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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* SYLVAIN LESPINATS and XAVIER LE PIVERT<sup>1</sup>

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Appeal 2019-000752  
Application 14/401,176  
Technology Center 2800

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Before BEVERLY A. FRANKLIN, MICHAEL P. COLAIANNI, and  
N. WHITNEY WILSON, *Administrative Patent Judges*.

FRANKLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

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<sup>1</sup> Appellants identify the real party in interest as Commissariat A L'Energie Atomique Et Aux Energies Alternatives. App. Br. 2.

Appellant requests our review under 35 U.S.C. § 134(a) of the Examiner's decision rejecting claims 1–5, 7–13, 15, and 16. We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

### STATEMENT OF THE CASE

Claim 1 is illustrative of Appellant's subject matter on appeal and is set forth below:

1. A method for operating a solar radiation sensor wherein said sensor is a pyranometer or a reference cell associated with photovoltaic panels, the method comprising:
  - calculating an estimate of drift of the solar radiation sensor according to at least one ratio of at least one radiation measurement (GMES) by the solar radiation sensor in its conditions of use to at least one correspondingly time-aligned value of a radiation model, or vice versa;
  - calculating a correction factor based on the estimate of drift of the solar radiation sensor; and
  - operating the solar radiation sensor based on the correction factor.

App. Br. (Claims Appendix).

The Examiner relies on the following prior art references as evidence of unpatentability:

Gopal	US 2008/0046387	Feb. 21, 2008
Le Pivert	US 2010/0185337 A1	July 22, 2010
Dunn	US 2012/0053867 A1	Mar. 1, 2012

Wang et al. ("Wang"), *Short-Term Solar Irradiance Forecasting Model Based on Artificial Neural Network Using Statistical Feature Parameters* 5 ENERGIES 1355–70 (2012).

### THE REJECTIONS

1. Claims 1–5, 7–13, 15 and 16 are rejected under 35 U.S.C. § 101 because the claimed invention is directed to a judicial exception (i.e., a law of nature, a natural phenomenon, or an abstract idea) without significantly more.
2. Claims 1, 2, 4, 5, 7–9, and 15 are rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Le Pivert in view of Dunn.
3. Claim 3 is rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Le Pivert in view of Dunn and Wang.
4. Claims 10–13 are rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Le Pivert in view of Dunn and Gopal.
5. Claims 16 is rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Le Pivert in view of Dunn and Wang.

### ANALYSIS

We select claim 1 as representative and address the claims separately to the extent they are so argued by Appellants. 37 C.F.R. § 41.37(c)(1)(iv).

Upon consideration of the evidence and each of the respective positions set forth in the record, we find that the preponderance of evidence supports the Examiner's findings and conclusion that the subject matter of Appellants' claims is unpatentable under § 101 and over the applied art. Accordingly, we sustain each of the Examiner's rejections on appeal essentially for the reasons set forth in the Final Office Action and in the Answer, and add the following for emphasis.

### Rejection 1

For the reasons discussed below, we are unpersuaded by Appellants' arguments that the claimed subject matter has not been shown to be patent-ineligible as directed to a judicial exception without reciting significantly more.

An invention is patent-eligible if it claims a “new and useful process, machine, manufacture, or composition of matter.” 35 U.S.C. § 101. The Supreme Court, however, has long interpreted 35 U.S.C. §101 to include implicit exceptions: “[l]aws of nature, natural phenomena, and abstract ideas” are not patentable. *E.g.*, *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 216(2014).

In determining whether a claim falls within an excluded category, we are guided by the Supreme Court's two-step framework, described in *Mayo* and *Alice*. *Id.* at 217—18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75—77 (2012)). In accordance with that framework, we first determine what concept the claim is “directed to.” *See Alice*, 573 U.S. at 219 (“On their face, the claims before us are drawn to the concept of intermediated settlement, i.e., the use of a third party to mitigate settlement risk.”); see also *Bilski v. Kappos*, 561 U.S. 593, 611 (2010) (“Claims 1 and 4 in petitioners' application explain the basic concept of hedging, or protecting against risk.”).

Concepts determined to be abstract ideas, and thus patent ineligible, include certain methods of organizing human activity, such as fundamental economic practices (*Alice*, 573 U.S. at 219—20; *Bilski*, 561 U.S. at 611); mathematical formulas (*Parker v. Flook*, 437 U.S. 584, 594—95 (1978)); and mental processes (*Gottschalk v. Benson*, 409 U.S. 63, 69 (1972)). Concepts determined to be patent eligible include physical and chemical processes, such as “molding rubber products” (*Diamond v. Diehr*, 450 U.S. 175, 191 (1981)); “tanning, dyeing, making water-proof cloth, vulcanizing India rubber, smelting ores” (*id.* at 182 n.7 (quoting

*Corning v. Burden*, 56 U.S. 52, 267—68 (1854)); and manufacturing flour (*Benson*, 409 U.S. at 69 (citing *Cochrane v. Deener*, 94 U.S. 780, 785 (1876))).

In *Diehr*, the claim at issue recited a mathematical formula, but the Supreme Court held that “[a] claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula.” *Diehr*, 450 U.S. at 187; *see also id.* at 191 (“We view respondents’ claims as nothing more than a process for molding rubber products and not as an attempt to patent a mathematical formula.”). Having said that, the Supreme Court also indicated that a claim “seeking patent protection for that formula in the abstract . . . is not accorded the protection of our patent laws, . . . and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment.” *Id.* (citing *Benson* and *Flook*); *see, e.g., id.* at 187 (“It is now commonplace that an application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.”).

If the claim is “directed to” an abstract idea, we turn to the second step of the *Alice* and *Mayo* framework, where “we must 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.” *Alice*, 573 U.S. at 221 (quotation marks omitted). “A claim that recites an abstract idea must include ‘additional features’ to ensure ‘that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].’” *Id.* (quoting *Mayo*, 566 U.S. at 77). “[Merely requiring] generic computer implementation[] fail[s] to transform that abstract idea into a patent-eligible invention.” *Id.*

The PTO recently published revised guidance on the application of §101 with regard to the first step of the *Alice/Mayo* test (i.e., Step 2A of the USPTO’s Subject Matter Eligibility Guidance as incorporated into M.P.E.P. § 2106). USPTO’s January 7, 2019, *2019 Revised Patent Subject Matter Eligibility Guidance* (“Revised

Guidance”). 84 Fed. Reg. 50 (Jan. 7, 2019). Thus, under Step 1 of the Guidance, as revised, we determine whether the claimed subject matter falls within the one of the four statutory categories: process, machine, manufacture, or composition of matter. Step 2A of the Guidance is two-pronged, under which we look to whether the claim recites:

- (1) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activity such as a fundamental economic practice, or mental processes); and
- (2) additional elements that integrate the judicial exception into a practical application (*see* MPEP § 2106.05(a)–(c), (e)–(h)).

*See* 84 Fed. Reg. at 54—55.

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, do we then, under Step 2B, look to whether the claim:

- (3) adds a specific limitation beyond the judicial exception that is not “well-understood, routine, conventional” in the field (*see* MPEP § 2106.05(d)); or
- (4) simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception.

*See* 84 Fed. Reg. at 56.

### ***Guidance Step 1***

Following the aforementioned revised guidance, initially, there is no dispute that claims 1–5, 7–13, 15 and 16 fall within one of the four statutory categories of invention under Step 1 of the Guidance. Accordingly, we turn next to Step 2A(1) of the Revised Guidance.

***Guidance Step 2A, Prong 1***

Under Step 2A(1), we find that claim 1 recites a judicial exception in the form of mathematical concepts, and we refer to the underlined portions of claim 1 as identified by the Examiner on pages 2–3 of the Final Office Action in this regard. These portions of the claim include, for example, “calculating an estimate of drift of the solar radiation sensor according to at least one ratio of at least one radiation measurement (GMES) by the solar radiation sensor in its conditions of use to at least one correspondingly time-aligned value of a radiation model, or vice versa”. We adopt the Examiner’s position as set forth on pages 2–3 of the Final Office Action, and agree that claim 1 recites a judicial exception in the form of mathematical concepts. *SAP America, Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1163 (Fed. Cir. 2018) (holding that claims to a “series of mathematical calculations based on selected information” are directed to abstract ideas).

***Guidance Step 2A, Prong 2***

As a result, we next turn to Step 2A(2) of the Revised Guidance to determine whether the claims integrate the judicial exception into a practical application. *Diehr*, 450 U.S. at 187 (“A claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula.”).

Appellants submit their claims are directed to a real-world application involving the operation of a piece of equipment such as a solar radiation sensor. Appeal Br. 8. Appellants submit that instant claim 1 recites a technical solution beyond a computation of a result, i.e., the operation of a solar radiation sensor, and is directed to the solution of a technical problem. *Id.* Appellants submit that the Specification discloses how current techniques for recalibration of solar radiation sensors typically require either de-installation of the sensor for recalibration back at a factory or workshop

through the use of specialized equipment (¶¶ [0006] and [0007]), resulting in inefficiency.<sup>2</sup> Appeal Br. 8–9. Appellants conclude that therefore the claim language is not abstract claim language. Appeal Br. 9.

Appellants also argue that the Examiner’s position that the claimed operating step is part of the data processing algorithm, is not consistent with the Specification for the reasons set forth on page 10 of the Appeal Brief. Appellants state that in this case, ¶ [0080] of the Specification states that sensor operation (“adaptation”) is performed according to the correction factor; no reference is made to this operation forming a part of an algorithm used to determine the correction factor itself. Appeal Br. 10.

In response to the above position of Appellants, it is the Examiner’s position that:

[t]he patent eligible claims of the Diehr decision related to a process of controlling the execution of a physical process, i.e. a rubber molding process, in which the results of the abstract idea were utilized to control the rubber molding process (opening the rubber mold and stopping the curing process). In this instance the pending claims do not incorporate a limitation relating to controlling the execution of a physical process.

The claim limitation relating to operating the solar radiation sensor based on the correction factor is a broad limitation that is not further narrowed in relation to controlling the exactions of a physical process by the appellant’s specification. A reasonable interpretation of the claimed limitation, in light of the appellant’s specification, indicates that the recited “operating of the radiation sensor based on the correction factor” is directed towards applying the correction factor in a data processing algorithm.

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<sup>2</sup> We note that automating previously manual processing was found not to be a patentable improvement. *Credit Acceptance Corp. v. Westlake Services*, 859 F.3d 1044, 1064–1065 (Fed. Cir. 2017) (holding that claims directed to automating previously manual processing of loan applications to be ineligible subject matter, because the claims did not amount to a technical improvement sufficient to render the abstract idea patent eligible).

The examiner does not see how the recited correction factor, i.e. a mathematical correction factor, would affect the physical operation of the solar radiation sensor. Furthermore, the appellant's specification does not provide support relation [related] to the physical operation of the solar radiation sensor based on the correction factor.

The appellant does highlight a portion of the specification to show that that the sensor's adaptation, i.e. operating of the radiation sensor based on the correction factor, is different from the calibration algorithm because it discloses a sensor operation/adaption that occurs in step that is different from the correction coefficient calculation algorithm (see Brief page 10 and Fig.3 and paragraph 0080 of the appellant's specification). While highlighting paragraph 0080 of their specification the appellant argues that the office's interpretation is entitled to apply a broadest reasonable interpretation of the given claim that is consistent with the specification, and that it would not be reasonable to interpret the claimed operating of the sensor as an abstract limitation.

However the disclosed sensor adept step, i.e. block 47 of Fig 3, is part of the disclosed calibration method (see appellant's specification Figs. 4A and 4B paragraphs 0037 and 0058-0059). The cited portions of the specification describes that Figs 4A and 4B illustrate the operation of the embodiment of Figure 3, and expressly indicate that the argued sensor adaptations is implemented by a digital processing circuit of a microprocessor (see appellant's specification paragraph 0056).

For the reasons set forth above, the examiner's interpretation of wherein the claimed limitation of "operating of the radiation sensor based on the correction factor" as part of the abstract data processing/calibration limitations is clearly consistent with the specification. The specification describes the argued adaptation, i.e., operating of the radiation sensor to occur within a digital processing circuit of a microprocessor (see appellant's specification paragraph 0056). The appellant has not provided any support to contradict the examiner's interpretation that the recited operating of the radiation sensor is nothing more than part of the disclosed data processing algorithm implemented in a microprocessor (see appellant's specification paragraph 0056).

Ans. 3-4.

In reply, Appellants argue that there is no per se requirement that the claims should recite control of a “physical process” or “physical operation”. Reply Br. 3.

We agree with the Examiner’s position as presented, *supra*, and are unpersuaded of error by Appellant’s arguments for the reasons provided by the Examiner in the record. Taking the claims as a whole and considering the steps of the claimed method of operating a solar radiation sensor, including operating the solar radiation sensor based on the correction factor, such steps are insufficient to integrate the mathematical limitations that are judicial exceptions into a practical application. The claims are not directed to more than applying the judicial exception in a generic way concerning a method of operating a solar radiation sensor. MPEP § 2106.05(f). Here, the method of operating a solar radiation sensor merely defines the field of use linked to the judicial exception. There is no description of transforming the method of operating a solar radiation sensor or any actual description of improving the method of operating a solar radiation sensor (there is no sufficient detail of the operating of the sensor based on the correction factor). *See* MPEP § 2106.05(c).

Having determined that claim 1 recites a judicial exception, but the additional elements recited in the claim do not integrate the judicial exception into a practical application, i.e., the claim is directed to an abstract idea, we proceed to Step 2B of the Guidance.

***Guidance Step 2B***

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, as in the instant case, do we next, under Step 2B, conduct the following analysis. We note that under Step 2B of the Guidance, we determine whether the claim provides an “inventive concept,” i.e., whether the additional elements beyond the judicial exception, individually and

in combination, amount to “significantly more” than the judicial exception itself. Guidance, 84 Fed. Reg. at 56. According to the Guidance, “simply append[ing] well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality,” is indicative that an inventive concept is absent. *Id.* at 56.

In the instant case, Appellants argue that their claims amount to substantially more, and when read as a whole, recite the specific process for the operation of a machine (solar radiation sensor). Appeal Br. 10–11. Appellants reiterate that the claims embrace significantly more than the alleged abstract idea. Reply Br. 3–4.

We are unpersuaded by such arguments. While claim 1 includes the claim element of “operating the solar radiation sensor based on the correction factor”, this limitation does not have any specificity to it to render it significantly more than the abstract idea. Use of a correction factor is like a calibration. Hence, in essence, operating the solar radiation sensor based on a correction factor is a calibration of the sensor. As stated by the Examiner, this adaptation of the sensor (or calibration of it) is implemented by a digital processing circuit of a microprocessor. Ans. 4. More specifically, as mentioned, *supra*, the Examiner states the Specification describes that Figures 4A and 4B illustrate the operation of the embodiment of Figure 3, and expressly indicates that the argued sensor adaptations is implemented by a digital processing circuit of a microprocessor. Spec. ¶ 0056. Ans. 4. Furthermore, unlike in *Diamond v. Diehr*, 450 U.S. 175 (1981), where the post-solution activity, namely controlling the press is very specific with respect to designated outcomes of the mathematical calculation, namely “to open when the comparison indicates equivalence, meaning that the molded product is cured,” the present claims are too generic to constitute significantly more. *See also Classen Immunotherapies Inc. v. Biogen IDEC*, 659 F.3d 1057, 1066–68 (Fed. Cir. 2011) (the immunization step, which only immunized where the analysis step

resulted in showing lower risk for chronic immune-mediated diseases, was meaningful because it integrated the results of the analysis into a specific and tangible method). *Cf. Electric Power Group, LLC v. Alstom, S.A.*, 830 F.3d 1350, 1356 (Fed. Cir. 2016) (claiming a particular solution to a problem or a particular way to achieve a desired outcome may provide significantly more).

Furthermore, the Examiner points out that the additional elements simply append well-understood, routine, and conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception. Ans. 7–8. Therein, the Examiner states (with text in bold for emphasis):

Furthermore, even if the argued operation of a sensor based on a correction coefficient is not part of the recited abstract idea, a broadly recited limitation as to operating a sensor based on a correction coefficient would not amount to something significantly more than the recited abstract idea. As noted in background of the appellant’s specification, performing calibration algorithm to adjust sensor values is **well-understood, routine, and conventional in the art**. Furthermore the prior art of record discloses continuing to operate a solar radiation sensor once it has been calibrated (see Le Pivert (US 2010/0185337) paragraph 0056: stores a loss coefficient, i.e. a calibration coefficient, in memory that serves as a basis for a periodic recalculation of a new loss coefficient based on the stored values; see also Dunn (US 2012/0053867) Abstract and paragraphs 0060-0065: discusses using calibrated reference cells, i.e., once already corrected by a calibration coefficient, as a means to isolate any degradation effects associated with the solar panel; also discusses that calibrated cells may also be used to calibrate other solar cells). Thus, the broadly recited limitation relating to operating a solar radiation sensors according to a calculated correction factor is **well-understood, routine, and conventional as shown in the prior art of record**.

We agree with the Examiner’s position which is supported by the record as shown above (*see* MPEP § 2106.05(d)), and note that Appellants do not reply to the aforementioned position in their Reply Brief. Appellants do argue on page 9 of the Appeal Brief that the “operating” step utilizing a calibration is not conventional. It is respectfully noted that Appellants’ arguments must be considered mere attorney

speculation not supported by evidence. *In re Scarborough*, 500 F.2d 560,566 182 USPQ 298,302 (CCPA 1974).

In view of the above, we affirm Rejection 1.

### Rejections 2–5

As an initial matter, our determinations with respect to Rejection 2 is dispositive for Rejections 3–5 (Appellants rely upon the same arguments (Appeal Br. 18–19)).

We adopt the Examiner’s findings made on page 5–10 of the Final Office Action and the Examiner’s response set forth on pages 9–10 of the Answer. For the reasons stated therein, we are unpersuaded by Appellants’ arguments in the record. We note that Appellants’ primary argument is that the combination of Le Pivert and Dunn teaches, at most, a determination of correction factors for prediction models used to estimate solar energy production, thereby precisely avoiding the need for solar radiation sensors as recited in the claims. Appeal Br. 14. Reply Br. 4–5. However, Le Pivert only discloses that a sensor, which is relatively costly, is not necessary. Le Pivert, [0043]. We do not agree with Appellants that this is a teaching to completely avoid sensors as it is well settled that merely because “[a] combination would not be made by businessmen for economic reasons does not mean that persons skilled in the art would not make the combination.” *In re Farrenkopf*, 713 F.2d 714, 718 (Fed. Cir. 1983). We thus are unpersuaded by such argument.

In view of the above, we affirm Rejections 2–5.

Appeal 2019-000752  
Application 14/401,176

DECISION

Each rejection is affirmed.

TIME PERIOD

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).

ORDER

AFFIRMED