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MICHAEL BEST & FRIEDRICH LLP (Bosch) 790 N WATER ST SUITE 2500 MILWAUKEE, WI 53202			JOSEPH, DEVON A	
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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* BERND DITTMER and EKKEHARD HOFFMANN

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Appeal 2019-006419  
Application 14/356,186  
Technology Center 2800

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Before CATHERINE Q. TIMM, BRIAN D. RANGE, and  
MERRELL C. CASHION, JR., *Administrative Patent Judges*.

RANGE, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant<sup>1</sup> appeals from the Examiner's decision to reject claims 1–7 and 9–18. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

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<sup>1</sup> We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Robert Bosch GmbH. Appeal Br. 2.

CLAIMED SUBJECT MATTER<sup>2</sup>

Appellant describes the invention as relating to controlling an electrical machine in the event of a malfunction. Spec. ¶ 2. Appellant's Specification describes, as an example, a desire to reduce phase line energy while minimizing braking torque in the event of malfunction relating to a vehicle. *Id.* ¶ 31. The Specification teaches that "excessively high braking torque could lead to a loss of controllability of the vehicle." *Id.* Claim 1 is illustrative, and we reproduce claim 1 below with emphasis added to certain key recitations:

1. A method for operating a multiphase electrical machine (2) in the event of a malfunction, the method comprising:

driving the electrical machine (2) with the aid of a driver circuit (3), the driver circuit (3) comprising half-bridge circuits (31),

allocating each half-bridge circuit (31) to a phase (U, V, W), and

electrically connecting or disconnecting predefined voltage potentials to and/or from the respective phases (U, V, W) of the electrical machine (2) via bridge branches (32),

operating one or a multiple of the bridge branches (32) in a first malfunction operation mode when a malfunction is detected, and

**reducing a braking torque of the multiphase electrical machine (2) in the first malfunction operation mode by controlling the one or the multiple bridge branches (32) connected to the same potential as the malfunctioning**

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<sup>2</sup> In this Decision, we refer to the Final Office Action dated May 19, 2017 ("Final Act."), the Appeal Brief filed October 23, 2017 ("Appeal Br."), the Examiner's Answer dated June 28, 2019 ("Ans."), and the Reply Brief filed August 28, 2019 ("Reply Br.").

**bridge branch (32) so that they connect a first predefined voltage potential of the predefined voltage potentials to the phase (U, V, W) by way of a predefined electrical resistance;**

wherein the one or the multiple bridge branches (32) comprise semiconductor switches (S1, S2, S3, S4, S5, S6) that are operated in a partially controlled manner, such that the semiconductor switches (S1, S2, S3, S4, S5, S6) do not completely close, in the first malfunction operation mode in order to form the predefined electrical resistance.

Appeal Br. 10 (emphasis added). Claim 11 recites a device configured to control the bridge branches so that they connect a first predefined voltage potential such that a braking torque of the machine is reduced. *Id.* at 13.

#### REJECTION AND REFERENCES

On appeal, the Examiner maintains (Ans. 3) the rejection of claims 1–7 and 9–18 under 35 U.S.C. § 103 as obvious over Shimana, US 2010/0263953 A1, Oct. 21, 2010, in view of Wirth, US 4,954,917, Sep. 4, 1990. Final Act. 2.

#### OPINION

The Examiner has the initial burden of establishing a *prima facie* case of obviousness under 35 U.S.C. § 103. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992) (“[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability.”). To establish a *prima facie* case of obviousness, the Examiner must show that each and every limitation of the claim is described or suggested by the prior art or would have been obvious based on the

knowledge of those of ordinary skill in the art or the inferences and creative steps a person of ordinary skill in the art would have employed. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007); *In re Fine*, 837 F.2d 1071, 1074 (Fed. Cir. 1988).

To resolve the issues before us on appeal, we focus on the Examiner's findings and determinations that relate to the error Appellant identifies. The Examiner finds that Shimana teaches bridge branches "wherein the one or the multiple bridge branches comprise semiconductor switches that are operated in a partially controlled manner, such that the semiconductor switches do not completely close, in the first malfunction operation mode in order to form the predefined electrical resistance." Final Act. 3 (citing Shimana ¶¶ 72–76, Fig. 4). The Examiner also finds that "Shimana does not teach that the switches operate in a partially controlled manner, such that they do not completely close in the first malfunction operation mode in order to form the predefined electrical resistance." *Id.* These two findings appear to conflict.

The Examiner also finds that Wirth teaches "once the transistor has been fully turned on, should a short circuit load condition occur, the transistor will drop out of saturation causing the drive circuit to reduce the gate voltage to increase the short circuit current handling capability of the transistor." *Id.* (citing Wirth Abstract, col. 2, ll. 5–13). The Examiner determines that it would have been obvious to partially control the Wirth semiconductor switches as taught by Wirth within the teaching of Shimana to "reduce[] the conductivity of the semiconductor circuit when a short circuit condition exists." *Id.* at 4.

Appellant argues that the cited references do not teach reducing a braking torque by operating semiconductor switches in a partially controlled manner to connect a predefined voltage to the phase. Appeal Br. 6–7; Reply Br. 2. Appellant’s argument persuades us of Examiner error. The portions of Shimana that the Examiner cites to reach the recitations at issue (paragraphs 72–76 and Figure 4) refer to operation of a hybrid vehicle in a “limp-home operation” state. Shimana ¶¶ 72–76. The Examiner has not adequately explained how Shimana, at these paragraphs and at Figure 4, teaches reducing braking torque by connecting switches to form predefined voltage potentials or predefined electrical resistance. Indeed, one of the Examiner’s findings appears to agree that Shimana does not have such a teaching. Ans. 3.

Wirth, meanwhile, generally refers to a circuit configuration for addressing a fail state. Wirth Abstract. The Examiner finds that Wirth provides short circuit protection capabilities. Ans. 9. Wirth does not appear, however, to refer to vehicles or braking at all. The Examiner has not adequately explained how Wirth teaches or suggests “reducing a braking torque” in the manner recited by claim 1 or why a person of skill in the art would have modified Shimana in view of Wirth’s teachings to reach such recitations.

We further note that the Examiner’s response to Appellant’s argument (Ans. 5–9) does not explain how the references teach reducing braking torque by reaching predefined voltage potentials or predefined electrical resistance. Indeed, the Examiner’s response does not mention braking or any predefined values.

For the reasons above, we do not sustain the Examiner’s rejection.

DECISION SUMMARY

In summary:

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
1-7, 9-18	103	Shimana, Wirth		1-7, 9-18

REVERSED