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Meagher Emanuel Laks Goldberg & Liao, LLP One Palmer Square Suite 325 Princeton, NJ 08542			GONZALEZ QUINONE, JOSE A	
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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* STEVEN JOSEPH GALIOTO and AYMAN MOHAMED  
FAWZI EL-REFAIE

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Appeal 2018-004020  
Application 13/853,122  
Technology Center 2800

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Before MAHSHID D. SAADAT, ALLEN R. MacDONALD, and  
NABEEL U. KHAN, *Administrative Patent Judges*.

KHAN, *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 1–6, 8–10, 12–16, 19, and 20.<sup>2</sup> Claims

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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(a). Appellant identifies the real party in interest as General Electric Corporation. Appeal Br. 3.

<sup>2</sup> In an Amendment dated May 9, 2017, Appellant attempted to cancel claims 2–6, 9, 12–15, 19, and 20. *See* Amendment under 37 C.F.R. § 41.33. However, the Examiner indicated the amendment was not entered. *See* Advisory Action dated June 28, 2017.

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7, 11, and 18 have been cancelled. We have jurisdiction under  
35 U.S.C. § 6(b).

We affirm.

### CLAIMED SUBJECT MATTER

Appellant describes the invention as relating to “a dual magnetic phase rotor lamination for use in induction machines.” Spec. ¶ 3.

Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. An induction machine comprising:

a stator including a plurality of windings and being configured to generate a rotating magnetic field when a current is provided to the plurality of windings; and

a rotor assembly positioned within the stator and configured to rotate relative thereto responsive to the rotating magnetic field, the rotor assembly comprising:

a rotor core; and

a plurality of rotor conductors mechanically coupled to the rotor core and positioned thereabout, with the plurality of rotor conductors positioned within slots formed in the rotor core;

wherein the rotor core comprises a plurality of rotor laminations that collectively form the rotor core, with each of the rotor laminations being composed of a dual magnetic phase material and including:

a first rotor lamination portion comprising a magnetic portion; and

a second rotor lamination portion comprising a non-magnetic portion;

wherein the second rotor lamination portion comprises a nitrided portion of the rotor lamination, with the nitridding of the second rotor lamination portion rendering the dual magnetic phase material of the rotor lamination non-magnetic at the locations of the second rotor lamination portion, so as to adjust a leakage inductance of the induction machine.

#### REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Reiter, Jr.	US 2003/0062786 A1	Apr. 3, 2003
El-Refaie	US 2008/0238236 A1	Oct. 2, 2008
Yokoyama	US 6,255,005 B1	July 3, 2001
Mizuno	US 6,345,544 B1	Feb. 12, 2002
Oyamada	JP 2006-271058 A	Oct. 5, 2006

#### REJECTIONS

1. Claims 1–6 and 8 stand rejected under 35 U.S.C. § 103 as unpatentable over Reiter, El-Refaie, Yokoyama, and Mizuno. Final Act. 2–7.
2. Claims 10, 12–14, 16, and 19–20 stand rejected under 35 U.S.C. § 103 as unpatentable over Reiter, Yokoyama, and Mizuno. Final Act. 7–12.
3. Claim 9 stands rejected under 35 U.S.C. § 103 as unpatentable over Reiter, El-Refaie, Yokoyama, Mizuno, and Oyamada. Final Act. 12–13.
4. Claim 15 stands rejected under 35 U.S.C. § 103 as unpatentable over Reiter, Yokoyama, Mizuno, and Oyamada. Final Act. 13–14.

OPINION

*Claim 1*

Claim 1 recites “the nitriding of the second rotor lamination portion rendering the dual magnetic phase material of the rotor lamination non-magnetic at the locations of the second rotor lamination portion, so as to adjust a leakage inductance of the induction machine.” The Examiner finds El-Refaie discloses a reluctance machine that includes a rotor including a rotor core, where the rotor core includes multiple laminated sheets disposed on top of each other. *See* Final Act. 4 (citing El-Refaie, Fig. 2); *see also* El-Refaie ¶ 18. The Examiner further finds the laminated sheets include multiple ferromagnetic regions and non-ferromagnetic regions, where the non-ferromagnetic regions are subjected to a localized surface treatment, such as local heat treatment, in order to induce an irreversible phase transformation to create the non-ferromagnetic areas. *See* Final Act. 4; *see also* Ans. 2–4; El-Refaie ¶¶ 19, 21.

The Examiner additionally finds Mizuno discloses a load detection device including two detection sections respectively including magnetic substances disposed vertically and covered by one case made of non-magnetic material. *See* Final Act. 5; *see also* Mizuno 5:26–60. Regarding the magnetic substances, the Examiner further finds that materials of different magnetic permeability may be used, or the same materials with different hardness imparted by heat treatment or surface treatment, such as nitriding treatment, may be used. *See* Final Act. 5 (citing Mizuno 6:7–16); *see also* Ans. 2–4. As additionally found by the Examiner, it would have been obvious at the time of the claimed invention to combine El-Refaie and Mizuno with the other cited references, and, more specifically, to replace the heat treatment disclosed in El-Refaie with the nitriding treatment disclosed

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in Mizuno, as one of ordinary skill in the art would recognize that heat treatments and nitriding treatments are known equivalents for treatments for lowering magnetic permeability. *See* Final Act. 5.

Appellant argues Mizuno does not teach or suggest a treatment that actually lowers magnetic permeability. *See* Appeal Br. 5. As argued by Appellant, Mizuno teaches treating one of two magnetic materials, and then compressing the two magnetic materials, where there is a difference in inductance between the two materials. *See* Appeal Br. 5–6.

Appellant further argues that Mizuno’s nitriding merely changes the hardness of one of the two magnetic materials, and changing hardness does not actually change a magnetic property directly. *See* Appeal Br. 6–7; *see also* Reply Br. 2–3. Thus, Appellant argues Mizuno does not teach or suggest that heat treatments and nitriding are known equivalents for treatments for lowering magnetic permeability. *See* Appeal Br. 7–8.

Appellant also argues Mizuno teaches it is compression, not heat treatments or nitriding that actually alters magnetic permeability and produces an induction change. *See* Appeal Br. 8. Thus, Appellant asserts the Examiner’s logic that Mizuno teaches or suggests using nitriding to alter magnetic permeability because Mizuno discloses the combination of nitriding and compression results in the altering of magnetic permeability is flawed. *See* Appeal Br. 8–9.

We are not persuaded by Appellant’s arguments that the Examiner erred. At the crux of Appellant’s arguments is the contention that Mizuno fails to teach or suggest “the nitriding of the second rotor lamination portion rendering the dual magnetic phase material of the rotor lamination non-magnetic,” as recited in claim 1 because Mizuno fails to disclose that its nitriding process alters the magnetic permeability of a magnetic substance.

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*See e.g.*, Reply Br. 2. However, consistent with the Examiner's finding, Mizuno discloses that by applying a nitriding treatment to one of two identical materials, the two materials behave identically as two materials with different magnetic permeability when an identical load is applied to the two materials and a difference in inductance change of the two materials is produced. *See Mizuno 6:7–16*. Thus, and contrary to Appellant's core argument, Mizuno does disclose a means for altering magnetic permeability of a magnetic substance via a nitriding treatment.

Further, Appellant's arguments only address Mizuno individually, rather than the combination of El-Refaie and Mizuno. One cannot show non-obviousness by attacking references individually when the rejection is based on a combination of references. *See In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986); *see also In re Keller*, 642 F.2d 413, 425 (CCPA 1981). The Examiner did not solely rely on Mizuno for teaching or suggesting the aforementioned element of claim 1. Instead, the Examiner relied upon the combination of El-Refaie and Mizuno (along with the other cited references) for teaching or suggesting the aforementioned element of claim 1. *See Final Act. 4–5; see also Ans. 3–5*. More specifically, the Examiner relied upon El-Refaie's for disclosing a local heat treatment applied to regions of a laminated sheet in order to induce an irreversible phase transformation to create non-ferromagnetic areas (*i.e.*, rendering the areas non-magnetic). *See El-Refaie ¶¶ 19, 21*. The Examiner further relied upon Mizuno for disclosing a nitriding treatment applied to one of two magnetic substances that are the same material, as a means for producing a different in inductance change in the detection of an identical load applied to the two magnetic substances. *See Mizuno 6:7–16*. Because Appellant's

arguments fail to address the combination of El-Refaie and Mizuno, these arguments are not persuasive.

Accordingly, we sustain the Examiner's rejection of independent claim 1. We also sustain the rejection of dependent claims 2–6, 8, and 9, as they are not separately argued by Appellant.

*Claims 10 and 16*

Claim 10 recites “each of the rotor laminations being composed of a dual magnetic phase material; and wherein the nitride slot closure portions of each rotor lamination are in a nonmagnetic state and a remaining portion of each rotor lamination is in a magnetic state.” Claim 16 recites “providing a plurality of rotor laminations formed of a dual magnetic phase material that is magnetic in a first state and non-magnetic in a second state . . . wherein the slot closures of each of the plurality of rotor laminations are nitrated and in the second state so as to be non-magnetic and a remaining portion of the plurality of rotor laminations is in the first state so as to be magnetic.” The Examiner rejects independent claims 10 and 16 on a similar basis as claim 1, finding Yokoyama discloses a composite magnetic member comprising a ferromagnetic portion and a non-magnetic portion in a single material, further finding Mizuno discloses applying a nitrating treatment on one of two magnetic materials, and further finding it would have been obvious at the time of the claimed invention to combine Yokoyama and Mizuno with the other cited references. *See* Final Act. 8–9, 11–12. Appellant does not provide separate arguments for claims 10 and 16, and its arguments regarding Mizuno are not persuasive for the reasons previously discussed. Therefore we also sustain the Examiner's rejection of claims 10 and 16. We additionally sustain the rejection of dependent claims 12–15, 19, and 20, as they are not separately argued by Appellant.

CONCLUSION

We sustain the Examiner's rejection of claims 1–6, 8–10, 12–16, 19, and 20 under 35 U.S.C. § 103.

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>
1–6, 8	103	Reiter, El-Refaie, Yokoyama, Mizuno	1–6, 8	
10, 12–14, 16, 19–20	103	Reiter, Yokoyama, Mizuno	10, 12–14, 16, 19–20	
9	103	Reiter, El-Refaie, Yokoyama, Mizuno, Oyamada	9	
15	103	Reiter, Yokoyama, Mizuno, Oyamada	15	
<b>Overall Outcome</b>			1–6, 8–10, 12–16, 19, 20	

TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED