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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* JOHN SHUTTY, VOLKER JOERGL, and VOLKER MUELLER

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Appeal 2017-003512  
Application 12/158,338  
Technology Center 3700

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Before ANNETTE R. REIMERS, THOMAS F. SMEGAL, and  
LISA M. GUIJT, *Administrative Patent Judges*.

REIMERS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

John Shutty et al. (Appellants) appeal under 35 U.S.C. § 134(a) from the Examiner's decision to reject claims 29–42, 44–47, 49, and 51. Claims 1–28, 43, and 50 have been withdrawn from consideration. Claim 48 has been canceled. We have jurisdiction under 35 U.S.C. § 6(b).

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

### CLAIMED SUBJECT MATTER

The claimed subject matter relates to “controlling exhaust gas recirculation within turbocharged compression-ignition engine systems.”

Spec. ¶ 2, Fig. 3. Claims 29 and 51 are independent.

Claim 29 is illustrative of the claimed subject matter and recites:

29. A product comprising:

a controller to control exhaust gas recirculation (EGR) and configured to:

receive input signals including a target total EGR fraction of an EGR system comprising at least two EGR paths, which has been estimated responsive to one or more proxy parameters as input to one or more engine system models, and at least one other engine system input signal,

determine a target HP/LP EGR ratio to control other engine system parameters within the constraints of the target total EGR fraction, and

transmit output signals responsive to the target HP/LP EGR ratio;

wherein the controller is further configured to:

generate HP EGR and LP EGR setpoints in accordance with the determined target HP/LP EGR ratio, determine target HP and LP EGR valve opening percentages corresponding to the HP and LP EGR setpoints,

adjust at least one of the setpoints or opening percentages by processing an estimated total EGR fraction as process variable input and the target total EGR fraction as setpoint input, and

transmit the opening percentages as the output signals.

REJECTIONS<sup>1</sup>

- I. Claims 29–35, 38–42, 44, 45, and 51 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Brookshire (US 7,013,879 B2, issued Mar. 21, 2006), Li (US 6,802,302 B1, issued Oct. 12, 2004) and in view of additional evidence.<sup>2</sup>
- II. Claims 36 and 37 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Brookshire, Li, DeBiasi (US 4,922,874, issued May 8, 1990) and Kurtz (US 2004/0149272 A1, published Aug. 5, 2004)
- III. Claims 46 and 49 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Brookshire, Li, DeBiasi, and Akao '676 (US 6,708,676 B2, issued Mar. 23, 2004).
- IV. Claim 47 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Brookshire, Li, DeBiasi, Akao, and Katashiba (US 5,359,975, issued Nov. 1, 1994).

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<sup>1</sup> The Examiner rejects claim 45 under 35 U.S.C. § 112, second paragraph, for indefiniteness. *See* Final Office Action 4 (hereinafter “Final Act.”) (mailed Oct. 1, 2015). Appellants correctly note that “[c]laim 45 was amended in the response to the office action mailed December 1, 2015, rendering this rejection moot.” Appeal Brief 9 (hereinafter “Appeal Br.”) (filed Apr. 4, 2016).

<sup>2</sup> The Examiner cites the following prior art as additional evidence: Zellmer (US 4,501,254, issued Feb. 26, 1985); zur Loye (US 6,516,774 B2, issued Feb. 11, 2003); Pattas (US 5,067,973, issued Nov. 26, 1991); Halimi (US 5,560,208, issued Oct. 1, 1996); Akao '528 (US 6,161,528, issued Dec. 19, 2000); Ge (US 7,143,580 B2, issued Dec. 5, 2006); and Isobe (US 5,931,136, issued Aug. 3, 1999). *See* Final Act. 5, 7. The Examiner includes withdrawn claim 43 in the heading of this rejection. *See id.* at 5. We consider this an inadvertent typographical error.

ANALYSIS

*Rejection I*

*Claims 29–35, 38–42, 44, 45, and 51*

Each of independent claims 29 and 51 is directed to a product including a controller configured to “determine a target HP/LP EGR ratio<sup>3</sup> to control other engine system parameters within the constraints of the target total EGR fraction.” Appeal Br. 27, 30–31, Claims App. The Examiner looks to Brookshire for this limitation, in particular, column 6, lines 14–17. *See* Final Act. 6 (“determine a target HP/LP EGR ratio (Brookshire: col 6, ln 14 – 17) to control other engine system parameters (apparent) within the constraints of the target total EGR fraction (apparent / common sense).”).<sup>4</sup>

Brookshire discloses that:

In this particular embodiment, fresh air/second EGR stream mixture **26** is a high pressure loop (HPL) that is cooled to provide EGR for mid/full load operation. First EGR stream **16** is a low pressure loop (LP) that provides uncooled EGR for idle/low load operation. The split [sic] between EGR delivered via the HPL and LP is controlled by EGR valve **20**, and the split towards the LP is increased for cold weather operation.

Brookshire 6:10–17, Fig. 1.

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<sup>3</sup> High Pressure (HP)/Low Pressure (LP) Exhaust Gas Recirculation (EGR) ratio. *See* Spec. ¶ 19.

<sup>4</sup> According to the Examiner, the Li reference is “relied on . . . for one very simple teaching; that[] it’s known to target an EGR amount.” Final Act 3. We further note that the Examiner does not rely on any of the references cited at footnote 2 above to “determine a target HP/LP EGR ratio,” as recited in claims 29 and 51. *See* Final Act. 6, 8; *see also* Answer 9 (hereinafter “Ans.”) (mailed Nov. 1, 2016); Appeal Br. 27, 30–31 Claims App.

Under the broadest reasonable interpretation, we acknowledge that the above cited portion of Brookshire discloses HP and LP in a “ratio” relationship; however, the cited portion of Brookshire fails to disclose determining a “target” HP/LP EGR ratio. *See* Appeal Br. 9–10, 12. Column 6, lines 14 to 17, of Brookshire merely discloses that the LP portion of the HP/LP EGR ratio is “higher/increased” during cold weather operations. *See id.* at 12 (“The Examiner [cites] col. 6, lines 14–17 of Brookshire, which may be argued merely to introduce the idea of an HP/LP EGR ratio, but certainly does not teach determining a *target* EGR ratio.”) (emphasis added). In addition, we fail to see, and the Examiner fails to adequately explain, how the “*split towards the LP*” corresponds to determining a “target” HP/LP EGR ratio. Ans. 9. Moreover, the Examiner fails to direct us to the portion of Brookshire that “*explicitly* discloses controlling the engine to achieve *desired* [(i.e., targeted)] ratios.” *Id.* (emphasis added).

Accordingly, for the foregoing reasons, we do not sustain the Examiner’s rejection of independent claim 29 and its dependent claims 30–35, 38–42, 44, 45 and independent claim 51 as unpatentable over Brookshire, Li, and additional evidence.

*Rejections II–IV*

*Claims 36, 37, 46, 47, and 49*

The Examiner’s rejections of claims 36, 37, 46, 47, and 49 are each based on the same unsupported findings and conclusions discussed above with respect to Brookshire. *See* Final Act. 8–9. The Examiner does not rely on DeBiasi, Kurtz, Akao, or Katashiba to remedy the deficiencies of Brookshire. Accordingly, for reasons similar to those discussed above for

claim 29, we do not sustain the Examiner's obviousness rejections of claims 36, 37, 46, 47, and 49.

*New Ground of Rejection*

Claims 29–42, 44–47, 49, and 51 are rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter.

To determine whether a claim falls within a judicially recognized exception to patent eligibility under 35 U.S.C. § 101, we apply the two-step framework set forth in *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 132 S. Ct. 1289, 1293–94 (2012), and reaffirmed in *Alice Corporation Proprietary LTD. v. CLS Bank International*, 134 S. Ct. 2347, 2355 (2014). For the first step, we determine whether the claims at issue are directed to a patent-ineligible concept such as an abstract idea, law of nature, or natural phenomenon. *Alice*, 134 S. Ct. at 2355 (citing *Mayo*, 132 S. Ct. at 1296–97). If so, we advance to the second step where “we 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” of the otherwise patent-ineligible concept. *Id.* (quoting *Mayo*, 132 S. Ct. at 1298, 1297). The Court has described this second step “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.* (citing *Mayo*, 132 S. Ct. at 1294 (internal quotation marks and alterations omitted)).

Regarding the first step in the *Alice* framework, independent claims 29 and 51 are each directed to a product comprising a processor configured to collect and analyze data. Stated differently, claims 29 and 51 amount to

no more than receiving data, analyzing data, manipulating data by converting it to another format, and then transmitting the converted data. *See* Appeal Br. 27, 30–31, Claims App. Thus, claims 29 and 51 are similar to claims directed to the collection, organization, and manipulation of data that our reviewing court has found to be directed to patent-ineligible abstract ideas. For example, in *Electric Power Group, LLC v. Alstom S.A.*, 830 F.3d 1350 (2016), the court held that claims drawn to systems and methods for performing real-time performance monitoring of an electric power grid by collecting data from multiple data sources, analyzing the data, and displaying the results were directed to the abstract idea of “collecting information, analyzing it, and displaying certain results of the collection and analysis.” *Id.* at 1352, 1353. Similarly, in *Content Extraction & Transmission LLC v. Wells Fargo Bank, National Ass’n*, 776 F.3d 1343 (Fed. Cir. 2014), the court held that claims generally reciting “a method of 1) extracting data from hard copy documents using an automated digitizing unit such as a scanner, 2) recognizing specific information from the extracted data, and 3) storing that information in a memory,” were drawn to an abstract idea. *Id.* at 1345, 1347. We further note that no actual sensor(s) is/are recited for receiving input signals and/or transmitting output signals. Based on the foregoing reasons, independent claims 29 and 51 are each directed to an abstract idea.

Having determined that independent claims 29 and 51 are directed to an abstract idea, we must determine whether the additional elements of independent claims 29 and 51 transform them into patent-eligible subject matter. Regarding step two of the *Alice* framework, the elements of claims 29 and 51, considered both individually and as an ordered combination, do

not transform the nature of the claim into a patent-eligible application of the abstract idea. Each of claims 29 and 51 recite a “product” that uses “a controller” to receive, determine, generate, adjust, and transmit data. Appeal Br. 27, 30–31, Claims App. “[M]ere . . . generic computer implementation” of an abstract idea does not transform the abstract idea into patent-eligible subject matter. *Alice*, 134 S. Ct. at 2357. Here, the claims do not require any specialized technology or device, but only generic computer equipment. Appellants’ Specification does not describe any new or unique computer hardware or software, and the law is clear that simply programming a computer to perform what would otherwise be an abstract idea is not sufficient to impart patent eligibility. *See Spec. e.g.*, ¶ 28 (“[T]he control subsystem 22 may include *any* suitable hardware, software, and/or firmware to carry out at least some portions of the methods disclosed herein.” (emphasis added)); *see also id.* at ¶ 31; *Alice Corp. Pty. v. CLS Bank Int’l*, 134 S. Ct. at 2359. In *Electric Power Group*, the court held that claim elements that require no more than conventional computer, network, and display technology are insufficient to constitute “an inventive concept in the application of an abstract idea.” *Elec. Pwr. Grp.*, 830 F.3d at 1355. Claims 29 and 51 do not require anything other than conventional off-the-shelf computer, network, and display technology. As noted above, the Specification makes clear that the invention may be implemented on readily available technology. *See Spec. e.g.*, ¶¶ 28, 31.

Independent claims 29 and 51 when considered “both individually and ‘as an ordered combination,’” amount to nothing more than an attempt to patent the abstract ideas embodied in the steps of these claims. *See Alice*, 134 S. Ct. at 2355 (quoting *Mayo*, 132 S. Ct. at 1298). Accordingly, the

limitations of independent claims 29 and 51 fail to transform the nature of these claims into patent-eligible subject matter. *See id.* (citing *Mayo*, 132 S. Ct. at 1297, 1298). The dependent claims (i) further limit engine system or sensed parameters, input/output values, or calculation of the estimated total EGR fraction (*i.e.*, claims 30, 31, 44–47, 49); (ii) specify reasons to determine the target HP/LP EGR ratio (*i.e.*, claims 32–40, 42); or (iii) require a certain type of valve control or control modules (*i.e.*, claim 41, 45). Therefore, the dependent claims do not transform the subject matter of independent claim 29 for similar reasons, and thus, are not directed to patent-eligible subject matter as well.

#### DECISION

We REVERSE the decision of the Examiner to reject claims 29–42, 44–47, 49, and 51.

We enter a NEW GROUND OF REJECTION of claims 29–42, 44–47, 49, and 51 under 35 U.S.C. § 101.

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.

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).

REVERSED; 37 C.F.R. § 41.50(b)