UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/341,069	07/25/2014	Jason Meyer	83454384; 67186-105 PUS1	2475

46442 7590 12/26/2019

CARLSON, GASKEY & OLDS, P.C./Ford
400 W. MAPLE RD.
SUITE 350
BIRMINGHAM, MI 48009

EXAMINER	
CASTRO, PAUL A	

ART UNIT	PAPER NUMBER
3662	

NOTIFICATION DATE	DELIVERY MODE
12/26/2019	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

cgolaw@yahoo.com
ptodocket@cgolaw.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JASON MEYER, RYAN ABRAHAM MCGEE, FLING FINN TSENG, and JOHANNES GEIR KRISTINSSON

Appeal 2019-001559
Application 14/341,069
Technology Center 3600

Before EDWARD A. BROWN, WILLIAM A. CAPP, and JEREMY M. PLENZLER, *Administrative Patent Judges.*

PLENZLER, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's decision to reject claims 1–20. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART and enter a NEW GROUND OF REJECTION in accordance with 37 C.F.R. § 41.50(b).

---

[1] We use the word Appellant to refer to "applicant" as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as Ford Global Technologies, LLC, which is owned by Ford Motor Company. Appeal Br. 1.

CLAIMED SUBJECT MATTER

The claims are directed to predicting vehicle energy consumption. Claim 1, reproduced below, is illustrative of the claimed subject matter:

> 1. A method of crowd-sourcing energy consumption data for vehicles, comprising:
>
> at a server remote from a vehicle, selecting a route for the vehicle in response to a predicted energy consumption that is continually updated based on a difference between a previous predicted energy consumption and a previous actual base energy consumption;
>
> providing the route to the vehicle using a built-in communication link; and
>
> routing the vehicle along the route.

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Hiestermann	US 2011/0307166 A1	Dec. 15, 2011
Sellschopp	US 2014/0214267 A1	July 31, 2014

REJECTIONS

Claims 1–8 and 20 are rejected under 35 U.S.C. § 112(b) as being indefinite.

Claim 1–16 and 20 are rejected under 35 U.S.C. § 103 as being unpatentable over Hiestermann.

Claim 17–19 are rejected under 35 U.S.C. § 103 as being unpatentable over Hiestermann and Sellschopp.

OPINION

Indefiniteness

The Examiner rejects claim 1 as indefinite "for omitting essential steps, such omission amounting to a gap between the steps." Final Act. 7 (citing MPEP § 2172.01). The Examiner explains that "[t]he omitted steps are: for a method of crowd-sourcing energy consumption data for vehicles however the claims only recite using a server remote from a vehicle, selecting a route for the vehicle, providing the route to the vehicle and routing the vehicle." *Id.* The Examiner further explains that "[t]here is no actual mention of using crowd-sourced information from vehicles, or even using crowd-sourced information or even a plural amount of vehicles," and that "[t]he claim should tie some method that actually involves crowd-sourced data from vehicles into the method." *Id.*

Appellant responds that "[t]he essential matter requirement relates to matter 'defined by applicant(s) in the specification' as essential," and "the preamble recit[ing] 'crowd-sourcing energy consumption data' does not mean that the Examiner's suggested features are 'defined' by the Appellant as 'essential' in the specification." Appeal Br. 3 (citing MPEP § 2172.01). Appellant further explains that "the present application indicates a crowd consists of one or more vehicles, e.g., in some examples, the crowd is a single vehicle . . . and therefore, a crowd of more than one vehicle is not defined as an 'essential' feature of the present application, as the Examiner seems to suggest." *Id.* at 4.

The Examiner addresses Appellant's contentions by asserting that "'crowd-sourcing' which is ultimately a concept on its own and would be understood by one of ordinary skill in the art to require information

gathering from multiple sources (crowdsourcing)," and "[t]he Appellant has not explicitly redefined 'crowd-sourcing.'" Ans. 7.

Appellant has the better position because the Examiner's rejection has at least two shortcomings. First, regardless of whether "crowd-sourcing" may typically require more than one source, as Appellant notes, the Specification specifically contemplates crowd-sourcing with a single source. Spec. ¶ 29. Second, the preamble, which recites the claim language at issue, does not limit the claim.

"In general, a preamble limits the invention if it recites essential structure or steps, or if it is 'necessary to give life, meaning, and vitality' to the claim." *Catalina Mktg. Int'l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002). A preamble, however, "generally is not limiting when the claim body describes a structurally complete invention such that deletion of the preamble phrase does not affect the structure or steps of the claimed invention." *Id.* at 809. One guidepost for determining the effect of a preamble on claim scope is whether the preamble language provides antecedent basis for any limitation in the body of the claim. *Id.* at 808. A preamble describing the purpose or intended use of an invention generally does not limit the claim. *Id.* at 809. In claim 1, "crowd-sourcing energy consumption data for vehicles" simply describes "the purpose or intended use" of the method, and does not affect the steps of the method. The preamble does not provide antecedent basis for any claim term, and understanding the steps of the claim does not require reliance on the preamble.

For at least these reasons, we do not sustain the Examiner's decision to reject claims 1–8 and 20 under 35 U.S.C. § 112(b).

Obviousness – Claims 1–16

Independent claims 1 and 9 each recite "selecting a route for the vehicle in response to a predicted energy consumption that is continually updated based on a difference between a previous predicted energy consumption and a previous actual base energy consumption." The Examiner finds that Hiestermann teaches "selecting a route for the vehicle in response to a predicted energy consumption that is continually updated . . . based on a difference between a previous predicted energy consumption (Optimal Longitudinal Speed Profile OLSP) and a previous actual base energy consumption (RRDSL . . .)." Final Act. 8 (citing Hiestermann ¶¶ 48, 51, Figs. 10 and 11). The Examiner acknowledges that "Hiester[mann] does not use the terms energy consumption," but "refers to the system as using Optimal longitudinal speed profiles." *Id.* at 9. The Examiner finds that "[i]t would be understood . . . that Hiester[mann]'s OLSP are a reference to energy consumption as minimizing accelerations and maintaining ideal speeds are directly correlated with energy efficiency of a vehicle." *Id.* The Examiner reasons that "[i]t would be obvious . . . to use Hiester[mann]'s OLSPs as a reference to determine energy consumption efficiency for vehicles." *Id* (citing Hiestermann ¶ 17).

Appellant responds that because "the speed profile of Heistermann fails to teach energy consumption, the rejection should be reversed," but "[e]ven if Heistermann's OLSP represents energy consumption, claims 1 and 9 recite 'selecting a route for the vehicle in response to a predicted energy consumption that is continually updated *based on a difference between a previous predicted energy consumption and a previous actual base energy consumption*." Appeal Br. 4. Appellant contends that "even if RRDSL did represent energy consumption, Hiestermann never discloses

routing a vehicle based on a difference between OLSP and RRDSL." *Id.* at 6.

In the Answer, the Examiner explains that "[t]he claim language states 'selecting . . . in response to a predicted energy consumption that is continually updated based on a difference between a previous predicted energy consumption and a previous actual base energy consumption[,]'" which "is vague" and "considering the claim neither details further to how these limitations relate further, nor does it specify what 'actual base energy consumption' refers to (is energy base consumption different from actual energy consumption), it is difficult to map explicit details to that claim." Ans. 9–10. The Examiner may be correct. Nevertheless, we know that the claim at least requires that the "predicted energy consumption" is "based on a *difference* between a previous predicted energy consumption and a previous actual base energy consumption." That is, there must be some calculated *difference* between energy consumption values that is used to route the vehicle.

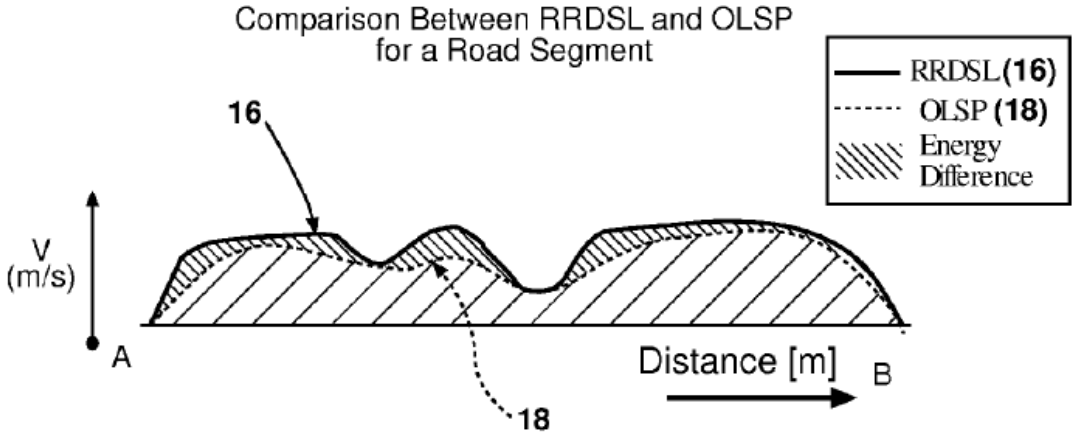
Hiestermann explains that "[a] Raw Road Design Speed Limit (RRDSL) may be derived from . . . collected probe data . . . and then statistically analyzed to derive the speed at every point along . . . the road segment." Hiestermann ¶ 37. "Once the RRDSL 16 has been determined, . . . a driver operating with a navigation-capable device is able to continually compare their current speed . . . with the undisturbed speeds represented by the RRDSL 16 for the particular road segment." *Id.* ¶ 45. This allows "the driver [to] alter their driving speed to match or more closely mimic the target speeds along the road segment on which the vehicle is currently traveling" so that "the driver can . . . optimize their use of fuel . . . because the free flow conditions (upon with the RRDSL 16 was derived) represent the closest

to steady-speed operation taking into account the practical considerations of road geometry and other real-world factors that influence driving speeds." *Id.* That is, the RRDSL provides information to the driver regarding a target speed for optimal fuel efficiency along a given road segment.

Hiestermann further explains that "[t]o improve energy efficiency amid sharp changes in the target speed, an Optimal Longitudinal Speed Profile (OLSP) 18 may be introduced," which "reflects driving without too many accelerations/decelerations and thus represents minimal energy losses." Hiestermann ¶ 47. "The OLSP 18, like the RRDSL 16, is also a function of the longitudinal profile, based on position along a road section and of the travel-based direction." *Id.* ¶ 49. "Stated simply, the OLSP 18 is a continuous or semi-continuous averaged speed distribution of vehicles driving along the same road and direction, considering the RRDSL 16 . . . and minimizing the number of accelerations/decelerations but keeping close to the RRDSL 16." *Id.*

Hiestermann illustrates energy benefits of the OLSP relative to the RRDSL in Figure 10, reproduced below.

FIG. 10



Hiestermann's Figure 10 illustrates a "speed diagram for a road segment . . . showing both the RRDSL and OLSP with energy savings represented by the OLSP being shown as an energy difference between the curves." Hiestermann ¶ 30. Hiestermann explains that "[t]he energy saved by observing the OLSP 18 rather than the RRDSL 16 is proportional to the available energy conservation" and, therefore, "[i]ndividual vehicles driving according to the OLSP 18 will be using less fuel." *Id.* ¶ 51.

The Examiner has not established sufficiently that the energy difference between Hiestermann's "OLSP" and "RRDSL" (illustrated in Figure 10) is used to route the vehicle. *See* Final Act. 8; Ans. 10. Although Hiestermann determines an energy difference between the OLSP and RRDSL, as seen above in Figure 10, the portions of Hiestermann identified by the Examiner (¶¶ 48, 51) do not discuss using that energy *difference* to select a route, as required by the claims. The cited portions of Hiestermann do not even discuss using the difference between velocities illustrated in Figure 10 to select a route for the vehicle.

For at least these reasons, we do not sustain the Examiner's decision to reject claims 1–16.

Obviousness – Claims 17–19

Claim 17 recites:

> A system for crowd-sourcing information to predict vehicle energy consumption, comprising:
>
> a server in communication with a crowd of vehicles; and
>
> a database on the server, wherein at least one of the server and database collect data corresponding to vehicle energy consumption from the crowd of vehicles, update the data in the database, and provide data corresponding to vehicle energy consumption to the crowd of vehicles.

The Examiner finds that Hiestermann teaches the features recited in claim 17, but "is not explicit to providing the data to the crowd of vehicles." Final Act. 12–13. The Examiner cites Sellschopp as teaching this feature and proposes modifying Hiestermann's teachings accordingly. *Id.* at 13.

Appellant disputes the Examiner's rejection only with respect to the type of data collected and disseminated. *See* Appeal Br. 8–9. Appellant's contentions do not apprise us of error because the particular type of data collected and disseminated does not impart patentability into the claim.

Our reviewing court has held that nonfunctional descriptive material cannot lend patentability to an invention that would have otherwise been anticipated by the prior art. *In re Ngai*, 367 F.3d 1336, 1339 (Fed. Cir. 2004). *Cf. In re Gulack*, 703 F.2d 1381, 1385 (Fed. Cir. 1983) (noting that when descriptive material is not functionally related to the substrate, the descriptive material will not distinguish the invention from the prior art in terms of patentability). *King Pharm., Inc. v. Eon Labs, Inc.*, 616 F.3d 1267, 1279 (Fed. Cir. 2010) ("[T]he relevant question is whether 'there exists any new and unobvious functional relationship between the printed matter and the substrate.'") (citations omitted).

In claim 17, the particular type of data is not functionally related to the server or database. The particular type of data does not affect how the server or the database functions. This is similar to the type of data considered non-functional descriptive material in *Ex parte Nehls*, 88 USPQ2d 1883 (BPAI 2008) (precedential). *Nehls* addressed a claim reciting:

> A computer-based system for identifying nucleic acid fragments of the human genome of commercial importance comprising the following elements:

> a) a data storage means comprising the sense or antisense sequence of at least 18 contiguous nucleotides of any one of SEQ ID NOS:9-1,008;
>
> b) search means for comparing a target sequence to each of the sequences of the data storage means of step a) to identify homologous sequence(s); and
>
> c) retrieval means for obtaining said homologous sequence(s) of step (b).

Id. at 1884. The Board determined that

> [t]he recited sequences are not functionally related to the computer system carrying out the comparison because the computer compares a target sequence to a database the same way regardless of whether the database includes any of SEQ ID NOs 9-1008: the SEQ ID NOs and the computer do not depend on each other for their function.

Id. at 1888–89. Like the relationship between the computer system and the "SEQ ID NOs" in *Nehls*, neither the server nor the database in claim 17 depends on the type of data (i.e., that it is "data corresponding to vehicle energy consumption") for their function. *See also Ex parte Curry*, 84 USPQ2d 1272 (BPAI 2005), *aff'd* (Fed. Cir. Appeal No. 2006-1003, aff'd Rule 36 June 12, 2006) and *Ex parte Mathias*, 84 USPQ2d 1276 (BPAI 2005), *aff'd* 191 Fed. Appx. 959 (Fed. Cir. 2006).

Accordingly, the particular type of data recited in claim 17 is not entitled to patentable weight. Because there are no other issues disputed with respect to the Examiner's rejection of claims 17–19, we are not apprised of reversible error.

Moreover, even if the particular type of data recited in claim 17 is entitled to patentable weight, we are still not apprised of Examiner error. Unlike claims 1 and 9, claim 17 merely requires "data corresponding to vehicle energy consumption." Claim 17 does not require "predicted energy consumption . . . based on a difference between a previous predicted energy

consumption and a previous actual base energy consumption." There is no dispute that Hiestermann teaches collecting, updating, and providing velocity information via a server and database. *Compare* Appeal Br. 8–9 *with* Final Act. 12 (discussing speed profiles). As discussed above, and illustrated in Figure 10 of Hiestermann reproduced above, vehicle speed "correspond[s] to vehicle energy consumption."

For at least the reasons set for above, we sustain the Examiner's decision to reject claims 17–19.

Enablement New Ground – Claims 1–16 and 20

"The specification shall contain a written description of the invention . . . to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same." 35 U.S.C. § 112(a). "Enablement serves the dual function in the patent system of ensuring adequate disclosure of the claimed invention and of preventing claims broader than the disclosed invention." *MagSil Corp. v. Hitachi Glob. Storage Techs., Inc.*, 687 F.3d 1377, 1380–81 (Fed. Cir. 2012).

"The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation." *U.S. v. Telectronics, Inc.*, 857 F.2d 778, 785 (Fed. Cir. 1988). "Whether undue experimentation is needed is not a single, simple factual determination, but rather is a conclusion reached by weighing many factual considerations." *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988). These factors include: (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill

of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims. *Id.* Not all of the *Wands* factors need to be reviewed when determining whether a disclosure is enabling. *Enzo Biochem, Inc. v. Calgene, Inc.*, 188 F.3d 1362, 1371 (Fed. Cir. 1999). Rather, the *Wands* factors "are illustrative, not mandatory. What is relevant depends on the facts." *Amgen, Inc. v. Chugai Pharm. Co., Ltd.*, 927 F.2d 1200, 1213 (Fed. Cir. 1991).

Based on the record before us, the *Wands* factors weigh in favor of rejecting claims 1–16 and 20 for lack of enablement. As noted above, there is little (if any) guidance provided as to how one skilled in the art would determine "a difference between a previous predicted energy consumption and a previous actual base energy consumption," as recited in claims 1 and 9. The Specification explains that "database 112 receives and stores data about the actual energy consumption of the vehicles 102" and "[t]he server 104 and database 112 process the data to make predictions about vehicle 102 energy consumption." Spec. ¶¶ 34, 35. The Specification is lacking any detail, however, as to how this prediction is made (e.g., there are no working examples). The claims are broad, in that they, too, fail to provide any detail regarding the recited predictions.

A similar problem exists with respect to the "base energy consumption" recited in the claims. The Specification explains that "database 112 may also include additional base energy consumption data for a particular vehicle 102," which "can be modified by the crowd-sourced data." Spec. ¶ 35. With respect to how the "base energy consumption" is determined, the Specification simply states that "the method 200 determines a base energy consumption rate for a vehicle 102 on each road segment based on a personalized energy consumption model," and that "model can

take into account, for example, driver habits, vehicle make and model, etc.," without further detail.[2] *Id.* ¶ 37. Later, the Specification again simply repeats that at "step 304, the method 300 predicts a base energy consumption for the vehicle 102 travelling on the road segment based on a personalized energy consumption model." *Id.* ¶ 41. Notably, the phrase "actual base energy consumption" never appears in the Specification, leaving some confusion as to whether the claim should recite "actual energy consumption" instead of "actual base energy consumption." *See id.* ("In Step 306, the method 300 observes the *actual energy consumption* of the vehicle 102 on the road segment. In Step 308, the method 300 determines a difference between the predicted *base energy consumption* and the *actual energy consumption*.") (emphasis added).

Claim 11, which depends from claim 9, additionally recites a "relevancy factor." That, too, is problematic due to the lack of detail provided as to how the "relevancy factor" is determined. Claim 11 only recites that the "relevancy factor" is "based on a first set of data entries corresponding to roads along the route and a second set of data entries corresponding to roads similar to the roads along the route" and "prioritizes energy consumption data for the vehicle." The Specification is similarly light on details, explaining that "[t]he relevancy factor can depend on road characteristics, such as number of lanes, speed limit, road grade, road classification, number of traffic lights or stop signs, etc." and "can also depend on a time since the data entries were collected," without detail as to how it *can depend* on these features. Spec. ¶ 38. The most detail provided as to *how* the relevancy factor is determined is that "[w]hen the similarity of

[2] The model is recited in claim 2 without additional detail.

road characteristics is high and the time since the data entry was collected is low, the relevancy factor is the highest and the data is prioritized for use in Step 212." *Id.* Again, however, the direction or guidance presented is extremely limited, and there are no working examples.

For the reasons set forth above, we reject claims 1–16 and 20 as failing to comply with the enablement requirement.

CONCLUSION

The Examiner's decision to reject claims 1–16 and 20 is reversed, and the decision to reject claims 17–19 is affirmed. A new ground of rejection is entered with respect to claims 1–16 and 20.

DECISION SUMMARY

In summary:

Claims Rejected	**35 U.S.C. §**	**Reference(s)/ Basis**	**Affirmed**	**Reversed**	**New Ground**
1–8, 20	112(b)	Indefiniteness		1–8, 20	
1–16, 20	103	Hiestermann		1–16, 20	
17–19	103	Hiestermann, Sellschopp	17–19		
1–16, 20	112(a)	Enablement			1–16, 20
Overall Outcome			17–19	1–16, 20	1–16, 20

TIME PERIOD FOR RESPONSE

This decision contains new grounds of rejection pursuant to 37 C.F.R. § 41.50(b).

Section 41.50(b) provides "[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review." Section 41.50(b) also provides:

> When the Board enters such a non-final decision, the appellant, within two months from the date of the decision, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:
>
> (1) *Reopen prosecution*. Submit an appropriate amendment of the claims so rejected or new Evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the prosecution will be remanded to the examiner. The new ground of rejection is binding upon the examiner unless an amendment or new Evidence not previously of Record is made which, in the opinion of the examiner, overcomes the new ground of rejection designated in the decision. Should the examiner reject the claims, appellant may again appeal to the Board pursuant to this subpart.
>
> (2) *Request rehearing*. Request that the proceeding be reheard under §41.52 by the Board upon the same Record. The request for rehearing must address any new ground of rejection and state with particularity the points believed to have been misapprehended or overlooked in entering the new ground of rejection and also state all other grounds upon which rehearing is sought.

Further guidance on responding to a new ground of rejection can be found in the MPEP § 1214.01.

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

AFFIRMED-IN-PART; 37 C.F.R. § 41.50(b)