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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JOHN BARICH, RENEE LEMAIRE-ADKINS, DAVID NEAZ, ARIEL NOTCOVICH, PAUL PATT, RYAN SHORT, STEVEN SWIHART, EVAN THRUSH, and TREY MARLOWE

Appeal 2019-000066
Application 14/056,162
Technology Center 1700

Before ROMULO H. DELMENDO, RAE LYNN P. GUEST, and LILAN REN, *Administrative Patent Judges*.

DELMENDO, *Administrative Patent Judge*.

DECISION ON APPEAL

The Applicant[1] ("Appellant") appeals under 35 U.S.C. § 134(a) from the Primary Examiner's final decision to reject claims 12–14, 18–25, and 28–34.[2] We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

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[1] The Applicant is listed as "Bio-Rad Laboratories, Inc., LSG – LSG Division" (Application Data Sheet filed October 17, 2013, 8–9). The real party in interest is listed as "Bio-Rad Laboratories, Inc." (Appeal Brief filed July 3, 2018 ("Appeal Br."), 3).

[2] Appeal Br. 7–11; Reply Brief filed October 2, 2018 ("Reply Br."), 1–3; Final Office Action entered April 3, 2018 ("Final Act."), 3–8; Examiner's Answer entered August 3, 2018 ("Ans."), 3–12.

I. BACKGROUND

The subject matter on appeal relates to "a method of analyzing a plurality of analytes detectable by light emission and arranged in a two-dimensional array" (Specification filed October 17, 2013 ("Spec."), ¶ 5). Representative claim 12 is reproduced from the Claims Appendix to the Appeal Brief, as follows:

> 12. A method of generating a corrected full image of a planar matrix supporting a two-dimensional analyte array, the method comprising:
>
> placing the planar matrix within 5 cm of a detector comprising one or more moveable solid-state image sensors, wherein a transparent faceplate is placed between the planar matrix and the detector, and wherein the transparent faceplate is deposited on or bonded directly to the solid-state image sensors;
>
> ***producing a dark signal pattern for the detector***;
>
> positioning the image sensor(s) to two or more positions with respect to the planar matrix and acquiring with the image sensor(s) at the two or more positions a plurality of measurement patterns of electrical signals, wherein the electrical signals of the measurement patterns can be projected or otherwise made visible or detectable as sub-images of the planar matrix;
>
> measuring a plurality of temperatures at different locations along the image sensor(s);
>
> determining, using the plurality of measured temperatures, temperature variations among the different locations along the image sensor(s);
>
> ***adjusting the dark signal pattern according to the temperature variations among the different locations along the image sensor(s), wherein the adjusting comprises applying a function characterizing a variation of the dark signal pattern with temperature***;
>
> ***subtracting the adjusted dark signal pattern from one or more of the plurality of measurement patterns***; and
>
> subsequently assembling the sub-images into a full image of the planar matrix in accordance with the positions occupied by the image sensor(s) when the sub-images are acquired, wherein

> said assembling comprises stitching together at least two of the sub-images.

(Appeal Br. 12 (emphases added)).

II. REJECTION ON APPEAL

Claims 12–14, 18–25, and 28–34 stand rejected under AIA 35 U.S.C. § 112(a) as failing to comply with the written description requirement (Ans. 3–12; Final Act. 3–8).

III. DISCUSSION

The Examiner finds that "[t]he written description is inadequate in providing disclosure to providing an adjusted dark signal pattern and utilization of such in compensating/eliminating irregularities across the planar matrix" (Ans. 4). Specifically, the Examiner finds that the written description in the original disclosure (US 2014/0106989 A1, published Apr. 17, 2014 ("US '989"), ¶¶ 11, 47 (Spec. ¶¶ 11, 43)) and the Declaration of Joint Inventor Swihart filed March 6, 2018 ("Swihart Declaration" or "Swihart Decl.") do "not provide a showing that one of ordinary skill in the art would have been apprised of the ***adjustment of the dark signal pattern by applying a function characterizing a variation of the dark signal pattern with temperature***" (Ans. 4). According to the Examiner, "the disclosure is devoid of discussion of the ***applying*** **of the function** so as to provide an adjustment to the dark signal pattern according to the measured temperature variations" and that "**there is a nexus missing in which Applicant has failed to show how the *correction factor is accomplished***" (*id.* at 5). Regarding the Swihart Declaration, the Examiner states that it "merely provides a law of nature [i.e., the Arrhenius equation] which can most closely relate dark signal pattern to temperature in image sensors" (*id.*).

The Appellant contends that the original disclosure (US '989 ¶ 47; Spec. ¶ 43) provides sufficient written description and that the "relationship between dark signal and temperature was well understood by those of ordinary skill in the art as of the filing date of the present application, as was affirmed by the March 6, 2018 Declaration by Steve Swihart" (Appeal Br. 7). The Appellant emphasizes that the test for determining compliance with the written description requirement is whether the original disclosure of the application relied upon reasonably conveys to one skilled in the relevant art that the inventors had possession at that time of the later claimed subject matter (*id.* at 9).

As the Appellant notes, "the test for sufficiency [of written description] is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date." *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (citation omitted).

Applying this test, we agree with the Appellant that the Examiner's rejection is not well-founded. Claim 12, which the Examiner finds to be insufficiently described in the original disclosure, was introduced by an Amendment filed with a Request for Continued Examination submitted on August 1, 2017. But the disclosure, as originally filed, contains the following:

> In some embodiments, the detector defines a planar detection surface, and the method further includes generating a dark signal pattern of each sub-image and subtracting the dark signal pattern from the planar matrix image prior to analyzing the analytes. In some embodiments, the detector defines a planar detection surface, and the method further includes ***measuring***

> ***temperature at selected sites along the planar detection surface to determine a temperature pattern, generating a dark signal pattern representative of the temperature pattern, and subtracting the dark signal pattern from the planar matrix image***.

(Spec. ¶ 11 (emphasis added); *see also* US '989 ¶ 11). The original disclosure further states:

> Within each image or sub-image, an amount of dark signal of a magnitude that is great enough to impair or limit the sensitivity of the sensor can occur. "Dark signal" is defined as the response of a photosensitive element in the absence of light. One source of sensor limitation from dark signal is fundamental shot noise. Another is fixed pattern noise. For large area sensors, noise from dark signal can become very large due to the large size of the sensor array. Physical processes that produce dark signal usually increase with increasing amounts of material used in the photosensitive element. ***The sensitivity of the photosensor array can be increased significantly by removing fixed pattern dark noise. This can be achieved by producing a dark signal pattern for the sensor array and subtracting the dark signal pattern from the measurement pattern generated by the array. The dark signal pattern can vary with temperature, time, or both, and can thus be characterized as a function of these two variables.*** For example, a temperature measurement can be made and the dark current pattern can be adjusted accordingly to subtract the fixed pattern dark current. The temperature can also vary between different photosensors within the photosensor array. To compensate for this, a plurality of temperature measurements can be taken at different locations within the photosensor array, i.e., at selected sites along the planar detection surface formed by the array, to determine temperature variations along the surface and the resulting temperature pattern. The dark signal pattern can then be adjusted accordingly.

(Spec. ¶ 43 (emphasis added); *see also* US '989 ¶ 47).

Given these descriptions in the disclosure, as originally filed, we do not discern any basis to find that the subject matter recited in claim 12,

including the step of "adjusting the dark signal pattern according to the temperature variations among the different locations along the image sensor(s), wherein the adjusting comprises applying a function characterizing a variation of the dark signal pattern with temperature" (Appeal Br. 12), lacks sufficient descriptive support. The written description explicitly states that "[t]he dark signal pattern can vary with temperature, time, or both, and can thus be characterized ***as a function of these two variables***" (Spec. ¶ 47 (emphasis added)), which is undisputedly known as following the Arrhenius equation (Swihart Decl. ¶ 7; Ans. 4). The original disclosure explains that the dark signal pattern can be subtracted from the measurement pattern generated by the array to increase the sensitivity of the photosensor array (Spec. ¶ 47). Thus, we find that the original disclosure contains explicit support for the subject matter now recited in claim 12.

Although the Examiner questions "how the correction factor is accomplished" (Ans. 5), that issue appears to be more relevant to an inquiry under the enablement requirement of 35 U.S.C. § 112(a)—i.e., whether "undue experimentation" would have been required to make and/or use the invention—not the written description requirement. Consistent with the Appellant's position (Reply Br. 2–3), the Examiner does not offer sufficient evidence or reasoning establishing that a person having ordinary skill in the art would have been unable to make and/or use the invention without undue experimentation.[3] *Cf. Ariad*, 593 F.3d at 1349–50 (explaining that even original claims reciting functional language or a desired result may, in some circumstances, lack written description result but that "functional claim

[3] *See In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988).

language can meet the written description requirement when the art has established a correlation between structure and function").

For these reasons, we do not sustain the Examiner's rejection.

IV. SUMMARY

The rejection under 35 U.S.C. § 112(a), lack of written description, is not sustained. Therefore, the Examiner's final decision to reject claims 12–14, 18–25, and 28–34 is reversed.

REVERSED