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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SHAFI RAHMAN, EESHAN MALHOTRA,
NEERAJ THAKARE, and AMY MARIES ESSELMAN

Appeal 2018-005631¹
Application 13/531,429²
Technology Center 3600

Before ANTON W. FETTING, BRADLEY B. BAYAT, and
TARA L. HUTCHINGS, *Administrative Patent Judges*.

BAYAT, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner’s final rejection of claims 1–4, 6–18, and 20–26, which are all the claims pending in the Application. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ Throughout this Decision, we refer to Appellants’ corrected Appeal Brief (“App. Br.”) filed Jan. 16, 2018, Reply Brief (“Reply Br.”) filed May 9, 2018, the Final Office Action (“Final Act.”) mailed Feb. 14, 2017, and the Examiner’s Answer (“Ans.”) mailed Mar. 9, 2018.

² According to Appellants, the real party in interest is “Fair Isaac Corporation.” App. Br. 2.

CLAIMED INVENTION

Appellants' invention "relates to determining groups of customers for controlled provision of relevant offers on associated products in real time."

Spec. ¶ 1. Independent claim 1, reformatted and reproduced below with bracketed notations, is illustrative of the subject matter on appeal.

1. A method comprising:

[(a)] populating, by at least one data processor, a three dimensional matrix with a first plurality of scores, the three dimensional matrix including the first plurality of scores placed according to a customer dimension, a product dimension, and a time dimension, each score of the first plurality of scores characterizing a likelihood of a corresponding customer to purchase a respective product in an associated period of time;

[(b)] *randomly determining*, by at least one data processor and *from a second plurality of scores associated with a spatial intersection of the three dimensional matrix at a particular period of time, a first set of one or more scores of the second plurality of scores*;

[(c)] *changing*, by at least one data processor, *the randomly determined first set of one or more scores to zero in spite of the likelihood associated with at least one randomly determined score being more than zero*; and

[(d)] providing, by at least one data processor, one or more offers to one or more customers when one or more scores that are within the first plurality of scores within the three dimensional matrix and are associated with the one or more customers are more than zero after the changing of the randomly determined first set of one or more scores to zero, the providing of the one or more offers to the one or more customer occurring in real-time.

App. Br. 17, Claims Appendix (emphasis added).

REJECTIONS

Claims 24–26 stand rejected under 35 U.S.C. § 112 (pre-AIA), second paragraph, as being indefinite.

Claims 1–4, 6–18, and 20–26 stand rejected under 35 U.S.C. § 101 as directed to a judicial exception without significantly more.

ANALYSIS

35 U.S.C. § 112, second paragraph

Appellants do not contest the rejection of claims 24–26 under 35 U.S.C. § 112, second paragraph. App. Br. 9. “Appellant has appealed the final rejection of claims 1–4, 6–18, and 20–26 under 35 U.S.C. 101.” *See* Reply Br. 4. Thus, we summarily sustain the rejection.

35 U.S.C. § 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 Supreme Court has long interpreted 35 U.S.C. § 101 to include implicit exceptions: “[I]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 id.* 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, 68 (1972)). Concepts determined to be patent eligible include physical and chemical processes, such as “molding rubber products” (*Diamond v. Diehr*, 450 U.S. 175, 192 (1981)); “tanning, dyeing, making waterproof cloth, vulcanizing India rubber, smelting ores” (*id.* at 182 n.7 (quoting *Corning v. Burden*, 56 U.S. 252, 267–68 (1853))); 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 176; *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.* (internal 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 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. “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.*

After the mailing of the Answer and the filing of the Appeal Brief in this case, the PTO published revised guidance on the application of § 101. *See* 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (USPTO Jan. 7, 2019) (“Guidance”). Revised Step 2A, Prong One, is an evaluation of whether the claim recites (1) any judicial exceptions, including certain groupings of abstract ideas (i.e., (a) mathematical concepts, (b) certain methods of organizing human activity, and (c) mental processes). If so, Revised Step 2A, Prong Two, is an evaluation of whether (2) the judicial exception is integrated a practical application (*see* MPEP §§ 2106.05(a)–(c), (e)–(h) (9th ed. Rev. 08.2017, Jan. 2018)). Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, we at 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* Guidance, 84 Fed. Reg. at 56.

In rejecting claim 1 under 35 U.S.C. § 101, the Examiner determined claim 1 is “directed to providing targeted offers to customers based on each customer’s likelihood of purchasing a particular product in a particular time period which is an abstract idea similar to the concept found abstract in *Electric Power Group, LLC v. Alstom S.A.*”³ Final Act. 3–4.

Appellants argue: “Similar to the claims at dispute in *Enfish*, claim 1 is directed to a structure that improves the way a computer operates.” App. Br. 11. We are not persuaded for the reasons set forth below.

Does claim 1 recite a judicial exception?

There is no dispute that claim 1 is directed to a statutory category. *See* Final Act. 3. As such, we first consider whether the claim recites a judicial exception. Guidance, 84 Fed. Reg. at 51. The Guidance synthesizes key concepts identified by the courts as abstract ideas into three primary subject-matter groupings: mathematical concepts, certain methods of organizing human activity, and mental processes. *Id.* at 52. The Guidance provides that “[m]athematical concepts—mathematical relationships, mathematical formulas or equations, mathematical calculations” are abstract ideas. *Id.* We determine that claim 1’s controlled and optimal provision of

³ *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016).

offers to customers on associated products recites a mathematical concept, and therefore is an abstract idea.

Claim 1 recites a process comprising five steps: (a) “populating . . . a three dimensional matrix with a first plurality of scores,⁴ the three dimensional matrix including the first plurality of scores placed according to a customer dimension, a product dimension, and a time dimension, each score of the first plurality of scores characterizing a likelihood of a corresponding customer to purchase a respective product in an associated period of time;” (b) “randomly determining . . . from a second plurality of scores associated with a spatial intersection of the three dimensional matrix at a particular period of time, a first set of one or more scores of the second plurality of scores;” (c) “changing . . . the randomly determined first set of one or more scores to zero in spite of the likelihood associated with at least one randomly determined score being more than zero;” and (d) “providing . . . one or more offers to one or more customers when one or more scores that are within the first plurality of scores within the three dimensional matrix and are associated with the one or more customers are more than zero after the changing of the randomly determined first set of one or more scores to zero, the providing of the one or more offers to the one or more customer occurring in real-time.” App. Br. 17, Claims Appendix.

Under the broadest reasonable interpretation, steps (b) and (c) of claim 1 describe mathematical concepts. For example, “random determining of the first set of one or more scores, [as recited in step (b)], can be

⁴ “A score can characterize a likelihood of a customer to purchase a corresponding product in an associated time period.” *Id.* ¶ 3.

performed using a pseudorandom number generation algorithm.” Spec. ¶ 45. Step (c), which recites changing the randomly determined first set of one or more scores to zero in spite of the likelihood associated with at least one randomly determined score being more than zero, is described as a mathematical calculation in the Specification. *See* Spec. ¶ 39, Fig. 3; *see also id.* ¶ 51 (“changing the score to one can be implemented for x randomly selected customers for each product, where x can be calculated according to the equation/ formula: $[x = \{f^* n * (v_i / v_{total})\}]$ ”). Apart from steps (b) and (c), which encompass mathematical algorithms and calculations, step (a) is included in this abstract idea because it merely supports the calculations by gathering historical purchase information. *See* Spec. ¶ 43 (“The scores populated in the three dimensional matrix 400 can be generated using historical purchase data associated with a plurality of customers and a plurality of products.”). Together, such mathematical calculations have been determined to be abstract ideas. *See, e.g., In re Grams*, 888 F.2d 835, 837 (Fed. Cir. 1989) (“Mathematical algorithms join the list of non-patentable subject matter not within the scope of section 101.”); *SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1163 (Fed. Cir. 2018) (holding that claims to a “series of mathematical calculations” are directed to an abstract idea); *Diamond v. Diehr*, 450 U.S. at 191 (“[a] mathematical formula . . . 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”) (citation omitted); *Blue Spike, LLC v. Google Inc.*, No. 14-CV-01650-YGR, 2015 WL 5260506 (N.D. Cal. Sept. 8, 2015), *aff’d*, No. 2016-1054, 669 Fed. Appx. 575, 2016 WL 5956746 (mem) (Fed.

Cir. Oct. 14, 2016) (comparison of the results of the mathematical operations itself is an abstract idea).

For all the above reasons, claim 1 recites an abstract idea.

Is claim 1 “directed to” the recited judicial exception?

We look to whether the recited judicial exception of claim 1 is integrated into a practical application. Guidance, 84 Fed. Reg. at 51. When a claim recites a judicial exception and fails to integrate the exception into a practical application, the claim is “directed to” the judicial exception. *Id.* Claim 1 may integrate the judicial exception when, for example, it reflects an improvement to technology or a technical field. *Id.* at 55.

In that regard, Appellants argue that similar to “*Enfish*, claim 1 is directed to a structure that improves the way a computer operates . . . a specific type of data structure—a three dimensional matrix—that is designed to improve the way a computer stores and retrieves data in memory.” App. Br. 11 (citing Spec. ¶¶ 36, 41, 43); *see also* Reply Br. 10–12. According to Appellants, “the claimed three dimensional matrix enables . . . faster search of stored data, more efficient storage of data other than structured text, and no requirement to model each thing in the database as a separate table.” *Id.* at 12.

The Examiner responds:

In contrast [to *Enfish*], Appellant’s claims are *directed to* a method of providing offers to customers based evaluating data stored in a matrix and not to configuring computer memory. Representative claim 1 describes no creation of a logical table including particular arrangements of rows and columns nor does it describe any feature akin to storing information about each column in one or more rows rendering the table self-

referential. Rather, claim 1 describes the population of an existing matrix with numerical values, changing some of those values to zero, and providing offers to customers whose corresponding numerical values are not zero. The claimed process is dissimilar from the self-referential table for a computer database in *Enfish* because where those claims were directed to the design of a data structure, Appellant's claims merely involve the manipulation of data within an existing structure.

Ans. 5. We agree with the Examiner.

Claim 1 does not reflect a technological improvement, but rather, is “directed to a result or effect that itself is the abstract idea and merely invoke[s] generic processes and machinery.” *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1314 (Fed. Cir. 2016). Appellants have not offered any persuasive evidence that the computer implementation improves the functioning of the computer processor itself. None of cited paragraphs 36, 41, and 43 describe any improvement to the way a computer stores and retrieves data in memory. *See* Ans. 6. In *Enfish*, the court noted that “[s]oftware can make non-abstract improvements to computer technology just as hardware improvements can.” *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335 (Fed. Cir. 2016). The court put the question as “whether the focus of the claims is on [a] specific asserted improvement in computer capabilities . . . or, instead, on a process that qualifies as an ‘abstract idea’ for which computers are invoked merely as a tool.” *Id.* at 1335–36. The court found that the “plain focus of the claims” there was on “an improvement to computer functionality itself, not on economic or other tasks for which a computer is used in its ordinary capacity.” *Id.* at 1336. We find the focus of the claim as a whole here is on an marketing task, because the

claimed processors are merely invoked as tools to implement optimization algorithms that “allow an automatic determining of best (for example, most-optimal or most-relevant or most-effective) offers in real time, which can be more efficient than [sic] a manual determining of best offers.” Spec. ¶ 22.

We use the term “additional elements” for “claim features, limitations, and/or steps that are recited in the claim beyond the identified judicial exception.” *See* Guidance, 84 Fed. Reg. at 55 n.24. Here, step (d) and the “at least one data processor” recited in steps (a) through (c) are the additional elements. Step (d), which recites providing offers to corresponding customers by outputting the results of the analysis, merely describes insignificant post-solution activity. The presence of a generic processor (*see* Spec. ¶ 57 (e.g., general purpose computer)) does not necessarily indicate a technical solution. The claimed invention, which includes one or more data processors, merely uses a generic computer or processor as a tool to execute the algorithms described in steps (b) and (c). Although a computer is recited, claim 1 does not apply or use the abstract idea in a “particular machine.” *See Bilski*, 561 U.S. at 604. A general-purpose computer that merely executes the judicial exception using conventional computer functions, as is the case here, is not a particular machine. *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 716–17 (Fed. Cir. 2014), cited in MPEP § 2106.05(b). Thus, we agree with the Examiner that claim 1 does not recite an improvement to computer technology. Ans. 6. The claimed invention does not use the recited data processors in a way that indicates that the judicial exception has been integrated into a practical application.

And, although a processor may perform calculations faster than a human could manually, using a computer to achieve a solution more quickly may not be sufficient to show an improvement to computer technology. *See Versata*, 793 F.3d at 1334; *see also* MPEP § 2106.05(a)(II) (instructing examiners that a “commonplace business method . . . being applied on a general purpose computer” may not be sufficient to show an improvement).

Consequently, we determine that on the present record the subject matter of independent claim 1 does not appear to integrate the recited abstract idea into a practical application.

Does claim 1 provide an inventive concept?

To determine whether a claim provides an inventive concept, the additional elements are considered—individually and in combination—to determine whether they (1) add a specific limitation beyond the judicial exception that is not “well-understood, routine, conventional” in the field or (2) simply append 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 56.

Appellants argue that “the claimed technology is implemented in a manner that is neither routine nor conventional, at least because, as evidenced by the lack of any rejections under 35 U.S.C. §§ 102 or 103.” App. Br. 15. To the extent that Appellants maintain that certain claim limitations necessarily amount to “significantly more” than the abstract idea because the limitations are allegedly patentable over the prior art, Appellants misapprehend the controlling precedent. Although the second step in the *Alice* framework is termed a search for an “inventive concept,” the analysis

is not an evaluation of novelty or nonobviousness, but rather, a search for “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.’” *Alice*, 573 U.S. at 217–18 (alteration in original) (quoting *Mayo*, 566 U.S. at 72–73). In other words, a novel and nonobvious claim directed to a purely abstract idea is, nonetheless, patent ineligible. *See Mayo*, 566 U.S. at 89–90 (rejecting the suggestion that Sections 102, 103, and 112 might perform the appropriate screening function and noting that in *Mayo* such an approach “would make the ‘law of nature’ exception . . . a dead letter”); *see also Genetic Techs. Ltd. v. Merial L.L.C.*, 818 F.3d 1369, 1376 (Fed. Cir. 2016) (“[U]nder the Mayo/Alice framework, a claim directed to a newly discovered law of nature (or natural phenomenon or abstract idea) cannot rely on the novelty of that discovery for the inventive concept necessary for patent eligibility . . .”). “Groundbreaking, innovative, or even brilliant discovery does not by itself satisfy the § 101 inquiry.” *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576, 591 (2013). Indeed, “[t]he ‘novelty’ of any element or steps in a process, or even of the process itself, is of no relevance in determining whether the subject matter of a claim falls within the § 101 categories of possibly patentable subject matter.” *Diehr*, 450 U.S. at 188–89.

Considering the elements in combination, Appellants have not shown that the recited calculations improve operating efficiency or otherwise operate in an unconventional way. Similar to Appellants’ claims, the Federal Circuit has recognized that “an invocation of already-available computers that are not themselves plausibly asserted to be an advance, for use in carrying out improved mathematical calculations, amounts to a

recitation of what is ‘well-understood, routine, [and] conventional.’” *SAP Am.*, 898 F.3d at 1170 (alteration in original) (citing *Mayo*, 566 U.S. at 73). Thus, the additional elements, individually and in combination, do not provide an inventive concept.

Finally, Appellants’ argument as to the lack of preemption (App. Br. 9; Reply Br. 8) is also unpersuasive. *See OIP Techs.*, 788 F.3d 1359, 1362–63 (“[T]hat the claims do not preempt all price optimization or may be limited to price optimization in the e-commerce setting do not make them any less abstract.”). Although “preemption may signal patent ineligible subject matter, the absence of complete preemption does not demonstrate patent eligibility.” *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015); Ans. 12. “Where a patent’s claims are deemed only to disclose patent ineligible subject matter” under the *Alice* framework, “preemption concerns are fully addressed and made moot.” *Id.*

Accordingly, we sustain the rejection of independent claim 1 under 35 U.S.C. § 101, and claims 2–4, 6–18, and 20–26, which are not argued separately. *See* App. Br. 15.

DECISION

The rejection under 35 U.S.C. § 112 (pre-AIA), second paragraph, is affirmed.

The rejection under 35 U.S.C. § 101 is affirmed.

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