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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MILAN BORKOVEC, ANANTH MADHAVAN, and
HANS HEIDLE

Appeal 2019-002101
Application 14/160,212
Technology Center 3600

Before MURRIEL E. CRAWFORD, PHILIP J. HOFFMANN, and
BRADLEY B. BAYAT, *Administrative Patent Judges*.

CRAWFORD, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1 and 3–11. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ We use the word Appellant to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as ITG SOFTWARE SOLUTIONS, INC. Appeal Br. 2.

CLAIMED SUBJECT MATTER

The claims are directed to a method for agency cost estimation. Spec.

¶ 2. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A computer-implemented method for computing estimated transaction costs of a security trade execution according to a specified automated trading strategy and for generating and displaying recommendations for optimizing the trading automated strategy, comprising the steps of:

by one or more trading servers in electronic communication with one or more electronic market places and one or more trading client terminals, receiving electronic data defining parameters of a proposed trade, said data specifying an automated trading strategy among a plurality of predefined automated trading styles defining how share quantities of securities to be electronically traded are to be electronically traded over a specified trading time period;

by said one or more trading servers, computing estimated first and second transaction costs for the received proposed trade based on the specified automated trading strategy and market data, wherein said first transaction costs are based on discretionary trades and said second transaction costs are based on non-discretionary trades;

by said one or more trading servers, generating recommendations for optimizing the automated trading strategy based on at least one of the first and second transaction costs; and

by said one or more trading servers, outputting said recommendations to be displayed on said one or more trading client terminals.

REJECTION

Claims 1 and 3–11 are rejected under 35 U.S.C. § 101 as directed to ineligible subject matter in the form of abstract ideas. Final Act. 3.

OPINION

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

Appeal 2019-002101
Application 14/160,212

However, the 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 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. 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 Supreme Court held that “[a] claim drawn to subject matter otherwise

Appeal 2019-002101
Application 14/160,212

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). “[M]erely requir[ing] 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. *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:

Appeal 2019-002101
Application 14/160,212

- (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* Manual of Patent Examining Procedure (“MPEP”) § 2106.05(a)–(c), (e)–(h)).

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.

See Guidance.

The Examiner determines the claims are directed to “a method for estimating costs of trading,” which “is abstract because it is a fundamental economic practice.” Final Act. 4. The Examiner finds:

Although a computer acts as the intermediary in the claimed method, the claims do no more than implement the abstract idea of receiving information related to parameters of a proposed trade, estimating the costs of the trade and outputting the results. All of these computer functions are “well understood, routine, conventional activities” previously known to the industry.

Id. at 5.

The Appellant argues all claims together, using claim 1 as an example. Appeal Br. 8. We select claim 1 as representative. *See* 37 C.F.R. § 41.37(c)(1)(iv).

We are unpersuaded by the Appellant’s argument that the “invention [] is not directed to a fundamental economic practice, but rather a new trading tool that works with other tools and solves technical problems with the modern electronic trading paradigm.” Appeal Br. 9–10; *see also id.* at 8 (“the claims are directed to technical improvement in the modern, electronic trading paradigm.”).

Claim 1 recites:

computing estimated first and second transaction costs for the received proposed trade based on the specified automated trading strategy and market data, wherein said first transaction costs are based on discretionary trades and said second transaction costs are based on non-discretionary trades; . . . [and]
generating recommendations for optimizing the automated trading strategy based on at least one of the first and second transaction costs.

The Specification describes that the method “includes: a first part that comprises computer-based models that allow a user to obtain price impact cost estimates for any pre-specified strategy, and a second part that comprises computer-executed mathematical models that generate an optimal trading strategy subject to certain assumptions about the user's ultimate objectives.” Spec. ¶ 7. The claimed method “estimates the expected costs and the standard deviation of the costs of the agency trading strategy that optimally balances the trade-off between paying price impact costs and incurring opportunity costs for a given level of risk aversion and trading horizon.” *Id.* ¶ 48. Specifically, the method involves “computing a cost of a pre-specified trading strategy, equations (2) and (3) are used to generate a predicted cost. . . . A proprietary daily risk model is used to get a forward looking estimate of the variance of cost, allowing for the possibility of price movements across bins.” *Id.* ¶ 65. Then, “the optimal trading strategy,

Appeal 2019-002101
Application 14/160,212

denoted by $\{n^*\}$, is computed by solving a particular optimization problem that balances expected cost against variance of cost.” *Id.* ¶ 66.

The method, of computing estimated costs and optimizing a strategy based on costs, is thus directed to “estimating and optimizing trading transaction costs,” as is recited in the preamble of claim 1. We agree with the Examiner that estimating and selecting a least-cost approach to conducting business is a fundamental economic practice, as businesses manage themselves by optimizing income and costs. *See* Guidance at 52; *see also* MPEP § 2106.04(a)(2)(I)(A).

We also discern that the abstract idea of computing estimated costs, and optimizing trading transaction costs, as claimed, involves performing computations, and can be performed in the human mind, using mental thought and pen and paper for performing the mathematical operations employed in estimating and optimizing these costs. *Id.* This is consistent with the Specification, which states that “[b]y providing such servers, a significant advantage over the prior art system (where analyses are executed manually by human traders or by computer using outdated information) is achieved. The server 11 can handle much more complex trades including trades involving large volumes and many more different equities.” Spec. ¶ 54.

This means the method can be performed manually, but is sped up by using computers. As such, the manual mental implementation of the method is an abstract idea because it involves work that can be done mentally by a human. Guidance, 52, fn. 14; *see also* MPEP § 2106.04(a)(2)(III)(A-B).

We thus agree with the Examiner that the method recites an abstract idea, under Prong One of Step 2A of the Guidance. As a result, we disagree with the Appellant that the claimed method is *not* a fundamental economic

Appeal 2019-002101
Application 14/160,212

practice. We also note that the argued “technical improvement in the modern, electronic trading paradigm” (Appeal Br. 8), is an improvement in an abstract idea, which remains an abstract idea after improvement. “What is needed is an inventive concept in the non-abstract application realm.” *SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1168 (Fed. Cir. 2018). “[A] claim for a new abstract idea is still an abstract idea.” *Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1151 (Fed. Cir. 2016) (emphasis omitted).

We are also unpersuaded by the Appellant’s argument that “[l]ike the claims in *Trading Technologies*, the claims at issue solve problems of prior specialized computer systems in the context of computerized trading, relating to the estimation of transaction costs.” Appeal Br. 11. The above citation to paragraph 54 of the Specification establishes that the improvement uses computers to calculate cost estimates faster than was able to be done with prior art manual processes. The improvement is thus not in the computer, as was the case with the user interface improvements in *Trading Techs. Int’l Inc. v. CQG, Inc.*, 675 F. App’x 1001 (Fed. Cir. 2017). The distinguishing feature for the claims in *Trading Technologies* was an advance in efficiency provided by an improved graphical user interface as compared to other computer processes. *Id.* at 1004. In contrast to *Trading Technologies*, no such distinguishing features are recited in claim 1, and the method before us does not concern an improvement to a technology, but merely the use of general-purpose computer technology to speed up a manual process.

Finally, Appellant argues because claim 1 “recites ‘a *computer implemented* method,’ ‘a specified *automated* trading strategy,’ ‘*electronically* traded,’ etc. . . . claim 1 includes a specific, tangible

Appeal 2019-002101
Application 14/160,212

structure that is integral to the operation of the claim as a whole, [and] is not directed to a judicial exception under Step 2A.” Reply Br. 5–6.

We are not persuaded by the Appellant’s argument, because merely automating a manual process by using a computer does not represent eligible subject matter. *See Credit Acceptance*, 859 F.3d 1044, 1055 (Fed. Cir. 2017) (“Our prior cases have made clear that mere automation of manual processes using generic computers does not constitute a patentable improvement in computer technology.”); *see also Bancorp Services, L.L.C. v. Sun Life Assurance Co. of Canada (U.S.)*, 687 F.3d 1266, 1278 (Fed. Cir. 2012) (A computer “employed only for its most basic function . . . does not impose meaningful limits on the scope of those claims.”). Further, because the Specification describes speeding up and expanding the volume of data (Spec. ¶ 54), the computer does not render the method to become eligible subject matter. *See Intellectual Ventures ILLC v. Capital One Bank*, 792 F.3d 1363, 1370 (“[M]erely adding computer functionality to increase the speed or efficiency of the process does not confer patent eligibility on an otherwise abstract idea.”).

Under Prong Two of Revised Step 2A, we evaluate whether the judicial exception is integrated into a practical application. Guidance, 54. Here, claim 1 recites steps for “receiving electronic data defining parameters of a proposed trade,” and “outputting said recommendations to be displayed” on a terminal, in addition to computing estimated costs and optimizing a strategy based on the costs. The method does not improve the underlying “trading server” or “client terminals” recited as performing the limitations of claim 1, because any computer can be used to execute the claimed method. *See Spec. ¶¶ 51–52*. In addition,

the invention relates to systems, methods and computer program products for creating and implementing mathematical/econometric models that provide pre-trade estimates of the price impact costs of a given order to trade a number of shares of one or more tradable assets, such as securities, as well as optimization techniques utilizing the cost estimates.

(Spec. ¶ 2). As such, the claimed method does not improve *another* technology, because the method computes and optimizes transaction costs. Guidance, 55; *see also* MPEP § 2106.05(a). Because a particular computer is not required, the claim also does not define or rely on a “particular machine.” *Id.*; *see also* MPEP § 2106.05(b). Further, the method does not transform matter. *Id.*; *see also* MPEP § 2106.05(c). Instead, the claim receives data, computes estimated costs, selects optimized costs, and provides the optimized strategy selected as output.

The receiving of data and providing results as output, which are recited in the two limitations not considered to be part of the abstract idea, are merely steps that represent insignificant extra-solution activity. *Id.* at 55, fn. 31; *see also* MPEP § 2106.05(g). As such, the method has no other meaningful limitations (MPEP § 2106.05(e)), and thus merely recites instructions to execute the abstract idea on a computer (MPEP § 2106.05(f)).

Therefore, we determine that claim 1 does not integrate the judicial exception into a practical application. In addition, because of this determination, we are unpersuaded by the Appellant’s argument that the claims are “directed to an improvement *in another technology or technical field* -- computer tools for trade cost estimation so as to enable the display of estimated post trade transaction costs on a remote trading device.” Appeal Br. 11. This is because the claimed invention is directed to trade cost estimation, which thus is not *another* field.

In Step 2B of the Guidance, we are directed to evaluate whether the claim provides an inventive concept, which adds “a specific limitation or combination of limitations that are not well-understood, routine, conventional activity.” Guidance, 56. The Examiner finds:

Although a computer acts as the intermediary in the claimed method, the claims do no more than implement the abstract idea of receiving information related to parameters of a proposed trade, estimating the costs of the trade and outputting the results. All of these computer functions are “well understood, routine, conventional activities” previously known to the industry.

Final Act. 5.

We are not persuaded by the Appellant’s argument that the “claims recite a technological improvement to electronic, automated trading systems that was not a well-understood, routine, and conventional.” Appeal Br. 12. The issue is not whether the method itself is well-understood, routine, and conventional, it is whether there are additional elements, alone or in combination, beyond the abstract idea, that are well understood, routine, and conventional. The Examiner has identified only the computer on which the claimed method executes as an additional element. The Appellant identifies as additional elements “computer servers coupled with markets and trading terminals, configured, inter alia, to fine-tune an automated trading strategy and to recommend an optimal trading strategy to a client by displaying recommendations on a trading client computer.” Appeal Br. 12. Thus, we discern no element other than the trading server computer is asserted as being an additional element, along with the other computers to which it is connected. In this system of computers, which receive data, make calculations, and present output, no operation of the computers performs any computer function except those that are well understood, routine, and

Appeal 2019-002101
Application 14/160,212

conventional. *See In re Katz Interactive Call Processing Patent Litig.*, 639 F.3d 1303, 1316 (Fed. Cir. 2011) (“Absent a possible narrower construction of the terms ‘processing,’ ‘receiving,’ and ‘storing,’ discussed below, those functions can be achieved by any general purpose computer without special programming.”).

Because the Appellant has failed to identify error in the Examiner’s rejection of claims, we sustain the rejection under 35 U.S.C. § 101.

CONCLUSION

The Examiner’s rejection is AFFIRMED.

DECISION SUMMARY

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1, 3–11	101	Ineligible	1, 3–11	

TIME PERIOD FOR 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