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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/923,098	06/20/2013	Nissanka Arachchige Bodhi Priyantha	338878.01	9903
39254	7590	09/12/2019	EXAMINER	
Barta, Jones & Foley, P.C. (Patent Group - Microsoft Corporation) 2805 Dallas Parkway Suite 222 Plano, TX 75093			BOYLAN, JAMES T	
			ART UNIT	PAPER NUMBER
			2486	
			NOTIFICATION DATE	DELIVERY MODE
			09/12/2019	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte NISSANKA ARACHCHIGE BODHI PRIYANTHA,
MATTHAI PHILIPOSE, and STEPHEN EDWARD HODGES

Appeal 2018-009012
Application 13/923,098¹
Technology Center 2400

Before JOSEPH P. LENTIVECH, DAVID J. CUTITTA II, and
SCOTT RAEVSKY, *Administrative Patent Judges*.

CUTITTA, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1–20, all the pending claims in the present application.

We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We AFFIRM.

¹ Microsoft Technology Licensing, LLC (“Appellant”) is the Applicant, as provided for under 37 C.F.R. § 1.46, and is also identified in the Appeal Brief as the real party in interest. *See* Appeal Br. 1.

STATEMENT OF THE CASE

Invention

Appellant’s invention relates to continuous vision systems having “energy-efficient region of interest detection and capture . . . using multimodal sensors, in which lower power sensors are used to ‘gate’ higher power sensors.” Spec. ¶ 20; *see* ¶ 1.²

Exemplary Claim

Claims 1, 10, and 18 are independent claims. Claim 1 is exemplary and is reproduced below with limitations at issue emphasized.

1. A method comprising:

processing first data of a first set of pixels corresponding to an evaluation image captured by a gating sensor, the gating sensor being a narrow depth-of-field sensor having a first resolution;

determining to activate a gated sensor based on the processing of the first data indicating that a region of interest is captured within the evaluation image;

based on the determination, activating the gated sensor to obtain an image set comprising one or more images that include the region of interest, wherein the gated sensor captures images that have a second resolution that is greater than the first resolution;

based on the image set comprising one or more images obtained by the gated sensor, determining to activate a second gated sensor, the second gated sensor capturing images that

² This Decision refers to: (1) Appellant’s Specification (“Spec.”) filed June 20, 2013; (2) the Final Office Action (“Final Act.”) mailed November 2, 2017; (3) the Appeal Brief (“Appeal Br.”) filed June 25, 2018; (4) the Examiner’s Answer (“Ans.”) mailed July 19, 2018; and (5) the Reply Brief (“Reply Br.”) filed September 19, 2018.

have a third resolution that is greater than the second resolution;
and

obtaining, from the second gated sensor, an image that
includes the region of interest captured by the one or more
images obtained from the gated sensor.

Appeal Br. A-1 (Claims Appendix).

REFERENCES

The Examiner relies upon the following prior art³ in rejecting the
claims on appeal:

McGowan	US 2006/0139470 A1	June 29, 2006
KONDO (“Kondo”)	US 2007/0236497 A1	Oct. 11, 2007
Nguyen	US 2011/0115886 A1	May 19, 2011
Ruedin	US 7,961,906 B2	June 14, 2011
Hao	US 2011/0216210 A1	Sept. 8, 2011
Högasten	US 2011/0221599 A1	Sept. 15, 2011
Baker	US 2012/0327218 A1	Dec. 27, 2012
Swaminathan	US 2014/0168056 A1	June 19, 2014

REJECTIONS

Claims 1–3, 5, 7, 8, 10, 13, 16, and 18 stand rejected under 35 U.S.C.
§ 103 as being unpatentable over the combination of Kondo, Baker, and
Nguyen. *See* Final Act. 4–16.

Claim 4 stands rejected under 35 U.S.C. § 103 as being unpatentable
over the combination of Kondo, Baker, Nguyen, and Hao. *See* Final
Act. 16–18.

³ All citations to the references use the first-named inventor only.

Claim 6 stands rejected under 35 U.S.C. § 103 as being unpatentable over the combination of Kondo, Baker, Nguyen, and Ruedin. *See* Final Act. 18–19.

Claims 9 and 11 stand rejected under 35 U.S.C. § 103 as being unpatentable over the combination of Kondo, Baker, Nguyen, and McGowan. *See* Final Act. 19–21.

Claims 12, 14, 19, and 20 stand rejected under 35 U.S.C. § 103 as being unpatentable over the combination of Kondo, Baker, Nguyen, and Högasten. *See* Final Act. 21–25.

Claim 15 stands rejected under 35 U.S.C. § 103 as being unpatentable over the combination of Kondo, Baker, Nguyen, Högasten, and McGowan. *See* Final Act. 25–26.

Claim 17 stands rejected under 35 U.S.C. § 103 as being unpatentable over the combination of Kondo, Baker, Nguyen, and Swaminathan. *See* Final Act. 26–27.

Our review in this appeal is limited to the above rejections and the issues raised by Appellant. Arguments not made in the Briefs are waived. *See* 37 C.F.R. § 41.37(c)(1)(iv) (2016).

ANALYSIS

Issue 1: Does the Examiner err in finding the combination of Kondo, Baker, and Nguyen teaches or suggests “determining to activate a gated sensor based on the processing of the first data indicating that a region of interest is captured within the evaluation image,” as recited in independent claim 1?

The Examiner relies, *inter alia*, on Kondo's Figure 23 to teach the first limitation at issue. See Final Act. 5; Ans. 4–5. Kondo's Figure 23 and corresponding text disclose “object detection processing performed by [a] security camera” in which an infrared sensor 424 acts as a gating sensor to a microwave sensor 425, and the microwave sensor acts as a gating sensor to the security camera 422. Kondo ¶ 89; see Kondo ¶¶ 223–238. The Examiner finds “Kondo is being relied upon for ‘determining to activate a gated sensor’” because Kondo discloses “[d]etermining to turn on a microwave sensor based on the processing of infrared image data.” Ans. 5; Final Act. 2–3 (emphasis omitted) (citing Kondo s201–s203 of Fig. 23). More specifically, the Examiner finds Kondo discloses “the object detection processing of the infrared sensor's output and where the sensor receives infrared rays emitted from an object including a human and outputs a corresponding detection signal. This shows a gated sensor is activated based on a determination of a ROI (human in the captured infrared image).” Final Act. 2 (emphasis and bracketing omitted) (citing Kondo ¶¶ 223, 224). The Examiner states “Kondo is silent in regards to the gated sensor capturing images” but finds Kondo's “sensors are not limited to the ones described,” i.e., the microwave sensor. Final Act. 3 (citing Kondo ¶ 150). The Examiner further finds Kondo discloses a “video camera [that] captures images” of a ROI and acts as a gated sensor. Final Act. 3 (emphasis omitted). Kondo's video camera may be used as a gated sensor in place of the microwave sensor “by a simple substitution of sensor.” Ans. 5–6.

The Examiner also relies on Baker to teach the limitation at issue, finding:

Baker is being relied upon for “utilizing a second camera based on ROI determination from a previous sensor” [See Baker [Fig. 1, 0032 and 0043] After ROI determination is performed based on thermal information, other sensors, including one or more of the following: an RGB sensor, a depth sensor, are focused on capturing and processing data corresponding to the region of interest.

Ans. 5–6 (emphasis and some bracketing omitted). The Examiner determines it would have been obvious to combine the teachings of Kondo with Baker because the combination “is based upon a simple substitution of known elements to perform power saving in the field of camera technology.”

Ans. 5.

Appellant does not challenge the Examiner’s conclusion of obviousness but instead disputes the Examiner’s factual findings regarding Kondo. Appellant argues “Kondo does not describe or suggest a gated sensor that captures images” so “Kondo cannot describe or suggest ‘determining to activate a gated sensor based on the processing of the first data indicating that a region of interest is captured within the evaluation image,’ as the recited gated sensor is defined as a gated sensor that captures images.” Appeal Br. 11.

We do not find Appellant’s arguments persuasive. Rather, we find the Examiner has provided a comprehensive response to Appellant’s arguments, and we adopt the Examiner’s findings and explanations. *See* Final Act. 2–8; *see also* Ans. 4–6. Appellant’s argument that “the gated sensor in Kondo . . . is a microwave sensor that transmits microwaves” and “does not describe or suggest a gated sensor that captures images,” (Reply Br. 2), fails

to persuasively address the Examiner's determination that (1) Kondo's gated sensor is not limited to the microwave sensor, (2) Kondo also discloses a gated sensor that is a video camera capturing images, and (3) substituting the video camera in Kondo for the microwave sensor would have been a simple substitution of known elements. *See* Final Act. 3; Ans. 4–5.

Nor does Appellant address the Examiner's conclusion that it would have been obvious to substitute any of Baker's "thermal sensor, a depth sensor, and a RGB sensor, where each of these sensors capture the ROI," with Kondo's sensor. Final Act. 3 (emphasis omitted) (citing Baker ¶ 32, Fig. 1). In conclusion, Appellant's argument fails to address why Kondo's determining to activate a gated sensor, such as a video camera substituted for a microwave sensor, based on an output reading of an IR sensor (gating) in combination with Baker's ROI determination, fails to teach or suggest "determining to activate a gated sensor," as recited in claim 1.

Issue 2: Does the Examiner err in finding the combination of Kondo and Baker teaches or suggests "based on the determination, activating the gated sensor to obtain an image set comprising one or more images that include the region of interest," as recited in independent claim 1?

The Examiner finds Kondo teaches "activat[ing] a gated sensor" that captures images, as claimed, because Kondo discloses "[d]etermining to turn on a microwave sensor based on the infrared image data." Final Act. 5 (emphasis omitted) (citing Kondo s201–s203 in Fig. 23). The Examiner also finds Kondo discloses "[t]urning on power source of video camera based on the output reading of the microwave sensor . . . [and] the sensors are not limited to the ones described within . . . therefore, Kondo discloses the main

concept of processing sensor data to activate a following sensor for capturing of data.” Final Act. 3; Ans. 5 (emphasis omitted) (citing Kondo ¶¶ 222–224, 150 and Fig. 3). The Examiner further finds Baker discloses “a thermal sensor, a depth sensor, and a RGB sensor, where each of these sensors capture the ROI.” Final Act. 3 (emphasis omitted) (citing Baker ¶ 32, Fig. 1. The Examiner concludes “the combination of Kondo and Baker disclose the processing of each sensor data (i.e. three in total) in sequential steps to activate the following sensor (i.e. first one is on, then second one is turned on, then third one is turned on) for capturing image data of the determined ROI.” Final Act. 3.

Appellant first argues “Baker does not describe **a gated sensor**, merely a depth sensor that captures images, and the depth sensor in [B]aker is not used as a gated sensor.” Appeal Br. 11; *see* Reply 3. We find this argument unpersuasive because rather than Baker, the Examiner relies on Kondo to teach the gated sensor. *See* Final Act. 5 (citing Kondo Fig. 23).

Appellant next argues “Kondo describes a gated sensor that cannot capture images.” Appeal Br. 11. We find this argument unpersuasive for the same reasons discussed above with respect to issue one.

In summary, we conclude Appellant’s arguments do not address the actual reasoning of the Examiner’s rejection. Appellant, instead, attacks the references singly for lacking teachings that the Examiner relies on a combination of references to show. It is well established one cannot show non-obviousness by attacking references individually where the rejections are based on combinations of references. *See In re Keller*, 642 F.2d 413, 426 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). Our reviewing court requires that references must be read, not in

isolation, but for what they fairly teach in combination with the prior art as a whole. *Merck*, 800 F.2d at 1097. Accordingly, we agree with the Examiner the combination of Kondo and Baker teaches or suggests “based on the determination, activating the gated sensor,” as recited in claim 1.

Issue 3: Does the Examiner provide erroneous reasoning in combining the teachings of Kondo and Baker?

Appellant argues

the rejection is impermissibly based on a hindsight reconstruction” because “to replace the microwave sensor (alleged gated sensor) that transmits microwaves . . . with a sensor from Baker that captures images, would render the system in Kondo inoperable for its intended purpose as the system in Kondo requires a sensor that transmits two detection signals (microwaves) and . . . [a] captured image cannot provide microwaves or detection signals.

Appeal Br. 10, 12 (citing *In re Gordon*, 733 F.2d 900 (Fed. Cir. 1984)).

Appellant’s argument is premised on a “physical” or “bodily” incorporation of limitations of one reference into the other. However, this is not the standard. “It is well-established that a determination of obviousness based on teachings from multiple references does not require an actual, physical substitution of elements.” *In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012) (citing *In re Etter*, 756 F.2d 852, 859 (Fed. Cir. 1985) (en banc)); *see also In re Sneed*, 710 F.2d 1544, 1550 (Fed. Cir. 1983) (“[I]t is not necessary that the inventions of the references be physically combinable to render obvious the invention under review.”). Rather than express obviousness as the physical incorporation of a structure from one reference into the structure of another reference, in an obviousness analysis, the prior

art should be viewed as a combination of teachings from different sources, and the use of those teachings by one of ordinary skill in the art. *See Keller*, 642 F.2d at 425.

We find Appellant's argument unpersuasive because the rejection does not require physically incorporating any of Baker's thermal sensor, depth sensor, or RGB sensor within Kondo's microwave sensor. Instead, the Examiner rejects the claim as unpatentable over the combined teachings of the references.

Accordingly, we determine the Examiner has provided sufficient motivation for modifying Kondo based on the teachings of Baker, without resorting to impermissible hindsight reasoning.

For these reasons, we sustain the Examiner's 35 U.S.C. § 103 rejection of claim 1, and similarly, independent claims 10, and 18, which are not argued separately from claim 1. *See Appeal Br.* 13. Dependent claims 2–9, 11–17, 19, and 20 are either not argued separately or are merely nominally argued separately and so we also sustain the Examiner's 35 U.S.C. § 103 rejection of these claims. *See id.* at 12–14.

DECISION

We affirm the Examiner's decision to reject claims 1–20 under 35 U.S.C. § 103.

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