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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* STEVEN J. KUEHL, TUSHAR KULKARNI, and  
GUOLIAN WU<sup>1</sup>

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Appeal 2014-006704  
Application 12/612,211  
Technology Center 3700

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Before BRANDON J. WARNER, LEE L. STEPINA, and  
AMANDA F. WIEKER, *Administrative Patent Judges*.

WIEKER, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Steven J. Kuehl et al. (“Appellants”) appeal under 35 U.S.C. § 134(a) from the Examiner’s final rejection of claims 1–20. We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

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<sup>1</sup> According to Appellants, the Real Party in Interest is Whirlpool Corporation. Appeal Br. 2.

### CLAIMED SUBJECT MATTER

The invention concerns “a refrigerator having a main cooling loop and a secondary cooling loop, the secondary cooling loop being configured to be in fluid communication with a detachable module,” which module may include “a turbo chill module . . . , a fast freeze module, a shock freeze module, a temperature controlled crisper compartment module,” etc. Spec. ¶¶ 2, 36. Claim 1 is illustrative of the subject matter on appeal, and recites:

1. A refrigerator having an interior and a main cooling loop, at least a portion of the interior including a freezer section and at least a portion of the main cooling loop including an evaporator, said refrigerator comprising:
  - at least one detachable module comprising at least one quick connect fitting, said detachable module configured to removably attach to a surface of the refrigerator; and
  - a secondary cooling loop comprising at least one quick connect fitting that corresponds to said at least one detachable module’s said at least one quick connect fitting,
    - wherein said secondary cooling loop includes a selectively removable tank that is in thermal communication with at least one of the evaporator and the freezer section, and
    - wherein said secondary cooling loop is configured to be in fluid communication with said at least one detachable module through said corresponding at least one quick connect fittings.

Appeal Br. 17 (Claims App.).

### REJECTIONS

The claims stand rejected as follows:

- I. Claims 1–11 and 14–19 under 35 U.S.C. § 103(a) as unpatentable over Rafalovich (US 2008/0141699 A1, pub. June 19, 2008) and Hall (US 4,354,359, iss. Oct. 19, 1982).

- II. Claims 12, 13, and 20 under 35 U.S.C. § 103(a) as unpatentable over Rafalovich, Hall, and Felicetta (US 4,519,216, iss. May 28, 1985).

## ANALYSIS

### *Rejection I – Claims 1–11 and 14–19*

Appellants argue claims 1–3 and 7–9 as a group. Appeal Br. 5–11. We select claim 1 as representative, and claims 2, 3, and 7–9 stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(iv). Appellants separately address claims 4 and 5 (Appeal Br. 11–12), claim 6 (*id.* at 12), and claims 10, 11, and 14–19 (*id.*), and we address Appellants’ arguments in turn.

### *Claims 1–3 and 7–9*

The Examiner finds that Rafalovich discloses a refrigerator (100) substantially as claimed including, *inter alia*, a module (540) including at least one connector that is attached to a surface of the refrigerator, and a secondary cooling loop including at least one connector corresponding to that of the module, wherein the secondary cooling loop includes a tank (530) in thermal communication with at least one of an evaporator (220) and a freezer section (101) of the refrigerator. Final Act. 2–3 (citing Rafalovich ¶ 26, Fig. 1). The Examiner finds that Rafalovich fails to teach that the module and tank are detachable and removable, but relies on Hall for such a teaching. *Id.* at 3 (citing Hall, 2:14–17, 4:6–15, Figs. 1, 3, 6–9). The Examiner concludes it would have been obvious to one of ordinary skill in the art to modify Rafalovich’s module and tank to be “detachable with connectors as this would allow for easy replacement of the module or tank when they malfunction or break” and because constructing a formerly

integral structure in various elements involves only routine skill in the art. *Id.* at 3–4 (citing MPEP § 2144.04(V, C)).

Appellants argue that, in a prior rejection, the Examiner conceded that Rafalovich’s element 510 corresponds to the claimed tank but, in the Final Rejection from which this appeal is taken, the Examiner suggests that tank 510 is interchangeable Rafalovich’s element 530 (“medium path”). Appeal Br. 5. According to Appellants, these structures are distinct and cannot be interchanged because doing so would render Rafalovich unsatisfactory for its intended purpose. *Id.* at 5–7.

We are unpersuaded by Appellants’ argument, which is not responsive to the Examiner’s rejection. The Examiner did not find that Rafalovich’s elements 510 and 530 are interchangeable, as Appellants argue. Rather, the Examiner found that element 530 corresponds to the “tank” recited in claim 1, without being interchanged with anything. Final Act. 3; Ans. 13. Rafalovich describes element 530 as a “medium path in a heat exchanger.” Rafalovich ¶ 20. That Rafalovich does not utilize the term “tank,” when describing element 530, is not dispositive because a reference need not employ the same terminology as used in the claims. *See* Reply Br. 2–4. Indeed, a prior art reference may disclose a claimed invention even though it describes the claimed subject matter using different terms. *See In re Schaumann*, 572 F.2d 312, 317 (CCPA 1978).

We are unpersuaded that the Examiner’s interpretation of “tank” to include Rafalovich’s medium flow path 530 was unreasonable. Appeal Br. 8; Reply Br. 4–5. Appellants define “tank” as “a large receptacle or storage chamber, especially for liquid or gas.” Appeal Br. 8. This definition is

consistent with Appellants' Specification, which explains that "secondary cooling loop 116 includes a tank 120 that is *configured to store* a portion of the *coolant material*." Spec. ¶ 23 (emphasis added). Rafalovich's medium path 530, which is part of heat exchanger 570, satisfies Appellants' own interpretation of a "tank" because path 530 is a chamber that stores a liquid cooling medium as it travels from pump 520 to module 540. Rafalovich ¶¶ 19–20, 27; Ans. 14 (explaining that because path 530 contains fluid, it is a tank). We are unpersuaded that because coolant "flows" through path 530, it is not "stored" there. Appeal Br. 8. Appellants' own construction of "tank" does not dictate the duration of time for which contents must be stored in a chamber, or whether the contents may move within the tank.

Furthermore, as noted by the Examiner, Appellants' Specification explains that "tank 120 can be a heat exchanger." Ans. 14 (quoting Spec. ¶ 23). We are unpersuaded that reliance on this disclosure constitutes improper hindsight (*see* Reply Br. 4–5) because the Examiner does not rely on this statement to provide a reason to modify the prior art. Rather, the Examiner relies on Appellants' admission as evidence that a tank can be a heat exchanger, such as that disclosed by Rafalovich. We are also unpersuaded that this statement describes Appellants' "novel technology . . . that a tank can be made to behave as a heat exchanger." Reply Br. 5. The cited disclosure does not state what the tank *may do*, e.g., "behave as a heat exchanger," but rather, the disclosure states simply what the tank *may be*, e.g., "a heat exchanger." This disclosure supports the Examiner's finding that medium path 530 of Rafalovich's heat exchanger is encompassed by a tank as claimed.

We are also unpersuaded by Appellants' argument that Rafalovich's tank 510 is not in thermal communication with the evaporator or the freezer section. Appeal Br. 8. As discussed above, the Examiner relies on Rafalovich's path 530 as the claimed tank and, as shown in Figures 1 and 2, path 530 is in thermal communication with evaporator 220 (Rafalovich ¶ 26 ("refrigerant in the refrigerant coil 220 absorbs heat from the medium flowing in the medium path 530")) and also with freezer section 101 (*id.* ¶ 29 ("path 530 [is] disposed next to a back wall of the freezer compartment 101")).

Finally, we are unpersuaded by Appellants' argument that Hall fails to disclose a removable tank of a secondary cooling loop that is placed in thermal communication with an evaporator or freezer section of a separate cooling loop. Appeal Br. 10. As the Examiner notes, Hall is relied upon solely for its disclosure of detachability. Ans. 15. Rafalovich is relied upon for its disclosure of main and secondary cooling loops. *Id.*

For the foregoing reasons, we are unpersuaded of error in the Examiner's rejection of claim 1, which we affirm. We also affirm the rejections of claims 2, 3, and 7–9, which fall with claim 1.

Claims 4 and 5

Claim 4 depends from claim 1 and requires that the thermal communication between the tank and the evaporator or freezer section "comprises said tank being at least one of [(a)] Integrated with the evaporator; and [(b)] having a heat exchange portion that is at least partially located within the freezer section." Appeal Br. 17 (Claims App.). Because these limitations are recited in the alternative, we address only limitation (b).

The Examiner finds that Rafalovich as modified by Hall teaches tank 530 located within the freezer section as claimed. Final Act. 4–5 (citing Rafalovich ¶ 29, Fig. 2); Ans. 17.

Appellants contend that Figure 2 shows path 530 “set apart from the freezer compartment 101” and Rafalovich does not support the Examiner’s findings.<sup>2</sup> Appeal Br. 11–12 (citing Rafalovich ¶ 26). Appellants do not present any argument regarding claim 5.

We are unpersuaded by Appellants’ argument. Rafalovich depicts, in Figure 2, that path 530 is located within the freezer section, e.g., between the freezer section back wall and an evaporator cover. *See* Rafalovich ¶ 29 (disclosing that path 530 is “disposed next to a back wall of the freezer compartment 101 and behind a freezer evaporator cover”), Fig. 2. We are also unpersuaded by Appellants’ argument regarding paragraph 26. This argument does not address the disclosure of paragraph 29, which was cited by the Examiner.

For the foregoing reasons, we are unpersuaded of error in the Examiner’s rejection of claims 4 and 5, which we affirm.

Claim 6

Claim 6 depends from claim 3 and, through that dependency, requires that the tank is configured to store coolant material and is configured to be removably connected to the evaporator. Appeal Br. 18 (Claims App.).

Appellants incorporate the arguments presented with respect to claims 1 and 4, arguing that because the combination of references does not

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<sup>2</sup> We are unpersuaded by Appellants’ arguments regarding element 510, upon which the Examiner does not rely to teach the claimed tank.

disclose a selectively removable tank “integrated with the evaporator,” the combination also does not disclose a tank “removably connected to the evaporator.” Appeal Br. 12.

Appellants’ incorporation of arguments presented with respect to claim 1 is not persuasive for the reasons discussed above. Appellants’ arguments regarding limitations presented by claim 4, i.e., “integrated with the evaporator,” are not persuasive because they are not commensurate with the scope of claim 6, which does not depend from claim 4 and therefore does not require “integrat[ion] with the evaporator.” Appeal Br. 17–18 (Claims App.). Appellants’ arguments do not address the Examiner’s conclusion that it would have been obvious to have modified Rafalovich’s tank 530 and evaporator 220 to be detachably connected, i.e., removably connected, for ease of tank replacement. *See* Appeal Br. 12; Final Act. 3–5.

For the foregoing reasons, we are unpersuaded of error in the Examiner’s rejection of claim 6, which we affirm.

Claims 10, 11, and 14–19

For claims 10, 11, and 14–19, Appellants incorporate the arguments presented with respect to claims 1, 4, and 6. For the reasons discussed above, we are unpersuaded by these arguments and, accordingly, affirm the Examiner’s rejection of claims 10, 11, and 14–19.

*Rejection II – Claims 12, 13, and 20*

Claims 12, 13, and 20 require, *inter alia*, that the tank includes at least one protrusion and the evaporator includes at least one coil, such that the tank is integrated with the evaporator. Appeal Br. 19–21 (Claims App.). The Examiner finds that Rafalovich as modified by Hall fails to disclose this

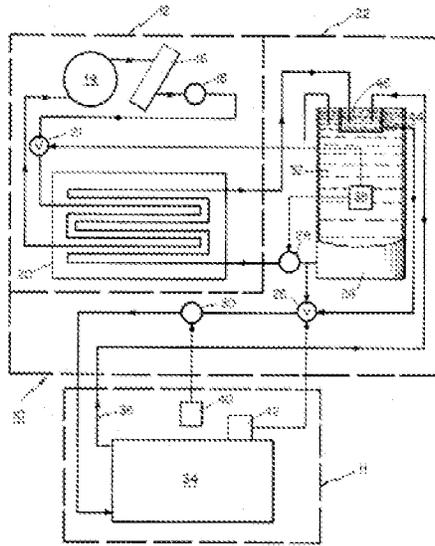
arrangement, but finds that Felicetta teaches the required protrusion(s), coil(s), and integration. Final Act. 12–13. Specifically, the Examiner finds:

Felicetta teaches a tank (20) [that] includes a plurality of protrusions (Conduits entering from the right side of tank 20), and wherein the evaporator includes a plurality of coils (conduits entering from the left side of tank 20) . . . (Figure 1 illustrates that the two sets of coils in the tank 20 are integrated with each other).

*Id.* The Examiner concludes that it would have been obvious to a person of ordinary skill in the art to integrate Rafalovich’s tank and evaporator, in view of Felicetta’s teachings, to increase the heat transfer exchange capacity of the assembly. *Id.* at 13.

Appellants contend, *inter alia*, that Felicetta does not support the Examiner’s finding that “two sets of ‘conduits’ enter the [tank (20)] where one set of conduits define an evaporator that ‘includes a plurality of coils’ that enter the [tank (20)].” Appeal Br. 14–15.

We are persuaded by Appellants’ argument. Felicetta discloses a system for removing heat loads from a refrigerated storage area. Felicetta, 2:4–7. The disclosed system includes chiller 20, shown in the sole Figure, which is reproduced below.



Felicetta's Figure depicts a schematic flow diagram of the refrigeration system. *Id.* at 1:66–68. Felicetta explains that when a desired temperature of coolant material 32, stored in tank 24, is reached, the material is pumped through a closed-loop circuit 22 to circulate in cooling coil 34. *Id.* at 2:22–25. Felicetta also explains that the coolant material circulates through chiller 20 of closed-loop refrigeration circuit 12 before returning to tank 24 through vessel 44. *Id.* at 51–54. Although the Examiner identifies chiller 20 as the claimed tank, the Examiner does not explain what aspect of Felicetta's system constitutes the claimed evaporator. Final Act. 12–13. Therefore, it is unclear how conduits entering the chiller from the left constitute coils of an evaporator, as the Examiner found. *Id.* As a result, the Examiner's factual findings underlying the conclusion of obviousness are not supported by a preponderance of evidence.

We reverse the Examiner's rejection of claims 12, 13, and 20.

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DECISION

The Examiner's decision to reject claims 1–11 and 14–19 is  
AFFIRMED; and  
the Examiner's decision to reject claims 12, 13, and 20 is  
REVERSED.

AFFIRMED-IN-PART