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pavel@transpacificlaw.com  
ppogodin@gmail.com

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* OLGA ANDREEVNA CHESKIS,  
SEMEN LEONIDOVICH TREGUB, and  
ANDREY SERGEEVICH KAZAROV

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Appeal 2019-003189  
Application 14/094,776  
Technology Center 2800

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Before MICHAEL P. COLAIANNI, JEFFREY R. SNAY, and  
JANE E. INGLESE, *Administrative Patent Judges*.

SNAY, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant<sup>1</sup> appeals under 35 U.S.C. § 134(a) from the Examiner's  
decision rejecting claims 1–6. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

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<sup>1</sup> We use the word Appellant to refer to “applicant” as defined in 37 C.F.R. § 1.42(a). Appellant identifies OOO ROCK FLOW DYNAMICS as the real party in interest. Appeal Br. 2.

## BACKGROUND

The subject matter on appeal relates to building a geological model of an oil or other mineral deposit. Spec. ¶ 2. Claim 1 is illustrative:

1. A computer-implemented method for determining a position of coordinates of a marker depth in well  $W$  for building of a geological model of a deposit, the computer-implemented method comprising:

1) determining a well  $W$  and wells located within a specified circular neighborhood of the well  $W$ , a radius of the specified neighborhood being  $R$  and a center of the specified neighborhood being the well  $W$ ;

2) determining values of a mark of a marker depth  $\{z(i)\}$ ,  $i = 0, \dots, n$ , wherein  $n$  being an integer,  $\{z_i\}, i = 0, \dots, n$  in each well  $W$  and in the wells located within the specified neighborhood of the well  $W$ ;

3) evaluating a functional  $C$  in points where the value of the marker depth  $\{z(i)\}$  is known;

4) composing gradient vectors in points where the value of marker depth  $\{z(i)\}$  is known;

5) smoothing the gradient vector by replacing each component of the gradient vector in the well  $W$  by a mean value of components of gradient vector in the wells located within the specified neighborhood of the well  $W$  with the radius  $R$ ;

6) searching for a value of the functional  $C$  greater than a previously found value of the functional  $C$  within a segment of a specified length starting from the marker depth mark  $\{z(i)\}$  in a direction of the gradient vector with a current value of marker depth mark  $\{z(i)\}$  assumed determined if no such value is found;

7) improving an obtained value of marker depth mark  $\{z(i)\}$  by searching for a larger value of marker depth  $\{z(i)\}$  within the specified step;

8) smoothing a gradient vector for the marker depth mark  $\{z(i)\}$ , at which the functional  $C$  is maximal, by replacing each component of the gradient vector in the well  $W$  by a mean value of components of the gradient vector in wells in the neighborhood with radius  $R$  reduced by a specified value;

- 9) sorting the marker depth marks  $\{z(i)\}$  by depth; and
- 10) reiterating the steps 4)-10) of the method until a larger value of functional  $C$  is found.

Appeal Br. 18–19 (Claims Appendix). Independent claim 3 recites a system that includes a computer processor enabled to perform essentially the same method as is recited in claim 1. Independent claim 5 recites a computer-readable medium having instructions for performing the method of claim 1. Each remaining claim on appeal depends from claim 1, 3, or 5.

### REJECTION<sup>2</sup>

Claims 1–6 stand rejected under 35 U.S.C. § 101 as being directed to patent-ineligible subject matter.

### DISCUSSION

The Examiner rejects claims 1–6 under 35 U.S.C. § 101 as being directed to a judicial exception—namely, an abstract idea without significantly more. Final Act. 6. Appellant argues the claims as a group. *See* Appeal Br. 9–12. In accordance with 37 C.F.R. § 41.37(c)(1)(iv), we select independent claim 1 as representative, and decide the appeal based on the representative claim alone. Having considered the Examiner’s findings and Appellant’s arguments, we are not persuaded the Examiner reversibly erred in rejecting claim 1 under 35 U.S.C. § 101.

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<sup>2</sup> Rejections based on 35 U.S.C. § 103(a) and double patenting were withdrawn. *See* Ans. 3.

A. Section 101

An invention is patent-eligible if it claims a “new and useful process, machine, manufacture, or composition of matter.” 35 U.S.C. § 101.

However, the U.S. Supreme Court 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 Court’s two-part 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, 67 (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.

252, 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 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 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.* (citation omitted) (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 part 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 (internal 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.* (alterations in original) (quoting *Mayo*, 566 U.S. at 77). “[M]erely requir[ing] generic computer implementation[] fail[s] to transform that abstract idea into a patent-eligible invention.” *Id.*

## B. USPTO Section 101 Guidance

In January 2019, the U.S. Patent and Trademark Office (USPTO) published revised guidance on the application of § 101. 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019) (“Guidance”).<sup>3</sup> “All USPTO personnel are, as a matter of internal agency management, expected to follow the guidance.” *Id.* at 51; *see also* October 2019 Update at 1.

Under the Guidance and the October 2019 Update, we first 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) (“Step 2A, Prong One”); and
- (2) additional elements that integrate the judicial exception into a practical application (*see* MPEP §§ 2106.05(a)–(c), (e)–(h) (9th ed. Rev. 08.2017, Jan. 2018)) (“Step 2A, Prong Two”).<sup>4</sup>

Guidance, 84 Fed. Reg. at 52–55.

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<sup>3</sup> In response to received public comments, the Office issued further guidance on October 17, 2019, clarifying the Guidance. USPTO, *October 2019 Update: Subject Matter Eligibility* (the “October 2019 Update”) (available at [https://www.uspto.gov/sites/default/files/documents/peg\\_oct\\_2019\\_update.pdf](https://www.uspto.gov/sites/default/files/documents/peg_oct_2019_update.pdf)).

<sup>4</sup> This evaluation is performed by (a) identifying whether there are any additional elements recited in the claim beyond the judicial exception, and (b) evaluating those additional elements individually and in combination to determine whether the claim as a whole integrates the exception into a practical application. *See* Guidance - Section III(A)(2), 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 look, under Step 2B, 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.

Guidance, 84 Fed. Reg. at 52–56.

#### *Guidance Step 1*

There is no dispute that claim 1 is within a statutory category. Claim 1 recites a method.

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

Under Step 2A of the Guidance, we first consider whether the Examiner erred in determining that the claim recites a judicial exception. The Examiner determined that claim 1 recites an abstract idea. Final Act. 5–6. For the reasons explained below, we see no error in that determination.

The Guidance identifies mathematical concepts as belonging to one of the enumerated groupings of abstract ideas. Guidance, 84 Fed. Reg. at 52. In this case, claim 1 includes the following recitations: “3) evaluating a functional  $C$  in points where the value of the marker depth  $\{z(i)\}$  is known;” “4) composing gradient vectors;” “5) smoothing the gradient vector;” “6) searching for a value of the functional  $C$  greater than a previously found

value;” “7) improving an obtained value of marker depth mark  $\{z(i)\}$  by searching for a larger value of marker depth  $\{z(i)\}$  within the specified step;” “8) smoothing a gradient vector for the marker depth mark  $\{z(i)\}$ ;” “9) sorting the marker depth marks  $\{z(i)\}$ ;” and “10) reiterating steps 4)-10) of the method until a larger value of functional  $C$  is found.” There is no dispute that each of the foregoing steps involves performing a mathematical operation. *See, e.g.*, Appeal Br. 10 (“[T]he present claims recite collecting data using physical sensors and then processing the acquired data using a mathematical algorithm.”). Accordingly, we conclude under Step 2A, Prong 1 of the Guidance that the claims recite the judicial exception of a mathematical concept.

*Guidance Step 2A, Prong 2*

Having determined that the claims recite a judicial exception, our analysis under the Guidance turns to determining whether there are additional elements that integrate the exception into a practical application. *See* MPEP §§ 2106.05(a)–(c), (e)–(h). Additional elements are found in steps 1 and 2 of claim 1. In step 1, a group of wells is “determin[ed].” In step 2, marker depth values are “determin[ed]” for each well identified in step 1.

We determine that claim 1 does not recite additional elements that integrate the judicial exception into a practical application. The recited “determining” steps involve data gathering recited at a high level of generality. *See Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1354 (Fed. Cir. 2016); *see also SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1168 (Fed. Cir. 2018) (“As many cases make clear, even if a process of

collecting and analyzing information is ‘limited to particular content’ or a particular ‘source,’ that limitation does not make the collection and analysis other than abstract.” (quoting *Elec. Power Grp.*, 830 F.3d at 1353, 1355 (citing cases)). In this case, the foregoing steps, both individually and collectively, merely constitute identifying a particular group of wells and obtaining their marker depth values. The claims do not recite any particular operation to be performed or equipment to be used in the recited determination of wells and their marker depths. Rather, these data-gathering steps encompass mental steps of visually observing a group of wells and reading marker depth values corresponding to those wells. As such, these determining steps in claim 1 do not “transform the nature of the claim into a patent-eligible application.” See *Alice*, 573 U.S. at 217 (internal quotation marks omitted); see also Guidance 84 Fed. Reg. at 55 n.24 (“USPTO guidance uses the term ‘additional elements’ to refer to claim features, limitations, and/or steps that are recited in the claim *beyond the identified judicial exception.*” (emphasis added)).

Appellant contends the claims are indistinguishable from claims involving digital check scanning at issue in *U.S. Bancorp v. Solutran, Inc.*, CBM2014-00076, Paper 16 (PTAB August 7, 2014) because both “involve first collecting data using sensors and then processing it.” Appeal Br. 10. Appellant similarly argues the claims are indistinguishable from those determined patent-eligible in *Thales Visionix, Inc. v. United States*, 850 F.3d 1343 (Fed. Cir. 2017). *Id.* at 10–11. However, claim 1 lacks any recitation of a sensor, and Appellant does not direct us to any recitation that would relate to digital check scanning. In *Thales*, the claims involved inertial

sensors used in a non-conventional manner. *Thales*, at 1345. The instant claims do not require sensors at all.

For the foregoing reasons, we determine that claim 1 does not integrate the judicial exception into a practical application.

### *Guidance Step 2B*

In *Alice* step two, we consider the elements of the claim, both individually and as an ordered combination, to assess whether the additional elements transform the nature of the claim into patent-eligible subject matter. *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat'l Ass'n*, 776 F.3d 1343, 1347 (Fed. Cir. 2014). “To save a patent at step two, an inventive concept must be evident in the claims.” *RecogniCorp, LLC v. Nintendo Co.*, 855 F.3d 1322, 1327 (Fed. Cir. 2017). “An inventive concept that transforms the abstract idea into a patent-eligible invention must be significantly more than the abstract idea itself, and cannot simply be an instruction to implement or apply the abstract idea on a computer.” *Bascom Glob. Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1349 (Fed. Cir. 2016). 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 indicated that an inventive concept is absent. Guidance, 84 Fed. Reg. at 56.

In this context, we also look to see if the additional elements are more than “well-understood, routine, [and] conventional” so as to amount to an inventive concept. Conversely, we consider whether these additional elements simply append “well-understood, routine, [and] conventional” elements, particularly at a high level of generality, to the judicial exception.

Appellant does not point to evidence of record that would tend to show that the steps of “determining a well W and wells located within a specified circular neighborhood of the well W,” and “determining values of a mark of a marker depth” in claim 1 are more than well-understood, routine, and conventional. To the contrary, the Specification acknowledges that marker depths are read from existing conventional well log curves. Spec. ¶ 10. The Specification also states, “the various embodiments of the invention as described may be implemented in the form of a software running on a general purpose computer.” *Id.* ¶ 30. In the Reply Brief, Appellant argues that all of the steps recited in claim 1 are “unconventional elements,” based on the fact that the Examiner withdrew the previously imposed rejection under 35 U.S.C. § 103(a). Reply Br. 4. This argument also is not persuasive. A novel and non-obvious claim directed to a purely abstract idea is, nonetheless, patent-ineligible. *See Mayo*, 566 U.S. at 89–90.

For the foregoing reasons, we determine that the additional elements recited in claim 1 do not amount to significantly more than the abstract idea itself.

For the reasons discussed above and by the Examiner, we are not persuaded of reversible error in the Examiner’s rejection of representative claim 1. Accordingly, the rejection of claims 1–6 under 35 U.S.C. § 101 is sustained.

#### CONCLUSION

The Examiner’s decision rejecting claims 1–6 is affirmed.

DECISION SUMMARY

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
1-6	101		1-6	

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