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Paper 19
Date: November 19, 2020

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BAYERISCHE MOTOREN WERKE AKTIENGESELLSCHAFT &
BMW OF NORTH AMERICA, LLC,
Petitioner,

v.

PAICE LLC & THE ABELL FOUNDATION, INC.,
Patent Owner.

IPR2020-00994
Patent 7,104,347 B2

Before SALLY C. MEDLEY, KALYAN K. DESHPANDE, and ARTHUR M. PESLAK, *Administrative Patent Judges.*

PESLAK, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314, 37 C.F.R. § 42.4

I. INTRODUCTION

Bayerische Motoren Werke Aktiengesellschaft and BMW of North America, LLC (collectively "Petitioner" or "BMW") filed a Petition (Paper 1) and, with our permission, filed a Corrected Petition (Paper 11, "Pet.") requesting an *inter partes* review of claims 2, 11, 17, 24, 33, and 38 of U.S. Patent 7,104,347 B2 (Ex. 1001, "the '347 patent"). Paice LLC and the Abell Foundation, Inc. (collectively "Patent Owner" or "Paice") filed a Preliminary Response (Paper 13, "Prel. Resp."). With our permission, Petitioner filed a Reply to Patent Owner's Preliminary Response to address discretionary denial issues raised by Patent Owner in the Preliminary Response. Paper 16 ("Pet. Reply"). Patent Owner, in turn, filed a Sur-reply. Paper 17.

We have authority, acting on the designation of the Director, to determine whether to institute an *inter partes* review under 35 U.S.C. § 314(a). *See also* 37 C.F.R § 42.4(a) (2019) ("The Board institutes the trial on behalf of the Director."). Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted unless the information presented in the Petition shows "there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." Taking into account the Petition, the arguments presented in the Preliminary Response, as well as all supporting evidence, we conclude that the information presented in the Petition establishes that there is a reasonable likelihood that Petitioner would prevail in its challenge of at least one claim of the '347 patent as unpatentable. Pursuant to 35 U.S.C. § 314, we hereby institute an *inter partes* review of all challenged claims of the '347 patent on all grounds stated in the Petition.

Our factual findings and legal conclusions at this stage of the proceeding are based on the evidentiary record developed thus far. This decision to institute trial is not a final decision as to the unpatentability of the claims for which *inter partes* review is instituted. Our final decision will be based on the full record developed during trial.

A. Related Matters

The '347 patent is currently at issue in *Paice LLC v. Bayerische Motoren Werke Aktiengesellschaft*, 1:19-cv-03348-SAG (D. Md.). Paper 4, 2. The '347 patent was subject to review in IPR2014-00571, IPR2014-00579, IPR2014-00884, IPR2015-00794, IPR2015-00795, IPR2017-00227, IPR2017-00226, and IPR2016-00272. Pet. 72–73. Final Written Decisions were issued in IPR2014-00571, IPR2014-00579, IPR2014-00884, IPR2015-00794, and IPR2015-00795. Ex. 1003; Ex. 1004; Ex. 1006; Ex. 1010. The Federal Circuit affirmed the Board's Final Written Decisions. Ex. 1005; Ex. 1007.

B. Real Parties in Interest

Petitioner and Patent Owner state that the named entities are the only real parties in interest. Pet. 72; Paper 4, 2.

C. The '347 Patent (Ex. 1001)

The '347 patent issued on September 12, 2006, and is titled "Hybrid Vehicles." Ex. 1001, codes (45), (54). The '347 patent issued from U.S. Patent Application 10/382,577 filed March 7, 2003. *Id.* at codes (21), (22).

The '347 patent is directed to hybrid vehicles comprising an internal combustion engine, a traction motor, and a battery bank and are controlled by a microprocessor so that engine runs only under high efficiency

conditions in response to the vehicle's torque requirements. *Id.* at code (57). Figure 4 of the '347, reproduced below, illustrates the drive system of a hybrid vehicle:

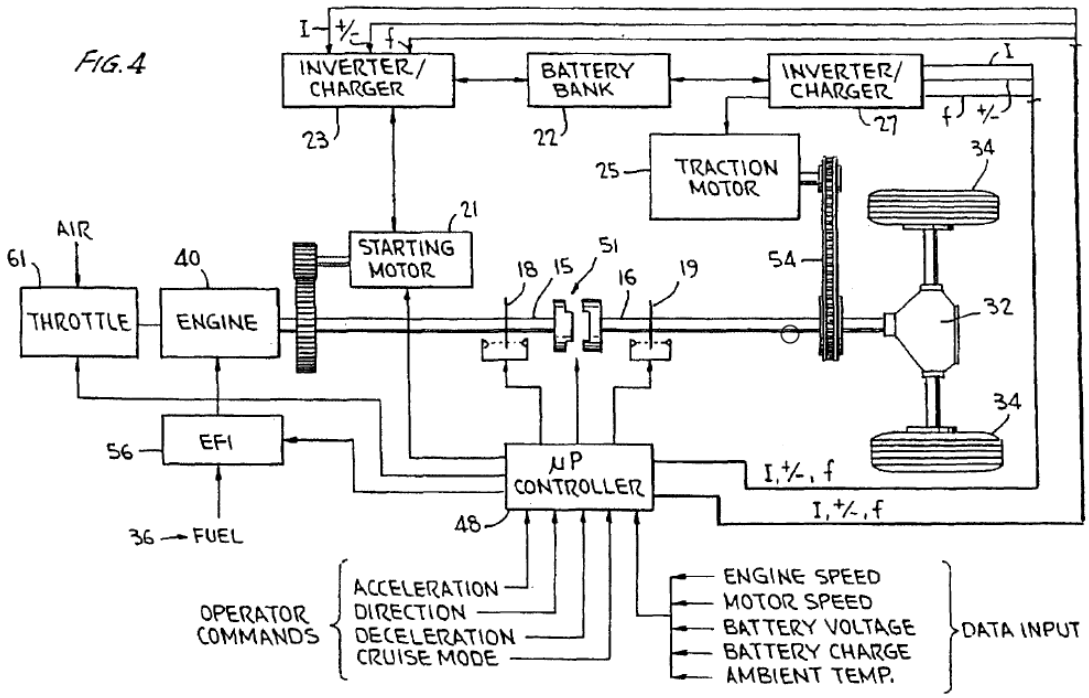

Figure 4 is "a block diagram of the principal components of the drive system" of an embodiment of the hybrid vehicle of the '347 patent. *Id.* at 22:15–16. As shown in Figure 4, the drive system includes internal combustion engine 40, starting motor 21, traction motor 25, battery bank 22, and microprocessor 48. *Id.* at 17:5–45. The microprocessor features an engine control strategy that runs the engine only under conditions of high efficiency, typically when the vehicle's instantaneous torque requirements (i.e., the amount of torque required to propel the vehicle, or "road load") is at least equal to 30% of the engine's maximum torque output ("MTO") capability. *Id*. at 20:52–60, 35:5–14; *see also id*. at 13:47–61 ("the engine is

never operated at less than 30% of MTO, and is thus never operated inefficiently.").

Running the engine only when it is efficient to do so leads to improved fuel economy and reduced emissions. *Id*. at 13:47–51. To achieve such efficiency, the hybrid vehicle includes various operating modes that depend on the vehicle's torque requirements, the battery's state of charge, and other operating parameters. *Id*. at 19:53–55. For example, the hybrid vehicle may operate in: (1) an all-electric mode, where only the traction motor provides the torque to propel the vehicle and operation of the engine would be inefficient (i.e., stop-and-go city driving); (2) an engine-only mode, where only the engine provides the torque to propel the vehicle and the engine would run at an efficient level (i.e., highway cruising); (3) a dual-operation mode, where the traction motor provides additional torque to propel the vehicle beyond that already provided by the engine and the torque required to propel the vehicle exceeds the maximum torque output of the engine (i.e., while accelerating, passing, and climbing hills); and (4) a battery recharge mode where the engine operates a generator to recharge the battery while the traction motor drives the vehicle. *Id*. at 35:66–36:58, 37:26–38:55.

D. Prior Art and Asserted Grounds

Petitioner asserts that claims 2, 11, 17, 24, 33, and 38 would have been unpatentable on the following grounds[1]:

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[1] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103. Because the '347

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