

The opinion in support of the decision being entered today  
is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* ANDREW D. HIRZEL

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Appeal 2006-3366  
Application 10/864,041  
Technology Center 2800

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Decided: July 31, 2007

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Before JAMES D. THOMAS, JOSEPH L. DIXON, and  
ST. JOHN COURTENAY III, *Administrative Patent Judges*.  
DIXON, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1-6, 8-10, and 12-20. Claims 7 and 11 have been canceled. We have jurisdiction under 35 U.S.C. § 6(b). An Oral Hearing was held on July 10, 2007.

We AFFIRM-IN-PART.

## BACKGROUND

Appellant's invention relates to a radial airgap, transverse flux motor. An understanding of the invention can be derived from a reading of exemplary claim 1, which is reproduced below.

1. A dynamoelectric machine, comprising:

(a) at least one stator assembly, a plurality of stator windings, and at least one rotor assembly supported for rotation about a rotational axis, said rotor and stator assemblies being concentric with said rotational axis;

(b) said at least one rotor assembly comprising at least one rotor magnet structure, said magnet structure providing magnetic poles having north and south polarity, said poles being disposed in at least two rotor layers that are substantially planar, perpendicular to said rotational axis, and axially spaced apart, each of said layers having the same number of poles, and said poles in each of said layers being disposed equiangularly about the circumference of said rotor assembly on a cylindrical periphery thereof;

(c) said at least one stator assembly comprising a plurality of stator cores, each of said stator cores terminating in a first and a second stator poleface and being comprised of laminated layers composed of a material selected from the group consisting of amorphous, nanocrystalline, and flux enhancing Fe-based metal, said stator cores being disposed equiangularly about the circumference of said stator assembly, such that:

(i) said first and second stator polefaces of each of said stator cores are situated on a cylindrical periphery of said stator assembly in axial alignment;

(ii) said first stator polefaces are in a first stator layer radially adjacent one of said rotor layers; and

(iii) said second stator polefaces are in a second stator layer adjacent another of said rotor layers; and

(d) said stator windings encircling said stator cores and said dynamoelectric machine having a slot per phase per pole ratio that ranges from about 0.25 to 4.0.

### PRIOR ART

The prior art references of record relied upon by the Examiner in rejecting the appealed claims are:

Tsuya	4,265,682	May 05, 1981
Sibata	5,220,228	Jun. 15, 1993
Lutz	5,691,588	Nov. 25, 1997
Fan	US 6,188,159 B1	Feb. 13, 2001
DeCristofaro	US 6,462,456 B1	Oct. 08, 2002
Caamano	US 6,603,237 B1	Aug. 5, 2003
Maslov	US 6,617,746 B1	Sep. 09, 2003

J. R. Hendershot et al., *Design of Brushless Permanent-Magnet Motors*, pp. 3-1, 3-6 through 3-11, 3-13, 3-27, 4-26 through 4-29, (Clarendon Press, 1994).

### REJECTIONS

Claims 1, 4, 8, 9, 12-14, 17, and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Fan, in further view of DeCristofaro and Hendershot. Claims 2 and 3 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Fan and Hendershot and DeCristofaro, in further view of Lutz. Claim 5 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Fan, Hendershot and DeCristofaro in further view of Sibata. Claims 6, 14, 18, and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Fan, Hendershot, and DeCristofaro, in further view of Maslov. Claim 10 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Fan, Hendershot, and DeCristofaro, in further view of

Tsuya. Claims 15 and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Fan, Hendershot, and DeCristofaro, in further view of Caamano.

Rather than reiterate the conflicting viewpoints advanced by the Examiner and the Appellant regarding the above-noted rejections, we make reference to the Examiner's Answer (mailed May 26, 2006) for the reasoning in support of the rejections, and to Appellant's Brief (filed Mar. 24, 2006) and Reply Brief (filed Jul. 24, 2006) for the arguments thereagainst.

### OPINION

In reaching our decision in this appeal, we have given careful consideration to Appellant's Specification and claims, to the applied prior art references, and to the respective positions articulated by Appellant and the Examiner. As a consequence of our review, we make the determinations that follow.

### 35 U.S.C. § 103

A rejection under 35 U.S.C. § 103(a) must be based on the following factual determinations: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed invention and the prior art; and (4) objective indicia of non-obviousness. *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1360, 80 USPQ2d 1641, 1645 (Fed. Cir. 2006) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966)).

“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Leapfrog Enter., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1161, 82 USPQ2d 1687, 1691 (Fed. Cir. 2007) (quoting *KSR Int’l v. Teleflex, Inc.*, 127 S. Ct. 1727, 1740-41, 82 USPQ2d 1385, 1395 (2007)). “One of the ways in which a patent's subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims.” *KSR*, 127 S. Ct. at 1742, 82 USPQ2d at 1397.

Discussing the question of obviousness of a claimed combination of elements of prior art, *KSR* explains:

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *Sakraida* [*v. AG Pro, Inc.*, 425 U.S. 273, 189 USPQ 449 (1976)] and *Anderson's-Black Rock* [*Inc. v. Pavement Salvage Co.*, 396 U.S. 57, 163 USPQ 673 (1969)] are illustrative—a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.

*KSR*, 127 S. Ct. at 1740, 82 USPQ2d at 1396. Where, on the other hand, the claimed subject matter involves more than the simple substitution one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement, a holding of obviousness must be based on “an apparent reason to combine the known elements in the fashion claimed.” *KSR*, 127 S. Ct. at 1740-41, 82 USPQ2d at 1396. That is,

“there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *Id.*, 127 S. Ct. at 1741, 82 USPQ2d at 1396 (quoting *In re Kahn*, 441 F.3d 977, 987, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006)). However, it is not necessary to look only to the problem the patentee was trying to solve; “*any* need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed,” *KSR*, 127 S. Ct. at 1742, 82 USPQ2d at 1397 (emphasis added).

The reasoning given as support for the conclusion of obviousness can be based on interrelated teachings of multiple patents, the effects of demands known to the design community or present in the marketplace, and the background knowledge possessed by a person having ordinary skill in the art. *KSR*, 127 S. Ct. at 1740-41, 82 USPQ2d at 1396. *See also Leapfrog*, 485 F.3d at 1162, 157 82 USPQ2d at 1691 (holding it “obvious to combine the Bevan device with the SSR to update it using modern electronic components in order to gain the commonly understood benefits of such adaptation, such as decreased size, increased reliability, simplified operation, and reduced cost”).

With respect to the role of the Examiner as finder of fact, the Court of Appeals for the Federal Circuit has stated: “the examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability.” *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the

Examiner must make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966). Furthermore, “‘there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness’ . . . . [H]owever, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR*, 127 S. Ct. at 1741, 82 USPQ2d at 1396 (2007) (quoting *In re Kahn*, 441 F.3d at 988, 78 USPQ2d at 1336 (Fed. Cir. 2006)). Further, as pointed out by our reviewing court, we must first determine the scope of the claim. “[T]he name of the game is the claim.” *In re Hiniker Co.*, 150 F.3d 1362, 1369, 47 USPQ2d 1523, 1529 (Fed. Cir. 1998). Therefore, we look to the limitations as recited and disputed in independent claim 1.

At the outset, we note the following claim interpretation. Here, we note that independent claim 1 is directed to a single machine (“dynamoelectric machine”) which meets the enumerated limitations. We find the instant range of Slots per Phase per Pole ratio (SPP) to be alternative embodiments of the recited dynamoelectric machine since each individual machine when constructed has a single SPP which does not change unless the physical number of poles, number of slots, or number of phases of the dynamoelectric machine change. Since that does not happen in the physical dynamoelectric machine, the SPP does not change. There is only one SPP per dynamoelectric machine. Therefore, if the prior art teaches or suggests a SINGLE dynamoelectric machine that falls within this range, then we find the claimed invention (machine) to be taught or suggested by that prior art. Additionally, we note that the preamble of independent claim 1 does not

recite any field of use more than a dynamoelectric machine. Therefore, independent claim 1 is not limited in a specific context to the type, size or other facet of the motor/machine. Here, Appellant generally contends that the entire range needs to be taught or suggested by the prior art. We disagree with Appellant.

At the Oral Hearing, Appellant argued that there are three important features of the claimed invention. First, the use of amorphous, nanocrystalline, and flux enhancing Fe-material material in element (c); second, the transverse flux design of the motor in element (b); and third, the recited SPP ratio in element (d). Appellant emphasized at the hearing that each of the three references teach one of the three features, but none of the teachings teach or suggest all of the three features. Additionally, we note that Appellant's main contention in the Brief and Reply Brief is that the Examiner has not made a proper showing for a prima facie case of obviousness and that it would not have been obvious to one skilled in the art at the time of the invention to combine the teachings as the Examiner proposes since Hendershot teaches away from such a combination<sup>1</sup> (Br. 20-21). We cannot agree with Appellant's unsupported proposition.

From our review of the teachings of Hendershot, Fan, and DeCristofaro, we find no express "teaching away" from the combination in those express teachings. Additionally, an artisan is not compelled to blindly follow the teaching of one prior art reference over the other without the

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<sup>1</sup> Additionally, we note that Appellant questions the Examiner's brief discussion/mention of magnets and yokes of Maslov to optimize the magnetic flux in the Answer at page 5, but Appellant does not view the rejection as containing Maslov (Br. 19-20). We agree with Appellant that the rejection is based only upon the three enumerated references in the statement of the grounds of rejection.

exercise of independent judgment. *See Lear Siegler, Inc. v. Aeroquip Corp.*, 733 F.2d 881, 889, 221 USPQ 1025, 1032 (Fed. Cir. 1984). As to the specific question of "teaching away," our reviewing court in *In re Gurley*, 27 F.3d 551, 553, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994) stated:

A reference may be said to teach away when a person of ordinary skill, upon [examining] the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.

Here, we find that Appellant has not established in the record that the skilled artisan would be led in a divergent direction or from following the path disclosed by Hendershot. Therefore, Appellants' argument is not persuasive.

Additionally, we find no extrinsic evidence supplied by Appellant which controverts the express teachings of the prior art applied by the Examiner. From our review of the rejection and the prior art teachings presented by the Examiner, we find that the Examiner has set forth a proper initial showing of the obviousness of independent claim 1 with Fan teaching the transverse flux design, DeCristofaro teaching the desirability of the use of amorphous nanocrystalline material in an electric motor, and Hendershot teaching the use of motors having the range of SPP ratio claimed and the considerations in designing such motors at page 3-1. We additionally find that the Examiner has set forth a statement of motivation for the combination of the teachings at page 5 of the Answer which Appellant has not shown error therein.

Appellant controverts the Examiner's reliance upon the teachings of Hendershot in the rejection and asserts that Hendershot is insufficient to suggest to one skilled in the art Appellant's broad range of ratios of 0.25-4.0

and not the specific ratios of 0.25-1.0 and 0.50 in dependent claims 12 and 13 (Br. 21 and Reply Br. 14).<sup>2</sup>

Appellant argues that the teachings of Hendershot teach theoretically possible machine configurations that encompass a spectrum of values of SPP, but that the disclosure falls short of any enabling disclosure (Br. 22). Additionally, Appellant contends that the tables of Hendershot were generated by a computer and that many of the configurations have never been made (Br. 23). While these facts are true, we do not find that this would have been a “teaching away” or a persuasive teaching to follow a different path than Appellant’s contend the present invention goes. Therefore, Appellants' argument is not persuasive. Obviousness does not require absolute predictability, only a reasonable expectation of success, i.e., a reasonable expectation of obtaining similar properties. *See, e.g., In re O'Farrell*, 853 F.2d 894, 903, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988).

Here, we find that Appellant has speculated throughout the Brief and Reply Brief as to why it would not have been obvious to one skilled in the art at the time of the invention and that those skilled in the art would not have been motivated to make the big motors that the present invention works well with, such as with the larger number of poles (argument from the hearing). However, arguments of counsel cannot take the place of factually supported objective evidence. *See, e.g., In re Huang*, 100 F.3d 135, 139-40, 40 USPQ2d 1685, 1689 (Fed. Cir. 1996); *In re De Blauwe*, 736 F.2d 699,

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<sup>2</sup> We note that Appellant has not set forth the arguments to dependent claims 12 and 13 with a separate heading as required by 37 C.F.R. § 41.37, but we will address Appellant’s arguments thereto. We note that Appellant has included dependent claims 12 and 13 as grouped with dependent claim 4, 8, 9, 12-14 and 17 at page 37 of the Brief and page 21 of the Reply Brief.

705, 222 USPQ 191, 196 (Fed. Cir. 1984). We find no express limitation in independent claim 1 which supports Appellant's contention about the size of the motor/machine or the number of poles. Appellant opines that Hendershot is not enabled as to those configurations which have not been shown to be useful and those that are known to be useful and that this lack of differentiation precludes Hendershot from being properly regarded as a disclosure of the numerically defined range of machine configurations (Br. 26), and that those skilled in the art would not know what SPP works since no other reference is relied upon to teach or suggest the claimed range (Br. 23-32).<sup>3</sup>

Appellant also maintains:

But even if *arguendo* the Hendershot et al. disclosure were to be regarded as an enabling disclosure of a broad range of configurations, permitting a case of *prima facie* obviousness to be established, applicant still maintains that the surprising and unexpected benefits afforded by the claimed subset of these configurations (i.e., the particular values of slots, poles, and phases) would still negate obviousness and predicate patentability of designs falling within the restricted class defined by applicant's SPP ratios. The Federal Circuit has consistently held that obviousness cannot be predicated merely on finding the recited elements in a combination of references.

(Br. 27).

Appellant additionally maintains that:

The benefit of using low core loss materials is unexpectedly high in machines with low SPP ratios, high pole counts, and high excitation

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<sup>3</sup> Additionally, we would speculate that Appellant has not made every motor within the claimed range and every combination of SPP. If we carry out this argument to its logical end, we question whether enablement is an issue with the instant specification, but leave it to the Examiner to evaluate.

frequencies, e.g. as recited by claims 1 and 20, and, *a fortiori*, by preferred claims 12-15. Significantly, none of the prior art references recognizes the viability of such a configuration for high-speed motors. It is respectfully submitted that the lack of recognition of the synergy of these factors is evidenced by the prior art's clear aversion to machine designs incorporating these design parameters. Particular devices constructed in accordance with the prior art can achieve some, but not all, of these desirable characteristics. For example, the Hendershot et al. reference alludes to the use of a large pole count, but only for low speed devices. The Decristofaro et al. reference discloses use of amorphous metal for stator construction, but does not recognize the combination of high slot and pole count with low SPP ratio afforded by applicant's design, despite the availability of the Hendershot et al. reference well before the Decristofaro filing. Rather, such machines are viable only in combination with the low core losses afforded by amorphous and nanocrystalline materials. It is thus submitted that it is surprising and unexpected, and known only in light of applicant's own disclosure, that it is possible to attain all these characteristics in a single device.

(Br. 31-32).

We find no express support for Appellant's contention above since we find no express limitation in the language of independent claim 1 for the high pole counts and high excitation frequencies. Therefore, Appellant's argument is not persuasive. Additionally, we find no support and no evidence in the record for Appellant's argument to the "surprising and unexpected results." Additionally, we note that the "high-speed" aspect of the invention, the "synergy" of the factors, and "high slot and pole count with low SPP" are not found in the express limitations of independent claim 1 nor has Appellant shown how they are impliedly present. Nor has Appellant provided evidence of unexpected results. Hence, we are left with mere attorney speculation and conjecture which are at odds with the express

teachings of the prior art and the reasoned positions in the rejection. Since Appellant bears the burden of persuasion at this point in the prosecution, and has not presented any evidence of criticality of the range, we are not persuaded by the Appellant's mere arguments. Appellant can rebut a *prima facie* case of obviousness based on overlapping ranges by showing the criticality of the claimed range. "The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. . . . In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990). As stated above, Appellant has not met the burden by providing any evidence of criticality.

While we acknowledge Appellant's attempt to differentiate the disclosed invention from that of the combination of teachings relied upon in the instant rejection, we find that Appellant has submitted no extrinsic evidence in the present record and identified no specific intrinsic evidence in the instant prosecution history which clearly evidences why it would not have been obvious to one skilled in the art at the time of the invention to combine the instant teachings in the manner advanced by the Examiner.<sup>4</sup>

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<sup>4</sup> See, *Takeda Chemical Industries, Ltd. v Alphapharm Pty., Ltd* (Fed Cir, 06-1329, 6/28/2007) slip Opinion at 13-16. We distinguish *Takeda* from the instant prosecution history where Appellant has not presented any extrinsic evidence to support the argued contentions. Appellant's representative was queried at the oral hearing whether Appellant had submitted any evidence to support the argued contentions. Appellant's representative stated that no extrinsic evidence had been filed in the prosecution and there was no or little evidence submitted to us and no expert opinions were before us as well.

Appellant again argues the surprising and unexpected success in Appellant's configuration and for high-speed motors, but does not provide any factual support this contention (Br. 33-34). Therefore, Appellant's arguments are not persuasive.

Appellant contends that those skilled in the art would not have a reasonable expectation of success regarding each of the configurations taught and suggested by Hendershot and whether they could be built and used successfully. Appellant identifies no legal support for this contention that every single suggested embodiment of a prior art teaching must be able to be "built and used successfully." Knowing of no such requirement, we do not find Appellant argument persuasive. No evidence has been presented to us that Hendershot's extensive design considerations, generally known in the electric motor art, were not enabling to a skilled artisan.

Appellant contends that at the very best Hendershot may be deemed an "obvious to try" suggestion which is contended in insufficient (Br. 35-37 and Reply Br. 8). As clarified in *KSR*, it's now apparent "obvious to try" may be an appropriate test in more situations than we previously contemplated. When there is motivation:

to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under § 103.

*KSR*, 127 S. Ct. 1727 at 1742, 82 USPQ2d at 1397 (2007). This reasoning is applicable here. Additionally, *KSR* clarifies that, "Common

sense teaches . . . that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle. . . . A person of ordinary skill is also a person of ordinary creativity, not an automaton.” *KSR*, 127 S. Ct. at 1742, 82 USPQ2d at 1397. Here, we find Appellant’s argument to be unpersuasive. Since we have found the totality of Appellant’s arguments to be unpersuasive, we will sustain the Examiner’s rejection of independent claims 1 and 20 which have been grouped together by Appellant.

Additionally, we will sustain the rejection dependent claims 12 and 13 since we find that the narrower range of SPP in dependent claim 12 is taught or fairly suggested by Hendershot along with the specific SPP value of 0.50 in dependent claim 13 that we find is also taught or fairly suggested by Hendershot (see Table 3.4 at page 3-10: 9 slots/3 phases/6 poles).

With respect to dependent claims 4, 8, 9, 12-14, and 17, Appellant argues that the Examiner has not established a proper prima facie case of obviousness and has not set forth specific citations (Br. 37-38 and Reply Br. 21-22). We find that the Examiner has addressed the limitations in the Answer at pages 18-19 which Appellant does not address in the Reply Brief. Therefore, Appellant’s arguments are not persuasive, and we will sustain the rejection of dependent claims 4, 8, 9, 12-14, and 17.

With respect to dependent claims 2 and 3, Appellant argues many facets of flux density, frequency of operation, and power which we do not find express support for in the language of independent claim 1 nor in the express limitations of dependent claims 2 and 3 (Br. 39-42). Therefore,

Appellant's arguments are not persuasive, and we will sustain the rejection of dependent claims 2 and 3.

With respect to dependent claim 5, Appellant argues the Examiner has not shown a teaching addressing dependent claim 5. Appellant further argues that the Examiner's statement in the Answer is an eleventh hour attempt to take Official Notice and should not be considered (Reply Br. 23-24). We agree that the discussion is late in prosecution, but so is Appellant's assertion of the elimination of the first order harmonics in the cogging torque profile which is unsupported by the express language of dependent claim 5 which merely recites "skewed by an amount ranging up to about one half the distance . . . ." We agree with the Examiner that Hendershot discloses skewing the magnets which we find to fairly suggest some skew. Thus, we find Hendershot fairly suggests the invention as recited in dependent claim 5. Therefore, Appellant's arguments are not persuasive.

With respect to dependent claim 6, Appellant argues that the language of the claim requires at least four rotor layers yet the language of dependent claim 6 does not explicitly recite four rotor layers. To support this requirement of four rotor layers, Appellant further argues that dependent claim 6 correlates to Fig. 14 of the Specification which shows four rotor layers and the Examiner has not shown the four layers in the prior art. Additionally, Appellant identifies in the arguments that there is an inconsistency between the language of independent claim 1 which recites "at least one rotor assembly" and the required two rotor assemblies as disclosed in Fig. 14 which is relied upon for support (Reply Br. 24-27). Since Figure 14 requires two rotors and independent claim 1 requires only a single rotor, we find Appellant's reliance thereon for support of the argued four rotor

layers to be flawed. We find the admitted inconsistency in the claim language and the proffered evidence show a lack of persuasiveness in Appellant's argument. Therefore, Appellant's arguments are not persuasive, and we will sustain the rejection of dependent claim 6 due to a lack of a persuasive argument.

With respect to dependent claims 14 and 18, Appellant continues to extol the benefits of the disclosed invention and loosely addresses the language of dependent claims 14 and 18. We find that the Examiner addresses the limitation of dependent claim 18 with respect to rotor and stator locations and find no persuasive argument thereto in the Brief or Reply Brief. Therefore, Appellant's arguments are not persuasive, and we will sustain the rejection of dependent claim 18 due to a lack of a persuasive argument, and we sustain the rejection of dependent claim 14 which Appellant has elected to group therewith.

With respect to independent claim 19, Appellant argues that the Examiner does not address the "power electronics means"<sup>5</sup> in the rejection (Br. 48-49). The Examiner maintains that the power electronics are not specifically defined in the Specification and specifically claimed. We agree with the Examiner that it is unclear as to the express limitation which is required in independent claim 19 and what to evaluate against the prior art.

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<sup>5</sup> We note that we find no specific "power electronics" disclosed in Appellant's specification which correspond to the recited "power electronics means," and Appellant has not identified any such structure, acts or materials as required by 37 C.F.R. § 41.37(c)(1)(v) (See also Specification 28, ll. 12-30).

Considering the rejections of independent claim 19 under 35 U.S.C. § 103(a), we have carefully considered the subject matter defined by these claims. However, for reasons stated *supra* in our new rejection under the second paragraph of Section 112 entered under the provisions of 37 C.F.R. § 41.50(b), no reasonably definite meaning can be ascribed to certain language appearing in the claims. As the court in *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970) stated:

All words in a claim must be considered in judging the patentability of that claim against the prior art. If no reasonably definite meaning can be ascribed to certain terms in the claim, the subject matter does not become obvious --the claim becomes indefinite.

In comparing the claimed subject matter with the applied prior art, it is apparent to us that considerable speculations and assumptions are necessary in order to determine what in fact is being claimed. Since a rejection based on prior art cannot be based on speculations and assumptions, *see In re Steele*, 305 F.2d 859, 862, 134 USPQ 292, 295 (CCPA 1962), we are constrained to reverse, *pro forma*, the examiner's rejections of claim 19 under 35 U.S.C. § 103(a). We hasten to add that this is a procedural reversal rather than one based upon the merits of the section 103 rejection. Additionally, we note that we find the Examiner's presentation of a rejection to the merits of independent claim 19 to be seriously lacking in the Answer at pages 6-7 and 20-22 as to a required showing under 35 U.S.C. § 103(a). Therefore, we will not sustain the rejection of independent claim 19 due to a lack of a presentation of a prima facie case of obviousness.

With respect to dependent claim 10, Appellant's main contention is that the teachings of Tsuya do not remedy the deficiencies noted above with

respect to independent claim 1 and that Hendershot fails to recognize any possible use of the Tsuya material or the implications of the low core losses of such material (Br. 52). As discussed above, we found no deficiency in the Examiner's base combination as to independent claim 1 and no persuasive arguments by Appellant. Similarly, we do not find Appellant's reliance on the base argument as to independent claim 1 to be persuasive here.

Therefore, Appellant's arguments are not persuasive, and we will sustain the rejection of dependent claim 10.

With respect to dependent claims 15 and 16, Appellant's main contention is that the teachings of Caamano do not remedy the deficiencies noted above with respect to independent claim 1 and that Caamano does not operate at peak torque output at the 1-1500 kHz frequency, but does not provide any persuasive argument as to why it would not (Br. 54 and Reply Br. 33-34). As discussed above, we found no deficiency in the Examiner's base combination as to independent claim 1 and no persuasive arguments by Appellant why it would not have been obvious to one of ordinary skill in the relevant art at the time of the invention to have made a motor as disclosed by Caamano to operate with a commuting frequency in the disclosed range which corresponds with three quarters of the claimed range. Additionally, we note that Caamano teaches the use of high pole counts greater than 32 (Caamano, col. 11, ll. 26-67). Similarly, we do not find Appellant's reliance on the base arguments as to independent claim 1 to be persuasive here. Therefore, Appellant's arguments are not persuasive, and we will sustain the rejection of dependent claim 15 and dependent claim 16 grouped therewith by Appellant.

35 U.S.C. § 112, FIRST and SECOND PARAGRAPHS

We reject independent claim 19 under 35 U.S.C. § 112, first and second paragraphs as failing to provide an enabling description and additionally failing to particularly point out and distinctly claim the invention. Since we find no corresponding structure, acts, or materials in Appellant's Specification, and find no corresponding disclosure identified by Appellant in the Brief which corresponds to the "power electronics means," we are left to speculate as to what the corresponding "means" would be and how those skilled in the art would make and use the claimed invention without undue experimentation. Without corresponding subject matter, the metes and bounds of independent claim 19 cannot be ascertained and cannot be enabled.

DECISION

We have sustained the Examiner's prior art rejections with respect to claims 1-6, 8-10, 12-18, and 20 on appeal. We have reversed the Examiner's prior art rejection with respect to claim 19. Moreover, we have entered a new ground of rejection under 37 C.F.R. § 41.50(b) for claim 19 as failing to provide an enabling description under 35 U.S.C. § 112, first paragraph and as failing to particularly point out and distinctly claim the invention under 35 U.S.C. § 112, second paragraph.

This decision contains a new ground of rejection pursuant to 37 C.F.R. § 41.50(b) (amended effective Sept. 13, 2004, by final rule notice 69 Fed. Reg. 49,960 (Aug. 12, 2004), 1286 Off. Gaz. Pat. Office 21 (Sept. 7, 2004)). 37 C.F.R. § 41.50(b) provides that "[a] new ground of rejection . . . shall not be considered final for judicial review."

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37 C.F.R. § 41.50(b) also provides that the Appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:

(1) Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner. . . .

(2) Request that the proceeding be reheard under § 41.52 by the Board upon the same record. . . .

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

AFFIRMED-IN-PART  
37 C.F.R. § 41.50(b)

KIS

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