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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MAHDI AHMADI, RAJESH RAJAMANI, and
GERALD TIMM

Appeal 2018-006374
Application 14/681,476
Technology Center 3700

Before JAMES P. CALVE, LISA M. GUIJT, and
ARTHUR M. PESLAK, *Administrative Patent Judges*.

PESLAK, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134(a) from the Examiner's decision rejecting claims 1–4 and 6–21.¹ We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Regents of the University of Minnesota. Appeal Br. 3.

THE CLAIMED SUBJECT MATTER

Appellant's invention relates "to a pressure sensing catheter system that includes a urethral catheter and a sensor array formed on the urethral catheter." Spec. ¶ 4. Claims 1, 17, and 20 are independent. Claim 1, reproduced below, is illustrative of the claimed subject matter.

1. A pressure sensing catheter system, comprising:
a urethral catheter; and
a flexible sensor strip formed on the urethral catheter,
wherein the flexible sensor strip includes a plurality of
capacitive pressure sensors distributed along a length of the
urethral catheter and includes signal lines to carry signals from
the capacitive pressure sensors to an
external interface.

REJECTIONS

The Examiner entered the following rejections:

- 1) Claims 1–4, 9–11, and 17–18 under 35 U.S.C. § 103 as unpatentable over Brown (US 2007/0225616 A1, published Sept. 27, 2007) and Dlugos (US 2008/0221598 A1, published Sept. 11, 2008).
- 2) Claim 6 under 35 U.S.C. § 103 as unpatentable over Brown, Dlugos, and Sliwa (US 2007/0293792 A1, published Dec. 20, 2007).
- 3) Claims 7, 8, and 15 under 35 U.S.C. § 103 as unpatentable over Brown, Dlugos, and Irazoqui (US 2014/02966687 A1, published Oct. 2, 2014).
- 4) Claim 20 under 35 U.S.C. § 103 as unpatentable over Brown and Pons (US 2009/0036574 A1, published Feb. 5, 2009).

- 5) Claims 12–14, and 19 under 35 U.S.C. § 103 as unpatentable over Brown, Dlugos, and Davie (US 2003/0033886 A1, published Feb. 20, 2003)².
- 6) Claim 16 under 35 U.S.C. § 103 as unpatentable over Brown, Dlugos, and Yoon (US US 2006/0254369 A1, published Nov. 16, 2006).
- 7) Claim 21 is rejected under 35 U.S.C. § 103 as unpatentable over Brown, Dlugos, and Uchimura (US 2009/0048488 A1, published Feb. 19, 2009).

DISCUSSION

Rejection 1

The Examiner finds that Brown discloses most of the limitations of independent claims 1 and 17 except it “does not specifically disclose a flexible sensor strip with capacitive pressure sensors.” Final Act. 4. The Examiner finds that Dlugos discloses “a pressure sensing strip 100 which has a plurality of individual sensors 102 on a flexible substrate 104” and “that the sensors can be capacitive sensors.” *Id.* (citing Dlugos ¶ 32, Fig. 6). The Examiner concludes that it would have been obvious to one of ordinary skill in the art “to modify Brown to include a flexible strip with individual sensors, which could include capacitive sensors, as taught by Dlugos, in order to measure pressure at the tissue interface where the sensors are located.” *Id.* at 4–5.

² Although the caption for this rejection lists claim 21 (*see* Final Act. 7), the Examiner did not include findings for claim 21 in this rejection. Therefore, we omit claim 21 from the caption of this rejection.

Appellant contends that “Dlugos is directed to a gastric band with pressure sensors” and “does not teach or suggest ‘a flexible sensor strip **formed on the urethral catheter.**’” Appeal Br. 8 (citing Dlugos, Abst., ¶¶ 1, 23, 33, 34). Appellant further contends that the Examiner “has not provided an explanation regarding how or why one of ordinary skill in the art would be motivated to combine [Dlugos’] strip of gastric sensors with a urethral catheter, and has not identified any disclosure in the cited references regarding how such a combination might be implemented.” *Id.*

The Examiner responds that “Dlugos is teaching of a flexible strip 100 formed in a catheter 130 with capacitive pressure sensors 102.” Ans. 4 (citing Dlugos, ¶ 59, Figs. 6–11). The Examiner asserts that “this is merely replacing one type of sensor with another type of sensor and possibly making the catheter more flexible than is portrayed” in Brown. *Id.* The Examiner also asserts that both Brown and Dlugos are intended to be used in “nearly identical types of tissue.” *Id.* With respect to the issue of whether Brown and Dlugos are used in nearly identical types of tissue, Appellant contends that the Examiner cites to “no evidence to support the argument” and is engaging in speculation. Reply Br. 3. For the following reasons, we do not sustain the rejection of claims 1 and 17.

First, Dlugos does not disclose a *catheter* 130 with capacitive pressure sensors 102 as the Examiner asserts in the Answer, but rather discloses “an adjustable gastric band 38 positioned on the upper portion of the patient’s stomach.” Dlugos, ¶ 26. The Examiner’s finding that Dlugos teaches a flexible strip 100 formed on a *catheter* 130 with capacitive sensors 102 is speculative. Dlugos describes Figures 6–11 as teaching pressure sensing strips 100, 120, 121 with pressure sensors 102 that may be provided

integrally in “tissue interface member 130 of any suitable medical device.” Dlugos ¶ 42. Dlugos does not teach tissue interface member 130 as being a catheter, and the Examiner has not explained why a skilled artisan would understand a tissue interface member 130 to be a catheter. Paragraph 59 teaches a display 66 that provides real-time pressure measurements. Dlugos teaches the use of a catheter 44 as a separate element from an adjustable gastric band 38 in Figures 1–3 but there is no disclosure that catheter 44 includes capacitive pressure sensors formed thereon. *See id.* ¶¶ 26, 35. Further, the Examiner’s assertion that Brown’s urethral catheter is intended for use in tissue that is identical to the tissue in which Dlugos’s gastric band is used is not supported by a preponderance of the evidence. Dlugos discloses pressure sensing strip 100 with a plurality of capacitive pressure sensors that “is configured to fit between a gastric band 38 and a patient’s stomach.” *Id.* ¶¶ 32–33, Fig. 6. The Examiner, however, does not direct us to any disclosure in Dlugos that Dlugos’s pressure sensing strip 100 is formed on gastric band 38. *See* Final Act. 4. For these reasons, we determine that the Examiner’s rationale for modifying Brown to include Dlugos’ flexible strip with capacitive sensors is not supported by a rational underpinning.

We, thus, do not sustain the rejection of independent claims 1 and 17 and claims 2–4 and 9–11 which depend from claim 1 and claim 18 which depends from claim 17.

Rejections 2, 3, 5, 6, and 7

Claims 6, 7, 8, and 12–16 depend from independent claim 1, and claims 19 and 21 depend from independent claim 17. Appeal Br. 19–21 (Claims App.). The Examiner rejects these claims based on the combination

of Brown and Dlugos discussed above with additional disclosure from Sliwa, Irazoqui, Yoon, and Uchimura. Final Act. 5–9. The Examiner does not rely on the additional disclosure from Sliwa, Irazoqui, Yoon, and Uchimura to cure the deficiencies in the combination of Brown and Dlugos discussed above in connection with Rejection 1. We, thus, do not sustain the rejection of claims 6, 7, 8, 12–16, 19, and 21 for the same reasons.

Rejection 4

The Examiner finds that Brown discloses most of the limitations of claim 20 except it “does not specifically disclose a flexible capacitive sensor strip formed on a catheter.” Final Act. 7. The Examiner finds that Pons discloses “using capacitive pressure sensors . . . formed on a flexible strip.” *Id.* (citing Pons, ¶¶ 26, 55). The Examiner concludes that it would have been obvious to one of ordinary skill in the art “to modify Brown to include a flexible capacitive sensors strip on a catheter (as taught by Pons) to utilize a thin catheter.” *Id.*

Appellant contends that “Pons discloses that the pressure sensors are **piezoelectric** pressure sensors.” Appeal Br. 11. (Citing Pons, Abst.). Appellant also contends that the Examiner’s reliance on paragraph 26 of Pons is misplaced because that paragraph “discloses ‘[t]he production of the electrode can be carried out by various processes, for example by one of the processes that is already used for the production of capacitive pressure sensors.’” *Id.* (quoting Pons, ¶ 26).

The Examiner responds that Pons discloses that “this process *already exists*, which is clearly teaching that pressure sensors, electrodes or both can be used in this type of scenario.” Ans. 4. The Examiner asserts that Brown “teaches all of the limitations” and that Pons “teaches that the variation is

obvious to one of ordinary skill in the art.” *Id.* For the following reasons, we do not sustain the rejection of claim 20.

Claim 20 recites “a flexible sensor strip . . . [that] includes a plurality of capacitive pressure sensors.” Pons discloses a pressure sensor that “is equipped with at least one piezoelectric transducer.” Pons, Abst. Paragraph 26 of Pons, on which the Examiner relies for disclosure of the pressure sensors, discloses that an electrode can be produced by the same process “used for the production of capacitive pressure sensors.” *Id.* ¶ 26. The fact that Pons discloses that the process for producing capacitive pressure sensors is known does not support the Examiner’s finding that Pons discloses “a flexible sensor strip . . . [that] includes a plurality of capacitive pressure sensors.” As the rejection is based on an erroneous factual finding, the conclusion of obviousness cannot stand. *See In re Warner*, 379 F.2d 1011, 1017 (CCPA 1967) (holding that “[t]he legal conclusion of obviousness must be supported by facts. Where the legal conclusion is not supported by facts it cannot stand.”). We, thus, do not sustain the rejection of claim 20.

CONCLUSION

In summary:

Claims Rejected	Basis	Affirmed	Reversed
1-4, 9-11, 17-18	§ 103 Brown, Dlugos		1-4, 9-11, and 17-18
6	§ 103 Brown, Dlugos, Sliwa		6
7, 8, 15	§ 103 Brown, Dlugos, Irazoqui		7, 8, and 15
12-14, 19	§ 103 Brown, Dlugos, Davie		12-14, 19
16	§ 103 Brown, Dlugos, Yoon		16
20	§ 103 Brown, Pons		20
21	§ 103 Brown, Dlugos, Uchimura		21
Overall Outcome			1-4 and 6-21

REVERSED