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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte EDWIN EARL FREED

Appeal 2018-006296
Application 14/797,052
Technology Center 2400

Before ERIC B. CHEN, IRVIN E. BRANCH, and JOHN R. KENNY,
Administrative Patent Judges.

Opinion for the Board filed by BRANCH, Administrative Patent Judge,

Concurring Opinion filed by KENNY, Administrative Patent Judge,

BRANCH, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE¹

Pursuant to 35 U.S.C. § 134(a), Appellant² appeals from the Examiner's decision to reject claims 1–3, 5, 7–10, 12, 14–17, and 19, which are all of the pending claims. *See* Final Act. 1. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

CLAIMED SUBJECT MATTER

The claims are directed to conducting malicious message detection without revealing message content. Claim 1, reproduced below with disputed limitations emphasized in *italics* and bracketing added for reference, is illustrative of the claimed subject matter:

1. A method comprising:
 - [1] receiving, by a client machine, a message object that is communicated over a communications network;
 - [2] segmenting, by the client machine, the received message object into structural data segments and textual data segments;
 - [3] utilizing, by the client machine, a keyed cryptographic hash function and the textual data segments to generate corresponding hashed textual data segments;
 - [4] determining, by the client machine, that one of the hashed textual data segments matches an element in one of a

¹ We refer to the Specification, filed July 10, 2015 (“Spec.”); Final Office Action, mailed May 15, 2017 (“Final Act.”); Appeal Brief, filed November 20, 2017 (“Appeal Br.”); Examiner’s Answer, mailed April 4, 2018 (“Ans.”); and Reply Brief, filed June 4, 2018 (“Reply Br.”).

² 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 Oracle International Corporation. Appeal Br. 2.

plurality of tuple entries stored in a tuple table associated with the received message object, wherein each of the plurality of tuple entries stored in the tuple table includes a hashed textual data segment element, a corresponding textual data segment element, and *a count value element*;

[5] *in response to the determination that a hashed textual data segment matches a hashed textual data segment element included in a tuple entry stored in the tuple table associated with the receive message object, rehashing the hashed textual data segment by a number of times indicated by the count value element included in the tuple entry containing the matching hashed textual data segment to generate a new hashed textual data segment element that is then designated as one of the hashed textual data segments for the received message object*;

[6] storing, by the client machine, the hashed textual data segments and the textual data segments as new tuple entries in the tuple table associated with the received message object;

[7] creating, by the client machine, a new message object including the structural data segments and the hashed textual data segments; and

[8] sending, by the client machine, the new message object in lieu of the received message object to a message scanning entity for evaluation via the communications network.

The prior art relied upon by the Examiner is:

Name	Reference	Date
Gianniotis	US 2014/0304825 A1	Oct. 9, 2014
Yurcik	William Yurcik et al., <i>Privacy/Analysis Tradeoffs in Sharing Anonymized Packet Traces: Single-Field Case</i> , The Third Int'l Conference on Availability, Reliability and Security, 237–44, https://ieeexplore.ieee.org/document/4529343 (last viewed June 25, 2020).	2008
Yurcik 2	William Yurcik et al., <i>SCRUB-tcpdump: A Multi-Level Packet Anonymizer Demonstrating Privacy/Analysis Tradeoffs</i> , pp. 1–8, https://ieeexplore.ieee.org/abstract/document/4550306 (last viewed June 25, 2020).	2007
Larson	Per-Ake Larson, <i>ANALYSIS OF REPEATED HASHING</i> , BIT Numerical Mathematics, 25–32, https://link.springer.com/article/10.1007/BF01933582 (last viewed June 25, 2020).	1980

REFERENCES AND REJECTIONS

Claims 1–3, 5, 7–10, 12, 14–17, and 19 stand rejected under 35 U.S.C. § 101 because the claimed invention is directed to a judicial exception without significantly more. Final Act. 5–8.

Claim 1–3, 5, 7–10, 12, 14–17, and 19 stand rejected under 35 U.S.C. § 103 as unpatentable over the combination of Gianniotis, Yurcik, Yurcik 2, and Larson. Final Act. 10–21.

ANALYSIS

We have reviewed the Examiner's rejections in light of Appellant's arguments. We have considered in this Decision only those arguments

Appellant actually raised in the Briefs. Any other arguments Appellant could have made but chose not to make in the Briefs are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(iv).

Rejection under 35 U.S.C. § 101

Legal Principles

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. *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*. *Alice*, 573 U.S. 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, 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 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 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.* (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 (internal 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.*

The United States Patent and Trademark Office published revised guidance on the application of § 101 (2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019)) and, recently, published an update to that guidance (*October 2019 Patent Eligibility Guidance Update*, 84 Fed. Reg. 55,942) (jointly referred to as “Guidance”). Under the Guidance, in determining whether a claim falls within an excluded category, we first look, under step 2A of the Guidance, 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); and
- (2) additional elements that integrate the judicial exception into a practical application (*see* 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 move to step 2B of the Guidance and 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.

Claims 1–3, 5, 7–10, 12, 14–17, and 19

Prong One of Step 2A

Under prong 1 of step 2A, 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, or mental processes). Guidance, 84 Fed. Reg. at 52–54.

Claim 1 is a method that includes “[1] receiving . . . a message object” and “[8] sending . . . [a] new message object in lieu of the received message object to a message scanning entity for evaluation.” These steps amount to sending and receiving data. The remaining steps, [2]–[7], include segmenting the received message, hashing the segments to generate other data, making comparisons of data, further hashing of certain data based on the comparisons, storing data, and creating the new message based on the hashed data. We determine these steps recite mental processes performable in the human mind or with pen and paper.

Specifically, hashing—and by extension, rehashing—is described in the Specification as a mathematical operation. *See, e.g.*, Spec. p. 9, l. 17–p. 10, l. 23 (“[U]sing random key K and textual data segments as inputs for hash function **120**, a hash value V may be produced. As an example, hash value V may be determined via $V=H(S, K)$, where H represents a hash function, S represents a textual data segment, and K represents the random key.” (emphasis added)); *see also id.* at p. 13, ll. 16–19 (“If a matching entry is found, then the count value for that entry in column **203** is incremented by 1 and the hash value is rehashed by the message object management module for a predefined number of times (e.g., C + 1 times).”). Thus, the claims,

broadly construed consistent with the Specification, do not recite hashing at a level of complexity beyond a human's mental capability.

Moreover, recording data as “tuple entries” in a “tuple table” and making comparisons to data stored in a tuple table are steps that can be performed in the mind using pen and paper. That is, a tuple table, as shown in Specification, Figure 2, can be hand written. Thus, steps [2]–[7] can be characterized reasonably as mental processes or mathematical calculations. Mathematical calculations involve mathematical concepts which, along with mental processes, are categories of activities that the Guidance recognizes as constituting an abstract idea. *See* Guidance, 84 Fed. Reg. at 52. Thus, under prong one of step 2A we determine the claims recite abstract ideas.

Prong Two of Step 2A

Under prong 2 of step 2A of the Guidance we determine whether the claim as a whole integrates the recited abstract idea into a practical application of the abstract idea. A claim that integrates a judicial exception into a practical application will apply, rely on, or use the judicial exception in a manner that imposes a meaningful limit on the judicial exception, such that the claim is more than a drafting effort designed to monopolize the judicial exception. To evaluate whether the claims integrate the abstract idea into a practical application, we identify whether there are any additional elements recited beyond the abstract idea, and evaluate those additional elements individually and in combination.

Some exemplary considerations laid out by the Supreme Court and the Federal Circuit indicative that an additional element integrates an abstract idea into a practical application include (i) an improvement in the functioning of a computer or to another technological field, (ii) an

application of the judicial exception with, or by use of, a particular machine, (iii) a transformation or reduction of a particular article to a different state or thing, or (iv) a use of the judicial exception in some other meaningful way beyond generally linking the use of the judicial exception to a particular technological environment. *See* MPEP §§ 2106.05(a)–(c), (e)–(h).

According to our reviewing court:

We often analyze software-related claims by asking whether the claims focus on a “specific asserted improvement in computer capabilities” instead of on “a process that qualifies as an ‘abstract idea’ for which computers are invoked merely as a tool.” *Finjan, Inc. v. Blue Coat Sys., Inc.*, 879 F.3d 1299, 1303 (Fed. Cir. 2018). The claims of the ’852 patent do not recite a particular way of programing or designing software—they merely claim an abstract process in five steps: (i) “presenting” notations; (ii) “receiving” input; (iii) “assessing” performance; (iv) “determining” weaknesses; and (v) “changing” the difficulty level or “generating” mini-games. ’852 patent col. 20 ll. 21–43. The specification describes these steps in functional terms and not by what process or machinery is required to achieve those functions. *See McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1312 (Fed. Cir. 2016) (“[T]he abstract idea exception prevents patenting a result where ‘it matters not by what process or machinery the result is accomplished.’” (quoting *O’Reilly v. Morse*, 56 U.S. . . . 62, 113 . . . (185[4]))). The specification states that “the processes presented herein are not inherently related to any particular computer, processing device, article, or other apparatus.” ’852 patent col. 2 ll. 22–24; *see also id* at col. 1 ll. 67–2:2 (“The invention may be applied as a standalone game engine system or as a component of an integrated software solution.”).

UBISOFT Entm’t, S.A. v. Yousician OY, No. 2019-2399, 2020 WL 3096369 (Fed. Cir. June 11, 2020).

Aside from the limitations we addressed above, representative claim 1 recites a “client machine” and “a communications network.” Reviewing the

claim limitations as a whole, we determine the claim does not recite additional elements that integrate the abstract idea into a practical application. The client machine and the communications network are not described as improving the functioning of a computer. Rather, the client machine and the communications network are used in their ordinary manner to receive data from and provide data to users and perform the otherwise mental processes and mathematical functions. *See* Spec. p. 6, l. 11–p. 7, l. 21. Thus, the technological elements of the claim simply link the mental processes and mathematical functions to the technological environment of computers (a “client machine” (*see* Spec. p. 6, l. 20–p. 7, l. 21) or a communications network (*see* Spec. p. 6, l. 11)), which are “invoked merely as a tool” (*Finjan*, 879 F.3d at 1303).

Furthermore, we find the steps of “[1] receiving, by a client machine, a message object that is communicated over a communications network” (i.e., data gathering) and “[8] sending, by the client machine, the new message object in lieu of the received message object to a message scanning entity for evaluation via the communications network” to be directed to insignificant extra-solution activity. *See* MPEP § 2106.05(g).

Appellant argues as follows:

[T]he instant claims clearly focus on a specific improvement in computer capabilities. For example, the present claims improve a client computer’s capability for conducting malicious message detection for message objects communicated over a communications network. Notably, the claims recite a client machine that utilizes a tuple table to manage the selective hashing of designated portions of a message object. Such techniques can improve the security of messages communicated by a client machine. Hence, the present claims focus on a specific improvement in computer capabilities.

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Appeal Br. 11 (citing *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016)).

We are not persuaded because Appellant does not identify any elements that use the client machine and communications network in other than their ordinary manner.

Appellant further argues as follows:

[T]he claims in the present application recite malicious message detection in a manner that differs from the way a human would conduct the process. Notably, it is respectfully submitted that the process for utilizing a keyed cryptographic hash function and rehashing a previously hashed textual data segment as claimed is completely different from the abstract human activity of redaction (e.g., humans manually redact sensitive/secret text from documents via the whiteout or blackout of the text).

Appeal Br. 11–12 (citing *McRO*).

We are not persuaded because merely differing from the traditional human activity of redaction does not remove the claim from the capability of a human.

Appellant also argues “the claims do not merely recite the performance of some business practice that can be performed manually or via human activity alone,” thus “there is no direct corresponding offline equivalence to . . . conducting malicious message detection without revealing message content of a message object that includes the elements recited in the independent claims.” Appeal Br. 13 (citing *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245 (Fed. Cir. 2014)).

We are not persuaded by this argument because, business practice or not, our analysis above explains how, but for the use of a “client machine” and “communications network” in their ordinary capacity, a human could

perform the recited steps, including the mathematical functions, unaided by anything more than pen and paper.

Accordingly, we determine that the claims do not integrate the abstract ideas into a practical application.

Step 2B of the Guidance

Under step 2B of the Guidance we analyze the claims to determine whether they provide an inventive concept (i.e., whether the additional elements amount to significantly more than the exception itself). Considerations that are evaluated with respect to step 2B include determining whether the claims as a whole add a specific limitation or combination of limitations that are not well-understood, routine, conventional activity in the field.

As we have explained above, with the exception of the recitation of the “client machine” and “communications network,” the limitations of the claim recite mathematical concepts and also techniques that can be performed mentally. The client machine is described in the Specification as having “any type of processor” and generic memory. Spec. p. 7. The Specification states that the communications network may be “the Internet.” Spec. p. 6. Thus, the Specification describes the client machine and communications network as being used in their well-understood, routine, and conventional ways.

Appellant argues “even assuming, for the sake of argument, that these claims recite an abstract idea, the claim elements in combination amount to significantly more than an abstract idea.” Appeal Br. 12 (emphasis omitted) (citing *BASCOM Glob. Internet Servs., Inc.*, 827 F.3d 1341 (Fed. Cir. 2016)).

This argument is unpersuasive because Appellant does not identify anything about the combination to support the naked assertion that the combination amounts to significantly more than an abstract idea.

Accordingly, we sustain the Examiner's rejection of claims 1–3, 5, 7–10, 12, 14–17, and 19 under 35 U.S.C. § 101.

35 U.S.C. § 103

Claim 1 recites, in pertinent part, “rehashing [a] hashed textual data segment by a number of times indicated by [a] count value element included in [a] tuple entry.” The Examiner relies exclusively on Larson for the following elements of claim 1:

a count value element [and]

in response to the determination that a hashed textual data segment matches a hashed textual data segment element included in a tuple entry stored in the tuple table associated with the receive message object, rehashing the hashed textual data segment by a number of times indicated by the count value element included in the tuple entry containing the matching hashed textual data segment to generate a new hashed textual data segment element that is then designated as one of the hashed textual data segments for the received message object.

Final Act. 15–18.

Appellant contends that “the combination of Gianniotis in view Yur[ci]k, Yur[ci]k 2, and Larson fails to teach or suggest a method that includes the rehashing of hashed textual data segment by a number of times indicated by the count value element included in the tuple entry.” Appeal Br. 14 (reference underlining omitted). Among other things, Appellant argues specifically as follows:

[T]he records or overflow records disclosed in Larson do not include or contain the overflow counter as recited in independent

claim 1. There is nothing in Larson, alone or in combination with Gianniotis, Yur[ci]k, and Yur[ci]k 2, that teaches or suggests an element such as a tuple entry (or a record or bucket as disclosed by Larson) that includes a segment element (i.e., the hasted textual data segment) that is rehashed *by a number of times indicated by another element (i.e., the count value element) that is contained in the same tuple entry* as recited in independent claim 1.

Appeal Br. 16 (italics added for emphasis; reference underlining omitted); see Reply Br. 3–4 (“appellant’s claims specifically recite that the count value element is included in a tuple entry as opposed to being associated to the tuple table”).

We are persuaded by Appellant’s argument that Larson does not disclose that the count value element is stored in tuple entries in the tuple table, and the Examiner does not account for this element elsewhere.

Accordingly, for at least the foregoing reason, we do not sustain the Examiner’s obviousness rejection of claim 1 nor of the remaining independent and dependent claims, which recite corresponding subject matter.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–3, 5, 7–10, 12, 14–17, 19	101	Eligibility	1–3, 5, 7–10, 12, 14–17, 19	
1–3, 5, 7–10, 12, 14–17, 19	103	Gianniotis, Yurcik, Yurcik 2, Larson		1–3, 5, 7–10, 12, 14–17, 19

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
Overall Outcome			1-3, 5, 7- 10, 12, 14- 17, 19	

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

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KENNY, Administrative Patent Judge, concurring:

I join the majority's decision regarding the rejection under 35 U.S.C. § 101. As for the rejection under 35 U.S.C. § 103, I might add to the analysis, but that is not necessary in light of the overall disposition of the case.