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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ELMAR WAGNER

Appeal 2019-006144
Application 15/350,460
Technology Center 2600

Before CARL W. WHITEHEAD JR., DAVID M. KOHUT, and
IRVIN E. BRANCH, *Administrative Patent Judges*.

PER CURIAM

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 13–19, 22, and 23. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

¹ We use “Appellant” to reference the applicant as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as “Intel Deutschland GmbH.” Appeal Br. 1.

STATEMENT OF THE CASE

Appellant's Invention

Appellant's invention relates to "modulat[ing] waveforms in digital fashion." Spec. ¶ 3. Claim 13, reproduced below with emphasis, is the only independent claim.

13. A circuit that includes a digital modulator, the digital modulator comprising:

a differentiator to receive successive phase values at a sampling rate and provide differentiated phase values based on the phase values;

an adder to provide successive instantaneous phase offset values at the sampling rate based on both the differentiated phase values and a frequency control word;

a phase accumulator to provide successive instantaneous phase values at the sampling rate based on the instantaneous phase offset values; and

an angle-to-amplitude converter to convert the instantaneous phase values to a multi-bit representation of a phase modulated wave at the sampling rate.

Appeal Br. 9 (Claims Appendix).

Rejections²

Claims 13, 14, 18, and 19 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Waheed (US 2007/0189417 A1; Aug. 16, 2007).

Final Act. 3–5.

Claim 15 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Waheed and Gentile (Gentile, Ken, "DDS Simplifies Polar Modulation," EDN Magazine, Aug. 5, 2004, pp. 69–74 (available at: <https://>

² The Examiner finds claims 16 and 23 are allowable if rewritten in independent form. Final Act. 8.

www.edn.com/?s=%22DDS+Simplifies+Polar+Modulation%22)).

Final Act. 6.

Claim 17 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Waheed, Gentile, and Eliezer (US 2006/0291589 A1; Dec. 28, 2006).

Final Act. 7.

Claim 22 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Waheed and Edwards (US 3,985,966; Oct. 12, 1976). Final Act. 7–8.

OPINION

For the following reasons, we are persuaded of error in the Examiner’s reliance on Waheed. We accordingly do not sustain the rejections of claims 13–19, 22, and 23.

Appellant contends the Examiner errs by concluding, in view of Waheed’s Figure 3, it would have been obvious for the Digital Phase Locked Loop (DPLL) 350 of Waheed’s Figure 24 to perform the claimed angle-to-amplitude conversion. Appeal Br. 4–6. Appellant frames the overall issue as a question of “whether the requisite motivation exists to modify the [DPLL] in Fig. 24 of Waheed et al. to include an angle-to-amplitude converter based on the teaching in Fig. 3.” *Id.* at 4. Appellant then contends the Examiner “appears to” propose a device whereby Waheed’s bit shifter 374 of the DPLL 350 operates as an angle-to-amplitude converter. *Id.* at 5. Appellant also contends the record lacks a reason for the bit shifter 374 to operate as an angle-to-amplitude converter because: “there is no rationale provided in Fig. 3 of Waheed et al. to modify the DPLL in Fig. 24 of Waheed et al. . . . [so as] to replace the . . . bit shifter 374 with an angle-to-amplitude converter as claimed” (*id.*);

and, “[t]here is nothing in the amplitude modulation . . . in Fig. 3 that has anything to do with element 374 of Fig. 24” (*id.* at 6).

We are persuaded of error because the Examiner does not present a clear rationale for the determination of obviousness.

The Final Action states “it would have been obvious to one having ordinary skill in the art . . . *to interpret* the output of [Waheed’s] element 374 as a multibit representation of the phase modulated wave.” Final Act. 4. This reasoning does not support a determination of obviousness. It amounts to an assertion that an artisan would have understood the claimed output of the angle-to-amplitude converter—i.e., the multibit representation of the phase modulated wave—as “broad enough” to read on the output of Waheed’s bit shifter 374. Thus, this finding does not support a factual basis for a determination of obviousness, much less a supporting rationale.

The Answer clarifies that the Examiner concludes it would have been obvious to use components 368–76 of Waheed’s Figure 24 (i.e., of the DPLL 350) within the modulator 108 of Waheed’s Figure 3. *See* Ans. 9, 11, 15. Specifically, the Answer twice states that the Examiner “corresponds” components 368–76 to the modulator 108 (*id.* at 9, 11) and then states components 368–76 “would appear within modulator 104” (*id.* at 15) (emphasis omitted). The Answer, however, lacks a stated reason why it would have been obvious to use components 368–76 within the modulator 108.³ This clarification amounts to an allegation that it would have been

³ Waheed’s Figure 5 might be probative (but is not addressed by the Examiner) of whether it would have been obvious for Figure 3’s polar transmitter (Waheed ¶ 28) to include Figure 24’s DPLL 350 (which includes components 368–76). Figure 5 “illustrat[es] the amplitude and phase modulation paths of the polar transmitter” (*id.* ¶ 30) and shows a DPLL

common sense to use components 368–76 within the modulator 108. The Examiner’s “utter failure to explain the . . . common sense on which [he] relied is problematic.” *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1362 (Fed. Cir. 2016) (internal quotation marks omitted) (quoting *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356 (Fed. Cir. 2006); *see also In re Zurko*, 258 F.3d 1379, 1383, 1385–86 (Fed. Cir. 2001) (“With respect to core factual findings in a determination of patentability, . . . the Board cannot simply reach conclusions based on . . . its assessment of what would be basic knowledge or common sense.”). Such a failure is especially “problematic” if, as here, the proposed inclusion of elements within a prior art device is not “technology-independent.” *Arendi*, 832 F.3d at 1361 (citing *DyStar*, 464 F.3d at 1368).

For the foregoing reasons, we are persuaded by Appellant that the record lacks the requisite “articulated reasoning . . . to support the legal conclusion of obviousness.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (parenthetically quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). This shortcoming permeates all pending claims.

OVERALL CONCLUSION

Accordingly, we reverse the Examiner’s decision to reject claims 13–19, 22, and 23.

loop 130 within the phase modulation path. Further, Figure 5’s DPLL loop 130 and Figure 24’s DPLL 350 may share a “delay matching” issue. *Id.* ¶¶ 84, 146.

DECISION SUMMARY

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
13, 14, 18, 19	103	Waheed		13, 14, 18, 19
15	103	Waheed, Gentile		15
17	103	Waheed, Gentile, Eliezer		17
22	103	Waheed, Edwards		22
Overall Outcome				13–19, 22, 23

REVERSED