Each of the independent claims challenged by Dexco requires "a continuous, high voltage DC power." For instance, claim 14 recites "an integrated power system that provides a continuous, high voltage DC power." Ex. 1001, 9:32–41. In that regard, the Specification of the '178

patent states that the "power system can be battery-operated, yet still provide a continuous high voltage, rather than Marx generators (pulsed) or capacitively-pulsed systems." *Id*. at 8:12–14.

In its Petition, Dexco proposes to construe the claim term "high voltage" as "a voltage that can be used by an x-ray tube to generate x-rays." Pet. 6–7 (citing Ex. 1001, 4:10–21). Aribex, in its Preliminary Response, proposes to construe the claim term "continuous" to exclude a pulse or burst of high voltage. Prelim. Resp. 19 (citing Ex. 1001, 8:12–14; Ex. 1002, 188–92). In light of the Specification, we agree with the parties that the claim term "a continuous, high voltage DC power" encompasses a DC voltage power that can be used by an x-ray tube to generate x-rays, but this claim term does not include a pulse or burst of high voltage. *See* Ex. 1001, 4:10–21, 8:12–14.

Preamble of claim 3

Claim 3 recites "[t]he device of *claim 1*, wherein each power supply provides a power ranging from about 20 to about 50 kV." Ex. 1001, 8:62–63 (emphasis added). Claim 1, however, does not recite any power supply. *Id*. at 8:53–59. Aribex alleges that claim 3 is not indefinite because one of ordinary skill in the art would have read claim 3 as dependent from claim 2 rather than claim 1. Prelim. Resp. 18–19.

Notwithstanding that it is undisputed that claim 3, as currently written in the '178 patent, depends from *claim 1*, Aribex essentially asks us to rewrite claim 3 to depend from *claim 2*. We recognize that courts

sometimes can correct "a patent if (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims." *Rembrandt Data Techs., LP v. AOL, LLC*, 641 F.3d 1331, 1339 (Fed. Cir. 2011). Here, the correction suggested by Aribex is not minor, obvious, free from reasonable debate or evident from the prosecution history. In view of the foregoing, we decline to adopt Aribex's proposed claim construction.

C. Principles of Law

To establish anticipation, each and every element in a claim, arranged as recited in the claim, must be found in a single prior art reference. *Net MoneyIN, Inc. v. VeriSign, Inc*., 545 F.3d 1359, 1371 (Fed. Cir. 2008). While the elements must be arranged or combined in the same way as in the claim, "the reference need not satisfy an *ipsissimis verbis* test," i.e., identity of terminology is not required. *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009).

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc*., 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art;

(3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

D. Anticipation by Kobayashi

Dexco asserts that claims 1, 4, 19, and 21 are unpatentable under 35 U.S.C. § 102(b) as anticipated by Kobayashi. Pet. 10–18. As support, Dexco relies upon a Declaration of Dr. Hamby (Ex. 1003) and a Declaration of Mr. Montrose (Ex. 1006). Aribex counters that Kobayashi fails to disclose several claim elements. Prelim. Resp. 37–43.

Claim 1 recites "an x-ray source that is powered by an integrated power system that provides *a continuous, high voltage DC power*." Ex. 1001, 8:54–56 (emphasis added). Claims 4, 19, and 21 also require a similar limitation. *See, e.g., id*. at 10:11–13. As discussed previously, we determine that the claim term "a continuous, high voltage DC power" encompasses a DC voltage power that can be used by an x-ray tube to generate x-rays, but it does not include a pulse or burst of high voltage.

In regard to this disputed limitation, Dexco argues that Kobayashi's x-ray tube "is powered by an internal, power system that includes high voltage circuit 32 and rechargeable battery 31, which together provides a high voltage, continuous DC power to the tube." Pet. 13. To support its argument, Dexco directs our attention to two separate embodiments of Kobayashi: (1) the embodiment as shown in Figure 2 of Kobayashi (Ex. 1011 ¶¶ 6–10); and (2) the embodiment as shown in Figure 4 of Kobayashi (*id*. ¶¶ 11–15). Pet. 10–18.

Aribex opposes. Prelim. Resp. 37–40. With respect to the first embodiment, Aribex argues that Kobayashi does not disclose a *continuous* DC voltage. *Id*. As to the second embodiment, Aribex contends that Kobayashi does not disclose a *high DC voltage*. *Id*.

Upon review of Dexco's contentions (Pet. 10–18) and expert testimony (Ex. 1003 ¶¶ 31–55; Ex. 1006 ¶¶ 25–34), we agree with Aribex that Dexco has not shown sufficiently that Kobayashi describes "a continuous, high voltage DC power," as required by claims 1, 4, 19, and 21.

Kobayashi describes a portable x-ray generating apparatus which can be used suitably for medical treatment. Ex. 1011 ¶ 1. Figure 2 of Kobayashi is reproduced below.

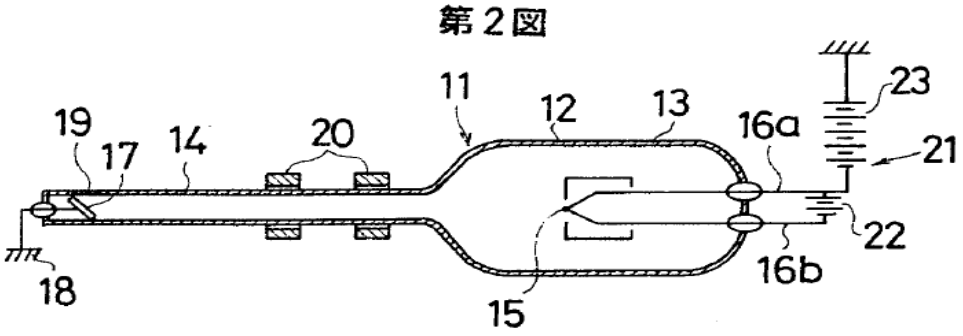

Figure 2 of Kobayashi illustrates x-ray tube bulb 11, having sealed tube 12 that has large diameter part 13 and small diameter part 14. *Id*. ¶ 6. Filament 15 is disposed inside large diameter part 13 for generating electron beams. *Id*. Target 17 is disposed in the tip of small diameter part 14 for converting the electron beams into x-rays. *Id*. The x-rays are irradiated through window 19. *Id*.

The power system for this embodiment comprises lead wires 16a and 16b and power source part 21, which itself comprises filament power source 22, which heats filament 15, and high voltage power source 23, which supplies a DC high voltage to sealed tube 12. *Id*. However, Kobayashi is silent as to the voltage supplied to the x-ray tube bulb being a *continuous*, high DC voltage, as opposed to a *pulse* voltage. *Id*. ¶¶ 6–10.

Figure 4 of Kobayashi, reproduced below, illustrates another embodiment.

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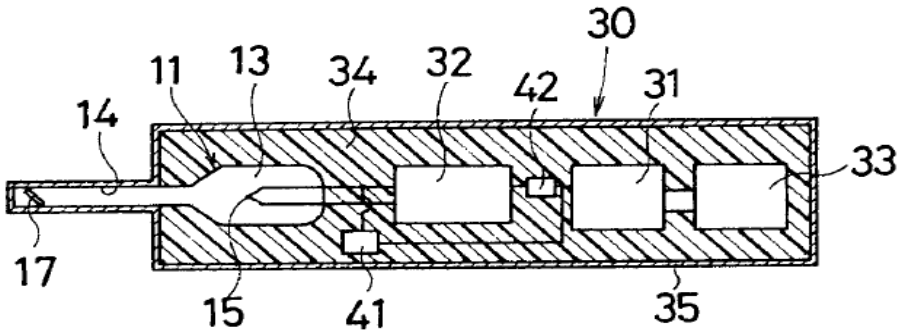

As shown in Figure 4 of Kobayashi, the base part of x-ray tube bulb 11 is molded in by synthetic resin along with chargeable reversible battery 31, high voltage generating circuit 32, and charging circuit 33. *Id.* ¶ 11. Switch 41 is for heating filament 15 and switch 42 is for applying a high voltage to filament 15. *Id*. ¶ 13.

However, nothing in this embodiment of Kobayashi discloses that the voltage supplied to x-ray tube bulb 11 is a *high DC voltage*. Ex. 1011 ¶¶ 11–17. In fact, Kobayashi discloses that "battery 31 itself is of low voltage and therefore *converted to AC by an oscillation circuit* in high voltage generating circuit 32, with the voltage thereof increased by a

transformer and used as a high voltage power source." Ex. 1011 ¶ 11 (emphasis added).

Yet, Mr. Montrose testifies that Kobayashi's x-ray device "can continuously provide *DC current* to the X-ray tube as well as provide intermittent current for frame photographing and also current for instantaneous operations." Ex. 1006 ¶ 27 (citing Ex. 1011 ¶ 13) (emphasis added). Mr. Montrose further testifies that the x-ray tube is "powered by an internal, power system that includes high voltage circuit 32 and rechargeable battery 31, which together provide a *high voltage, continuous DC power* to the tube 11." *Id*. ¶ 31 (emphasis added). However, the portions of Kobayashi relied upon by Mr. Montrose's testimony are directed to the second embodiment (shown in Figure 4 of Kobayashi) which, as we discussed above, does not disclose a *high DC voltage*. *Id*. ¶¶ 27–31.

Mr. Montrose's testimony also relies on Kobayashi's switch disclosure—"switch 42 for applying a high voltage to filament 15," and that switch 42 "can selectively perform . . . operations for operating only for a continuously necessary time for continuous irradiation." *Id*. ¶ 31 (citing Ex. 1011 ¶ 13). That disclosure of Kobayashi, however, is silent as to the voltage applied to the x-ray tube bulb being a *high DC voltage*.
Mr. Montrose does not explain sufficiently why the power system of the second embodiment (shown in Figure 4 of Kobayashi) would generate a *high DC voltage*, using that switch. Nor does he explain why the power system of the first embodiment (shown in Figure 2 of Kobayashi), which does not use such a switch, would provide a *continuous* voltage.

Mr. Montrose's testimony improperly attempts to combine the two embodiments of Kobayashi, conflating the two power systems. *Id*. ¶¶ 27–31. Although the items related to the x-ray tube bulb (items 11, 13, 14, 15, 17) are described in the first embodiment, Kobayashi clearly describes two separate and distinct power systems. Ex. 1011 ¶¶ 4–17. Nothing in the first embodiment of Kobayashi (shown in Figure 2 of Kobayashi) describes a *continuous*, high DC voltage, and nothing in the second embodiment (shown in Figure 4 of Kobayashi) describes a *high DC voltage*. Ex. 1011 ¶¶ 6–17.

We decline, here in an anticipation analysis, to combine the two separate and distinct power systems of Kobayashi, as suggested by Mr. Montrose. Ex. 1006 ¶¶ 27–31. Furthermore, even if we were to contemplate such a combination, Mr. Montrose does not explain how the components of each power system are to be combined or what components would be included in the resulting power system. Nor does he articulate any reasoning why one with ordinary skill in the art would have combined the power systems to provide "a continuous, high voltage DC power" as required by the claims 1, 4, 19, and 21.

Dexco also directs our attention to Dr. Hamby's Declaration, which mainly repeats Mr. Montrose's testimony and provides no additional meaningful explanations or evidence with respect to the "continuous, high voltage DC power" limitation. *Compare* Ex. 1003 ¶¶ 31–55, *with* Ex. 1006 ¶¶ 27–31. Given the evidence before us, we give little, if any, weight to the testimony of Mr. Montrose and Dr. Hamby that Kobayashi discloses "a continuous, high voltage DC power." *See* 37 C.F.R. § 42.65(a) ("Expert

testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight."); *see also Rohm and Haas Co. v. Brotech Corp*., 127 F.3d 1089, 1092 (Fed. Cir. 1997) (nothing requires a fact finder to credit the inadequately explained testimony of an expert).

For the foregoing reasons, we determine that Dexco has not shown adequately that Kobayashi describes "a continuous, high voltage DC power." Therefore, we conclude that Dexco has not demonstrated a reasonable likelihood of prevailing on its assertion that claims 1, 4, 19, and 21 are unpatentable under 35 U.S.C. § 102(b) as anticipated by Kobayashi.

E. Obviousness over Kobayashi in Combination with Other References

Dexco asserts that claims 2, 3, 5, 14, 15, 17, and 23 are unpatentable under 35 U.S.C. § 103(a) as obvious over Kobayashi in combination with other cited references. Pet. 18–39. In particular, Dexco contends that: (1) claims 2, 3, and 14 would have been obvious over Kobayashi, Skillicorn, Topich, and/or Spencer (*id*. at 18–28); (2) claims 15 and 17 would have been obvious over Kobayashi, Skillicorn, and Golden (*id*. at 28–34); (3) claim 5 would have been obvious over Kobayashi and Grodzins (*id*. at 35–38); and (4) claim 23 would have been obvious over Kobayashi, Skillicorn, Golden, and Grodzins (*id*. at 38–39).

Independent claims 14, 17, and 23 each recite "an x-ray source that is powered by an integrated power system that provides *a continuous, high voltage DC power*," which is similar to the limitation recited in claim 1 that

we discussed above in our anticipation analysis. Ex. 1001, 9:33–36. By virtue of their dependency, claims 2, 3, 5, and 15 also require this disputed limitation. Dexco contends that Kobayashi discloses this limitation, essentially relying on the same arguments and evidence presented in connection with claim 1. Pet. 18–39; *see*, *e.g.*, *id*. at 20 ("Claims 2 and 3 include all of the elements and limitations of claim 1, all of which are literally found in [Kobayashi], as discussed above."), 33 (Kobayashi "includes those elements and limitations common to claims 1 and 17 of the '178 patent as discussed above."). In our analysis above, we have addressed those arguments and conclude that those arguments are likewise unavailing here. Furthermore, Dexco does not rely on other cited references for any teaching that would remedy the deficiencies discussed above with regard to the "continuous, high voltage DC power" limitation. *Id*. at 18–39.

In consideration of the foregoing, we determine that Dexco has not shown adequately that Kobayashi in combination with the other cited references teaches or suggests "a continuous, high voltage DC power." Consequently, we determine that Dexco has not demonstrated a reasonable likelihood of prevailing on its assertions that claims 2, 3, 5, 14, 15, 17, and 23 are unpatentable as obvious over Kobayashi in combination with the other cited references.

III. CONCLUSION

For the foregoing reasons, the information presented in the Petition fails to establish that there is a reasonable likelihood that Dexco would prevail in challenging claims 1–5, 14, 15, 17, 19, 21, and 23 of the ’178 patent.

IV. ORDER

It is ORDERED that the Petition is *denied*, and no trial is instituted.

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