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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte TORSTEN BRANDT, ARMIN DATZ,
ALBERT HAMMERSCHMIDT, SILKE LATZEL, JOSEF LERSCH,
ARNO MATTEJAT, WALTER STUEHLER,
and OTTMAR VOITLEIN

Appeal 2015-004417
Application 12/867,568
Technology Center 1700

Before JEFFREY T. SMITH, KAREN M. HASTINGS, and
MICHAEL P. COLAIANNI, *Administrative Patent Judges*.

SMITH, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

This is an appeal under 35 U.S.C. § 134 from a final rejection of claims 11–14, 16, 19–26, and 28–35. We have jurisdiction under 35 U.S.C. § 6.

We REVERSE.

Appellants' appealed invention is illustrated by independent claim 11, reproduced below:

11. A humidification cell of a fuel cell apparatus, the humidification cell comprising:

a first outer plate and a second outer plate;

a gas chamber;

a humidification water chamber;

a water-permeable membrane separating said gas and humidification water chambers;

starting from said first outer plate, said gas chamber, said humidification water chamber and said water-permeable membrane, being disposed between said first outer plate and said second outer plate; and

a first water-permeable support element disposed between said first outer plate and said membrane, said first support element being made from a screen fabric;

said membrane having a rigidity;

said screen fabric and said membrane being matched to one another and to pressures in said chambers adjoining said membrane with regard to said thickness and said diameter of said pores of said screen fabric and with regard to said rigidity of said membrane, for preventing said membrane from squeezing through said pores and coming into contact with at

least one of said outer plates, during operation of the humidification cell;

said screen fabric having a thickness and pores with a diameter; and

said diameter of said pores and said thickness of said screen fabric being in a ratio of from 1:2 to 1:5.

Appellants (*see* Appeal Brief, *generally*) request review of the following rejections from the Examiner's Final Office Action:

I. Claims 11–13, 19–25, and 29–35 rejected under 35 U.S.C. § 103(a) as unpatentable over Hartnack (US 2004/0234833 A1, published November 25, 2004), Guo (US 2007/0092773 A1, published April 26, 2007), and Kondo (US 2007/0287036 A1, published December 13, 2007).

II. Claims 14 and 26 rejected under 35 U.S.C. § 103(a) as unpatentable over Hartnack, Guo, Kondo, and Ono (JP 10172591 A, published June 26, 1998).

III. Claims 16 and 28 rejected under 35 U.S.C. § 103(a) as unpatentable over Hartnack, Guo, Kondo, and Fenton (US 6,465,136 B1, issued October 15, 2002).

OPINION

*Rejection I*¹

After review of the respective positions provided by Appellants and the Examiner, we REVERSE the Examiner's prior art rejection of claims 11–13, 19–25, and 29–35 for the reasons presented by Appellants. We add the following.

¹ We limit our discussion to independent claim 11.

Independent claim 11 is directed to a humidification cell comprising a first water-permeable support element made from a screen fabric having a thickness and pores with a diameter, wherein the ratio of the diameter of said pores and the thickness of said screen fabric ranges from 1:2 to 1:5.

The Examiner found Hartnack discloses a humidification cell that differs from the claimed invention in that Hartnack does not disclose the pore diameter, the thickness of the screen fabric, or that the ratio of the two is from 1:2 to 1:5. Final Act. 3–5; Hartnack Figures 1–3. To remedy this deficiency, the Examiner relies on Guo and Kondo as respectively teaching the pore diameter of a permeable fabric and the thickness of a permeable fabric as result effective variables that affect the fluid transfer rate through the screen fabric. Final Act. 5–6; Guo ¶ 59; Kondo ¶ 104. While the Examiner recognizes that that the cited art does not disclose a ratio of the pore diameter to the thickness of the screen fabric, the Examiner determined it would have been obvious to one skilled in the art that optimizing each of the pore diameter and the thickness of the screen fabric necessarily results in the claimed ratio of the pore diameter to the thickness of the screen fabric. Final Act. 7; Ans. 3–5.

Appellants argue one skilled in the art would not know what the ratio will be when the pore diameter and the thickness are each independently optimized according to some criteria that is not immediately evident from the cited prior art. App. Br. 7–8. According to Appellants, the possible combinations of the very large possible ranges for the pore diameter and the thickness of the fabric respectively disclosed by Guo and Kondo would be too great to conclude that the ratio required by claim 11 would have been obvious. *Id.* at 8. Appellants also argue the cited prior art does not

recognize that one can optimize a ratio of the pore diameter and the thickness of said screen fabric or that such a ratio is a result effective variable. *Id.* at 9, 11–12.

We agree with Appellants that the Examiner has not adequately established how the claimed ratio of the pore diameter to the thickness of the screen fabric ratio is reached.

Moreover, as noted by Appellants, Guo is directed to a fluid that is not the same as the fluid in Hartnack. App. Br. 5. Guo is directed to a porous material that permits liquid fuel (methanol/water mixture) to be drawn into the liquid fuel cavity or passage 40 of a fuel cell. Guo ¶¶ 20, 59. On the other hand, Hartnack and Kondo are directed to a humidification cell having a water permeable supporting fabric element. Hartnack ¶¶ 12–17;

Kondo ¶ 1. Assuming arguendo that the prior art is combined as proposed by the Examiner, the Examiner has not adequately explained how one skilled in the art would arrive to the optimum pore diameter for a water permeable screen fabric used in a humidification cell based on the pore diameter for a liquid fuel permeable screen fabric used in a fuel cell. Thus, the Examiner has not adequately explained how one skilled in the art would necessarily arrive to the claimed pore diameter to screen fabric thickness ratio.

Under these circumstances, we cannot conclude that the Examiner has met the minimum threshold of establishing obviousness under 35 U.S.C. § 103(a). See *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992); *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

Accordingly, we reverse the Examiner's prior art rejection under 35 U.S.C. § 103(a) for the reasons presented by Appellants and given above.

Rejections II and III

The Examiner's prior art rejections of claims 14, 16, 26 and 28 under 35 U.S.C. § 103(a) (Rejections II and III) are premised on the teachings of Hartnack, Guo, and Kondo the humidification cell of a fuel cell apparatus of the subject matter of independent claim 11 obvious to one skilled in the art. Final Act. 8–10. As discussed above, such is not the case. The Examiner did not rely on the additionally cited secondary references to overcome the previously noted deficiencies of Hartnack, Guo, and Kondo. *Id.*

Accordingly, we also reverse the Examiner's prior art rejections of claims 14, 16, 26, and 28 for the reasons presented by Appellants and given above.

ORDER

The Examiner's prior art rejections under 35 U.S.C. § 103(a) are reversed.

REVERSED