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BLOCH, MICHAEL RYAN

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JOHN A. LANE, HENRY JOSEPH SMITH III,
DAVID E. QUINN, and TYSON B. WHITAKER¹

Appeal 2017-008107
Application 12/848,417
Technology Center 3700

Before DONALD E. ADAMS, MICHAEL J. FITZPATRICK, and
RYAN H. FLAX, *Administrative Patent Judges*.

FLAX, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134(a) involving claims to a system and method for estimating respirations. Claims 1, 2, 7, 8, 10, 12, and 13 are on appeal as rejected under 35 U.S.C. §§ 101 and 103.

We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.²

¹ Appellants identify the Real Party in Interest as “Welch Allyn, Inc.”
Appeal Br. 3.

² We have considered and herein refer to the Specification of Aug. 2, 2010 (“Spec.”); the Final Office Action of May 6, 2016 (“Final Action”); Appeal Brief of Nov. 4, 2016 (“Appeal Br.”); Examiner’s Answer of Feb. 27, 2017

STATEMENT OF THE CASE

The Specification states:

There is currently no low cost, accurate system to measure respirations (i.e., breaths per minute). In high acuity situations, a carbon dioxide monitor, including a nasal and/or mouth cannula, can be used to estimate respirations by monitoring airflow into and out of an individual's mouth or nose. However, such machines are complex, costly, and invasive. Otherwise, in lower acuity situations, a crude manual estimate of respirations can be made by a caregiver observing the speed and level of respirations of the individual. However, such a manual estimate is prone to inaccuracy and is incomplete, since the measurement is subjective and conducted only for the duration of time that the individual is observed by the caregiver.

Spec. ¶ 1. The Specification further states, “[e]mbodiments of the present disclosure are directed to systems and methods for estimating respirations for an individual. In some examples described herein, an accelerometer is coupled to the individual to estimate respirations of the individual.” *Id.* ¶ 2.

The Specification further states:

In one embodiment, the accelerometer is a DC-response sensor that measures tilt. As the orientation of the accelerometer changes (i.e., is tilted), the impact of gravity on the accelerometer changes in a cyclical and repeatable manner, and the accelerometer can be configured to measure this change. By processing the tilt patterns measured by the accelerometer, the individual's respirations are estimated.

Id. ¶ 16.

(“Answer”); and Supplemental Appeal Brief of Sept. 15, 2017 (“Supp. Br.”). No Reply Brief was submitted.

Claims 1 and 8 are the independent claims. Claim 1 is representative and is reproduced below:

1. A system for estimating respirations, the system comprising:

an accelerometer configured to be coupled to an individual's torso, the accelerometer being configured to measure a tilt of the accelerometer as the individual breathes; and

a processor connected to the accelerometer, the processor being programmed to:

process tilt data including more than one input signal from the accelerometer;

pause the processing of tilt data for about 1 second to about 30 seconds;

after the pause, determine whether the more than one input signal have stabilized;

if the more than one input signal have stabilized, determine a best respiration signal candidate from the more than one input signal by applying a band-pass filter;

determine whether the best respiration signal candidate is respiration or noise;

determine an activity status of the individual, the activity status selected from moving and still;

estimate a moving type of the individual, the moving type selected from ascending, descending and level;

determine a body position of the individual, the body position selected from lying and upright; and

estimate a respiration rate based on the tilt data, including estimating a quality of breathing, the quality selected from shallow and deep.

Appeal Br. 25 (Claims App'x).

The following rejections are appealed:

Claims 1, 2, 7, 8, 10, 12, and 13 are rejected under 35 U.S.C. § 101 as directed to a judicial exception (i.e., an abstract idea) without significantly more. Final Action 2.

Claims 1 and 2 stand rejected under 35 U.S.C. § 103(a) over Klewer,³ Pinhas,⁴ Kovacs,⁵ and Timmons.⁶ *Id.* at 4.

Claim 7 stands rejected under 35 U.S.C. § 103(a) over Klewer, Pinhas, Timmons, and Collins.⁷ *Id.* at 11.

Claims 8, 10, and 12 stand rejected under 35 U.S.C. § 103(a) over Klewer, Pinhas, Kovacs, Timmons, and Partin.⁸ *Id.* at 12–13.

Claim 13 stands rejected under 35 U.S.C. § 103(a) over Klewer, Pinhas, Timmons, Partin, and Collins. *Id.* at 22.

DISCUSSION

Only those arguments made by Appellants in the Appeal Brief and properly presented in the Supplemental Appeal Brief (no Reply Brief was submitted) have been considered in this Decision; arguments not so presented in the Briefs are waived. *See* 37 C.F.R. § 41.37(c)(1)(iv) (2015); *see also Ex parte Borden*, 93 USPQ2d 1473, 1474 (BPAI 2010) (informative) (“Any bases for asserting error, whether factual or legal, that are not raised in the principal brief are waived.”).

³ WO 2009/138896 A1 (pub. Nov. 19, 2009) (“Klewer”).

⁴ US 2007/0118054 A1 (pub. May 24, 2007) (“Pinhas”).

⁵ US 2007/0208233 A1 (pub. Sept. 6, 2007) (“Kovacs”).

⁶ US 2008/0312553 A1 (pub. Dec. 18, 2008) (“Timmons”).

⁷ WO 03/005893 A2 (pub. Jan. 23, 2003) (“Collins”).

⁸ US 2010/0056878 A1 (pub. Mar. 4, 2010) (“Partin”).

“[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability. If that burden is met, the burden of coming forward with evidence or argument shifts to the applicant.” *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992).

PATENT ELIGIBILITY

“Phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work.” *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 71 (2012) (quoting *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)). Claims directed to *nothing more than* abstract ideas (such as mathematical algorithms), natural phenomena, and laws of nature are not eligible for patent protection. *Diamond v. Diehr*, 450 U.S. 175, 185 (1981); *accord* MPEP § 2106 (II) (discussing *Diehr*).

In analyzing patent-eligibility questions under the judicial exception to 35 U.S.C. § 101, the Supreme Court instructs us to “first determine whether the claims at issue are directed to a patent-ineligible concept.” *Alice Corp. Pty. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2355 (2014). If the claims are determined to be directed to an ineligible concept we then move to a second step and “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.* (quoting *Mayo*, 566 U.S. at 97).

The Federal Circuit has “recognize[d] that defining the precise abstract idea of patent claims in many cases is far from a ‘straightforward’ exercise.” *Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1150 (Fed. Cir. 2016) (quoting *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d

1245, 1257 (Fed. Cir. 2014)). However, “we continue to ‘treat[] analyzing information by steps people [could] go through in their minds, or by ***mathematical algorithms, without more, as essentially mental processes within the abstract-idea category.***” *Synopsys*, 839 F.3d at 1146–47 (emphasis added) (quoting *Electric Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1354 (Fed. Cir. 2016) (citations omitted)); see also *Electric Power Grp.*, 830 F.3d at 1353 (“collecting information, analyzing it, and displaying certain results of the collection and analysis” “fall[s] into a familiar class of claims ‘directed to’ a patent-ineligible concept,” that of the abstract idea). The Federal Circuit has recognized that “a claim for a *new* abstract idea is still an abstract idea.” *Synopsys*, 839 F.3d at 1151.

There is an abundance of cases where the Federal Circuit has held that, for example, manipulating, organizing, analyzing, and displaying data using generic computer components is not patent-eligible under the common law application of 35 U.S.C. § 101. The Federal Circuit, in *Intellectual Ventures I LLC v. Capital One Financial Corp.*, 850 F.3d 1332 (Fed. Cir. 2017), where the claims were held to be directed to a computer programmed to edit XML documents, “conclude[d] [the claims were,] . . . at their core, directed to the abstract idea of collecting, displaying, and manipulating data.” *Id.* at 1339–40. Even though the patent at issue in *Intellectual Ventures I* indicated its invention provided a concrete solution to a particular problem in computer programming, it “at best, . . . limit[ed] the invention to a technological environment for which to apply the underlying abstract concept,” which does “not render an otherwise abstract concept any less abstract.” *Id.* at 1340 (citing *Affinity Labs of Tex., LLC v. DIRECTV, LLC*, 838 F.3d 1253, 1259 (Fed. Cir. 2016)). Under step two of the *Alice* analysis,

the court in *Intellectual Ventures I* held that claims reciting generic computer components or elements and their functions, e.g., organizing, mapping, identifying, defining, detecting, and modifying, “merely describe the functions of the abstract idea itself” and are not sufficient to supply significantly more than the abstract idea so as to confer patent-eligibility. *Id.* at 1341.

The Federal Circuit has established in several other cases that collecting, classifying, storing, and organizing data, regardless of whether such data manipulations are limited to a particular technological environment, is an abstract idea and, without more (which cannot be provided by generic components or steps used in their routine and customary ways), is not patent eligible. *See, e.g., Interval Licensing LLC v. AOL, Inc.*, --- F.3d ---, 2018 WL 3485608 (Fed. Cir. July 20, 2018) (claims directed to manipulating data for selective display using routine and conventional instructions/programming not patent-eligible);⁹ *SAP America, Inc. v. Investpic, LLC*, 890 F.3d 1016, 1018 (Fed. Cir. 2018) (claims directed to “nothing but a series of mathematical calculations based on selected

⁹ *But see Interval Licensing LLC.*, --- F.3d ---, 2018 WL 3485608 * 9, J. Plager concurring-in-part and dissenting-in-part, stating:

Given the current state of the law regarding what inventions are patent eligible, and in light of our governing precedents, I concur in the carefully reasoned opinion by my colleagues in the majority, even though the state of the law is such as to give little confidence that the outcome is necessarily correct. The law, as I shall explain, renders it near impossible to know with any certainty whether the invention is or is not patent eligible. Accordingly, I also respectfully dissent from our court’s continued application of this incoherent body of doctrine.

information and the presentation of the results of those calculations” is merely an advancement in an abstract idea and patent-ineligible, even though physical things like databases and processors are claimed); *Electric Power Grp.*, 830 F.3d 1350 (“claim[s] [to] systems and methods for performing real-time performance monitoring of an electric power grid by collecting data from multiple data sources, analyzing the data, and displaying the results” was not patent-eligible even though limited to a particular technological environment); *In re TLI Communications LLC Patent Litigation*, 823 F.3d 607 (Fed. Cir. 2016) (collecting and organizing data in the form of digital images is abstract and patent ineligible, and using computer systems in their generic ways do not add an inventive concept); *Content Extraction and Transmission LLC v. Wells Fargo Bank, Nat’l Ass’n*, 776 F.3d 1343 (Fed. Cir. 2014) (extracting data from documents, recognizing information therefrom, and storing the information is abstract).

The Examiner determined, pursuant to *Alice* step one, that

Claim(s) 1-2, 7-8, 10, 12-13 is/are directed to judicial exception of abstract ideas of mathematical equations/relationships, organizing human activity, and ideas of itself present in the steps of pausing, determining stabilization, filtering, noise or signal determination, activity status determination, estimate moving type, determine body position, and estimating respiration rates without significantly more than these features.

Final Action 2–3. Pursuant to *Alice* step two, the Examiner determined, that

The claim(s) does/do not include additional elements that are sufficient to amount to significantly more than the judicial exception because the processes are completed by a generic processor (claim[1]) or by mental process (claim 8), and the sensors for acquiring data are generic/well-known, and routine in the art, and the steps of acquiring data have been determined by

the courts to be extra solution data gathering steps that do not add significantly more than the abstract ideas.

Id.; *see also id.* at 23–25. The Examiner analogized the claimed subject matter and patent-ineligibility determination to the facts and holdings in the following Federal Circuit decisions:

Classen Immunotherapies, Inc. v. Biogen IDEC, 659 F.3d 1057 (Fed. Cir. 2011) (collecting and comparing information was abstract and patent-ineligible);

Electric Power Grp., 830 F.3d 1350 (cited *supra* and discussed *infra*);

CyberSource Corp. v. Retail Decisions, Inc., 654 F.3d 1366, 1372 (Fed. Cir. 2011) (diagnosing an abnormal condition by performing clinical tests and analyzing the results was abstract and patent-ineligible);

Digitech Image Tech, LLC v. Elec. For Imaging, Inc., 758 F.3d 1344 (Fed. Cir. 2014) (claimed methods of generating data, manipulating the data using mathematical formulas, and organizing this data was abstract and patent-ineligible);

In re Meyer, 688 F.2d 789, 791-93 (CCPA 1982) (process for neurologist to follow when testing a patient for nervous system malfunctions was abstract and patent-ineligible); and

In re Maucorps, 609 F.2d 481, 482 (CCPA 1979) (an algorithm for determining the optimal number of visits by a business representative to a client was abstract and patent-ineligible);

and distinguished the facts on appeal from those of *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016) (claimed invention improved how computers function, solving a problem in software arts); *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1316 (Fed. Cir. 2016) (claimed invention improved 3D animation techniques and was not abstract); *SiRF Tech, Inc. v. Int’l Trade Comm’n*, 601 F.3d 1319, 1332–33 (2010)

(claimed method required GPS receiver, placing a meaningful limitation on invention). Answer 5–11. The Examiner concluded, “[c]onsidering all claim limitations individually and as a whole, the claimed invention does not amount to patent eligible subject matter because the claims are directed to judicial exception without significantly more than the exception.” Final Action 25. We discern no error in the Examiner’s determinations. We address Appellants’ arguments below.

Appellants argue “the rejection fails to articulate any analysis of the two-step test under *Mayo*,” and “[f]or that reason alone, the rejection should be reversed.” Appeal Br. 17. Appellants further argue that, under *Alice*’s step one, the rejection “provides nothing more than a cursory recitation of a few high points of the claims and ignores any meaningful limitations.” Appeal Br. 18 (citing *Enfish*, 822 F.3d 1327).

These arguments are not persuasive. As set forth above, the Examiner’s determinations with respect to *Alice*’s two-step analysis are clear. The Examiner was explicit pursuant to *Alice*’s step one that the invention is directed to the abstract idea of mathematical equations/relationships embodied in the various steps the processor is programmed to perform in claim 1 and recited as method steps in claim 8. As for *Alice*’s step two, the Examiner explained that the additionally-claimed subject matter, e.g., the accelerometer and processor, did not provide significantly more than the abstract idea to transition the claims to patent-eligible subject matter; there is no inventive concept beyond the abstract idea.

As for Appellants’ citation to *Enfish*, it does not support reversing the Examiner’s determination of patent-ineligibility. The facts here are not

analogous to those of *Enfish*. In *Enfish*, the Federal Circuit relied on the distinction made in *Alice* between computer-functionality improvements and uses of existing computers as mere tools in processes focused on abstract ideas (e.g., the creation and manipulation of data). *See Enfish*, 822 F.3d at 1335–36; *see Alice*, 134 S. Ct. at 2358–59; *see also Electric Power Grp.*, 830 F.3d at 1354 (distinguishing *Enfish*). Here, the claims are directed to programming (e.g., software) for estimating respiration (or the steps required by such programming), and unlike the court in *Enfish*, we are not presented with claims directed to an improvement in computer functionality or the solving of an existing problem in the software arts.

Appellants argue that the recited claim elements are not merely routine, but, compared to Example 4 in the patent-eligibility Guidelines, similarly link the abstract idea to a particular technological environment and so amount to significantly more and confer patent-eligibility. Appeal Br. 19.

Appellants' argument is not persuasive. The Examiner points out that the Guidelines Example 4 is modeled after the facts of *SiRF*, 601 F.3d 1319, where required mathematics could not be performed without a GPS receiver, which saved the claims from patent-ineligibility. *SiRF* was decided before *Mayo* and *Alice* (and the plethora of subsequent Federal Circuit cases directed to the patent-eligibility of algorithmic inventions) and, thus, did not have the guidance provided by those cases. It is therefore not clear that *SiRF* was decided under the current test. *See SiRF*, 601 F.3d at 1332. In *SiRF*, a GPS receiver was considered to place a meaningful limitation on the claim because “without a GPS receiver it would be impossible to generate pseudoranges or to determine the position of the GPS receiver whose position is the precise goal of the claims.” *Id.* The algorithm in *SiRF* was

used to determine the position of a GPS receiver. The claims in this case are distinguishable because the algorithm, or software program steps, while receiving data from an accelerometer, has no claimed application to the operation or structure of the accelerometer or computer system. Rather, the algorithm is used to deduce information about respiration sensed by the accelerometer; such data is not claimed to be used to affect how the system is thereafter used, even if it conceivably *might* be so-used in some way.

Here, we find the claimed subject matter and facts analogous to *Electric Power Group* where the claims recited, *inter alia*, “receiving a plurality of data streams,” “receiving data from other . . . sources” (e.g., power plant locations), “receiving data from a plurality of non-grid sources,” “detecting and analyzing events in real time from the plurality of data streams,” “displaying the event analysis,” “displaying concurrent visualizations of measurements from the data,” “accumulating and updating the measurements,” and “deriving a composite indicator of reliability.” *Electric Power Grp.*, 830 F.3d at 1351–52. The Federal Circuit found the claims directed to collecting information, analyzing it, and displaying certain results of the collection and analysis and held this to be an abstract idea. *Id.* at 1353. The Federal Circuit held that the additional claimed subject matter, e.g., limiting the claims to a particular technological environment of power-grid monitoring, did not transform the claims into patent-eligible applications of the abstract idea. *Id.* at 1354–55.

Simply put, “[i]nformation as such is an intangible,” and collecting it and analyzing it by mathematical algorithms without more is abstract, and storing, searching, or presenting that information with routine tools “is abstract as an ancillary part of such collection and analysis.” *Id.* at 1353–54.

Here, similar to *Electric Power Group*, the claims merely require selection of information collected with an accelerometer used in its conventional way, and manipulation of that data for analytical purposes using a conventional computer component programmed to do so; such do not transform the abstract ideas of the claims into a patent-eligible invention.

Moreover, here, the prior art references cited by the Examiner and of record in this appeal (see the obviousness rejections in the Final Action, discussed *infra*) suggest that the claimed way of using an accelerometer (to measure respiration) and a processor (to manipulate and analyze data from an accelerometer sensing respiration) were routine, customary, and well known before Appellants' application. See Klewer (Abstract, 2–10, Fig. 1); Pinhas (Abstract, ¶¶ 178, 186, Fig. 2); Kovacs (Abstract, ¶¶ 10, 35–38, Fig. 2A); Timmons (¶¶ 33–38); Collins (Abstract, 2–5, 7–8, Figs. 1, 2); Partin (Abstract, ¶¶ 2, 16, 45). While a single disclosure in a prior art reference of a feature determined in a patent-eligibility analysis to be used routinely and customarily may be argued not to be sufficient evidence, if challenged, to support a *prima facie* case of patent-ineligibility,¹⁰ here, every cited prior art reference (that is, all 6) discloses that an accelerometer is a sensor for measuring respiration and discloses that data from such sensors are analyzed using a processor circuit.

Appellants also argue the claims do not risk preempting all applications of the abstract idea. Appeal Br. 20.

This argument is not persuasive. “While preemption may signal patent ineligible subject matter, the absence of complete preemption does

¹⁰ See *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1369 (Fed. Cir. 2018).

not demonstrate patent eligibility.” *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015). “Where a patent’s claims are deemed only to disclose patent ineligible subject matter under the *Mayo* [*Alice*] framework, as they are in this case, preemption concerns are fully addressed and made moot.” *Id.*

By way of a supplemental brief, Appellants argue that the claims should be determined to be patent-eligible in view of the Federal Circuit decision in *Thales Visionix Inc. v. United States*, 850 F.3d 1343 (Fed. Cir. 2017). In *Thales*, the Federal Circuit analogized the claims, which it found not to be directed to an abstract idea, to those found patent-eligible in *Diehr*. The Federal Circuit reasoned that the claims in *Thales* were directed to using sensors and algorithms (the application of physics to create an improved technique) “in a non-conventional manner” to improve measuring and orienting moving objects, as in *Diehr* where an algorithm and sensor were used to improve a rubber-making process. *Thales*, 850 F.3d at 1348–49.

Here, on the other hand, claim 1 is directed to data manipulation and analysis to create more data and uses an accelerometer and a processor not in non-conventional ways, but in conventional ways as discussed above. In *Thales*, the improvement was in a physical tracking system, which, in *SAP America*, 890 F.3d at 1022, the Federal Circuit explained was wholly in the “physical-realm,” as contrasted with the selection and mathematical analysis of information followed by reporting or display of the results, which the Federal Circuit held to be “not a physical-realm improvement but an improvement in wholly abstract ideas.” Here, the claims are like those of *SAP America* and, more so, those of *Electric Power Group*, rather than *Thales*, because the improvement achieved is in the abstract idea itself.

For the reasons set forth above, pursuant to the precedent of our reviewing court, we affirm the § 101 rejection.

OBVIOUSNESS

“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007). “[T]he analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *Id.* at 418. “[I]f a technique has been used to improve one device [or process], and a person of ordinary skill in the art would recognize that it would improve similar devices [or processes] in the same way, using the technique is obvious unless its actual application is beyond his or her skill.” *Id.* at 417. “In determining whether the subject matter of a patent claim is obvious, neither the particular motivation nor the avowed purpose of the patentee controls. What matters is the objective reach of the claim. If the claim extends to what is obvious, it is invalid under § 103.” *Id.* at 419.

The Examiner determined that claims 1 and 2 would have been obvious over Klewer, Pinhas, Kovacs, and Timmons, in combination. Regarding claim 7, the Examiner added Collins to (essentially) the aforementioned combination. Regarding claims 8, 10, and 12, the Examiner added Partin to the aforementioned combination. Regarding claim 13, the Examiner added Partin and Collins to (essentially) the aforementioned combination. In supporting these rejections the Examiner cited Klewer in its entirety, but specifically at 3:28–4:6, 5:1–11:1, Figures 1, 3; cited Pinhas in its entirety, but specifically ¶¶ 181, 189, 193, 241–247, 295, 302, 337, 340–

341; cited Kovacs in its entirety, but specifically ¶¶ 34, 38, 48; cited Timmons ¶¶ 33, 48; cited Collins 2:2–31; and cited Partin ¶¶ 20–21. Final Action 4–23; Answer 11–15. We discern no error in the Examiner’s determinations and adopt the related rationale and findings of fact. We address Appellants’ arguments below.

Regarding claim 1, Appellants argue that “[e]ach of Klewer, Pinhas and Kovacs is silent as to pausing,” per the claim limitation. Appeal Br. 21. Appellants argue Timmons, cited by the Examiner for teaching such subject matter, also fails in this regard because the reference, while disclosing an accelerometer sensor as a condition indicator, “suggests, at best, repeating and delaying posture measurements ‘until there is consistency and stability.’” *Id.* at 21–22. Appellants also argue Timmons fails to teach the “determine a best respiration signal candidate” limitation because the reference estimates a posture, not respiration, and that Timmons teaches away from estimating respiration by requiring placement of sensors away from areas subject to oscillation from respiration. *Id.* at 22.

Regarding claim 7, Appellants argue “[c]laim 7 depends from claim 1 [and] Collins does not remedy the shortcomings of Klewer, Pinhas, Kovacs, and Timmons noted above with respect to claim 1. Claim 7 is therefore patentable for at least the same reasons as those provided for claim 1.” *Id.* at 22. Regarding claims 8, 10, and 12, Appellants argue:

As discussed above with reference to claim 1, the combination of Klewer, Pinhas, Kovacs and Timmons does not disclose at least similar limitations. Partin does not remedy this deficiency. For at least reasons similar to those discussed above, the combination of Klewer, Pinhas, Kovacs, Timmons, and Partin does not disclose these limitations. Claims 10 and 12 depend from claim 8 and are patentable for at least these reasons.

Id. at 23. Regarding claim 13, Appellants argue “[c]laim 13 depends from claim 8 [and] Collins does not remedy the shortcomings of Klewer, Pinhas, Kovacs, Timmons, and Partin noted above with respect to claim 8. Claim 13 is therefore patentable for at least the same reasons as those provided for claim 8.” *Id.*

Therefore, Appellants’ non-obviousness arguments come down to whether Timmons teaches or suggests the claimed pause element/step and the claimed determining of a best respiration signal, and whether Timmons teaches away from the claimed invention based on accelerometer placement. Appellants’ arguments are not persuasive.

Timmons teaches and suggests the claimed pause. Timmons is directed to a system for measuring, e.g., blood pressure, and incorporates within that system not only a pressure sensor, but also one or more condition indicators to aid in determining correct absolute pressure measurements. Timmons ¶ 32. One such condition indicator is an accelerometer paired with a microprocessor that can be used to sense body posture, body motion, patient activity, and pulmonary function (e.g., respiration, ventilation rate, ventilation volumetric rate, minute ventilation). *Id.* ¶¶ 33–38. The signals from the accelerometer (and pressure sensors) are controlled to sample data over time to assess changes in signal values to determine the most desirable time to take a pressure measurement. *Id.* ¶¶ 47–48. This sampling includes taking measurements every 3–10 seconds, or at other periods as found usable. *Id.* ¶ 48. Thus, sensing pauses are built into the Timmons system. Furthermore, Timmons teaches that if the system detects too much change in measurements, e.g., respiration is not ideal for measuring pressure, a delay is effected to wait “until there is consistency and stability in the

measurements.” *Id.* Thus, Timmons teaches and suggests and makes obvious the claimed “pause the processing of tilt data for about 1 second to about 30 seconds; after the pause, determine whether the more than one input signal have stabilized; if the more than one input signal have stabilized, determine a best respiration signal candidate,” as determined by the Examiner.

As to the alleged “teach[ing] away from estimating respiration” because Timmons “require[es] placement of sensors ‘away from tissue that is subject to pressure oscillations from respiration’,” this argument is not persuasive. First, the Examiner does not rely on Timmons to teach placement of an accelerometer. Answer 14. Second, Timmons only suggests positioning an internal reference *pressure sensor* away from tissue that is subject to pressure oscillations from respiration; the references does not suggest so positioning an accelerometer intended to measure respiration, which, in one embodiment, is disclosed as positioned over the chest cavity. *See* Timmons ¶¶ 26, 41, Fig. 5.

For the reasons above, we affirm the obviousness rejections.

SUMMARY

The rejection of the claims as directed to patent-ineligible subject matter is affirmed.

The obviousness rejections are each affirmed.

TIME PERIOD FOR RESPONSE

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).

AFFIRMED