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EXAMINER

EVANS, GARRETT F

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte DALE SCOTT CROMBEZ, SCOTT J. LAUFFER,
and ANDY CHUAN HSIA

Appeal 2017-005347
Application 13/602,370
Technology Center 3600

Before MICHELLE R. OSINSKI, JILL D. HILL, and
FRANCES L. IPPOLITO, *Administrative Patent Judges*.

HILL, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the final rejection of claims 1–20. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

CLAIMED SUBJECT MATTER

Independent claims 1, 8, and 15 are pending. Claim 1, reproduced below, illustrates the claimed subject matter:

1. A method for controlling a brake system in a vehicle comprising:

limiting non-friction braking at an axle of the vehicle by a first non-friction braking torque when the vehicle has a first load, and by a second non-friction braking torque lower than the first non-friction braking torque when the vehicle has a second load lower than the first load.

REJECTIONS

I. Claims 1, 8, and 15 stand rejected under 35 U.S.C. § 112 as indefinite. Final Act. 2.

II. Claims 1, 2, 8, and 15 stand rejected under 35 U.S.C. § 102 as anticipated by Amanuma (US 2004/0238244 A1, pub. Dec. 2, 2004) or, in the alternative, under 35 U.S.C. § 103 as obvious over Amanuma and Bohm (US 6,457,784 B1, iss. Oct. 1, 2002). Final Act. 4.

III. Claims 1–20 stand rejected under 35 U.S.C. § 103 as obvious over Lubbers (US 2008/0100129 A1, pub. May 1, 2008), Führer (US 7,152,934 B2, iss. Dec. 26, 2006), and Kushi (US 6,089,679, iss. July 18, 2000). Final Act. 6.

DISCUSSION

Rejection I

The Examiner finds that the term “lower” in claims 1 and 15, and the lack of antecedent basis for the term “respective vehicle loads” in claim 8, render the claims indefinite. Final Act. 2–3. The Examiner finds that the term “lower” is indefinite because it does not “provide a standard for ascertaining the requisite degree,” and one skilled in the art would not be reasonably apprised of the scope of the invention, because “lower” can refer to either a physical relation or a mathematical relation. *Id.* Appellants’ Specification, however, uses the term “lower” only as a mathematical relation. Spec. ¶¶ 31, 33, 35, 36, 39, and 42. We agree with Appellants that one skilled in the art would understand what is claimed when the claim is read in light of the specification. Regarding the term “respective vehicle loads,” regardless of whether the term lacks antecedent basis, the Examiner does not find that the terms lack of antecedent basis would prevent one

skilled ion the art from understanding what is claimed when claim 8 is read in light of Appellants' Specification. We do not sustain Rejection I.

Rejection II

The Examiner finds that Amanuma discloses limiting non-friction braking at an axle of the vehicle by a first non-friction braking torque when the vehicle has a first load, and by a second non-friction braking torque lower than the first non-friction braking torque when the vehicle has a second load. Final Act. 4–5 (citing Amanuma Fig. 11, ¶ 63). Amanuma's Figure 11, however, discloses different maximum decelerations and distributions of braking force to the rear wheels for differing coefficients of friction μ , not for differing loads. See Amanuma Fig. 11, ¶ 56. Amanuma's paragraph 63 discloses decreasing a non-friction braking force for rear wheels and increasing non-friction braking force for front wheels of a vehicle based on its downhill slope, because “[w]hen the vehicle [] is traveling down the slope, the weight of the vehicle body applied to the front wheels [] is increased, and the weight of the vehicle body applied to the rear wheels [] is decreased,” such that “locking of the rear wheels [] can be prevented by decreasing the distribution of the braking force to the rear wheels[.]” Amanuma ¶ 63. The “load” on the Amanuma vehicle, although shifting, is not disclosed as being lower in connection with a change in braking force, and the Examiner does not explain how Amanuma's shifting load discloses or renders obvious limiting non-friction braking by a first non-friction braking torque when the vehicle has a first load and limiting non-friction braking by a second lower non-friction braking torque when the vehicle has a second load that is lower than the first load. Amanuma's load amount is constant. Similarly, the Examiner does not explain how the

maximum decelerations and distributions of braking force to the rear wheels that vary with coefficient of friction μ in Amanuma's Figure 11 equate with maximum decelerations and distributions of braking force to the rear wheels that vary as a vehicle's load changes value, or how Figure 11 can be combined with the shifting load in paragraph 63 to teach or suggest the recitation of claim 1. The Examiner does not find that Bohm cures these deficiencies of Amanuma. The Examiner has not established anticipation or prima facie obviousness, and we do not sustain Rejection II.

Rejection III

The Examiner finds that Lubbers discloses limiting non-friction braking at an axle of a vehicle by a first non-friction braking torque when the vehicle has a first load, but is silent regarding a second load or second non-friction braking torque. Final Act. 6–9. The Examiner finds that Führer discloses a method for coordinating friction braking, non-friction braking, and ABS, and that using only non-friction braking can initiate ABS braking control. *Id.* at 9. The Examiner then finds that Kushi discloses selecting a brake force distribution pattern depending on a vehicle's load. *Id.* at 10 (citing Kushi Abstract (“controlling a distribution of front and rear wheel braking force . . . according to a selected one of a first and a second distribution pattern,” wherein “selection of the two distribution patterns may be dependent on vehicle load.”)).

The Examiner concludes that it would have been obvious to use Kushi's appreciation of varying vehicle loads and resulting distribution pattern selection in Lubbers' vehicle system “to limit braking at an axle prior to wheel lock” (which we assume to be synonymous with ABS initiation) and “to better prevent the vehicle from losing control in the running

direction.” *Id.* at 11 (emphasis omitted) (citing Lubbers ¶ 10, Kushi 1:55–58). The Examiner further concludes that it would have been obvious to use Kushi’s distribution pattern selection teachings in Lubbers’ system “to selectively use different [brake force] distribution patterns that correspond to ideal distribution curves according to values of vehicle load” in order “to better distribute front and rear wheel braking forces.” *Id.* at 11–12 (citing Kushi 5:9–14).

While we find no error in the Examiner’s findings that (1) Lubbers limits non-friction braking at an axle of a vehicle by a non-friction braking torque when the vehicle has a given load, and (2) Kushi selects a front-to-rear brake force distribution pattern depending on a vehicle’s load, the Examiner does not explain how Kushi’s friction brake force distribution pattern would be applied to Lubbers’ non-friction vehicle braking to yield the claimed limiting non-friction braking at a given vehicle axle by a non-friction braking torque that varies with the vehicle load. Without providing a more thorough explanation regarding how the disclosure of the references would be combined to render the claims obvious, *prima facie* obviousness has not been established and we do not sustain Rejection III.

CONCLUSION

We REVERSE the rejection of claims 1, 8, and 15 under 35 U.S.C. § 112 as indefinite.

We REVERSE the rejection of claims 1, 2, 8, and 15 under 35 U.S.C. § 102 as anticipated by Amanuma or, in the alternative, under 35 U.S.C. § 103 as obvious over Amanuma and Bohm.

Appeal 2017-005347
Application 13/602,370

We REVERSE the rejection of claims 1–20 under 35 U.S.C. § 103 as obvious over Lubbers, Führer, and Kushi.

REVERSED