



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
**United States Patent and Trademark Office**  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/644,525	03/11/2015	Paul Callaway	4672-14003CUS	3291
12684	7590	10/01/2019	EXAMINER	
Lempia Summerfield Katz LLC/CME 20 South Clark Street Suite 600 Chicago, IL 60603			BRIDGES, CHRISTOPHER	
			ART UNIT	PAPER NUMBER
			3695	
			NOTIFICATION DATE	DELIVERY MODE
			10/01/2019	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket-us@lsk-iplaw.com  
mail@lsk-iplaw.com  
pair\_lsk@firsttofile.com

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

*Ex parte* PAUL CALLAWAY, SEAN CASTETTE,  
KIREETI REDDY, AKIRA YAMAGUCHI,  
JOSE ANTONIO ACUÑA-ROHTER,  
PEARCE PECK-WALDEN, and ZACHARY BONIG<sup>1</sup>

---

Appeal 2018-008946  
Application 14/644,525  
Technology Center 3600

---

Before BRADLEY W. BAUMEISTER, JON M. JURGOVAN, and  
RUSSELL E. CASS, *Administrative Patent Judges*.

BAUMEISTER, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134(a) from the Examiner's Final Rejection of claims 1–28, which constitute all of the pending claims. Appeal Br. 5. Claims 1–28 stand rejected under 35 U.S.C. § 101 as being directed to patent-ineligible subject matter. Final Action mailed Oct. 25, 2017 (“Final Act.”) 2. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

---

<sup>1</sup> 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 Chicago Mercantile Exchange Inc. Appeal Brief filed Mar. 26, 2018 (“Appeal Br.”) 2.

### CLAIMED SUBJECT MATTER

Appellant describes the present invention as follows:

The disclosed embodiments relate to regulation of a rate of incoming orders by buffering or otherwise batching orders together as they are received and subsequently forwarding batches of orders to a match engine for processing thereby in a manner [that] may equalize orders from traders having varying abilities to rapid submit orders or otherwise capitalize on market events. The disclosed embodiments further relate to prioritizing the matching of resting orders against an incoming order. In particular, the disclosed embodiments alter the priority of a given resting order to match against an incoming order, relative to other suitably matching resting orders, as a function of how long the orders have been resting on the order book.

Abstract.

Independent claim 1 is representative of the appealed claims.<sup>2</sup> It is reproduced below with formatting modified for clarity and emphasis added to the claim language that recites an abstract idea:

1. A system for determining, by an electronic trading system, an allocation of an incoming order for a transaction of a quantity of a financial instrument at an order price among a plurality of previously received but unsatisfied orders, stored in a first memory, for a transaction counter thereto at the order price for a total quantity of the financial instrument that is less than the quantity of the incoming order, wherein each of the plurality of previously received but unsatisfied orders is characterized by a time of receipt at which the previously received but unsatisfied order was received by the electronic trading system, the system comprising:

---

<sup>2</sup> Appellant argues all of the claims together as a group. *See* Appeal Br. 5–28. Accordingly, we select independent claim 1 as representative. *See* 37 C.F.R. § 41.37(c)(1)(iv).

[i] *first logic* stored in a second memory and executable by a first processor coupled therewith to cause the first processor to *receive the incoming order*;

[ii] *second logic* stored in the second memory and executable by the first processor to cause the first processor to *automatically determine an elapse of time and based on the magnitude thereof, divide the plurality of previously received but unsatisfied orders into at least one non-overlapping subset thereof, each comprising at least one of the plurality of previously received but unsatisfied orders, as a function of the time of receipt thereof*; and

[iii] *third logic* stored in the second memory and executable by the first processor to cause the first processor to *automatically allocate the quantity of the incoming order to each of the at least one subset of previously received but unsatisfied orders according to a first allocation algorithm and subsequently thereto, allocate the quantity allocated to each subset of previously received but unsatisfied orders among the previously received but unsatisfied orders thereof according to a second allocation algorithm different from the first allocation algorithm*.

## PRINCIPLES OF LAW

### 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-step framework, described in *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66 (2012), and

*Alice*. *Alice*, 573 U.S. at 217–18 (citing *Mayo*, 566 U.S. at 75–77). 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.* (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.* (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 United States Patent and Trademark Office (“USPTO”) published revised guidance on the application of 35 U.S.C. § 101. USPTO, 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019) (“2019 Guidance”). Under the 2019 Guidance, we first look to whether the claim recites the following:

- (1) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activities such as a fundamental economic practice, or mental processes); and

(2) additional elements that integrate the judicial exception into a practical application (*see* MPEP § 2106.05(a)–(c), (e)–(h)).  
2019 Guidance, 84 Fed. Reg. 52–55.

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, do we then look 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.  
2019 Guidance, 84 Fed. Reg. 56.

## ANALYSIS

### *Step 2A, Prong 1*

Under step 2A, prong 1, of the 2019 Guidance, we first look to whether the claim recites any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activities such as a fundamental economic practice, or mental processes). 84 Fed. Reg. 52–55.

Claim 1’s limitation [i] recites “*first logic . . . to receive the incoming order.*”<sup>3</sup> The act of receiving an order reasonably can be characterized as

---

<sup>3</sup> Appellant argues claims 2–28 together as a group. *See* Appeal Br. 5–20. Accordingly, we select independent claim 1 as representative. 37 C.F.R. § 41.37(c)(1)(iv).

reciting an observation that can be performed in the human mind. The 2019 Guidance expressly recognizes such mental observations as mental processes that constitute an abstract idea. 84 Fed. Reg. 52. As such, limitation [i] reasonably can be characterized as reciting a patent-ineligible abstract idea.

Limitation [ii] recites the following language:

*second logic . . . to automatically determine an elapse of time and based on the magnitude thereof, divide the plurality of previously received but unsatisfied orders into at least one non-overlapping subset thereof, each comprising at least one of the plurality of previously received but unsatisfied orders, as a function of the time of receipt thereof.*

The acts of determining an elapse of time based upon various factors and dividing orders into subsets reasonably can be characterized as reciting mental evaluations, judgments, or opinions that can be performed in the human mind. The 2019 Guidance expressly recognizes such mental evaluations, judgments, and opinions as mental processes that constitute abstract ideas. 84 Fed. Reg. 52. As such, limitation [ii] reasonably can be characterized as reciting a patent-ineligible abstract idea.

Limitation [iii] recites the following language:

*third logic . . . to automatically allocate the quantity of the incoming order to each of the at least one subset of previously received but unsatisfied orders according to a first allocation algorithm and subsequently thereto, allocate the quantity allocated to each subset of previously received but unsatisfied orders among the previously received but unsatisfied orders thereof according to a second allocation algorithm different from the first allocation algorithm.*

Like limitation [ii], limitation [iii]'s act of allocating quantities of incoming orders to subsets of received orders also reasonably can be

characterized as reciting a mental evaluation, judgment, or opinion. As such, limitation [iii] also reasonably can be characterized as reciting a patent-ineligible abstract idea. 84 Fed. Reg. 52.

Moreover, limitations [i]–[iii], in combination, recite steps that purportedly improve upon the manner in which financial instruments are traded. As Appellant explains:

[T]he presently claimed invention is directed to a specific improvement to the way computers operate as the claimed system and method for determining, by an electronic trading system, an allocation of an incoming order for a transaction of a quantity of a financial instrument at an order price among a plurality of previously received but unsatisfied orders, stored in a first memory, for a transaction counter thereto at the order price for a total quantity of the financial instrument that is less than the quantity of the incoming order are directed to a specific implementation of a solution to a problem in the software arts.

Appeal Br. 14.

As such, these limitations, in combination, additionally can be characterized reasonably as reciting methods of organizing human activities. More specifically, the limitations reasonably can be characterized as reciting fundamental economic practices associated with securities trading. The 2019 Guidance expressly recognizes fundamental economic practices as a method of organizing human activity that constitutes an abstract idea. For these reasons, each of limitations [i]–[iii], individually, and in combination, reasonably can be characterized as reciting patent-ineligible subject matter.

*Step 2A, Prong 2*

Under step 2A, prong 2, of the 2019 Guidance, we next analyze whether claim 1 recites additional elements that integrate the judicial exception into a practical application. 84 Fed. Reg. 52–55.

Claim 1's first limitation of "receiv[ing an] incoming order" alternatively can be characterized reasonably as merely constituting insignificant pre-solution activity:

An example of pre-solution activity is a step of gathering data for use in a claimed process, *e.g.*, a step of obtaining information about credit card transactions, which is recited as part of a claimed process of analyzing and manipulating the gathered information by a series of steps in order to detect whether the transactions were fraudulent.

MPEP § 2106.05(g). As such, limitation [i] does not add any meaningful limitations to the abstract idea.

Appellant argues that "the claims are directed to a specific, novel and non-preemptive application [that] improves a system for managing processing of incoming transactions." Appeal Br. 5. Appellant's argument regarding preemption is unpersuasive.

We recognize that the Supreme Court has described "the concern that drives this exclusionary principle [i.e., the exclusion of abstract ideas from patent eligible subject matter] as one of pre-emption." *Alice*, 573 U.S. at 216. However, characterizing preemption as a driving concern for patent eligibility is not the same as characterizing preemption as the sole test for patent eligibility. As our reviewing court has explained: "The Supreme Court has made clear that the principle of preemption is the basis for the judicial exceptions to patentability" and "[f]or this reason, questions on preemption are inherent in and resolved by the § 101 analysis." *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015) (citing *Alice*, 573 U.S. at 216). Although "preemption may signal patent ineligible subject matter, the absence of complete preemption does not demonstrate patent eligibility." *Id.*

Turning to the remaining arguments, Appellant further asserts that the invention

thereby improv[es] or facilitat[es] market liquidity and balanc[es] a market implemented by an electronic trading system by altering the priority and timing of incoming transactions to transact in the system by altering the priority of a given previously received transaction to transact against a newly received transaction, relative to other suitably matching previously received transactions, as a function of the age of the previously received transactions. *The claimed invention directly addresses an issue in, and improves upon the technical field of, electronic transaction processing systems [that] are not able to directly control the submission of transaction requests from independent sources, i.e. the rate at, or timing of, which transaction are submitted by those independent sources of transactions. So, for a given set of unfilled electronic order transactions awaiting an incoming electronic order transaction, an electronic order transaction received at time t1 may be treated differently by the system if instead this same order was received at a later time t2, despite no other electronic order transactions being received in the interim time period.*

Appeal Br. 5 (emphasis added).

Appellant continues,

the claimed invention addresses the technical problems created by independently managed multipath computer networks, i.e. that some network paths leading to same end point, i.e. the electronic trading system, may be faster than others, which may convey an inequitable advantage to some messages communicated over that network vs. others. The disclosed embodiments normalize incoming orders to equalize disparities in the network communication paths leading to the electronic trading system.

Appeal Br. 10 (citing Spec. ¶¶ 62, 106–09).

These arguments are unpersuasive. Improving upon how orders for securities are filled by taking into account the timing at which orders are

received was relevant to the trading of securities long before the advent of computers or the Internet. That is, Appellant’s invention would have provided comparable improvements for historical trading systems that alternatively received orders through the mail, via the telephone, or in person. As such, Appellant’s invention, as claimed is better characterized as being directed to an improvement in a method of organizing commercial or economic human activities—not to an improvement to computer technology. *See BSG Tech LLC v. BuySeasons, Inc.*, 899 F.3d 1281, 1290 (Fed. Cir. 2018) (“It has been clear since *Alice* that a claimed invention’s use of the ineligible concept to which it is directed cannot supply the inventive concept that renders the invention ‘significantly more’ than that ineligible concept.”); *Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1151 (Fed. Cir. 2016) (“[A] claim for a new abstract idea is still an abstract idea.” (emphasis omitted)); *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.”).

Restated, the use of computers for practicing Appellant’s claimed trading process merely makes that trading process more efficient. Our reviewing court held that where an “invention makes the *trader* faster and more efficient, not the computer . . . [, it] is not a technical solution to a technical problem.” *Trading Techs. Int’l v. IBG LLC*, 921 F.3d 1084, 1090 (Fed. Cir. 2019); *see also id.* at 1093 (claims are abstract where “they recite a purportedly new arrangement of generic information that assists traders in processing information more quickly”); *Bancorp Servs., L.L.C. v. Sun Life Assurance Co. of Can. (U.S.)*, 687 F.3d 1266, 1278 (Fed. Cir. 2012) (“[T]he fact that the required calculations could be performed more efficiently via a

computer does not materially alter the patent eligibility of the claimed subject matter.”); *OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1363 (Fed. Cir. 2015) ([R]elying on a computer to “perform routine tasks more quickly or more accurately is insufficient to render a claim patent eligible.”); *DDR Holdings, LLC v. Hotels.com., L.P.*, 773 F.3d 1245, 1257 (Fed. Cir. 2014) (distinguishing a claimed solution necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks from claims that “merely recite the performance of some business practice known from the pre-Internet world along with the requirement to perform it on the Internet”).

For these reasons, Appellant does not persuade us that claim 1 is directed to an improvement in the function of a computer or to any other technology or technical field. MPEP § 2106.05(a). Nor is claim 1 directed to a particular machine or transformation. MPEP §§ 2106.05(b), (c). Nor has Appellant persuasively demonstrated that claim 1 adds any other meaningful limitations. MPEP § 2106.05(e). Accordingly, Appellant has not persuaded us that claim 1 integrates the recited abstract ideas into a practical application within the meaning of the 2019 Guidance. 84 Fed. Reg. 52–55.

### *Step 2B*

Under step 2B of the 2019 Guidance, we next analyze whether claim 1 adds any specific limitation beyond the judicial exception that is not “well-understood, routine, conventional” in the field. 84 Fed. Reg. 56; MPEP § 2106.05(d).

Claim 1’s additional elements beyond the recited abstract ideas include “an electronic trading system,” “a first memory,” “a first processor,”

and “a second memory.” The Examiner determines that “[t]he process steps of the claim are performed by a generic computing device comprising a generic processor(s) suitably programmed to execute the claimed steps.” Final Act. 5. According to the Examiner, “[t]he elements together execute in routinely and conventionally accepted coordinated manners and interact with their partner elements to achieve an overall outcome which, similarly, is merely the combined and coordinated execution of generic computer functionalities which are well-understood, routine and conventional activities previously known to the industry.” *Id.* at 6.

Appellant argues, inter alia,

determining of “an elapse of time and based on the magnitude thereof, divide the plurality of previously received but unsatisfied orders into at least one non-overlapping subset thereof, each comprising at least one of the plurality of previously received but unsatisfied orders, as a function of the time of receipt thereof” and allocating of “the quantity of the incoming order to each of the at least one subset of previously received but unsatisfied orders according to a first allocation algorithm and subsequently thereto, allocate the quantity allocated to each subset of previously received but unsatisfied orders among the previously received but unsatisfied orders thereof according to a second allocation algorithm different from the first allocation algorithm”, form a specific solution/application which have NOT been used before and therefore are not well understood, routine or conventional in the art, as evidenced by the absence of an art-based rejection in the Office Action.

Appeal Br. 16–17.

Appellant’s arguments are unpersuasive. To the extent that Appellant is arguing that the algorithms and protocols have not been used before, we note that “[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. A novel and nonobvious claim directed to a purely abstract idea is, nonetheless, patent ineligible. *See Mayo*, 566 U.S. at 90.

More generally, though, Appellant is again arguing the abstract ideas that are performed by the additional elements of the claims. Appellant does not provide persuasive argument for why the additional elements constitute an improvement to the technology or otherwise add any meaningful limitations beyond the abstract idea.

Furthermore, Appellant’s Specification supports the Examiner’s determination that the additionally recited claim elements are conventional:

It will be appreciated that the types of computer devices deployed by traders and the methods and media by which they communicate with the electronic trading system 100 is implementation dependent and may vary and that not all of the depicted computer devices and/or means/media of communication may be used and that other computer devices and/or means/media of communications, now available or later developed may be used.

Spec. ¶ 50.

Appellant’s Specification further explains,

the computer system 400 may include a processor 402, e.g., a central processing unit (CPU), a graphics processing unit (GPU), or both. The processor 402 may be a component in a variety of systems. For example, *the processor 402 may be part of a standard personal computer or a workstation. The processor 402 may be one or more general processors, digital signal processors, application specific integrated circuits, field programmable gate arrays, servers, networks, digital circuits, analog circuits, combinations thereof, or other now known or later developed devices for analyzing and processing data.*

*Id.* ¶ 156 (emphasis added).

Appellant’s Specification further explains,

[a]lthough the present specification describes components and functions that may be implemented in particular embodiments with reference to particular standards and protocols, the invention is not limited to such standards and protocols. For example, standards for Internet and other packet switched network transmission (e.g., TCP/IP, UDP/IP, HTML, HTTP, HTTPS) represent examples of the state of the art. Such standards are periodically superseded by faster or more efficient equivalents having essentially the same functions. Accordingly, *replacement standards and protocols having the same or similar functions as those disclosed herein are considered equivalents thereof.*

*Id.* ¶ 167 (emphasis added).

For these reasons, we determine that claim 1 does not recite additional elements that amount to significantly more than the judicial exception within the meaning of the 2019 Guidance. 84 Fed. Reg. 52–55; MPEP § 2106.05(d).

Accordingly, we sustain the Examiner’s rejection of claim 1 under 35 U.S.C. § 101 as being directed to patent-ineligible subject matter. We, likewise, sustain the 101 rejection of claims 2–28, which Appellant does not argue separately. Appeal Br. 5–20.

## CONCLUSION

In summary:

<b>Claims Rejected</b>	<b>Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
1–28	§ 101	1–28	

Appeal 2018-008946  
Application 14/644,525

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)(1). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED