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EXAMINER

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MANOHARPRASAD K. RAO, MARK CUDDIHY, and
WILFORD TRENT YOPP

Appeal 2015-001114
Application 11/278,043
Technology Center 3600

Before CHARLES N. GREENHUT, MICHAEL L. HOELTER, and
ANNETTE R. REIMERS, *Administrative Patent Judges*.

REIMERS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Manoharprasad K. Rao et al. (Appellants) appeal under 35 U.S.C. § 134(a) from the Examiner's decision to reject claims 1–19. Claim 20 has been cancelled. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

CLAIMED SUBJECT MATTER

The claimed subject matter relates to “pre-crash sensing systems for automotive vehicles.” Spec. ¶ 1. Claims 1 and 8 are independent.

Claim 1 is illustrative of the claimed subject matter and recites:

1. A method comprising:
 - scanning a frontal zone with a pre-crash sensing system and generating a pre-crash signal;
 - classifying a potential collision in response to the pre-crash signal;
 - using the collision classification, the pre-crash signal, and sensor-based predictions that provide data about the potential collision to set a pre-crash collision confidence level; and
 - when the confidence level is greater than or equal to a confidence factor threshold, deploying a restraint system in pre-collision mode, the pre-collision mode deploying the restraint system at a rate that is slower than deployment of the restraint system for a collision mode; and
 - when the confidence level is less than the confidence factor threshold, yet the potential collision is confirmed with vehicle collision sensors to be a collision, deploying the restraint system in collision mode.

REJECTIONS¹

- I. Claims 1 and 3–7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Breed (US 2002/0027339 A1; pub. Mar. 7, 2002).
- II. Claim 2 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Breed and Aoki (US 2004/0020701 A1; pub. Feb. 5, 2004).
- III. Claims 8, 11, 15, and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Breed and Hirata (US 2006/0138754 A1; pub. June 29, 2006).
- IV. Claim 9 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Breed, Hirata, and Young (US 2003/0117018 A1; pub. June 26, 2003).
- V. Claims 10, 12, and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Breed, Hirata, and Midorikawa (US 2005/0077717 A1; pub. Apr. 14, 2005).
- VI. Claim 14 stands rejected under 35 U.S.C. § 103(a) as being

¹ Appellants submitted a Response to Final Office Action filed February 18, 2014, in which amendments to claims 1–3 and 8 were introduced. The amendments were in response to the Examiner’s rejection of claims 1 and 8 under 35 U.S.C. § 112, second paragraph, and adopted the Examiner’s suggested “potential collision” language for claims 1 and 8. *See* Final Act. 4–5 (mailed December 18, 2013). The amendments were entered by the Examiner in the Advisory Action mailed March 10, 2014. As the Examiner did not subsequently address the rejection in the Examiner’s Answer, we conclude the amendments to claims 1 and 8 overcame the Section 112 rejection of claims 1 and 8 such that the rejection is no longer before us on appeal. The claim set before us for review is the one submitted with the Appeal Brief, which includes the amendments entered by the Examiner. *See* App. Br. 55–58, Claims App. (filed May 19, 2014).

unpatentable over Breed, Hirata, Midorikawa, and Aoki.

VII. Claims 17 and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Breed, Hirata, and Osmer (US 2001/0010424 A1; pub. Aug. 2, 2001).

VIII. Claim 19 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Breed, Hirata, and Hiramatsu (US 2006/0022077 A1; pub. Feb. 2, 2006).

ANALYSIS

Rejection I

Claims 1 and 3–7

Independent claim 1 recites the steps of “classifying a *potential collision* in response to the pre-crash signal; [and] using the collision classification, the pre-crash signal, and sensor-based predictions that provide data about the potential collision *to set a pre-crash collision confidence level.*” App. Br. 55, Claims App. (emphasis added).

The Examiner finds that Breed teaches the limitations of claim 1 associated with setting a pre-crash collision confidence level. *See* Final Act 6 (citing Breed ¶¶ 28–47, 60–62, 96, 97, 102, 104, 107, 118, 121, 124; Figs. 1, 2).

Appellants contend, among other things, that

Paragraphs [0028]–[0047], [0060]–[0062] and [0096] of Breed discloses an anticipatory sensor system [that] identifies and classifies **an object** prior to impact to predict the severity of an impact prior to the actual collision. The Breed reference operates under the assumption that a crash is *imminent* and discloses a system that detects and classifies an object based on sensor signal strength to provide information about the object, such as its

stiffness. This is for the purpose of predicting the severity of an impact and is not directed to, nor is it suggested to be used to determine the *probability* that a collision will occur as taught and claimed in the present invention.

App. Br. 19 (*italics added*); *see also Id.* at 20–30, 35–39; Reply Br. 4–7.² In other words, as per Appellants, Breed simply assumes a collision will occur (“‘object’ classification”) and, based on that presumption, ascertains the severity of the forthcoming impact. Reply Br. 4.³

Claims are construed with an eye toward giving effect to all terms in the claim. *Bicon Inc. v. Straumann Co.*, 441 F.3d 945, 950 (Fed. Cir. 2006). *See Stumbo v. Eastman Outdoors, Inc.*, 508 F.3d 1358, 1362 (Fed. Cir. 2007) (denouncing claim constructions which render phrases in claims superfluous). Here, the Examiner does not give proper effect to an essential limitation of the method of independent claim 1, namely, the phrase “*potential collision*” as that term is used to describe collisions which may occur but do not necessarily have to occur. Reply Br. 4–5.

Breed consistently refers to an imminent (“about to,” “pending”) vehicle impact and not the probability thereof. *See e.g.*, Breed ¶¶ 25, 27, 30. Breed is concerned with gauging the severity of the collision by determining the type of object that the vehicle is destined to collide with. For example, Breed at paragraph 25 discusses “an object or vehicle which is about to impact the side of a target vehicle” and a “soon-to-be-impacting object or

² The pages of the Reply Brief are not numbered. As such, we deem the cover page as being page 1 and each page thereafter as constituting a successively higher page number.

³ The Examiner acknowledges that Appellants’ disclosure supports the phrase “potential collision.” *See* Final Act. 3 (Appellants’ invention “teaches a prediction that a collision may or may not occur in the specification and drawings.”); *see also id.* at 4–5.

vehicle,” at paragraph 27 discusses a “pending accident,” and at paragraphs 28 and 30 discusses “an object which is about to impact a vehicle.”⁴ As correctly stated by Appellants:

The Breed reference operates under the assumption that a collision with an object that has been classified WILL occur. Breed indicates throughout its teachings that the collision is imminent. There is no consideration in Breed as to IF the collision will take place. There is no teaching or suggestion in Breed to determine, or even consider, the probability that a collision may or may not occur.

App. Br. 37.

Breed is silent in regards to gauging the probability of a collision, let alone, in the manner prescribed by Appellants’ claim 1. That is, the Examiner has not shown where Breed uses a collision classification, a pre-crash signal, and sensor-based predictions that provide data about a *potential collision* to set a pre-crash collision confidence level. As such, the Examiner has failed to establish by a preponderance of the evidence that Breed discloses the method of claim 1.

Accordingly, we do not sustain the Examiner’s rejection of claim 1 and dependent claims 3–7 as unpatentable over Breed.

⁴ See also Breed paragraph 102 for a discussion of “fuzzy logic” used to “classify trucks as a different class of objects from automobiles and further to classify different types of trucks giving the ability to predict accident severity based on truck type and therefore likely mass, as well as velocity.”

Rejection III

Claims 8, 11, 15, and 16

Like claim 1, independent claim 8 recites the step of “using a collision classification, a pre-crash signal, and sensor-based predictions that provide data about a *potential collision to set a pre-crash collision confidence level.*” App. Br. 56, Claims App. (emphasis added).

The Examiner’s rejection of independent claim 8 as unpatentable over Breed and Hirata is based on the same unsupported findings discussed above with respect to independent claim 1. *See* Final Act. 9–11. The Examiner does not rely on Hirata to remedy the deficiencies of Breed. Thus, the Examiner’s findings with respect to Breed are deficient for claim 8 as well.

Accordingly, for reasons similar to those discussed above for claim 1, we do not sustain the Examiner’s rejection of claims 8, 11, 15, and 16 as unpatentable over Breed and Hirata.

Rejections II and IV–VIII

Claims 2, 9, 10, 12–14, and 17–19

The Examiner’s obviousness rejections of claims 2, 9, 10, 12–14, and 17–19 are each based on the same unsupported findings discussed above with respect to independent claims 1 and 8. *See* Final Act. 9, 12–16. The Examiner does not rely on Aoki, Young, Midorikawa, Osmer, or Hiramatsu to remedy the deficiencies of Breed. Accordingly, for reasons similar to those discussed above for claims 1 and 8, we do not sustain the Examiner’s obviousness rejections of claims 2, 9, 10, 12–14, and 17–19.

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Application 11/278,043

DECISION

We REVERSE the decision of the Examiner to reject claims 1–19.

REVERSED