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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte THOMAS R. ERVOLINA,
MARKUS R. Ettl, SOUMYADIP GHOSH,
DONNA LEIGH GRESH, and SECHAN OH

Appeal 2018-007297
Application 13/183,058
Technology Center 3600

Before CARL W. WHITEHEAD JR., JASON V. MORGAN, and
PHILLIP A. BENNETT, *Administrative Patent Judges*.

BENNETT, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellants¹ appeal from the Examiner's decision to reject claims 1–11 and 13–26. Final Act. 1. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

¹ We use the word “Appellants” to refer to “Applicants” as defined in 37 C.F.R. § 1.42(a). Appellants identify the real party in interest as International Business Machines Corporation. Appeal Br. 2.

CLAIMED SUBJECT MATTER

The claims are directed to “optimizing management of configurable product portfolios.” Spec. ¶ 1. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A method for managing a portfolio of configurable products to simplify the portfolio by eliminating identified products and product components from the portfolio based on user input and non-user input, wherein specified configurations of the products are offered for sale to customers, and an inventory is maintained of a set of components for assembling the products, the method comprising:

collecting data from a software application and a user, said data including a first set of data describing a portfolio of products, the set of components used to assemble the portfolio of products, and cost and profit factors relating the portfolio of products to the set of components, and a second set of data including component substitution preferences data including a matrix of substitution logic for all the components of the set of components, and the second set of data including parameter data input via an internet webpage;

formulating a set of constraints based on the collected data, the set of constraints having a configuration provision constraint and a substitution rule constraint;

defining an optimization problem by the set of constraints and an optimization objective;

using a computer-implemented model, implemented on a processing engine of a computer system, for solving the optimization problem using the collected data, the set of constraints, the optimization objective and an objective function via mixed integer programming, including

inputting to the model said first set of data and said second set of data, including using a model input interface to filter and format the first and second sets of data for use in the processing engine, including combining the first and second sets of data and formulating the first and second sets of data into input mathematical formats required by the processing engine to specify the set of constraints and the objective function, assessing

the first and second sets of data and filtering out any data that is not complete, and electronically copying and formatting relevant data of the first and second sets of data into a computer language format compatible with the processing engine,

the model using said first and second sets of data and the set of constraints for solving the optimization problem to identify one or more of the configurable products to eliminate from inventory planning operations and to identify one or more of the components to drop from the product portfolio to achieve a defined balance between a complexity of the product configurations offered for sale and lost opportunity cost of a reduced product portfolio; and

outputting a solution of the optimization problem to enable management of the components in the product portfolio.

Appeal Br. (Corrected Appendix A at 3–4).

REJECTION

Claims 1–11 and 13–26 stand rejected under 35 U.S.C. § 101 as being directed to ineligible subject matter. Final Act. 2–12, 18–26.

ANALYSIS

Legal Standard

In issues involving subject matter eligibility, our inquiry focuses on whether the claims satisfy the two-step test set forth by the Supreme Court in *Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208 (2014). The Supreme Court instructs us to “[f]irst . . . determine whether the claims at issue are directed to [a] . . . patent-ineligible concept[]” (*id.* at 217), and, in this case, the inquiry centers on whether the claims are directed to an abstract idea. If the initial threshold is met, we then move to the second step, in which 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.” *Id.* (quoting *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 79, 78 (2012)). The Supreme Court describes the 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.’” *Alice*, 573 U.S. at 217–18 (quoting *Mayo*, 566 U.S. at 72–73).

The USPTO has published revised guidance on the application of § 101. USPTO’s *2019 Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. 50 (Jan. 7, 2019) (“Guidance”). Under the Guidance, 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) (Guidance, Step 2A, prong 1); and
- (2) additional elements that integrate the judicial exception into a practical application (*see* MANUAL OF PATENT EXAMINING PROCEDURE (MPEP) § 2106.05(a)–(c), (e)–(h) (9th Ed., Rev. 08.2017, 2018)) (Guidance, Step 2A, prong 2).

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, do we then 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.

Guidance (Step 2B).

Examiner’s Determinations and Conclusion

Applying the first step of the *Alice* inquiry, the Examiner determines the claims are directed to an abstract idea of “managing a portfolio of configurable products to simplify the portfolio by eliminating identified products and product components from the portfolio based on user input and non-user input . . . [and] via solving an optimization problem.” Final Act. 18. At *Alice* step 2, the Examiner determines the claims do not recite elements sufficient to amount to significantly more than the abstract idea because:

[T]he additional element(s) or combination of elements in the claim(s) amount(s) to no more than recitation of generic, ubiquitous computer structure at Original Specification ¶ [0063], ¶ [0066]–¶ [0068], ¶ [0008], which serve to perform via generic computer code such as a “computer-implemented model” and “processing engine” at ¶ [0032] – ¶ [0039], ¶ [0044] etc. of the Original Specification, as generic computer functions or instructions, which, as already identified above, are directed to abstract idea(s), and also directed to well-understood, routine, and conventional activities previously known to the pertinent industry.

Final Act. 23–24. Accordingly, the Examiner concludes the claims are directed to patent-ineligible subject matter.

Appellant’s Contentions

Appellants describe the invention as “provid[ing] a demand substitution model that, in embodiments of the invention, enables a retailer to reduce inventory while still fulfilling demand for certain products.”

Appeal Br. 19. Appellants assert the Examiner's characterization of the claims is wrong because:

[W]hen the claims are considered as a whole, in light of the specification, each of claims 1, 8, and 15 is directed to an automated procedure using a computer implemented model to simplify a portfolio of products by eliminating identified products and product components from the portfolio based on user input, non-user input, and a set of constraints, where a model input interface is used to filter, format, and formulate different types of dat[a] for the model.

Appeal Br. 21. Appellants assert that the claims "are not simply directed broadly to a mathematical relationship, an idea of itself, organizing human activity, or fundamental economic practices." Appeal Br. 22. Appellants further argue the claims provide a "significant claimed improvement [that] is more than simply a mathematical relationship" and recite "specific functionality and data structures [that] are used to identify specific products and components that can be eliminated from a portfolio of products."

Appeal Br. 23.

Appellants also argue that the claims supply an inventive concept under *Alice* step 2. Appellants contend that their "claims are patentable over the prior art" and "set forth significant features and are important advancements over the prior art." Appeal Br. 23. Appellants assert that the additional limitations recited in the claims, when viewed as an ordered combination, amount to significantly more than any abstract idea. Appeal Br. 23–24.

Guidance, Step 2A, Prong One²
The Judicial Exception

Applying the Guidance, we are not persuaded of Examiner error. The Guidance instructs us first to determine whether any judicial exception to patent eligibility is recited in the claim. The guidance identifies three judicially-expected groupings: (1) mathematical concepts; (2) certain methods of organizing human activity such as fundamental economic practices, fundamental economic principles or practices, commercial or legal interactions, and managing personal behavior or relationships or interactions between people; and (3) mental processes. As shown below, Appellants' claims include limitations that fall within each of these three categories.

Claim 1 recites the following limitations: (1) “[a] method for managing a portfolio of configurable products to simplify the portfolio by eliminating identified products and product components from the portfolio based on user input and non-user input, wherein specified configurations of the products are offered for sale to customers, and an inventory is maintained of a set of components for assembling the products”;

(2) “collecting data from a software application and a user, said data including a first set of data describing a portfolio of products, the set of components used to assemble the portfolio of products, and cost and profit factors relating the portfolio of products to the set of components, and a second set of data including component substitution preferences data including a matrix of substitution logic for all the components of the set of

² Throughout this opinion, we give the claim limitations the broadest reasonable interpretation consistent with the Specification. *See In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997).

components, and the second set of data including parameter data input via an internet webpage”; (3) “formulating a set of constraints based on the collected data, the set of constraints having a configuration provision constraint and a substitution rule constraint”; (4) “defining an optimization problem by the set of constraints and an optimization objective”; (5) “solving the optimization problem using the collected data, the set of constraints, the optimization objective and an objective function . . . including inputting to [a] model said first set of data and said second set of data”; and (6) “the model using said first and second sets of data and the set of constraints for solving the optimization problem.” Appeal Br. (Corrected Appendix A at 3–4). These limitations, under their broadest reasonable interpretation, recite a collection of abstract ideas, including a fundamental economic practice, mental steps, and mathematical concepts under the Guidance.³

For example, limitation (1) recites the intended use of the claimed system, “managing a portfolio of configurable products to simplify the portfolio by eliminating identified products and product components from the portfolio.” This intended use largely amounts to inventory management and product portfolio selection, concepts similar to the examples of hedging, insurance, and mitigating risk identified as fundamental economic practices in the Guidance. Guidance 52. Many of the remaining limitations recite operations that merely implement the abstract idea on a computer, and further are abstract in their own right. Limitations (2), (3), and (4) recite

³ We note that simply adding one abstract idea to another abstract idea does not render a claim non-abstract. *RecogniCorp, LLC v. Nintendo Co., Ltd.*, 855 F.3d 1322, 1327 (Fed. Cir. 2017).

mental steps which can be performed by a person using their mind or on pen and paper. We note that the language of claim 1 does not require that limitations (2), (3), and (4) be performed by a computer. Instead, these limitations recite collecting data, formulating constraints based on the collected data, and defining an optimization problem, all of which can be performed by a person without the aid of a computer. Likewise, limitations (5) and (6) recite solving the optimization problem by inputting the collected data into a model, which also encompasses both a mathematical concept (i.e., solving the problem) and a mental step (i.e., inputting data into a model). Accordingly, we conclude claim 1 recites a combination of abstract ideas, including a fundamental economic practice, a mathematical concept, and a mental process. *See FairWarning IP, LLC v. Iatric Systems, Inc.*, 839 F.3d 1089, 1093–94 (Fed. Cir. 2016) (patent-ineligible claims were directed to a combination of abstract ideas).

Revised Guidance, Step 2A, Prong Two
Integration of the Judicial Exception into a Practical Application

Having determined that the claims recite a judicial exception, our analysis under the Guidance turns now to determining whether there are “additional elements that integrate the judicial exception into a practical application.” *See* Guidance (citing MPEP § 2106.05(a)–(c), (e)–(h)). Under the Guidance, limitations that are indicative of “integration into a practical application” include:

1. Improvements to the functioning of a computer, or to any other technology or technical field — *see* MPEP § 2106.05(a);
2. Applying the judicial exception with, or by use of, a particular machine — *see* MPEP § 2106.05(b);

3. Effecting a transformation or reduction of a particular article to a different state or thing — *see* MPEP § 2106.05(c); and
4. Applying or using the judicial exception in some other meaningful way beyond generally linking the use of the judicial exception to a particular technological environment, such that the claim as a whole is more than a drafting effort designed to monopolize the exception — *see* MPEP § 2106.05(e).

In contrast, limitations that are not indicative of “integration into a practical application” include:

1. Adding the words “apply it” (or an equivalent) with the judicial exception, or merely include instructions to implement an abstract idea on a computer, or merely uses a computer as a tool to perform an abstract idea – *see* MPEP § 2106.05(f);
2. Adding insignificant extra-solution activity to the judicial exception — *see* MPEP § 2106.05(g); and
3. Generally linking the use of the judicial exception to a particular technological environment or field of use — *see* MPEP 2106.05(h).

See 2019 Revised Guidance, 84 Fed. Reg. at 54–55 (“Prong Two”).

Appellants’ claim 1 recites additional limitations including: (a) the optimization problem is solved “using a computer-implemented model, implemented on a processing engine of a computer system . . . via mixed integer programming”; (b) “using a model input interface to filter and format the first and second sets of data for use in the processing engine, including combining the first and second sets of data and formulating the first and second sets of data into input mathematical formats required by the

processing engine to specify the set of constraints and the objective function, assessing the first and second sets of data and filtering out any data that is not complete, and electronically copying and formatting relevant data of the first and second sets of data into a computer language format compatible with the processing engine”; (c) solving the optimization problem in order “to identify one or more of the configurable products to eliminate from inventory planning operations and to identify one or more of the components to drop from the product portfolio to achieve a defined balance between a complexity of the product configurations offered for sale and lost opportunity cost of a reduced product portfolio”; and (d) “outputting a solution of the optimization problem to enable management of the components in the product portfolio.” Appeal Br. (Supp. Appendix A at 3–4).

We do not find these additional limitations sufficient to integrate the judicial exception into a practical application. Limitation (a), which essentially recites that a computer is used to solve the optimization problem, is an example of a computer merely being used as a tool to perform the abstract idea, which is not sufficient to integrate an abstract idea into a practical application. MPEP § 2106.05(f). The same may be said of limitation (b) which at best represents an improvement to how the mathematical concept is implemented—an improvement to the judicial exception and not how a computer operates. *SAP Am. Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1168 (Fed. Cir. 2018) (“What is needed is an inventive concept in the non-abstract application realm.”); *see also Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 88–89 (2012) (narrow embodiments of ineligible matter are still ineligible). Limitation

(c), which recites the purpose of solving the optimization problem—to identify products for elimination—merely links the judicial exception to a field of use (inventory management). MPEP § 2106.05(h). Finally, the analysis results output of limitation (d) merely adds insignificant extra-solution activity to the judicial exception, which is also not sufficient to integrate the judicial exception into a practical application. See MPEP § 2106.05(g).

Thus, the additional elements recited in claim 1 are not sufficient to integrate the recited abstract idea into a practical application. Accordingly, we conclude claim 1 is *directed to* a judicial exception.

The Inventive Concept – Step 2B

Having determined the claim is directed to a judicial exception, we proceed to evaluating whether the claim adds a specific limitation beyond the judicial exception that is not “well-understood, routine, conventional” in the field (*see* MPEP § 2106.05(d)) or 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 at 56.

Our review of the Examiner’s rejection under Step 2B is guided by the revised examination procedure published online by the USPTO on April 19, 2018, entitled “Changes in Examination Procedure Pertaining to Subject Matter Eligibility, Recent Subject Matter Eligibility Decision (*Berkheimer v. HP, Inc.*)” (“*Berkheimer Memorandum*”), which imposed a new fact finding requirement for Examiners, as applicable to rejections under § 101. We agree with the Examiner that the claim does not add specific limitations beyond what is well-understood, routine, and conventional.

Appellants assert that the additional claim limitations “enables Appellants’ invention to use two sets of data that have very different types of data – a first set of data that includes a portfolio of product and components used to assemble those products, and a second set of data that includes component substitution preferences.” However, the Federal Circuit has held that using existing technology to recognize and store specific types of data is not sufficient to supply an inventive concept. *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat’l Ass’n*, 776 F.3d 1343, 1348 (Fed. Cir. 2014).

Nor is Appellants’ argument that the Examiner has failed to provide evidence persuasive. Reply Br. 5–6. The *Berkheimer Memorandum* provides that the Examiner may support a finding that an additional element or combination of elements may be supported by “[a] citation to one or more of the court decisions discussed in MPEP § 2106.05(d)(II) as noting the well-understood, routine, conventional nature of the additional element(s).” *Berkheimer Memorandum* at 4, § III(A)(2).

Here, the Examiner cites to *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709 (Fed. Cir. 2014) and *Versata Dev. Group Inc. v. SAP Am. Inc.*, 793 F.3d 1306, 1331 (Fed. Cir. 2015), which are discussed in MPEP § 2106.05(d)(II) as noting the well-understood, routine, conventional nature of subject matter similar to the additional limitations in Appellants’ claims. *See* Ans. 8–10. Appellants do not provide any argument or explanation as to how or why this evidence is insufficient. Accordingly, we are not persuaded the Examiner erred in the Step 2B analysis.

Because the Examiner correctly concluded claim 1 is directed to a judicial exception, and because Appellants do not identify any error in the

Examiner's determination under step 2B of the Guidance, we sustain the rejection of claim 1 under 35 U.S.C. § 101. Appellants do not present arguments pertaining to any other claim. Accordingly, we treat claim 1 as representative, and we sustain the rejection of the pending claims under 35 U.S.C. § 101.

DECISION

We affirm the Examiner's decision to reject the claims under 35 U.S.C. § 101.

DECISION SUMMARY

Claims Rejected	Basis	Affirmed	Reversed
1-11, 13-26	§ 101	1-11, 13-26	

FINALITY AND RESPONSE

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).

AFFIRMED