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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* DANIEL FARB, JOE VAN ZWAREN,  
AVNER FARKASH, and KEN KOLMAN

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Appeal 2017-005548  
Application 13/322,576  
Technology Center 3700

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Before JOHN C. KERINS, EDWARD A. BROWN, and  
LYNNE H. BROWNE, *Administrative Patent Judges*.

BROWNE, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Daniel Farb et al. (Appellants)<sup>1</sup> appeal under 35 U.S.C. § 134 from the rejection of claims 24–26, 28–30, 35, and 37. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM and enter NEW GROUNDS OF REJECTION pursuant to our authority under 37 C.F.R. § 41.50(b).

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<sup>1</sup> Appellants identify Leviathan Energy Hydroelectric as the real party in interest. App. Br. 3.

### CLAIMED SUBJECT MATTER

Claims 24 and 35 are independent. Claim 24, reproduced below, is illustrative of the claimed subject matter:

24. A method of producing electricity from a hydroelectric turbine in a pipe, comprising:

a. a nozzle with a cross-sectional diameter of approximately 45–55% cross-sectional diameter of the pipe;<sup>2</sup>

b. blades of substantially similar diameters and configured to revolve at 90–150 times per minute, the blades positioned in the pipe to be rotated by the existing pressure in the pipe, and to maintain a substantially constant exit pressure; and,

c. the pipe is at least approximately 100 mm in cross-sectional diameter.

### REFERENCES

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Ramer                      US 4,372,113                      Feb. 8, 1983

Ortiz                        US 2008/0238105 A1            Oct. 2, 2008

Kenneth R. Broome, *CFD Analysis of an Undershot Impulse-Jet Hydropower Generator*, IIHR - HYDROSCIENCE AND ENGINEERING, THE UNIVERSITY OF IOWA, Feb. 23, 2009.

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<sup>2</sup> Claim 24, reproduced in the Claims Appendix of the Appeal Brief, contains typographical errors; namely, “A” before “a nozzle” and a period after “cross-sectional diameter of the pipe.” *See* Appeal Br. 19 (Claims App.). Claim 24, reproduced above, does not contain these typographical errors. *See* Amendment filed Nov. 30 2015.

### REJECTIONS<sup>3</sup>

- I. Claims 24–26, 28–30, and 37 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.
- II. Claims 24–26, 28–30, and 37 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.
- III. Claim 35 stands rejected under 35 U.S.C. § 101, as being directed to non-statutory subject matter.
- IV. Claims 24–26, 28–30, and 37 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Ramer and Ortiz.
- V. Claim 35 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Ramer and Broome.

### DISCUSSION

*New Ground of Rejection — 35 U.S.C. § 112, second paragraph*

Claims 24–26, 28–30, 35, and 37 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

A claim is properly rejected as being indefinite under 35 U.S.C. § 112, second paragraph if, after applying the broadest reasonable interpretation in light of the specification, the metes and bounds of a claim are not clear

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<sup>3</sup> The Final Action also includes objections to claims 24 and 35. Final Act. 4. Review thereof is a petitionable matter not within jurisdiction of the Board.

because the claim “contains words or phrases whose meaning is unclear.” *In re Packard*, 751 F.3d 1307, 1310 (Fed Cir. 2014).

The preamble of claim 24 identifies that the claim is a method claim, however, the claim does not require or include any particular step. Claim 24 instead merely recites structural elements and apparent functional characteristics of the blades. Appeal Br. 19 (Claims App.). As such, it is unclear what, if any, method steps are required to be performed to produce electricity from a hydroelectric turbine in a pipe in accordance with claim 24.

In addition, it is unclear what blade diameters are referred to in the limitation “blades of substantially similar diameters,” as the shape of the blades has not been claimed, nor has a frame of reference been described based on which such diameters are to be measured. Moreover, it is unclear if the claimed blade diameters are “substantially similar” to other blade diameters, or to the diameter or diameters of other components, such as the pipe or nozzle diameters.

Furthermore, the scope of the claim language “substantially similar” is unclear. Appeal Br. 19 (Claims App.). Although, the claim terms “substantially” and “similar” are both relative terms which generally do not render a claim indefinite,<sup>4</sup> in this instance the Specification does not provide adequate guidance as to how narrowly or how broadly either of these terms is to be interpreted. *See generally* Spec. The lack of clarity that arises because of this lack of guidance is further compounded by the use of both

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<sup>4</sup> *See e.g., Andrew Corp. v. Gabriel Electronics*, 847 F.2d 819 (Fed. Cir. 1988); *see also Ex parte Kristensen*, 10 USPQ2d 1701 (Bd. Pat. App. & Inter. 1989).

relative terms in the phrase “substantially similar.” In other words, it is unknown to what extent the modifier “substantially” extends or contracts the scope of the claim language “similar diameters,” itself a relative term. Thus, the meaning of the claim language “substantially similar” cannot readily be ascertained. Accordingly, claim 24 and its dependent claims 25, 26, 28–30 and 37 are indefinite.

The method of claim 35 requires the step of “simulating an in-pipe turbine system” in paragraph (a). *Id.* at 20 (Claims App.). However, paragraph (a) does not include any parameters for running the claimed simulation. Rather, it recites components of an in-pipe turbine system and a plurality of inputs recited as members of a Markush group, and does not describe how “a minimum of inputs” selected from the Markush group are used in a simulation. As such, it is unclear what exactly is being simulated, how the inputs are utilized in the simulation, and how the in-pipe turbine system is simulated. Nor is it clear what is meant by “a minimum number of inputs.” Accordingly, claim 35 is indefinite.

*Rejection I— Written Description*

Claims 24–26, 28–30, and 37

Claims 25, 26, 28–30, and 37 depend from claim 24. Appeal Br. 19–20 (Claims App.). Appellants do not present separate arguments for claims 25, 28–30, and 37. Appellants’ arguments pertaining to claim 26 are limited to the separate rejection of claim 26 discussed *infra*. Thus, for the limitations at issue in this section of the rejection, claims 25, 26, 28–30, and 37 stand or fall with claim 24.

The Examiner determines that the following limitations of claim 24 are not supported by the original disclosure: (i) “approximately 45–55%,” (ii) “blades of substantially similar diameters,” and (iii) “the blades positioned in the pipe to be rotated by the existing pressure in the pipe, and to maintain a substantially constant exit pressure.” Final Act. 5. In regard to limitation (i), “approximately 45–55%,” the Examiner’s position is that “[w]hile the specification provides basis for a nozzle diameter of 45–55% of the cross-sectional diameter of the pipe, the original disclosure fails to provide a basis for a range of ‘approximately 45–55%’, which broadens the scope of the claim beyond that found in applicant’s original disclosure.” *Id.*

Whether an application provides written descriptive support is a question of fact, and determining whether a patent complies with the written description requirement will necessarily vary depending on the context. *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). Specifically, the level of detail required to satisfy the written description requirement varies depending on the nature and scope of the claims and on the complexity and predictability of the relevant technology. *Id.* When the original written description describes something more broadly than what is claimed, the burden is on the Examiner to provide convincing reasoning or evidence showing why the broader disclosure does not provide support for the narrower limitation of the claim. *See In re Wertheim*, 541 F.2d, 257, 263–65 (CCPA 1976) (holding that when the claimed range is outside the range disclosed in the original specification, the PTO need only point out that fact to support a written description rejection, but when the claimed range is subsumed within a range disclosed in the original specification, the PTO must present a sufficient reason to doubt that

the broader described range does not also describe the somewhat narrower range.)

For the first limitation at issue, the Examiner's rejection as set forth in the Final Action consists of referring only to the 45–55% range as disclosed in the Specification, and an assertion that claiming this as an “approximate” range renders the claim broader than the disclosure, and not supported thereby. Final Act. 5. However, the Specification also discloses a broader range of 40–60%. Spec. 3. The disclosed 40–60% range encompasses “approximately 45–55%.” As discussed *supra*, in this instance it is incumbent upon the Examiner to present convincing reasoning or evidence showing why the disclosure of 40–60% does not provide support for the “approximately 45–55%” range as claimed. The Examiner does not provide such evidence.

In regard to limitation (ii) “blades of substantially similar diameters,” the Examiner's position is that “there is no mention of the blade diameters” in the Specification, and “[w]hile the blades are stated to have similar cross-sectional areas, this does not inherently imply similar diameters for the blades.” Final Act. 5.

However, the Specification discloses that a “Pelton Turbine-like arrangement of cups . . . is used, as [shown] in Figure 1.” Spec. 2. The Examiner acknowledges that “it is old and well known in the art that Pelton Turbines have blades substantially similar in diameter.” Final Act. 8. We also note that, as shown in Figure 1, all of the blades of the turbine appear to be identical. *See* Spec., Fig. 1. Thus, those of ordinary skill in the art would understand the blades shown in Figure 1 to have “substantially similar diameters.” As such, we determine that at the time the invention was made,

Appellants had possession of the limitation “blades of substantially similar diameters.”

Concerning limitation (iii) “the blades positioned in the pipe to be rotated by the existing pressure in the pipe, and to maintain a substantially constant exit pressure,” the Examiner asserts that “[w]hile the specification and cancelled claim 36 discuss maintaining a constant pressure drop across the turbine, this does not inherently imply a constant exit pressure.” Final Act. 5.

In response to this argument, Appellants direct our attention to paragraph 20 of the Specification. Appeal Br. 9. Paragraph 20 describes factors that are relevant to achieving “a substantially exact decrease in pressure before and after an in-pipe turbine.” Spec. ¶ 20. One of the enumerated factors is “pressure out” or exit pressure. *Id.* However, this paragraph does not indicate that the “pressure out” is maintained at a substantially constant pressure. *See id.* Further, our review of the entire Specification reveals no discussion of maintaining the exit pressure at a substantially constant pressure. *See generally* Spec. Moreover, Appellants provide no persuasive argument or evidence to show that one skilled in the art would understand a Pelton Turbine to inherently require a constant exit pressure. Thus, Appellants do not apprise us of error in this part of the rejection.

Accordingly, for this reason, we sustain the Examiner’s decision rejecting claims 24–26, 28–30, and 37 as failing to comply with the written description requirement.

Claim 26

In addition, the Examiner determines that the limitation of claim 26, “wherein the blades operate as propellers” is not supported by the original disclosure. Final Act. 6. The Examiner’s position is that “[w]hile the specification may describe propeller-like blades, this does not suggest that the blades operate as propellers.” *Id.*

The Specification does not disclose using “propeller-like blades” but instead, discloses that “Figure 4 is a diagram of a nozzle with guide vanes. This kind of nozzle may be used with cup or *propeller types of blades.*” Spec. 4 (emphasis added). Accordingly, an ordinary artisan would understand that Appellants had possession of the limitation “wherein the blades operate as propellers” because the blades as described in the Specification are “propeller types.”

For these reasons, we do not sustain the rejection of claim 26 under 35 U.S.C. § 112, first paragraph.

*Rejection II — Indefiniteness*

Appellants do not contest this rejection. *See* Appeal Br. 9. Accordingly, we summarily sustain the rejection of claims 24–26, 28–30, and 37 as indefinite, on the grounds presented in the Final Action. We note that these grounds are in addition to the grounds presented above in the new ground of rejection.

*Rejection III — Non-Patent Eligible Subject Matter*

The Examiner determines that claim 35 is directed to an abstract idea and does not include additional elements that are sufficient to amount to

significantly more than the abstract idea. Final Act. 7. The Examiner asserts that “the claim establishes a method of manufacturing a hydroelectric turbine nozzle comprising the steps of simulating an in-pipe turbine system based upon a set of inputs and then producing a system based upon the results of the simulation.” *Id.* at 7–8. The Examiner further asserts that “[a]s the simulation simply involves a computer aided design process based upon iterative routine testing, it does not add any meaningful limitation to the claimed method since there is no substantial system or structure created by this process,” “the provision of a system based upon the results of an optimizing design process is well known to one having ordinary skill in the art,” and therefore, “as the steps do not substantially alter the structure of the manufactured system that is otherwise known in the art, the method is not directed to significantly more than an abstract idea.” *Id.* at 8.

Appellants contend that step (b) of claim 35 provides a physical structure and “[c]laim 35 is directed to a process, which is patentable matter under 101.” Appeal Br. 10. Appellants argue that “[t]he examiner did not find th[e] association of pressure control with flow and generator rpm in prior art even with combinations of prior art.” *Id.* at 11. According to Appellants, “[d]efining the exit pressure is an important goal, which has not been done before.” *Id.* Appellants further argue that “[a]lthough some of the inputs covered in the claim may seem self-evident, the association of these factors for a certain and specific purpose is highly innovative and the Examiner has not provided any specific refutation of the specific ones chosen.” *Id.*; *see also* Reply Br. 2–3.

The Supreme Court has set forth “a framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas

from those that claim patent-eligible applications of those concepts.” *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2355 (2014) (citing *Mayo Collaborative Servs. v. Prometheus Labs, Inc.*, 132 S. Ct. 1296–1297 (2012)). According to the Supreme Court’s framework, we must first determine whether the claims at issue are directed to one of those concepts (i.e., laws of nature, natural phenomena, and abstract ideas). *Id.* If so, we must secondly “consider the elements of each claim both individually and ‘as an ordered combination’ to determine whether the additional elements ‘transform the nature of the claim’ into a patent-eligible application.” *Id.* The Supreme Court characterizes the second step of the analysis as “a search for an ‘inventive concept’ — *i.e.*, an element or combination of elements that is ‘sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.’” *Id.* (alteration in the original) (quoting *Mayo*, 132 S. Ct. at 1294).

For the first part of our inquiry, we observe that claim 35, step (a), recites “*simulating* an in-pipe turbine system.” Appeal Br. 20 (Claims App.) (emphasis added). As the Examiner points out, “the method of claim 35 may be broken down into a step of simulating a turbine system given a select set of inputs, and providing that system based upon the results of the simulation. None of this requires anything more than a thought experiment.” Ans. 5. We thus understand the Examiner’s position to be that claim 35 is directed to an abstract idea of simulating an in-pipe turbine system. Step (a) of claim 35 merely identifies components of an in-pipe turbine system that is to be simulated, i.e., does not physically exist, and inputs used in the simulation. Considering claim 35 in its entirety, including the limitations above, we find that the claimed subject matter is directed to the concept of

simulating an in-pipe turbine system. Accordingly, claim 35 is directed to an abstract idea.

Having determined that claim 35 is directed to an abstract idea, we must determine whether the additional elements of the claim transform it into patent-eligible subject matter. Although claim 35 sets forth in step (a) a group of inputs, from which “a minimum of inputs” are to be selected for use in the simulation, it does not specify how the inputs are selected or used other than that they are to achieve “provid[ing] a substantially exact decrease in pressure before and after [the] turbine.” The Examiner’s assertions that “[a]s the simulation simply involves a computer aided design process based upon iterative routine testing, it does not add any meaningful limitation to the claimed method since there is no substantial system or structure created by this process,” and “the provision of a system based upon the results of an optimizing design process is well known to one having ordinary skill in the art,” distill down to a determination that step (a) requires well-understood, routine, conventional activity or simple instruction to implement an abstract idea. Final Act. 8. However, claims must include additional features that are significantly beyond “well-understood, routine, conventional activity” or beyond a simple “instruction to implement or apply the abstract idea on a computer.” *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 715 (Fed. Cir. 2014) (quoting *Mayo*, 566 U.S. at 79.); *Bascom Glob. Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1349 (Fed. Cir. 2016). Thus, the limitations in step (a) of claim 35 do not transform the abstract idea embodied in the claim. Rather, it simply implements the idea.

Regarding step (b) of claim 35, as noted above, this step is merely a post-solution activity. Thus, the combination of limitations of claim 35 does

not transform the abstract idea embodied in the claim but simply implements that idea.

Accordingly, the elements of claim 35, when considered “both individually and ‘as an ordered combination,’” amount to nothing more than an attempt to patent the abstract idea embodied in the steps of this claim. *See Alice*, 134 S. Ct. at 2355 (quoting *Mayo*, 132 S. Ct. at 1298). Thus, the limitations of claim 35 fail to transform the nature of this claim into patent-eligible subject matter. *See id.* (citing *Mayo*, 132 S. Ct. at 1297, 1298).

Concerning Appellants’ contentions that: (1) “[t]he examiner did not find th[e] association of pressure control with flow and generator rpm in prior art even with combinations of prior art” (Appeal Br. 11); (2) “[d]efining the exit pressure is an important goal, which has not been done before” (*id.*); and (3) “[a]lthough some of the inputs covered in the claim may seem self-evident, the association of these factors for a certain and specific purpose is highly innovative and the Examiner has not provided any specific refutation of the specific ones chosen” (*id.*), as the Supreme Court stated, “[t]he ‘novelty’ of any element or steps in a process, or even of the process itself, is of no relevance in determining whether the subject matter of a claim falls within the § 101 categories of possibly patentable subject matter.” *Diamond v. Diehr*, 450 U.S. 175, 188–89 (1981). Thus, we are not apprised of error based on this argument.

For these reasons, we sustain the Examiner’s decision rejecting claim 35 as being directed to non-statutory subject matter.

*Rejections IV–V—Obviousness*

The Examiner rejected claims 24–26, 28–30, and 37 under 35 U.S.C. § 103(a) as unpatentable over Ramer and Ortiz (Final Act. 8–12), and rejected claim 35 under 35 U.S.C. § 103(a) as unpatentable over Ramer and Broome (*id.* at 12–15).

Having determined that claims 24–26, 28–30, 35, and 37 are indefinite, we cannot sustain the rejections of these claims under 35 U.S.C. § 103(a) because to do so would require speculation as to the scope of the claims. *See In re Aoyama*, 656 F.3d 1293, 1300 (Fed. Cir. 2011) (holding that the Board erred in affirming an anticipation rejection of indefinite claims); *In re Steele*, 305 F.2d 859, 862–63 (CCPA 1962) (holding that the Board erred in affirming a rejection of indefinite claims under 35 U.S.C. § 103(a)).

DECISION

The Examiner’s rejection of claims 24–26, 28–30, and 37 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement is AFFIRMED.

The Examiner’s rejection of claims 24–26, 28–30, and 37 under 35 U.S.C. § 112, second paragraph, as being indefinite is AFFIRMED.

The Examiner’s rejection of claim 35 under 35 U.S.C. § 101, as being directed to non-statutory subject matter is AFFIRMED.

The Examiner’s rejection of claims 24–26, 28–30, and 37 under 35 U.S.C. § 103(a) as unpatentable over Ramer and Ortiz is REVERSED.

The Examiner’s rejection of claim 35 under 35 U.S.C. § 103(a) as unpatentable over Ramer and Broome is REVERSED.

We enter NEW GROUNDS OF REJECTION for claims 24–26, 28–30, 35, and 37 under 35 U.S.C. § 112, second paragraph.

#### FINALITY OF DECISION

This decision contains new grounds of rejection pursuant to 37 C.F.R. § 41.50(b). Section 41.50(b) provides “[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review.” Section 41.50(b) also provides:

When the Board enters such a non-final decision, the Appellant, within two months from the date of the decision, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:

(1) *Reopen prosecution.* Submit an appropriate amendment of the claims so rejected or new Evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the prosecution will be remanded to the examiner. The new ground of rejection is binding upon the examiner unless an amendment or new Evidence not previously of Record is made which, in the opinion of the examiner, overcomes the new ground of rejection designated in the decision. Should the examiner reject the claims, appellant may again appeal to the Board pursuant to this subpart.

(2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same Record. The request for rehearing must address any new ground of rejection and state with particularity the points believed to have been misapprehended or overlooked in entering the new ground of rejection and also state all other grounds upon which rehearing is sought.

Further guidance on responding to a new ground of rejection can be found in the Manual of Patent Examining Procedure § 1214.01.

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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; 37 C.F.R. § 41.50(b)