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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte OTMAN A. BASIR and WILLIAM BEN MINERS

Appeal 2020-001191
Application 14/556,977
Technology Center 3600

Before ROBERT E. NAPPI, ST. JOHN COURTENAY III, and
STACY B. MARGOLIES, *Administrative Patent Judges*.

COURTENAY, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant¹ appeals under 35 U.S.C. § 134(a) from a Final rejection of claims 1–11 and 15. Claims 12–14 have been withdrawn. We have jurisdiction over the pending claims under 35 U.S.C. § 6(b).

We affirm.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42(a). According to Appellant, the real party in interest is IMS Solutions, Inc. See Appeal Br. 1.

STATEMENT OF THE CASE²

Introduction

Appellant’s claimed invention relates generally to a “precision usage-based transportation infrastructure charging service[, which] includes a dynamic road and infrastructure usage engine that can fairly assess road usage based on any combination of mileage, time of day, vehicle mass, location, road class, defined zones and other relevant parameters.” Abstract.

Independent Claim 1

1. A system for assessing transportation infrastructure usage comprising:

an on-board unit installed on a vehicle, the on-board unit configured to obtain one or more parameters describing vehicle usage and location; and

a server receiving the one or more parameters from the on-board unit to assess transportation infrastructure usage by the vehicle, wherein transportation infrastructure usage by the vehicle is validated using aggregate vehicle movement information.

Claims Appendix, Appeal Br. 2, as filed in corrected form on Mar. 14, 2019, in response to a Notification of Non-Compliant Appeal Brief.

² We herein refer to the Final Office Action, mailed June 13, 2018 (“Final Act.”); Appeal Brief, filed March 14, 2019 (“Appeal Br.”); the Examiner’s Answer, mailed October 4, 2019 (“Ans.”), and the Reply Brief, filed November 30, 2019 (“Reply Br.”).

Evidence

The prior art relied upon by the Examiner as evidence is:

Name	Reference	Date
Grush	US 2004/0181495 A1	Sept. 16, 2004
Hamilton, II et al. ("Hamilton")	US 2010/0156670 A1	June 24, 2010
Davidson	US 2013/0031029 A1	Jan. 31, 2013
McCoy et al. ("McCoy")	US 2014/0074566 A1	Mar. 13, 2014
Wilson et al. ("Wilson")	US 2016/0180604 A1	June 23, 2016

Rejections³

Rej	Claims Rejected	35 U.S.C. §	Reference(s)/Basis
A	1-11, 15	101	Eligibility
B	1, 3-5, 7, 15	103	Davidson, Grush
C	2	103	Davidson, Grush, McCoy
D	6, 8	103	Davidson, Grush, Wilson
E	9, 11	103	Davidson, Grush, McCoy
F	10	103	Davidson, Grush, McCoy, Hamilton

³ The Examiner withdrew the rejection under 35 U.S.C. § 112(b). *See* Final Act. 2. Therefore, this rejection is not before us on appeal.

USPTO § 101 Guidance

The U.S. Patent and Trademark Office (USPTO) has published revised guidance on the application of 35 U.S.C. § 101. *See* USPTO January 7, 2019 Memorandum, 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (“January 2019 Memorandum”).⁴ Under that guidance, we first look 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) (*see* January 2019 Memorandum, *Step 2A – Prong One*); and
- (2) any additional elements that integrate the judicial exception into a practical application (*see* MPEP § 2106.05(a)–(c), (e)–(h)) (*see* January 2019 Memorandum, *Step 2A – Prong Two*).⁵

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, do we then look to whether the claim:

⁴ The Office issued a further memorandum on October 17, 2019 (the “October 2019 Memorandum”) clarifying guidance of the January 2019 Memorandum in response to received public comments. *See* https://www.uspto.gov/sites/default/files/documents/peg_oct_2019_update.pdf. Moreover, “[a]ll USPTO personnel are, as a matter of internal agency management, expected to follow the guidance.” January 2019 Memorandum at 51; *see also* October 2019 Memorandum at 1.

⁵ This evaluation is performed by (a) identifying whether there are any additional elements recited in the claim beyond the judicial exception and (b) evaluating those additional elements individually and in combination to determine whether the claim as a whole integrates the exception into a practical application. *See* January 2019 Memorandum — Section III(A)(2).

- (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 January 2019 Memorandum, *Step 2B*.

Because there is no single definition of an “abstract idea” under *Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208 (2014) Step 1, the January 2019 Memorandum synthesizes, for purposes of clarity, predictability, and consistency, key concepts identified by the courts as abstract ideas to explain that the “abstract idea” exception includes the following three groupings:

1. Mathematical concepts—mathematical relationships, mathematical formulas or equations, mathematical calculations;
2. Mental processes—concepts performed in the human mind (including an observation, evaluation, judgment, opinion); and
3. Certain methods of organizing human activity—fundamental economic principles or practices (including hedging, insurance, mitigating risk); commercial or legal interactions (including agreements in the form of contracts; legal obligations; advertising, marketing or sales activities or behaviors; business relations); managing personal behavior or relationships or interactions between people (including social activities, teaching, and following rules or instructions).

See January 2019 Memorandum, 84 Fed. Reg. at 52.

According to the January 2019 Memorandum, “[c]laims that do not recite [subject] matter that falls within these enumerated groupings of abstract ideas should not be treated as reciting abstract ideas,” except in rare circumstances. Even if the claims recite any one of these three groupings of

abstract ideas, these claims are still not “directed to” a judicial exception (abstract idea), and thus are patent eligible, if “the claim as a whole integrates the recited judicial exception into a practical application of that exception.” *See* January 2019 Memorandum, 84 Fed. Reg. at 53.

ANALYSIS

We have considered all of Appellant’s arguments and any evidence presented. We highlight and address specific findings and arguments for emphasis in our analysis below.⁶

Rejection A of Claims 1–11 and 15 under § 101

Independent Claim 1

1. A system for *assessing* transportation infrastructure usage comprising:

an on-board unit installed on a vehicle, the on-board unit configured to obtain one or more parameters describing vehicle usage and location; and

a server receiving the one or more parameters from the on-board unit to *assess* transportation infrastructure usage by the vehicle, wherein transportation infrastructure usage by the vehicle is *validated* using aggregate vehicle movement information.

Claims Appendix 2 (emphases added).

⁶ Throughout this opinion, we give the claim limitations the broadest reasonable interpretation (BRI) consistent with the Specification. *See In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997).

Step 2A, Prong One

Under the January 2019 Memorandum, we begin our analysis at *Step 2A, Prong One*, by first considering whether the claims recite any judicial exceptions, including certain groupings of abstract ideas, in particular: (a) mathematical concepts, (b) certain methods of organizing human activity, and (c) mental processes.

In the Final Office Action, the Examiner concludes that independent system claims 1 and 15 recite an abstract idea of “determining a toll for road usage” that is considered to be a method of organizing human activity, including a business practice or an idea of itself. Final Act. 6. The Examiner concludes that “[d]etermining a toll for road usage’ is also an idea that can be performed by a human using a pen and paper (‘an idea of itself’).” *Id.* In the Answer, the Examiner further explains that “the main idea of the claimed invention is evaluation of the information collected from a vehicle in order to determine infrastructure usage by the vehicle.” Ans. 4. The Examiner finds that “[t]his evaluation could be performed mentally by a human provided with the collected information.” *Id.* at 4–5.

Appellant notes that “[s]ince the rejection was sent, the USPTO has issued the 2019 Revised Patent Subject Matter Eligibility Guidance.” Appeal Br. 2. Appellant adds that, “[a]ccording to the 2019 Guidance, except in ‘rare circumstance,’ ‘abstract ideas’ are limited to: (a) mathematical concepts; (b) certain methods of organizing human activity; and (c) mental processes.” Appeal Br. 2–3. Appellant argues that claims 1 and 15 do not recite any of these categories of abstract ideas. *Id.* at 2–3.

With respect to the “mental processes” category, Appellant urges that “a human could not validate the transportation infrastructure usage by the

vehicle using aggregate vehicle movement information, as required by claim 1[,] or at least not practically.” Appeal Br. 3. Appellant further argues in the Reply Brief that “the Examiner does not rebut Appellant’s argument that claims 1 and 15 could not be done in the human mind.” Reply Br. 1.

With respect to the Examiner’s conclusion in the Final Rejection that claims 1 and 15 are directed to a certain method of organizing human activity, we do not agree. The Examiner’s conclusion is based upon language that does not appear in either claim — “determining a toll for road usage.” Final Act. 6.

We also do not agree with the Examiner’s finding in the Final Office Action that claims 1 and 15 recite “an idea that can be performed by a human using a pen and paper,” to the extent it is premised upon language that does not appear in either claim — “determining a toll for road usage.” *See* Final Act. 6.

To the extent the Examiner is referring to “determin[ing] infrastructure usage by the vehicle” as the mental process (*see* Ans. 3–4), and to the extent the Examiner is specifically referring to the “assess[ing]” and “validat[ing]” aspects of the claims as mental steps, we agree with the Examiner that the assessing and validating functions can be performed practically in the human mind.

Appellant’s arguments that the validating cannot be practically performed in the mind are not persuasive, because claims 1 and 15 are not limited to, say, a large set of obtained data that is validated. *See* Ans. 4 (“[The] Examiner respectfully disagrees that any ‘amount of data’ present *in the claims* renders any *claimed* evaluation of data to be unable to be practically performed in the human mind.”) (emphases in original). Thus,

Appellant has not persuaded us of error in the Examiner’s finding that claims 1 and 15 recite an abstract idea.

Step 2A, Prong Two

The Examiner finds that “[t]he limitations are instructions to implement the abstract idea on a computer and require no more than a generic computer to perform generic computer functions” Final Act. 2–3. The Examiner adds that the claimed “on-board unit” “is generally recited and can merely be general purpose computers that perform basic functions.” *Id.* at 4. In the Answer, the Examiner further explains that the claimed “on-board unit” is a generic machine and the claimed “server” “merely implements the abstract idea on a computer.” Ans. 5–6.

Appellant argues that, “even if the claims recite an abstract idea, which the Examiner says is ‘the concept of determining a toll for a road usage,’ the claims integrate that idea into a practical application because determining a toll for road usage is a practical application itself.” Appeal Br. 5. Appellant also argues that the claims recite “particular machines and a particular technical environment” because “things occur in a server based upon, not only information from the vehicle, but from other vehicles.” *Id.* Appellant acknowledges that “tolls for road usage have been known for a long time.” *Id.* at 6. However, Appellant urges that “the claims provide several *improvements*, such as validating the usage by the vehicles based upon *other* vehicle usage.” *Id.* (emphases added).

We agree with Appellant that the Examiner has not specifically addressed Appellant’s argument (Appeal Br. 5, 6) that validating the usage by a vehicle based upon *other* vehicle usage is an improvement that

integrates the judicial exception into a practical application. We understand Appellant to be referring to the claim phrase “using aggregate vehicle movement information” as the *other* vehicle usage. The Examiner does not specifically address Appellant’s argument that the server improves technology by validating transportation infrastructure usage by using aggregate vehicle movement information. We thus determine that Appellant has shown an error in the Examiner’s Section 101 rejection of independent claims 1 and 15.

Dependent Claims

The Examiner finds that the dependent claims “further narrow the identified abstract idea of road tolling.” Final Act. 8. The Examiner adds that “the limitations of claims 2 and 4–7 define how the toll is determined for a vehicle with respect to the road usage[,] which further defines the abstract idea.” *Id.*

As noted above, Appellant contends that independent claim 1 does not recite a mental process because a human could not practically validate the transportation infrastructure usage by the vehicle using aggregate vehicle movement information, as required by claim 1. Appeal Br. 3. With respect to the dependent claims, Appellant argues: “Many of the dependent claims would be even more difficult (or even less practical), but the Examiner has not analyzed these claims. The Examine[r] just treats the dependent claims with a broad brush” *Id.* Appellant adds that “[e]ven if were possible for a human to perform claim 1 (it is not), it would be completely impractical for a human to perform claim 2 because of the amount of data.” *Id.* at 4.

In the Answer, the Examiner “disagrees that any ‘amount of data’ present *in the claims* renders any *claimed* evaluation of data unable to be practically performed in the human mind.” Ans. 4 (emphases in original).

We agree with the Examiner that the dependent claims are not limited to a large amount of data and therefore recite mental processes that can be practically performed in the human mind. *See* Ans. 4–5. We also note that only some of the dependent claims involve the concept of road tolling, as asserted by the Examiner. In particular, dependent claims 5, 6, and 8–10 recite “usage fees,” which may be considered a fundamental economic practice. Thus, Appellant has not shown that the Examiner erred in determining that the claims recite an abstract idea.

Nevertheless, as with the independent claims, the Examiner does not address Appellant’s argument that the dependent claims integrate any recited abstract idea into a practical application by improving the technology, specifically by validating transportation infrastructure usage using aggregate vehicle movement information. *See* Appeal Br. 5, 6; Ans. 5–6. We thus determine that Appellant has shown an error in the Examiner’s Section 101 rejection of dependent claims 2–11.

Conclusion regarding Rejection A

Based upon our review of the record, we find the Examiner has not fully developed the record to establish that the claims do not integrate the abstract idea into a practical application. For this reason, we are constrained on this record to reverse the Examiner’s Rejection A under 35 U.S.C. § 101 of all claims 1–11 and 15 on appeal.

Rejection B of Claims 1, 3–5, 7, and 15 under § 103

Appellant argues that the Examiner’s Rejection B of independent claims 1 and 15 under 35 U.S.C. § 103, as being obvious over the combination of Davidson and Grush, is in error. App. Br. 6–7. In particular, Appellant urges that “the invention of Grush could not be used in the Davidson system.” Appeal Br. 7.

In support, Appellant notes that “Davidson discloses a system for determining road usage taxes for a fleet of vehicles [and] Grush discloses that one can determine which lane each vehicle is using by comparing the relative positions of the vehicles, rather than just the absolute positions of the vehicles.” *Id.* at 6. Appellant contends that “Davidson could not be modified to include this feature of Grush because a fleet would rarely (if ever) have enough vehicles on the road in the same place at the same time regularly to determine which vehicle is in which lane based upon their relative locations.” *Id.* Appellant argues that “accurate specific lane information would not be relevant to the Davidson system for determining road usage taxes for a fleet of vehicles.” *Id.* Appellant urges that specific lanes are not relevant to the geofences in Davidson because Davidson (paragraph 4) determines that taxes are based upon the amount of fuel consumed within certain geofences. *Id.*

The Examiner finds that Davidson teaches the limitations of claim 1, except “wherein transportation infrastructure usage by the vehicle is validated using aggregate vehicle movement information.” Final Act. 9. The Examiner looks to Grush’s paragraph 77 and Figure 5 to provide the “validating” teaching found missing from Davidson. *Id.* The Examiner explains that paragraph 77 and Figure 5 of Grush “show that the system

collects information from a group of vehicles that are in close proximity to the targeted vehicle in order to verify the usage information.” *Id.* The Examiner finds an artisan would have been motivated to modify Davidson with Grush’s validation using aggregate vehicle movement information (paragraph 77, Figure 5), because doing so would correct any bias or inaccuracy in the collection of data. *Id.* The Examiner makes similar findings for claim 15. *Id.* at 11–12.

Turning to the evidence, Grush discloses the following:

[Figure] 5 depicts an exaggerated and artificially tidy (random variation is not depicted) illustration of a situation in which cars 104 traveling in an HOT lane produce journey logs 120 whose absolute positions are biased but whose relative positions are correct. *Using data from a group (mob) of vehicles 122 that are concurrent and co-located*, statistical techniques allow categorization of cars 104 into lanes of travel and *correction for any bias*. This is intended to be used only in cases of ambiguity or *requirement of proof of charges*.

Grush ¶ 77 (emphases added). Thus, Grush discloses validating vehicle transportation infrastructure usage information (e.g., usage of a HOT lane) based on aggregate vehicle movement information.

Both Davidson and Grush are from the same field of endeavor as Appellant’s invention, i.e., tracking vehicle locations and use. *See* Davidson, Abstract, ¶¶ 2, 33, 35; Grush, Abstract, Fig. 5, ¶¶ 66, 77. We agree with the Examiner that one of ordinary skill in the art would have understood that Davidson’s teachings of obtaining vehicle usage and location information and assessing transportation infrastructure usage for one or more fleet vehicles (or other vehicles) (e.g., Davidson ¶ 72) would benefit from an approach that employs aggregate nearby vehicle usage to

provide more accurate road usage reporting that would correct for any bias, as taught by Grush, at paragraph 77.

We find that improved accuracy would generally be relevant to the determination of usage taxes in Davidson (paragraph 2), and to collecting more accurate road usage information in Grush. We emphasize that Grush, at paragraph 66, specifically describes: “The key issues that this invention addresses are cost, *accuracy*, reliability, flexibility and multiple concurrent purposes.” (emphasis added). We note the Examiner cites to paragraphs 66, 75, and 77 of Grush to provide additional support for the finding of motivation to combine. *See* Ans. 9.

We agree with the Examiner that Appellant has not persuasively addressed the reasoning for combining Davidson with Grush: “to gather *accurate* measurements and corrects any bias.” Ans. 9 (emphasis added).

As further explained by the Examiner in the Answer:

Contrary to appellant’s arguments, Davidson’s teaching may be modified to use the position measurements of the group of vehicles around the monitored vehicle to determine a *more accurate* measurement of the location of the monitored vehicle on the road taught by [Grush] since Davidson monitors vehicles in a fleet of vehicles individually. The location measurements of the vehicle inside a geofence taught by Davidson may be *improved* using [Grush]’s teaching as illustrated above. One of . . . ordinary skill in the art would be motivated to do so to gather *accurate measurements and corrects any bias* ([Grush] para. 75, 77 and 66).

Ans. 9 (emphases added).

To the extent that Appellant may be implying that Davidson or Grush “teaches away” from the claimed invention (Appeal Br. 4; Reply Br. 4), we note that the “mere disclosure of alternative designs does not teach away.” *In re Mouttet*, 686 F.3d 1322, 1334 (Fed. Cir. 2012). A “teaching away”

requires a reference to actually criticize, discredit, or otherwise discourage the claimed solution. *See In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). Here, Appellant has not persuasively shown that Davidson or Grush criticize, discredit, or otherwise discourage the claimed solution.

Appellant does not point to any evidence of record that shows combining the teachings of Davidson and Grush in the manner found by the Examiner (Final Act. 9; Ans. 9) would have been “uniquely challenging or difficult for one of ordinary skill in the art” or would have “represented an unobvious step over the prior art.” *Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007) (citing *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007)).

Therefore, based upon a preponderance of the evidence, we are not persuaded of error regarding the Examiner’s underlying factual findings and ultimate legal conclusion of obviousness regarding the Examiner’s Rejection B of independent claims 1 and 15.

Accordingly, we sustain the Examiner’s obviousness Rejection B of claims 1 and 15, and claims 3–5 and 7, which were not argued separately. *See* 37 C.F.R. § 41.37(c)(1)(iv).

Rejections C, D, E, and F under 35 U.S.C. § 103

The remaining pending dependent claims rejected under Rejections C, D, E, and F were not argued separately. Arguments not made are considered waived. *See* 37 C.F.R. § 41.37(c)(1)(iv). Accordingly, for the reasons explained above with respect to Rejection B, we sustain the Examiner’s obviousness rejections C, D, E, and F of the remaining dependent claims on appeal.

CONCLUSIONS

We conclude the Examiner has not shown that claims 1–11 and 15, rejected under 35 U.S.C. § 101, are directed to patent-ineligible subject matter.

We also conclude that the Examiner did not err in rejecting claims 1–11 and 15 as obvious under 35 U.S.C. § 103, over the cited combinations of prior art.

DECISION SUMMARY

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–11, 15	101	Eligibility		1–11, 15
1, 3–5, 7, 15	103	Davidson, Grush	1, 3–5, 7, 15	
2	103	Davidson, Grush, McCoy	2	
6, 8	103	Davidson, Grush, Wilson	6, 8	
9, 11	103	Davidson, Grush, McCoy	9, 11	
10	103	Davidson, Grush, McCoy, Hamilton	10	
Overall Outcome			1–11, 15	

FINALITY AND RESPONSE

Because we have affirmed at least one ground of rejection with respect to each claim on appeal, the Examiner’s decision is affirmed. *See* 37 C.F.R. § 41.50(a)(1).

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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. § 41.50(f).

AFFIRMED