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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JOHN CHARLES SAUKAITIS and ERIC PRECISE

Appeal 2019-003611
Application 14/681,585
Technology Center 1700

Before KAREN M. HASTINGS, ELIZABETH M. ROESEL, and MICHAEL G. MCMANUS, *Administrative Patent Judges*.

HASTINGS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant[1] requests our review under 35 U.S.C. § 134(a) of the Examiner's decision rejecting claims 1–5 and 10–14. Claims 1–4 and 12 were rejected under 35 U.S.C. § 103 as unpatentable over the combined prior art of Saukaitis (US 2011/0232821 A1; published Sept. 29, 2011) (hereinafter "Saukaitis '821"), and Woo (US 2007/0254560 A1; published Nov. 1, 2007), claims 5, 10, 11, 13, and 14 were rejected as unpatentable over Saukaitis '821, Woo, and Saukaitis '293 (US 2009/0120293 A1;

[1] We use the word "Appellant" to refer to the "applicant" as defined in 37 C.F.R. § 1.42(a). Appellant identifies Shell Oil Company as the real party in interest (Appeal Br. 2).

published May 14, 2009) (hereinafter "Saukaitis '293") [2]; and claim 14 was rejected under 35 U.S.C. § 112 (b) as indefinite.

We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We AFFIRM.

CLAIMED SUBJECT MATTER

Claim 1 is illustrative of the subject matter on appeal:

> 1. A method for preparing a gas separation membrane system, wherein said method comprises:
>
> (a) depositing an initial layer of gas-selective material onto a surface of a tubular porous support, having an axis, to thereby provide said tubular porous support having a gas-selective membrane layer;
>
> (b) annealing said initial gas-selective membrane layer to provide a first annealed gas-selective membrane layer;
>
> (c) providing a first abraded membrane surface by polishing said first annealed gas-selective membrane layer using a robotic polisher providing for first controlled polishing condition parameters with use of a belted abrading medium defined as having a centerline and further including a structured abrasive article comprising a backing having bonded thereto an abrasive layer comprising a plurality of shaped abrasive composites that comprise abrasive grains dispersed in a polymeric binder,
>
> wherein said first controlled polishing condition parameters include:
>
> a first belt speed, which is a linear rate at which a fixed point located on the centerline of said belted abrading medium moves relative to a starting point fixed in space on the centerline, wherein the belt speed is in the range of from 1 to 1000 surface feet per minute (sfpm),

[2] A discussion of the additional reference of Saukaitis '293, applied to claims 5, 10, 11, 13, and 14, is not necessary for disposition of this appeal.

> a first part speed, which is a rate of a number of turns of said tubular porous support completes in one minute around said axis in rpm, wherein the part speed is in the range of from 20 to 600 rpm,
>
> a first lateral speed, which is a linear rate at which the centerline of said belted abrading medium and its contact point with said tubular porous support moves in parallel with the ground in mmps, wherein the lateral speed is in the range of from 1 to 60 mmps,
>
> a first contact angle, which is a position at which said tubular porous support is held in contact at a point of contact on said belted abrading medium, and
>
> a first repetitions set, which is a number of full polishing motions with said belted abrading medium; and
>
> (d) placing a second layer of gas-selective material upon said first abraded membrane surface to provide a first overlaid membrane layer.

Appellant's arguments focus on limitations common to independent claims 1 and 5,[3] except for the arguments presented for dependent claims 12 and 13 (Appeal Br. 9–17).

OPINION

Upon consideration of the evidence of record and each of Appellant's contentions as set forth in the Appeal Brief, we determine that Appellant has not demonstrated reversible error in the Examiner's rejections (e.g., *see generally* Ans.). *In re Jung*, 637 F.3d 1356, 1365–66 (Fed. Cir. 2011) (explaining the Board's long-held practice of requiring Appellant(s) to identify the alleged error in the Examiner's rejection). We sustain the

[3] Claim 5 in the Claims Appendix inadvertently recites "directly" in step (a); that term is recited in dependent claim 13 (Appeal Br. 17 (Appellant offers to cancel claim 13 if the Examiner amends claim 5 to recite "directly")).

rejections generally for the reasons expressed by the Examiner in the Final Office Action and the Answer.

We add the following for emphasis.

The § 112 Indefiniteness Rejection

At the outset, we note that Appellant has not presented any arguments regarding the Examiner's section 112 rejection of claim 14 (*see generally* Appeal Brief).

Accordingly, we summarily affirm the Examiner's section 112 rejection of claim 14 for indefiniteness.

The § 103 Rejections

Although there are separate sections in the Appeal Brief for claims 1 and 5, the arguments are essentially the same in each section. Appellant does not present any additional arguments regarding Saukaitis '293 applied in the rejection of claims 5, 10, 11, 13, and 14 (*see* Appeal Br. 16–17).

It has been established that the predictable use of known prior art elements/steps performing the same functions they have been known to perform is normally obvious, and the combination of familiar elements/steps is likely to be obvious when it does no more than yield predictable results. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007); *see also KSR*, 550 U.S. at 418 ("the [obviousness] analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ."); *see also In re Fritch*, 972 F.2d 1260, 1264–65 (Fed. Cir. 1992) (a reference stands for all of the specific teachings thereof as well as the inferences one of ordinary skill in the art would have reasonably been expected to draw therefrom).

Appellant's first argument is that the Examiner has taken an unreasonably broad interpretation of the claim language which requires "depositing an initial layer of gas-selective material onto a surface of a tubular porous support" and annealing and abrading said initial layer (Appeal Br. 8–10). The Examiner's position is that since Saukaitis '821 teaches that multiple layers are applied, annealed, and abraded, any layer before a subsequent layer may be considered "an initial layer," as claimed (Ans. 3). The Examiner further explains that claims 12 and 13, which require depositing the initial layer "directly" onto the tubular porous support, would encompass depositing a layer onto a porous support that already has a layer deposited thereon (Ans. 4).

Even assuming that Appellant's position is correct that the claim should be interpreted such that only the very first gas-selective layer applied onto the tubular support is the initial layer, Appellant's arguments are not persuasive of reversible error in the Examiner's obviousness position. As pointed out by the Examiner, Saukaitis '821 teaches that multiple layers may be activated via abrasion/polishing, and annealed (Abstract, Saukaitis '821 ¶¶ 47, 48, 49). Notably, Saukaitis '821 teaches that in the prior art, activation of the porous substrate as well as each gas-selective metal layer, inclusive of the initial layer, may include using multiple applications of activation solution with intervening drying "and, even, annealing" steps (Saukaitis '821 ¶ 6). Saukaitis '821 teaches to replace the prior art's chemical activation (i.e., application of an activation solution) with mechanical activation (i.e., abrading/polishing to impose morphology) and that each metal membrane layer, inclusive of the initial layer, should be activated (*id.* ¶¶ 21, 32). Saukaitis '821 does not, however, suggest that the

prior art step of annealing the initial layer should be eliminated. Accordingly, one of ordinary skill in the art would have readily inferred and appreciated that the annealing and abrading/polishing steps of Saukaitis '821 and/or prior art discussed therein would have been appropriate for all of the applied gas-selective layers, including the initial layer.

Appellant's remaining argument is that neither Saukaitis '821 nor Woo explicitly teach or suggest the polishing parameters recited in claims 1 and 5 (Appeal Br. 10–12). This argument is not persuasive of reversible error for the reasons explained by the Examiner (Ans. 4, 5 (explaining that Saukaitis '821 paragraph 49 teaches that all of these parameters are result-effective variables, and that the polishing system depicted in Figures 1 and 2 of Saukaitis '821 is virtually identical to that shown in Appellant's Figures 1 and 2)).

It is well settled that it would have been obvious for an artisan with ordinary skill to develop workable or even optimum ranges for result-effective parameters. *In re Woodruff*, 919 F.2d 1575, 1577 (Fed. Cir. 1990); *In re Boesch*, 617 F.2d 272, 276 (CCPA 1980); *In re Aller*, 220 F.2d 454, 456 (CCPA 1955).

"A recognition in the prior art that a property is affected by the variable is sufficient to find the variable result-effective." *In re Applied Materials, Inc.*, 692 F.3d 1289, 1297 (Fed. Cir. 2012). Appellant has not adequately refuted the Examiner's determination that the recited polishing parameters are all known result-effective variables (no Reply Brief filed). Accordingly, substantial evidence supports the Examiner's obviousness determination of the polishing parameters recited in claim 1, as well as in claim 5.

Accordingly, we sustain the Examiner's section 103 rejections of independent claims 1, 5, dependent claims 12, 13, and all other claims dependent on claims 1 or 5 since they are not argued separately (*see generally* Appeal Br.).

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–4, 12	103	Saukaitis '821, Woo	1–4, 12	
5, 10, 11, 13, 14	103	Saukaitis '821, Woo, Saukaitis '293	5, 10, 11, 13, 14	
14	112 (b)	Indefiniteness	14	
Overall Outcome			1–5, 10–14	

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)(1)(iv).

AFFIRMED