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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MATTHEW SPRAY

Appeal 2014-009729
Application 13/347,282
Technology Center 3600

Before STEFAN STAICOVICI, WILLIAM A. CAPP, and SEAN P. O'HANLON, *Administrative Patent Judges*.

O'HANLON, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Matthew Spray (Appellant)[1] appeals under 35 U.S.C. § 134 from the Examiner's final decision rejecting claims 1–18, 20, and 21.[2] We have jurisdiction over this appeal under 35 U.S.C. § 6(b).

SUMMARY OF DECISION

We AFFIRM-IN-PART.

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[1] According to Appellant, the real party in interest is Honeywell International Inc. App. Br. 3.
[2] Claim 19 is canceled. *Id.*

SUMMARY OF INVENTION

Appellant's claimed invention "relates to a vehicle braking system." Spec. ¶ 1. Claim 1, reproduced below from page 19 (Claims Appendix) of the Appeal Brief, is illustrative of the claimed subject matter:

> 1. A system comprising:
> a brake assembly comprising:
> a brake stack; and
> a plurality of brake actuators, each brake actuator being configured to compress the brake stack when the brake actuator is activated; and
> a processor configured to modify a braking force applied by the brake assembly by at least modifying a number of brake actuators of the plurality of brake actuators that are activated, wherein the processor is configured to modify the braking force by at least detecting a first type of braking event and activating a first number of brake actuators of the plurality of brake actuators to compress the brake stack with a first braking force in response to detecting the first type of braking event, and detecting a second type of braking event and activating a second number of brake actuators of the plurality of brake actuators to compress the brake stack with a second braking force in response to detecting the second type of braking event, the first number being less than the second number, and the first braking force being less than the second braking force, and wherein the second type of braking event comprises an emergency landing event, an aborted takeoff event, or an engine run-up event.

REJECTIONS

Claims 7 and 17 are rejected under pre-AIA 35 U.S.C. § 112, 4th paragraph.

Claims 1–18, 20 and 21 are rejected under pre-AIA 35 U.S.C. §§ 102 (a), (e) as being anticipated by DeVlieg (US 2011/0226569 A1, pub. Sept. 22, 2011).

ANALYSIS

Rejection Under 35 U.S.C. § 112

The Examiner finds that each of claims 7 and 17 are of improper dependent form for failing to further limit the subject matter of the respective parent claims because claims 7 and 17 "recite events already recited in the independent claims." Final Act. 2. Appellant traverses, arguing that each of claims 7 and 17 recites receiving input from a user, and none of the respective parent claims includes such a requirement. App. Br. 17–18.

We are persuaded by Appellant's arguments. Each of claims 7 and 17 recites, *inter alia*, that a user provides input indicative of the second type of braking event. App. Br. 20, 24 (Claims Appendix). None of the respective parent claims recites a user. Thus, each of claims 7 and 17 further limits their respective parent claim.

Accordingly, we do not sustain the Examiner's rejection of claims 7 and 17 as being of improper dependent form.

Rejection Under 35 U.S.C. § 102

Claims 1–8, 10, and 21

The Examiner finds that DeVlieg discloses all of the elements of independent claim 1, including, *inter alia*, a processor that is configured to detect a first type of braking event and activate a first number of brake

actuators, and to detect a second type of braking event and activate a second, greater number of brake actuators in the manner claimed. Final Act. 3 (citing DeVlieg, ¶ 7, Figs. 5B, 5C, 6). Appellant traverses, arguing that DeVlieg fails to disclose the activation of different numbers of brake actuators or modifying the applied braking force. App. Br. 8–11 (citing DeVlieg, ¶¶ 6, 9, 27, 29, 30); *see also* Reply Br. 2–5.

We are not persuaded by Appellant's arguments. As noted by the Examiner (*see* Ans. 2), Appellant references only DeVlieg's inhibited braking mode rather than the entirety of the disclosure, including the disclosure of an emergency braking mode. The inhibited mode is engaged when "a commanded clamping force [is] *less than* a predetermined threshold." DeVlieg ¶ 27 (emphasis added). In the inhibited mode, only a portion of the brake actuators are activated, but the activated ones of the brake actuators are activated at a higher level than commanded so that "the amount of braking effort produced by the wheel brake applies the same amount of braking force and continues to absorb the same amount of braking energy as when all of the available electric motor-actuators are activated together." *Id.* ¶ 30. For example, DeVlieg explains that only half of the brake actuators are activated in the inhibited mode to achieve the relatively lesser commanded clamping (i.e., braking) force, but the selected actuators are activated at twice the commanded level to compensate for the deactivated actuators. *Id.* ¶¶ 27–30.

Appellant focuses on this inhibited mode compensation, intimating it discloses that the same level of braking is applied at all times, even in the emergency braking mode. *See, e.g.*, App. Br. 10 ("The Examiner's position

in the final Office Action appears to disregard the compensatory multiplication of the clamping force commanded by the brake system control unit 60 when the system of DeVlieg operates in inhibited braking mode, to achieve 'the same amount of braking force' as when the system operates in emergency braking mode."); *see also* Reply Br. 4 ("DeVlieg makes clear that the brake system control unit 60 ultimately commands that a 'same amount of braking force' be applied in all braking modes"). As explained above, however, the compensation is only applicable to the inhibited braking mode and is used to achieve the same (reduced) braking force when using only half of the actuators to do so as would result when using all of the actuators.

DeVlieg additionally discloses an emergency braking mode, which, in contrast to the inhibited mode, is engaged "when the commanded braking force is *greater than or equal to* a predetermined braking force." DeVlieg ¶ 31 (emphasis added). Thus, in the emergency mode, a greater braking force is commanded and delivered by the braking system than in the inhibited mode. The emergency braking mode also differs from the inhibited mode in that all of the brake actuators are activated (that is, no brake actuators are inhibited). *Id.* Thus, a greater number of actuators are activated to deliver a greater braking force in the emergency mode as compared to the inhibited mode.

Accordingly, for the foregoing reasons, we sustain the Examiner's rejection of independent claim 1, as well as of its dependent claims 2–8, 10, and 21, as being anticipated by DeVlieg.

Claim 9

Claim 9 depends directly from claim 1 and further recites a depressible brake pedal, an aircraft wheel, and detecting the second type of braking event by detecting depression of the pedal and determining that the wheel was not rotating prior to depression of the brake pedal. App. Br. 21 (Claims Appendix). The Examiner finds that DeVlieg discloses these recitations. Final Act. 4 (citing DeVlieg, ¶ 35). Appellant traverses, arguing that "DeVlieg discloses that a full clamping force is applied with a parking brake when the engines are running," but fails to disclose that the determination to apply such a clamping force is based on a determination that the "aircraft wheel was not rotating prior to depression of the brake pedal." App. Br. 11–12.

We are persuaded by Appellant's arguments. DeVlieg discloses use of the parking brake to apply full clamping force when the engines are running and partial clamping force when the engines are not operating. DeVlieg ¶ 35. Thus, DeVlieg discloses determining the amount of braking force to apply based on whether the engines are operating, but the Examiner has not established a disclosure in DeVlieg that the determination is based on whether the wheel is rotating.

Accordingly, we do not sustain the Examiner's rejection of claim 9 as being anticipated by DeVlieg.

Claim 11

Claim 11 depends directly from claim 1 and further recites the selection of which brake actuators to activate in response to the first type of braking event based on the amount of time the actuators have been operated.

App. Br. 22 (Claims Appendix). The Examiner finds that DeVlieg discloses these recitations because alternating between groups of brake actuators will be choosing the actuators that have been used the least amount of time. Ans. 3; *see* also Final Act. 4 (citing DeVlieg, ¶ 33). Appellant traverses, arguing that DeVlieg's continuous cycle of alternately activating and deactivating groups of actuators is not a determination based on the time of operation. App. Br. 12; *see also* Reply Br. 5–6.

We are persuaded by Appellant's arguments. DeVlieg discloses alternating between the groups of selected actuators, but the Examiner has not established a disclosure in DeVlieg of selecting actuators to activate based on the amount of time each actuator has been operated. *See* DeVlieg ¶ 33. Nor does such alternation necessarily include an inherent time determination, as the Examiner has not established that each brake application is of uniform time duration.

Accordingly, we do not sustain the Examiner's rejection of claim 11 as being anticipated by DeVlieg.

Claim 12

Claim 12 depends directly from claim 1 and further recites that each brake actuator comprises a hydraulic piston. App. Br. 22 (Claims Appendix). The Examiner finds that DeVlieg discloses that the use of hydraulic brakes is known in the art. Final Act. 4 (citing DeVlieg, ¶ 2); *see also* Ans. 3–4. Appellant traverses, arguing that DeVlieg does not disclose that the actuators include hydraulic pistons. App. Br. 13–14; *see also* Reply Br. 7.

We are persuaded by Appellant's arguments. DeVlieg differentiates hydraulically actuated and electrically actuated brake assemblies. DeVlieg ¶ 2. DeVlieg explains that although electrically actuated brake assemblies eliminate disadvantages of hydraulic actuated systems (*id.*), one disadvantage of electrically actuated systems is that they require periodic maintenance that increases their cost (*id.* ¶ 3). DeVlieg then proposes a solution to reduce costs of electrically actuated systems by reducing the number of applications of the electric brake actuators. *Id.* ¶ 5. Thus, although DeVlieg discloses that hydraulic pistons are known, DeVlieg does not disclose that hydraulic pistons are used in its system, but rather discloses the use of only electric actuators. Therefore, the Examiner has not established that DeVlieg discloses inhibiting the activation of actuators that include hydraulic pistons.

Accordingly, we do not sustain the Examiner's rejection of claim 12 as being anticipated by DeVlieg.

Claims 13–17

Independent claim 13 is similar to independent claim 1, but requires a friction brake in lieu of a brake stack, and a control system in lieu of a processor. App. Br. 23 (Claims Appendix). The Examiner finds that DeVlieg discloses all of the elements of independent claim 13. Final Act. 3. Appellant traverses, presenting arguments similar to those presented with respect to claim 1. App. Br. 14–15. These arguments are unpersuasive for the same reasons as discussed above.

Accordingly, we sustain the Examiner's rejection of independent claim 13, as well as of its dependent claims 14–17, as being anticipated by DeVlieg.

Claims 18 and 20

Independent claim 18 is a method claim that contains similar recitations as claim 1. App. Br. 25 (Claims Appendix). The Examiner finds that DeVlieg discloses all of the elements of independent claim 18. Final Act. 3. Appellant traverses, presenting arguments similar to those presented with respect to claim 1. App. Br. 15–17. These arguments are unpersuasive for the same reasons as discussed above.

Accordingly, we sustain the Examiner's rejection of independent claim 18, as well as of its dependent claim 20, as being anticipated by DeVlieg.

DECISION

The Examiner's decision to reject claims 1–8, 10, and 13–18, 20, and 21 is affirmed.

The Examiner's decision to reject claims 9, 11, and 12 is reversed.

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