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info@dd-iplaw.com
pdaugherty@dd-iplaw.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MORTEN FALK REVENTLOW

Appeal 2019-004890
Application 14/624,669
Technology Center 3700

Before JAMES P. CALVE, WILLIAM A. CAPP and LISA M. GUIJT,
Administrative Patent Judges.

CAPP, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant¹ seeks our review under 35 U.S.C. § 134(a) of the final rejection of claims 1–7 and 9–20. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42(a). Appellant identifies Koninklijke Philips N.V. as the real party in interest. Appeal Br. 2.

THE INVENTION

Appellant's invention relates to ultrasound imaging. Spec. 1.

Claim 1, reproduced below, is illustrative of the subject matter on appeal.

1. An ultrasound imaging apparatus, comprising:
 - a plurality of sides that include a material with at least one of an antibacterial or an antimicrobial agent thereon;
 - an acoustic window of one of the sides, wherein the acoustic window includes the material with the at least one of the antibacterial or the antimicrobial agent; and
 - a transducer array of transducing elements disposed within the sides and adjacent to the acoustic window.

THE REJECTIONS

The Examiner relies upon the following as evidence in support of the rejections:

NAME	REFERENCE	DATE
Pflugrath	US 5,722,412	Mar. 3, 1998
Lyon	US 5,897,503	Apr. 27, 1999
Kimura	US 2004/0166163 A1	Aug. 26, 2004
Pelissier	US 2007/0270694 A1	Nov. 22, 2007
Stonefield	US 2009/0129640 A1	May 21, 2009
Boudreaux	US 2010/0198220 A1	Aug. 5, 2010

The following rejections are before us for review:

1. Claims 1–7 and 9 are rejected under 35 U.S.C. § 103 as being unpatentable over Lyon and either Kimura or Boudreaux.
2. Claims 10–12 are rejected under 35 U.S.C. § 103 as being unpatentable over Lyon and either Kimura or Boudreaux, in combination with Pelissier.

3. Claim 13 is rejected under 35 U.S.C. § 103 as being unpatentable over Lyon and either Kimura or Boudreaux, in combination with Pflugrath.

4. Claims 14–17 are rejected under 35 U.S.C. § 103 as being unpatentable over Stonefield and Lyon, in combination with either Kimura or Boudreaux.

5. Claims 18–20 are rejected under 35 U.S.C. § 103 as being unpatentable over Stonefield and Lyon, in combination with either Kimura or Boudreaux.

OPINION

Unpatentability of Claims 1–7 and 9 over Lyon and either Kimura or Boudreaux

Claim 1

The Examiner finds that Lyon discloses the invention substantially as claimed except for an antibacterial agent² such as silver or copper, for which the Examiner relies on Kimura or, in the alternative, Boudreaux. Final Action 2–3. The Examiner concludes that it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine the teachings of the prior art to achieve the claimed invention. *Id.* at 3.

According to the Examiner, a person of ordinary skill in the art would have done this to reduce the transmissions of pathogens from patient to patient and to reduce bacterial and microbes on the ultrasound device. *Id.*

Appellant first argues that Kimura is directed to an apparatus made from vinyl chloride resin. Appeal Br. 4. Appellant contends that such

² For brevity, we use “antibacterial agent” as an abbreviated form for “antibacterial or antimicrobial agent.”

“implies” that not all antimicrobial compositions can be used with all exposed surfaces of all medical tools. *Id.*

In response, the Examiner clarifies that the rejection does not incorporate the vinyl chloride resin of Kimura or Boudreaux. Ans. 5. The Examiner explains that Kimura and Boudreaux are useful to teach a skilled artisan that medical devices can benefit from using an antibacterial agent to prevent the transmission of disease. *Id.* The Examiner further finds that Lyon teaches that acoustic windows are common place elements in ultrasound transducers, and that

accordingly, a skilled artisan in light of the prior art would not have combined the specific vinyl chloride resin of Kimura in the acoustic window or the cutting tool of Boudreaux, but rather, would have utilized the antimicrobial or antibacterial material of Kimura or Boudreaux to enhance the acoustic window of Lyon.

Id.

In reply, Appellant accuses the Examiner of engaging in an “overly broad and unsubstantiated interpretation of Kimura and Boudreaux.” Reply Br. 2. Appellant argues that adding silver or copper as taught by Kimura and Boudreaux to an acoustic lens is not disclosed or suggested by the prior art and that the Examiner’s findings in such regard are not supported with evidence or rationale. *Id.*

There is no indication that the amounts of silver or copper in compounds is adjustable, or that their compounds, even without the silver or copper, could be used with the acoustic window of an ultrasound imaging system.

Id. at 2–3.

Lyon is directed to a hand-held transducer probe for an ultrasound imaging system. Lyon, Abstract, col. 1, ll. 5–9. Lyon’s device features

acoustic lens/window 114. *Id.* col. 5, ll. 44–54. Lyon teaches the use of various elastomeric compounds, including polyolefin based compounds, rubber based compounds, low durometer polyurethane based compounds, foam-based compounds, and polyvinylchloride based compounds, as improvements over prior art compounds used in prior art acoustic windows. *Id.* col. 4, ll. 16–25. Kimura discloses that it has long been known that specific metals, such as silver, have antimicrobial properties. Kimura, ¶ 5. Although Kimura is primarily directed to a composition for medical tools made of a vinyl chloride resin (Kimura, Abstract), Kimura discloses that various antibacterial agents can be used in combination with such vinyl chloride resin composition, to enhance or broaden the antimicrobial spectrum of the composition. *Id.* ¶ 50. Such antibacterial agents include metals such as silver and copper. *Id.* ¶ 51.

Appellant's claim 1 is directed to an ultrasound imaging apparatus. Claims App., claim 1. The claimed apparatus has a housing comprised of a plurality of sides. *Id.* Such housing includes an acoustic window on one of the sides. *Id.* The housing also includes a transducer array disposed within the sides and adjacent the acoustic window. *Id.* The sides, including the acoustic window, includes a material with an antibacterial agent thereon. *Id.* There is no limitation as to the amount or concentration of the antibacterial agent. *Id.* Apart from including or incorporating the antibacterial agent, there is no limitation as to the materials that may be used to form the sides and acoustic window. *Id.* In other words, the sides and window may be formed from any suitable material that is capable of incorporating or being otherwise combined with an antibacterial agent in an unspecified amount or concentration.

Appellant's arguments against combining the ultrasound probe of Lyon with the silver or copper antibacterial agent of Kimura are not persuasive. Appellant presents neither evidence nor persuasive technical reasoning that the materials used in the sides and acoustic window of Lyon's ultrasound transducer cannot be successfully combined with an antibacterial agent such as silver or copper. Similarly, Appellant presents neither evidence nor persuasive technical reasoning that such a combination achieves unexpected results. Indeed, given the background disclosure in Kimura that the antimicrobial properties of metals such as silver "has long been known," such results would have been expected at the time of the invention. Kimura ¶ 5.

Appellant next argues that the devices of Kimura and Boudreaux do not require acoustic impedance properties. Appeal Br. 5. Appellant argues that there is no indication that antibacterial or antimicrobial materials would not negatively affect or compromise the acoustic properties of the acoustic window of an ultrasound imaging system. *Id.* In response, the Examiner points out that the proposed combination relies on the exact silver compounds in a polymer resin as in Appellant's invention. Ans. 6.

Appellant argues that using the antibacterial agent of Kimura and Boudreaux with the acoustic window of Lyon would have been "unpredictable." Reply Br. 2. This argument goes to the issue of whether a person of ordinary skill would have so modified Lyon with a reasonable expectation of success. "An obviousness determination requires finding that a person of ordinary skill in the art would have been motivated to combine or modify the teachings in the prior art and would have had a reasonable expectation of success in doing so." *Regents of Univ. of Cal. v. Broad Inst.*,

Inc., 903 F.3d 1286, 1291 (Fed. Cir. 2018). “The reasonable expectation of success requirement refers to the likelihood of success in combining references to meet the limitations of the claimed invention.” *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367 (Fed. Cir. 2016). In other words, “one must have a motivation to combine accompanied by a reasonable expectation of achieving what is claimed in the patent-at-issue.” *Id.* “For obviousness under § 103, all that is required is a reasonable expectation of success.” *In re O’Farrell*, 853 F.2d 894, 904 (Fed. Cir. 1988); *see also Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1364 (Fed. Cir. 2007) (“the expectation of success need only be reasonable, not absolute”).

Using silver as an antimicrobial agent is known in the prior art. Kimura ¶ 5. It has been used to improve other medical devices. *See* Kimura ¶ 51. It is well settled that if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). Here, Appellant presents no evidence that modifying Lyon with silver as an antimicrobial agent is beyond the skill level of the ordinary artisan. Furthermore, Appellant’s argument that such a combination would have been “unpredictable” is unpersuasive as mere unsubstantiated attorney argument. *In re Cole*, 326 F.2d 769, 773 (CCPA 1964) (explaining that statements by counsel in the brief cannot take the place of evidence).

In view of the foregoing discussion, we determine the Examiner’s findings of fact are supported by a preponderance of the evidence and that

the Examiner's legal conclusion of unpatentability is well-founded. We sustain the Examiner's unpatentability rejection of claim 1.

Claims 2–7 and 9

Appellant does not argue for the separate patentability of claims 2–7 and 9 apart from arguments presented with respect to claim 1 which we have previously considered. We sustain the Examiner's rejection of claims 2–7 and 9. *See* 37 C.F.R. § 41.37(c)(1)(iv) (failure to separately argue claims constitutes a waiver of arguments for separate patentability).

*Unpatentability of Claims 10–13 over
Combinations based on Lyon and either Kimura or Boudreaux*

Claims 10–13 depend, directly or indirectly, from claim 1 and are not separately argued apart from the arguments that we previously considered and found unpersuasive with respect to claim 1. Claims App., Appeal Br. 6. We sustain the Examiner's unpatentability rejection of claims 10–13. 37 C.F.R. § 41.37(c)(1)(iv).

*Unpatentability of Claims 14–20 over
Combinations based on Lyon and either Kimura or Boudreaux*

Claims 14 and 18 are independent claims that, as conceded by Appellant, are substantially similar in scope to claim 1. Appeal Br. 6–7. Claims App. Claims 15–17 depend, directly or indirectly, from claim 14. *Id.* Claims 19 and 20 depend from claim 18. *Id.*

Claims 14–20 are not separately argued apart from the arguments that we previously considered and found unpersuasive with respect to claim 1. Appeal Br. 6–7. We sustain the Examiner's rejection of claims 10–13. 37 C.F.R. § 41.37(c)(1)(iv).

CONCLUSION

In summary:

Claims Rejected	§	References	Aff'd	Rev'd
1-7, 9	103	Lyon, Kimura, Boudreaux	1-7, 9	
10-12	103	Lyon, Kimura, Boudreaux, Pelissier	10-12	
13	103	Lyon, Kimura, Boudreaux, Pflugrath	13	
14-17	103	Stonefield, Lyon, Kimura, Boudreaux	14-17	
18-20	103	Pflugrath, Lyon, Kimura, Boudreaux	18-20	
Overall Outcome			1-7, 9-20	

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