

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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 TOBIAS GERLACH

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Appeal No. 2006-0871  
Application No. 10/678,799

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ON BRIEF

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Before JERRY SMITH, RUGGIERO, and SAADAT, Administrative Patent Judges.

JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's rejection of claims 1-3, 6, 7, 9-13 and 16-19, which constitute all the claims pending in this application.

The disclosed invention pertains to a method for determining a frequency of current ripples contained in an armature current signal of a commutated direct current (DC) motor.

Representative claim 1 is reproduced as follows:

1. A method for determining a frequency of current ripples contained in an armature current signal of a commutated direct current (DC) motor, the method comprising:

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determining a frequency spectral result of the armature current signal of the motor in which the armature current signal contains current ripples and interference;

determining a frequency spectral result of a voltage signal of the motor in which the voltage signal contains the interference;

determining a frequency spectral result of the current ripples contained in the armature current signal based on differences between the frequency spectral result of the armature current signal and the frequency spectral result of the motor voltage signal such that the determined frequency spectral result of the current ripples contained in the armature current signal is void of frequency components which are superimposed on the armature current signal as the interference; and

determining the frequency of the current ripples contained in the armature current signal from the determined frequency spectral result of the current ripple contained in the armature current signal.

The examiner relies on the following references:

Falk et al. (Falk)	3,935,512	Jan. 27, 1976
Periou et al. (Periou)	4,952,854	Aug. 28, 1990
Matsumoto	5,977,732	Nov. 02, 1999
Kane et al. (Kane)	6,038,532	Mar. 14, 2000
		(filed Jul. 23, 1993)

Claims 1-3, 6, 7, 9-13 and 16-19 stand rejected under 35 U.S.C. § 103(a). As evidence of obviousness the examiner offers Matsumoto in view of Falk and Kane with respect to claims 1-3, 6, 11-13 and 16, and Periou is added to this combination with respect to claims 7, 9, 10 and 17-19.

Rather than repeat the arguments of appellant or the examiner, we make reference to the briefs and the answers for the respective details thereof.

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OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the examiner and the evidence of obviousness relied upon by the examiner as support for the rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellant's arguments set forth in the briefs along with the examiner's rationale in support of the rejections and arguments in rebuttal set forth in the examiner's answers.

It is our view, after consideration of the record before us, that the evidence relied upon and the level of skill in the particular art would not have suggested to one of ordinary skill in the art the obviousness of the invention as set forth in the claims on appeal. Accordingly, we reverse.

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 is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in

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the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If that burden is met, the burden then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. See Id.; In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d

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1048, 1052, 189 USPQ 143, 147 (CCPA 1976). Only those arguments actually made by appellant have been considered in this decision. Arguments which appellant could have made but chose not to make in the brief have not been considered and are deemed to be waived [see 37 CFR § 41.37(c)(1)(vii)(2004)].

We consider first the rejection of claims 1-3, 6, 11-13 and 16 based on Matsumoto, Falk and Kane. The examiner finds that Matsumoto determines current ripples in an armature current signal, but Matsumoto does not include means for removing interference from the armature current signal using a voltage signal that contains the interference. The examiner cites Falk as teaching a circuit for removing interference using a voltage signal that contains the interference. The examiner finds that it would have been obvious to the artisan to modify Matsumoto to include a means for removing interference as taught by Falk. The examiner notes that this combination still fails to teach performing the subtraction digitally using a Fourier transform. The examiner cites Kane as teaching the determination of frequency spectral results using the Fourier transform. The examiner finds that it would have been obvious to the artisan to modify the invention of Matsumoto and Falk to perform the

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subtraction digitally using a Fourier transform as taught by Kane [answer, pages 3-6].

Appellant argues that the claimed invention differs from the combination of Matsumoto, Falk and Kane in that in the claimed invention a frequency spectral result of the current ripples contained in the armature current signal is determined from differences between (1) a frequency spectral result of the armature current signal of the motor in which the armature current signal contains current ripples and interference and (2) a frequency spectral result of a voltage signal of the motor in which the motor voltage signal contains the interference such that the determined frequency spectral result of the current ripples contained in the armature current signal is void of frequency components which are superimposed on the armature current signal as the interference. Appellant asserts that two different signals are compared in the claimed invention while Falk teaches using two signals which are based on the same thing. Appellant argues that there is no suggestion to use a voltage signal of the motor as the voltage signal which contains the interference that is common to the interference contained in the armature current signal while at the same time being essentially

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void of contributions resulting from the current ripples contained in the armature current signal [brief, pages 10-12].

The examiner responds that the claims do not require that the two signals be based on different things, but only that the armature current signal and the voltage signal be "of the motor" which is met by Matsumoto and Falk. The examiner also responds that appellant's arguments admit that the combination provides a voltage signal "of the motor" and that Falk teaches removing interference from the armature current signal using a voltage signal that includes the interference [answer, pages 7-10].

Appellant responds that the superimposed signal of Falk includes a residual interference component which implies that the interference components of the current signal and the voltage signal are not the same. Thus, appellant argues that Falk does not teach obtaining a current signal having an interference component and obtaining a voltage signal having the interference component. Appellant also asserts that he did not admit that Falk teaches removing interference from a current signal using a voltage signal that contains the interference [reply brief, pages 2-4].

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The examiner responds that appellant did admit that the voltage signal of Falk contains the interference of the current signal. The examiner also asserts that in the preferred embodiment of Falk there would be no residual interference [supplemental answer, pages 2-4].

Appellant responds that he does not admit that the voltage signal of Falk contains the interference of the current signal as recited in the claimed invention. Appellant further asserts that the comparison in the applied prior art is based on a previous comparison between a voltage signal containing interference "approximately proportional" to the interference contained in the current signal with the current signal which contains the interference. Appellant argues that the prior art fails to suggest where to find a voltage signal which meets the limitations recited in the claimed invention [second reply brief, pages 1-3].

We will not sustain the examiner's rejection of claims 1-3, 6, 11-13 and 16. Although we agree with the examiner that the voltage signal in Falk contains the interference signal of the current signal, we find, nevertheless, that the operation to control compensation in Falk fails to teach the claimed

invention. Specifically, claim 1 recites that the frequency spectral result of the current ripples be "such that the determined frequency spectral result of the current ripples contained in the armature current signal is void of frequency components which are superimposed on the armature current signal as the interference" [emphasis added]. This recitation requires that no trace of the interference be present in the resulting signal representative of current ripples. The result described by Falk includes a residual interference component [column 3, lines 43-44]. Although the examiner asserts that this residual component is eliminated in the preferred embodiment of Falk, there is no support for this position in Falk. To the contrary, the only operation disclosed by Falk is that an oscillation in the control loop occurs between an undercompensation and an overcompensation. Thus, Falk teaches, if anything, that the resultant signal is not normally void of the interference. Since the claimed invention specifically recites the feature quoted above, and since the examiner's findings are not supported by the applied prior art, the examiner's findings fail to support a case of obviousness.

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We now consider the rejection of claims 7, 9, 10 and 17-19 based on Matsumoto, Falk, Kane and Periou. Since Periou does not overcome the deficiencies in the basic combination of references for reasons discussed above, we also do not sustain the examiner's rejection of these claims.

In summary, we have not sustained either of the examiner's rejections of the claims on appeal. Therefore, the decision of the examiner rejecting claims 1-3, 6, 7, 9-13 and 16-19 is reversed.

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REVERSED

JERRY SMITH	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
JOSEPH F. RUGGIERO	)	APPEALS
Administrative Patent Judge	)	AND INTERFERENCES
	)	
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MAHSHID D. SAADAT	)	
Administrative Patent Judge	)	

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