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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SUNDAR ARUNAPURAM

Appeal 2017-006383
Application 13/207,758
Technology Center 3600

Before JOSEPH L. DIXON, LARRY J. HUME, and
SCOTT B. HOWARD, *Administrative Patent Judges*.

DIXON, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant¹ appeals under 35 U.S.C. § 134(a) from a rejection of claims 1–6, 14–19, and 22–29. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

¹ Appellant indicates that Oracle International Corporation is the real party in interest. (App. Br. 3).

The claims are directed to vessel schedule optimization. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A non-transitory computer readable medium storing instructions that, when executed by a processor, cause the processor to perform a process, the process comprising:

creating an order bundle including a plurality of orders that have a same origin location, a same destination location, an overlapping pickup time window at the same source location, and an overlapping delivery time window at the same destination location;

creating equipment sized bundles from the order bundle based on equipment type information including container size, the creating including:

iteratively simulating packing of the plurality of orders into a plurality of containers using at least two packing methods and a multi-container mixed integer programming (MIP) solver to create a plurality of container number estimates, the plurality of containers having the same container size or a mix of container sizes, the packing methods including quick packing, single container MIP packing, enumerative packing or three dimensional load packing,

selecting an optimal number of containers of each container size, from the plurality of container number estimates, based on maximum utilization, minimum container number or minimum cost, and

dividing the order bundle into the equipment sized bundles based on the optimal number of containers of each container size;

for each of the equipment sized bundles, identifying available origin ports, destination ports, and voyages based on the origin location, destination location, pickup time, delivery time, land leg transit time from the origin location to the origin ports, land leg transit time from the destination ports to the destination location, and voyage schedule information including voyage departure times, voyage arrival times, voyage cutoff

times at the origin ports, and voyage recovery times at the destination ports; and

building land and ocean shipments for each of the equipment sized bundles based on the available origin ports, destination ports and voyages.

REJECTIONS

The Examiner made the following rejections:

Claims 1, 14, and 22 were rejected 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. (Final Act. 2).

Claims 1–6, 14–19, and 22–29 stand rejected 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. (Ans. 4)

ANALYSIS

Appellant does not petition the Examiner's extension of the patent eligibility rejection to all claims as set forth in the Examiner's Answer. (Reply Br. 2–5).

We have reviewed the Examiner's rejections in light of Appellant's arguments presented in this appeal. Arguments which Appellant could have made but did not make in the Briefs are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(iv). On the record before us, we are not persuaded the Examiner erred. We adopt as our own the findings and reasons set forth in the rejections from which the appeal is taken and in the Examiner's Answer, and provide the following for highlighting and emphasis.

Section 101 Rejection

Law Governing Patent-Eligible Subject Matter

Patent-eligible subject matter is defined in § 101 of the Patent Act, which recites: “Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.”

There are, however, three judicially created exceptions to the broad categories of patent-eligible subject matter in § 101: laws of nature, natural phenomena, and abstract ideas. *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2354 (2014); *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 70–71 (2012). Although an abstract idea, itself, is patent-ineligible, an application of the abstract idea may be patent-eligible. *Alice*, 134 S. Ct. at 2355. Thus, we must consider “the elements of each claim both individually and ‘as an ordered combination’ to determine whether the additional elements ‘transform the nature of the claim’ into a patent-eligible application.” *Id.* (citing *Mayo*, 566 U.S. 79). The claim must contain elements or a combination of elements that are “sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [abstract idea] itself.” *Id.* (citing *Mayo*, 566 U.S. 79).

The Supreme Court set forth a two-part “framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts.” *Id.* at 2355.

First, we determine whether the claims at issue are directed to one of those patent-ineligible concepts. [*Mayo*,] 132 S. Ct., at 1296–1297. If so, we then ask, “[w]hat else is there in

the claims before us?” *Id.*, at —, 132 S. Ct., at 1297. To answer that question, we consider the elements of each claim both individually and “as an ordered combination” to determine whether the additional elements “transform the nature of the claim” into a patent-eligible application. *Id.*, at —, 132 S. Ct., at 1298, 1297. We have described step two of this analysis as a 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.*, at —, 132 S. Ct., at 1294.

Id.

“The ‘abstract idea’ step of the inquiry calls upon us to look at the ‘focus of the claimed advance over the prior art’ to determine if the claim’s ‘character as a whole’ is directed to excluded subject matter.” *Affinity Labs of Tex. v. DirectTV, LLC*, 838 F.3d 1253, 1257 (Fed. Cir. 2016) (quoting *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016)); *see also Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335 (Fed. Cir. 2016). There is no definitive rule to determine what constitutes an “abstract idea.” Rather, the Federal Circuit has explained that “both [it] and the Supreme Court have found it sufficient to compare claims at issue to those claims already found to be directed to an abstract idea in previous cases.” *Enfish*, 822 F.3d at 1334; *see also Amdocs (Israel) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1294 (Fed. Cir. 2016) (explaining that, in determining whether claims are patent eligible under § 101, “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”).

Under the second step of the *Alice/Mayo* framework, we examine the claim limitations “more microscopically,” *Elec. Power*, 830 F.3d at 1354, to

determine whether they contain “additional features” sufficient to “transform the nature of the claim’ into a patent-eligible application.” *Alice*, 134 S. Ct. at 2355, 2357 (quoting *Mayo*, 566 U.S. at 78). “Mere recitation of concrete, tangible components is insufficient to confer patent eligibility to an otherwise abstract idea. Rather, the components must involve more than performance of well-understood, routine, conventional activit[ies] previously known to the industry.” *In re TLI Commc’ns LLC Patent Litig.*, 823 F.3d 607, 613 (Fed. Cir. 2016) (citing *Alice*, 134 S. Ct. at 2359).

Claims 1, 14, and 22

The Examiner maintains:

Claims 1, 14, [and] 22 are directed to the abstract idea of building land and ocean shipments for order bundles. This is a concept involving an idea of itself relating to shipping practices. The process of creating an order bundle, creating equipment sized bundles from the order bundle, selecting an optimal number of containers, dividing the order bundle into the equipment sized bundles, and selecting an origin port, a destination port, and a voyage, and building land and ocean shipments all describe the abstract idea. This idea is similar to abstract ideas by the courts, in that the limitations could “be performed in the human mind, or by a human using pen and paper” and therefore amount to “an idea of itself.”

The claim(s) does/do not include additional elements that are sufficient to amount to significantly more than the judicial exception because the additional elements are simply a generic iterative process on a computer. The claim amounts to no more than stating building land and ocean shipments by using an iterative process on a computer, and send it over a network. Taking the elements both individually and as a combination, the computer components in the claims perform purely generic computer functions. The claim as a whole does not amount to significantly more than the abstract idea itself.

With regard to the dependent claims, claims 2-6, 15-19, and 23-27 are further directed to the abstract idea relating to the concept involving an idea of itself, by merely narrowing the abstract idea, and can similarly be performed on pen and paper.

(Ans. 4).

Here, the Examiner modifies the finding of the abstract idea to be similar to encompass similar abstract ideas identified by the courts, in that the limitations could “be performed in the human mind, or by a human using pen and paper” and therefore amount to “an idea of itself.”

Alice Step 2A

Appellant argues that the claims are not directed to an abstract idea (Step 2A). (App. Br. 8). Appellant argues that “the claims do not recite ‘a disembodied concept of data sorting and storage’ because the claims do not recite collecting orders in classified form, and then separating and transmitting the orders according to their classification. *See, Cyberphone* at Page 7.” (App. Br. 10). Appellant further argues:

Instead, the claims recite, *inter alia*, creating an order bundle that includes a plurality of orders that have similar features, creating equipment sized bundles from the order bundle based on equipment type information, identifying available origin ports, destination ports, and voyages based on several factors, and building land and ocean shipments for each of the equipment sized bundles based on the available origin ports, destination ports and voyages. In other words, a *single* order bundle is created from a *plurality* of orders having similar features, then a *plurality* of equipment sized bundles are created from the *single* order bundle, after which *land and ocean shipments* are created for *each* equipment sized bundle. Accordingly, the claimed concept is clearly distinct from the alleged abstract idea, which merely sorts, separates and transmits information based on classification.

(App. Br. 10).

We find Appellant’s argument generally restates that the claim language and generally contends that the claim is distinct from prior cases. We find Appellant’s argument unavailing.

Appellant further argues:

While the final Office Action also alleges that “using an iterative algorithm to simulate orders into containers . . . is a concept similar to the basic concept of manipulating information using mathematical relationships,” (Page 4; Response to Arguments), Appellants observe that “manipulating information using mathematical relationships” clearly does not characterize the concept recited by the claims, nor is it related to “using categories to organize, store, and transmit information.”

(App. Br. 10). Additionally, Appellant observes “the final Office Action has declined to follow the methodology provided by the Court, which offered citations to textbooks and articles to establish that the identified abstract idea was, indeed, a fundamental economic practice.” (App. Br. 10). But, Appellant does not further dispute the Examiner’s finding of a fundamental economic practice. We find Appellant’s argument to be unpersuasive because we find the language of independent claim1 to be directed to an abstract idea of building land and ocean shipments for order bundles which is a concept involving an idea of itself relating to shipping practices.

Claims 28 and 29

Appellant further contends “at least dependent Claims 28 and 29 do not recite an abstract idea because the claimed invention improves the performance of the computer-related technology of database searching.” (App. Br. 11). Appellant repeats the claim limitations and specifically contend “[t]he instant Specification describes the improvement in the performance of the computer system due to the caching provided by the

voyage primary key cache and the location month cache in Paragraph 0027.”
(App. Br. 11).

We find Appellant’s argument to be unpersuasive because the language of dependent claims 28 and 29 merely recite a label for the unclaimed storage elements as “cache” memories which were well-known hardware items which are merely used for their known function to increase speed of data retrieval as their normal and well-known function. Moreover, the recitation of the hardware type does not further limit the claimed “process” recited in the language of independent claim 1 where the medium merely stores the claimed process, but the cache memory would be a hardware element which would interact with the processor, but in an unclaimed manner.

Appellant relies upon decisions in *Enfish and McRO v. Bandai Namco*, and a discussion of preemption to argue that the use of the cache memories improve the database searching and obviate the finding of an abstract idea and preemption. (App. Br. 12). We disagree with Appellant’s line of reasoning and find that the recitation of a cache memory does not limit the claimed process as discussed above and would not affect preemption of the claimed process.

Alice Step 2B

Appellant further contends the claims recite significantly more than an abstract idea (Step 2B). (App. Br. 13).

Claims 1, 14, and 22

Appellant argues:

Even assuming, *arguendo*, that the claims recite elements that comprise one or more abstract ideas, Appellants submit that *at least* creating equipment sized bundles from the order bundle

based on equipment type information including, *inter alia*, selecting an optimal number of containers of each container size, from the plurality of container number estimates, based on maximum utilization, minimum container number or minimum cost, and dividing the order bundle into the equipment sized bundles based on the optimal number of containers of each container size, taken in combination with identifying available origin ports, destination ports, and voyages based on the origin location, destination location, pickup time, delivery time, land leg transit time from the origin location to the origin ports, land leg transit time from the destination ports to the destination location, and voyage schedule information including voyage departure times, voyage arrival times, voyage cutoff times at the origin ports, and voyage recovery times at the destination ports, and building land and ocean shipments for each of the equipment sized bundles based on the available origin ports, destination ports and voyages, result in the claims as a whole amounting to significantly more than “using categories to organize, store and transmit information.”

(App. Br. 13–14).

We find the argued claim limitations merely list various parameters, but does not specifically identify how the items of information are used. Consequently, Appellant’s reliance upon the claim language does not specifically recite significantly more than the abstract idea. Moreover, we find claim 1 is recited that such a high level, that the creating the order bundle step and creating equipment sized bundles step does not specifically recite significantly more than the abstract idea.

Furthermore, Appellant contends that

Evidence that the claims as a whole amount to significantly more can be found in the final Office Action itself, which essentially admits that the pending independent claims recite a “non-conventional and non-generic arrangement of known, conventional pieces.” Specifically, the final Office Action indicates that the claims are allowable over the prior art,

meaning all of the pending claims now recite an inventive concept per Step 2B, as discussed in *Bascom*.

(App. Br. 13–14).

Appellant further contends that the Examiner’s withdrawal of the obviousness rejection and an indication of allowable subject matter over the prior art references is evidence that the claims as a whole amount to significantly more than the abstract idea. (App. Br. 14). We find Appellant’s reliance upon the lack of an obviousness rejection to be unavailing with regards to the patent eligibility requirement.

Appellant further contends:

With respect to the independent claims, Appellants respectfully submit that the limitation “creating an order bundle including a plurality of orders that have a same origin location, a same destination location, an overlapping pickup time window at the same source location, and an overlapping delivery time window at the same destination location,” when viewed in combination with the other elements of the independent claims, provide a non-conventional and non-generic arrangement of known, conventional pieces.

Additionally, the limitation “iteratively simulating packing of the plurality of orders into a plurality of containers using at least two packing methods and a multi-container mixed integer programming (MIP) solver to create a plurality of container number estimates, and selecting an optimal number of containers of each container size, from the plurality of container number estimates, based on maximum utilization, minimum container number or minimum cost,” when viewed in combination with the other elements of the independent claims, provide a non-conventional and non-generic arrangement of known, conventional pieces.

Furthermore, the limitation “for each of the equipment sized bundles, identifying available origin ports, destination ports, and voyages based on the origin location, destination location, pickup time, delivery time, land leg transit time from

the origin location to the origin ports, land leg transit time from the destination ports to the destination location, and voyage schedule information, the voyage schedule information including voyage departure times, voyage arrival times, voyage cutoff times at the origin ports, and voyage recovery times at the destination ports,” when viewed in combination with the other elements of the independent claims, provide a non-conventional and non-generic arrangement of known, conventional pieces.

Accordingly, the Examiner has failed to provide a reasonable explanation as to *why* the combination of these independent claim features do not provide nonconventional and non-generic arrangement of known, conventional pieces. Appellants observe that the Examiner’s categorization that the claim’s “additional limitations . . . such as selecting an optimal number of containers . . . , identifying available origin ports, destination ports . . . represent insignificant pre-solution activity” does not address whether all of the claim elements, taken in combination, provide a non-conventional and non-generic arrangement of known, conventional pieces.

(App. Br. 14–15).

We disagree with Appellant and find that merely repeating the claim language does not evidence that each of the claim limitations “when viewed in combination with the other elements of the independent claims, provide a non-conventional and non-generic arrangement of known, conventional pieces” because relative time frames, data types identified, and creating and selecting estimates “based on maximum utilization, minimum container number or minimum cost” do not change the underlying process recited in claim 1. Clearly, optimizing cost in shipping is a fundamental economic practice and an abstract idea in addition to being a long-standing economic practice which those parties in commerce have endeavored to carry out using a pen and paper. Consequently, Appellant has not shown error in the Examiner’s conclusion that the claims are not directed to significantly more

than the abstract idea. Therefore, we agree with the Examiner that independent claims 1, 14, and 22 are directed to patent ineligible subject matter.

Claims 6, 19, and 22

Appellant contends:

Claims 6, 19 and 27 recite “wherein the voyage cutoff time at the origin port is the time within which orders must be present or arrive at the origin port to make the voyage, and the voyage recovery time at the destination port is the time required to release an order at the destination port after the order arrives.” The claimed voyage cutoff and recovery times, when viewed in combination with the other elements of the independent claims, provide a non-conventional and non-generic arrangement of known, conventional pieces.

(App. Br. 15–16).

We find Appellant merely repeats the language of the dependent claim 6 which further details specifics with respect to a voyage cutoff time and a voyage recovery time. We find these limitations as to specific time frames used in the process of shipping does not change or further limit the underlying process which is an abstract idea nor provide significantly more than the abstract idea.

As a result, Appellant’s argument does not show error in the Examiner’s conclusion that the claims are not directed to significantly more than the abstract idea. Therefore, we agree with the Examiner that dependent claims 6, 19, and 22 are directed to patent ineligible subject matter.

Claim 29

Appellant further contends that dependent claim 29 recites patent eligible subject matter because “Claim 29 recites a voyage primary key

cache and a location month cache. These elements, when viewed in combination with the other elements of the independent claims, provide a non-conventional and non-generic arrangement of known, conventional pieces.” (App. Br. 16). Appellant further contends that similar arguments are applicable to the remaining dependent claims. (App. Br. 16). We disagree with Appellant, as discussed above.

Reply Brief

Appellant contends that “[f]undamentally, the Examiner has failed to properly explain *how* the following claim feature could be performed without the use of a computer, i.e., in the human mind or using pen and paper.” (Reply Br. 2). Appellant recites the claim limitations “creating equipment sized bundles...;” “iteratively simulating packing...;” “selecting an optimal number of containers...;” and “dividing the order bundle” We note that Appellant has not identified why the limitations cannot be performed using pen and paper. For example, depending upon the amount and complexity of the goods being shipped, the shipping may be as easy as putting one automobile in one container because that is all that fits and of the remainder of the claim merely goes to the determining arrival times and cost to optimize the shipping. The claim sets forth no limitations on the amount of goods or containers or limitations as to the packing or container estimation. Similarly, the Specification does not further limit these methodologies beyond merely reciting/listing them in the same broad context. Consequently, merely reiterating the limitations without substantive argument does not evidence that humans could not carry out the method in their mind or using pen and paper.

Appellant contends:

[T]he specification teaches that, in one embodiment, this iterative simulation is necessarily accomplished by a “container optimization module 213” that is executed by processor 22 of system 10. Appellant observes that the specification fails to teach or suggest that the functionality performed by container optimization module 213 “could be performed in the human mind, or by a human using pen and paper.”

(Reply Br. 2–3).

Appellant further contends “the Examiner is not permitted to create an abstract idea out of thin air and simply label it as “an idea of itself.” (Reply Br. 4). Appellant further argues that “the Examiner has gone beyond the concepts that have been identified as abstract ideas by the courts because the Examiner has failed to cite a *single* court decision that supports the identification of ‘building land and ocean shipments for order bundles’ as an abstract idea.” (Reply Br. 4).

We find the last step of building the shipment orders for bundles to be similar to a limitation “apply it.” We further note that the Specification provides no details as to how the program performs the “building” the land and ocean shipments beyond merely repeating the same language found in the claims. (*See* ¶¶ 4, 19, 25, 29, and 38).

We find the claimed invention to be directed to a combination of abstract ideas relating to 1) packing and 2) shipping and tracking of goods. We find the following cases to be similar to portions of the abstract idea regarding the shipping and tracking of containers:

Wireless Media Innovations, LLC v. Maher Terminals, LLC, 636 Fed. App’x 1014 (Fed. Cir. 2016) (Mem), *aff’g.*, 100 F. Supp.3d 405 (D. N.J. 2015). The District Court found the abstract idea to be monitoring

locations, movement, and load status of shipping containers within a container-receiving yard, and storing, reporting and communicating this information in various forms through generic computer functions

In *GT Nexus, Inc. v. Intrtra, Inc.*, 2015 WL 6747142 (N.D. Cal. November 5, 2015), the District Court identified the abstract idea as “the patents-in-suit describe a third-party portal that facilitates the process of booking and tracking shipping containers across multiple carriers. It follows from prior precedent that the patents-in-suit embrace an abstract idea— ‘intermediated booking and tracing of shipping containers.’”

While we do not find a specific prior court case regarding optimizing packing of a container/box, we do find that visualization and packing of a receptacle of goods has been well-known, routine , and conventional for as long as there have been containers/boxes and modes of delivery thereof. We note that the language of independent claim 1 does not set forth any specific limitations beyond setting forth an iterative process with no specific details of the methods of packing or estimation. As a result, we find the broad limitations do not take the claimed invention beyond the abstract idea and claims significantly more than the abstract idea alone.

Therefore, we determine Appellant’s arguments in the Reply Brief do not show error in the Examiner’s conclusion of a lack of patent eligible subject matter of independent claim 1 and independent claims 14 and 22, not argued separately.

Additionally, Appellant does not set forth further separate arguments for patentability of any of the dependent claims. Therefore, they will fall with their parent independent claim.

CONCLUSION

The Examiner did not err in rejecting claims 1–6, 14–19, and 22–29 based upon a lack of patent eligible subject matter under 35 U.S.C. § 101.

DECISION

For the above reasons, we sustain the Examiner’s rejection of claims 1–6, 14–19, and 22–29 based upon a lack of patent eligible subject matter under 35 U.S.C. § 101.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv). *See* 37 C.F.R. § 4150(f).

AFFIRMED