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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ROGER I. KHAZAN, JOSHUA KRAMER,
DANIIL M. UTIN, MANKUAN MICHAEL VAI,
and DAVID WHELIHAN

Appeal 2018-001895
Application 14/733,325
Technology Center 2400

Before ALLEN R. MacDONALD, HUNG H. BUI, and
DAVID J. CUTITTA II, *Administrative Patent Judges*.

MacDONALD, *Administrative Patent Judge*.

DECISION ON APPEAL¹

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) from a final rejection of claims 1–8, which are all of the pending claims. Final Act. 1. We have jurisdiction under 35 U.S.C. § 6(b). We REVERSE.

¹ Appellants indicate the real party in interest is Massachusetts Institute of Technology. App. Br. 1.

Illustrative Claim

Illustrative claim 1 under appeal reads as follows (emphasis, formatting, and bracketed materials added):

1. A method for computer-implemented verification of security of a device comprising:
 - [A.] accepting data comprising a circuit description of the device;
 - [B.] identifying using a computer a plurality of mutually independent circuit zones from the circuit description such that no data paths pass directly between said circuit zones;
 - [C.] identifying a plurality of gate circuits providing data paths linking the circuit zones, the gate circuits being verified to limit unmodified transfer of data between zones by their circuitry according to a security policy; and
 - [D.] verifying that the device complies with the security policy ***according to whether all data paths between the circuit zones*** are via the identified gate circuits according to the security policy.

References²

Kitajima et al	US 6,823,069 B1	Nov. 23, 2004
Karaki et al.	US 2006/0190851 A1	Aug. 24, 2006
Lescuyer et al.	US 2008/0072034 A1	Mar. 20, 2008
Keefe et al.	US 2008/0181394 A1	July 31, 2008
Mossawir et al.	US 2009/0228849 A1	Sept. 10, 2009

² All citations herein to these references are by reference to the first named inventor only.

*Rejections*³

A.

The Examiner rejects claims 1–8 under 35 U.S.C. § 101 because “the claimed invention is directed to a judicial exception (i.e., a law of nature, a natural phenomenon, or an abstract idea) without significantly more,” i.e., because the subject matter of the claimed invention is patent-ineligible.

Final Act. 4–5.

As to this rejection, our decision as to the § 101 rejection of claim 1 is determinative as to the § 101 rejection of all the claims. Therefore, except for our ultimate decision, we do not discuss further herein the § 101 rejection of claims 2–8.

B.

The Examiner rejects claims 1–3 and 6–8 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Kitajima, Keefe, and Karaki.

Final Act. 5–9.

The Examiner rejects claim 4 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Kitajima, Keefe, Karaki, and Lescuyer. Final Act. 9–10.

The Examiner rejects claim 5 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Kitajima, Keefe, Karaki, and Mossawir. Final Act. 10–11.

Appellants present arguments for claim 1. App. Br. 8–11. As to these rejections, our decision as to the § 103 rejection of claim 1 is determinative as to the § 103 rejections of all the claims. Therefore, except for our

³ All citations herein to the “Final Action” are to a Final Action mailed on September 15, 2016.

ultimate decision, we do not discuss further herein the § 103 rejections of claims 2–8.

Issues on Appeal

Has the Examiner erred in rejecting claim 1 as being directed to patent-ineligible subject matter?

Has the Examiner erred in rejecting claim 1 as being obvious?

ANALYSIS⁴

We have reviewed the Examiner’s rejections in light of Appellants’ Appeal Brief and Reply Brief arguments that the Examiner has erred.

A. Section 101

Under 35 U.S.C. § 101, a patent may be obtained for “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof.” The Supreme Court has “long held that this provision contains an important implicit exception: Laws of nature, natural phenomena, and abstract ideas are not patentable.” *Alice Corp. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2354 (2014) (quoting *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576, 589–90 (2013)).

Accordingly, in applying § 101, the Supreme Court cautioned:

[W]e must distinguish between patents that claim the “buildin[g] block[s]” of human ingenuity and those that integrate the building blocks into something more, thereby “transform[ing]” them into a patent-eligible invention. The former “would risk disproportionately tying up the use of the underlying” ideas, and are therefore ineligible for patent

⁴ All Manual of Patent Examining Procedure (MPEP) citations herein are to MPEP Rev. 08.2017, January 2018.

protection. The latter pose no comparable risk of pre-emption, and therefore remain eligible for the monopoly granted under our patent laws.

Alice, 134 S. Ct. at 2354–55.

The Supreme Court in *Alice* reiterated the two-step framework previously set forth in *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 566 U.S. 66, 82–83 (2012), “for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts.” *Alice*, 134 S. Ct. at 2355. The first step in that analysis is to “determine whether the claims at issue are directed to one of those patent-ineligible concepts,” such as an abstract idea. *Id.* For example, a fundamental economic practice or merely implementing a mathematical algorithm/formula is an abstract idea. *See Alice*, 134 S. Ct. at 2357–58 (discussing *Bilski v. Kappos*, 561 U.S. 593 (2010) and *Parker v. Flook*, 437 U.S. 584 (1978)).

The Court acknowledged in *Mayo* that “all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.” *Mayo*, 566 U.S. at 71. We, therefore, look to whether the claims focus on a specific means or method that improves the relevant technology or are instead directed to a result or effect that itself is the abstract idea and merely invoke generic processes and machinery. *See Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335–36 (Fed. Cir. 2016). If the claims are not directed to an abstract idea or other patent-ineligible concept (e.g., a law of nature), the inquiry ends. *Id.* at 1339. Otherwise, the inquiry proceeds to the second step where the elements of the claims are considered “individually and ‘as an ordered combination’ to determine whether the additional elements ‘transform the nature of the claim’ into a

patent-eligible application.” *Alice*, 134 S. Ct. at 2355 (quoting *Mayo*, 566 U.S. at 79, 78). In other words, the second step is to “search for an ‘inventive concept’—*i.e.*, an element or combination of elements that is ‘sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.’” *Id.* (citing *Mayo*, 566 U.S. at 72–73). “[W]ell-understood, routine, [and] conventional activit[ies]’ previously known to the industry” are insufficient to transform an abstract idea into patent-eligible subject matter. *Id.* (citing *Mayo*, 566 U.S. at 73).

In *Enfish*, the Federal Circuit provided further guidance.

In setting up the two-stage *Mayo/Alice* inquiry, the Supreme Court has declared: “We must first determine whether the claims at issue are directed to a patent-ineligible concept.” *Alice*, 134 S. Ct. at 2355. That formulation plainly contemplates that the first step of the inquiry is a meaningful one, *i.e.*, that a substantial class of claims are *not* directed to a patent-ineligible concept. The “directed to” inquiry, therefore, cannot simply ask whether the claims *involve* a patent-ineligible concept, because essentially every routinely patent-eligible claim involving physical products and actions *involves* a law of nature and/or natural phenomenon—after all, they take place in the physical world. *See Mayo*, 132 S. Ct. at 1293 (“For all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.”)[.] Rather, the “directed to” inquiry applies a stage-one filter to claims, considered in light of the specification, based on whether “their ***character as a whole*** is directed to excluded subject matter.”

Enfish, 822 F.3d at 1335 (bold emphasis added).

B. Requirement to Provide Sufficient Articulated Reasoning

The requirement that the Examiner must provide a proper notice of rejection is set forth by 35 U.S.C. § 132:

Whenever, on examination, any claim for a patent is rejected, . . . the Director shall notify the applicant thereof, stating the reasons for such rejection . . . together with such information and references as may be useful in judging of the propriety of continuing the prosecution of his application.

The Federal Circuit has held that the Office carries its procedural burden when its rejection satisfies the requirements of 35 U.S.C. § 132 by notifying the applicant of the reasons for rejection, “together with such information and references as may be useful in judging of the propriety of continuing the prosecution of [the] application.” *See In re Jung*, 637 F.3d 1356, 1362 (Fed. Cir. 2011) (brackets in original, quoting 35 U.S.C. § 132).

Put simply, the Office is required to set forth the statutory basis of the rejection in a sufficiently articulate and informative manner as to meet the notice requirement of § 132. *Id.*; *see also Chester v. Miller*, 906 F.2d 1574, 1578 (Fed. Cir. 1990) (noting that § 132 “is violated when a rejection is so uninformative that it prevents the applicant from recognizing and seeking to counter the grounds for rejection”).

C. Examiner’s § 101 Rejection - Alice/Mayo - Steps 1 and 2

Applying step 1 of the *Alice/Mayo* analysis, the Examiner determines⁵ claim 1 is directed to a “judicial exception” because:

Claims 1-8 are directed to an abstract idea of ***obtaining data, data recognition and comparing data to a control data*** (i.e., steps of accepting, identifying, identifying and verifying).

Final Act. 5 (emphasis added).

Claims 1-8 are directed to an abstract idea (An Idea ‘Of Itself’) of obtaining data, data recognition and comparing data to a

⁵ We reproduce in its entirety the Examiner’s analysis of *Alice/Mayo* step 1 for claim 1.

control data (i.e., steps of accepting, identifying, identifying and verifying).

...

Although a computer is utilized, no improvement to the computer or another technology is realized. In the instant application a person either mentally or using a pen and paper can perform the steps of the claims (e.g. identifying circuit zones, identifying gate circuits, verifying security policy compliance, etc). For example, *the person can receive information about the device on a piece of paper and can either mentally or using a pen identify the various zones and gates and verify pathways.* The general-purpose computer components are added after the fact to the abstract idea.

Reply Br. 2–3 (emphasis added).

Applying step 2 of the *Alice/Mayo* analysis, the Examiner determines claim 1 is “without significantly more” because:

The claims do not include additional elements that are sufficient to amount to significantly more than the judicial exception because the mere recitation of “computer-implemented” and “using a computer” is akin to adding the words “apply it” in conjunction with the abstract idea. Such limitations are not enough to add significantly more to the claimed method. In addition, the type of information being identified and verified does not impose meaningful limitations or render the idea less abstract. Furthermore, the step of associating an index is merely directed to an abstract idea of organizing information. Although a computer is utilized, no improvement to the computer or another technology is realized. Viewed as a whole, these additional claim elements do not provide meaningful limitations to transform the abstract idea such that the claims amount to significantly more than the abstract idea itself.

Final Act. 5.

D. *Appellants' § 101 Arguments*⁶

Appellants raise the following arguments in contending that the Examiner erred in rejecting claim 1 as being directed to patent-ineligible subject matter because the claim satisfies *step one* of the *Alice/Mayo* analysis.

In particular, Appellants contend:

[T]he *Examiner's characterization of the claims* as simply being “are directed to an abstract idea of obtaining data, data recognition and comparing data to a control data (i.e., steps of accepting, identifying, identifying and verifying)” *is an oversimplification* of the claims which does not account for any of the specific requirements of the claims. For example, claim 1 requires specif[ic] features such as

“identifying . . . a plurality of mutually independent circuit zones . . . such that no data paths pass directly between said circuit zones,” “identifying a plurality of gate circuits . . . being verified to limit unmodified transfer of data between zones by their circuitry according to a security policy” and “verifying . . . whether all data paths between the circuit zones are via the identified gate circuits according to the security policy.”

Such specific features go well beyond the Examiner's oversimplified characterization of the claim. . . . For at least the reasons set forth above, the Appellant submits that the claims do not merely recite the abstract idea of “obtaining data, data recognition and comparing data to a control data (i.e., steps of accepting, identifying, identifying and verifying)[.]” . . . [T]he claims are certainly more than a drafting effort designed to monopolize the idea of “obtaining data, data recognition and comparing data to a control data (i.e., steps of accepting, identifying, identifying and verifying),” but instead focus on a

⁶ The contentions we discuss herein are determinative as to the § 101 rejection on appeal. Therefore, we do not discuss Appellants' other § 101 contentions herein.

specific verification method that improves the technology of secure computing.

App. Br. 5–6 (emphasis and formatting added).

E. *Panel’s § 101 Analysis*

Essentially, Appellants are arguing the Examiner’s articulated reasoning for *Alice/Mayo* step 1 is so uninformative that it prevents the applicant from recognizing and seeking to counter the grounds for rejection. We agree.

To provide sufficient articulated reasoning as to why a claim is directed to an abstract idea or other patent-ineligible concept (e.g., a law of nature), an Examiner must adequately address both (a) what the character of the claim as a whole is directed to, and (b) whether that something is an abstract idea or a patent-ineligible concept. *Enfish*, 822 F.3d at 1335.

E.1.

In applying step 1 of the *Alice/Mayo* analysis, the Examiner determines:

Claims 1-8 are directed to an abstract idea of ***obtaining data, data recognition and comparing data to a control data*** (i.e., steps of accepting, identifying, identifying and verifying).

Final Act. 5 (emphases added).

We agree with Appellants that the Examiner’s analysis “is an oversimplification of the claims which does not account for any of the specific requirements of the claims.” App. Br. 5. Step 1 of the *Alice/Mayo* analysis is based on whether, considered in light of the specification, the character of the claim as a whole is directed to excluded subject matter. *Enfish*, 822 F.3d at 1335. By oversimplifying claim 1 Examiner fails to provide sufficient articulated reasoning (i.e., notice) to Appellants of the

Examiner's determination of what the character of claim 1 as a whole is directed to. Such an oversimplified claim analysis, at best, may show that the claim *involves* an abstract idea, but cannot show the character of the claim as a whole is *directed to* an abstract idea.

In claim 1, the operations are recited with greater specificity (a lower level of generality) than the operations recited in the claims at issue in *Bilski* and *Alice*. From a plain reading of claim 1, it is clear that claim 1 is not recited as the broad manipulation of data as determined by the Examiner. *See* Final Act. 5. Rather, claim 1 includes at least a circuit zone security verification process not sufficiently addressed by the Examiner, e.g., “verifying that the device complies with the security policy according to whether all data paths between the circuit zones are via the identified gate circuits according to the security policy,” as recited in claim 1.

E.2.

Appellants' arguments persuade us the Examiner fails to properly determine what the claim is directed to. The Examiner fails to provide sufficient articulated reasoning to support a conclusion that all the specific claim limitations that the Examiner labels as included in the abstract idea are actually an abstract idea. Therefore, we do not sustain the rejection under 35 U.S.C. § 101 of claims 1–8.

F. *Appellants' § 103 Arguments*⁷

Appellants raise the following argument in contending that the Examiner erred in rejecting claim 1 under 35 U.S.C. § 103(a).

The Appellant [sic] submits that none of *Kitajima*, *Keefe*, or *Karaki*, taken alone or in any proper combination, describes or suggests:

*“verifying that the security device complies with the security policy according to **whether all data paths** between the circuit zones are via the identified gate circuits according to the security policy”*

as is recited by independent claim 1.

App. Br. 9 (emphasis added).

G. *Panel's § 103 Analysis*

In rejecting claim 1 under § 103 (Final Act. 5–8), we do not find where the Examiner's analysis addresses the “all data paths” limitation of claim 1. In the Answer, the Examiner determine:

Since *Kitajima* in view of *Keefe* teaches a device where ***all data paths*** between the red and black zones are via the cryptographic unit, *Kitajima* in view of *Keefe* also teaches that the design specifications of the device include ***wherein all data paths*** between the red and black zones are via the cryptographic unit. When implementing the teachings of *Karaki* of simulating and verifying the behavior description of the circuit according to the design specifications into *Kitajima* in view of *Keefe*, the combination teaches verifying the red/black implementation of the device. Therefore, the combination of *Kitajima* in view of *Keefe* and *Karaki* teaches “verifying that the security device complies with the security policy according to whether all data paths between the circuit zones are via the identified gate circuits according to the security policy”.

⁷ The contentions we discuss are determinative as to the § 103 rejections on appeal, so we do not discuss Appellants' other § 103 contentions herein.

Ans. 4–5 (emphasis added).

In reply, the Appellants argue:

The fact of the matter is that Keefe never describes or suggests that any limitations are placed on “all data paths” between the red zone and the black zone in his system. For example, Keefe’s system may allow control data to circumvent the cryptographic circuit and pass between the red zone and the black zone. Based on Keefe’s disclosure, there is certainly nothing that would preclude such control data from traversing the red zone and the black zone.

Reply Br. 3 (emphasis omitted).

We conclude, after reviewing the Examiner’s rejection (Final Action and Answer) and consistent with Appellants’ above arguments as to claim 1, there is insufficient articulated reasoning to support the Examiner’s findings that the combination of Kitajima, Keefe, and Karaki teaches (or renders obvious) the argued “all data paths” limitation. Although Keefe teaches segregated signal paths (red/black), we do not find in the Examiner cited portion of Keefe any suggestion to extend this segregation beyond the red/black scenario as is required by Appellants’ claim 1. Nor does Examiner adequately articulate why such an extension would have been obvious to an artisan. Therefore, we conclude that there is insufficient articulated reasoning to support the Examiner’s conclusion that claim 1 is rendered obvious by Kitajima, Keefe, and Karaki based on the Examiner’s articulated reasoning.

CONCLUSIONS

(1) Appellants have established that the Examiner erred in rejecting claims 1–8 under 35 U.S.C. § 101 as being directed to patent-ineligible subject matter.

(2) Appellants have established that the Examiner erred in rejecting claims 1–8 as being unpatentable under 35 U.S.C. § 103(a).

(3) Claims 1–8 have not been shown to be unpatentable.

DECISION

The Examiner’s rejection of claims 1–8 under 35 U.S.C. § 101, as being directed to patent-ineligible subject matter is **reversed**.

The Examiner’s rejection of claims 1–8 as being unpatentable under 35 U.S.C. § 103(a) is **reversed**.

REVERSED