UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/419,516	02/04/2015	Óscar H. Bjarnasen	360-0364/US	1026

114333 7590 11/27/2019

Capitol City TechLaw, PLLC
344 Maple Avenue West, #333
Vienna, VA 22180

EXAMINER	
HOSSAIN, KAZI S	

ART UNIT	PAPER NUMBER
2837	

MAIL DATE	DELIVERY MODE
11/27/2019	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte OSCAR H. BJARNASEN and TORD CEDELL

Appeal 2019-001121
Application 14/419,516
Technology Center 2800

BEFORE ROMULO H. DELMENDO, JAMES C. HOUSEL, CHRISTOPHER C. KENNEDY, *Administrative Patent Judges.*

HOUSEL, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's decision to finally reject claims 1–9.[2] We have jurisdiction under 35 U.S.C. § 6(b).

---

[1] 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 MagComp AB. Appeal Brief ("Appeal Br.") filed July 4, 2018, p. 1.

[2] We note that claim 8, which recites that the coil is offset from the optimal position, currently depends from claim 7, which recites that the coil is arranged in the optimal position. Clearly, claim 8 does not properly depend from claim 7 because it does not include all the limitations of claim 7. The

We REVERSE.[3]

CLAIMED SUBJECT MATTER

The claims are directed to an inductor having an improved coil and core. Spec. 2:28–29. Appellant's coil includes an electrically insulated metal wire wound around an axis, wherein the shape of the complete winding is substantially toroidal having a substantially elliptic cross-section and a bulk thermal heat conduction above 0.8 W/mK. *Id.* at 2:30–3:2. Appellant discloses that the thermal heat conduction and shape are achieved by compressing the winding to reduce air or gas voids present in the coil, thereby increasing coil compactness and reducing energy losses. *Id.* at 3:3–5. According to Appellant, the coil compactness in combination with the toroidal shape increases the H-field of the coil. *Id.* at 3:5–8. In addition, the wire can comprise one or more separately electrically insulated strands for reducing the skin effect related losses, wherein the strands are twisted approximately 360° ± 90° to reduce proximity effects caused in the coil by higher frequencies. *Id.* at 4:13–15 and 23–26.

Appellant further discloses that the coil may be placed in a core that is molded from metallic particles and a binder material and subjected to a magnetic field during molding to magnetically align the core with particles with the H-field for the intended use of the core. Spec. 6:13–25. The coil

---

Examiner and Appellant should address this apparent inconsistency upon further prosecution in this application.

[3] Our Decision refers to the Specification ("Spec.") filed February 4, 2015, the Examiner's Final Office Action ("Final Act.") dated December 27, 2017, the Examiner's Answer ("Ans.") dated September 20, 2018, and Appellant's Reply Brief ("Reply Br.") filed November 20, 2018.

placement in the core can be optimal to provide substantially the same B-flux in the core in all directions seen from the coil surface. *Id.* at 7–31. Alternatively, the coil may be offset from this optimal position to provide a higher magnetic flow towards the center than the periphery of the inductor. *Id.* 7:32–8:1.

Claim 1, reproduced below from the Claims Appendix to the Appeal Brief, is illustrative of the claimed subject matter:

> 1. A coil for an inductor, the coil comprising:
>
> a metal wire wound circular around a center axis;
>
> wherein the wire has an electrically insulating layer insulating each turn of the wire in the winding from neighboring turns;
>
> *wherein the wire includes a plurality of electrically insulated strands that are twisted 360°, ±90°, for the complete wound coil*;
>
> wherein the shape of the complete winding, building up the coil, is toroidal having an elliptic cross section in a plane perpendicular to the wire winding direction; and
>
> wherein the wound coil has a metal volume to a total volume at a level so that the thermal heat conduction of the coil is above 0.8 W/m*K.

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Trench et al. ("Trench")	US 3,617,965	Nov. 2, 1971
Kusumoto et al. ("Kusumoto")	US 2002/0050395 A1	May 2, 2002
Buswell	US 2004/0066267 A1	Apr. 8, 2004
Okura et al. ("Okura")	US 2004/0183639 A1	Sept. 23, 2004
Cooper et al. ("Cooper")	US 2011/0109419 A1	May 12, 2011

REJECTIONS

The Examiner maintains, and Appellant requests our review of, the following grounds of rejection under 35 U.S.C. § 103(a):

1. Claims 1–4 as unpatentable over Okura in view of Kusumoto and Cooper;

2. Claims 5–8 as unpatentable over Okura in view of Kusumoto and Cooper, and further in view of Buswell; and

3. Claim 9 as unpatentable over Okura in view of Kusumoto and Cooper, and further in view of Buswell and Trench.

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."). The Examiner may not, because of doubts that the invention is patentable, resort to speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies in the factual basis. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) ("To facilitate review, [the obviousness] analysis should be made explicit."); *see also In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness."), quoted with approval in *KSR*, 550 U.S. at 418.

After review of the Examiner's and Appellant's opposing positions and the appeal record before us, we determine that Appellant's arguments are sufficient to identify reversible error in the Examiner's anticipation rejection. *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011). Accordingly, we reverse the stated obviousness rejections for substantially the reasons set forth by the Examiner in the Appeal and Reply Briefs. We offer the following for emphasis only.

The Examiner finds that Okura teaches an inductor coil substantially as recited in claim 1 except for a wire including a plurality of electrically insulated strands that are twisted 360°, ±90°. Final Act. 3–4. For this feature, the Examiner finds Kusumoto teaches a plurality of wire elements that are twisted at least 360° so as to overlap each other. *Id.* at 4. The Examiner concludes that it would have been obvious to provide Okura's wire as a plurality of electrically insulated strands that are twisted 360°, ±90°, to meet design requirements for certain applications. *Id.*

The Examiner acknowledges that Okura and Kusumoto fail to teach a wound coil has a metal volume to total volume at a level such that the thermal heat conduction of the coil is above 0.8 W/mK. Final Act. 4. However, the Examiner finds that Cooper teaches the bulk thermal conductivity of a conventional coil can drop to about 2 W/mK. *Id.* Therefore, the Examiner concludes that it would have been obvious to provide Okura's coil with a thermal conductivity above 0.8 W/mK to meet certain design requirements for certain applications. *Id.*

Appellant argues that the Examiner failed to identify a valid reason that would have prompted a skilled artisan to combine Okura and Kusumoto. Appeal Br. 7; Reply Br. 2. Appellant contends that although Kusumoto's

wire bundle is twisted by at least 360°, there is no suggestion to dispense with Okura's solid core wire in favor of a wire bundle. Appeal Br. 7. Appellant asserts that the Examiner has engaged in hindsight reconstruction by merely identifying the discrete components of the claimed invention existing individually in a number of prior art references. *Id.* at 8.

Appellant also argues that the Examiner's reliance on Kusumoto is misplaced because the advantages that Kusumoto achieves occur only after the subsequent press-forming of the wire bundle into a flat, bar-shaped conductor. Appeal Br. 9; Reply Br. 3. In addition, Appellant contends that Kusumoto's press-formed wire bundle is an improvement over prior conductive sheet material which Okura doesn't use. Appeal Br. 9; Reply Br. 4. Indeed, Appellant urges that Okura teaches away from a flat pressed conductor as taught by Kusumoto because Okura teaches that pressing a wire into a flat wire destroys the corners of the insulative covering and reduces reliability. Appeal Br. 10; Reply Br. 4–5.

Appellant's arguments are persuasive of reversible error. Here, although the Examiner identified that it was known in the art to utilize wire produced from twisted wire bundles to produce a coil conductor, the Examiner found that such twisted wire bundles reduce the electromagnetic radiation and crosstalk between neighboring pairs, and improve rejection of external electromagnetic interferences. Ans. 5. However, as Appellant notes, the Examiner failed to direct attention to any support in the prior art, or otherwise provide some basis, for these advantages.[4] We further note that

[4] We note that Kusumoto teaches that twisting the wire bundles ensures that the conducting strands do not easily separate from each other. Kusumoto

the Examiner's other reason for making the modification to Okura's wire to include a plurality of twisted electrically insulated strands—to meet design requirements for certain applications—also fails because the Examiner does not explain at all the "certain applications" and the "design requirements," or direct our attention to any support in the record for this reasoning.

Absent such support, we cannot conclude that the Examiner has met the minimum threshold of establishing obviousness under 35 U.S.C. § 103(a). *See In re Rouffet*, 149 F.3d 1350, 1358 (Fed. Cir. 1998) ("hindsight" is inferred when the specific understanding or principal within the knowledge of one of ordinary skill in the art leading to the modification of the prior art in order to arrive at Appellant's claimed invention has not been explained); *In re Warner*, 379 F.2d 1011, 1017 (CCPA 1967) ("A rejection based on section 103 clearly must rest on a factual basis, and these facts must be interpreted without hindsight reconstruction of the invention from the prior art"). We, therefore, do not sustain the Examiner's rejection of independent claim 1. Because the Examiner's treatment of dependent claims does not cure this error, we also do not sustain the Examiner's rejection of those claims.

CONCLUSION

Upon consideration of the record, and for the reasons given above and in the Final Office Action and the Examiner's Answer, the decision of the Examiner rejecting claims 1–9 under 35 U.S.C. § 103(a) as unpatentable

¶ 88. However, this reason does not address why the skilled artisan would have modified Okura to use wire bundles.

over Okura in view of Kusumoto and Cooper, alone or further in view of Buswell or Trench, is *reversed*.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Basis	Affirmed	Reversed
1–4	103(a)	Okura, Kusumoto, Cooper		1–4
5–8	103(a)	Okura, Kusumoto, Cooper, Buswell		5–8
9	103(a)	Okura, Kusumoto, Cooper, Trench		9
Overall Outcome				1–9

REVERSED