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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/019,875	02/02/2011	Jeffrey H. Hunt	10-1217-US-NP	1262
11670	7590	12/08/2016	EXAMINER	
The Boeing Company c/o Vista IP Law Group LLP 100 Spectrum Center Drive Suite 900 Irvine, CA 92618			OSINSKI, MICHAEL S	
			ART UNIT	PAPER NUMBER
			2662	
			NOTIFICATION DATE	DELIVERY MODE
			12/08/2016	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JEFFREY H. HUNT

Appeal 2016-000303
Application 13/019,875¹
Technology Center 2600

Before BRUCE R. WINSOR, AMBER L. HAGY, and
MICHAEL J. ENGLE, *Administrative Patent Judges*.

ENGLE, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134(a) from a final rejection of claims 1–5 and 21–25, which are all of the claims pending in the application. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

Technology

The application relates to a frequency selective imager which senses photons and emits an electrical pulse voltage proportional to the energy level of the sensed photon. Abstract.

¹ Appellant states the real party in interest is The Boeing Co. App. Br. 2.

Representative Claim

Claim 1 is representative and reproduced below with the limitation at issue emphasized:

1. A frequency selective imager, the imager comprising:
an array of pixels arranged in a focal plane array,
wherein a pixel includes *at least one nanoparticle-sized diameter thermoelectric junction of dissimilar materials that is formed between nanowires of different compositions*,
wherein when the at least one nanoparticle-sized diameter thermoelectric junction senses at least one photon, charged carriers in the nanowires diffuse from the at least one nanoparticle-sized diameter thermoelectric junction to connecting electrical terminals, thereby causing each of the at least one nanoparticle-sized diameter thermoelectric junction to emit at least one electrical pulse having a voltage that is proportional to an energy level related to a wavelength of the at least one photon, thereby discriminating the wavelength of the at least one photon.

Rejection

Claims 1–5 and 21–25 stand rejected under 35 U.S.C. § 103(a) as obvious over the combination of Huber (US 2012/0062317 A1; Mar. 15, 2012) and Peczalski et al. (EP 2037243 A2; Mar. 18, 2009). Final Act. 5.

ISSUE

Did the Examiner err in finding the combination of Huber and Peczalski teaches or suggests “at least one nanoparticle-sized diameter thermoelectric junction of dissimilar materials that is formed between nanowires of different compositions,” as recited in claim 1?

ANALYSIS

Claim 1 recites “at least one nanoparticle-sized diameter thermoelectric junction of dissimilar materials that is formed between

nanowires of different compositions.” Independent claim 21 recites a commensurate limitation.

The Examiner relies on Huber as teaching “at least one nanoparticle-sized diameter thermoelectric junction,” but relies on Peczalski as teaching the junction is “of dissimilar materials” and formed between nanowires “of different compositions.” Final Act. 5–6; Ans. 2–3. Specifically, the Examiner and Appellant agree that “in Huber, the nanowire comprises a single bismuth tellurium crystal (Bi_2Te_3)” whereas “Peczalski teaches a nanowire 112 composed of a Pt (platinum) section 111 and an Au-Ni (gold-nickel) section 113.” App. Br. 8; Ans. 3.

Appellant contends it would not be obvious to combine Huber and Peczalski because “in Peczalski, . . . each antenna is unable to discriminate between photons with different wavelengths”; because Peczalski measures resistance whereas Huber measures voltage; and because “[i]t is not probable, and not likely, that the metal (Pt/Au-Ni) nanowire 112 of Peczalski would be able to exhibit the same properties (e.g., acting as photon detector) as the semiconductor (Bi_2Te_3) nanowire 120 of Huber.” App. Br. 6–8.

However, Appellant’s first two arguments merely summarize the prior art yet fail to sufficiently explain whether and how that affects the Examiner’s proposed combination, and they therefore are unpersuasive. *In re Lovin*, 652 F.3d 1349, 1357 (Fed. Cir. 2011) (“[T]he Board reasonably interpreted Rule 41.37 to require more substantive arguments in an appeal brief than a mere recitation of the claim elements and a naked assertion that the corresponding elements were not found in the prior art.”); 37 C.F.R. § 41.37(c)(1)(iv).

We also agree with the Examiner that Appellant has made speculative assertions that lack supporting evidence in the record. Ans. 6; *see also* Reply Br. 5. “Attorney’s argument in a brief cannot take the place of evidence.” *In re Pearson*, 494 F.2d 1399, 1405 (CCPA 1974).

Moreover, “it is not necessary that the inventions of the references be physically combinable to render obvious the invention under review.” *In re Sneed*, 710 F.2d 1544, 1550 (Fed. Cir. 1983). Here, the Examiner does not seek to combine all of Peczalski’s device into Huber, only Peczalski’s teaching that a nanowire can be made of two different compositions. Ans. 2–3. Appellant has not provided sufficient evidence to persuade us that a nanowire and junction of two different compositions would not work in Huber. That is particularly true given that the *only* material for the nanowire specifically identified in the Specification is the *same* material as Huber: “the nanowires are preferably manufactured from a compound material containing Bismuth (Bi) and Tellurium (Te) (e.g., Bismuth Telluride (Bi₂Te₃)).” Spec. ¶ 16; *see also id.* ¶¶ 26–27; Huber ¶ 15. If Appellant and the Examiner are correct that a junction within bismuth tellurium (Bi₂Te₃) is *not* “of dissimilar materials” or “formed between nanowires of different compositions” (a finding which we do not address here given the limited record before us), then the Specification of the present application provides even less disclosure of “dissimilar materials” than Peczalski. *Compare* Spec. ¶¶ 15, 20, 24 (disclosing the nanowire is made of “different compositions” or “different materials” yet never identifying those materials), *with* Peczalski ¶ 24 (specifically identifying “[t]he nanowire 112 can be composed of a Pt [i.e., platinum] section 111 and an Au-Ni [i.e., gold-nickel] section 113”). Thus, given the record of the Specification and the prior art,

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Appellant has not sufficiently persuaded us with evidence that the Examiner erred in combining Peczalski's "different compositions" with Huber's nanowire and junction.

Accordingly, we sustain the Examiner's rejection of claims 1 and 21, and dependent claims 2–5 and 22–25, which Appellant argues are patentable for similar reasons. *See* App. Br. 8; 37 C.F.R. § 41.37(c)(1)(iv).

DECISION

For the reasons above, we affirm the Examiner's decision rejecting claims 1–5 and 21–25.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 41.50(f).

AFFIRMED