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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MARTIN FORNAGE and DONALD RICHARD ZIMMANCK

Appeal 2019-002866
Application 14/586,416
Technology Center 2800

Before MONTÉ T. SQUIRE, AVELYN M. ROSS, and MERRELL C. CASHION, JR., *Administrative Patent Judges*.

SQUIRE, *Administrative Patent Judge.*

DECISION ON APPEAL[1]

Appellant[2] appeals under 35 U.S.C. § 134(a) from the Examiner's decision finally rejecting claims 21–25, 31–36, 38, and 39, which are all of the claims pending in this application.[3] We have jurisdiction under 35 U.S.C. § 6(b).

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[1] In this Decision, we refer to the Specification filed Dec. 30, 2014 ("Spec."); Final Office Action dated Mar. 12, 2018 ("Final Act."); Advisory Action dated June 20, 2018 ("Advisory Act."); Appeal Brief filed Sept. 12, 2018 ("Appeal Br."); Examiner's Answer dated Dec. 21, 2018 ("Ans."); and Reply Brief filed Feb. 21, 2019 ("Reply Brief").

[2] We use the word "Appellant" to refer to "applicant" as defined in 37 C.F.R. § 1.42(a). Appellant identifies Enphase Energy, Inc. as the real party in interest. Appeal Br. 3.

[3] Claims 1–20, 26–30, 37, and 40 are cancelled. Appeal Br. 9, 11.

We AFFIRM.

CLAIMED SUBJECT MATTER

Appellant's claimed subject matter relates to an apparatus for operating a DC-DC converter, which, according to the Specification, is adapted for lossless commutation during DC-DC power conversion. Spec. ¶¶ 2, 6, Fig. 1; Abstract. Claim 21 illustrates the claimed subject matter on appeal and is reproduced below from the Claims Appendix to the Appeal Brief:

> 21. Apparatus for power conversion, comprising:
>
> a power conversion circuit comprising (i) a transformer having a primary winding and a secondary winding, and (ii) ***a current control switch coupled to the transformer for controlling current flow through the primary winding such that there is no ringing*** on a drain-source voltage of the current control switch during energy transfer between the primary winding and the secondary winding, wherein a primary capacitance of the power conversion circuit and a secondary capacitance of the power conversion circuit are matched based on a turns ratio of the transformer.

Appeal Br. 9 (key disputed claim language italicized and bolded).

REFERENCE

The Examiner relies on the following prior art reference as evidence in rejecting the claims on appeal:

Name	Reference	Date
Wittenbreder, Jr. ("Wittenbreder")	US 7,606,051 B1	Oct. 20, 2009

REJECTIONS

On appeal, the Examiner maintains (Ans. 3) the following rejections:

1. Claims 21–25 and 32 are rejected under pre-AIA 35 U.S.C. § 102(a) and § 102(e) as being anticipated by Wittenbreder ("Rejection 1"). Final Act. 9.

2. Claims 21–25, 31–36, 38, and 39 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1–20 of U.S. Patent No. 8,937,817 ("Rejection 2"). *Id.* at 13.

OPINION

Having considered the respective positions advanced by the Examiner and Appellant in light of this appeal record, we affirm the Examiner's rejections based on the fact-finding and reasoning set forth in the Answer, Advisory Action, and Final Office Action, which we adopt as our own. We add the following primarily for emphasis.

Rejection 1

The Examiner rejects claims 21–25 and 32 under pre-AIA 35 U.S.C. § 102(a) and § 102(e) as anticipated by Wittenbreder (Final Act. 9–12), which we refer to as Rejection 1. In response to the Examiner's rejection, Appellant argues for the patentability of claim 21 but does not present separate arguments for the patentability of remaining claims 22–25 and 32. Appeal Br. 5–7. We select claim 21 as representative and claims 22–25 and 32 stand or fall with claim 21. 37 C.F.R. § 41.37(c)(1)(iv).

The Examiner determines Wittenbreder discloses an apparatus for power conversion satisfying all of the elements of claim 21 and thus, concludes the reference anticipates the claim. Final Act. 9–11 (citing

Wittenbreder, Fig. 8 and identifying T_{MAIN} (transformer), I_{PRI} (primary winding), I_{SEC} (secondary winding), $S_{PRIMAIN}$ (current control switch)).

To serve as an anticipatory reference, "the reference must disclose each and every element of the claimed invention." *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009). On the record before us, we find a preponderance of the evidence supports the Examiner's findings and determination (Final Act. 9–11; Ans. 3–8) that Wittenbreder discloses a power conversion apparatus satisfying all of the elements of claim 21 and that the reference anticipates the claim. Wittenbreder, Abstract, Figs. 3, 8–12, 7:59–8:59, 8:27–40, 8:49–62, 16:58–17:6, 17:46–51.

Appellant argues that the Examiner's rejection of claim 21 should be reversed because Wittenbreder does not disclose "a current control switch coupled to the transformer for controlling current flow through the primary winding such that there is no ringing on a drain-source voltage of the current control switch during energy transfer between the primary winding and the secondary winding," as recited in the claim. Appeal Br. 5–6; Reply Br. 2–3. In particular, Appellant contends that, because Wittenbreder is "silent with respect to the operation of a current control switch to achieve no ringing," the reference fails to teach or suggest operating a current control switch "such that there is no ringing," as required by the claim. Appeal Br. 5, 6.

We do not find Appellant's argument persuasive of reversible error in the Examiner's rejection based on the fact-finding and reasons provided by the Examiner at pages 3–5 of the Answer and pages 10–11 of the Final Office Action. Contrary to what Appellant argues, a preponderance of the evidence supports the Examiner's determination that Wittenbreder discloses

the "such that there is no ringing" recitation of the claim. Wittenbreder, Abstract, Figs. 3, 8–12, 7:59–8:59, 8:27–40, 8:49–62, 16:58–17:6, 17:46–51.

In particular, as the Examiner finds (Ans. 4), Wittenbreder discusses and explicitly teaches operating the power conversion apparatus it describes to eliminate ringing through the use of clamped circuits. Wittenbreder, Abstract (disclosing that "overshoot and ringing associated with leakage inductance . . . is entirely eliminated"), 8:20–22 (disclosing that "there can be no ringing or overshoot at the primary and secondary windings of T_{MAIN}"), 8:55–59 ("The FIG. **8** circuit has successfully used its leakage inductance to provide the benefit of zero voltage switching without the detriment of overshoot and ringing, which is usually the consequence of leakage inductance in prior art converters."), 16:58–60 (disclosing that the power conversion circuit "can totally eliminate overshoot and ringing").

As the Examiner further finds (Ans. 4), Wittenbreder teaches that the ringing is eliminated by controlling the current control switch on the primary side ($S_{PRIMAIN}$) and the clamp switch ($S_{PRICLAMP}$). Wittenbreder 7:59–8:59 (describing the operation of the converter during the two phases which make up a full switching cycle, including the control of switches $S_{PRIMAIN}$ and $S_{PRICLAMP}$ to eliminate ringing on the primary side). As the Examiner also finds (Ans. 4), Wittenbreder teaches that no ringing occurs specifically in the voltages at the terminals of each transformer winding. Wittenbreder, Fig. 8, 8:49–62.

Appellant's arguments do not reveal reversible error in the Examiner's factual findings and analysis in this regard. Appellant's contention that Wittenbreder is "silent with respect to the operation of a current control switch to achieve no ringing" is misplaced because, as

discussed above, Wittenbreder is in fact not silent on this teaching, and actually does describe controlling a current control switch such that there is no ringing, as claimed.

Appellant also argues the Examiner's interpretation of the phrase "during energy transfer between the primary winding and the secondary winding" to mean during any period during operation of the converter is incorrect because "[a]s is well-known in the art, energy transfer between the transformer winding does not occur during all periods of power converter operation." *Id.* at 5.

We do not find Appellant's argument persuasive of reversible error in the Examiner's rejection. Rather, we determine the Examiner's interpretation of the phrase "during energy transfer between the primary winding and the secondary winding" constitutes the broadest reasonable interpretation consistent with the Specification.

During prosecution, claims are given their broadest reasonable interpretation consistent with the specification. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). The words used in a claim must be read in light of the specification, as they would have been interpreted by one of ordinary skill in the art at the time of the invention. *Id.*

As the Examiner points out (Ans. 5), the claim does not recite any specific time period, switching cycle, or phase of operation for the power converter. The Specification also does not provide any special definition for the phrase "during energy transfer between the primary winding and the secondary winding" beyond the language recited in the claim. Further, Appellant does not identify or direct us to any description in Specification indicating that the phrase must narrowly be construed to mean a specific

time period, switching cycle, or phase of operation beyond the language of the claim. Thus, absent any special or scope-limiting definition in the Specification, we find the Examiner correctly applied the broadest reasonable interpretation of the phrase to mean during any period during operation of the converter. *In re ICON Health & Fitness, Inc.*, 496 F.3d 1374, 1379 (Fed. Cir. 2007) ("[W]e look to the specification to see if it provides a definition for claim terms, but otherwise apply a broad interpretation.").

Moreover, applying the broadest reasonable interpretation of the recitation "during energy transfer between the primary winding and the secondary winding," we discern no reversible error in the Examiner's finding that Wittenbreder discloses that element of the claim. In particular, we find a preponderance of the evidence supports the Examiner's finding (Ans. 5) that Wittenbreder describes, for example, an "off state" during which the primary switch $S_{PRIMAIN}$ is turned off and stored energy in the primary winding I_{PRI} is transferred to the secondary winding I_{SEC} as a flowing output current (Wittenbreder, Figs. 8, 10, 8:27–36, 8:40–42 (disclosing that "[c]urrent is transferred gradually to the secondary winding during the off state")), which falls within the scope of "during energy transfer between the primary winding and the secondary winding," as recited in the claim.

Appellant's assertion that it "is well-known in the art, energy transfer between the transformer winding does not occur during all periods of power converter operation" (Appeal Br. 5) is conclusory and, without more, does not rebut or otherwise establish reversible error in the Examiner's factual

findings and analysis in this regard. *In re De Blauwe*, 736 F.2d 699, 705 (Fed. Cir. 1984).

Lastly, Appellant argues Wittenbreder does not disclose the "wherein a primary capacitance of the power conversion circuit and a secondary capacitance of the power conversion circuit are matched based on a turns ratio of the transformer" recitation of the claim. *Id.* at 6. In particular, Appellant contends Wittenbreder is actually "silent" with respect to this element of the claim, and the "Examiner merely hypothesizes about what one could do to achieve the claimed matched capacitances." *Id.* at 6.

We do not find Appellant's contentions in this regard persuasive of reversible error because they are conclusory and unsupported by persuasive evidence in the record. Attorney argument is not evidence. *De Blauwe*, 736 at 705; *see also In re Lovin*, 652 F.3d 1349, 1356–57 (Fed. Cir. 2011) (holding that a "naked assertion" that the prior art fails to disclose a claim limitation is not an argument in support of separate patentability).

Moreover, based on the fact-finding and detailed analysis provided by the Examiner at pages 5–8 of the Answer and pages 10–11 of the Final Office Action, we find that a preponderance of the evidence does support the Examiner's finding that Wittenbreder discloses the "wherein a primary capacitance of the power conversion circuit and a secondary capacitance of the power conversion circuit are matched based on a turns ratio of the transformer" recitation of the claim. Wittenbreder, Fig. 8, 7:59–8:59.

Accordingly, we affirm the Examiner's rejection of claims 21–25 and 32 under pre-AIA 35 U.S.C. § 102(a) and § 102(e) as anticipated by Wittenbreder.

Rejection 2

Appellant does not present any substantive argument in the Appeal Brief or Reply Brief in response to the Examiner's rejection of claims 21–25, 31–36, 38, and 39 on the ground of nonstatutory double patenting as being unpatentable over claims 1–20 of U.S. Patent No. 8,937,817 (Final Act. 13). *See generally* Appeal Br., Reply Br.

Accordingly, because the Examiner's rejection of claims 21–25, 31–36, 38, and 39 for nonstatutory double patenting has not been withdrawn (*see* Ans. 3; Final Act. 13–14) and is not disputed by Appellant, we summarily affirm this rejection. *Cf. Hyatt v. Dudas*, 551 F.3d 1307, 1314 (Fed. Cir. 2008); *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential) ("If an appellant fails to present arguments on a particular issue — or, more broadly, on a particular rejection — the Board will not, as a general matter, unilaterally review those uncontested aspects of the rejection") (cited with approval in *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011)).

CONCLUSION

In summary:

Claim(s) Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
21–25, 32	102(a)	Wittenbreder	21–25, 32	
21–25, 32	102(e)	Wittenbreder	21–25, 32	

Claim(s) Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
21–25, 31–36, 38, 39		Nonstatutory double patenting	21–25, 31–36, 38, 39	
Overall Outcome			**21–25, 31–36, 38, 39**	

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a) (1)(iv).

AFFIRMED