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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MARK L. PALMERI, SAMANTHA L. LIPMAN, and KATHRYN R. NIGHTINGALE

Appeal 2018-004036
Application 13/312,278
Technology Center 3700

Before MICHAEL L. HOELTER, ANNETTE R. REIMERS, and LISA M. GUIJT, *Administrative Patent Judges*.

REIMERS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Mark L. Palmeri et al. ("Appellants") appeal under 35 U.S.C. § 134(a) from the Examiner's decision to reject claims 1–14, 17–26, and 30–33. Claims 15, 16, and 27–29 have been canceled. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

CLAIMED SUBJECT MATTER

The claimed subject matter "relates to ultrasound methods, systems and computer program products, and more specifically to ultrasound imaging of fluids." Spec. ¶ 2, Figs. 1–3A. Claims 1, 17, and 26 are independent.

Claim 1 is illustrative of the claimed subject matter and recites:

> 1. An ultrasound system for identifying a presence of fluid in a region of interest, the system comprising:
>
> a controller configured to communicate with an ultrasound transducer such that the ultrasound transducer
>
> a) emits a radiation force excitation ultrasound pulse from the ultrasound transducer that propagates through the region of interest and is sufficient to perturb a fluid in the region of interest;
>
> b) emits a first acoustic ultrasound pulse from the ultrasound transducer that propagates away from the ultrasound transducer, through the region of interest and produces a first echo ultrasound signal that propagates from the region of interest to the ultrasound transducer;
>
> c) receives a first data set responsive to the first echo signal at the ultrasound transducer;
>
> d) emits a second acoustic ultrasound pulse from the ultrasound transducer that propagates away from the ultrasound transducer, through the region of interest and produces a second echo ultrasound signal that propagates from the region of interest to the ultrasound transducer while the radiation force excitation ultrasound pulse is perturbing the fluid in the region of interest; and
>
> e) receives a second data set responsive to the second echo signal at the ultrasound transducer; and
>
> a decorrelation module configured to identify a decorrelation region of decorrelated data that is decorrelated between the first and second data sets, wherein the decorrelation

region indicates a presence of fluid that is injected into soft tissue in the region of interest.

THE REJECTIONS

I. Claim 33 stands rejected under 35 U.S.C. § 112, second paragraph, for indefiniteness.

II. Claims 1–8, 14, 17–22, 26, and 30–33 stand rejected under 35 U.S.C. § 103(a) as unpatentable over by Bercoff (WO 2007/110375 A1, published Oct. 4, 2007)[1] and Gray.[2]

III. Claims 2–8 and 18–22 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Bercoff, Gray, and Østensen (US 5,980,460, issued Nov. 9, 1999).

IV. Claims 9, 11, 23, and 25 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Bercoff, Gray, Østensen, and Zhao (US 6,775,400 B1, issued Aug. 10, 2004).

V. Claims 10 and 24 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Bercoff, Gray, Østensen, Zhao, and Burla (US 2007/0038084 A1, published Feb. 15, 2007).

VI. Claims 12 and 13 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Bercoff, Gray, and Fraser (US 2008/0249409 A1, published Oct. 9, 2008).

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[1] For citation, the Examiner relies on the US equivalent, US 2010/0168566 A1, published July 1, 2010. *See* Final Office Action 6 ("Final Act."), dated Jan. 25, 2017. For consistency, we shall cite to the US equivalent as well.

[2] Gray, Andrew T., *Ultrasound-guided Regional Anesthesia*, 104 ANESTHESIOLOGY 368–73 (2006).

VII. Claims 30–33 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Bercoff, Gray, and Keenan (US 2007/0197954 A1, published Aug. 23, 2007).

ANALYSIS

Rejection I – Indefiniteness

The Examiner determines that "claim 33 is indefinite because [the] claim depends from canceled claim 27." Final Act. 5.

Because Appellants have not presented any argument pertaining to the Examiner's rejection of claim 33 as being indefinite, we summarily sustain the rejection. *See* Br. 5–6;[3] MPEP § 1205.02 ("[T]he Board may summarily sustain any grounds of rejections not argued.").

Rejection II – Obviousness over Bercoff and Gray

Appellants do not offer arguments in favor of claims 2–8, 14, 17–22, 26, and 30–33 separate from those presented for independent claim 1. *See* Br. 5–6. We select claim 1 as the representative claim, and claims 2–8, 14, 17–22, 26, and 30–33 stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(iv).

Regarding claim 1, the Examiner finds that "Bercoff teaches identifying a presence of fluid in a region of interest by decorrelation between plural images (see par. [0002], [0008], [0122], [0124])." Final Act. 7. The Examiner acknowledges that "Bercoff fails to explicitly state that the decorrelation region indicates fluid that is injected into soft tissue." *Id.* The Examiner, however, finds that "Gray discloses high-resolution ultrasound

[3] Appeal Brief ("Br."), filed Aug. 24, 2017.

image providing direct real-time imaging of peripheral nerves and identify tissue planes that permit favorable local anesthetic distribution" and that "Gray teaches using [the] image to identify fluid that is injected into soft/nerve tissue ([F]ig. 1B shows ultrasound images that indicates injection and presence of fluid (arrow-heads) into soft tissue)." Final Act. 7. The Examiner reasons that it would have been obvious to "have utilized indicating fluid that is injected into soft issue in the invention of Bercoff, as taught by Gray, to be able to successfully perform neural blockade (see left column on page 368)." *Id.* The Examiner notes, however, that in regard to claims 1 and 26, the limitation "wherein the decorrelation region indicates a presence of fluid that is injected into soft tissue" is "not positively recited, and therefore, the claim limitation does not further limit the claim[s]." *Id.* at 6.

As an initial matter, Appellants contend that "the claim recitation [reiterated *supra*] clearly limits a characteristic of the decorrelation region, which is affirmatively claimed" and note that "[c]laim 17 recites 'injecting a fluid into soft tissue in the region of interest,' which is a positive recitation." Br. 5 (emphasis omitted).

Appellants' contentions are unpersuasive. The limitation "injecting a fluid into soft tissue in the region of interest" is only recited in claim 17, which is directed to "[a]n ultrasound *method* for identifying a presence of fluid in a region of interest." Br. 10, Claims App. (emphasis added). This limitation is not recited in claim 1, which is directed to "[a]n ultrasound *system* for identifying a presence of fluid in a region of interest" or in claim 26, which is directed to "[a] *computer program product* for identifying a presence of fluid in a region of interest." *Id.* at 7, 12 (emphasis added).

Thus, we agree with the Examiner that the limitation "wherein the decorrelation region indicates a presence of fluid that is injected into soft tissue" is "not positively recited, and therefore, the claim limitation does not further limit . . . claim[s 1 and 26]." Final Act. 6; *see also* Ans. 12–13.[4] Notwithstanding the Examiner's determination that the limitation reiterated *supra* does not further limit claim 1, we note the Examiner states, "[h]owever, for compact prosecution, the [Examiner] has provided prior art[, i.e., Gray,] to address the claim limitation of injecting fluid into soft tissue." Final Act. 6.

Appellants contend that "Gray discusses nerve imaging with ultrasound, and does not disclose a decorrelation region that indicates that a fluid is injected into soft tissue." Br. 5 (emphasis omitted).

This argument is unpersuasive as it does not address the Examiner's rejection. The Examiner does not rely on the teachings of Gray for disclosing a decorrelation region that indicates that a fluid is injected into soft tissue; rather, the Examiner relies on the teachings of Bercoff for disclosing "identifying a presence of fluid in a region of interest by decorrelation between plural images" and on the teachings of Gray for disclosing "using [the] image to identify fluid that is injected into soft/nerve tissue." *See* Final Act. 7; *see also* Ans. 13–15. *See In re Keller*, 642 F.2d 413 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091 (Fed. Cir. 1986). Thus, we are not apprised of Examiner error based on this argument.

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[4] Examiner's Answer ("Ans."), dated Dec. 29, 2017.

Appellants argue that "Gray does not discuss any techniques for enhancing the visibility of fluid injected into soft tissue and instead relies on a standard ultrasound image." Br. 5 (emphasis omitted).

This argument is also unpersuasive. As the Examiner explains, claim 1 "do[es] *not* recite any limitation that is directed to *enhancing* the visibility of fluid injected into soft tissue"; rather, claim 1 is "merely directed to identifying a decorrelation region that is decorrelated between first and second data sets, and the decorrelation region indicates a *presence* of injected fluid that is injected into soft tissue." Ans. 15 (emphasis added). *See In re Self*, 671 F.2d 1344, 1348 (CCPA 1982) (Limitations not appearing in the claims cannot be relied upon for patentability).

In summary, and based on the record presented, we are not persuaded the Examiner erred in rejecting independent claim 1 as unpatentable over Bercoff and Gray. Accordingly, we sustain the Examiner's rejection of claim 1, as unpatentable over Bercoff and Gray, with claims 2–8, 14, 17–22, 26, and 30–33 falling with claim 1.

Rejections III – VII Obviousness over Bercoff, Gray, and any of Østensen, Zhao, Burla, Fraser, or Keenan

Appellants do not provide any substantive arguments against Rejections III–VII. Br. 5–6. As we find no deficiencies in the Examiner's rejection of independent claims 1, 17, and 26 as unpatentable over Bercoff and Gray for the reasons discussed above for Rejection II, we likewise sustain the Examiner's rejections of claims 2–8 and 18–22 as unpatentable over Bercoff, Gray, and Østensen, of claims 9, 11, 23, and 25 as unpatentable over Bercoff, Gray, Østensen, and Zhao, of claims 10 and 24 as unpatentable over Bercoff, Gray, Østensen, Zhao, and Burla, of claims 12

and 13 as unpatentable over Bercoff, Gray, and Fraser, and of claims 30–33 as unpatentable over Bercoff, Gray, and Keenan.

DECISION

We AFFIRM the decision of the Examiner to reject claim 33 under 35 U.S.C. § 112, second paragraph.

We AFFIRM the decision of the Examiner to reject claims 1–14, 17–26, and 30–33 under 35 U.S.C. § 103(a).

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