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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MILES R. PALMER,
ALEKSANDER EDWARD OSADZINSKI, and
WILLIAM J. BROWN

Appeal 2021-001500
Application 15/790,961
Technology Center 2600

Before CARL W. WHITEHEAD JR., BRADLEY W. BAUMEISTER, and
JAMES B. ARPIN, *Administrative Patent Judges*.

ARPIN, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant¹ appeals under 35 U.S.C. § 134(a) from the Examiner’s
decision rejecting claims 1–48, all of the pending claims. Final Act. 2.²

¹ Appellant refers to “applicant” as defined in 37 C.F.R. § 1.42 (2012). Appellant identifies the real party-in-interest as 8 Rivers Capital, LLC. Appeal Br. 1. Nevertheless, Office records indicate no recorded assignments in this application, and Palmer Labs, LLC, is Miles R. Palmer’s assignee in the parent and priority applications of this application.

² In this Decision, we refer to Appellant’s Appeal Brief (“Appeal Br.,” filed September 25, 2020) and Reply Brief (“Reply Br.,” filed December 21, 2020); the Final Office Action (“Final Act.,” mailed March 23, 2020), the Advisory Action (“Adv. Act.,” filed July 2, 2020), and the Examiner’s Answer (“Ans.,” mailed October 22, 2020); and the Specification (“Spec.,”

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Appellant cancels claims 49 and 50. Appeal Br. 16 (Claims App.). We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

STATEMENT OF THE CASE

The claimed apparatus and methods “relate[] generally to a system and method of [free space optical (FSO)] communications and in particular, diverged-beam FSO communications.” Spec., 2:2–3.

As noted above, claims 1–48 are pending. Claims 1 and 25 are independent. Appeal Br. 9 (claim 1), 12–13 (claim 25) (Claims App.). Claims 2–24 depend directly or indirectly from claim 1, and claims 26–48 depend directly or indirectly from claim 25. *Id.* at 9–16.

Claim 1, reproduced below with a disputed limitation emphasized, is representative.

1. An apparatus comprising:

a demodulator configured to recover data carried by an optical beam, the demodulator including electronics configured to support a data rate of at least 100 megabits per second; and

an optical receiver coupled to the demodulator and configured to detect the optical beam that carries the data the demodulator is configured to recover, the optical receiver being configured to detect the optical beam emitted without artificial confinement from an optical transmitter configured to emit the optical beam modulated with the data,

wherein the optical receiver includes a lens and an array of detectors positioned between the lens and a focus of the lens, the array of detectors greater than 200 microns in size, and the lens positioned to refract optical beams from a range of angles greater than 0.1 degrees onto the array of detectors, the optical

filed October 23, 2017). Rather than repeat the Examiner’s findings and Appellant’s contentions in their entirety, we refer to these documents.

receiver thereby having an acceptance angle greater than 0.1 degrees.

Id. at 9 (emphasis added). Independent claim 25 recites a limitation corresponding to the disputed limitation of claim 1. *Id.* at 13.

REJECTION

The Examiner rejects claims 1–48 under 35 U.S.C. § 112(a) as lacking adequate written description. Final Act. 2–4.

We review the appealed rejection for error based upon the issues identified by Appellant, and in light of the contentions and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential). The Examiner and Appellant focus their findings and contentions, respectively, on the claims 1 and 25; so we do as well. *See* Appeal Br. 3; Ans. 4; Reply Br. 2. Arguments not made are forfeited.³ Unless otherwise indicated, we adopt the Examiner’s findings in the Final Office Action, the Advisory Action, and the Answer as our own and add any additional findings of fact for emphasis. We address the rejection below.

ANALYSIS

Lacking Adequate Written Description

The Examiner rejects claims 1–48 as lacking adequate written description. Final Act. 2–4. In particular, claim 1 recites, “wherein the optical receiver includes a lens and *an array of detectors positioned between*

³ *See In re Google Tech. Holdings LLC*, 980 F.3d 858, 863 (Fed. Cir. 2020) (“Because Google failed to present these claim construction arguments to the Board, Google forfeited both arguments.”); 37 C.F.R. § 41.37(c)(1)(iv) (2013) (“Except as provided for in §§ 41.41, 41.47 and 41.52, any arguments or authorities not included in the appeal brief will be refused consideration by the Board for purposes of the present appeal.”).

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the lens and a focus of the lens.” Appeal Br. 9 (Claims App.) (emphasis added). Claim 25 recites a corresponding limitation. *Id.* at 13. The Examiner finds:

The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor or a joint inventor, or for pre-AIA the inventor(s), at the time the application was filed, had possession of the claimed invention.

Final Act. 2–3; *see* Ans. 3.

As our reviewing court explained,

The test for determining compliance with the written description requirement is *whether the disclosure of the application as originally filed reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter, rather than the presence or absence of literal support in the specification for the claim language.*

In re Kaslow, 707 F.2d 1366, 1375 (Fed. Cir. 1983) (emphasis added, citations omitted); *see Agilent Techs., Inc. v. Affymetrix, Inc.*, 567 F.3d 1366, 1379 (Fed. Cir. 2009), *reh’g en banc denied* Sept. 18, 2009.

The term “possession,” however, has never been very enlightening. It implies that as long as one can produce records documenting a written description of a claimed invention, one can show possession. But the hallmark of written description is disclosure. Thus, “possession as shown in the disclosure” is a more complete formulation. *Yet whatever the specific articulation, the test requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art.* Based on that inquiry, the specification must describe an invention understandable to that skilled artisan

and show that the inventor actually invented the invention claimed.

Ariad Pharmaceuticals, Inc. v. Eli Lilly and Co., 598 F.3d 1336, 1351 (Fed. Cir. 2010) (emphasis added).

The Examiner notes, “Applicant argues ‘Support for the amendment may be found at least at page 13, line 22 - page 14, line 9, and in FIGS. 6A, 6B, 9A, 11A and 11B, of the present application.’” Final Act. 3. The Examiner finds the Specification’s disclosure inadequate for four reasons. Final Act. 2–4. We agree with the Examiner.

First, the Examiner finds the Specification discloses “just the possible data rates, and does not indicate the position of the array of detectors” at page 13, line 22, through page 14, line 9. Final Act. 3.

Second, the Examiner finds none of Figures 6A, 6B, 9A, 11A, and 11B depicts “an array of detectors positioned *between* the lens and a focus of the lens.” Final Act. 3 (quoting claim 1 with emphasis added). Moreover, the Examiner finds that although the Specification discloses:

This adjustable focus may facilitate a match of the optical receiver to characteristics of the optical beam. So for a [line-of sight (LOS)] case, as shown in FIG. 9B, the optical receiver may desire an infinite or nearly infinite focus since the incoming beam may be effectively collimated at the receiver.

Id. (quoting Spec, 29:13–16 with the Examiner’s emphasis). The Examiner finds that these figures and the disclosure regarding Figure 9B relate to detectors “on the focal plane.” *Id.*

Further, the Specification’s Figure 6A, depicting beams passing

through optics and impinging on detectors, is reproduced below.

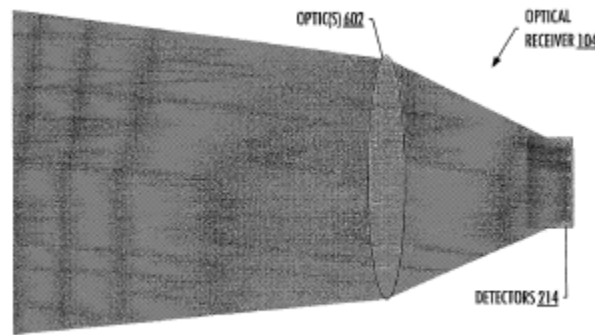


FIG. 6A

Figure 6A depicts optical receiver 104 “includ[ing] an extended source of an array of detectors **214** and one or more optics **602** (*the array of detectors having a size larger than the spot size of the optical beam at the optical transmitter*).” Spec., 26:26–30 (emphasis added). In the Advisory Action, the Examiner finds with respect to Figure 6A,

the “large spot size” does not mean[] “[t]he array of detectors here is clearly positioned between the lens and the focus of the lens”. Because of a limited size of the lens, an Airy disk/spot always presents at the focus point due to diffraction. “In optics, the Airy disk (or Airy disc) and Airy pattern are descriptions of the best-focused spot of light that a perfect lens with a circular aperture can make, limited by the diffraction of light (Wikipedia).⁴

Adv. Act. 2. In other words, the Examiner finds Figure 6A does not disclose that the focal point of optics 602 is beyond detectors 214. *See also* Spec.,

⁴ The Board has not viewed Wikipedia as a trustworthy source. *See Ex parte Coward*, Appeal No. 2017-000644, 2018 WL 799021, at *4 (PTAB 2018) (“Due to the constantly changing nature of Wikipedia, a citation to Wikipedia is of limited value. Moreover, Wikipedia is not considered to be a reliable source.”); *Ex parte Three-Dimensional Media Group, Ltd.*, Appeal No. 2009-004087, 2010 WL 3017280, at *17 (BPAI 2010) (non-precedential) (“Wikipedia is generally not to be considered as trustworthy as traditional sources for several reasons, for example, because (1) it is not peer

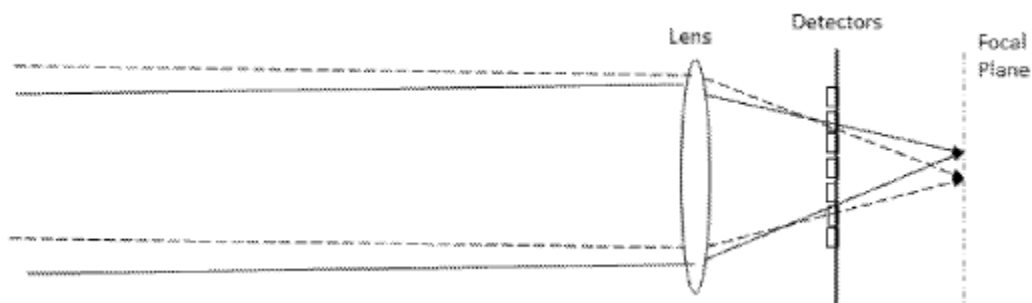
Figs. 6B, 9A, 11A, 11B (depicting substantially the same relationship between optic(s) 602 and detector(s) 214).

Third, the Specification discloses:

For LOS in weather, it may be desirable to focus *at some intermediate point between the optical transmitter 102 and receiver* since the scattering due to rain, snow, fog or other may generate an effective source point between the optical transmitter and receiver. As shown in FIG. 9C, this may be similarly the case for [non-line-of-sight (NLOS)] in which it may be likewise desirable to focus *on some intermediate point between the optical transmitter and receiver*.

Spec., 29:16–22 (emphases added). Thus, in each of the LOS and NLOS examples, the Specification describes a focal point between the optical transmitter and receiver, *not a receiver between the optical transmitter and the focus of the lens*, as recited in claims 1 and 25. Final Act. 3–4.

Fourth, the Examiner finds that “the specification does not teach *how* to demodulate/decode the signals when multiple beams impinge on same detector due to the unfocused beams on the detectors.” Final Act. 4 (emphasis added). The Examiner’s drawing depicting an array of detectors positioned between a lens and a focal plane is reproduced below.



Referring to this drawing, the Examiner finds, “an array of detectors

reviewed; (2) the authors are unknown; and (3) apparently anyone can contribute to the source definition”).

positioned between the lens and a focus of the lens’, two beams from different emitters are impinged on multiple detectors. The specification does not disclose *how* each detector demodulates the desired signals while the detector receives multiple optical beams.” *Id.* (emphasis added).

1. *Depiction of Figure 6A*

In response, Appellant first contends “at least FIG. 6A of the present application . . . clearly illustrates ‘the optical receiver includes a lens and an array of detectors positioned between the lens and a focus of the lens.’”

Appeal Br. 3–4; *see* Reply Br. 2. The Specification’s Figure 6A is reproduced above. In particular, Appellant contends,

As shown, there are optical beams over a range of incoming angles (from the left of the optic(s) 602) that [] focus onto the array of detectors 214. As also shown, the optical beams do NOT come to a focus or point, and instead have a large spot size on the array of detectors. The array of detectors here is clearly positioned between the lens and the focus of the lens.

Appeal Br. 4. Appellant responds to the Examiner’s findings in the Advisory Action,

that one skilled in the art would clearly recognize the specification describing the apparatus and method in terms of geometrical optics, and that the size of the Airy disk is infinitesimally small. One skilled in the art would therefore not construe what is shown in the figure as the Airy disk.

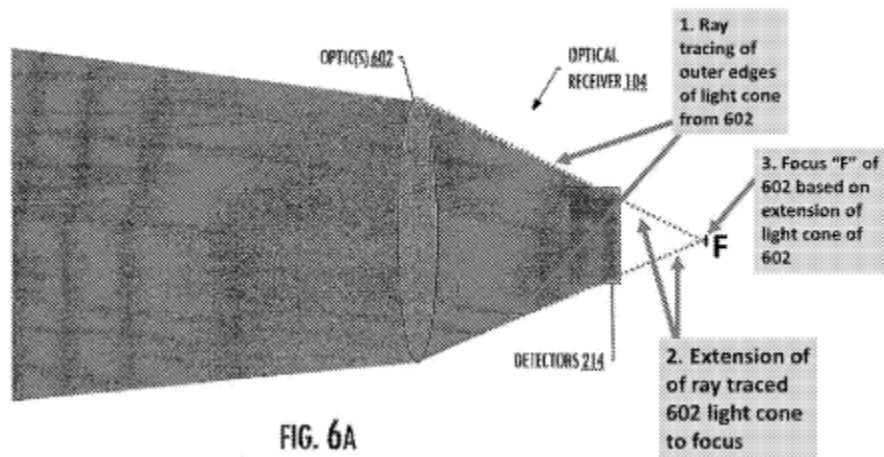
Id. We disagree with Appellant.

The Examiner’s findings regarding an Airy disk and Appellant’s response are immaterial. When a specification does not disclose that the drawings are to scale and is silent as to dimensions, arguments based on measurement of the drawing features are of little value. *See Hockerson-Halberstadt, Inc. v. Avia Group Int’l*, 222 F.3d 951, 956 (Fed. Cir. 2000);

see also Spec., 27:16–19 (“As size of the detector increases from 200 microns up to 500 microns, and then to 1 mm and more, the acceptance angle may increase from a fraction of a degree up to several degrees, while maintaining an aperture size of 0.1 to 100 or more centimeters.” (emphases added)). Thus, neither the Examiner’s findings regarding Figure 6A nor Appellant’s response persuade us either way on the adequacy of the written description. See Appeal Br. 5; Ans. 9–10.

Appellant further contends “that FIG. 6A is an illustration of ray tracing that describes the optical beam that, if extended to the focus of the lens,” shows the detector between the lens and the focus of the lens. Appeal Br. 5. We are not persuaded by Appellant’s contention.

Figure 6A, including Appellant’s annotations, is reproduced below.



Annotated Figure 6A depicts, “the light cone . . . is *only* consistent with a focus as shown at point ‘F,’ not with the focus point ‘F’ being at the detectors 214.” Appeal Br. 5 (emphasis added).

The Examiner finds, however, that other explanations of Figure 6A’s depiction are possible. Ans. 7 (discussing Figure O1), 11–12 (discussing Figures O3 and O4). Ultimately, the Examiner finds:

The cone define[d] by Appellant [in annotated Figure 6A] is formed by a plurality of light beams. The Appellant uses different light beams to generate a point ‘F’ arbitrarily.

. . . And, the original disclosure does not positively and clearly disclose/define ‘a focus’ that is ‘based on extension of light cone’.

Id. at 11. We agree with the Examiner.

Moreover, it is well settled that Appellant’s arguments cannot take the place of factually supported objective evidence. *See, e.g., In re Huang*, 100 F.3d 135, 139–40 (Fed. Cir. 1996); *In re De Blauwe*, 736 F.2d 699, 705 (Fed. Cir. 1984). Here, although Appellant presents a possible explanation of Figure 6A’s depiction that describes the disputed limitation of claims 1 and 25, that explanation is not sufficiently supported by evidence of record and, in particular, by intrinsic evidence. *See Ariad*, 598 F.3d at 1351 (“Yet whatever the specific articulation, the test requires an objective inquiry *into the four corners of the specification* from the perspective of a person of ordinary skill in the art.” (emphasis added)). Consequently, we are not persuaded the Examiner errs in finding that Figure 6A does not provide adequate written description for the disputed limitation.

2. Disclosure of “Focus at Some Intermediate Point”

As noted above, the Specification discloses, “[f]or LOS in weather, it may be desirable to focus at some intermediate point between the optical transmitter **102** and receiver since the scattering due to rain, snow, fog or other may generate an effective source point between the optical transmitter and receiver.” Spec., 29:16–19. Appellant contends, “the above passage in the specification, by physics known to those skilled in the art, demonstrates support for ‘the optical receiver includes a lens and an array of detectors positioned between the lens and a focus of the lens.’” Appeal Br. 6

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(referring to Spec., 29:16–19). In particular, Appellant contends that based on “thin lens equation,” “the placement of a detector at the focus point f_{∞} or point f_{TX} will *automatically* place the detector between the lens and the point f_{IP} , where f_{IP} is a focus of the lens, namely the focus of the lens *for the intermediate point.*” *Id.* (emphases added, citing Wikipedia, *Thin Lens*, https://en.wikipedia.org/wiki/Thin_lens (last modified Mar. 20, 2020)).⁵

The Examiner responds that this contention is not persuasive for three reasons. Ans. 13–14.

First, the paragraph (page 29, lines 13-22) cited by Examiner actually indicates that *an object at the intermediate point can be focused on the receiver by using the dynamic optic(s) (902).*

Second, as admitted by Appellant, f_{TX} is a “*focus point for transmitter*”; that is the f_{TX} is a focus of the lens. And the detector is “At the TX focus point”. And the detector is not positioned between the lens and the focus of the lens (f_{TX}). *And the Appellant’s figure (see [Appeal Br. 6; Ans. 13]) clearly indicates that an array of detectors is positioned at the focus of the lens: f_{TX} , not between the lens and the f_{TX} .*

Third, as shown by the figure on [Appeal Br. 6] (also presented on [Ans. 13]), the Appellant introduces another “focus of the lens”: f_{IP} , *which is an image point of intermediate point s2.* Ans. 13–14 (emphases added). We agree with the Examiner.

Appellant fails to show where the Specification discusses the “thin lens equation” or its applicability to the disclosure in the cited paragraph at page 29, lines 12–22. *See* Appeal Br. 5–6. Moreover, as noted above, Appellant’s arguments cannot take the place of factually supported objective evidence. *See, e.g., Huang*, 100 F.3d at 139–40; *De Blauwe*, 736 F.2d at 705. Here, although Appellant presents a possible explanation of the

⁵ *See supra* note 4.

Specification's disclosure that could describe the disputed limitation of claims 1 and 25, that explanation is not sufficiently supported by evidence of record and, in particular, by intrinsic evidence. *See Ariad*, 598 F.3d at 1351. Further, the Examiner supplies an alternative to Appellant's explanation which does not support the disputed limitation. Consequently, on this record, we are not persuaded the Examiner errs in finding that the Specification, interpreted in light of the "thin lens equation," does not provide adequate written description for the disputed limitation.

3. *Disclosure of "How Different Detector Elements Demodulate Different Beams"*

The Examiner and Appellant disagree on whether the Specification provides an adequate description of "how" to demodulate or decode signals in beams falling on detectors positioned between a lens and a focal plane. Final Act. 4; Appeal Br. 7–8; Ans. 15–18. The Examiner finds that, if the Specification fails to disclose "how" this is accomplished, the Specification cannot describe the recited arrangement of components. *See* Final Act. 4; Ans. 17–18. Appellant contends, however, that "the specification does in fact disclose *how* different detector elements demodulate different beams at least by spectral multiplexing." Appeal Br. 7 (emphasis added).

As our reviewing court explained, "[s]ince its inception, this court has consistently held that § 112, first paragraph, contains *a written description requirement separate from enablement.*" *Ariad*, 598 F.3d at 1351 (emphasis added). "Although not explicitly stated in section 112, to be enabling, the specification of a patent must teach those skilled in the art *how* to make and use the full scope of the claimed invention without 'undue experimentation.'" *In re Wright*, 999 F.2d 1557, 1561 (Fed. Cir. 1993) (emphasis added, internal citations omitted). The rejection here, however, is

for lack of adequate written description, *not* lack of enablement. Final Act. 2 (“Claims 1-48 are rejected under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the written description requirement.”). Therefore, we need not determine whether the Specification explains *how* detectors, as recited in the claim, might work in order to make the separate determination whether the Specification demonstrates that “the disclosure of the application as originally filed reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter.” *Kaslow*, 707 F.2d at 1375. Thus, we need not and do not reach the question whether the Specification adequately explains *how* the “array of detectors” recited in the disputed limitation work.

For the reasons given above, we are not persuaded the Examiner errs in rejecting claims 1 and 25 as lacking adequate written description in the Specification. Consequently, we sustain this rejection of claims 1 and 25, and we sustain this rejection of claims 2–24 and 26–48, which the Examiner rejects due to the alleged deficiencies in their base claims and does not argue separately.

DECISION

1. The Examiner does not err in rejecting claims 1–48 under 35 U.S.C. § 112(a) as lacking adequate written description.
2. Thus, on this record, claims 1–48 are not patentable.

CONCLUSION

We affirm the Examiner’s decision rejecting claims 1–48.

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In summary:

Claim(s) Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1-48	112(a)	Written Description	1-48	

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. § 1.136(a)(1)(iv) (2013).

AFFIRMED