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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/435,650	05/16/2006	Leslie Eugene Hampton	SP06-030	6617

22928 7590 02/01/2013
CORNING INCORPORATED
SP-TI-3-1
CORNING, NY 14831

EXAMINER
KWOK, HELEN C

ART UNIT	PAPER NUMBER
2856	

NOTIFICATION DATE	DELIVERY MODE
02/01/2013	ELECTRONIC

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte LESLIE EUGENE HAMPTON and ZHIQIANG SHI

Appeal 2010-008342
Application 11/435,650
Technology Center 2800

Before, KALYAN K. DESHPANDE, DAVID M. KOHUT, and JOHNNY A. KUMAR, *Administrative Patent Judges*.

KOHUT, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134(a) of the Final Rejection of claims 1, 3, 5, 6, 8-13, and 15-26.[1] We have jurisdiction under 35 U.S.C. § 6(b).

We affirm-in-part the Examiner's rejection of these claims.

INVENTION

The invention is directed to a method and apparatus for determining discontinuities in a honeycomb structure using an ultrasonic transmitter. Spec. 3-4. Claim 18 is representative of the invention and is reproduced below:

> 18. An apparatus for determining internal discontinuities or inhomogeneities in a green or fired ceramic honeycomb structure having an inlet end and an outlet end, comprising:
>
> an array of one or more ultrasonic transmitters for transmitting an ultrasonic wave of between about 150 and 700 KHz,
>
> a support that positions the array of transmitters adjacent to but not in contact with one of the inlet end and outlet end of the honeycomb structure for propagating ultrasonic waves into the honeycomb structure, and
>
> an array of ultrasonic receivers opposite the array of ultrasonic transmitters for receiving a response signal of the propagated ultrasonic waves as modulated by the structure.

REFERENCES

Breuer	US 2005/0247131 A1	Nov. 10, 2005
Fei	US 2007/0144260 A1	June 28, 2007 (filed Dec. 27, 2005)
Daoud	US 2007/0199380 A1	Aug. 30, 2007

[1] Claims 2, 4, 7, and 14 were previously cancelled.

(filed Feb. 28, 2006)

Peters et. al., "Resonant Transmission Of Air-Coupled Ultrasound Through Metallic Inserts In Honeycomb Sandwich Structures," CP760, Review of Qualitative Nondestructive Evaluation, vol. 24, 2005 American Institute of Physics, 0-7354-0245-0/05, pg. 1026-1032.[2]

REJECTION AT ISSUE

Claims 1, 3, 5, 6, 8-13, and 15-26 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Fei, Daoud, Breuer, and Peters. Ans. 3-7.

ISSUES

Did the Examiner err in finding that one of ordinary skill in the art would find it obvious to combine Fei, Daoud, Breuer, and Peters?

Did the Examiner err in finding the combination of Fei, Daoud, Breuer, and Peters teaches or suggests an ultrasonic transmitter that propagates a wave of between about 150 kHz and 700 kHz, as required by independent claims 1 and 18?

Did the Examiner err in finding that the combination of Fei, Daoud, Breuer, and Peters teaches or suggests a response that includes a distance through air signal (DTA) and a distance through substrate signal (DTS), as required by claims 3 and 21?

[2] Hereinafter referred to as Peters.

ANALYSIS[3]

Appellants initially argue that it would not have been obvious to combine Fei and Daoud to teach "positioning an ultrasonic transmitter adjacent to but not in contact with one of the inlet end and outlet end of the honeycomb structure" (App. Br. 9) because Fei and Daoud are not in the same field of endeavor. App. Br. 9-10; Reply Br. 2-4. Specifically, Appellants contend that Fei deals with manufacturing flaws or defect detection and Daoud deals with particulate-content monitoring which are different functions. App. Br. 9; Reply Br. 3. Thus, Appellants contend that it would not have been obvious to combine two references that deal with different issues. App. Br. 9; Reply Br. 3.

We disagree with Appellants' interpretation of the references. We agree with the Examiner (Ans. 8) that both Fei and Daoud monitor, detect, and evaluate particle filters for internal discontinuities and inhomogeneities. Fei specifically indicates that the invention is related to detecting internal flaws, such as cracks, in particulate filters. Ans. 8. Daoud specifically indicates that the invention is related to monitoring a state of a particulate filter, which includes detecting damage to the particulate filter that may include melting or cracking. Ans. 8. Thus, we agree with the Examiner (Ans. 9) that one of ordinary skill in the art would look to both of these references to solve the particular problem Appellants were concerned with at the time of the claimed invention, i.e., "detecting internal defects in ceramic honeycomb structures" (Spec. [0001]).

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[3] We select claim 1 as representative of the group comprising claims 1, 5, 8, 9, 11-13, 15-20, 23, and 24 since Appellants do not argue any of the other claims with particularity. 37 C.F.R. § 41.37(c)(1)(vii).

Appellants additionally argue that Fei teaches away from the claimed invention because Fei teaches using an ultrasonic transmitter for defect detection in a honeycomb structure using forceful contact whereas Appellants' invention requires the transmitter to be adjacent and not in contact with the honeycomb structure. App. Br. 9; Reply Br. 2. We are not persuaded by Appellants' argument. "What the prior art teaches and whether it teaches toward or away from the claimed invention … is a determination of fact." *Para-Ordnance Mfg., Inc. v. SGS Importers Int'l, Inc.*, 73 F.3d 1085, 1088 (Fed. Cir. 1995). "A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant." *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994). Teaching an alternative or equivalent method, however, does not teach away from the use of a claimed method. *See In re Dunn*, 349 F.2d 433, 438 (CCPA 1965).

Appellants have not pointed to an explicit disclosure within Fei that acts to "criticize, discredit, or otherwise discourage" the ultrasonic transmitters from being adjacent but not in contact with the honeycomb structure. *See In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). Instead, we find that Fei's disclosure of using force to push the transmitters toward each other is an alternative or equivalent teaching to transmitters located adjacent to the honeycomb structure, as claimed. Especially in light of the Examiner's finding that Daoud teaches embodiments where the transmitters are directly mounted (in contact) and indirectly mounted (not in contact) with the honeycomb structure. Ans. 9. Therefore, Appellants have not shown that Fei teaches away from the claimed invention. It follows that

Appellants have not shown that the Examiner erred in finding it obvious to combine Fei and Daoud.

Next, Appellants argue that none of the references teach or suggest the range of frequencies required by independent claims 1 and 18. App. Br. 10-11; Reply Br. 4-6. Appellants contend that the frequencies taught by Peters are used to scan aluminum cylinder inserts and not ceramic honeycomb structures and Breuer's frequencies do not cover the claimed ranges. App. Br. 11; Reply Br. 5. Thus, Appellants argue that one of ordinary skill would not look to Peters or Breuer to determine a proper frequency range. App. Br. 11; Reply Br. 5. We disagree.

The Examiner finds that Breuer teaches using a particular frequency for ceramic wall filters in order to detect defects in the filters. Ans. 10. Additionally, the Examiner finds that Peters teaches a frequency range from 120-400 kHz for a honeycomb sandwich structure. Ans. 10. Thus, the Examiner finds that it would have been obvious to use the frequencies of Peters with the teachings of Breuer to detect defects. Ans. 11. We agree with the Examiner.

The Examiner is simply relying on Breuer to show that it was known in the art to determine optimal frequencies for detecting defects. Ans. 10. Additionally, the Examiner is relying on Peters to show that it was known in the art that frequency ranges of between 120 kHz and 400 kHz were optimal for honeycomb structures. Ans. 10. Thus, we agree with the Examiner that it would have been obvious to one of ordinary skill in the art to use Peters' frequency ranges with Breuer's method of detecting defects as the combination is nothing more than a combination of familiar elements according to known methods that yield predictable results. *See KSR Int'l*

Co. v. Teleflex Inc., 550 U.S. 398, 406 (2007). As such, we sustain the Examiner's rejection of claim 1 and claims 5, 8, 9, 11-13, 15-20, 23, and 24 that have been grouped with claim 1.

Claim 3 recites "wherein said received response includes a distance through air signal (DTA) and a distance through substrate signal (DTS), and further comprising the step of selecting one of said DTA signal or said DTS signal to detect said internal discontinuities or inhomogeneities." Claim 21 contains a similar limitation; claims 6, 10, and 25 are dependent upon claim 3; and claim 22 is dependent upon claim 21. Appellants argue that none of the references disclose this limitation. App. Br. 13; Reply Br. 8. In response, the Examiner finds that Fei teaches a front signal (F) and a back signal (B), which the Examiner interprets to be the DTA and DTS signals (respectively). Ans. 11. Further, the Examiner finds that these signals, as shown in Figures 7a-14c of Fei, are used to determine the depth of defects in the filter. Ans. 11. We disagree. While we agree with the Examiner that a signal is used to determine the depth of defects in Fei, the Examiner has not provided sufficient evidence, nor do we find anything in the reference, that indicates that both the DTA and DTS signals are used to determine depth of defects. Thus, we cannot sustain the Examiner's rejection of claims 3, 6, 20, 21, 22, or 25.

CONCLUSION

The Examiner did not err in finding that one of ordinary skill in the art would find it obvious to combine Fei, Daoud, Breuer, and Peters.

The Examiner did not err in finding the combination of Fei, Daoud, Breuer, and Peters teaches or suggests an ultrasonic transmitter that

propagates a wave of between about 150 kHz and 700 kHz, as required by independent claims 1 and 18.

The Examiner erred in finding that the combination of Fei, Daoud, Breuer, and Peters teaches or suggests a response that includes a distance through air signal (DTA) and a distance through substrate signal (DTS), as required by claims 3 and 21.

SUMMARY

The Examiner's decision to reject claims1, 3, 5, 6, 8-13, and 15-26 is affirmed.

The Examiner's decision to reject claims 3, 6, 10, 21, 22, and 25 is reversed.

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-IN-PART

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