

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FORD MOTOR COMPANY,
Petitioner,

v.

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

Case IPR2015-00790
Patent 7,237,634 B2

Before SALLY C. MEDLEY, KALYAN K. DESHPANDE, and
CARL M. DeFRANCO, *Administrative Patent Judges*.

DESHPANDE, *Administrative Patent Judge*.

DECISION
Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

Ford Motor Company (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 4, 13–15, 25, 28, 29, 32, 67, and 79 of U.S. Patent No. 7,237,634 B2 (Ex. 1650, “the ’634 patent”). Paper 1 (“Pet.”). Paice LLC and The Abell Foundation, Inc. (collectively, “Patent Owner”) filed a Preliminary Response in both unredacted and redacted forms. Papers 10, 11 (“Prelim. Resp.”).¹ Patent Owner also filed a Motion to Seal. Paper 12 (“Motion to Seal”). We have jurisdiction under 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted “unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” After considering the Petition, the Preliminary Response, and associated evidence, we conclude that Petitioner has demonstrated a reasonable likelihood that it would prevail in showing unpatentability of all the challenged claims. Thus, we authorize institution of an *inter partes* review of claims 4, 13–15, 25, 28, 29, 32, 67, and 79 of the ’634 patent.

A. Related Proceedings

Petitioner indicates that the ’634 patent is the subject of *Paice, LLC and The Abell Foundation, Inc. v. Ford Motor Company*, Case No. 1-14-cv-00492 (D. Md.) and *Paice LLC and The Abell Foundation, Inc. v. Hyundai Motor America et. al.*, Case No. 1:2012-cv-00499 (D. Md.). Pet. 2. Petitioner also indicates that the ’634 patent is the subject of IPR2014-00904, IPR2014-01416, IPR2015-00606, IPR2015-00722, IPR2015-00758, IPR2015-00784, IPR2015-00785, and IPR2015-00791. *Id.* Petitioner

¹ Citations are to the redacted version of Patent Owner’s Preliminary Response (Paper 11, “Prelim. Resp.”).

further indicates that patents related to the '634 patent are the subject of IPR2014-00568, IPR2014-00570, IPR2014-00571, IPR2014-00579, IPR2014-00852, IPR2014-00875, IPR2014-00884, IPR2014-01415, and IPR2015-00767. *Id.*

B. The '634 Patent (Ex. 1650)

The '634 patent describes a hybrid vehicle with an internal combustion engine, at least one electric motor, and a battery bank, all controlled by a microprocessor that directs torque transfer between the engine, the motor, and the drive wheels of the vehicle. Ex. 1650, 17:17–56, Fig. 4. The microprocessor compares the vehicle's torque requirements and the engine's torque output against a predefined setpoint and uses the results of the comparison to control the vehicle's mode of operation, e.g., straight-electric, engine-only, or hybrid. *Id.* at 40:16–49. The microprocessor utilizes a hybrid control strategy that operates the engine only in a range of high fuel efficiency, which occurs when the instantaneous torque required to drive the vehicle, or road load (RL), reaches a setpoint (SP) of approximately 30% of the engine's maximum torque output (MTO). *Id.* at 20:61–67; *see also id.* at 13:64–65 (“the engine is never operated at less than 30% of MTO, and is thus never operated inefficiently”). Operating the engine in a range above the setpoint but substantially less than the maximum torque output maximizes fuel efficiency and reduces pollutant emissions of the vehicle. *Id.* at 15:55–58.

C. Illustrative Claim

Petitioner challenges dependent claims 4, 13–15, 25, 28, 29, 32, 67, and 79 of the '634 patent. Pet. 3–59. Each of these claims depends from independent claim 1, and, therefore, claim 1 is illustrative of the claims at

issue and is reproduced below:

1. A hybrid vehicle, comprising:
 - one or more wheels;
 - an internal combustion engine operable to propel the hybrid vehicle by providing torque to the one or more wheels;
 - a first electric motor coupled to the engine;
 - a second electric motor operable to propel the hybrid vehicle by providing torque to the one or more wheels;
 - a battery coupled to the first and second electric motors, operable to:
 - provide current to the first and/or the second electric motors; and accept current from the first and second electric motors; and
 - a controller, operable to control the flow of electrical and mechanical power between the engine, the first and the second electric motors, and the one or more wheels; wherein the controller is operable to operate the engine when torque required from the engine to propel the hybrid vehicle and/or to drive one or more of the first or the second motors to charge the battery is at least equal to a setpoint (SP) above which the torque produced by the engine is efficiently produced, and wherein the torque produced by the engine when operated at the SP is substantially less than the maximum torque output (MTO) of the engine.

Ex. 1650, 58:2–27.

D. The Alleged Grounds of Unpatentability

The information presented in the Petition sets forth proposed grounds of unpatentability of claims 4, 13–15, 25, 28, 29, 32, 67, and 79 of the '634 patent under 35 U.S.C. § 103(a) as follows (*see* Pet. 3–59):^{2, 3}

² Petitioner supports its challenge with the Declaration of Dr. Gregory W. Davis. Ex. 1661.

³ Although Petitioner adds the general knowledge of one with ordinary skill in the art to the express statement of each alleged ground of unpatentability (Pet. 3–4), that is not necessary. Obviousness is determined from the

| References | Claims Challenged |
|---|-------------------|
| Ibaraki '882 ⁴ and Yamaguchi ⁵ | 4 and 28 |
| Ibaraki '882, Masding/Bumby, ⁶ and Admitted Prior Art (“APA”) ⁷ | 13, 14, and 15 |
| Ibaraki '882 and Kawakatsu ⁸ | 25 |
| Ibaraki '882 and Vittone ⁹ | 29 |
| Ibaraki '882 and Ibaraki '626 ¹⁰ | 32 |
| Ibaraki '882 and Suga ¹¹ | 67 and 79 |

II. ANALYSIS

A. Patent Owner’s Discretionary Dismissal Arguments

Patent Owner first argues that we should exercise our discretion under 35 U.S.C. § 325(d) and reject the Petition because “it relies on substantially the same arguments that [Petitioner] Ford has already presented to the Board

perspective of one with ordinary skill in the art. We leave out the express inclusion of the general knowledge of one with ordinary skill.

⁴ U.S. Patent No. 5,789,882, issued Aug. 4, 1998 (Ex. 1652)(“Ibaraki '882”).

⁵ U.S. Patent No. 5,865,263, issued Feb. 2, 1999 (Ex. 1653)(“Yamaguchi”).

⁶ P.W. Masding et al., *A Microprocessor Controlled Gearbox for Use in Electric and Hybrid-Electric Vehicles*, THE INSTITUTE OF MEASUREMENT AND CONTROL (1998) (Ex. 1654) (“Masding/Bumby”).

⁷ Petitioner relies on the Masding/Bumby disclosures from the '634 patent specification.

⁸ U.S. Patent No. 4,335,429, issued June 15, 1982 (Ex. 1655)(“Kawakatsu”).

⁹ Oreste Vittone, *Fiat Conceptual Approach to Hybrid Cars Design*, 12TH INTERNATIONAL ELECTRIC VEHICLE SYMPOSIUM (1994) (Ex. 1656) (“Vittone”).

¹⁰ U.S. Patent No. 6,003,626, issued Dec. 21, 1999 (Ex. 1657) (“Ibaraki '626”).

¹¹ U.S. Patent No. 5,623,104, issued Apr. 22, 1997 (Ex. 1658) (“Suga”).

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