

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IPR 2016-00079

In re Patent of: Smith et al.
U.S. Patent No.: 7,241,034 B2
Issue Date: July 10, 2007
Appl. Serial No.: 10/285,312
Filing Date: October 31, 2002
Reexam. Cert. No.: 7,241,034 C1
Reexam. Cert. Date: June 14, 2013.

Title: AUTOMATIC DIRECTIONAL CONTROL SYSTEM FOR VEHICLE
HEADLIGHTS

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REPLY DECLARATION OF RALPH V. WILHELM, PH.D.

1. I, Ralph V. Wilhelm, am President of Wilhelm Associates, LLC., an independent consulting firm that I founded in 2001 and that specializes in automotive electronics, telematics, systems engineering, data communications between systems and devices, and product/market and business strategies.

2. I have been engaged in the present matter to provide my independent analysis of the issues raised in the petition for inter partes review of U.S. Patent No. 7,241,034 (“the ’034 patent”). In connection with my analysis, I prepared a declaration that was submitted as Koito Exhibit 1019 to Petitioner Koito Manufacturing Co., Ltd.’s Petition for Inter Partes Review of the ’034 patent. My background, qualifications, and past testifying experience are described in detail in that declaration and in my curriculum vitae (AHT Exhibit 1020). Such descriptions are thus omitted here.

3. I have since reviewed Patent Owner’s Response to Petition for Inter Partes Review, dated July 22, 2016, as well as the Declaration of Joe Katona (AHT Exhibit 2002) in Support of Patent Owner’s Response to Petition for Inter Partes Review. I have prepared this reply declaration of my comments and opinions in response to certain arguments and opinions presented by Patent Owner and Mr. Katona. As with my initial declaration, I received no compensation for this reply declaration beyond my normal hourly compensation (\$500 per hour) based on my

time actually spent studying the matter and preparing this declaration, and my compensation does not depend on the outcome of this inter partes review of the '034 patent.

4. Mr. Katona opines that “the control systems of the '034 Patent do not sense and are not responsive to the banking, or roll, of the vehicle or the rate of change of banking angle, or roll angle, of the vehicle [sic] are disclosed or claimed as a condition with may be sensed.” (AHT Exhibit 2002 at ¶36). Relatedly, he states elsewhere in his declaration that “bank angle is not among the operating conditions to which the headlight directional control device of the '034 Patent is responsive.” (*Id.* at ¶50).

5. I disagree. The '034 patent does not, and does not purport to, provide an exhaustive list of “operating conditions” to which the control device can respond so as to adjust the vehicle headlight. At column 2, lines 8-13, for example, the '034 patent (Koito Exhibit 1001) explains:

One or more operating condition sensors may be provided that generate signals that are representative of an operating condition of the vehicle, *such as* road speed, steering angle, pitch, suspension height, rate of change of road speed, rate of change of steering angle, rate of change of pitch, and rate of change of suspension height of the vehicle.

(Emphasis added). By using the phrase “such as” to introduce the list of operating conditions, the '034 patent makes plain that the listed conditions are examples, and

that other types of operating conditions, such as banking angle, are not excluded.

6. The '034 patent (Koito Exhibit 1001) reinforces the broad nature of conditions which may be sensed at column 6, line 67 to column 7, line 9. There, after again reciting a list of conditions as examples, the patent goes on to say that “*any other operating condition or conditions of the vehicle may be sensed and provided to the headlight directional controller 14.*” (Emphasis added.) Thus, contrary to Mr. Katona’s opinion, the control systems of the '034 patent plainly do not exclude “banking angle” or “rate of change of banking angle” from the operating conditions that may be sensed.

7. Mr. Katona opines that “the aim of Kato is the opposite of that of the '034 Patent, which seeks to cause the headlights to swivel in the direction of the turn and pitch of a four-wheel vehicle to provide illumination of the road surface in the path of movement of the vehicle rather than providing for a reverse angle correction movement.” (AHT Exhibit 2002 at ¶40).

8. I disagree. None of the '034 patent claims mentions or otherwise requires movement in “the direction of the turn and pitch of a four-wheel vehicle.” Instead, the '034 patent independent claims, for example, broadly recite “two or more actuators being connected to the vehicle headlight *to effect movement thereof.*” (See, e.g., claims 3, 7)(emphasis added). And with regard to the '034 patent specification, far from limiting the scope of the purported '034 invention,

the specification states that the algorithm used to adjust headlight orientation (1) “can be *any desired relationship* that relates one or more operation conditions of the vehicle to one or more angular orientations of the headlight,” (2) that the “invention is not intended to be limited to any particular relationship,” and (3) that the relationship “may, if desired, vary from vehicle to vehicle in accordance with a variety of factors, including relative size and performance characteristics of the vehicle or any other desired condition.” (6:47-61). The ’034 patent further states that the “invention may be practiced with any headlight that is adjustable in any single direction or multiple directions of movement, whether up/down, left/right, *or any other direction*,” (3:22-25). In sum, there is simply no valid basis in the ’034 patent specification or claims for the purported swivel-direction distinction identified by Mr. Katona.

9. Moreover, both the ’034 patent and Kato disclose “pitch angle” corrections, which, contrary to Mr. Katona’s opinion, are indeed reverse-angle corrections. Kato discloses, for example, that “when the pitch angle is changed by the inclination of the vehicle body, the beam irradiation range of the head light is immediately corrected *by suppressing the vertical movement* of the optical axis of the headlight.” (Kato Exhibit 1007 (Certified translation of Kato), ¶8)(emphasis added). Similarly, the ’034 patent describes that “pitch variations can alter the angle at which the beam of light projects from the headlight 11 in the up and down

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