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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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Ex parte MURIEL Y. ISHIKAWA,
EDWARD K.Y. JUNG, ERIC C. LEUTHARDT,
NATHAN P. MYHRVOLD, and LOWELL L. WOOD JR.

———————

Appeal 2020-000425
Application 14/966,276
Technology Center 1600

———————

Before ERIC B. GRIMES, LINDA M. GAUDETTE, and
FRANCISCO C. PRATS, *Administrative Patent Judges*.

PRATS, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's decision to reject claims 23–25, 29, 35–40, and 43–45. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

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[1] We use the word "Appellant" to refer to "applicant" as defined in 37 C.F.R. § 1.42. Appellant states that the real party in interest is "Elwha LLC, in Bellevue, Washington. Elwha LLC is an affiliate of The Invention Science Fund II, LLC." Appeal Br. 5.

STATEMENT OF THE CASE

The following rejections are before us for review:[2]

(1) Claims 23, 35–38, 40, 44, and 45, under 35 U.S.C. § 103(a) as being unpatentable over Brasch,[3] Magnetic Resonance Imaging,[4] and Hurd[5] (Final Act. 6–8);

(2) Claims 24, 25, and 29, under 35 U.S.C. § 103(a) as being unpatentable over Brasch, Magnetic Resonance Imaging, Hurd, and Clark[6] (Final Act. 9–10);

(3) Claim 39, under 35 U.S.C. § 103(a) as being unpatentable over Brasch, Magnetic Resonance Imaging, Hurd, and Igo[7] (Final Act. 11–12);

(4) Claim 43, under 35 U.S.C. § 103(a) as being unpatentable over Brasch, Magnetic Resonance Imaging, Hurd, and Desai[8] (Final Act. 12–13);

(5) Claims 23 and 36, on the ground of nonstatutory double patenting over claim 3 of U.S. Patent No. 7,979,213 B2 in view of Hurd (Final Act. 15–16);

(6) Claim 23, on the ground of nonstatutory double patenting over claim 3 of U.S. Patent No. 8,112,233 B2 in view of Hurd (Final Act. 16–17);

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[2] The Final Action included a rejection under 35 U.S.C. § 101. *See* Final Act. 2–5 (entered January 24, 2019). The Examiner has withdrawn the rejection under § 101. Ans. 3.
[3] US 6,009,342 (issued Dec. 28, 1999).
[4] Magnetic Resonance Imaging (MRI); From Mosby's Dictionary of Medicine, Nursing, & Health Professions (2012) (http://www.credoreference.com/entry/ehsmosbymed/magnetic_resonance_imaging_mri) .
[5] US 2007/0025918 A1 (published Feb. 1, 2007).
[6] US 6,537,222 B1 (issued Mar. 25, 2003).
[7] US 5,900,433 (issued May 4, 1999).
[8] US 2007/0116761 A1 (published May 24, 2007).

(7) Claim 23, on the ground of nonstatutory double patenting over claim 1 of U.S. Patent No. 8,364,407 B2 in view of Hurd (Final Act. 18);

(8) Claim 23, on the ground of nonstatutory double patenting over claim 1 of U.S. Patent No. 8,364,412 B2 in view of Hurd (Final Act. 19–20);

(9) Claims 23 and 36, on the ground of nonstatutory double patenting over claim 15 of U.S. Patent No. 8,364,423 B2 in view of Hurd (Final Act. 20–21);

(10) Claim 23, on the ground of nonstatutory double patenting over claim 1 of U.S. Patent No. 8,346,484 B2 in view of Hurd (Final Act. 22–23);

(11) Claims 23, 35–37, 40, and 43, on the ground of nonstatutory double patenting over claims 1, 13–15, 28, and 22, of U.S. Patent No. 9,211,332 B2 in view of Hurd (Final Act. 23–24); and

(12) Claims 23, 29, 35–37, 40, and 43–45, on the ground of nonstatutory double patenting over claims 1, 4, 10–13, and 16–18 of U.S. Patent No. 8,195,403 B2 in view of Hurd (Final Act. 25).

Appellant's claim 23 is representative and reads as follows:

> 23. A method, comprising
>
> identifying a naturally-occurring agent in a body;
>
> selecting a set of differing energy inputs specific to the agent, wherein the set of differing energy inputs selectively resonates a plurality of resonant structures in the agent; and
>
> directing the set of differing energy inputs towards the agent.

Appeal Br. 43.

OBVIOUSNESS

The Examiner's Prima Facie Case

The Examiner determined that Brasch describes a magnetic resonance imaging (MRI) process which, as evidenced by the Magnetic Resonance

Imaging reference, involves "progressively and selectively inputting magnetic field energetics into a subject and then assess[ing] changes in resonances of the portions of the subject onto which the magnetic energetics have been directed." Final Act. 6. The Examiner noted in particular that, "in Brasch et al., the portion of the subject undergoing MRI is the tumor injected with the contrast agent. The cover figure of Brasch et al. illustrates the result of the MRI experiment at a plurality of points." *Id.*

The Examiner determined that Brasch differs from Appellant's representative claim 23 only in that Brasch "does not teach that the [MRI contrast] agent must be naturally occurring." Final Act. 6.

The Examiner cited Hurd as evidence that, despite the difference between representative claim 23 and Brasch, a skilled artisan would have considered claim 23's process obvious. Final Act. 7. In particular, the Examiner found, "[p]aragraph 38 of Hurd teach[es] use of both C-13 enriched fullerenes and naturally-occurring fullerenes as MRI agents with the naturally-occurring fullerenes giving a weaker signal than the C-13 enriched fullerenes." *Id.*

Based on the references' combined teachings, the Examiner reasoned that a skilled artisan would have considered it obvious "to modify the contrast agents of Brasch et al. by use of the naturally-occurring agents of Hurd because it is obvious to substitute known elements in the prior art to yield a predictable result." Final Act. 7. In particular, the Examiner reasoned, the "naturally-occurring agents of Hurd are alternatives to the contrast agents of Brasch et al. There would have been a reasonable expectation of success in using either the contrast agents of Brasch et al. or Hurd because both studies analogously pertain to the use of agents in MRI studies." *Id.* at 8.

Analysis—Claim 23

As stated in *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992):

> [T]he examiner bears the initial burden . . . of presenting a *prima facie* case of unpatentability. . . .
>
> After evidence or argument is submitted by the applicant in response, patentability is determined on the totality of the record, by a preponderance of evidence with due consideration to persuasiveness of argument.

In the present case, Appellant does not persuade us that the Examiner's conclusion of obviousness as to Appellant's representative claim 23 is not supported by a preponderance of the evidence. In particular, Appellant does not persuade us that, because the MRI process described in Brasch involves administering an exogenous contrast agent to a subject before directing the image-generating resonant energy to the subject's body, Brasch is irrelevant to the process recited in representative claim 23. Appeal Br. 22–25 (citing Brasch 6:49–7:23); Reply Br. 3.

It is well settled that "[n]on-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references. . . . [The reference] must be read, not in isolation, but for what it fairly teaches in combination with the prior art as a whole." *See In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986).

In the present case, the Examiner relies on Brasch, as evidenced by the Magnetic Resonance Imaging reference, as disclosing an MRI process having claim 23's steps of identifying an agent (an MRI contrast agent) in a subject's body, selecting a set of resonant energies specific to the agent that allow imaging of structures within the body, and directing the set of energies to the agent, which generates images of the structures of interest. *See* Final

Act. 6. The Examiner acknowledges that Brasch does not use a naturally-occurring contrast agent in its MRI process, and cites Hurd as evidence that it would have been obvious to use (and identify in the subject's body) a naturally occurring MRI contrast agent. *See id.* at 7–8.

Thus, the fact that Brasch does not, by itself, describe identifying a naturally-occurring agent in a subject's body does not demonstrate error in the Examiner's obviousness conclusion, because the Examiner relies on Brasch in combination with additional references. *See In re Merck*, 800 F.2d at 1097. For similar reasons, the failure of the Magnetic Resonance Imaging reference (termed "Mosby" by Appellant) to describe using (and identifying) a naturally-occurring agent as the contrast agent in an MRI process does not persuade us of error in the Examiner's conclusion of obviousness. *See* Appeal Br. 24–25.

Appellant also does not persuade us that representative claim 23, in reciting the step of "identifying a naturally-occurring agent in a body" (Appeal Br. 43), requires the agent to be a substance that is endogenously present in the body, as opposed to a naturally-occurring substance that has been administered to the body before being identified. *See* Appeal Br. 22 ("Brasch, the primary reference in each of the cited combinations of references, is expressly directed to administering *external* contrast agents *into* a body. Plainly, if the contrast agents have to be externally administered, then the agents do not include 'a naturally occurring agent in a body.'"); *see also* Reply Br. 3–4.

It is well settled that during examination, the PTO must interpret terms in a claim using "the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or

otherwise that may be afforded by the written description contained in the applicant's specification." *In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997). However, "absent claim language carrying a narrow meaning, the PTO should only limit the claim based on the specification . . . when [it] expressly disclaims the broader definition." *In re Bigio*, 381 F.3d 1320, 1325 (Fed Cir. 2004).

In the present case, when referring to naturally-occurring agents that are present in a body without having been previously administered, the Specification uses the term "endogenous agents." *See* Spec. 24 ("In some embodiments, it may be desirable to catalyze, release, activate, inactivate, or destroy *endogenous agents* in the blood or in other tissue. These may include, for example, blood clotting factors . . . ." (emphasis added)).

Accordingly, because claim 23 does not include language limiting the identified naturally-occurring agent to an endogenous agent, Appellant does not persuade us that the Examiner erred by interpreting claim 23 as not being limited to identifying endogenous agents. *See In re Bigio*, 381 F.3d at 1325.

To the contrary, as the Examiner points out, Appellant's Specification describes exciting with resonant energy (and therefore identifying), a number of undisputedly naturally-occurring agents after they have been administered to a subject's body. *See* Spec. 21 ("In some embodiments, the compositions to be excited may be agents that have been or will be administered *in vivo*, such as but not limited to . . . hormones . . . and vitamins[.]"). Appellant does not persuade us, therefore, that the Examiner erred in determining that, when claim 23 is given its broadest reasonable interpretation in light of the Specification, the step of "identifying a naturally-occurring agent in a body" (Appeal Br. 43) encompasses

identifying a naturally-occurring agent that is administered to the body before being identified.

Appellant also does not persuade us that the Examiner erred in finding that Hurd suggests using a naturally occurring agent as the contrast agent in Brasch's MRI process. *See* Appeal Br. 25–27; Reply Br. 4.

Hurd's invention "relates to carbon-13 enriched fullerene . . . compositions for improved magnetic resonance imaging ('MRI')." Hurd, abstract. Hurd therefore focuses on using its preferred carbon-13 enriched fullerenes in MRI processes, as Appellant contends. *See, e.g.*, *id.* ¶¶ 1, 43.

As the Examiner found, however, while Hurd prefers carbon-13 enriched fullerenes, Hurd also discloses that naturally-occurring fullerenes have a weak NMR signal that is detectable in MRI processes:

> Isotopically enriched carbon-13 fullerene contrast agents will preferably have a stronger NMR signal compared to naturally occurring fullerenes because, without the enrichment, the NMR signal is weak since the natural abundance of carbon-13 is only 1.1% and carbon-13 has a smaller gyromagnetic ratio, γ, than that of a proton (~¼), leading to an inherently weaker NMR signal than the proton signal.

Hurd ¶ 38. Given Hurd's teaching that naturally-occurring fullerenes have a weak NMR signal that is detectable in MRI processes, Appellant does not persuade us that the Examiner erred in finding that a skilled artisan had motivation for, and a reasonable expectation of success in, using naturally-occurring fullerenes in Brasch's MRI process.

In particular, contrary to Appellant's contention that Hurd condemns the use of naturally-occurring fullerenes in MRI processes, Hurd merely states that carbon-13 enriched fullerenes "*preferably* have a stronger NMR signal compared to naturally occurring fullerenes because, without the enrichment, the NMR signal is weak . . . ." Hurd ¶ 38 (emphasis added). It

is well settled that a "reference does not teach away . . . if it merely expresses a general preference for an alternative invention but does not criticize, discredit, or otherwise discourage investigation into the invention claimed." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1327 (Fed. Cir. 2009) (internal quotations omitted); *see also In re Mills*, 470 F.2d 649, 651 (CCPA 1972) ("All the disclosures in a reference must be evaluated, *including nonpreferred embodiments*, and a reference is not limited to the disclosure of specific working examples.") (citations omitted; emphasis added).

Accordingly, because Hurd merely expresses a preference for carbon-13 enriched fullerenes having a stronger NMR signal than naturally-occurring fullerenes, Appellant does not persuade us that Hurd teaches away from using naturally-occurring fullerenes in Brasch's MRI process. Moreover, given Hurd's teaching that naturally-occurring fullerenes have a weak NMR signal that is detectable in MRI processes, the fact that Hurd prefers carbon-13 enriched fullerenes does not persuade us that the Examiner erred in finding that Hurd would have provided motivation for, and a reasonable expectation of success in, using naturally-occurring fullerenes in Brasch's MRI process.

In sum, for the reasons discussed, Appellant does not persuade us that the preponderance of the evidence fails to support the Examiner's conclusion of obviousness as to Appellant's representative claim 23. We therefore affirm the Examiner's rejection of claim 23 over Brasch, Magnetic Resonance Imaging, and Hurd. Claims 35–38, 40, 44, and 45 fall with claim 23. *See* 37 C.F.R. 41.37(c)(1)(iv).

Claims 24, 25, and 29

In rejecting claims 24, 25, and 29 for obviousness over Brasch, Magnetic Resonance Imaging, Hurd, and Clark, the Examiner cited Brasch, Magnetic Resonance Imaging, and Hurd for the teachings discussed above, and cited Clark as evidence that the additional features recited in claims 24, 25, and 29 would have been obvious elements of the process suggested by the other references. *See* Final Act. 9–10.

In traversing the Examiner's obviousness rejection of claims 24, 25, and 29, Appellant reiterates its arguments directed to claim 23, discussed above. *See* Appeal Br. 28–30. For the reasons provided above, we do not find those arguments persuasive. We therefore also affirm the Examiner's rejection of claims 24, 25, and 29 for obviousness over Brasch, Magnetic Resonance Imaging, Hurd, and Clark.

Claim 39

In rejecting claim 39 for obviousness over Brasch, Magnetic Resonance Imaging, Hurd, and Igo, the Examiner cited Brasch, Magnetic Resonance Imaging, and Hurd for the teachings discussed above, and cited Igo as evidence that the additional features recited in claim 39 would have been obvious elements of the process suggested by the other references. *See* Final Act. 11–12.

In traversing the Examiner's obviousness rejection of claim 39, Appellant reiterates its arguments directed to claim 23, discussed above. *See* Appeal Br. 30–32. For the reasons provided above, we do not find those arguments persuasive. We therefore also affirm the Examiner's rejection of claim 39 for obviousness over Brasch, Magnetic Resonance Imaging, Hurd, and Igo.

Claim 43

In rejecting claim 43 for obviousness over Brasch, Magnetic Resonance Imaging, Hurd, and Desai, the Examiner cited Brasch, Magnetic Resonance Imaging, and Hurd for the teachings discussed above, and cited Desai as evidence that the additional features recited in claim 43 would have been obvious elements of the process suggested by the other references. *See* Final Act. 12–13.

In traversing the Examiner's obviousness rejection of claim 43, Appellant reiterates its arguments directed to claim 23, discussed above. *See* Appeal Br. 32–34. For the reasons provided above, we do not find those arguments persuasive. We therefore also affirm the Examiner's rejection of claim 43 for obviousness over Brasch, Magnetic Resonance Imaging, Hurd, and Desai.

DOUBLE PATENTING

The Examiner's Prima Facie Case

All of the Examiner's rejections for obviousness-type double patenting apply essentially the same rationale. For example, in the first double patenting rejection, the Examiner found that the conflicting patented claim, claim 3 of U.S. Patent No. 7,979,213 B2, describes a process that differs from Appellant's rejected claims 23 and 36 only in that the patented claim does not use a naturally-occurring agent in the described process. Final Act. 15. Analogous to the obviousness rejections discussed above, the Examiner cited Hurd as evidence that a skilled artisan would have considered it obvious to use a naturally-occurring agent in a resonant energy-applying process described by the patented claim. *See id.* at 15–16. In each of the other double patenting rejections, the Examiner cites Hurd as evidence that a skilled artisan would have considered it obvious to use a

naturally-occurring agent in a resonant energy-applying process described by the patented claims. *See id.* at 17–25.

Analysis

In traversing the Examiner's double patenting rejections, Appellant does not assert error in the Examiner's finding that the cited patented claims differ from the rejected claims only in that the patented claims do not recite the use of a naturally-occurring agent in the processes described in the patented claims. *See* Appeal Br. 34–41; Reply Br. 5. Rather, in traversing each of the double patenting rejections, Appellant reiterates its argument, discussed above in relation to the obviousness rejection of claim 23, that Hurd does not suggest using a naturally-occurring agent in processes in which resonant energy is directed to an identified agent. *See id.* For the reasons discussed above, we do not find that argument persuasive. We therefore affirm each of the Examiner's rejections for obviousness-type double patenting.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
23, 35–38, 40, 44, 45	103(a)	Brasch, Magnetic Resonance Imaging, Hurd	23, 35–38, 40, 44, 45	
24, 25, 29	103(a)	Brasch, Magnetic Resonance Imaging, Hurd, Clark	24, 25, 29	
39	103(a)	Brasch, Magnetic Resonance Imaging, Hurd, Igo	39	
43	103(a)	Brasch, Magnetic Resonance Imaging, Hurd, Desai	43	
23, 36		Double Patenting; US 7,979,213 B2, Hurd	23, 36	
23		Double Patenting; US 8,112,233 B2, Hurd	23	
23		Double Patenting; US 8,364,407 B2, Hurd	23	
23		Double Patenting; US 8,364,412 B2, Hurd	23	
23, 36		Double Patenting; US 8,364,423 B2, Hurd	23, 36	
23		Double Patenting; US 8,346,484 B2, Hurd	23	
23, 35–37, 40, 43		Double Patenting; US 9,211,332 B2, Hurd	23, 35–37, 40, 43	

23, 29, 35–37, 40, 43–45		Double Patenting; US 8,195,403 B2, Hurd	23, 29, 35–37, 40, 43–45	
Overall Outcome			23–25, 29, 35–40, 43–45	

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). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED