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TEXAS INSTRUMENTS INCORPORATED
P O BOX 655474, M/S 3999
DALLAS, TX 75265
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EXAMINER

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ANAND DABAK and VENKATA RAMANAN¹

Appeal 2018-003062
Application 14/156,388
Technology Center 2800

Before JAMES C. HOUSEL, DONNA M. PRAISS, and
CHRISTOPHER C. KENNEDY, *Administrative Patent Judges*.

KENNEDY, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134(a) from the Examiner's decision rejecting claims 5, 8, 9, 14, and 17. We have jurisdiction under 35 U.S.C. § 6(b). We AFFIRM.

BACKGROUND

The subject matter on appeal relates to methods of measuring the velocity of a fluid. *E.g.*, Spec. ¶ 2; Claim 5. Claim 5 is reproduced below from page 15 (Claims Appendix) of the Appeal Brief:

¹ The Appellant is the Applicant, Texas Instruments Incorporated, which is also identified as the real party in interest. *See* Br. 1.

5. A method of measuring a velocity of a fluid or gas, comprising:
 - receiving a first ultrasonic signal transmitted through the fluid or gas;
 - receiving a second ultrasonic signal transmitted through the fluid or gas;
 - sampling the first ultrasonic signal to produce a first sampled ultrasonic signal;
 - sampling the second ultrasonic signal to produce a second sampled ultrasonic signal;
 - selecting points from the first and second sampled ultrasonic signals having a value greater than a first threshold; and
 - calculating the time difference in response to the selected points;
 - determining the velocity of the fluid or gas based on the time difference;wherein the step of selecting points comprises selecting a point by linear interpolation of the zero-crossing of a sine wave.

REJECTIONS ON APPEAL

The claims stand rejected as follows:

1. Claims 5, 8, 9, 14, and 17 under 35 U.S.C. § 101 as directed to patent-ineligible subject matter;
2. Claims 5 and 14 under 35 U.S.C. § 103 as unpatentable over Yejun² (CN 101922954 A, dated Dec. 22, 2010) and Jacobson (US 4,787,252, issued Nov. 29, 1988); and
3. Claims 8, 9, and 17 under 35 U.S.C. § 103 as unpatentable over Yejun and Edel (US 8,295,025 B2, issued Oct. 23, 2012).

² Like the Examiner and the Appellant, we rely on the machine translation of Yejun in the record.

ANALYSIS

After review of the cited evidence in the appeal record and the opposing positions of the Appellant and the Examiner, we determine that the Appellant has not identified reversible error in the Examiner's rejections. Accordingly, we affirm the rejections for reasons set forth below, in the Non-Final Action dated Mar. 14, 2017 ("Act."), and in the Examiner's Answer. *See generally* Act. 2–17; Ans. 2–9.

Rejection 1

The Appellant argues the claims subject to Rejection 1 as a group. We select claim 5 as representative of the claims subject to Rejection 1, and the remaining claims subject to Rejection 1 will stand or fall with claim 5. *See* 37 C.F.R. § 41.37(c)(1)(iv).

Determining whether a claimed invention is directed to patent-eligible subject matter is a two-step process that requires (1) evaluating whether the claim is directed toward a patent-ineligible concept, i.e., a law of nature, natural phenomenon, or abstract idea; and, if so, (2) determining whether the claim's elements, considered both individually and as an ordered combination, transform the nature of the claim into a patent-eligible application. *See Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 134 S. Ct. 2347, 2354–55 (2014).

The Examiner determines that claim 5 is related "to a generic computer function to obtain data and perform simple mathematical operations." Act. 2–3. The Examiner explains that courts have found "concepts relating to performing mathematical calculations abstract," and that "[t]he use of a computer to collect data, similar to the claimed sampling and selecting of points, is one of the most basic functions of a computer."

Id. at 3. The Examiner states that use of a computer to calculate a difference “is a computer function considered to be ‘well understood, routine, or conventional activities’ previously known in the industry.” *Id.*

The Examiner also determines that “[t]he claim does not include additional elements that are sufficient to amount to significantly more than the judicial exception because the additional elements when considered both individually and as an ordered combination do not amount to significantly more than the abstract idea,” and that “[t]here is no indication that the combination of elements improves the functioning of a computer for performing these steps or improves any other technology.” *Id.* at 3–4.

In view of that analysis, the Examiner concludes that the subject matter of claim 5 is patent ineligible.

In the Appeal Brief, the Appellant lists a variety of concepts that have been identified by the courts as abstract, including mathematical relationships/formulas, and then asserts, with no elaboration, that the claims are not directed to those abstract ideas. *E.g.*, Br. 5 (“Further, claims 5, 8, 9, 14 and 17 are not directed to mathematical relationships/formulas.”).

A naked assertion that claim 5 is “not directed to mathematical relationships/formulas” is not persuasive because it does not address the Examiner’s findings and conclusions. *See In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011) (“[I]t has long been the Board’s practice to require an applicant to identify the alleged error in the examiner’s rejections”); *cf. In re Lovin*, 652 F.3d 1349, 1357 (Fed. Cir. 2011) (arguments consisting of “naked assertion[s]” generally not persuasive). In that regard, we observe that the Appellant does not meaningfully dispute the Examiner’s characterization of claim 5 as being directed to collecting data and then

performing mathematical operations on the collected data to determine the velocity of a fluid. *See* Br. 5–6. The Appellant’s limited argument does not persuade us of error in the Examiner’s determination that claim 5 is directed to an abstract idea.

The Appellant also argues that claim 5 recites sampling ultrasonic signals, and that “[a] computer does not measure the ultrasonic signals transmitted through the fluid or gas.” *Id.* at 6. Claim 5, however, is directed to a method and does not recite a computer, a sensor, or a transducer for receiving or sampling ultrasonic signals. And, although the Appellant argues that the recited functions “add significantly more than mere computer implementation,” and that the recited functions “improve the functioning of the claimed systems and methods themselves,” the Appellant’s conclusory assertions do not persuasively identify any alleged improvement to any system or method. *See id.* at 6–7.

Claim 5 is similar in nature to the claims at issue in *Parker v. Flook*, 437 U.S. 584 (1978), which were held to be patent ineligible. Those claims required (1) collecting data (i.e., “[d]etermining the present value of [a] process variable” such as temperature, presumably monitored by a sensor), (2) subjecting the data to a mathematical operation to “[d]etermin[e] a new alarm base,” and (3) on the basis of the result of that operation, making a determination through use of an additional mathematical operation (“[d]etermining an updated alarm limit which is defined as $B_1 + K$ ”). *See id.* at 585, 597. Claim 5 similarly requires (1) collecting data (“selecting points” from sampled ultrasonic signals), (2) subjecting the data to a mathematical operation (“calculating the time difference in response to the selected points”), and (3) on the basis of the result of that operation, making

a determination through use of an additional mathematical operation (“determining the velocity of the fluid or gas based on the time difference,” *see* Spec. ¶ 5 (providing mathematical formula for determining velocity)).

Finally, we observe that, in the Answer, the Examiner substantially elaborates on the conclusion that the subject matter of claim 5 is patent ineligible. *See* Ans. 2–6. For example, the Examiner (1) finds that “[t]he steps of selecting points, calculating the time difference between those points and determining the velocity of the fluid or gas are mathematical operations which are capable of being performed by a human using a pen and paper,” *id.* at 5 (citing cases), and (2) cites evidence that certain aspects of the claim are routine and conventional, *id.* at 4. The Appellant does not file a Reply Brief to contest the Examiner’s additional analysis in support of the rejection, and we discern no basis to reject the additional analysis. On this record, we are not persuaded of reversible error in the Examiner’s determination that claim 5 is directed to patent-ineligible subject matter.

Rejection 2

The Appellant argues the claims subject to Rejection 2 as a group. We select claim 5 as representative of the claims subject to Rejection 2, and claim 14 will stand or fall with claim 5. *See* 37 C.F.R. § 41.37(c)(1)(iv).

The Examiner finds that Yejun teaches each element of claim 5 except that Yejun “remains silent regarding the step of selecting points comprises selecting a point by linear interpolation of the zero-crossing of a sine wave.” Act. 9. The Examiner finds that Jacobson “teaches a similar flow meter having a processing step for selecting points . . . using a line[a]r interpolation of the zero-crossing of a sine wave.” *Id.* The Examiner concludes that it would have been obvious to include the linear interpolation

of Jacobson in the method of Yejun because Jacobson teaches that “the linear interpolation increases the resolution of the calculations by two orders of magnitude, thereby giving a more accurate calculation.” *Id.* at 10.

In the Appeal Brief, the Appellant provides five pages of case law summary with no application of that law to the facts of this case, and then, with no elaboration, states that “[i]t appears that the Examiner’s proposed rejection is based solely on hindsight derived from Appellant’s specification.” Br. 8–13.

That argument is not persuasive because it does not meaningfully address or show error in the Examiner’s findings and conclusions. *See Jung*, 637 F.3d at 1365. Specifically, the Examiner finds that the combined prior art teaches each element of claim 5, and that a person of ordinary skill in the art would have been motivated to combine the references to obtain a more accurate calculation using Jacobson’s linear interpolation method. *See Act.* 9–10. Thus, and particularly in view of the lack of any meaningful challenge to those findings, we are not persuaded that the rejection is impermissibly based on hindsight. Rather, it appears to be based on the plain teachings and suggestions of the cited references. We are not persuaded of reversible error in the rejection.

Rejection 3

The Appellant argues the claims subject to Rejection 3 as a group. We select claim 8 as representative of the claims subject to Rejection 3, and claims 9 and 17 will stand or fall with claim 8. *See* 37 C.F.R. § 41.37(c)(1)(iv).

The Examiner finds that Yejun teaches each element of claim 8 except that Yejun “remains silent regarding each of the first and second ultrasonic

signals are transmitted in response to an excitation frequency.” Act. 11–12. The Examiner finds that Edel teaches “similar ultrasonic sensors as taught by Yejun having a controller and supporting control logic for controlling said sensors through a controllable excitation frequency.” *Id.* at 12. The Examiner concludes that it would have been obvious “to modify the first and second signals to be controllable according to the methods taught by Edel” because Edel teaches “the controllability allows for an optimum frequency to be continually controlled for optimum performance, thereby modifying Yejun to be controlled for optimum performance during measurements.” *Id.*

The Appellant argues that the Examiner’s rejection should be reversed because it “fails to provide any explanation as to how the controller and supporting control logic identified in Yejun might be modified to provide control of an excitation frequency,” and “[t]he circuits of Yejun and Edel have different modes of operation and it is, thus, not clear how Yejun would be modified based on Edel as alleged in the Office Action.” Br. 13. The Appellant asks, “[f]or example, what circuitry of Edel would be added to Yejun to include an excitation frequency?” *Id.*

In the Answer, the Examiner provides further discussion of the stated rejection, and finds that “[o]ne of ordinary skill in the art of ultrasonic transducers, in light of Edel, would find it obvious to incorporate the circuitry and control logic of Edel into Yejun . . . such that the frequency of the transducers of Yejun . . . are controlled optimally for optimum performance, as supported by Edel.” Ans. 8. The Appellant does not file a Reply Brief to contest those findings.

Particularly in view of the Examiner’s finding that any required circuitry and logic modification would have been within the level of

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ordinary skill in the art, and the Appellant's failure to contest that finding or to identify any particular aspect of the proposed combination that would not have been within the level of ordinary skill in the art, we are not persuaded by the Appellant's argument that the rejection is inadequate because it does not precisely specify, e.g., how to modify the circuitry of Yejun. *See* Ans. 8 ("The examiner would also like to point out that the claims are silent with regard[s] to how or what are controlling these excitation frequencies.").

On this record, we are not persuaded of reversible error in the Examiner's rejection.

CONCLUSION

We AFFIRM the Examiner's rejections of claims 5, 8, 9, 14, and 17.

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

AFFIRMED