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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte RICHARD H. WYLES and JAMES F. ASBROCK

Appeal 2015-006857¹
Application 13/270,557
Technology Center 2400

Before ALLEN R. MacDONALD, JOHN P. PINKERTON, and
GARTH D. BAER, *Administrative Patent Judges*.

BAER, *Administrative Patent Judge*.

DECISION ON APPEAL

¹ Appellants identify Raytheon Company as the real party in interest.
Appeal Br. 2.

STATEMENT OF THE CASE

This is a decision on appeal, under 35 U.S.C. § 134(a), from the Examiner's final rejection of claims 1–20, which are all the pending claims. Appeal Br. 2. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

BACKGROUND

A. The Invention

Appellants' invention is directed to a method and apparatus that receives data from a single sensor and provides "high-resolution imagery at a first frame rate . . . and lower-resolution imagery at a second frame rate, which is higher than the first rate." Abstract. Claims 1 and 17 are representative and reproduced below, with emphasis added to the disputed elements:

1. A method of processing data from a sensor, comprising:
 - processing data from a first pixel in a plurality of pixels at a first frequency by performing subframe averaging of the first pixel data over a first number of subframes to generate a first data stream at a first frame rate and a first resolution;
 - outputting the first data stream for viewing by a user;
 - aggregating data from at least two neighboring pixels to form aggregate pixel data which is read out at a subframe rate; and
 - integrating the aggregate pixel data and outputting the integrated aggregate pixel data at a second frequency higher than the first frequency to generate a second data stream simultaneously with the first data stream, the second data stream having a second resolution less than the first resolution and a second frame rate greater than the first frame rate.*

17. A sensor system including a sensor to obtain data, comprising:

a first means to process data from a first pixel in a plurality of pixels to generate a first data stream at a first frame rate and a first resolution;

a second means to aggregate data from at least two neighboring pixels to form aggregate pixel data at a subframe rate to generate a second data stream having a second resolution less than the first resolution and a second frame rate greater than the first frame rate.

Appeal Br. 19, 22. (Claims App.).

B. The Rejections on Appeal

The Examiner rejects claims 17 and 18 under 35 U.S.C. § 102(b) as anticipated by Bub (Gil Bub et al., *Temporal Pixel Multiplexing for Simultaneous High-speed, High-resolution Imaging*, NATURE METHODS 7(3) 209–211 (2010)). Ans. 3.²

The Examiner rejects claims 1, 2, 5, 6, 9, 10, 13, and 14 under 35 U.S.C. § 103(a) as unpatentable over Bub, in view of Finch (US 6,885,002 B1; Apr. 26, 2005). Ans. 5.

The Examiner rejects claims 3, 4, 7, 8, 11, 12, 15, and 16 under 35 U.S.C. § 103(a) as unpatentable over Bub, in view of Finch, and further in view of Snider (US 2007/0125951 A1; June 7, 2007). Ans. 9.

The Examiner rejects claims 19 and 20 under 35 U.S.C. § 103(a) as unpatentable over Bub, in view of Finch, and further in view of Sugiyama (US 2007/0239587 A1; Oct. 26, 2006). Ans. 11.

² The Examiner also cited Wikipedia (*Wikipedia – Charge-coupled device*, https://web.archive.org/web/20110413211206/http://en.wikipedia.org/wiki/Charge-coupled_device) as evidence that various features “are well-known to be implemented in a charge-coupled device.” Ans. 13; *see id.* at 15.

ANALYSIS

A. Claims 17 and 18

Appellants argue Bub fails to teach “a second means to aggregate data from at least two neighboring pixels to form aggregate pixel data at a subframe rate to generate a second data stream having a second resolution less than the first resolution and a second frame rate greater than the first frame rate,” as recited in independent claim 17. *See* Appeal Br. 7–10; *see also* Reply Br. 4–6.³ As argued by Appellants, the Examiner erred in finding Bub’s charge-coupled device (“CCD”) equivalent to the claimed “second means” because the way Appellants’ claimed invention performs the recited function, as described in paragraph 25 of Appellants’ Specification and as illustrated in Figure 4 of Appellants’ drawings, is substantially different from the way Bub’s CCD performs the recited function. *See* Appeal Br. 8–10 (citing Spec. ¶ 25, Fig. 4); *see also* Reply Br. 4–6.

We are persuaded that the Examiner erred. To teach a means-plus-function limitation, the prior art must disclose structure that performs the identical function recited in the means-plus-function limitation, and does so with structure that is the same or equivalent to the corresponding structure of the means-plus-function limitation. *Fresenius USA, Inc. v. Baxter Int’l, Inc.*, 582 F.3d 1288, 1299 (Fed. Cir. 2009). “[T]wo structures may be

³ Appellants also argue that Bub fails to teach “a first means to process data from a first pixel in a plurality of pixels to generate a first data stream at a first frame rate and a first resolution,” as recited in claim 17. *See* Appeal Br. 6–7; *see also* Reply Br. 2–3. Appellants also separately dispute the rejection of claim 18. *See* Appeal Br. 11–12; *see also* Reply Br. 6–7. We do not reach these arguments because the identified issue is dispositive of the appeal with respect to claims 17–18.

‘equivalent’ for purposes of section 112, paragraph 6 if they perform the identical function, in substantially the same way, with substantially the same result.” *Kemco Sales, Inc. v. Control Papers Co.*, 208 F.3d 1352, 1364 (Fed. Cir. 2000). Although we agree with the Examiner that Bub’s CCD and the claimed “second means” perform identical functions, we agree with Appellants that the Examiner failed to show Bub’s CCD performs the claimed function in substantially the same way as Appellants’ claimed invention. Specifically, we agree with Appellants that Bub’s CCD utilizes a mirror array (i.e., pixel level shutter array) to cause individual CCD pixels to sequentially capture portions of a scene and further utilizes post-processing software to extract and group n subframes from co-exposed pixels, whereas Appellants’ circuit 404 (i.e., the corresponding “second means” structure in Appellants’ Specification, as found by the Examiner) receives pixel data from a photodetector and aggregates the received pixel data from at least two neighboring pixels before pixel data is processed utilizing an integration capacitor. *See* Appeal Br. 9–10 (citing Bub, 1, 3–5; Spec. ¶ 25, Fig. 4). Thus, we agree with Appellants the Examiner has not shown Bub’s CCD teaches the claimed “second means.”

Accordingly, we do not sustain the Examiner’s rejection of independent claim 17 or dependent claim 18.

B. Claims 1–16, 19, and 20

Appellants argue Bub fails to teach:

integrating the aggregate pixel data and outputting the integrated aggregate pixel data at a second frequency higher than the first frequency to generate a second data stream simultaneously with the first data stream, the second data stream having a second

resolution less than the first resolution and a second frame rate greater than the first frame rate, as recited in independent claim 1, and similarly recited in independent claim 9. *See* Appeal Br. 14–16; *see also* Reply Br. 7–8. As argued by Appellants, Bub’s post-processing of received pixel data fails to teach integrating aggregate pixel data because the post-processing is performed after simultaneous capture of high-resolution pixel data and high-frame-rate pixel data. *See* Appeal Br. 14–15.

We are persuaded the Examiner erred. We agree with Appellants that Bub teaches the CCD extracting and arranging subframe pixel data, but fails to teach the CCD integrating the aggregate data. *See* Appeal Br. 14–15 (citing Bub, 5). Instead, Bub teaches each pixel data is integrated individually before the subframe pixel data is extracted and arranged. *See* Bub, 7.

Accordingly, we do not sustain the Examiner’s rejection of independent claim 1. We also do not sustain the Examiner’s rejection of independent claim 9, which recites substantially similar limitations as claim 1, or dependent claims 2–8, 10–16, 19, and 20.

DECISION

We reverse the Examiner’s rejection of claims 17 and 18 under 35 U.S.C. § 102(b). We also reverse the Examiner’s rejection of claims 1–16, 19, and 20 under 35 U.S.C. § 103(a).

REVERSED