



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/599,919	01/19/2015	Sean M. Hanlon	047177-9586-US00	8098
23409	7590	09/03/2020	EXAMINER	
MICHAEL BEST & FRIEDRICH LLP (Mke) 790 N WATER ST SUITE 2500 MILWAUKEE, WI 53202			ARANT, HARRY E	
			ART UNIT	PAPER NUMBER
			3763	
			NOTIFICATION DATE	DELIVERY MODE
			09/03/2020	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mkeipdocket@michaelbest.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SEAN M. HANLON and TOBEY D. FOWLER

Appeal 2020-001714
Application 14/599,919
Technology Center 3700

Before JILL D. HILL, LEE L. STEPINA, and ARTHUR M. PESLAK,
Administrative Patent Judges.

HILL, *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 1–4, 7–9, 15, 19, and 20.² *See* Non-Final Act. 1. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

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 Hussmann Corporation. Appeal Br. 2.

² Claims 5, 6, and 16–18 are withdrawn from consideration. Non-Final Act. 1.

BACKGROUND

Appellant's invention relates to a heat exchanger with heater insert. Claim 1, reproduced below with certain limitations italicized, illustrates the claimed subject matter:

1. A heat exchanger comprising:
fins spaced apart from each other, each of the fins including one or more tube slots;
a coil coupled to the fins and including a tube section extending through axially aligned tube slots; and
a heater insert extending through one or more of the axially aligned tube slots adjacent an exterior of the tube section to defrost the heat exchanger.

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Kobayashi	US 4,369,350	Jan. 18, 1983
Beasley	US 4,730,669	Mar. 15, 1988
Okabe	US 2012/0017630 A1	Jan. 26, 2012
Usov ³	RU 2 072 488 C1	Jan. 27, 1997

REJECTIONS

- I. Claims 1, 3, 15, 19, and 20 stand rejected under 35 U.S.C. § 102(a)(1) as being anticipated by Kobayashi.
- II. Claims 1, 2, 4, 8, and 9 stand rejected under 35 U.S.C. § 103 as unpatentable over Usov⁴ and Beasley.

³ The Examiner and Appellant rely on a machine translation of Usov that was entered into the record by the Examiner on February 8, 2019, accompanying a form PTO-892 (Notice of References Cited).

⁴ In Rejection II, the Examiner refers to Usov as "RU94027753C1," which is the Application No. not the Publication No. We deem this a harmless error.

III. Claim 7 stands rejected under 35 U.S.C. § 103 as unpatentable over Kobayashi and Okabe.

OPINION

Rejection I; Kobayashi

In rejecting claim 1 as anticipated by Kobayashi, the Examiner relies, in part, on Kobayashi's Figure 2, reproduced below. *See* Non-Final Act. 2.

FIG. 2 PRIOR ART

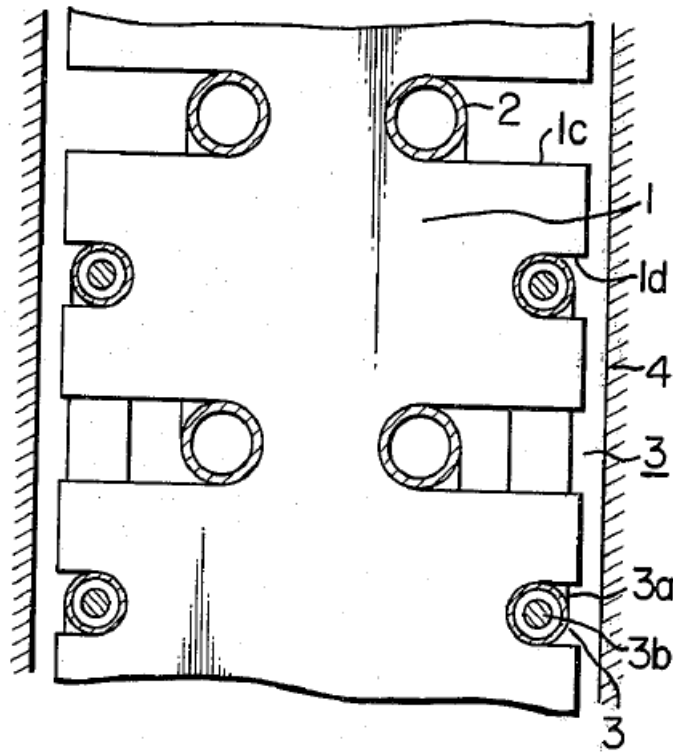


Figure 2 of Kobayashi is a fragmentary sectional view of an evaporator. Kobayashi, 2:45–48. Kobayashi's Figure 2 depicts fins 1 having U-shaped notches 1c for inserting refrigerant tubing 2, and U-shaped notches 1d for inserting heaters 3 which comprise heater tubes 3a and heater wires 3b. *Id.* at 1:33–37. The Examiner considers that Kobayashi's heater 3

meets the limitation “a heater . . . adjacent an exterior of the tube section to defrost the heat exchanger,” because Kobayashi’s heater is used to defrost the heat exchanger. Non-Final Act. 3 (citing Kobayashi, 1:17–24).

Appellant argues that the claims require the heater and coil extending through “the *same* axially aligned tube slots,” which differs from Kobayashi’s separate slots 1c, 1d for its coil and heater. Appeal Br. 7–8. Appellant also argues that Kobayashi does not meet the heater being “adjacent an exterior of the tube” limitation because Kobayashi’s heater is separate and spaced from the tube and is in a different notch. *Id.*

The Examiner responds that the claims do not require the heater and tube to extend through the same slot. Ans. 13. According to the Examiner, the term “adjacent” is defined as “lying close,” and because Kobayashi’s heater 3 “is interpreted as being close to the tube (2),” Kobayashi meets this limitation. *Id.* at 14.

In reply, Appellant reiterates that the claims require the same slot, because the claim recites “the axially aligned tube slots,” which refers back to the previously recited slots in which the tubes also extend. Reply Br. 2. Relying on Kobayashi’s Figure 2, reproduced above, Appellant asserts that the Examiner’s interpretation of the term “adjacent” “cannot be reasonably interpreted in this situation to encompass a heater that is in a slot different from the slot for the refrigerant tube when considering Appellant’s Application and claims as a whole.” Reply Br. 5 (“The Examiner’s interpretation of ‘adjacent an exterior of the tube section’ is unreasonably broad given Appellant’s Application as a whole and what is taught by Kobayashi, and is therefore improper.”).

We agree with Appellant on at least the latter argument. The broadest reasonable interpretation of the claim term “extending . . . adjacent an exterior of the tube section,” consistent with the Specification, requires more than just being “close” as the Examiner suggests. The Specification discloses that when evaporator 75 is assembled, heater insert 120 can “be guided through the axially-aligned slots 100 to engage one or both of the tube section 85 and the fins 90.” Spec. ¶ 31. The Specification also discloses that “heater insert 120 is engaged with the fins 90 via the slots 100 and extends generally parallel to the tube sections 85.” *Id.* ¶ 28; *see also* ¶ 36. The Specification further discloses that, in operation, “heater insert 120, 220 is in direct contact with one or both of at least a portion of one or both of the tube sections 85 and the fins 90 to defrost the evaporator 75 by conduction and convection.” *Id.* ¶ 40. Although contact is not required, each of the disclosed embodiments depicts the heater insert extending generally parallel to the tube section. We discern no disclosure of “adjacent” that encompasses a tube section and heater that are spaced apart and extend at different non-parallel levels of the fins as depicted by Kobayashi. Rather, we understand the broadest reasonable interpretation of the phrase “*extending . . . adjacent an exterior of the tube section,*” consistent with the Specification, to require that the heater insert is not only close to the tube section, but also extends in a manner that maintains the adjacent relationship of the heater and the tube.

For these reasons, the Examiner’s interpretation of the limitation “a heater . . . extending . . . adjacent an exterior of the tube section” as including Kobayashi’s heater 3a and 3b that is spaced apart vertically and horizontally from the tube section is unreasonably broad. Thus, the

Examiner's finding is in error, and we do not sustain the rejection of independent claims 1 and 15. Claims 3 and 20 depend from claim 1. Claim 19 depends from claim 15. We do not sustain Rejection I.

Rejection II; Usov and Beasley

The Examiner finds that Usov discloses a heat exchanger with fins, a coil, and a heater insert, but that Usov's fins do not include tube slots with tube sections and a heater insert extending through the tube slots. Non-Final Act. 6. The Examiner finds that Beasley discloses slots in the fins to allow for a cross flow pattern of fluid distribution. *Id.* (citing Beasley, 8:60–68). According to the Examiner, it would have been obvious to place tube slots in Usov's fins "to provide a cross flow pattern for the air distribution (allowing air to enter the fins in vertical and horizontal directions), thus improving the versatility of the system." *Id.* at 7.

Appellant argues, *inter alia*, that Usov's tubing 1 defines channels 5 that receive refrigerant, and that each channel is defined by inner walls of tubing 1. Appeal Br. 10. Appellant asserts that Usov discloses that the heater or "heat generating element" is inside the microchannel tubing. *Id.* According to Appellant, because the Examiner relies on the individual walls of the microchannel tubing 1 for the claimed tube sections, the Examiner not only mischaracterizes the disclosure of Usov, but also ignores Appellant's claim language. *Id.*

In response, the Examiner states that the claim requires that "the coil includes tube sections which are being interpreted as the partition walls." Ans. 16. According to the Examiner, based on this interpretation, Usov's heater 6 is adjacent an exterior of the partition wall. *Id.* at 17.

Appellant replies that the Examiner’s interpretation is unreasonably broad because the Examiner’s reliance on “arbitrarily-selected partition walls of Usov’s heat exchanger for teaching a ‘tube section’” has no reasonable basis in Usov or in Appellant’s disclosure. Reply Br. 7. Specifically, Appellant asserts that the Examiner’s position that Usov’s partition walls meet the claimed tube sections “is unreasonable because it is not consistent with what Appellant describes in the Specification or what would be ‘consistent with the interpretation that those skilled in the art would reach.’” *Id.* at 8.

Appellant has the better position. The Specification discloses that in “Figs. 2 and 3, the illustrated evaporator 75 includes a serpentine coil assembly that has two coils 80 with tube sections 85.” Spec. ¶ 24. We reproduce below Figure 3.

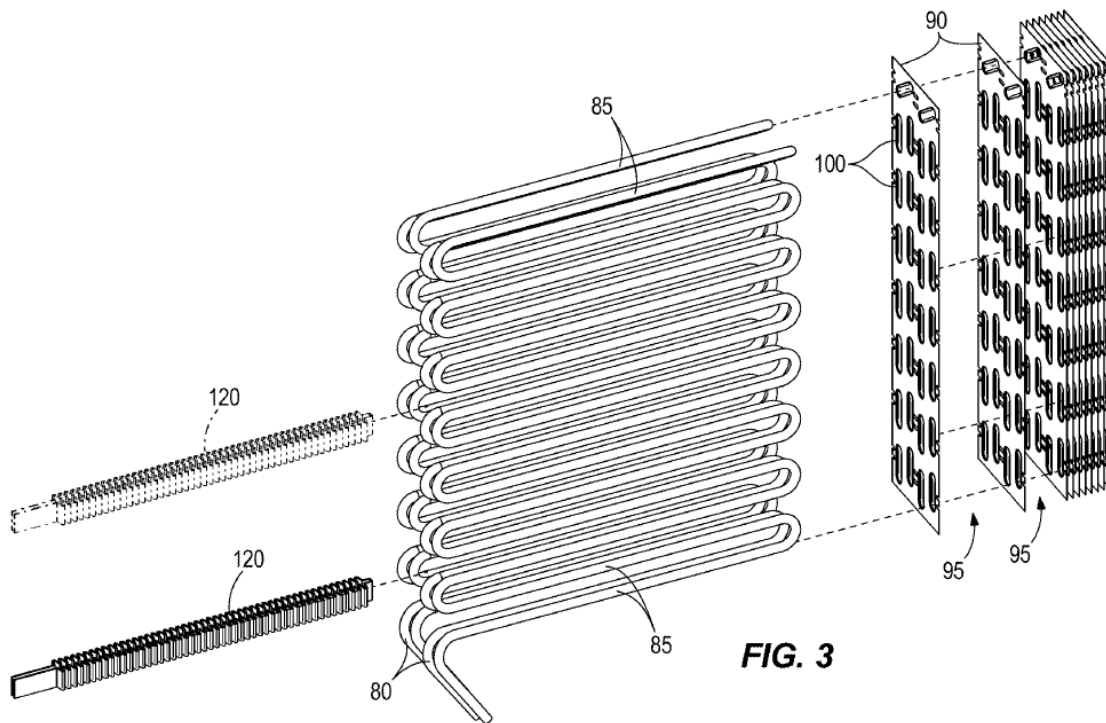


Figure 3 is an exploded perspective view of an evaporator illustrating the coils, the fins, and the heater insert. Spec. ¶ 12. Figure 3 shows two serpentine coils 80 that extend from the top of the figure to the bottom of the figure. As depicted in Figure 3, the coils are divided along their lengths into sections, or tube sections 85. We discern no disclosure of “tube section” that encompasses a cross-section of a coil or tube with interior walls of the coil as depicted by Usov. *See* Usov, 3:13–15 (“cross-section”). We understand the broadest reasonable interpretation of the phrase “tube section,” consistent with Appellant’s Specification to require that the tube section is a longitudinally extending portion of the fully enclosed coil tube. In view of this, as Appellant argues persuasively, Usov does not disclose a heater insert “adjacent an exterior of the tube section.” Given that the Examiner does not rely on Beasley for this feature, the Examiner has not established adequately that the combined teachings of Usov and Beasley suggest a heater insert extending through one or more of the axially aligned tube slots adjacent an exterior of the tube section, as required by claim 1.

For these reasons, we do not sustain the rejection of claim 1. Claims 2, 4, 8, and 9 depend from claim 1. We do not sustain Rejection II.

Rejection III; Kobayashi and Okabe

Claim 7 depends from claim 1. The Examiner does not find that Okabe cures the above-noted deficiency in Kobayashi set forth in Rejection I. We, therefore, do not sustain Rejection III for the reason set forth above regarding Rejection I.

CONCLUSION

The Examiner’s rejections are reversed.

More specifically,

DECISION SUMMARY

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1, 3, 15, 19, 20	102(a)(1)	Kobayashi		1, 3, 15, 19, 20
1, 2, 4, 8, 9	103	Usov, Beasley		1, 2, 4, 8, 9
7	103	Kobayashi, Okabe		7
Overall Outcome				1-4, 7-9, 15, 19, 20

REVERSED