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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte EVANS H. NGUYEN, MATTHEW J. MERGENER, WADE BURCH, JAMES V. CURTIN, ZACHARY P. HAAS, BENJAMIN OLIVER RYAN CABOT, and GARETH MUECKL

Appeal 2019-001599
Application 13/803,875
Technology Center 2400

Before ADAM J. PYONIN, PHILLIP A. BENNETT, and IFTIKHAR AHMED, *Administrative Patent Judges*.

AHMED, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant[1] appeals under 35 U.S.C. § 134(a) from the Examiner's Final Rejection of claims 1, 2, 4–16, and 18–20, which are all of the claims pending in the application. Claims 3 and 17 have been cancelled. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

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[1] We use the word Appellant to refer to "applicant" as defined in 37 C.F.R. § 1.42(a). According to Appellant, the real party in interest is Milwaukee Electric Tool Corporation. App. Br. 1.

Technology

The application relates to a thermal detector used to "assess temperatures of objects within a field-of-view ('FOV') of the thermal detector." Spec. ¶ 2.

Illustrative Claim

Claim 1 is illustrative and reproduced below with certain limitations at issue emphasized:

1. A thermal detection device comprising:

an outer housing;

a visual camera configured to generate a first signal related to a visual image of a scene;

a first thermopile array including a first plurality of pixels;

a second thermopile array including a second plurality of pixels;

an array of temperature sensors positioned around the first thermopile array;

a first control unit including a processor and a first memory, the first control unit connected to the first thermopile array and configured to generate a second signal related to a thermal image of the scene, the second signal associated with a temperature sensed by at least one of the first plurality of pixels in the first thermopile array, the first control unit positioned within a sub-housing, the sub-housing including at least one metallic side surface;

a second control unit including a processor and a second memory, the second control unit electrically connected to the visual camera and the first control unit, the second control unit configured to

receive the second signal from the first control unit,

> receive one or more output signals from the array of temperature sensors related to a temperature of the first thermopile array,
>
> ***generate a thermal map of the first plurality of pixels in the first thermopile array based on the one or more output signals from the array of temperature sensors, the thermal map related to how each pixel of the first thermopile array is affected by variations in temperature***,
>
> compensate the second signal based on the thermal map, and
>
> adjust a temperature, using the second thermopile array, of the at least one of the first plurality of pixels in the first thermopile array, the temperature adjusted based on the thermal map; and
>
> a display configured to display the visual image based on the first signal and the thermal image based on the compensated second signal.

REJECTIONS

Claims 1, 2, 4, 5, 11–15 and 20 stand rejected under 35 U.S.C. § 103(a) as obvious over the combination of Sheard (US 2010/0046577 A1; Feb. 25, 2010) and Shoda (US 6,133,569 A1; Oct. 17, 2000). Final Act. 7.

Claims 6–10, 16, 18, and 19 stand rejected under 35 U.S.C. § 103(a) as obvious over the combination of Sheard, Shoda, and Shibata (US 2012/0249799 A1; Oct. 4, 2012). Final Act. 16.

Claims 15, 16, 18–20 stand rejected under 35 U.S.C. § 112, first paragraph, as having limitations not supported by the Specification. Final Act. 5–6.

ISSUES

1. Did the Examiner err in finding that Sheard teaches or suggests "generat[ing] a thermal map of the first plurality of pixels in the first thermopile array based on the one or more output signals from the array of temperature sensors, the thermal map related to how each pixel of the first thermopile array is affected by variations in temperature," as recited in claims 1 and 15?
2. Did the Examiner err in concluding that the Specification fails to provide written description support for claim 15 under 35 U.S.C. § 112, first paragraph?

ANALYSIS

§ 103 Rejection of Claims 1, 2, 4, 5, 11–15 and 20

Independent claims 1 and 15 recite "***generat[ing] a thermal map*** of the first plurality of pixels in the first thermopile array based on the one or more output signals from the array of temperature sensors, ***the thermal map related to how each pixel of the first thermopile array is affected by variations in temperature.***" Appeal Br. 12, 16 (emphasis added).

The Examiner finds that Sheard teaches this limitation. Final Act. 9. The Examiner determines that Sheard discloses "a plurality of FPA[2] temperature sensors 166 mounted on either side of TSB 132 which monitor the temperature of the FPA 160 for offset calculation." Ans. 9 (citing Sheard ¶ 36). According to the Examiner, these "FPA temperature sensors 166 of Sheard measure the temperature of a thermopile array in order to perform offset calculations and determine how each pixel of the first

[2] Appellant states that focal plan array ("FPA") is an alternative name that can be used to describe a thermopile array. Appeal Br. 8, n. 37.

thermopile array is affected by variations between the temperature measured by the pixels of the thermopile array and the plurality of temperature sensors." *Id.* at 8 (citing Sheard ¶ 36). The Examiner further finds that because Sheard discloses "how offset correction can be stored and later applied," and also discloses "different temperature sensors monitoring different locations of the FPA 160 for the storage of offset calculations, Sheard effectively 'maps' the sensor locations and their respective output temperatures signals of corresponding pixels of the FPA." *Id.* at 9 (citing Sheard ¶¶ 3, 36). The Examiner adds that Sheard's disclosure is sufficient to teach the limitation given "the functional language of the [Applicant's Specification] and lack of specifics regarding the generation of a thermal map." *Id.* at 9.

Appellant argues that the "Examiner equates the mere reading of signals from temperature sensors as the claimed generation of a thermal map." Appeal Br. 9. According to Appellant, a "thermal map represents how individual pixels in a thermopile array are affected by variations in temperature," and "the generation of a thermal map requires a marrying of temperature information from an array of temperature sensors related to a thermopile array and the actual pixels of the thermopile array themselves." *Id*. Appellant asserts that "Sheard never discloses the impact of a temperature reading from the temperature sensor 166 on individual pixels of a thermopile array" or "how such a temperature reading relates to how individual pixels of the thermopile array are affected by variations in temperature." *Id.* Therefore, Appellant concludes, Sheard fails to teach the "generation of a thermal map based on output signals from an array of temperatures sensors that relates to how each pixel of a thermopile array is affected by variations in temperature." *Id.*

We agree with Appellant that the Examiner has not sufficiently explained how Sheard teaches or suggests generating a thermal map, ***based on output signals from an array of temperature sensors***, that relates to how each pixel of the first thermopile array is affected by variations in temperature. Although we agree with the Examiner that Sheard discloses "how offset correction can be stored and later applied," that offset correction teaching is based on "observing a uniform thermal scene (e.g., by placing a shutter between the optics and the FPA) and measuring offset correction data for each pixel," *not* on output signals from an array of temperatures sensors. *See* Sheard ¶ 3. The Examiner has not shown Sheard's separate disclosure of FPA temperature sensor 166 teaches the generation of a thermal map relating to pixel behavior. *Id.* ¶ 36.

Although Sheard discloses FPA temperature sensor 166 as *one of three* types of sensors used by Sheard's instrument, and also states that "one or more of such sensors may be used in offset compensation calculations," the Examiner fails to sufficiently explain how that disclosure teaches or suggests "different temperature sensors monitoring different locations of the FPA 160," or teaches "map[ping] the sensor locations and their respective output temperatures signals of corresponding pixels of the FPA." Ans. 9; Sheard ¶ 36. Instead, Sheard's express disclosure is limited to a *single* FPA temperature sensor 166. Sheard ¶ 36, Fig. 8. It is therefore unclear from the record before us that the readings from the FPA temperature sensor in Sheard could be used to generate a thermal map relating to the variations found in *each* pixel of the FPA in the manner determined by the Examiner.

Thus, we agree with Appellant that the Examiner has not shown that Sheard teaches or suggests "generat[ing] a thermal map of the first plurality of pixels in the first thermopile array based on the one or more output signals from the array of temperature sensors, the thermal map related to how each pixel of the first thermopile array is affected by variations in temperature" as recited in independent claims 1 and 15.

The Examiner also does not rely on Shoda as teaching this claim limitation in support of the obviousness rejection based on Sheard and Shoda. Accordingly, given the record before us, we do not sustain the Examiner's rejection of independent claims 1 and 15, and their dependent claims 2, 4–14, 16, and 18–20.

§ 112 Rejection of Claims 15, 16, 18–20

Independent claim 15 recites "compensate[ing] the ***pixel gain value*** for the at least one of the first plurality of pixels within the first thermopile array based on the thermal map." Appeal Br. 16 (emphasis added). The Office Action titles the rejection as follows:

> Claims 15, 16 and 18-20 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre- AIA), ***second*** paragraph, ***as being indefinite for failing to particularly point out and distinctly claim the subject matter*** which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention.

Final Act. 5 (emphasis added). The Examiner however describes the rejection as:

> Regarding independent claims 15, the combination of "a pixel gain value" and amended "a thermal map," specifically "compensate the pixel gain value for the at least one of the first plurality of pixels within the first thermopile array based on the thermal map" ***is not supported by the specification*** at the time the application was filed.

> . . .
>
> Examiner notes the pixel gain technique is never used together with the thermal map technique and there is no compensating a pixel value based on the thermal map. Therefore, the examiner notes the addition of a thermal map to claim 15 in addition to the recitation of a pixel gain ***is not supported by the specification***.

Id. at 6 (citing Spec. ¶ 52).

Appellant argues that "[t]he Examiner has justified a rejection for indefiniteness under 35 U.S.C. § 112, second paragraph, by asserting that Appellant's specification ***lacks written description support***," "a requirement under 35 U.S.C. § 112, first paragraph." Appeal Br. 5 (emphasis added). Therefore, Appellant asserts, "the Examiner has not established that independent claim 15 is indefinite." *Id.*

In response, the Examiner acknowledges that "the statement of statutory basis for 35 U.S.C. [§] 112, second paragraph was incorrectly provided in the most recent Office Action in place of the statement of statutory basis for 35 U.S.C. [§] 112 first paragraph." Ans. 3. "Examiner concedes this was done inadvertently," but also determines that "it should be clear by the wording of the rejection in combination with previously presented [§] 112 first paragraph rejections related to a pixel gain, the rejection is a [§] 112 first paragraph rejection for lack of written description." *Id.* at 4. Because Appellant "does not attempt to argue against the written description issue," the Examiner believes "that the [§] 112 rejection should be maintained under 35 U.S.C. [§] 112, first paragraph." *Id.* at 5.

In its reply, Appellant argues that the Examiner's Answer attempts to modify the appealed rejection" but "has not, however, presented any new grounds for rejection that differ from those grounds previously presented in the Final Office action." Reply Br. 2.

We determine it is clear that the rejection—as articulated in the Final Action—in substance is a §112 first paragraph rejection for lack of written description support. Final Act. 6. The Examiner quotes the entirety of paragraph 52 of the Applicant's Specification, relating to "pixel gain values" and emphasizes the portion of the claim limitation ("based on the thermal map") that "is not supported by the Specification." *Id.* (citing ¶ 52). The Examiner further clarifies in the Answer that "the [§] 112 rejection should be maintained under 35 U.S.C. [§] 112, first paragraph." Ans. 5. Moreover, Appellant understands the rejection as "asserting that Appellant's specification ***lacks written description support***," "a requirement under 35 U.S.C. § 112, ***first*** paragraph." Appeal Br. 5 (emphasis added).

To the extent that Appellant assigns error to the Examiner in allegedly failing to follow MPEP procedures and improperly modifying the ground for rejection under § 112, allegations of such procedural error are properly resolvable via petition. *See* 37 C.F.R. §§ 1.181, 41.40(a); MPEP 1207.03. The Board "will not ordinarily hear a question that should be decided by the Director on petition." *Ex parte Frye*, 94 USPQ 2d 1072, 1077–78 (BPAI 2010) (precedential) (quoting MPEP § 1201). Here, Appellants have not shown that the argued impropriety is within the jurisdiction of the Board.

We must therefore address the appealed rejection as presented by the Examiner, i.e., as a §112, first paragraph rejection. Appellant fails to address the merits of the rejection on appeal. Appeal Br. 5 (addressing the rejection under §112, second paragraph); Reply Br. 2. We therefore sustain the rejection of claim 15, and its dependent claims 16 and 18–20 under § 112, first paragraph for lack of written description.

DECISION

For the reasons above, we *affirm* the Examiner's decision rejecting claims 15, 16, and 18–20 under § 112, first paragraph, but we *reverse* the Examiner's decision rejecting 1, 2, 4–16, and 18–20 under § 103(a).

In summary:

Claims Rejected	35 U.S.C. §	Basis	Affirmed	Reversed
1, 2, 4, 5, 11–15, 20	103(a)	Sheard, Shoda		1, 2, 4, 5, 11–15, 20
6-10, 16, 18, 19	103(a)	Sheard, Shoda, Shibata		6–10, 16, 18, 19
15, 16, 18–20	112	Lack of written description	15, 16, 18–20	
Overall Outcome			**15, 16, 18–20**	**1, 2, 4–14**

TIME TO RESPOND

No time for taking subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv). *See* 37 C.F.R. § 41.50(f).

AFFIRMED-IN-PART