UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/787,679	05/26/2010	Wing Chit Mak	000118-004800US	5096

68155	7590	04/03/2018

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ART UNIT	PAPER NUMBER
3682	

NOTIFICATION DATE	DELIVERY MODE
04/03/2018	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte WING CHIT MAK

Appeal 2016-004456[1]
Application 12/787,679[2]
Technology Center 3600

Before ANTON W. FETTING, MICHAEL C. ASTORINO, and
ALYSSA A. FINAMORE, *Administrative Patent Judges.*

FINAMORE, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant appeals from the
Examiner's decision to reject claims 1–19. We have jurisdiction under
§ 6(b).

We AFFIRM.

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[1] Our Decision references Appellant's Specification ("Spec.," filed May 26,
2010), Appeal Brief ("Appeal Br.," filed Aug. 20, 2015), and Reply Brief
("Reply Br.," filed Mar. 16, 2016), as well as the Examiner's Final Office
Action ("Final Act.," mailed Jan. 22, 2015) and Answer ("Ans.," mailed
Jan. 22, 2016).

[2] Appellant identifies Hulu, LLC as the real party in interest. Appeal Br. 2.

SUBJECT MATTER ON APPEAL

The invention "relates to systems and methods for presenting media programs, and in particular to a system and method and apparatus for rapidly selecting advertisements to be presented in conjunction with such media programs." Spec. 1:6–8. Claims 1, 7, and 14 are the independent claims on appeal. Independent claim 1, reproduced below, is illustrative of the claimed subject matter:

1.   A method comprising:
accepting, by a computer server, an advertisement rule for each advertisement of a set of advertisements, each advertisement rule describing circumstances in which the associated advertisement belongs to a subset of advertisements complying with an advertisement request, each advertisement rule comprising: one or more advertisement rule primitives, each advertisement rule primitive comprising an advertisement rule key and an advertisement rule value associated with the advertisement rule key;
precomputing a first map relating each advertisement of the set of advertisements to its advertisement rule values in a bit array stored in a memory of the computer server, wherein each bit of the bit array signifies whether a corresponding one of the set of advertisements satisfies a corresponding one of the advertisement rule primitives;
accepting, by the computer server, an advertisement request having one or more advertisement request keys for a media program, each of the advertisement request keys having one or more advertisement request values;
retrieving, in response to the advertisement request, at least a portion of the precomputed map from the memory, the at least a portion describing the advertisement rules for which advertisement rule values match the advertisement request values;
computing, by the computer server, a second map from the portion of the precomputed first map using bits of the bit array associated with the portion of the precomputed first map; and

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selecting, by the computer server, the subset of advertisements using the second map as only those advertisements having advertisement rules satisfied by all of the advertisement request values; and

providing information for the subset of advertisements for sending to a media player, the subset of advertisements eligible for playing in advertisement opportunities associated with the media program for playing on the media player.

REJECTIONS

The Examiner rejects the claims on appeal as follows:

claims 1–19 under 35 U.S.C. § 101 as non-statutory subject matter; and

claims 1–19 under 35 U.S.C. § 103(a) as unpatentable over Rosenblum et al. ("Rosenblum," US 7,627,603 B2, iss. Dec. 1, 2009).

ANALYSIS

Non-Statutory Subject Matter

Appellant argues claims 1–19 as a group. Appeal Br. 9–15; Reply Br. 1–4. We select independent claim 1 as representative. The remaining claims of the group stand or fall with independent claim 1. 37 C.F.R. § 41.37(c)(1)(iv).

An invention is patent-eligible if it claims a "new and useful process, machine, manufacture, or composition of matter." 35 U.S.C. § 101. The Supreme Court, however, has long interpreted § 101 to include implicit exceptions: "[l]aws of nature, natural phenomena, and abstract ideas" are not patentable. *See, e.g., Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354 (2014) (quoting *Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107, 2116 (2013)). To "distinguish[] patents that

claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts," the Supreme Court, in *Alice*, reiterated the two-step framework previously set forth in *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 132 S. Ct. 1289 (2012), which, in the first step, considers whether a claim is directed to a patent-ineligible concept, e.g., an abstract idea, and, if so, considers, in the second step, whether the claim recites an inventive concept—an element or combination of elements sufficient to ensure the claim amounts to significantly more than the abstract idea and transform the nature of the claim into a patent-eligible application. *Alice*, 134 S. Ct. at 2355 (citing *Mayo*, 132 S. Ct. at 1294, 1296–98).

In rejecting independent claim 1 under 35 U.S.C. § 101 as non-statutory subject matter, i.e., subject matter judicially excepted from statutory subject matter, the Examiner analyzes the claim using this two-step framework. Final Act. 2–3. More specifically, pursuant to the first step, the Examiner determines that the claim is directed to the abstract idea of selecting advertisements that satisfy advertisement rules,[3] which is a fundamental economic practice and a method of organizing human activities, and, therefore, an abstract idea. *Id.* Under the second step, the Examiner determines that the elements of the claim do not amount to significantly more than the abstract idea because they amount to no more

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[3] We understand the abstract idea identified by the Examiner is selecting advertisements that satisfy advertisement rules, which is consistent with Appellant's understanding of the abstract idea. *See, e.g.*, Appeal Br. 11 ("For example, the Examiner has stated that the claimed invention is directed to an abstract idea of selecting advertisements that satisfy advertisement rules.").

than: (i) mere instruction to implement the idea on a computer; and/or (ii) recitation of generic computer structure that serves to perform generic computer functions that are well-understood, routine, and conventional activities previously known in the industry. *Id.*

As an initial matter, we are not persuaded of error by Appellant's argument that independent claim 1 does not wholly preempt the field of selecting advertisements. Appeal Br. 14–15. Although preemption may be the concern behind the judicial exceptions to statutory subject matter, preemption is not the test for eligibility. "The Supreme Court has made clear that the principle of preemption is the basis for the judicial exceptions to patentability. For 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) (citation omitted).

Appellant also argues that the Examiner has failed to set forth a prima facie case of patent-ineligible subject matter because the Examiner has not performed a detailed analysis of the claim language. Appeal Br. 11–12; Reply Br. 2–3. Appellant's argument does not apprise us of error.

With respect to the requirement to make a prima facie case, the Federal Circuit has held that

> the PTO carries its procedural burden of establishing a prima facie case when its rejection satisfies 35 U.S.C. § 132, in "notify[ing] the applicant ... [by] stating the reasons for [its] rejection, or objection or requirement, together with such information and references as may be useful in judging of the propriety of continuing the prosecution of [the] application."

In re Jung, 637 F.3d 1356, 1362 (Fed. Cir. 2011) (alterations in original) (quoting § 132). All that is required of the Office is to set forth the statutory basis of the rejection in a sufficiently articulate and informative manner. *Id.*

at 1363; *see also Chester v. Miller*, 906 F.2d 1574, 1578 (Fed. Cir. 1990)
("Section 132 is violated when a rejection is so uninformative that it
prevents the applicant from recognizing and seeking to counter the grounds
for rejection.").

As set forth above, in rejecting independent claim 1 under 35 U.S.C.
§ 101, the Examiner analyzes the claim using the two-step patent-eligibility
analysis. Final Act. 2–3. In determining that the claim is directed to an
abstract idea under the first step, the Examiner expressly considers each
limitation of the claim. Ans. 3–4. Pursuant to the second step, the Examiner
considers the claim limitations, both individually and as an ordered
combination, to determine that the claim does not recite significantly more
than the abstract idea. *Id.* at 4. As such, the Examiner sufficiently informs
Appellant that independent claim 1 is patent ineligible. Furthermore, there is
no indication that Appellant does not recognize or understand the
Examiner's rejection, as Appellant's understanding is manifested in the
arguments traversing it. Accordingly, the Examiner's rejection satisfies the
notice requirement of § 132 and sets forth a prima facie case of
patent-ineligible subject matter. We, therefore, consider Appellant's
remaining arguments to determine whether the Examiner erred in
determining that independent claim 1 is patent ineligible.

Pursuant to the first step of the patent-eligibility analysis, Appellant
argues the Examiner erred in determining that independent claim 1 is
directed to an abstract idea. Appeal Br. 9–11; Reply Br. 1–2. More
specifically, Appellant contends that the claim is directed to a technical way
of selecting ads, not to a fundamental economic practice or some other type

of abstract idea. Appeal Br. 9–11; Reply Br. 2. Appellant's argument is not convincing.

Our reviewing court has instructed that "[u]nder step one of *Mayo/Alice*, the claims are considered in their entirety to ascertain whether *their character as a whole* is directed to excluded subject matter." *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1346 (Fed. Cir. 2015) (emphasis added). For computer-implemented inventions in particular, "the first step in the *Alice* inquiry . . . asks whether the focus of the claims is on the specific asserted improvement in computer capabilities . . . or, instead, on a process that qualifies as an 'abstract idea' for which computers are invoked merely as a tool." *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335–36 (Fed. Cir. 2016).

Here, independent claim 1 recites the steps of: accepting an advertisement rule for each advertisement, the advertisement rule comprising one or more advertisement rule primitives including an advertisement rule key and an advertisement rule value associated with the advertisement rule key; precomputing a first map relating each advertisement to its advertisement rule values in a bit array stored in a memory of the computer server, wherein each bit of the bit array signifies whether a corresponding advertisement satisfies a corresponding advertisement rule primitive; accepting an advertisement request including one or more advertisement request keys for a media program, each advertisement request key having one or more advertisement request values; retrieving, in response to the advertisement request, a portion of the precomputed map that describes advertisement rule values matching the advertisement request values; computing a second map from the portion of

the precomputed first map using bits of the bit array associated with the

portion of the precomputed first map; selecting the subset of advertisements

using the second map as only those advertisements having advertisement

rules satisfied by all of the advertisement request values; and providing

information for the subset of advertisements for sending to a media player,

the subset of advertisements eligible for playing in advertisement

opportunities associated with the media program for playing on the media

player. Appeal Br., Claims App. Thus, according to independent claim 1,

the steps of "accepting . . . an advertisement rule," "precomputing a first

map," "accepting . . . an advertisement request," "retrieving . . . a portion of

the precomputed map," "computing . . . a second map," "selecting . . . the

subset of advertisements," and "providing information for the subset of

advertisements" enable selected advertisements to be played in a media

program on the media player. *Id.*

> Similarly, the Specification explains that

> providing directed advertisements in streaming media context is
> a challenging proposition, because it involves finding an optimal
> (or at least near optimal) match between a large and rapidly
> varying number of users with a large and rapidly varying number
> of advertisements, based upon a large number of rules, and doing
> so in a potentially very short period of time.

Spec. 5:5–9. The Specification further explains that the invention addresses

the need for "rapidly selecting an appropriate advertisement to display to a

user based on a match between user information and targeting rules that

define which advertisements should be shown to which users." *Id.* at 5:10–

12.

As Appellant points out, independent claim 1 recites a technical way

of selecting advertisements. Appeal Br. 9. Indeed, independent claim 1

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recites a computer server and technical details as to how eligible

advertisements are selected, e.g., precomputing a first map utilizing a bit

array to relate each advertisement to its advertisement rule values, and

computing a second map from the portion of the first map using bits of the

bit array associated with the portion of the first map. These technical details,

however, explain how the computer server selects advertisements to be

played in program. Although the claim specifically recites how the server

selects advertisements, the server is nonetheless used as a tool to select

advertisements. As such, the focus of the claim is not on a specific

improvement in computer capabilities, but rather, as the Examiner

determines, the character of the claim as a whole is directed to selecting

advertisements.

Turning to whether selecting advertisements that satisfy advertisement

rules is an abstract idea, the Federal Circuit has explained that "the

decisional mechanism courts now apply is to examine earlier cases in which

a similar or parallel descriptive nature can be seen—what prior cases were

about, and which way they were decided." *Amdocs (Isr.) Ltd. v. Openet

Telecom, Inc.*, 841 F.3d 1288, 1294 (Fed. Cir. 2016). The Federal Circuit

has determined that concepts similar to selecting advertisements that satisfy

advertisement rules are abstract ideas. For example, in *Electric Power

Group, LLC v. Alstom S.A.*, 830 F.3d 1350, 1353–54 (Fed. Cir. 2016), the

court determined that claims directed to collecting information, analyzing it,

and displaying certain results are directed to an abstract idea. Likewise, the

court has held the concept of comparing new and stored information and

using rules to identify options, as well as the concept of organizing

information through mathematical correlations, to be abstract ideas in

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SmartGene v. Advanced Biological Laboratories, S.A., 555 F. App'x 950, 955 (Fed. Cir. 2014) and *Digitech Image Technologies, LLC v. Electronics for Imaging, Inc.*, 758 F.3d 1344, 1350 (Fed. Cir. 2014), respectively. Ans. 3–4.

Even if none of the claims in *Electric Power, SmartGene*, and *Digitech* recites bit arrays or using maps to select an advertisement (Reply Br. 2), these limitations do not separate the claimed invention from the concept of selecting advertisements that satisfy advertisement rules, as we discuss *supra*. Appellant does not assert, and we fail to see, any meaningful distinction between this concept and the abstract ideas in these prior cases. Accordingly, we see no error in the Examiner's determination that independent claim 1 is directed to the abstract idea of selecting advertisements that satisfy advertisement rules.

Seeing no error in the Examiner's determination that independent claim 1 is directed to an abstract idea pursuant to the first step of the patent-eligibility analysis, we turn to Appellant's arguments under the second step. Appellant alleges that independent claim 1 recites significantly more than the abstract idea because the claimed invention selects advertisements in near-real time by precomputing a first map and then computing a second map that includes a subset of the first map. Appeal Br. 12. Appellant further contends that the ability to select advertisements in near-real time is a solution to a problem specifically arising in the realm of computer networks, similar to the patent-eligible claims in *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1257 (Fed. Cir. 2014). *Id.* at 13; Reply Br. 3–4. Appellant's arguments do not apprise us of error.

At the outset, we note the Federal Circuit has routinely held that using a computer to perform tasks more quickly or more accurately is not sufficient to render a claim eligible. *See 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."); *Intellectual Ventures I LLC v. Capital One Bank (USA)*, 792 F.3d 1363, 1367 (Fed. Cir. 2015) ("[C]laiming the improved speed or efficiency inherent with applying the abstract idea on a computer [does not] provide a sufficient inventive concept."); *Bancorp Servs., L.L.C. v. Sun Life Assur. 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.").

Furthermore, we disagree with Appellant that the need for near-real time selection of advertisements is a problem specifically arising in the realm of computer networks. Although the need for near-real time selection of advertisements may be exacerbated for streaming media, selecting advertisements more quickly would improve advertising in any medium. Accordingly, even if the claimed invention provides near-real time selection of advertisements by computing a first map and then a second map including a subset of the first map, we fail to see how these elements amount to significantly more than the abstract idea.

Appellant also argues that independent claim 1 recites significantly more than the abstract idea because the claimed invention improves the functioning of the computer itself. Appeal Br. 14; Reply Br. 3. In particular, Appellant contends that the use of bit arrays provides certain

advantages over a targeting rule evaluation process. Reply Br. 3 (citing Spec. 43:4–18).[4] Appellant's argument is not convincing.

According to Appellant's Specification:

> The targeting rule evaluation process used in the previous examples is rather inefficient. Evaluation of each advertising rule primitive within an advertising rule involves a search for the corresponding key-value pair in the advertisement request, and the entire evaluation process has to be repeated for each live advertisement in the system in order to find the subset of advertisements that qualifies for a given advertisement request. Even opportunities for short-circuiting the evaluation process are taken advantage of, scaling a system to handle thousands of live advertisements and hundreds of advertisement selection requests per second is a significant challenge with the given targeting rule evaluation algorithm.
>
> However, by exploiting the limitations we have imposed on the advertisement rule specification semantics, the following scheme can be used by the advertisement server 322 to evaluate the advertising rules of all advertisements quickly to determine if they qualify for an advertising request. Further, the [sic] since set operations (union and intersection) can be performed very quickly with simple AND and OR operations if sets are represented by bit-arrays, the scheme can be efficiently implemented.

Spec. 25:9–23. As such, the bit-arrays are used to implement an improved scheme that is more efficient than the targeting rule evaluation process. In other words, the improvement is to the rule evaluation process, which is implemented via the use of bit arrays, not to the functioning of the computer itself.

Appellant further asserts that independent claim 1 recites significantly more than the abstract idea because the claimed invention effects a

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[4] Appellant refers to page 42 of the Specification, but the quoted portion of the Specification appears on page 43.

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transformation. Appeal Br. 15. According to Appellant, computing the second map transforms the first map into a different use. *Id.* Appellant's argument is not persuasive of error.

Initially, we note that the machine-or-transformation is not the standard for determining whether a claim recites significantly more than the abstract idea. *DDR Holdings*, 773 F.3d at 1256 ("[S]atisfying the machine-or-transformation test, by itself, is not sufficient to render a claim patent-eligible, as not all transformations or machine implementations infuse an otherwise ineligible claim with an 'inventive concept.'"). Moreover, the alleged "transformation" is a manipulation of data, which is not sufficient to meet the transformation prong of the test. *See Gottschalk v. Benson*, 93 S. Ct. 253, 257 (1972) (holding that a computer-based algorithm that merely transforms data from one form to another is not patent-eligible).

In view of the foregoing, Appellant does not apprise us of error in the Examiner's determination that independent claim 1 is patent-ineligible, i.e., judicially excepted from statutory subject matter. Accordingly, we sustain the rejection of claims 1–19 under 35 U.S.C. § 101.

Obviousness

Appellant argues that Rosenblum does not disclose a precomputed first map, accepting an advertising request, and then computing a second map, as claimed. Appeal Br. 17. Appellant also argues Rosenblum does not disclose maps having bit arrays. *Id.* at 19. Appellant's arguments are convincing.

Independent claim 1 recites

> precomputing a first map relating each advertisement of the set of advertisements to its advertisement rule values in a bit array stored in a memory of the computer server, wherein each bit of the bit array signifies whether a corresponding one of the set of advertisements satisfies a corresponding one of the advertisement rule primitives.

Appeal Br., Claims App. Independent claim 1 further recites "computing, by the computer server, a second map from the portion of the precomputed first map using bits of the bit array associated with the portion of the precomputed first map." *Id.*

To disclose the claimed first map, the Examiner relies on Rosenblum's teaching of mapping advertisements to subscriptions. Final Act. 4 (citing Rosenblum 6:54–67, 32:8–27, Fig. 14). For disclosing the claimed second map, the Examiner relies on Rosenblum's teaching of transforming a data advertisement and query to a subscription and a notification, respectively. Final Act. 5 (citing Rosenblum 33:56–67, Fig. 21H).

Although we agree with the Examiner that Rosenblum teaches mapping an advertisement to a subscription and mapping a query to a notification, the Examiner does not explain, and we fail to see, how Rosenblum's advertisement or query discloses the claimed first map and how the subscription or notification discloses the claimed second map. For example, the Examiner does not explain how Rosenblum's advertisement or query includes "a bit array . . . wherein each bit of the bit array signifies whether a corresponding one of the set of advertisements satisfies a corresponding one of the advertisement rule primitives," as the claimed first map.

In view of the foregoing, the Examiner has not shown sufficiently that Rosenblum discloses the claimed first and second maps recited in independent claim 1. Each of independent claims 7 and 14 similarly recite first and second maps, and the Examiner's rejection of these claims suffers from the same deficiency as the rejection of independent claim 1. Final Act. 4–5. Accordingly, we do not sustain the Examiner's rejection of independent claims 1, 7, and 14 and dependent claims 2–6, 8–13, and 15–19 under 35 U.S.C. § 103(a).

DECISION

The Examiner's decision to reject claims 1–19 under 35 U.S.C. § 101 is affirmed.

The Examiner's decision to reject claims 1–19 under 35 U.S.C. § 103(a) is reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED