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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* HASAN ALBAYRAK, KLAUS GRUNERT,  
THOMAS LUDENIA, GUENTER STEFFENS, and ANDREAS STOLZE

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Appeal 2014-007477  
Application 12/086,463  
Technology Center 3700

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Before HUBERT C. LORIN, CYNTHIA L. MURPHY, and  
MATTHEW S. MEYERS *Administrative Patent Judges*.

MURPHY, *Administrative Patent Judge*.

DECISION ON APPEAL

The Appellants<sup>1</sup> appeal under 35 U.S.C. § 134 from the Examiner's rejections of claims 9–24. We have jurisdiction over this appeal under 35 U.S.C. § 6(b).

We AFFIRM.

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<sup>1</sup> The Appellants identify the real party in interest as “BSH BOSCH UND SIEMENS HAUSGERATE GMBH.” (Appeal Br. 3.)

STATEMENT OF THE CASE

The Appellants' invention relates "to a circuit arrangement for a Peltier module for use in a Peltier heat pump for a tumble dryer." (Spec. 1, lines 3–4.)

*Illustrative Claim<sup>2</sup>*

9. A circuit arrangement for a Peltier module for use in a Peltier heat pump for a tumble dryer, the circuit arrangement comprising:

a Peltier module configured to be connected to an AC power supply voltage of a public network and having at least one series arrangement of Peltier elements; and

a rectifier operatively associated with the AC power supply and the at least one series arrangement of Peltier elements and configured to rectify the AC power supply voltage directly from the public network to produce a DC voltage for use by said Peltier elements, the at least one series arrangement of the Peltier elements are actuatable so that the elements are capable of receiving the DC voltage obtained from the direct rectification of the AC voltage at a voltage level that is substantially equal to the received DC voltage allowing the Peltier module to be indirectly operated by the AC power supply,

wherein the number of Peltier elements and the manufacturer type of Peltier elements are such that the series arrangement is suitably matched with the received DC voltage, and

wherein the Peltier elements of the series arrangement are operated by actuating the series arrangement with the rectified AC power supply voltage at an operating voltage that is suitable for the use of the Peltier module in a Peltier heat pump.

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<sup>2</sup> This illustrative claim is quoted from the Claims Appendix ("Claims App.") set forth on pages 22–27 of the Appeal Brief.

*References*

Hanlein	US 3,220,199	Nov. 30, 1965
Newton	US 3,255,593	June 14, 1966
Boehmer	US 3,451,904	June 24, 1969
Ramirez	US 5,450,727	Sept. 19, 1995
Burress	US 5,724,750	Mar. 10, 1998
Ludikhuize	US 5,747,841	May 5, 1998
Tanaka	JP 08014723	Jan. 19, 1996

*Rejections*

- I. The Examiner rejects claims 9, 18, 19, and 22–24 under 35 U.S.C. § 103(a) as unpatentable over Boehmer and Hanlein. (Final Action 2.)<sup>3</sup>
- II. The Examiner rejects claims 10–14 and 16 under 35 U.S.C. § 103(a) as unpatentable over Boehmer, Hanlein, and Ramirez. (*Id.* at 5.)
- III. The Examiner rejects claim 15 under 35 U.S.C. § 103(a) as unpatentable over Boehmer, Hanlein, and Ludikhuize. (*Id.* at 8.)
- IV. The Examiner rejects claim 17 under 35 U.S.C. § 103(a) as unpatentable over Boehmer, Hanlein, and Burress. (*Id.* at 9.)
- V. The Examiner rejects claims 12 and 20 under 35 U.S.C. § 103(a) as unpatentable over Boehmer, Hanlein, and Tanaka. (*Id.* at 11.)
- VI. The Examiner rejects claim 21 under 35 U.S.C. § 103(a) as unpatentable over Boehmer, Hanlein, and Newton. (*Id.* at 12.)

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<sup>3</sup> We consider the Examiner’s non-listing of claims 22–24 in the opening sentence of this rejection as an inadvertent oversight, as these claims are specifically discussed in the body of the Examiner’s rejection. (*See* Final Action 2, 5; *see also* Answer 4–5.)

## ANALYSIS

### *Independent Claim 9*

Independent claim 9 recites “[a] circuit arrangement” comprising “a Peltier module configured to be connected to an AC power supply voltage of a public network and having at least one series arrangement of Peltier elements.” (Claims App.) The Examiner finds that Boehmer discloses such a circuit arrangement. (See Final Action 2–3.) Boehmer shows a circuit diagram wherein Peltier elements 54 are electrically connected to what appears to be a standard (117 volt) AC plug. (See Boehmer Fig. 7.)

Independent claim 9 also recites “a rectifier” that is “operatively associated with the AC power supply and the at least one series arrangement of Peltier elements” and that is “configured to rectify the AC power supply voltage” to produce “a DC voltage for use by said Peltier elements.” (Claims App.) The Examiner finds that Boehmer discloses such a rectifier. (See Final Action 2–3.) In Boehmer, a transformer 91 reduces the 117 volt AC power to “5 or 6 volts which is supplied to [a] rectifier system 93” and “[t]he rectifier 93 rectifies the current into a pulsating DC current.” (Boehmer, col. 6, lines 13–16.)

Independent claim 9 additionally requires the rectifier to be configured to rectify the AC power supply voltage “directly” from the public network. (Claims App.) The Examiner determines that it would have been obvious, in view of the teachings of Hanlein, to provide Boehmer’s circuit arrangement with 100–120 volt Peltier modules “in order to increase the efficiency of the device.” (Final Action 4.) The Examiner explains that, with this modification, Boehmer’s transformer 91 would be an “unnecessary

component” and it is “well within the ordinary skill in the art to remove an unnecessary component from a system.” (*Id.*)

The Appellants argue that Hanlein is not “reasonably pertinent to the problem faced by the inventors” and thus, not analogous art. (Appeal Br. 13.) According to the Appellants, the Specification “explains that one of the problems faced by the inventors of the present application is to improve the circuit arrangement of Peltier elements for use in a Peltier heat pump in a tumble dryer.” (*Id.* at 13–14.) Therefore, according to the Appellants, “[o]ne of ordinary skill would not have looked to Hanlein for providing any particular improvement for a circuit arrangement of Peltier elements in a Peltier heat pump in a tumble dryer.” (*Id.* at 14.)

We are not persuaded by this argument because the Specification also expressly states that the Appellants’ invention “addresses the problem of finding a simple solution to the issue of power supply for a Peltier module.” (Spec. 2, lines 17–18.) Hanlein’s teachings generally relate to “Peltier couples,” and Hanlein is particularly involved with problems that arise when “direct current is derived by rectification from generally available alternating current of utility lines.” (Hanlein, col. 1, lines 18–30). In other words, Hanlein pertains to the particular problem of power supply for a Peltier device.<sup>4</sup>

The Appellants also argue that one of ordinary skill in the art would not have been motivated to combine the teachings of Boehmer and Hanlein. (*See* Appeal Br. 16–17; Reply Br. 4–7.) The Appellants contend that

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<sup>4</sup> A reference is analogous prior art if it “is reasonably pertinent to the particular problem with which the inventor is involved.” *In re Bigio* 381 F.3d 1320, 1325 (Fed. Cir. 2004).

Boehmer is “in no way attempting to address” the Examiner’s articulated reason for the combination (i.e., to increase efficiency) and “Boehmer in no way envisions at all replacing the allegedly corresponding Peltier elements with Peltier devices capable of operating at high voltages as taught by Hanlein.” (*Id.* at 16.)

We are not persuaded by these arguments because, even if the Appellants’ contentions are true, they are not aligned with the Examiner’s rejection which relies upon Hanlein, not Boehmer, to teach high-voltage Peltier devices. The Appellants do not adequately address why one of ordinary skill in the art, armed with Hanlein’s teachings, would not infer that Boehmer’s circuit arrangement could be modified to include high-voltage Peltier elements. We note that the Examiner “need not seek out precise teachings directed to the specific subject matter of the challenged claim” as “the inferences and creative steps that a person of ordinary skill in the art would employ” can be taken into account. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 419 (2007).

Independent claim 9 also requires that “the number of Peltier elements and the manufacturer type of Peltier elements are such that the series arrangement is suitably matched with the received DC voltage.” (Claims App.) The Appellants argues that Boehmer does not inherently disclose this limitation. (*See* Appeal Br. 10–13; Reply Br. 2–3.) We are not persuaded by this argument because the Examiner finds that “the number and general characteristics of the Peltier modules” is a matter of simple design choice and “making design choices in order to maximize efficiency” is also within the ordinary skill in the art. (*See* Final Action 5.) The Appellants do not adequately address why choosing a number and manufacturer type of Peltier

elements that are “suitably matched” to the received DC voltage in Boehmer’s modified circuit arrangement would not have been obvious to one of ordinary skill in the art.

Independent claim 9 further recites that the Peltier elements “are actuatable so that the elements are capable of receiving the DC voltage obtained from the direct rectification of the AC voltage at a voltage level that is substantially equal to the received DC voltage allowing the Peltier module to be indirectly operated by the AC power supply.” (Claims App.) The Appellants argue that “[n]either Boehmer nor Hanlein disclose or suggest such features.” (Appeal Br. 17.) We are not persuaded by these arguments because they do not address the actuation of the Peltier elements in Boehmer’s modified circuit arrangement. In this modified circuit arrangement, transformer 91 is eliminated, AC power (e.g., 117 volt) is supplied to rectifier 95 for rectification, and the rectified DC voltage is provided to high-voltage (e.g., 100 to 120 volt) Peltier elements. (*See* Final Action 4.)

In view of the foregoing, we are not persuaded by the Appellants’ position that the Examiner errs in concluding that the circuit arrangement recited in independent claim 9 would have been obvious over the prior art. Thus, we sustain the Examiner’s rejection of independent 9 under 35 U.S.C. § 103(a) as unpatentable over Boehmer and Hanlein (Rejection I).

*Dependent Claims 10–14, 16, and 18–24*

Claims 10–14, 16, and 18–24 depend directly or indirectly from independent claim 9. (*See* Claims App.) The Appellants do not argue these claims separately or further (*see* Appeal Br. 10–20), and so they fall with independent claim 9.

Thus, we sustain the Examiner's rejection of dependent claims 18, 19, and 22–24 under 35 U.S.C. § 103(a) as unpatentable over Boehmer and Hanlein (Rejection I); we sustain the Examiner's rejection of dependent claims 10–14 and 16 under 35 U.S.C. § 103(a) as unpatentable over Boehmer, Hanlein, and Ramirez (Rejection II); we sustain the Examiner's rejection of dependent claims 12 and 20 under 35 U.S.C. § 103(a) as unpatentable over Boehmer, Hanlein, and Tanaka (Rejection V); and we sustain the Examiner's rejection of dependent claim 21 under 35 U.S.C. § 103(a) as unpatentable over Boehmer, Hanlein, and Newton (Rejection VI).

*Dependent Claim 15*

Claim 15 depends directly from independent claim 7 and further requires “a buffer condenser” and “a load current limiter.” (Claims App.) The Examiner finds that it would have been obvious, in view of the teachings of Ludikhuize, to provide Boehmer's modified circuit arrangement with such a buffer and such a load current limiter “to provide consistent voltage and current passing to the Peltier element.” (Final Action 9.)

Dependent claim 15 also requires the load current limiter to be positioned “between the rectifier and the buffer condenser.” (Claims App.) The Examiner finds that it would have been obvious to locate “the current limiter between the rectifier and the buffer condenser” in Boehmer's modified circuit arrangement. (Final Action 9.) The Examiner explains that this rearrangement of the current limiter “would not affect the functionality of the device.” (Answer 16.) In other words, the Examiner finds that this location of the current limiter would yield predictable results.

The Appellants argue that “the Examiner provides no rationale, nor points to any portion of Ludikhuize, as to why one would be motivated to

rearrange the features of Ludikhuize in the manner claimed.” (Appeal Br. 19.) We are not persuaded by this argument because “[a] combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR* 550 U.S. at 416. Here, the Appellants do not assert that a buffer condenser, a load current limiter, and/or a rectifier are not familiar elements in a circuit arrangement; and the Appellants do not contend that the Examiner’s proposed location of the load current limiter could not be accomplished by known methods. Also, the Appellants do not address the “criticality as to the particular location of the current limiter” (Answer 16) or, in other words, assert that this location would not yield predictable results.

In view of the foregoing, we are not persuaded by the Appellants’ position that the Examiner errs in concluding that the circuit arrangement recited in dependent claim 15 would have been obvious over the prior art. Thus, we sustain the Examiner’s rejection of dependent claim 15 under 35 U.S.C. § 103(a) as unpatentable over Boehmer, Hanlein, and Ludikhuize (Rejection III).

#### *Independent Claim 17*

Independent Claim 17 is directed to “[a] tumble dryer” comprising a circuit arrangement having features that are the same or similar to those recited in independent claim 9. (*See* Claims App.) The Appellants argue independent claim 17 in conjunction or in tandem with independent 9, and these arguments allege shortcomings in Boehmer, Hanlein, or the combination thereof. (*See* Appeal Br. 10–18; Reply Br. 2–8). As discussed above in our analysis of independent claim 9, we are not persuaded by these arguments.

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Thus, we sustain the Examiner's rejection of independent 17 under 35 U.S.C. § 103(a) as unpatentable over Boehmer, Hanlein, and Buress (Rejection IV).

#### DECISION

We AFFIRM the Examiner's rejections of claims 9–24.

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