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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte CHRISTOPHER C. SWOISH and CHRISTOPHER WHITT

Appeal 2016-006129
Application 13/891,875¹
Technology Center 3700

Before JOHN C. KERINS, ARTHUR M. PESLAK, and
ANTHONY KNIGHT, *Administrative Patent Judges*.

KNIGHT, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's Non-Final decision rejecting claims 1–10, the only claims remaining in the application. *See* Appeal Br. 10–12, Claims App. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

¹ According to Appellants, the real party in interest is GM GLOBAL TECHNOLOGY OPERATIONS LLC., who is the Applicant. Appeal Br. 1.

CLAIMED SUBJECT MATTER

The claims are directed to “a particulate filter device monitoring system for an engine.” Spec. ¶ 1. Claims 1 and 6 are the only independent claims. Claim 1 reproduced below, is illustrative of the claimed subject matter:

1. A particulate filter device monitoring system for an engine comprising:
 - a particulate filter device including at least one sensor;
 - a regeneration mode trigger module configured to set a regeneration request based on soot accumulation in the particulate filter device based on signals received from the at least one sensor;
 - a regeneration control module configured to control regeneration of the particulate filter device; and
 - a soot out model module including a soot out model configured to calculate changes in soot out rate during extended engine idle periods.

Appeal Br. 10, Claims App.

REJECTIONS

The Examiner made the following rejections:

- I. Claims 1–10 stand rejected as being directed to patent-ineligible subject matter under the judicial exception to 35 U.S.C. § 101.
- II. Claims 1–10 stand rejected under 35 U.S.C. § 112(b), as failing to particularly point out and distinctly claim the subject matter regarded as the invention.
- III. Claims 1, 4–6, 9, and 10 stand rejected under 35 U.S.C. § 102(a)(1) as anticipated by Wills (US 2007/0056274 A1, published Mar. 15, 2007).

IV. Claims 2, 3, 7, and 8 stand rejected under 35 U.S.C. § 103 as obvious over Wills.

OPINION

Rejection I— The rejection of claims 1–10 as patent-ineligible subject matter

The Examiner finds that “[t]he claim[s are] directed to the abstract idea of ‘monitoring a particulate filter’ and essentially comprise[] ‘modules configured to’ execute various algorithms.” Non-Final Act. 5. The Examiner states that “the additional structural elements . . . are *inferential* to their respective claims, are structures that are well known in the art, and do not serve to transform the respective claims into something significantly more than the abstract idea.” *Id.* at 6 (emphasis added).

Appellants submit that the claims are not subject to the judicial exception to eligible subject matter because “[c]laim 1 is directed to a system, a concrete and tangible article that monitors a particulate filter device,” and “[c]laim 6 is directed to an internal combustion engine.” Appeal Br. 4. Appellants assert that “the system itself is described as being embodied in modules which are themselves actual physical components.” *Id.* Appellants thus argue that “given the presence of these *positively recited* elements, both claims 1 and 6 should be clearly understood to be directed to one of the four statutory categories, i.e., a machine.” *Id.* at 5 (emphasis added).

To determine whether a claim is directed to ineligible subject matter, we apply the two-step test explained in *Alice Corp. Pty. Ltd. v. CLS Bank International*, 134 S. Ct. 2347, 2355 (2014). First, we determine whether

the claims at issue are directed to a patent-ineligible concept such as an abstract idea. *Id.* Next, we “examine the elements of the claim to determine whether it contains an ‘inventive concept’ sufficient to ‘transform’ the claimed abstract idea into a patent-eligible application.” *Id.* at 2357.

Taking up the first step of the patent-eligibility analysis, we do not find that claim 1 or claim 6 has been established to be directed to an abstract idea. *See Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 132 S. Ct. 1289, 1293 (2012). (“The Court has recognized, however, that too broad an interpretation of this exclusionary principle could eviscerate patent law. For all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.”).

Reviewing claim 1 it is clear that claim 1 explicitly recites “a particulate filter device including at least one sensor.” Appeal Br. 10, Claims App. Claim 6 explicitly recites “an engine including an exhaust gas conduit.” *Id.* at 11. Both structures in claim 1 and in claim 6 are physical and positively required by the claims. The reasoning used to determine that the claimed subject matter is judicially-excepted from patent eligibility under § 101 is therefore inadequate. Having determined that the threshold determination under step one of the Alice framework is inadequate, we need not move to the second step.

We therefore reverse the Examiner’s rejection of claims 1 and 6 as directed to patent ineligible subject matter. Likewise, because the Examiner did not analyze any of claims 2–5 and 7–10, we reverse the Examiner’s rejection of these claims as well. *See Non-Final Act.* 5–6.

We therefore do not sustain the rejection of claims 1–10 under 35 U.S.C. § 101.

Rejection II – The rejection of claims 1–10 under 35 U.S.C. § 112(b)

Noting that “[t]he claims recite various modules, each interpreted under 112(f) as comprising, among other possible structure, software embodied in memory as a non-transitory machine-readable storage medium,” the Examiner asserts that “[i]t is therefore unclear whether the claims are attempting to require separate, distinct elements for each of the recited modules, or whether the modules are merely software residing on a single device (e.g., one non-transitory machine-readable storage medium) resulting in a multiple inclusions of the claimed modules.” Non-Final Act. 7. We understand the Examiner’s position to be that there are multiple embodiments that would be encompassed by the claims. Thus, according to the Examiner, the term “module” is so broad it is indefinite. *See id.* at 6–7.

We disagree. The Examiner did not adequately explain why the claims are unclear. As Appellants point out in their Appeal Brief, “modules . . . are clearly defined [in the Specification at] paragraph [0014] and would be understood by one of ordinary skill in the art.” Appeal Br. 6. *See Spec.* ¶ 14. Furthermore, by the Examiners own admission (Non-Final Act. 6–7), the Examiner’s concerns are a matter of claim breadth, not indefiniteness. However, “[b]readth is not indefiniteness.” *In re Gardner*, 427 F.2d 786, 788 (1970).

We are persuaded by Appellants’ arguments that the language of claims 1–10 is not indefinite, based on, among other things, the description in the Specification. Appeal Br. 5–6. Accordingly, we do not sustain the rejection of claims 1–10 under 35 U.S.C. § 112(b).

*Rejection III – The rejection of claims 1, 4–6, 9,
and 10 under 35 U.S.C. § 102(a)(1)*

Claims 1 and 6

The Examiner finds that Wills anticipates Appellants' particulate filter including *inter alia*, "a soot out model module (soot production model 320 of Fig. 8) including a soot out model configured to calculate changes in soot out rate during extended engine idle periods (e.g., see pars. [0050], [0071], [0065], and [0057–0058])." Non-Final Act. 8. Appellants, for their part, submit that Wills does not disclose all of the claim limitations and in particular, "[a]t no point does Wills teach to calculate changes in soot out rate during extended engine idle periods." Appeal Br. 7 (emphasis omitted), Reply Br. 3. Further, Appellants expound that "[t]he Examiner appears to have overlooked the language in paragraph [0058] of Wills that teaches that functions of engine operating conditions/soot production relationships may vary both quantitatively and qualitatively depending on the type, size make, and model of engine." Appeal Br. 7 (emphasis omitted). Thus Appellants conclude that "[a]t no point does Wills suggest that a particular soot production rate for a particular fueling rate will change over time during idle." *Id.* (emphasis omitted). The Examiner responds stating that "[t]he fact that Wills teaches normalization and interpolation of soot production with respect to time means that Wills inherently understands the need for the correction of soot production as a function of time for any recognized engine operating condition which Wills recognizes includes engine idle." Ans. 5.

We agree that Appellants have the better view because Wills does not disclose every limitation of claims 1 and 6. *See Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987) (Finding that a

claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.).

Wills states that “the rate of particulate production will vary according to engine operating conditions such as fuel rate, exhaust gas recirculation (EGR) fraction, and timing of fuel injection into the cylinders (SOI, or start of injection).” Wills ¶ 53. Wills is silent with respect to the soot production rate varying with engine idling time. Moreover, Wills does state that “[o]ther factors may also bear on the particulate production rate,” *id.*, but is not specific as to what those other factors may be. Wills does discuss “engine idling” and “normalized soot production.” *See id.* ¶ 57. However, this discussion centers on fuel rates and engine size and not on engine idling time. *See e.g., id.* (“Point 200c shows the engine 110 idling, with a fuel rate of 1,500 grams per hour, corresponding to a normalized soot production 215a of 0.003, which in turn in one 15-liter engine embodiment corresponds to a soot production rate of 3 grams per hour.”) (boldface omitted). Thus, it is not apparent that Wills discloses the limitation of “a soot out model module including a soot out model configured to calculate changes in soot out rate during extended engine idle periods” as required by claims 1 and 6. Accordingly, we do not sustain the rejection of claims 1 and 6.

Claims 4 and 5 depend from claim 1. Appeal Br. 10, Claims Appendix. Claims 9 and 10 depend from claim 6. *Id.* at 11–12. The rejection of claims 4, 5, 9, and 10 relies upon the same erroneous finding as the rejection of claims 1 and 6. Non-Final Act. 7–10. Therefore, for the reasons discussed above, we also do not sustain the rejection of claims 4, 5, 9, and 10.

*Rejection IV – The rejection of claims 2, 3, 7, and 8
under 35 U.S.C. § 103*

Claims 2 and 3 depend from claim 1. *Id.* at 10. Claims 7 and 8 depend from claim 6. *Id.* at 11. The rejection of claims 2, 3, 7, and 8 relies upon the same erroneous finding as the rejection of claims 1 and 6. Non-Final Act. 7–10. Therefore, for the reasons discussed above, we also do not sustain the rejection of claims 2, 3, 7, and 8.

DECISION

The Examiner’s decision to reject claims 1–10 under 35 U.S.C. § 101 is reversed.

The Examiner’s decision to reject claims 1–10 under 35 U.S.C. § 112(b) is reversed.

The Examiner’s decision to reject claims 1, 4–6, 9, and 10 under 35 U.S.C. § 102(a)(1) is reversed.

The Examiner’s decision to reject claims 2, 3, 7, and 8 under 35 U.S.C. § 103 is reversed.

REVERSED