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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MAURICE LACASSE

Appeal 2019-001270
Application 14/261,048
Technology Center 1700

Before MICHAEL P. COLAIANNI, JAMES C. HOUSEL, and
MONTÉ T. SQUIRE, *Administrative Patent Judges*.

HOUSEL, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1–8 and 10–21. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.²

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 PYROTEK, Inc. Appeal Brief (“Appeal Br.”) filed July 5, 2018, at 1.

² This Decision also cites to the Specification (“Spec.”) filed April 24, 2014, the Final Office Action (“Final Act.”) dated January 4, 2018, the Examiner's Answer (“Ans.”) dated September 28, 2018, and the Reply Brief (“Reply Br.”) filed November 28, 2018.

CLAIMED SUBJECT MATTER

The invention relates to a method for insulating a honeycomb catalyst. Spec. 1, Title. Appellant discloses that it was known to divide a honeycomb catalyst through the use of a wall or walls of insulation. *Id.* at 2:4–5. To produce such an insulated honeycomb catalyst, Appellant describes a method comprising filling a selected plurality of channels in a catalyst substrate with a granular material and consolidating the granular material through heat, such that a wall separates the substrate into first and second portions of plural parallel channels. *Id.* at 3:1–7. Appellant further teaches that the consolidation step can be a sintering step. *Id.* at 3:8–9.

Claim 1, reproduced below from the Claims Appendix to the Appeal Brief, is illustrative of the claimed subject matter (some formatting added to facilitate review). The italicized limitation is at issue.

1. A method for forming a honeycomb catalyst, said method comprising providing a substrate suitable for catalytic activity, said substrate having a plurality of parallel channels extending therethrough, the method further comprising the steps of:

filling a selected plurality of the channels with a granular material by pouring;

and *consolidating the granular material through sintering*, the selected plurality being selected to produce a wall that separates the substrate into:

a first portion having a first plurality of the parallel channels extending therethrough;

and a second portion having a second plurality of the parallel channels extending therethrough.

Independent claim 20 recites a method for manufacture of a catalytic device similar to claim 10, wherein at least a portion of the

channels are filled with a water free granular material comprising fly-ash and a heat sensitive non-organic binder, followed by consolidating through sintering.

REFERENCES

The Examiner and Appellant rely on the following references:

Name	Reference	Date
Tremblay	US 2005/0116398 A1	June 02, 2005
Crawford et al. ("Crawford")	US 2014/0056779 A1	Feb. 27, 2014
Process Engineering	"Sintering Behaviour of Clays for the Production of Ceramics"	Unknown
Wikipedia	https://en.wikipedia.org/wiki/Sintering	June 30, 2017

REJECTIONS

The Examiner maintains, and Appellant requests our review of, the following rejections:

- A. Claims 1, 10, 12, 13, and 15–19 under 35 U.S.C. § 102(a)(1) as anticipated by Crawford;
- B. Claims 2, 8, and 14 under 35 U.S.C. § 103 as unpatentable over Crawford; and
- C. Claims 3–7, 11, 20, and 21 under 35 U.S.C. § 103 as unpatentable over Crawford in view of Tremblay.

OPINION

We review the appealed rejections for error based upon the issues Appellant identifies, and in light of the arguments and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential) (cited with approval in *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011) (“[I]t has long been the Board’s practice to require an applicant to identify

the alleged error in the examiner's rejections.”). After considering the argued claims and each of Appellant's arguments, we are not persuaded of reversible error in the pending rejections. We offer the following for emphasis only.

Rejection A: Anticipation by Crawford

The Examiner rejects claims 1, 10, 12, 13, and 15–19 under 35 U.S.C. § 102(a)(1) as anticipated by Crawford. Final Act. 3–5. The Examiner finds that Crawford teaches a method of forming an insulated honeycomb catalyst comprising the same steps as recited in claim 1. Final Act. 3–4. Specifically, the Examiner finds that Crawford teaches consolidating a granular material within a selected plurality of catalyst channels by curing via microwave or convection oven heating to lock the material to itself and to the channel walls. *Id.* at 3. The Examiner finds that this heat curing meets the sintering limitation of claim 1 because Crawford teaches that the curing may be performed at a temperature of 650°C and “because sintering is art-recognized to be heat treatment applied to a powder in order to make the powder coalesce into a solid mass.” *Id.* at 4.

Appellant does not argue the claims separately, but instead focuses on the limitations of claim 1 only. Appeal Br. 4–5; Reply Br. 3–5. Therefore, we address Appellant's arguments against this rejection on the basis of claim 1, which we designate as representative pursuant to 37 C.F.R. § 41.37(c)(1)(iv). Claims 10, 12, 13, and 15–19 stand or fall with claim 1. Appellant argues that Crawford fails to teach that a granular material is consolidated through sintering as required by claim 1. Appeal Br. 4. Appellant urges that sintering, as explained in Wikipedia, “requires atoms in the material to diffuse across the boundaries of the particles, fusing the

particles together and creating one solid piece.” *Id.* Appellant contends that Crawford teaches activation of a polymer binder and relies on polymerization of the binder to form a solid body, rather than diffusion of clay atoms across boundaries. *Id.* With regard to the Examiner’s finding that Crawford teaches heat curing at a temperature of 650°C, Appellant asserts that this teaching does not demonstrate sintering because clay sinters at about 1100°C. *Id.* at 4–5, citing Process Engineering. Appellant also asserts that “a typical sintering range for [an] alumino-silicate ceramic is 900 to 1050°C,” and nothing in Crawford suggests heating to these temperatures. *Id.* at 5.

Appellant’s arguments are not persuasive of reversible error in the Examiner’s finding of anticipation of claim 1 by Crawford. The issue before us is the proper construction of the term “sintering” as recited in claim 1 and whether the Examiner’s finding that Crawford teaches sintering is reasonable. It is well established that “the PTO must give claims their broadest reasonable construction consistent with the specification Therefore, we look to the specification to see if it provides a definition for claim terms, but otherwise apply a broad interpretation.” *In re ICON Health & Fitness, Inc.*, 496 F.3d 1374, 1379 (Fed. Cir. 2007). “[A]s applicants may amend claims to narrow their scope, a broad construction during prosecution creates no unfairness to the applicant or patentee.” *Id.*

Appellant does not direct our attention to any definition of “sintering” in the Specification, nor do we find any. The Specification teaches that the consolidation step can be a sintering step. Spec. 3:8–9. The Specification describes “a suitable sintering regime involves elevating the temperature of the granular material to 800°C at a rate of 200°C/hour and then allowing the

heated product to cool to ambient temperature at 200°C/hour.” *Id.* at 7:3–6. However, the Specification further explains that “whereas a specific sintering regime is described, sintering of granular material of the type described in U.S. Patent No. 7,083,758 is a matter of routine to persons of ordinary skill and variations are manifestly possible.” *Id.* at 7:22–8:1.

Further, the Examiner finds that “sintering” is a process transforming a powder into a solid body by heating without melting, which is similar to Appellant’s Wikipedia explanation of “sintering.” Ans. 4–5. We also note that Appellant’s Wikipedia citation describes that “ceramic sintering” includes heating a green body at low temperature to burn off the binder. Wikipedia 3. Although Crawford activates or cures a polymeric binder in the insulation composition, Crawford further teaches that this process may be effected at low temperature of the order of 650°C. Crawford ¶ 56. Moreover, Crawford teaches that the insulated catalyst operates at temperatures on the order of 1000°C. *Id.* Although Appellant asserts that clay sinters at 1100°C, citing the Process Engineering article, Appellant fails to direct our attention to any particular teaching therein stating that clay or Crawford’s alumino-silicate powders would not sinter below this temperature. Indeed, Appellant’s discloses that sintering of a known material is a material within the routine skill in the art, indicating that those skilled in the art would recognize that sintering conditions may be varied. Given that Crawford’s elevated temperatures are close to (or above) Appellant’s disclosed suitable sintering regime (800°C), we agree with the Examiner that those skilled in the art would reasonably expect that Crawford’s insulation is sintered.

Accordingly, we sustain the Examiner’s anticipation rejection of claim 1, 10, 12, 13, and 15–19 by Crawford.

Rejection B: Obviousness over Crawford

The Examiner rejects claims 2, 8, and 14 under 35 U.S.C. § 103 as unpatentable over Crawford. Final Act. 9–10. The Examiner finds, among other things, that although Crawford does not teach a sintering temperature of 800°C, Crawford teaches sintering at 650°C and that, absent a showing of criticality, the difference in temperature does not support patentability of claim 2. *Id.*

Appellant does not separately argue this rejection, other than contending that “even if the meaning of sintering requires debate [regarding claim 1], the temperature required in claim 2 (800°C) does not.” Appeal Br. 5. We note that Appellant does not address the Examiner’s position with regard to claim 2. Further, as set forth above, Crawford teaches an operating temperature of 1000°C. Therefore, we agree with the Examiner that it would have been obvious as a matter of routine skill in the art to optimize Crawford’s sintering temperature to arrive at the temperature recited in claim 2.

Accordingly, we sustain the Examiner’s obviousness rejection of claims 2, 8, and 14 over Crawford.

Rejection C: Obviousness over Crawford and Tremblay

The Examiner rejects claims 3–7, 11, 20, and 21 under 35 U.S.C. § 103 as unpatentable over Crawford in view of Tremblay. Final Act. 6–9. The Examiner acknowledges that Crawford fails to teach the granular material of claims 3–7 that is free of water and organic binder (claims 20 and 21). Final Act. 6, 8. However, the Examiner finds that Tremblay discloses a water free and organic binder free insulating material comprising the same composition recited in claims 3–7. *Id.* at 6–9. The Examiner

concludes that it would have been obvious to have substituted Tremblay's insulating composition for Crawford's with a reasonable expectation of success because Tremblay teaches a number of advantages of this insulating composition, e.g., water free, free flowing, low density, low thermal conductivity, organic binder free, and sets at a low temperature. *Id.*

Appellant argues that this rejection is erroneous because: 1) it relies solely on hindsight (Appeal Br. 6–8); and 2) the references teach away from the combination (*id.* at 8–10). In particular, Appellant contends that absent Appellant's identification of Tremblay in the Specification, the skilled artisan would not have been motivated to use Tremblay's material in Crawford's method. *Id.* at 6. Appellant also contends that a skilled artisan would find no reason to use Tremblay's refractory lining for an aluminum conveying trough in Crawford's catalytic converter. *Id.* at 7. Appellant urges that the Examiner's articulated motivation for combining Crawford and Tremblay would support a contention that any insulating material would have been an obvious substitution in Crawford which is not supported under a *Graham v. Deere*³ analysis. *Id.* Further, Appellant asserts that merely because Crawford and Tremblay both teach powder-based insulating materials is an insufficient basis to support their combination. *Id.* As for the advantages of Tremblay's materials, Appellant contends that low thermal conductivity is a fundamental characteristic of insulating materials as a class. *Id.* at 8.

Appellant's first argument is not persuasive of reversible error because the Examiner's articulated reason for combining Crawford and

³ *Graham v. John Deere Co.*, 383 U.S. 1 (1966).

Tremblay is found in the references. *See, e.g., Sensonics, Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1570 (Fed. Cir. 1996) (“The invention must be viewed not after the blueprint has been drawn by the inventor, but as it would have been perceived in the state of the art that existed at the time the invention was made.” (citing *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1138 (Fed. Cir. 1985))). While Crawford teaches an insulation composition requiring water and a polymeric binder, Tremblay specifically teaches the advantages of excluding water and organic binder in the fly ash and non-organic binder insulation composition while still achieving a free flowing material having low density and low thermal conductivity as compared to existing materials. Tremblay ¶¶ 13–19. Thus, the Examiner’s reasons for combining the teachings of Crawford and Tremblay are supported by the prior art disclosures themselves.

Moreover, the possibility that a plurality of other insulation materials would have been substitutable for Crawford’s does not render any one combination any less obvious. *Merck & Co. v. Biocraft Labs., Inc.*, 874 F.2d 804, 807 (Fed. Cir. 1989) (“That the ’813 patent discloses a multitude of effective combinations does not render any particular formulation less obvious.”); *see also In re Susi*, 440 F.2d 442, 445 (CCPA 1971) (obviousness rejection affirmed where the disclosure of the prior art was “huge, but it undeniably include[d] at least some of the compounds recited in appellant’s generic claims and [was] of a class of chemicals to be used for the same purpose as appellant’s additives”); *In re Kubin*, 561 F.3d 1351, 1359 (Fed. Cir. 2009) (“[W]here a skilled artisan merely pursues ‘known options’ from a ‘finite number of identified, predictable solutions,’

obviousness under § 103 arises.” (quoting *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007)).

As to Appellant’s second argument, Appellant contends that while Crawford teaches use of water and a polymeric binder in the insulating composition, Tremblay specifically excludes these two ingredients. Appeal Br. 8. Appellant asserts that Crawford prefers microwave curing which requires water and binder for heating to 100°C. *Id.* at 8–10. Further, Appellant urges that the Examiner ignores Crawford’s stated requirement to form pores via evaporating water to create insulation properties. *Id.* at 10. As such, Appellant argues that the references teach away from their combination. *Id.* at 8.

Appellant’s second argument is not persuasive of reversible error because Tremblay specifically teaches the advantages of using a water-free and organic binder-free insulation composition. Our reviewing court has recognized that a given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate any or all reasons to combine teachings, much less constitute teaching away from the combination. *See Winner Int’l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n.8 (Fed. Cir. 2000) (“The fact that the motivating benefit comes at the expense of another benefit, however, should not nullify its use as a basis to modify the disclosure of one reference with the teachings of another. Instead, the benefits, both lost and gained, should be weighed against one another.”). Given Tremblay’s specific teaching of advantages of excluding water and organic binder, one skilled in the art would reasonably have concluded that Tremblay’s insulation material would offer advantages over Crawford’s material. In addition, although Crawford expresses a preference

for microwave curing, Crawford teaches oven curing may alternatively be used, that the curing may be effected at a temperature of 650°C, and that a powder-based material having lower moisture levels may be used. Each of these teachings support the Examiner’s position that it would have been obvious to combine the teachings of Crawford and Tremblay. *See Merck & Co. v. Biocraft Labs., Inc.*, 874 F.2d 804, 807 (Fed. Cir. 1989) (“[A]ll disclosures of the prior art, including unpreferred embodiments, must be considered.” (quoting *In re Lamberti*, 545 F.2d 747, 750 (CCPA 1976))); *In re Fracalossi*, 681 F.2d 792, 794 n.1 (CCPA 1982) (explaining that a prior art reference’s disclosure is not limited to its examples).

Accordingly, we sustain the Examiner’s obviousness rejection of claims 3–7, 11, 20, 21 over Crawford in view of Tremblay.

CONCLUSION

Upon consideration of the record and for the reasons set forth above and in the Final Office Action and the Answer, the Examiner’s decision to reject claims 1–8 and 10–21 is *affirmed*.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1, 10, 12, 13, 15–19	102(a)(1)	Crawford	1, 10, 12, 13, 15–19	
2, 8, 14	103	Crawford	2, 8, 14	
3–7, 11, 20, 21	103	Crawford, Tremblay	3–7, 11, 20, 21	
Overall Outcome			1–8, 10–21	

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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) (2017).

AFFIRMED