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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte DENSO CORPORATION
Patent Owner and Appellant

Appeal 2020-004623
Reexamination Control 96/000,253
United States Patent 9,358,920
Technology Center 3900

Before JOHN A. JEFFERY, MARC S. HOFF, and MICHAEL J. ENGLE, *Administrative Patent Judges*.

JEFFERY, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant[1] appeals under 35 U.S.C. §§ 134 and 306 the Examiner's decision to reject claims 1–15. We have jurisdiction under 35 U.S.C. §§ 134 and 306.

We AFFIRM.

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[1] Appellant identifies the real party in interest as DENSO CORPORATION. Appeal Br. 3.

STATEMENT OF THE CASE

This appeal arose in connection with a supplemental examination of United States Patent 9,358,920 ("the '920 patent"), issued to Hibino on June 7, 2016.

The '920 patent pertains to controlling vehicle headlights. To this end, a headlight's illumination state automatically changes to (1) a "less-dazzling state" where a degree of dazzling a forward vehicle's occupant is lower than in the low-beam state, or (2) a "less-power consumption state" where the headlight consumes less electric power than in a daylight running lighting state. *See generally* '920 patent, col. 5, l. 49 – col. 8, l. 48. Claim 1 is illustrative of the invention and is reproduced below:

> 1. A vehicular lighting apparatus comprising:
> a headlight illuminating an outside of a subject vehicle;
> a vehicle-to-vehicle distance detecting unit detecting a vehicle-to-vehicle distance between the subject vehicle and a forward vehicle present in front of the subject vehicle;
> a following-state determining unit determining whether the subject vehicle is in an automatic following state with respect to the forward vehicle;
> a vehicle-to-vehicle distance determining unit determining whether the vehicle-to-vehicle distance detected by the vehicle-to-vehicle distance detecting unit is less than a predetermined vehicle-to-vehicle distance; and
> an illumination controlling unit automatically controlling an illumination state of the headlight,
> wherein
> the illumination controlling unit automatically changes the illumination state of the headlight when the subject vehicle is determined by the following-state determining unit as being in the automatic following state or the vehicle-to-vehicle distance detected by the vehicle-to-vehicle distance detecting unit is determined by the vehicle-to-vehicle distance

determining unit as being less than the predetermined vehicle-to-vehicle distance,

wherein

the illumination controlling unit automatically changes the illumination state of the headlight from one of a high-beam state where the headlight illuminates upward, a low-beam state where the headlight illuminates normally-downward and a daytime running lighting state where the headlight illuminates in daytime,

wherein

the illumination controlling unit automatically changes the illumination state of the headlight to a less-dazzling state where a degree of dazzling an occupant of the forward vehicle is lower than in the low-beam state or to a less-power consumption state where the headlight consumes less electric power than in the daytime running lighting state, and

wherein

the low-beam state is a state where an optical axis angle of the headlight in a vertical direction of the vehicle is downward by a predetermined angle; and

the illumination controlling unit automatically changes the illumination state of the headlight to the less-dazzling state by tilting the optical axis angle of the headlight more downward than the predetermined angle of the low-beam state.

THE REJECTIONS

The Examiner rejected claims 1–8 and 11–15 under 35 U.S.C. § 103 as unpatentable over Kawasaki (JP 2003-276502 A; published Oct. 2, 2003),

Kiyotaka[2] (EP 2,100,771 A2; published Sept. 16, 2009), and Bos (US 7,029,155 B2; issued Apr. 18, 2006). Final Act. 10–34.[3]

The Examiner rejected claim 9 under 35 U.S.C. § 103 as unpatentable over Kawasaki, Kiyotaka, Bos, and Watanabe (US 2011/0012511 A1; published Jan. 20, 2011). Final Act. 34–35.

The Examiner rejected claim 10 under 35 U.S.C. § 103 as unpatentable over Kawasaki, Kiyotaka, Bos, and Karpen (US 5,961,208; issued Oct. 5, 1999). Final Act. 36.

The Examiner rejected claim 14 under 35 U.S.C. § 103 as unpatentable over Kawasaki, Kiyotaka, and Bos or, alternatively, Kawasaki, Kiyotaka, Bos, and Stade (US 8,403,547 B2; issued Mar. 26, 2013). Final Act. 37–38.

THE REJECTION OVER KAWASAKI, KIYOTAKA, AND BOS

Regarding independent claim 1, the Examiner finds that Kawasaki's vehicular lighting apparatus includes, among other things, an illumination controlling unit that changes a headlight's illumination state automatically from one of (1) a high-beam state where the headlight illuminates upward, and (2) a low-beam state where the headlight illuminates normally-

[2] Although the first-named inventor of this reference is Kiyotaka Mochizuki, we nonetheless refer to this reference by the inventor's first name (Kiyotaka) for consistency with the Examiner's and Appellant's nomenclature.
[3] Throughout this opinion, we refer to (1) the Appeal Brief filed September 6, 2019 ("Appeal Br."); (2) the Examiner's Answer mailed March 11, 2020 ("Ans."); and (3) the Reply Brief filed May 11, 2020 ("Reply Br.").

downward such that the headlight's optical axis angle in the vehicle's vertical direction is downward by a predetermined angle. Final Act. 10–16.

Although the Examiner finds that Kawasaki's illumination controlling unit also changes the headlight's illumination state to (1) a less-dazzling state to a dazzling degree lower than that in the low-beam state, and (2) a less-power consumption state, the Examiner nonetheless cites Kiyotaka for teaching these features, including changing to the less-dazzling state automatically by tilting the headlight's optical axis angle more downward than the low-beam state's predetermined angle. Final Act. 15–17. The Examiner also cites Bos for teaching a daylight running lighting state where the headlight illuminates in daytime. Final Act. 14. Based on these collective teachings, the Examiner concludes that the claim would have been obvious. Final Act. 10–17.

Appellant argues that the Examiner's reliance on Kiyotaka for teaching the recited illumination controlling unit functionality is misplaced because Kiyotaka gradually increases illumination of an upper part of an area in front of the vehicle by aiming the headlight upwards and, therefore, does not tilt the headlight's optical axis angle more downward than the low-beam state's predetermined angle as claimed. Appeal Br. 11–15; Reply Br. 1–4. Appellant adds that neither Kawasaki nor Kiyotaka teaches or suggests automatically changing the headlight's illumination state to either the less-dazzling or less-power consumption states as claimed. Appeal Br. 16–18. Appellant argues various other recited limitations summarized below.

ISSUES

I. Under § 103, has the Examiner erred by finding that Kawasaki, Kiyotaka, and Bos collectively would have taught or suggested:

(1) an illumination controlling unit that changes a headlight's illumination state automatically to (a) a less-dazzling state where a degree of dazzling a forward vehicle's occupant is lower than in the low-beam state, or (b) a less-power consumption state where the headlight consumes less electric power than in a daylight running lighting state, where the illumination state is changed to the less-dazzling state by tilting the headlight's optical axis angle more downward than the low-beam state's predetermined angle; and

(2) the limitations recited in claims 4 and 7?

II. Is the Examiner's combining the teachings of the cited references supported by articulated reasoning with some rational underpinning to justify the Examiner's obviousness conclusion?

ANALYSIS

Claims 1–3, 7, 8, 11–13, and 15

We begin by noting that claim 1 recites an apparatus whose structural elements are recited in terms of what they *do*—not what they are *capable* of doing. That is, the claim is replete with structural elements performing active method steps, such as a headlight *illuminating* an outside of a subject vehicle, a vehicle-to-vehicle detecting unit *detecting* a vehicle-to-vehicle distance, an illumination unit automatically *changes* the illumination state, etc. Apparatus claims reciting active method steps have been held indefinite

under § 112(b), for such claims raise the question of whether they are infringed by devices that are merely capable of performing the recited function, or that they must actually perform that function. *See IPXL Holdings, L.L.C. v. Amazon.com, Inc.*, 430 F.3d 1377, 1384 (Fed. Cir. 2005); *see also Rembrandt Data Technologies, LP v. AOL, LLC*, 641 F.3d 1331, 1339 (Fed. Cir. 2011) (data transmitting device held indefinite for reciting transmitting method step). Independent claims 4 and 7 have similar deficiencies.

Turning to the merits, claim 1 recites three initial headlight illumination states: (1) a high-beam state where the headlight illuminates upward; (2) a low-beam state where the headlight illuminates normally-downward; and (3) a daylight running lighting state where the headlight illuminates in daytime.

Claim 1 also recites, in pertinent part, an illumination controlling unit that changes the headlight's illumination state automatically to (A) a "less-dazzling state" where a degree of dazzling a forward vehicle's occupant is lower than in the low-beam state, *or* (B) a "less-power consumption state" where the headlight consumes less electric power than in a daylight running lighting state.

Our emphasis on the term "or" underscores that only one of the recited alternatives need be taught or suggested by the prior art to satisfy the claim. That is, the cited prior art need only teach automatically changing to *either* the less-dazzling state *or* the less-power consumption state to satisfy the claim given the claim's alternative language.

The last clause of claim 1 recites:

> *the illumination controlling unit automatically changes the illumination state of the headlight* to **the** less-dazzling state by tilting the optical axis angle of the headlight more downward than the predetermined angle of the low-beam state.

The beginning of this last clause is identical to the beginning of the previously-recited first alternative, other than changing one "a" to "the":

> *the illumination controlling unit automatically changes the illumination state of the headlight* [(A)] to **a** less-dazzling state where a degree of dazzling an occupant of the forward vehicle is lower than in the low-beam state or [(B)] to a less-power consumption state where the headlight consumes less electric power than in the daytime running lighting state.

After the overlapping language, the last clause newly adds the way its state change is achieved (i.e., "by tilting . . . "). There are at least two ways that the last clause could be interpreted: (A) merely narrowing the first alternative without requiring that the first alternative actually be selected, or (B) an independent requirement that the unit must automatically change to the less-dazzling state by tilting. On the one hand, the last clause is not tied solely to the earlier limitation's first alternative (e.g., through language more along the lines of "said changing the illumination state to the less-dazzling state comprising tilting . . ."). On the other hand, treating the last clause as an independent requirement would render the earlier second alternative a nullity (i.e., because if any device satisfied the last clause's independent requirement for changing to the less-dazzling state, it necessarily also would satisfy the earlier limitation's first alternative, thereby never needing the second alternative).

"During reexamination proceedings of unexpired patents, however, the Board uses the broadest reasonable interpretation consistent with the

specification standard, or BRI." *In re CSB-Sys. Int'l, Inc.*, 832 F.3d 1335, 1340 (Fed. Cir. 2016) (quotation omitted). Here, both interpretations arguably may be reasonable—plural plausible constructions that may render the claim indefinite. *See Ex parte Miyazaki*, 89 USPQ2d 1207, 1211 (BPAI 2008) (precedential) ("[I]f a claim is amenable to two or more plausible claim constructions, the USPTO is justified in requiring the applicant to more precisely define the metes and bounds of the claimed invention by holding the claim unpatentable under 35 U.S.C. § 112, second paragraph, as indefinite."). Although the Examiner did not reject claim 1 on this basis, we nonetheless leave this question for the Examiner to consider after this opinion.

Here, the former interpretation (i.e., merely narrowing the first alternative) results in a broader claim (e.g., a claim that can be met by the second alternative alone), and we therefore apply that construction here. We need not resolve what the most reasonable construction would be under *Phillips v. AWH Corp.,* 415 F.3d 1303 (Fed. Cir. 2005) (en banc), and we encourage Appellant to amend the claims to clarify the desired intent.

Under the broadest reasonable interpretation, even if we were to accept Appellant's contentions regarding the cited prior art's alleged shortcomings with respect to the *less-dazzling* state alternative (Appeal Br. 11–16; Reply Br. 1–4), those arguments are not germane to the Examiner's findings and conclusions regarding the *less-power consumption* state alternative. As noted above, under the broadest reasonable interpretation, the claim as presently written requires only one of the alternatives be met, not both.

In the rejection, the Examiner finds that Kawasaki changes a headlight's illumination state to a less-power consumption state given the functionality of Kawasaki's illumination controlling unit 44 that reduces headlight 32's illumination from "above zero to zero" according to the vehicle-to-vehicle distance. Final Act. 14–15 (citing Kawasaki ¶ 18).

We see no error in these findings and conclusions. Although Kawasaki's paragraph 18 pertains to the device recited in Kawasaki's claim 9 that reduces light radiated from *behind* the vehicle as Appellant indicates (Appeal Br. 16–17), that paragraph also refers to the device of Kawasaki's claim 1 that similarly reduces light radiated in *front* of the vehicle as the Examiner indicates (Ans. 4–5). *Compare* Kawasaki claim 9 *with* Kawasaki claim 1. *See also* Kawasaki ¶ 9. Given these commensurate headlight and taillight light-reducing functionalities, we see no error in the Examiner's reliance on Kawasaki's paragraphs 9 and 18 for at least suggesting that applying the disclosed light-reduction functionality to headlights would have been at least an obvious variation. Nor has Appellant shown that such an application would have been uniquely challenging or beyond the level of ordinarily skilled artisans.

Although Kawasaki does not state explicitly that the disclosed light reduction consumes less electric power than in a daylight running lighting state, Kawasaki nevertheless teaches turning the lights off or, in Kawasaki's parlance, "[s]etting the amount of irradiation light to '0'." *See* Kawasaki ¶¶ 9, 18, 102. Ordinarily skilled artisans would understand that shutting off vehicle lights would consume less electric power than other states where the lights are activated—including a daylight running lighting state—

notwithstanding Kawasaki's silence regarding this particular daytime lighting mode. Nevertheless, we see no error in the Examiner's reliance on Bos merely to show that a daytime lighting state is known in the art, and that providing such a mode in the Kawasaki system would have been obvious to not only render the vehicle more visible during the day, but also comply with some jurisdictions' legal requirements in that regard. *See* Final Act. 14. The Examiner's rationale is, therefore, supported by articulated reasoning with some rational underpinning to justify the Examiner's obviousness conclusion. *See KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 421 (2007). Appellant's arguments regarding the cited references' individual shortcomings in this regard do not show nonobviousness where, as here, the rejection is based on the cited references' collective teachings. *See In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986).

On this record, then, Appellant does not persuasively rebut the Examiner's findings and conclusions regarding the cited prior art collectively at least suggesting an illumination controlling unit that changes the headlight's illumination state automatically to a "less-power consumption state" where the headlight consumes less electric power than in a daylight running lighting state.

As noted above, Appellant's arguments regarding the cited prior art's alleged shortcomings with respect to the *less-dazzling state* are not germane to the *alternative less-power consumption state* and, therefore, do not persuasively rebut the Examiner's findings and conclusions regarding the latter alternative. To the extent Appellant contends otherwise, such arguments are not commensurate with the scope of the claim, particularly in

light of the claim's alternative language. Therefore, we are not persuaded of error in the Examiner's rejection for that reason alone.

Because this issue is dispositive, we need not address whether the prior art teaches or suggests the alternative less-dazzling state limitations. Nevertheless, we leave to the Examiner to consider the functionality of Kawasaki's Figure 8 and paragraphs 115 to 117 that teach iteratively changing the front change angle in steps S510 to S550 via the feedback loop in steps S530 to S520 so that, as noted in paragraph 115, "the *direction of radiation* of the irradiation light by the head lamp 32 *becomes low gradually*" (emphasis added). Although this functionality apparently tilts the head lamp more downwardly *in each iteration* than the downward angle in the previous iteration in this feedback loop, we need not address that aspect of Kawasaki here or its relevance to the less-dazzling state alternative, for the claim is fully met by the less-power consumption state alternative as noted above. Nevertheless, we direct the Examiner's attention to this functionality in Kawasaki should prosecution reopen after this decision.

Therefore, we are not persuaded that the Examiner erred in rejecting claim 1, and claims 2, 3, 7, 8, 11–13, and 15 not argued separately with particularity.[4]

[4] Although Appellant nominally argues claim 7 separately (Appeal Br. 23–26), Appellant's arguments are similar to those made for claim 1. We, therefore, group these claims accordingly.

Claims 4–6

We also sustain the Examiner's rejection of claim 4 reciting, in pertinent part, automatically changing the headlight's illumination state from the daylight running lighting state to the less-power consumption state by turning the headlight off.

Despite Appellant's arguments to the contrary (Appeal Br. 18–23; Reply Br. 5), we see no error in the Examiner's reliance on Kawasaki and Bos for collectively teaching the disputed limitation. *See* Ans. 9. Although Kawasaki does not state explicitly that the disclosed light reduction consumes less electric power than in a daylight running lighting state, Kawasaki nevertheless teaches turning the lights off or, in Kawasaki's parlance, "[s]etting the amount of irradiation light to '0'." *See* Kawasaki ¶¶ 9, 18, 102. Ordinarily skilled artisans would understand that shutting off vehicle lights would consume less electric power than other states where the lights are activated—including a daylight running lighting state—notwithstanding Kawasaki's silence regarding this particular daytime lighting mode. Nevertheless, we see no error in the Examiner's reliance on Bos merely to show that a daytime lighting state is known in the art, and that providing such a mode in the Kawasaki system would have been obvious to not only render the vehicle more visible during the day, but also comply with applicable legal requirements in that regard. *See* Final Act. 14. The Examiner's rationale is, therefore, supported by articulated reasoning with some rational underpinning to justify the Examiner's obviousness conclusion. *See KSR*, 550 U.S. at 421. Appellant's arguments regarding the cited references' individual shortcomings in this regard do not show

nonobviousness where, as here, the rejection is based on the cited references' collective teachings. *See In re Merck*, 800 F.2d at 1097.

Also, as noted previously, Appellant's arguments regarding the cited prior art's alleged shortcomings regarding the less-dazzling state (Appeal Br. 20–23) are not commensurate with the scope of the claim that recites this state as an *alternative* to the less-power consumption state.

Therefore, we are not persuaded that the Examiner erred in rejecting claim 4, and claims 5 and 6 not argued separately with particularity.

THE OTHER OBVIOUSNESS REJECTIONS

We also sustain the Examiner's obviousness rejections of claims 9, 10, and 14. Final Act. 34–38. Because these rejections are not argued separately with particularity (*see* Appeal Br. 26–27), we are not persuaded of error in these rejections for the reasons previously discussed.

CONCLUSION

The Examiner's decision rejecting claims 1–15 is affirmed.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–8, 11–15	103	Kawasaki, Kiyotaka, Bos	1–8, 11–15	
9	103	Kawasaki, Kiyotaka, Bos, Watanabe	9	

10	103	Kawasaki, Kiyotaka, Bos, Karpen	10	
14	103	Kawasaki, Kiyotaka, Bos, Stade	14	
Overall Outcome			1–15	

REQUESTS FOR EXTENSIONS OF TIME

Requests for extensions of time in this proceeding are governed by 37 C.F.R. § 1.550(c). *See* 37 C.F.R. § 41.50(f).

AFFIRMED

Msc

For PATENT OWNER:

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