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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/100,103	12/09/2013	Hiromichi KITAJIMA	36856.2886	5467

54066 7590 02/16/2018

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ART UNIT	PAPER NUMBER
2649	

NOTIFICATION DATE	DELIVERY MODE
02/16/2018	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte HIROMICHI KITAJIMA

Appeal 2017-009352
Application 14/100,103
Technology Center 2600

Before JAMES R. HUGHES, CATHERINE SHIANG, and JESSICA C. KAISER, *Administrative Patent Judges*.

SHIANG, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 2–19, which are all the claims pending and rejected in the application. We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

STATEMENT OF THE CASE

Introduction

According to the Specification, the present invention relates to circuit modules that include a mounting substrate provided with signal electrodes, a ground electrode arranged between the signal electrodes when viewed in plan, and via conductors connected to the ground electrode. *See* Spec. ¶ 1. Claim 2 is exemplary:

2. A circuit module comprising:

a mounting substrate including a plurality of signal electrodes, a ground electrode that is arranged between the signal electrodes when viewed in plan and isolated from the signal electrodes, and a plurality of via conductors that are connected to the ground electrode;

wherein each of the plurality of via conductors is arranged so that an edge of the ground electrode is superposed with at least a portion of an end surface of the via conductor when viewed in plan; and

all of the plurality of signal electrodes and all of the plurality of via conductors are spaced away from edges of the mounting substrate.

References and Rejection

Claims 2–19 stand rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over the collective teachings of Kemmochi et al. (US 2004/0032706 A1; publ. Feb. 19, 2004) ("Kemmochi"), Nagano et al. (US 2007/0247258 A1; publ. Oct. 25, 2007) ("Nagano"), and Hatano et al. (US 2009/0302970 A1; publ. Dec. 10, 2009) ("Hatano").

ANALYSIS

We disagree with Appellant's arguments, and agree with and adopt the Examiner's findings and conclusions in (i) the Final Office Action from which this appeal is taken (Final Act. 4–6) and (ii) the Examiner's Answer (Ans. 4–10) to the extent they are consistent with our analysis below.[1]

On this record, the Examiner did not err in rejecting claim 2.

I

[1] To the extent Appellant advances new arguments in the Reply Brief without showing good cause, Appellant has waived such arguments. *See* 37 C.F.R. § 41.41(b)(2).

Appellant contends the Examiner has not provided the requisite rationale for combining the teachings of Kemmochi, Nagano, and Hatano. *See* Appeal Br. 3–15; Reply Br. 2–6. In particular, with respect to the combined teachings of Kemmochi and Nagano, Appellant argues:

> *Nagano et al. does not teach or suggest* that the arrangement of the small portion (annotated portion) of the vias 51 with respect to an edge of the ground electrodes 41 and 42 contribute to enhancing filter device isolation.
>
> . . .
>
> [T]here would have been no reason or motivation to combine the alleged teachings of Nagano et al. with the device of Kemmochi et al. because *Nagano et al. fails to* teach, suggest, or even contemplate that the arrangement annotated portion of the vias 51 of Nagano et al. should or could possibly have been included in the device of Kemmochi et al.

Appeal Br. 8–9 (emphases added) (original emphasis omitted); *see also* Appeal Br. 8–9, 14–15; Reply Br. 2–6.

With respect to the combined teachings of Kemmochi (as modified by Nagano's feature) and Hatano, Appellant contends:

> *Hatano et al. does not teach or suggest* that the arrangement of the signal electrodes (4, 6, 8) and the via conductors (36) being spaced away from edges of the substrate (2) as shown in Fig. 2 of Hatano et al. contributes to a reduced size and reliable isolation between terminal pads.
>
> . . .
>
> [O]ne of ordinary skill in the art would readily understand that modifying Kemmochi et al. such that the signal electrodes (GSM1800 RX/TX, EGSM900 RX/TX, and ANT) would have been spaced away from edges of the laminate would have at least required increasing the size of laminate or a complete redesign and reconfiguration of the internal and external structure of the laminate . . . .

Appeal Br. 11–12 (emphasis added) (original emphases omitted); *see also* Appeal Br. 12–15; Reply Br. 2–6.[2]

Appellant has not persuaded us of error. The U.S. Supreme Court has held "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007).

The Examiner has provided articulated reasoning with a rational underpinning as to why one skilled in the art would have found it obvious to combine the teachings of Kemmochi, Nagano, and Hatano. *See* Final Act. 6; Ans. 4–5. In particular, the Examiner finds—and Appellant does not dispute—Kemmochi, Nagano, Hatano are analogous art and suitable for the proposed combination. *See* Ans. 4–5. The Examiner correctly determines one skilled in the art would have modified Kemmochi's system to incorporate Nagano's technique to achieve the predicable result of enhancing device isolation. *See* Final Act. 6. The Examiner also correctly determines one skilled in the art would have modified Kemmochi's system (as modified by Nagano's teachings) to incorporate Hatano's technique to achieve the predicable result of reliable isolation between terminal pads. *See* Final Act. 6.[3] The Examiner finds Appellant's arguments are unpersuasive

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[2] Appellant's assertion that "Hatano et al. is completely silent regarding the spacing between the signal electrodes (4, 6, 8) or the via conductors (36) and the edges of the substrate (2) as shown in Fig. 2 of Hatano et al." (Appeal Br. 11) is incorrect. Because Appellant acknowledges the spacing feature is "shown in Fig. 2 of Hatano et al.," Hatano is not "completely silent" about that feature.

[3] Alternatively, the Examiner determined one skilled in the art would have pursued the proposed combination to achieve size reduction. *See* Final Act. 6. Because the Examiner has already provided the above rationale for the

because Appellant ignores common knowledge known to one skilled in the art. *See* Ans. 4. The Examiner further finds improving device performance by enhancing isolation was well known in the art. *See* Ans. 4.

Appellant does not persuasively show why the Examiner's determinations are incorrect. In particular, "[i]f the claim extends to what is obvious, it is invalid under § 103" and "the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR*, 550 U.S. at 418–19. Therefore, Appellant's arguments that Nagano (and similarly Hatano) does not specify the cited feature achieves the desired isolation result is unpersuasive. Similarly, the following argument is unpersuasive:

> Since Hatano et al. fails to teach or suggest that the arrangement of the signal electrodes (4, 6, 8) and the via conductors (36) being spaced away from edges of the substrate (2) as shown in Fig. 2 of Hatano et al. would even have been suitable for use in the laminate of Kemmochi et al., which clearly shows that the signal electrodes (GSM1800 RX/TX, EGSM900 RX/TX, and ANT) are provided at the edges of the mounting substrate (laminate), there would have been no reasonable likelihood of success of combining the alleged teachings of Hatano et al. with Kemmochi et al.

Appeal Br. 12. Under *KSR*, 550 U.S. at 418–19, Hatano does not need to specify its feature is suitable for use in Kemmochi, and Appellant has not shown the absence of that specific statement would

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proposed modification, we do not need to evaluate the alternative determination, which is cumulative and unnecessary.

have resulted in "no reasonable likelihood of success," as Appellant asserts (Appeal Br. 12).

Further, Appellant's assertion that modifying Kemmochi's system with Hatano's spacing away technique "would most certainly **not** have . . . achieved isolation between terminal pads" (Appeal Br. 12, 15) is unpersuasive because it is conclusory, and lacks persuasive analysis and support.

The Examiner's findings and conclusion are reasonable because the skilled artisan would "be able to fit the teachings of multiple patents together like pieces of a puzzle" since the skilled artisan is "a person of ordinary creativity, not an automaton." *KSR*, 550 U.S. at 420–21. Appellant does not present adequate evidence that the resulting arrangements would have been "uniquely challenging or difficult for one of ordinary skill in the art" or "represented an unobvious step over the prior art." *Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007) (citing *KSR*, 550 U.S. at 418–19). In particular, Appellant's assertion that the proposed combination of Kemmochi and Hatano would have required "a complete redesign and reconfiguration" (Appeal Br. 12, 15 (original emphases omitted)) is speculative and unsupported. For example, Appellant does not persuasively show why and how the proposed modification would have required "a complete redesign and reconfiguration" of the "circuit electrode patterns, wiring patterns, via-holes" (Appeal Br. 12, 15 (original emphases omitted)). To the contrary, one skilled in the art would have increased the size of the substrate—not a complete redesign and reconfiguration of those patterns and via holes—to incorporate the spacing away feature.

Finally, Appellant's argument about teaching, suggestion, or motivation (Appeal Br. 14–15) is outdated and contradicts the current legal standard. *See KSR*, 550 U.S. at 419 ("The obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents").[4]

Accordingly, we agree with the Examiner that applying Nagano's and Hatano's techniques in Kemmochi's system would have predictably used prior art elements according to their established functions—an obvious improvement. *See KSR*, 550 U.S. at 417.

II

Appellant argues the proposed combination is motivated by impermissible hindsight. *See* Appeal Br. 15–17.

We disagree. Our reviewing courts have not established a bright-line test for hindsight. The U.S. Supreme Court guides that "[a] factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning." *KSR*, 550

[4] Appellant's assertion that "*as discussed above*, none of . . . any other evidence of record, such as *knowledge generally available to one of ordinary skill in the art*, provides any reason or motivation whatsoever to have modified Kemmochi [to achieved the proposed combinations]" (Appeal Br. 14 (emphases added)) is incorrect and contradicts the record. Appellant has *not* presented such discussion "above" with respect to "knowledge generally available to one of ordinary skill in the art," as Appellant asserts (Appeal Br. 14). Therefore, that assertion is unpersuasive because it is conclusory, and lacks persuasive analysis to support the conclusion.

U.S. at 421 (citing *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 36 (1966)). "Rigid preventative rules that deny factfinders recourse to common sense, however, are neither necessary under our case law nor consistent with it." *KSR*, 550 U.S. at 421.

As discussed above, Appellant has not demonstrated the Examiner's proffered combination of references would have been "uniquely challenging or difficult for one of ordinary skill in the art." *Leapfrog Enters.*, 485 F.3d at 1162. In particular, Appellant's assertion that the Examiner impermissibly relies on the Specification (Reply Br 4) is incorrect and contradicts the record. To the contrary, the Examiner correctly cites the Specification to show Kemmochi, Nagano, Hatano, and this invention are all in the same field of endeavor, and the cited references constitute analogous art. *See* Ans. 4–5; *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004) (citations omitted) (To determine this invention's field of endeavor, we consider the "explanations of the invention's subject matter in the patent application, including the embodiments, function, and structure of the claimed invention.").

Further, after reviewing the respective teachings and suggestions of Kemmochi, Nagano, and Hatano, we find the weight of the evidence shows the proffered combination is merely a predictable use of prior art elements according to their established functions, because the combination uses prior art elements of (i) arranging each of the via conductors, so that an edge of the ground electrode is superposed with at least a portion of an end surface of the via conductor; and (ii) spacing all of the signal electrodes and via conductors away from edges of the mounting substrate, according to their well-known function of enhancing isolation, which leads to better device

performance. Therefore, on this record, Appellant has not persuaded us the Examiner engaged in impermissible hindsight.

III

In the Reply Brief, Appellant argues:

> However, contrary to the Examiner's allegations, Nagano et al. fails to teach or suggest that "each of the plurality of via conductors is arranged so that an edge of the ground electrode is superposed with at least a portion of an end surface of the via conductor when viewed in plan" . . . as required by Appellant's claim 2. As shown in Figs. 6-8 of Nagano et al. annotated and reproduced below, there are many vias 51, in fact more vias 51 (circled below in Fig. 6 of Nagano et al.) than those indicated by the arrows as annotated by the Examiner, that are not arranged so that an edge of the ground electrode 41or 42 is superposed with at least a portion of an end surface of the via conductor 51 when viewed in plan. Further, neither paragraphs [0040]-[0045] nor any other portions of Nagano et al. discuss or even mention the arrangement of the vias 51 with respect to an edge of the ground electrodes 41 and 42.

Reply Br. 3 (original emphases omitted).

Even if the above arguments are timely, they are unpersuasive for the following reasons.

First, the claim merely requires "*each of the plurality of* via conductors is arranged so that an edge of the ground electrode is superposed with at least a portion of an end surface of the via conductor when viewed in plan" (emphasis added). The Examiner maps "the plurality of via conductors" to Nagano's vias indicated by arrows (Final Act. 5–6)—not all of the vias in Nagano's drawings. Appellant's argument about the remaining vias (Reply Br. 3) is unpersuasive because it is not directed to the Examiner's findings.

Second, Appellant's argument that "neither paragraphs [0040]-[0045] nor any other portions of Nagano" use words to explicitly discuss that feature (Reply Br. 3) is unpersuasive. Although Nagano's text does not repeat the recited claim limitation verbatim, one skilled in the art would understand the recited claim limitation encompasses the Nagano drawings cited by the Examiner. *See In re Bond*, 910 F.2d 831, 832–33 (Fed. Cir. 1990) (whether a reference teaches a claim limitation "is not an 'ipsissimis verbis' test") (internal citation omitted). In fact, the Examiner finds—and Appellant does dispute—*Nagano's drawings* teach "the plurality of via conductors [are] arranged so that an edge of the ground electrode is superposed with at least a portion of an end surface of the via conductor when viewed in plan." *See* Final Act. 5–6; Ans. 7–8.[5]

Because Appellant has not shown the Examiner erred, we sustain the Examiner's rejection of claim 2.

We also sustain the Examiner's rejection of corresponding dependent claims 3–19, as Appellant does not advance separate substantive arguments about those claims.

DECISION

We affirm the Examiner's decision rejecting claims 2–19.

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[5] Because *Nagano's drawings* teach the limitation, Appellant's assertion that "Nagano et al. is *completely silent* regarding the arrangement of the vias 51 with respect to an edge of the ground electrodes 41 and 42" (Appeal Br. 8 (emphasis added)) is incorrect.

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