

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 29

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DAVID M. ERDMAN, DALE F. YODER,
RICHARD S. TATMAN and DAVID T. MOLNAR

Appeal No. 1998-0507
Application No. 08/457,701

HEARD: August 15, 2001

Before KRASS, BARRETT and GROSS, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 21, 22 and 76-87.
Claims 15 and 16 have been allowed.

The invention is directed to a low power, high efficiency motor used, for example, in household refrigerators. More particularly, an integrated and unitary low power fan motor and motor control circuit, suitable to be used as the condenser or

evaporator fan motor in refrigerator systems, is disclosed. A direct current electronically commutated DC fan motor is integrally assembled on a circuit board that also carries control circuit elements, with a portion of the motor passing through a region of the circuit board, with a stator coil positioned to one side of the rotor and with electronic components positioned to the other side of the rotor. The preferred embodiment uses a Hall sensor to sense the angular position of the rotor to control the commutation of the windings. The Hall sensor is pulsed during a portion of each cycle of operation and its output is sampled for operation and control of the motor in order to provide increased efficiency.

Representative independent claim 21 is reproduced as follows:

21. A motor and control assembly comprising:

an electronically commutated DC motor;

said electronically commutated motor including a stator core, a permanent magnet rotor and at least one winding magnetically coupled to said stator core;

a Hall sensor, for sensing rotation of said rotor, positioned in magnetic coupling relationship with said permanent magnet rotor;

said assembly including electronic components, a DC power supply, and switching means for delivering power from said DC power supply to said at least one winding in response to signals from said Hall sensor;

said control assembly also including means for pulsing energizing power supplied to said Hall device when said at least one winding is

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energized thereby to decrease the usage of such energizing power and to increase the efficiency of said assembly;

said rotor including a plurality of arcuate magnetic segments secured to a cylindrical core; and

an enclosure surrounding said magnetic segments and said cylindrical core.

The examiner relies on the following references:

Kitajewski et al. (Kitajewski)	4,022,980	May 10, 1977
Morinaga et al. (Morinaga)	4,511,827	Apr. 16, 1985
Schaefer et al. (Schaefer)	4,742,259	May 03, 1988
Müller	4,748,388	May 31, 1988
Gerfast	4,929,871	May 29, 1990
Sato	5,130,591	Jul. 14, 1992 (filed Nov. 29, 1989)

Claims 21, 22 and 76-87 stand rejected under 35 U.S.C. § 103 as unpatentable over Sato in view of Kitajewski and Schaefer.

Claims 76-87 stand further rejected under 35 U.S.C. § 103 as unpatentable over Morinaga in view of Gerfast and Müller.

Reference is made to the briefs and answer for the respective positions of appellants and the examiner.

OPINION

At the outset, we note that, in accordance with appellants' arguments, all claims will stand or fall together with regard to the rejection over Sato, Kitajewski and Schaefer

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and claims 76-87 will stand or fall together with regard to the rejection over Morinaga, Gerfast and Müller.

Turning first to the rejection based on Sato, Kitajewski and Schaefer, we will not sustain this rejection because we agree with appellants that Kitajewski is nonanalogous art and is not properly combinable with Sato and Schaefer.

With regard to claims 21 and 22, the examiner contends that Sato discloses the claimed invention but for pulsing the power to the Hall element and an enclosure surrounding the magnets.

The examiner employs Schaefer for a teaching of the enclosure and appellants do not dispute this use of Schaefer nor do they dispute the unobviousness of providing an enclosure so this is not an issue before us.

Appellants do dispute the examiner's use of Kitajewski for a teaching of pulsing the current to a Hall element. The examiner contends that it would have been obvious to have pulsed the power to the Hall effect device of Sato in order to reduce power consumption of the device, as disclosed by Kitajewski.

While the examiner never specifically indicates elements within Sato which correspond to the explicitly claimed elements, e.g., a Hall sensor, appellants apparently

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concede the applicability of Sato by their lack of argument against the examiner's application of Sato to the instant claims. In fact, appellants' sole argument is the nonanalogous nature of Kitajewski.

The examiner properly states the existing law when he states that a proper reference must either be in the field of an applicant's endeavor or, if not, then the reference must be at least reasonably pertinent to the particular problem with which the inventor was concerned. The examiner is also correct when he states that in order for a reference to be "reasonably pertinent," even though it may be from a different field or art from that with which the inventor is concerned, the reference logically would have commended itself to an inventor's attention in considering the problem with which the inventor was concerned.

In our view, while the examiner properly states the law, he improperly applies it. Clearly, both Sato and appellants are directed to motors and the operation thereof. Kitajewski, on the other hand, is interested in a ring trip detector whereby a Hall element is used for detecting when a called subscriber goes off-hook. Thus, Kitajewski is directed to the telephony arts and is not interested in motor control or structure. Clearly then, Kitajewski is not in the same field of endeavor as appellants' invention.

Now, we must determine if Kitajewski is at least reasonably pertinent to the particular problem with which appellants were concerned. It is the examiner's position that while Kitajewski is not directed to a motor position detecting circuit with a Hall effect element as the detecting means, Kitajewski "does teach a Hall effect element in an electronic circuit which is a broad field of endeavor which would include Appellant's [sic, Appellants'] claimed invention [answer-page 5].

We find that the artisan involved in motor position detecting circuits and looking for ways to improve such circuits would have had no reason to look to the telephony arts for any suggestions on how to improve motor positioning circuits. Merely because references in these diverse art areas both employ a Hall device is not sufficient reason, in our view, for the artisan to modify any Hall device used by one in accordance with the Hall device used by the other. While the examiner reasons that it would have been obvious "to have pulsed the power to the Hall effect device of Sato in order to reduce power consumption of the device, as disclosed by Kitajewski," [final rejection-page 2], we are in accordance with appellants' view [reply brief-page 4] that it "is not understood how the motivation to reduce power consumption in a ring tip [sic, trip] detection circuit, even one employing a Hall device, can reasonably be said to suggest or motivate its combination with references related to motor construction and control."

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Since Kitajewski is from a nonanalogous art, it is not properly combinable with Sato under 35 U.S.C. § 103. Since Schaefer does not remedy the deficiency of Sato in “pulsing energizing power supplied to said Hall device,” as claimed, we will not sustain the rejection of claims 21, 22 and 76-87 under 35 U.S.C. § 103 over Sato, Kitajewski and Schaefer.

We now turn to the rejection of claims 76-87 under 35 U.S.C. § 103 over Morinaga, Gerfast and Müller.

It is the examiner’s position that Morinaga discloses a brushless motor and control circuit “essentially as claimed except for providing a capacitor in series with the input of the rectifier and providing the Hall effect element such that it receives power from the rectifier” [final rejection-page 3]. The examiner employs Gerfast for the teaching of a capacitor 28 in series with the input to a rectifier which can be utilized to provide power to the winding of a brushless DC motor. The examiner contends that it would have been obvious to provide a capacitor in series with the motor winding of Morinaga in order to control the amount of current supplied to the motor, as disclosed by Gerfast.

As to the Hall effect device connected to receive power from the rectifier, the examiner relies on Müller for the teaching of the notoriety of connecting a Hall element

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of the drive circuit for a brushless motor across the DC bus lines in order to power the Hall effect device.

Appellants point out that Gerfast is the only reference that shows a current limiting capacitor and it has no speed control, contrasting this with Morinaga and Müller which provide speed control. According to appellants, since Gerfast provides a current limiting capacitor in order to provide current control while Morinaga and Müller have a commutating control circuit which provides speed in lieu of current control, it would not have been obvious to combine these references to include the current limiting capacitor of Gerfast in the Morinaga and Müller devices. Appellants point out that the instant claimed invention employs both speed control and a current limiting capacitor in a polyphase commutated brushless dc motor. Since the references relate to different types of motors, it is appellants' contention that they are not combinable.

We disagree. Appellants do not dispute that Morinaga and Müller relate to polyphase commutated brushless dc motors similar to appellants. Applying Morinaga to independent claim 80, for example, since appellants do not argue the specific limitations of any one claim over the others, Morinaga discloses the operation of a dc motor energized from an ac source through a rectifier 2 having an output side providing a dc bus voltage. The output of the ac source is rectified. A motor 5 is connected

across the dc bus and the motor has at least one winding and a rotor 6. The motor 5 is responsive to a control circuit 9 for controlling current flow through a plurality of current paths (i.e., current is conducted to each phase of the motor-see Abstract, lines 5-6), each path including at least one coil of the motor winding. Further, a control circuit is clearly activated to operate the motor. Thus, Morinaga discloses the claimed invention but for the specifics of a “capacitor across the rectifier input” for controlling the dc voltage on the output side of the rectifier.

While Gerfast is not directed to a “polyphase” dc motor, so it doesn’t disclose a “plurality of current paths,” Gerfast does clearly teach artisans to place a current limiting capacitor at the input side of a rectifier in a circuit for operating a brushless dc motor. See column 2, line 67-column 3, line 8. Gerfast teaches advantages of operating such a motor from AC without a transformer, e.g., cost-savings and efficiency. With the suggestion of such advantages and no suggestion by Gerfast that there would be an impediment to applying such a current limiting capacitor to polyphase dc motors, it would appear to us that the artisan viewing both the Morinaga and Gerfast teachings as a whole would have been led to provide a current limiting capacitor at the input of the rectifier in the polyphase dc motor of Morinaga in order to provide for the advantages taught by Gerfast in each of the phases of the dc motor of Morinaga.

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While appellants argue that the different types of motors of the references would preclude their combination, appellants never explain why these teachings would not have suggested the placement of a current limiting capacitor at the input to the rectifier in Morinaga. Appellants argue (principal brief-page 11) that Morinaga and Müller provide for speed control and that Gerfast provides for a current limiting capacitor but that only appellants provide for both. In the face of these teachings, appellants do not explain why the combination would not result in a circuit providing both speed control and a current limiting capacitor, as in the instant invention.

It is our view that the examiner has established a prima facie case of obviousness with regard to claims 76-87 over the combination of Morinaga, Gerfast and Müller and that appellants have not overcome this prima facie case. Accordingly, we will sustain this rejection.

CONCLUSION

We have not sustained the rejection of claims 21, 22 and 76-87 under 35 U.S.C. § 103 over Sato, Kitajewski and Schaefer but we have sustained the rejection of claims 76-87 under 35 U.S.C. § 103 over Morinaga, Gerfast and Müller.

Accordingly, the examiner's decision is affirmed-in-part.

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

AFFIRMED-IN-PART

ERROL A. KRASS)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
LEE E. BARRETT)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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ANITA PELLMAN GROSS)	
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