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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SIMON CARLSEN and ERLING LUNDE[1]

Appeal 2018-008581
Application 15/029,930
Technology Center 2600

Before JASON V. MORGAN, NABEEL U. KHAN, and DANIEL N. FISHMAN, *Administrative Patent Judges*.

MORGAN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Introduction

This is an appeal under 35 U.S.C. § 134(a) from the Examiner's Final Rejection of claims 1–16. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

Summary of disclosure

The Specification discloses "dynamically generating an acoustic noise map of an industrial zone to be used for protecting operators within the zone from exposure to acoustic noise above a safety threshold" by "collecting

[1] Appellant is the applicant and real party in interest, STATOIL PETROLEUM AS. Br. 1.

acoustic noise data using a network of wireless acoustic sensors located within said zone" to generate "an acoustic noise map using the collected noise data and a numerical model of the propagation of acoustic noise within the zone." Abstract.

Representative claims (*key limitations emphasized*)

> 1. A method of dynamically generating an acoustic noise map of an industrial zone to be used for protecting operators within the zone from exposure to acoustic noise above a safety threshold, the method comprising:
>
> collecting acoustic noise data using a network of wireless acoustic sensors located within said zone;
>
> *dynamically generating an acoustic noise map using the collected noise data and a numerical model of the propagation of acoustic noise within the zone*.
>
> 2. The method of claim 1, further comprising *correcting the estimated acoustic noise map by measuring acoustic noise within said zone at locations where initially no sensor is present*.
>
> 3. The method of claim 1, further comprising *correlating the acoustic noise map to operational process data of devices located within said zone*.
>
> 5. The method of claim 1, *wherein said network comprises a plurality of fixed sensors and a plurality of temporary sensors*.
>
> 6. A method of protecting an operator from exposure to acoustic noise above a safety threshold within an industrial zone, the method comprising *tracking the location of the operator within the zone and warning the operator if the operator approaches a location with acoustic noise above a safety threshold or if the acoustic noise at the location of the operator is likely to increase to above a safety threshold using an acoustic noise map* generated with the method of claim 1.

Rejections

The Examiner rejects claims 1–4, 6–9, and 13–16 under 35 U.S.C. § 102(a)(1) as being anticipated by Keady et al. (US 2010/0135502 A1; published June 3, 2010) ("Keady"). Final Act. 2–5.

The Examiner rejects claims 5 and 10–12 under 35 U.S.C. § 103 as being unpatentable over Keady and Brown (US 2012/0237049 A1; published Sept. 20, 2012). Final Act. 5.

ANALYSIS

Claim 1, 4, 8, and 9

In rejecting claim 1 as obvious, the Examiner finds that Keady's collection of noise information and generation of sound pressure level (SPL) maps discloses *dynamically generating an acoustic noise map using the collected noise data and a numerical model of the propagation of acoustic noise within the zone*. Final Act. 2–3 (citing Keady Figs. 18, 19, ¶¶ 70, 129, 173, 174); *see also* Ans. 2–4. Appellant contends the Examiner erred because "the SPL is simply determined from measuring the sounds pressure at a given location and is a scalar number representing the instantaneous sound pressure at the location of measurement." Br. 5 (citing Keady ¶¶ 9, 43). Appellant argues "the SPL does not provide information regarding noise propagation nor a model of how the noise propagates." *Id.* Appellant further argues the contour plots of Keady's Figures 18 and 19 do "not require a model of noise propagation and instead merely provide[] a sound exposure history at particular locations." *Id.*

Appellant's arguments are unpersuasive of error because, as the Examiner correctly finds, Keady requires a numerical model "in order to estimate common [sound pressure] levels in order to derive the *continuous*

contour lines from non-continuous sensor measurements." Ans. 3 (emphasis added). Appellant's argument that Keady's contour plots "merely provide[] [the] sound exposure histor[ies] at particular locations" (Br. 5) conflates Keady's disclosure of recording a history of sound pressure levels detected by a sensor (Keady ¶¶ 44–45) with Keady's use of sound pressure level "measurements taken by one or more [sensors] . . . to create a sound pressure level map of the work environment" (*id.* ¶ 174).

Keady's sound pressure level maps do not merely map a history of sound pressure levels at discrete points, but instead illustrate entire regions, depicted as contours, where similar sound pressure levels would propagate. *See id.* Figs. 18, 19. That is, Keady's sound pressure level maps represent the extrapolation of recorded sensor data to estimate the noise levels in locations *between* sensors. This accords with the Specification's broad disclosure of what a *numerical model* does. *See* Spec. p. 3, ll. 11–13 (a "numerical model may be used to extrapolate the data and estimate the noise levels in locations where no actual noise meter is present"); *id.* p. 4, ll. 19–21. Thus, Appellant does not persuasively rebut the Examiner's finding that the sounds pressure level maps of Keady—which depict continuous (rather than discrete) locations having comparable sound pressure levels—would have been produced through the use of a numerical model. Ans. 3. Therefore, we agree with the Examiner that Keady discloses "dynamically generating an acoustic noise map using the collected noise data and a numerical model of the propagation of acoustic noise within the zone," as recited in claim 1. Final Act. 2–3.

Accordingly, we sustain the Examiner's 35 U.S.C. § 102(a)(1) rejection of claim 1, and claims 4, 8, and 9, which Appellant argues are patentable for similar reasons. Br. 8.

Claim 2

In rejecting claim 2 as anticipated, the Examiner finds that Keady's inclusion of sensor data obtained in locations where no sensor had initially been present in generating a contour map discloses *correcting the estimated acoustic noise map by measuring acoustic noise within said zone at locations where initially no sensor is present*. Final Act. 4 (citing Keady ¶ 173); *see also* Ans. 4–5. Appellant contends the Examiner erred because Keady's creation of a sound pressure level map fails to include "an initial phase where no sensor is present." Br. 7.

Appellant's arguments are unpersuasive because Keady discloses both downloading sound pressure level data to database 1704 at intervals and generating multiple sound pressure level maps at different times. Keady ¶¶ 173–74. As the Examiner correctly finds, Keady discloses providing sound pressure level data from worker's wireless earpieces (e.g., mobile earpieces that may move with a worker). Final Act. 4; Keady ¶ 173. Thus, data from a worker's earpiece that includes data obtained when the worker moves to a location that did not previously have sound pressure level data recorded represents *measuring acoustic noise within said zone at locations where initially no sensor is present*. Furthermore, Appellant does not persuasively distinguish *correcting an estimated acoustic noise map* from generating additional maps. Therefore, we agree with the Examiner that Keady discloses "correcting the estimated acoustic noise map by measuring

acoustic noise within said zone at locations where initially no sensor is present," as recited in claim 2. Final Act. 4.

Accordingly, we sustain the Examiner's 35 U.S.C. § 102(a)(1) rejection of claim 2.

Claims 3 and 7

In rejecting claim 3 as anticipated, the Examiner finds that Keady's storage of time and location information along with sound pressure levels (*see, e.g.*, Keady ¶¶ 8, 65, 138) discloses *correlating the acoustic noise map to operational process data of devices located within said zone*. Final Act. 4; Ans. 5. Appellant contends the Examiner erred because an artisan of ordinary skill would have recognized "the term 'operational process data of devices' to constitute data related to the operation of said devices." Br. 7.

Appellant's arguments do not persuasively distinguish the claimed devices from the sensors of Keady themselves. Nor does Appellant persuasively distinguish *operational process data* from information identifying *when* a sensor was operational and *where* it was when it was operational and a reading was taken. Therefore, we agree with the Examiner that Keady discloses "correlating the acoustic noise map to operational process data of devices located within said zone," as recited in claim 3.

Accordingly, we sustain the Examiner's 35 U.S.C. § 102(a)(1) rejection of claim 3, and claim 7, which Appellant does not argue separately.

Claims 6 and 13–16

In rejecting claim 6 as anticipated, the Examiner finds that Keady's warning that a user's sound exposure levels are near damaging levels discloses *tracking the location of the operator within the zone and warning the operator if the operator approaches a location with acoustic noise above*

a safety threshold or if the acoustic noise at the location of the operator is likely to increase to above a safety threshold using an acoustic noise map. Final Act. 3–4 (citing Keady ¶ 50); Ans. 6 (further citing Keady Figs. 18, 19). Appellant contends the Examiner erred because, although Appellant acknowledges that "Keady describes tracking a user within an industrial zone," Appellant argues "Keady fails to disclose warning an operator based on that operator's position related to a noise map." Br. 8.

Appellant's argument is unpersuasive of error because the claimed *warning* represents a conditional step that need not be performed in all scenarios (i.e., when the operator does not approach a location with acoustic noise above a safety threshold and when the acoustic noise at the location of the operator is unlikely to increase to above a safety threshold). *See Ex parte Schulhauser*, Appeal No. 2013-007847, 2016 WL 6277792, at *5 (PTAB 2016). Furthermore, claim 6 recites conditions under which the warning would be given, but fails to positively recite performing steps to test for such conditions. Therefore, we agree with the Examiner that Keady discloses the disputed recitation of claim 6 given its broadest reasonable interpretation. Final Act. 3–4.

Accordingly, we sustain the Examiner's 35 U.S.C. § 102(a)(1) rejection of claim 6, and claims 13–16, which Appellant does not argue separately. Br. 8.

Claims 5 and 10–12

In rejecting claim 5 as obvious, the Examiner relies on Brown's use of a network of sensors to teach or suggest modifying Keady to use not just *temporary sensors* (i.e., sensors in worker earpieces), but also *fixed sensors*. Final Act. 5 (citing Brown ¶¶ 2, 23, Figs. 2, 8); *see also* Ans. 6–7 (further

citing Keady Figs. 18, 19; Brown ¶ 21). Appellant contends the Examiner erred because "Keady is entirely concerned with ear-pieces . . . to monitor the noise experienced by the ear of the wearer." Br. 10 (citing Keady ¶¶ 62, 81). Appellant argues "[o]ne of ordinary skill in the art would not replace the ear-pieces described in Keady with fixed sensors, such as those described in Brown (or any other fixed sensors), as this would defeat the purpose of Keady, i.e., to monitor the noise experienced by the wearer in order to determine ear fatigue or damage of said wearer." *Id.*

Appellant's arguments are unpersuasive because the Examiner does not rely on Brown to *replace* the earpiece sensors with fixed sensors. Rather, the Examiner properly concludes that it would have been obvious to an artisan of ordinary skill to use Brown's fixed sensors to *supplement* Keady's earpiece sensors. Final Act. 5. The Examiner's conclusion that it would have been obvious to combine the teachings and suggestions of Keady and Brown is supported by the fact that both references pertain to the generation of noise maps. Ans. 6. Moreover, using fixed sensors, such as those taught in Brown, *in addition to* temporary sensors, such as those taught in Keady, would not defeat the purpose of Keady, which would still be able to monitor the noises levels experienced by those wearing earpieces with sensors. Therefore, we agree with the Examiner that the combination of Keady and Brown teaches or suggests "wherein said network comprises a plurality of fixed sensors and a plurality of temporary sensors," as recited in claim 5. Final Act. 5.

Accordingly, we sustain the Examiner's 35 U.S.C. § 103 rejection of claim 5, and claims 10–12, which Appellant does not argue separately. Br. 9.

DECISION

We affirm the Examiner's decision rejecting claims 1–16.

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. § 41.50(f).

AFFIRMED