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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/646,939	12/23/2009	Paul E. Tiegs	KNIM.003	1023

23442 7590 12/06/2016
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EXAMINER
LAUX, DAVID J

ART UNIT	PAPER NUMBER
3743	

MAIL DATE	DELIVERY MODE
12/06/2016	PAPER

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte PAUL E. TIEGS

Appeal 2014-009190
Application 12/646,939
Technology Center 3700

Before MICHAEL L. HOELTER, THOMAS F. SMEGAL, and ERIC C. JESCHKE, *Administrative Patent Judges*.

JESCHKE, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Paul E. Tiegs ("Appellant") seeks review under 35 U.S.C. § 134(a) of the Examiner's decision, as set forth in the Final Office Action dated September 13, 2013 ("Final Act."), rejecting claims 1, 2, 6–12, and 14–19. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

BACKGROUND

The disclosed subject matter "relates to apparatus and methods to reduce emissions in exhaust streams of wood burning apparatus." Spec. ¶ 2. Claim 1, the sole independent claim, is reproduced below:

> 1. An emissions reduction system for a wood burning appliance having an exhaust flue, comprising:
>
> an inlet plenum connectable to said exhaust flue;
>
> an outlet plenum; and,
>
> a reaction chamber in fluid communication with said inlet plenum and said outlet plenum, said reaction chamber including at least one reaction chamber channel, the at least one reaction chamber channel comprising a tube having an inlet in fluid communication with the inlet plenum, an outlet in fluid communication with the outlet plenum and a heating element disposed in the tube.

REJECTIONS

1. Claim 1 stands rejected under 35 U.S.C. § 102(b) as anticipated by Tiegs (US 7,275,929 B2, issued Oct. 2, 2007).

2. Claims 2 and 14–16 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Tiegs.

3. Claims 6–10 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Tiegs and Chappell (US 5,520,123, issued May 28, 1996).

4. Claims 11 and 12 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Tiegs, Chappell, and Angelo (US 4,635,568, issued Jan. 13, 1987).

5. Claim 17 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Tiegs, Grahn (US 5,460,511, issued Oct. 24, 1995), and Hutchinson (US 3,887,336, issued June 3, 1975).[1]

6. Claim 18 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Tiegs, Grahn, Hutchinson, and Chappell.

7. Claim 19 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Tiegs, Grahn, Hutchinson, Chappell, and Drisdelle (US 2007/0137537 A1, published June 21, 2007).

DISCUSSION

Rejection 1 – The rejection of claim 1 under 35 U.S.C. § 102(b)

To address the final clause of claim 1 in the Final Office Action, the Examiner, referencing Tiegs, stated:

> a reaction chamber (portion of afterburner (10) surrounding the bypass flue (18)) in fluid communication with said inlet plenum (14) and said outlet plenum (16) (Figs. 1 & 2; Col. 5, lines 24–52), said reaction chamber (portion of afterburner (10) surrounding the bypass flue (18)) including at least one reaction chamber channel (portion of afterburner (10) surrounding the bypass flue (18)), the at least one reaction chamber channel (portion of afterburner (10) surrounding the bypass flue (18)) comprising a tube having an inlet in fluid communication with the inlet plenum (14) (Figs. 1 & 2; tube formed by outer wall 12 and inner wall 18), an outlet in fluid communication with the outlet plenum (16) and a heating element (26) disposed in the tube (Figs. 1 & 2; Col. 5, lines 24–52).

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[1] Although Grahn is not listed in the header for Rejection 5 (*see* Final Act. 5, ¶ 18), the Examiner makes findings regarding Grahn in the body of the Rejection (*see id.* at 6, ¶ 20). Thus, we consider the absence of Grahn from the header as a typographical error.

Final Act. 3.

Appellant argues that the "rejections all incorporate an argument that fails to distinguish the differences between a reaction chamber and a reaction chamber channel." Appeal Br. 3. Appellant argues that "[t]he reaction chamber channels recited in claim l are separate from the reaction chamber itself, as a structure contained within the reaction chamber to provide improved performance." *Id.* at 7, 4 (same argument); *see also id.* at 8 ("The 'reaction chamber channel' structure in Claim l is recited as a separate structure from the reaction chamber itself, although contained within it."). According to Appellant, "[t]he 'reaction chamber channel(s)' are not the same as the 'reaction chamber'" because "[t]hey are distinguished both in the Specification and Drawings, and the original claims." *Id.* at 3 (citing various figures and paragraphs in the Specification). Appellant contends that "[n]othing in [Tiegs] teaches [the claimed reaction chamber channel] structure of a separate channel/tube within a reaction chamber, the separate channel/tube containing its own heating element." *Id.* at 9.

We are not apprised of error based on these arguments. As noted by the Examiner, claim 1 does not require a "reaction chamber" having a structure separate from the "at least one reaction chamber channel." *See* Ans. 8. Although claim 1 recites "said reaction chamber including at least one reaction chamber channel," Appellant has not shown why this limitation (or any other limitation in claim 1) *requires* the "reaction chamber" and the "at least one reaction chamber channel" to be separate.

As to Appellant's reliance on the disclosed *functions* of the "reaction chamber channel"—e.g., "to provide improved performance" (Appeal Br. 7)—to distinguish it from the "reaction chamber," we decline to import the

disclosed functions into the recited "reaction chamber channel." *See Toro Co. v. White Consol. Indus., Inc.*, 266 F.3d 1367, 1371 (Fed. Cir. 2001) ("An invention claimed in purely structural terms generally resists functional limitation.") (citing *Ecolab, Inc. v. Envirochem, Inc.*, 264 F.3d 1358, 1367 (Fed. Cir. 2001) ("Where the function is not recited in the claim itself by the patentee, we do not import such a limitation.") (citations omitted)).

Although Appellant is correct that the written description and figures of the Specification disclose embodiments in which the "reaction chamber" and the "reaction chamber channel(s)" are separate structures—*see, e.g.*, Fig. 7 (showing multiple "reaction chamber channel[s]" 132 within an unnumbered "reaction chamber"), Fig. 8 (showing multiple unnumbered "reaction chamber channel[s]" within "reaction chamber" 130); Spec. ¶ 70—we decline to import this limitation into claim 1. *See In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993) ("[L]imitations are not to be read into the claims from the specification."); *see also Anchor Wall Sys., Inc. v. Rockwood Retaining Walls, Inc.*, 340 F.3d 1298, 1306–07 (Fed. Cir. 2003) (stating that "the mere fact that the patent drawings depict a particular embodiment of the patent does not operate to limit the claims to that specific configuration").

As to the argument that the "[c]laims expressly recite that the reaction chamber channels are distinct structures from the reaction chamber" (Reply Br. 1), Appellant relies on *original* claims 1 and 2, rather than on language *currently* recited in claim 1. *See also* Reply Br. 3 (discussing original claims 1 and 2).

We turn now to the argument that "[t]he combustion chamber of [Tiegs] (defined by shell 12) is a relatively large volume containing a

heating element (26) which does not create separate, independent, linear gas flows," whereas, "[b]y contrast, each reaction chamber channel (132, 232, 332) recited in claim 1 creates a separate linear gas flow which contains exhaust flows in close contact with its respective heating element (126, 226, 326) and the interior surfaces of the respective reaction chamber channel." Appeal Br. 7–8; *see also id.* at 4 (same argument addressing Tiegs rather than Rejection 1). According to Appellant, "a 'tube' having an 'inlet' and an 'outlet' and a heating element 'disposed in the tube' inherently defines a separate linear gas flow." Reply Br. 3 (relying on a dictionary definition of "tube"). Appellant also provides the language of claim 2, and argues that "[a] 'plurality' of 'parallel' 'tubes', each having an inlet and an outlet, inherently describes 'separate, independent, linear gas flows'." *Id.* at 4.

We are not apprised of error based on this argument. As noted by the Examiner, claim 1 does not require "separate, independent, linear gas flows," as argued by Appellant. *See* Ans. 8. Claim 1 does not require *more than one* "reaction chamber channels," but rather, recites "*at least one* reaction chamber channel." *See* Appeal Br. 20 (Claims App.) (emphasis added). Moreover, the requirement for "a plurality of parallel reaction chamber channels"—as recited in *claim 2* (*id.*)—does not show that *claim 1* requires "separate, independent, linear gas flows." In addition, Appellant has also not shown why the "tube" as fully set forth in claim 1 (or the dictionary definition of that term provided) "inherently defines a separate linear gas flow." Reply Br. 3–4.

We turn now to the argument that the "Examiner does not identify a specific structure which Examiner asserts is a 'channel'" and that "[p]resumably Examiner is asserting some sort of inherency argument that

any defined volume having an inlet and outlet necessarily includes a 'channel', but this is not what is claimed." Appeal Br. 8. Here, the Examiner identified the "portion of afterburner (10) surrounding the bypass flue (18))" as the recited "at least one reaction chamber channel." *See* Final Act. 3; Ans. 2, 7. We determine that this provided sufficient explanation so that Appellant was "properly notified and able to respond." *Hyatt v. Dudas*, 492 F.3d 1365, 1370 (Fed. Cir. 2007), *quoted in In re Jung*, 637 F.3d 1356, 1362 (Fed. Cir. 2011). Here, Appellant has not shown that the term "channel" distinguishes from the structure identified by the Examiner.

For these reasons, we sustain the rejection of claim 1.

Rejection 2 – The rejection of claims 2 and 14–16 under 35 U.S.C. § 103(a)

Claim 2 recites the system of claim 1, "further comprising: wherein said reaction chamber includes a plurality of parallel reaction chamber channels." Appeal Br. 20 (Claims App.). The Examiner stated that "Tiegs fails to disclose a plurality of parallel reaction chamber channels" but determined that

> [i]t would have been obvious to one having ordinary skill in the art at the time the invention was made to use a plurality of parallel reaction chamber channels, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art.

Final Act. 3.

Appellant contends that "the plurality of reaction chamber channels has certain advantages which accrue to the system, which are not simply 'mere duplication', and not obvious." Appeal Br. 13. According to Appellant, "[t]he reaction chamber channels could operate independently of

each other, to be selectively activated as needed, or selectively deactivated," which "permits reduced energy consumption by the system" in certain operating conditions. *Id.* (discussing Spec. ¶¶ 43–47).

The Examiner responds, "Appellant has not claimed the ability to be selectively activated, nor has Appellant claimed structural elements having the ability to do so. Instead, Appellant has claimed having multiples of the reaction chamber channels, which would have been obvious because duplication merely provides a multiplied effect, as would be expected." Ans. 8.

Appellant replies that "[m]ultiple channels does not simply increase flow capacity, but rather it markedly improves efficiency for a *given amount of exhaust flow* by separating the bulk exhaust stream into separate streams maintained in prolonged close proximity to the separate heating elements and hot interior tube surfaces." Reply Br. 7.

The predecessor to our reviewing court has stated that "the mere duplication of parts has no patentable significance unless a new and unexpected result is produced . . . ." *See In re Harza*, 274 F.2d 669, 671 (CCPA 1960). Here, we determine that Appellant has shown that the recited "plurality of parallel reaction chamber channels" provides increased efficiency for a given amount of air flow. *See* Reply Br. 7. The Specification supports Appellant's position:

> The efficiency of a reaction chamber is improved by providing one or more parallel flow channels, where each tube includes a heating element. Parallel channels may be provided by tubes ganged together, or by machining or forming channels into a unitary structure, such as a metal or ceramic block. The exhaust stream flows through the individual channels, and the entire mass flow of each individual stream is thereby maintained in close

> proximity to the heating elements in the channels for a prolonged period. The hot interior wall surfaces of the tubes provide significantly increased heating surface area and distribution, as well, due to the close proximity of the tubing to the heating element and constant flow of heated exhaust within the channels. The individual streams are thereby efficiently heated and, importantly, sustained at temperatures greater than 1500° F (816° C) – or some lower temperature in combination with oxidizer agent injection – to ensure near-complete oxidation of PICs and other organic pollutants.

Spec. ¶ 44. Thus, we do not sustain the rejection of claim 2, or the rejection of claims 14–16, which depend from claim 2.

Rejection 3 – The rejection of claims 6–10 under 35 U.S.C. § 103(a)

A. Claim 6

Claim 6 recites the system of claim 1, "further comprising an oxidizing agent injector." Appeal Br. 20 (Claims App.). The Examiner stated that "Tiegs fails to disclose an oxidizing agent injector," but found that "Chappell teaches an oxidizing agent injector (22) (Fig. 1)." Final Act. 4. According to the Examiner, it would have been obvious to have combined "the afterburner of Tiegs with the oxidizer . . . of Chappel[l] because such a combination would have had the added benefit of allowing remaining combustible matter in the flue gases to be completely combusted and providing an automatic means for regulating the amount of oxidizer provided to the afterburner." *Id.* at 5.

Appellant contends that "Chappel[l] discloses only pure-oxygen gas injection" and that "[a]lthough this is one form of oxidizer injection, Examiner fails to address [the] claims as a whole." Appeal Br. 5. According to Appellant, the "Examiner has misapplied the other references

in relation to [the] reaction chamber channels," and "has engaged in hindsight analysis." *Id.* Appellant contends that "[a]lthough Chappel[l] discloses injection of oxygen into an afterburner, neither Chappel[l] nor [Tiegs] disclose use of oxidation injection in combination with a reaction chamber channel within a reaction chamber." Appeal Br. 14. Appellant also contends that "[n]othing in either reference suggests modification to obtain the structure recited in [the] claims either." *Id.* at 14–15.

For the reasons above (*see supra* Rejection 1), we are not apprised of error in the rejection of claim 1, from which claim 6 directly depends. As to alleged hindsight, Appellant does not identify any knowledge that the Examiner relied upon that was gleaned only from the Specification and that was not otherwise within the level of ordinary skill at the time of the invention. *See In re McLaughlin*, 443 F.2d 1392, 1395 (CCPA 1971). In addition, the Supreme Court has made clear that an express teaching, suggestion, or motivation in the prior art is not the sole test for obviousness. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418–19 (2007) (holding that when the teaching-suggestion-motivation test is applied as a rigid and mandatory formula, it is incompatible with Supreme Court precedent).

For these reasons, we sustain the rejection of claim 6.

B. Claims 7–10

Claims 7–10 depend from claim 2. Appeal Br. 20–21 (Claims App.). The Examiner's added reliance on Chappell does not remedy the deficiencies discussed above (*see supra* Rejection 2). Thus, for the same reasons discussed above, we do not sustain the rejection of claims 7–10.

Rejections 4 through 7 – The rejection of claims 11, 12, and 17–19 under 35 U.S.C. § 103(a)

Claims 11, 12, and 17–19 depend from claim 2. Appeal Br. 21–23 (Claims App.). The Examiner's added reliance on Chappell, Angelo, Grahn, Hutchinson, and Drisdelle does not remedy the deficiencies discussed above (*see supra* Rejection 2). Thus, for the same reasons discussed above, we do not sustain the rejection of claims 11, 12, and 17–19.

DECISION

We AFFIRM the decision to reject claims 1 and 6, and we REVERSE the decision to reject claims 2, 7–12, and 14–19.

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