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WRB-IP LLP
801 N. Pitt Street
Suite 123
ALEXANDRIA, VA 22314

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HANSEN, COLBY M	

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte PER MATTSSON, ANDREAS NORDSTRAND, and RIKARD MÄKI

Appeal 2017-009615
Application 14/325,442[1]
Technology Center 3600

Before STEFAN STAICOVICI, MEREDITH C. PETRAVICK, and LYNNE H. BROWNE, *Administrative Patent Judges*.

STAICOVICI, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134(a) from the Examiner's decision in the Final Office Action (dated Mar. 11, 2016, hereinafter "Final Act.") rejecting claims 20–22, 25–29, and 32.[2]

Appellant's representative presented oral argument on August 20, 2019. We have jurisdiction over this appeal under 35 U.S.C. § 6(b).

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[1] Volvo Construction Equipment AB is identified as the Applicant and the real party in interest in Appellant's Appeal Brief (filed Dec. 19, 2016, hereinafter "Appeal Br."). Appeal Br. 1.

[2] Claims 1–19, 23, 24, 30, 31, and 33–38 were canceled. Appeal Br. 1.

SUMMARY OF DECISION

We REVERSE.

INVENTION

Appellant's invention is directed to a working machine having a prime mover, which can be an internal combustion engine, arranged in parallel with an electric machine with respect to a transmission line. Spec. paras. 1, 9.[3]

Claim 20, the sole independent claim, is representative of the claimed invention and reads as follows:

> 20. A working machine comprising
>
> a prime mover for supplying torque to driving wheels of the working machine, and
>
> a transmission line arranged between the prime mover and the driving wheels for transmitting torque from the prime mover to the driving wheels, the transmission line comprising
>
> a gearbox arranged between the prime mover and the wheels,
>
> at least one hydraulic machine in a hydraulic system for moving an implement arranged on the working machine and/or steering the working machine, and
>
> an electric machine for driving or braking the driving wheels and/or for driving or braking the at least one hydraulic machine, the electric machine being arranged in parallel with the prime mover with respect to the transmission line such that torque can be provided to the wheels by either one or both of the prime mover and the electric machine, and being mechanically connected to the transmission line between the prime mover and the gearbox,
>
> wherein the transmission line comprises a transmission component for engagement and disengagement of the prime mover relative to the driving wheels, the transmission

[3] We refer to the Substitute Specification, filed July 8, 2014, and entered by the Examiner in the Advisory Action, dated September 29, 2015.

component being arranged between the prime mover and the electric machine, the hydraulic machine is mechanically connected to the transmission line between the prime mover and the gearbox, and the gearbox is a continuously variable transmission having a variator unit, and the gearbox has an operation mode where the rotation speed of an output shaft of the gearbox is zero or close to zero independently of the rotation speed of an input shaft of the gearbox at the same time as torque can be transmitted from the input shaft to the output shaft.

REJECTIONS

I. The Examiner rejects claims 20–22 under 35 U.S.C. § 103(a) as being unpatentable over Friesen et al. (DE 10 2007 019 156 A1, published Oct. 23, 2008, hereinafter "Friesen '156")[4] and Zhu (US 2009/0055061 A1, published Feb. 26, 2009).

II. The Examiner rejects claim 32 under 35 U.S.C. § 103(a) as being unpatentable over Friesen '156, Zhu, and Ericson et al. (US 2008/0264051 A1, published Oct. 30, 2008).

III. The Examiner rejects claims 20–22, 25–29, and 32 under 35 U.S.C. § 103(a) as being unpatentable over Friesen '156 and Roethler et al. (US 2006/0148609 A1, published July 6, 2006).

[4] Like the Examiner, we derive our understanding of this reference from the English language publication US 2010/0210409 A1, published Aug. 19, 2010 (hereinafter "Friesen '409"). *See* Examiner's Answer (dated June 13, 2017, hereinafter "Ans.") 2. All references to Friesen '156 are to portions of Friesen '409.

ANALYSIS

Rejections I and III

Independent claim 20 requires, *inter alia*, "a transmission component for engagement and disengagement of the prime mover relative to the driving wheels, the transmission component being arranged between the prime mover and the electric machine." Appeal Br. 10 (Claims App.).

The Examiner finds that Friesen '156 discloses a working machine including a prime mover 1 (internal combustion engine "ICE")[5] for supplying torque to wheels 11 and an electric machine 2 (electric motor) arranged in parallel with prime mover 1 with respect to a transmission line located between prime mover 1 and wheels 11. Final Act. 4 (citing Friesen '409, paras. 9, 28). However, the Examiner finds that Friesen '156 does not explicitly disclose "a transmission component for engagement and disengagement of the prime mover between said prime mover" and the electric machine. *Id.* at 5.

Hence, in a first instance, the Examiner finds that because Friesen '156 discloses a parallel arrangement between internal combustion engine 1 and electrical machine 2, Friesen '156 "*may inherently* include a clutch between" them. *Id.* at 10 (emphasis added). In the alternative, the Examiner finds that even if Friesen '156 does not inherently disclose a clutch, Zhu discloses "transmission component 101a" and Roethler discloses "transmission component 34" between a prime mover and an electric machine for engagement and disengagement of the prime mover. *Id.* at 5 (citing Zhu, Fig. 11), 8 (citing Roethler, Fig. 5). As such, the Examiner concludes that it would have been obvious to a person of ordinary skill in the art to provide the

[5] Parenthetical nomenclature refers to Friesen '409.

transmission component of either Zhu or Roethler to the working machine of Friesen '156 "in order to have greater control and increased torque transfer to the wheels of a working machine while accommodating for permissible space of the housing" or "to control motion of a vehicle with increase torque capabilities and decreased fuel consumption." *Id.*

Appellant first argues that it is not inherent to provide a clutch between internal combustion engine 1 and electric motor 2 of Friesen '156 as a clutch is not a *necessary* structure. Appeal Br. 6. According to Appellant, the disclosure in Friesen '156 of electric motor 2 being "coupled directly" to the crankshaft of internal combustion engine 1 "would preclude an intervening structure such as a clutch." Reply Brief (dated June 29, 2017, hereinafter "Reply Br.") 4.

We agree with Appellant's position because "[t]o establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.' 'Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'" *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999) (citations omitted). In this case, the Examiner's position that Friesen '156 "*may* inherently include a clutch between the ICE [1] and [the] electric motor [2]" because they are arranged in parallel is not a sufficient showing that a clutch is *necessarily* present between them. *See* Final Act. 10. Furthermore, as Friesen '156 explicitly discloses that electric motor 2 is "coupled directly" to the crankshaft of internal combustion engine 1, a person of ordinary skill in the art would not recognize that a clutch is *necessarily* present between internal combustion engine 1 and electrical motor 2. *See* Friesen '409, para. 37. In

other words, even though a parallel arrangement of internal combustion engine 1 and electric motor 2 in Friesen '156 *may* include a clutch, as the Examiner finds, this does not mean that a clutch is *necessarily* positioned between them when electric motor 2 is "coupled directly" to the crankshaft of internal combustion engine 1. Therefore, the Examiner's finding that Friesen '156 *inherently* includes a clutch between internal combustion engine 1 and electric motor 2 is mere speculation based on an unfounded assumption that a parallel arrangement of internal combustion engine 1 electric motor 2 *necessarily* includes a clutch between them. Accordingly, we agree with Appellant that the Examiner has not adequately explained why a clutch is *necessarily* present between internal combustion engine 1 and electrical motor 2 of Friesen '156. Reply Br. 3.

We further agree with Appellant that because Friesen '156 discloses internal combustion engine 1 and electric motor 2 as "coupled directly," it would not have been obvious for a person of ordinary skill in the art to modify Friesen '156, according to Zhu or Roethler, "to provide a transmission component between a prime mover and an electric machine." Appeal Br. 7. Appellant notes that providing a clutch between internal combustion engine 1 and electric motor 2 of Friesen '156 "would interfere with the ability of the electric motor [2] to immediately start the internal combustion engine [1] upon actuation of an operating component by an operator." *Id.* According to Appellant, the objective of Friesen '156 is to have no delay when electric motor 2 starts internal combustion engine 1, whereas providing a clutch, as taught by Zhu or Roethler, between internal

combustion engine 1 and electric motor 2 "would add a delay as the clutch engages." Reply Br. 4 (citing Friesen '409, paras. 11–13).[6]

We understand Appellant's arguments to aver that upon modifying Friesen '156 to include the clutch of either Zhu or Roethler between internal combustion engine 1 and electric motor 2, Friesen '156 would no longer operate as intended in the automatic start/stop operating mode as the additional clutch engaging time would render the automatic start/stop operating mode inoperable.

The Examiner's response does not provide findings or reasoning rebutting Appellant's arguments. *See* Ans. 8–10. Therefore, as the Examiner has not adequately explained how Friesen '156 would still operate in the automatic start/stop operating mode when the clutch of either Zhu or Rotheler is added between internal combustion engine 1 and electric motor 2, we essentially are left with an unrebutted (and as far as we can see, correct) statement. As such, on the record before us, weighing the Examiner's reasons for combining the teachings of the references against Appellant's arguments supported with evidence from Friesen '156 and unrebutted by the Examiner, we do not agree with the Examiner's conclusion of obviousness.

Accordingly, for the foregoing reasons, we do not sustain the rejections under 35 U.S.C. § 103(a) of claims 20–22 as unpatentable over Friesen '156 and Zhu and of claims 20–22, 25–29, and 32 as unpatentable over Friesen '156 and Roethler. *See In re Fine*, 837 F.2d 1071, 1076 (Fed. Cir. 1988) (If

[6] In paragraphs 11–13, Friesen '409 discloses using electric motor 2 as a starter motor to achieve an automatic start/stop function where internal combustion engine 1 is "started within a very short time (<200 ms)" and "is only operated when it is actually needed" such that an "operator notices practically no delay" when re-starting internal combustion engine 1 after being switched off.

an independent claim is nonobvious under 35 U.S.C. § 103, then any claim dependent therefrom is nonobvious).

Rejection II

The Examiner's use of Ericson to disclose a wheel loader does not remedy the deficiency of the Friesen '156 and Zhu combination discussed *supra*. *See* Final Act. 6–7. Accordingly, for the same reasons discussed above, we also do not sustain the rejection of claim 32 as unpatentable over the combined teachings of Friesen '156, Zhu, and Ericson.

SUMMARY

The Examiner's decision to reject claims 20–22, 25–29, and 32 under 35 U.S.C. § 103(a) is reversed.

REVERSED