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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte YOSHIHIDE NAKAMURA, AKINORI MARUYAMA, and KEISUKE UETA

Appeal 2018-004857
Application 14/513,346
Technology Center 2800

Before BRADLEY W. BAUMEISTER, MICHAEL J. STRAUSS, and RUSSELL E. CASS, *Administrative Patent Judges.*

STRAUSS, *Administrative Patent Judge.*

DECISION ON APPEAL

Appellant[1] appeals under 35 U.S.C. § 134(a) from the Examiner's Final Rejection of claims 1–4, which constitute all claims pending in this application. Appeal Br. 18–20, Claims Appendix.[2] We have jurisdiction

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[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 the YAZAKI CORPORATION. Appeal Br. 2.

[2] Rather than repeat the Examiner's positions and Appellant's arguments in their entirety, we refer to the above mentioned Appeal Brief filed March 9, 2017, as well as the following documents for their respective details: the Final Action mailed September 7, 2016 ("Final Act."); the Examiner's Answer mailed February 8, 2018 ("Ans."); and the Reply Brief filed April 5, 2018 ("Reply Br.").

under 35 U.S.C. § 6(b). Oral argument was held on December 9, 2019. A copy of the transcript will be added to the record in due course. We affirm.

CLAIMED SUBJECT MATTER

Appellant describes the present invention as follows:

> The present invention relates to a protector for an electricity supply circuit for supplying electricity to a load installed on a vehicle, which immediately disconnects the circuit when an overcurrent flows to the electricity supply circuit and temperature rises

Spec. 1.

Independent claim 1, reproduced below with a disputed limitation emphasized in *italics*, illustrates the claimed subject matter on appeal:

> 1. A protector for an electricity supply circuit, which is installed on a vehicle to monitor a temperature of the electricity supply circuit connected to a load and which disconnects the electricity supply circuit when the temperature of the electricity supply circuit exceeds a preset threshold temperature, and thereby to protect the electricity supply circuit, the protector comprising:
>
> a power switch configured to switch between connection and disconnection of the electricity supply circuit;
>
> a controller configured to output a switching command signal to the power switch in accordance with an input signal; and
>
> a current detector for detecting current flowing to the electricity supply circuit, connected to the controller by a powerline, wherein the controller comprises:
>
> a temperature estimation unit configured to estimate rising temperature of the electricity supply circuit based on a current detected by the current detector and conducting time when the electricity supply circuit is turned on, estimate lowering temperature of the electricity supply circuit based on elapsed

time when the electricity supply circuit is turned off by the controller, and estimate a temperature of the electricity supply circuit based on the rising temperature and the lowering temperature;

a timer for counting an elapsed time after the load has been turned off by the power switch;

a lower limit threshold determination unit configured to determine if the estimated temperature of the electricity supply circuit, estimated by the temperature estimation unit, has dropped below a predetermined temperature determined by an ambient temperature of the electricity supply circuit; and

a mode switching unit configured to switch the controller to a low power consumption mode where the power consumption is lower than a power consumption in a normal operation mode in response to the elapsed time being greater than a predetermined time and the lower limit threshold determination unit determining that the estimated temperature of the electricity supply circuit estimated by the temperature estimation unit drops below the predetermined temperature.

STATEMENT OF THE REJECTION

Claims 1–4 stand rejected under 35 U.S.C. § 103 as being unpatentable over Higuchi and Kobayashi. Final Act. 4–8.

The Examiner bases the prior-art rejection on the following references:

Name	Reference	Date
Kobayashi et al.	US 2007/0103820	May 10, 2007
Higuchi et al.	US 2012/0022708	Jan. 26, 2012

STANDARD OF REVIEW

We review the appealed rejections for error based upon the issues identified by Appellant, and in light of the arguments and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential).

DETERMINATIONS AND ARGUMENTS

The Examiner finds that Higuchi discloses the limitations of claim 1 except for the timer and the corresponding requirement to condition switching to a low power consumption mode based on elapsed time. Final Act. 4–6. To cure the noted deficiency, the Examiner applies Kobayashi's teaching of a vehicle power protection circuit that transitions from an active mode into a partial power savings (i.e., first sleep) mode based on time and, subsequently, into a further power savings (i.e., second sleep) mode based on estimated temperature. According to the Examiner,

> Kobayashi . . . teaches a protection circuit for a load on a vehicle (paragraph 22), wherein a controller 31 stops supply of power to a load in the event an estimated temperature exceeds a limit (Paragraph 40). Kobayashi also teaches that the controller is placed in a sleep mode (paragraph 43). The sleep mode comprises [] a first sleep mode in which the power consumption of the controller is reduced[,] but still remains active by computing the estimated temperature at specific intervals[,] and then placed in a second sleep mode wherein the controller is placed in a complete sleep state in which computations are inhibited (paragraphs 44–48). The second sleep mode of Kobayashi is similar to the sleep mode described by Higuchi in that the controller is reduced to a point where it no longer performs temperature computations. Kobayashi teaches that the controller may move from the active state to the first sleep mode based on a predetermined time passing since stopping power to the motor load 20 (paragraph 119, the predetermined time would be measured by an inherent timer) and that the controller moves from the first sleep mode to the second sleep mode when the estimated temperature drops below a predetermined temperature determined by ambient temperature (paragraph 126). Essentially Kobayashi teaches that before the controller moves from an active state to a sleep state (in which temperature estimation computation is inhibited) when power is removed from a load, it

> first waits for a predetermined time to expire and also determines whether the estimated temperature is below a predetermined temperature.

Final Act. 6–7.

The Examiner finds one skilled in the art would have incorporated Kobayashi's two-stage sleep mode into Higuchi's temperature-based power controller to prevent the controller from preemptively entering into a complete sleep state in which temperature computation is inhibited. *Id.* at 8.

Appellant argues that Kobayashi fails to disclose use of both time and estimated temperature criteria to enter a sleep mode. Appeal Br. 14. According to Appellant, Kobayashi's first and second sleep modes are each based on only one factor. *Id*. Specifically, "the 'first sleep mode' of Kobayashi[is] based on either [an] ignition OFF signal or an elapsed time stopping of the motor[,] and the 'second sleep mode' of Kobayashi[is] based on estimated temperature or an elapsed time since stopping of the motor." *Id.*

The Examiner responds, explaining that because Kobayashi discloses transitioning from an active mode to a first sleep mode based on elapsed time and thence into a second sleep mode in response to an estimated temperature threshold, "[i]n essence, Kobayashi teaches that before the second sleep mode is entered, an elapsed time must pass **and** the estimated temperature must be determined to be below the predetermined temperature." Ans. 4.

Appellant argues in reply,

> There is no suggestion of multiple conditions precedent to switch from the "active mode" of Kobayashi (purportedly "the normal operation mode" recited in claim 1) to the "second sleep mode" (purportedly the "lower power consumption mode" of

> Kobayashi or the "third state" of Higuchi recited in claim 1). Instead, each of Kobayashi and Higuchi expressly discloses separate modes of operation having independent conditions precedent for switching.

Reply Br. 6.

ANALYSIS

Appellant's arguments do not persuade us that the Examiner has made a reversible error. Instead, we adopt as our own the findings and reasons set forth by the Examiner in (1) the action from which this appeal is taken (Final Act. 2–8) and (2) the Examiner's Answer in response to Appellant's Appeal Brief (Ans. 2–5), and we concur with the conclusions reached by the Examiner. We highlight the following for emphasis.

Appellant argues that each of Kobayashi's sleep modes is triggered by a single criteria, not two, as claimed (i.e., both time and temperature). Appeal Br. 13–15. However, Kobayashi does not merely disclose separate, individual sleep modes, but rather discloses a sequence of modes: an Active mode transitioning into a first sleep mode in response to a first sleep condition (e.g., time; Kobayashi ¶ 119), and the first sleep mode transitioning into a second sleep mode in response to a second sleep condition (e.g., temperature; Kobayashi ¶ 126). Kobayashi's active mode corresponds to the claimed normal mode and Kobayashi's second sleep mode corresponds to the claimed low power consumption mode. Thus, Kobayashi's disclosure of transitioning from an active mode through an intermediate sleep mode based on time to a final sleep mode based on temperature reasonably can be characterized as teaching or suggesting the claimed requirements of switching from a normal mode to a low power

consumption mode based on both an elapsed time being greater than a predetermined time and a lower limit threshold determination that an estimated temperature is below a predetermined temperature as claimed.

To the extent Appellant contends that Kobayashi is deficient because Kobayashi's second sleep mode is entered from the prior first sleep mode instead of directly from the active mode, such an argument is not commensurate in scope with claim 1. In particular, claim 1 does not exclude intermediate modes, such as Kobayashi's first sleep mode (i.e., switching directly from the normal operation mode to the final low power consumption mode). Nor does claim 1 include temporal or other limitations that exclude switching to a low power consumption mode based on a sequence of criteria and steps.

For the reasons discussed above, Appellant's contentions are unpersuasive of reversible Examiner error. Accordingly, we sustain the rejection of claim 1 under 35 U.S.C. § 103 as being unpatentable over Higuchi and Kobayashi. We, likewise, sustain the obviousness rejection of dependent claims 2–4, which Appellant does not argue separately with particularity. App. Br. 16.

CONCLUSION

We affirm the Examiner's rejection of claims 1-4.

Claims Rejected	35 U.S.C. §	Basis	Affirmed	Reversed
1–4	103	Higuchi, Kobayashi	1–4	

TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED