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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte PAUL D. ADCOCK, MICHAEL A. CORMACK, THOMAS F. HALLER, and ROBERT A. HILL

Appeal 2018-000825[1]
Application 11/416,913
Technology Center 3600

Before MURRIEL E. CRAWFORD, MICHAEL W. KIM, and PHILIP J. HOFFMANN, *Administrative Patent Judges*.

KIM, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

This is an appeal from the Examiner's Final rejection of claims 1–4, 8–14, 16, 17, and 19–30. We have jurisdiction to review the case under 35 U.S.C. §§ 134 and 6.

The invention relates generally to a financial instrument auction that executes concurrently, but separately, from a regular continuous limit order matching process. Spec. ¶¶ 6, 19.

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[1] The Appellants identify NYSE Group, Inc. as the real party in interest. Appeal Br. 1.

Independent claim 1 is illustrative:

1. A method of parallel processing order data to improve order throughput comprising:

providing a posting market center of a computer system having at least one non-transitory memory storing executable program code and at least one processor executing the program code stored in the memory, the posting market center further comprising:

an order matching engine defined by code included in the program code, the order matching engine further comprising:

a continuous matching engine having at least one continuous matching routine configured to execute a continuous matching process, and

an unpriced auction order engine having at least one unpriced auction order routine configured to execute an unpriced auction order process,

the order matching engine further configured to control simultaneous operation of the continuous matching engine and the unpriced auction order engine, such that the at least one continuous matching engine routine and the at least one unpriced auction order routine execute concurrently and separately to process the order data in parallel,

a public order book, and

an unpriced auction order book that is separate from the public order book; and

processing, by the order matching engine, the order data in parallel, comprising:

(a) receiving one or more limit orders and market orders at the posting market center, wherein each of the one or more limit orders and market orders specifies a quantity of shares or contracts to be traded and each market order is an unpriced buy order or an unpriced sell order;

(b) specifying a scheduled auction time at which an auction is configured to commence, wherein the scheduled auction time is after the opening of trading on a primary listing market center of an issue and before the close of trading on the primary listing market center of the issue;

(c) executing, by the order matching engine, steps (c)(i)-(c)(v) sequentially in order before the scheduled auction time:

(c)(i) determining, for each received order of the received one or more limit orders and market orders, whether the received order is a limit order or a market order and segregating the one or more limit orders from the one or more market orders;

(c)(ii) automatically directing only all the segregated limit orders to the continuous matching engine on the computing system;

(c)(iii) causing the continuous matching engine on the computing system to execute a continuous matching process on only all the segregated limit orders that are marketable against the posting market center's public order book;

(c)(iv) automatically directing only all the segregated market orders to the unpriced order auction engine on the computing system;

(c)(v) causing the unpriced order auction engine on the computing system to store the market orders in the unpriced auction order book;

(d) executing, by the unpriced order auction engine, steps (d)(i)-(d)(iv) sequentially in order at the scheduled auction time:

(d)(i) matching for the scheduled auction by the computing system one or more unpriced buy orders to unpriced sell orders;

(d)(ii) retrieving by the computing system an indicator external to the posting market center to establish the best prices in the entire marketplace;

(d)(iii) determining for the scheduled auction by the computing system a single auction price from the retrieved external indicator;

(d)(iv) executing the scheduled auction by the computing system trades in the issue between the matched unpriced buy and unpriced sell orders at the determined single auction price, wherein the scheduled auction at steps (d)(i)-(d)(iv) executes concurrently and separately from the continuous matching process executed by the continuous matching engine

> on the computing system without intem1ption at the scheduled auction time thereby improving order throughput;
>
> (e) automatically directing, by the order matching engine, the received unpriced orders that were not matched at step (d)(i) by the computing system for the scheduled auction to the continuous matching engine on the computing system; and
>
> (f) activating, by the order matching engine, the continuous matching engine to execute the continuous matching process on the computing system on the received unpriced orders that were not matched at the scheduled auction step d)(i) by the computing system and that are marketable against the posting market center's public order book.

The Examiner rejected 1–4, 8–14, 16, 17, and 19–30 under 35 U.S.C. § 101 as directed to non-statutory subject matter in the form of an abstract idea.

We AFFIRM.

PRINCIPLES OF LAW

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: "[l]aws of nature, natural phenomena, and abstract ideas" are not patentable. *See 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 [P]etitioners' 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, 192 (1981)); "tanning, dyeing, making waterproof cloth, vulcanizing India rubber, smelting ores" (*id.* at 184 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 statutory does not become nonstatutory simply because it uses a mathematical formula." *Diehr*, 450 U.S. at 176, 192 ("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*), and 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 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.*

ANALYSIS

The Examiner finds the claims are directed to a fundamental economic practice in the form of order matching and securities trading. Final Act. 11. Each independent claim is drawn to a method or system for "parallel processing order data," and the orders are described as financial instrument trading orders on an exchange. *See* Spec. ¶¶ 2–5. Because the claims recite steps for matching buy and sell orders for financial products, we agree with the Examiner that the claims are directed to order matching and securities trading, the former of which is a mental process of evaluating data and forming an judgment or opinion as to whether a match exists, and the second is a fundamental economic practice.

More specifically, the claims separate priced (limit) orders from unpriced (market) orders, and queue them separately to two matching "engines" to process in parallel, rather than sequentially in a single queue.

See Spec. ¶¶ 2, 6, and 23. Each "engine" is construed to be a software module, because each engine is "activated," and contains "sub-routines." Spec. ¶ 22. The claimed method and system thus divide up work and have two separate software modules work on the two queues consecutively, rather than sequentially with one module.

The method and system affect the logic the engines implement and the queues distributed to each engine, but do not alter the underlying computer that executes the code. More specifically, the underlying computer still executes instructions, as it would have without this method, by using time-slicing individual instructions, switching between active processes, or executing instructions simultaneously, such as on multi-processor-architecture machines. The architectures of those machines are not changed by the method or system, and thus the method and system do not improve the functioning of the underlying computer. *See* MPEP § 2106.05(a). In addition, the method and system are directed to financial markets, and thus do not improve another *technology*. *Id.*

The claimed method and system do not rely on a particular machine, because dividing up input data into multiple queues and having separate logic operate on each queue is a function of which any general purpose computer is capable. *See* MPEP § 2106.05(b). Rather, the method and system merely are instructions to execute the divided queues on a computer, and merely link the divided queue handing to financial trading. *See* MPEP § 2106.05(e), (f) and, (h). Further, the claims do not transform any physical object. *See* MPEP § 2106.05(c).

We are not persuaded by the Appellants' argument, citing *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016), that:

> Because the processor, controlled via the Appellants' claimed software, is enabled to perform parallel processing of data, the system's data throughput is substantially improved (e.g., because multiple streams of data can be processed simultaneously). In this manner, the Appellants' invention provides a technical improvement to the operation and processing of a computing system.

Appeal Br. 14, 24–25, *see also* Reply Br. 3–4. The claimed method does not alter how a computer operates, since general purpose computers, through time-slicing techniques and/or parallel architectures, are already able to execute two programs at once (each corresponding to a claimed "engine") and divide input data into separate queues for separate handling. Additionally, the claims provide no further detail on how simultaneous operation is enabled, other than through dividing the work between two programs, and the Specification has no details on any computer implementation that would make the claim more like those determined to be patent eligible in *Enfish*.

We also, for largely the same reasons, are not persuaded by the Appellants' argument, citing *BASCOM Global Internet v. AT&T Mobility, LLC*, 827 F.3d 1341 (Fed. Cir. 2016), they are "claiming a technology-based solution (not an abstract-idea-based solution implemented with generic technical components in a conventional way)." Appeal Br. 16, 25–26; *see also* Reply Br. 5–6. In particular, we are unpersuaded that the abstract idea of dividing up work into priced and unpriced order queues, while processing buy and sell orders, is based in technology. It would be possible, for example, to manually divide the orders and process them manually, indicating why merely dividing up the work so two queues can be processed at the same time is independent of technology.

The Appellants also argue, citing *McRO, Inc. v. Bandai Namco Games America, Inc.*, 837 F.3d 1299 (Fed. Cir. 2016), that the claims do not preempt all ways of achieving similar results, and the claims are "innovative, unconventional and constitute an improvement over all existing processes in this art, both manual and electronic." Appeal Br. 17–18; *see also* Reply Br. 6–8.

As to preemption, "[w]here a patent's claims are deemed only to disclose patent ineligible subject matter under the Mayo framework, as they are in this case, preemption concerns are fully addressed and made moot." *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015).

As to the unconventional improvement, we do not discern that dividing up a queue into two queues and having a software module work on each queue is an innovative or unconventional computing approach, because this is essentially the point of all parallel computing architectures, i.e., dividing up work so that more executions can take place at the same time. Furthermore, we note that this "improvement" is actually a part of the abstract idea. *BSG Tech LLC v. BuySeasons, Inc.*, 899 F.3d 1281, 1290 (Fed. Cir. 2018) (After formulating the concept the claims are "directed to," the inquiry under *Alice* step two is to determine whether claim limitations other than the steps for executing the formulated concept are "well-understood, routine, and conventional.").

The Appellants have thus not shown error that would lead us to agree that the claims transform the abstract idea into eligible subject matter. For this reason, we sustain the rejection of claims 1–4, 8–14, 16, 17, and 19–30 as directed to ineligible subject matter.

DECISION

We AFFIRM the rejection of claims 1–4, 8–14, 16, 17, and 19–30 under 35 U.S.C. § 101.

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