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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte VAN MICHAELS CHRISTOPHER (deceased), as represented by
DIANA MICHAELS CHRISTOPHER

Appeal 2019-006843
Application 14/068,478
Technology Center 2800

Before ROMULO H. DELMENDO, JEFFREY B. ROBERTSON, and
MONTÉ T. SQUIRE, *Administrative Patent Judges*.

SQUIRE, *Administrative Patent Judge*.

DECISION ON APPEAL¹

Appellant² appeals under 35 U.S.C. § 134(a) from the Examiner’s decision to reject claims 19–35, which are all of the claims pending in this application.³ We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ This Decision refers to the Specification filed Oct. 31, 2013 (“Spec.”); Non-Final Office Action dated Mar. 9, 2017 (“Non-Final Act.”); Appeal Brief filed Jan. 2, 2018 (“Appeal Br.”); Examiner’s Answer dated Aug. 31, 2018 (“Ans.”); and Reply Brief filed Oct. 26, 2018 (“Reply Br. “).

² We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. According to the first page of the Appeal Brief, Diana Michaels-Christopher, the legal representative of the deceased Inventor and the Assignee, appears to be identified as the real party in interest.

³ Claims 1–18 are cancelled. Spec. 19.

CLAIMED SUBJECT MATTER

The invention relates to power generation by converting a gas to mechanical work and, more specifically, to improving power generation by kinetically ordering the flow of the gas. Spec. ¶ 2. The Specification describes an apparatus that includes a convergent-divergent (CD) nozzle having an extended divergent end. *Id.* ¶ 9; Abstract. According to Appellant's disclosure, when attached to spiral channels of a bladeless turbine, the apparatus minimizes entropic losses and therefore results in an extremely efficient conversion of gas flow to work. Spec. ¶ 9.

Claim 19 illustrates the subject matter on appeal and is reproduced below from the Claims Appendix to the Appeal Brief (key disputed claim language italicized and bolded):

19. Apparatus for generating mechanical work from a working fluid, the apparatus comprising:

a stator;

a rotor mounted within the stator having at least one working-fluid in-feed opening;

an output shaft that is rotated by the working fluid flowing through the rotor;

a plurality of Archimedean spiral channels mounted within the rotor and wound around the output shaft, each Archimedean spiral channel having a channel opening; and

a CD nozzle for receiving the working fluid, the CD nozzle having converging nozzle inlet and a diverging nozzle exit, the nozzle exit having a shape that corresponds with a shape of the channel opening;

wherein the exit opening of the CD nozzle and the working-fluid in-feed opening are in close proximity to each other and the working fluid is ejected from the nozzle exit as a supersonic, flow having a mono-directional molecular order of the working fluid and injected through the working-fluid in-feed

opening on the rotor into the plurality of Archimedean spiral channels;

wherein the CD nozzle and the Archimedean spiral channels together ensure that the mono-directional molecular order of the working fluid is maintained, thereby reducing entropic losses in the working fluid to a minimum.

REFERENCE

The Examiner relies on the following prior art reference as evidence in rejecting the claims on appeal:

Name	Reference	Date
Hicks	US 6,973,792 B2	Dec. 13, 2005

REJECTIONS

On appeal, the Examiner maintains (Ans. 2) the following rejections:

1. Claims 19–28, 32, 33, and 35 are rejected under pre-AIA 35 U.S.C. § 102(b) as being anticipated by Hicks (“Rejection 1”). Non-Final Act. 31.
2. Claims 29–31 and 34 are rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Hicks (“Rejection 2”). Non-Final Act. 36.
3. Claims 19–35 are rejected under 35 U.S.C. § 112(a) or pre-AIA 35 U.S.C. § 112, first paragraph as failing to disclose the best mode (“Rejection 3”). Non-Final Act. 26.
4. Claims 19–35 are rejected under 35 U.S.C. § 112(a) or pre-AIA 35 U.S.C. § 112, first paragraph as failing to comply with the enablement requirement (“Rejection 4”). Non-Final Act. 27.
5. Claims 19–35 are rejected under 35 U.S.C. § 112(a) or pre-AIA 35 U.S.C. § 112, 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. (“Rejection 5”). Non-Final Act. 28.

6. Claim 19 is rejected under 35 U.S.C. § 112(a) or pre-AIA 35 U.S.C. § 112, second paragraph as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. (“Rejection 6”). Non-Final Act. 28, 29.

7. Claims 32–35 are rejected under 35 U.S.C. § 101 as being inoperative and for lack of utility (“Rejection 7”). Non-Final Act. 29.

OPINION

Rejection 1

The Examiner rejects claims 19–28, 32, 33, and 35 under § 102(b) as anticipated by Hicks. Non-Final Act. 31–35. Regarding the “plurality of Archimedean spiral channels mounted within the rotor” recitation of claim 19, the Examiner relies principally on Figure 31 of Hicks for disclosing that limitation. *Id.* at 4–5, 7–10, 19–20, 31. The Examiner finds that an Archimedean spiral is “the locus of points corresponding to the locations over time of a point moving away from a fixed point with a constant speed along a line that rotates with constant angular velocity.” *Id.* at 7.

The Examiner further finds and explains that, because “an Archimedean spiral channel is merely a channel having a spiral shape that follows a line comprising the locus of points corresponding to the locations over time of a point moving away from a fixed point with a constant speed along a line which rotates with constant angular velocity,” Figure 31 of Hicks discloses a spiral channel, which satisfies the “plurality of

Appeal 2019-006843
Application 14/068,478

Archimedean spiral channels” language of the claim. Ans. 5 (formatting omitted); *see also* Non-Final Act. 19–20 (referring to Fig. 1B of Saitoh⁴).

Appellant argues essentially that the Examiner’s rejection of claim 19 should be reversed because Hicks does not disclose “a plurality of Archimedean spiral channels,” as recited in the claim. *See* Appeal Br. 4, 11; Reply Br. 3.

Appellant’s argument is persuasive because, on this appeal record, we are not persuaded the Examiner has established by a preponderance of the evidence that Hicks discloses “a plurality of Archimedean spiral channels,” as required by the claim. *See In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992) (“[T]he examiner bears the initial burden, on review of the prior art . . . of presenting a prima facie case of unpatentability.”).

Anticipation requires a showing that each limitation of a claim is disclosed in a single reference, either expressly or inherently. *Perricone v. Medicis Pharm. Corp.*, 432 F.3d 1368, 1369 (Fed. Cir. 2005). To establish that a prior art reference inherently discloses a limitation, “the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.” *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Int. 1990) (citation omitted). Inherency “may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.”

⁴ Saitoh, US 2011/0164958 A1, published July 7, 2011. The Examiner refers to what appears to be an annotated copy of Figure 1B of Saitoh at page 19 of the Non-Final Action.

Appeal 2019-006843
Application 14/068,478

Continental Can Co. USA, Inc. v. Monsanto Co., 948 F.2d 1264, 1269 (Fed. Cir. 1991) (quoting *In re Oelrich*, 666 F.2d 578, 581 (CCPA 1981)).

During prosecution, claims are given their broadest reasonable interpretation consistent with the specification. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). Here, Appellant's Specification does not provide any special definition for the terms "Archimedean spiral" or "Archimedean spiral channels" beyond the language recited in the claim. The Saitoh reference, however, does provide an equation for Archimedes' spiral (i.e., " $r = a\theta$ ($a > 0$)"). Saitoh, ¶¶ 68, 151, Fig. 4B. Although the Examiner proposes definitions for these terms (*see* Ans. 5; Non-Final Act. 7), the Examiner does not provide an adequate explanation as to why one of ordinary skill in the art would have understood the terms as having those definitions or how the Examiner's proposed definitions relate or apply to the equation for Archimedes' spiral Saitoh discloses.

Even assuming the definitions above that the Examiner proposes for the terms "Archimedean spiral" and "Archimedean spiral channels" are consistent with claim 19's broadest reasonable interpretation and we were to apply those definitions to the disclosure of Hicks, on this appeal record, the Examiner has not provided the requisite factual basis and/or technical reasoning sufficient to support a determination that Hicks, either expressly or inherently, discloses "a plurality of Archimedean spiral channels," as claimed.

Although Figure 31 of Hicks illustrates an embodiment of a multi-port engine that includes spiral direction flow devices 3170 and flow areas 3150 and shows discs having swirl patterns (Hicks, 11:38–40, 11:57–59, 12:33–35, Fig. 31), the Examiner does not identify or direct us to any specific description or disclosure in Figure 31 or elsewhere in Hicks

sufficient to establish that the spiral structures of Hicks correspond to and would have been understood by one of ordinary skill to be “Archimedean spiral channels,” as recited in claim 19. Although Hicks depicts and describes certain elements of Figure 31 as being spiral or having a spiral direction, there is no disclosure or description in Hicks specifying any of the elements as being “Archimedean spiral” or “Archimedean spiral channels,” in the manner claimed, or that otherwise supports the Examiner’s determination. The portions of Saitoh the Examiner identifies and refers to in the Non-Final Action (*see* Non-Final Act. 7–10, 19–20) also do not support such determination. Indeed, Saitoh discloses several other suitable spiral configurations such as a logarithmic spiral. Saitoh ¶¶ 149, 150; Fig. 4A.

The Examiner also does not direct us to any specific disclosure in Hicks or other persuasive evidence in the record to adequately explain how or why the structure of Figure 31 of Hicks would fall within the scope of the definition of Archimedean spiral or Archimedean spiral channel the Examiner proposes or would have had the specific geometric dimensions to satisfy the equation Saitoh describes for an Archimedes’ spiral. The Examiner’s assertions that the definition of an Archimedean spiral is “well known in the art” (Ans. 5) and “HICKS clearly teach[es] and illustrates each and every structural element” in the claim (*id.* at 5) are conclusory and, without more, insufficient to sustain the Examiner’s rejection. *Kahn*, 441 F.3d at 988 (explaining that rejections “cannot be sustained by mere conclusory statements”).

The Examiner’s reliance on Figure 31 of Hicks for disclosing the claimed “Archimedean spiral channels” is particularly unpersuasive because there is no indication that Figure 31 is drawn to scale, and no other

disclosures in Hicks support the Examiner's rejection and interpretation of Figure 31 in this regard, particularly in view of the different spiral configurations disclosed in Saitoh as discussed above. It is well-settled that "[a]bsent any written description in the specification of quantitative values, arguments based on measurement of a drawing are of little value." *In re Wright*, 569 F.2d 1124, 1127 (CCPA 1977). Precise proportions should not be read into patent drawings when the patent does not expressly provide such proportions. *Nystrom v. TREX Co., Inc.*, 424 F.3d 1136, 1149 (Fed. Cir. 2005). Therefore, such "arguments based on measurement of the drawing features are of little value." MPEP 2125(11).

We, therefore, do not sustain the Examiner's anticipation rejection of claim 19. Because claims 19–28 depend from claim 19 and claims 32, 33, and 35 each include language similar to the "Archimedean spiral" recitation of claim 19, we also do not sustain the Examiner's rejection of those claims for the same reasons as claim 19.

Accordingly, we reverse the Examiner's rejection of claims 19–28, 32, 33, and 35 under pre-AIA 35 U.S.C. § 102(b) as anticipated by Hicks.

Rejection 2

The Examiner rejects claims 29–31 and 34 under § 103(a) as obvious over Hicks. Non-Final Act. 36. Claims 29–31 depend from claim 19 and claim 34 includes language similar to the "Archimedean spiral" recitation of claim 19.

The foregoing deficiencies we discuss above, however, in the Examiner's analysis and findings regarding claim 19 and Hicks' disclosure are not remedied by the findings and analysis the Examiner provides in support of this rejection. *See* Non-Final Act. 36.

Thus, for principally the same reasons we discuss above in connection with Rejection 1 and claim 19, we reverse the Examiner’s rejection of claims 29–31 and 34 under pre-AIA 35 U.S.C. § 103(a) as obvious over Hicks.

Rejections 3, 4, 5, 6, and 7

The Examiner rejects claims 19–35 under § 112 for failing to disclose the best mode (Rejection 3); claims 19–35 under § 112 for non-enablement (Rejection 4); claims 19–35 under § 112 for indefiniteness (Rejection 5); claim 19 under § 112 for incompleteness (Rejection 6); and claims 32–35 under § 101 lack of utility (Rejection 7). Non-Final Act. 26–29.

The Examiner maintains each of these rejections in the Answer. *See* Ans. 2 (stating “[e]very ground of rejection set forth in the Office action dated March 9, 2017 from which the appeal is taken is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading ‘WITHDRAWN REJECTIONS’”).⁵ Appellant does not present any substantive argument in the Appeal Brief or Reply Brief in response to these rejections. *See generally* Appeal Br., Reply Br.

Accordingly, because the Examiner’s rejections under § 112 (Rejections 3, 4, 5, and 6) and the Examiner’s rejection under § 101 (Rejection 7) have not been withdrawn (*see* Ans. 2) and are not disputed by Appellant, we summarily affirm each of these rejections. *Cf. Hyatt v. Dudas*, 551 F.3d 1307, 1314 (Fed. Cir. 2008); *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential) (“If an appellant fails to present arguments on a particular issue — or, more broadly, on a particular rejection

⁵ We note the Examiner does not identify any of the grounds of rejection as being withdrawn or list them under any such subheading in the Answer. *See generally* Ans.

Appeal 2019-006843
Application 14/068,478

— the Board will not, as a general matter, unilaterally review those uncontested aspects of the rejection”) (cited with approval in *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011)).

CONCLUSION

In summary:

Claim(s) Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
19–28, 32, 33, 35	102(b)	Hicks		19–28, 32, 33, 35
29–31, 34	103(a)	Hicks		29–31, 34
19–35	112	best mode	19–35	
19–35	112	enablement	19–35	
19–35	112	indefiniteness	19–35	
19	112	completeness	19	
32–35	101	utility	32–35	
Overall Outcome			19–35	

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