

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 11

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ALLAN R. GALE
and WILLIAM L. KELLEDES

Appeal No.1997-3237
Application 08/266,081

ON BRIEF

Before HAIRSTON, FLEMING, and FRAHM, **Administrative Patent Judges.**

FLEMING, **Administrative Patent Judge.**

DECISION ON APPEAL

This is a decision on appeal from the rejection of claims 1 through 14, all of the claims presently pending in the application.

Appellants' invention relates to a method for controlling regeneration energy from an electric induction motor. As disclosed on page 2 of the specification, operating the motor in regeneration mode creates engine braking and generates electrical energy for use in charging a battery. The disclosure on page 2 indicates that the regenerated energy, however, can damage the battery at or near its fully charge level. Fig. 1 shows the motor 22 powered by the battery 12 through inverter 14 while the motor controller 24 controls the regeneration power to prevent the overcharging of the battery. More specifically, as disclosed on pages 6 and 7 and Fig. 2, the controller uses the efficiency curve and the independent variable volts-per-hertz ratio of the motor to start regeneration at peak efficiency point 70 to store energy in the battery and at lower efficiency points 72 or 74 when the battery is fully charged. The state of the charge of the battery is detected by the battery monitor 15. The steps followed by the motor controller 24, as disclosed on pages 9 and 10 and Fig. 3, provide peak regenerative efficiency when the battery is not fully charged while less regenerative power

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is supplied by operating the motor at reduced efficiency when the battery is at or near fully charged level.

Representative independent claims 1 and 6 are reproduced as follow:

1. A method for controlling regeneration energy from an electric motor, said electric motor having a stator and a rotor, said method comprising the steps of:

(a) operating said electric motor in a regeneration mode at a first operating point; and

(b) operating said electric motor in a regeneration mode at a second operating point of reduced efficiency with respect to said first operating point in response to a regeneration current generated by said electric motor.

6. A method of controlling regeneration energy from an electric motor, said electric motor having a stator and a rotor, said method comprising the steps of:

(a) operating said electric motor in a regeneration mode at a first operating point;

(b) providing a battery to receive regeneration current from said motor;

(c) operating said electric motor in a regeneration mode at a second operating point of reduced efficiency with respect to said first operating point in response to a regeneration current flowing into said battery and a variable representing a state of charge of said battery.

The Examiner relies on the following references:

Takada et al. (Takada)	5,151,637	Sept. 29, 1992
Kanzaki et al. (Kanzaki)	5,420,491	May 30, 1995

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(filed Dec. 2, 1992)

Claims 1 through 14 stand rejected under 35 U.S.C. § 112 as being indefinite. Claim 1 stands rejected under 35 U.S.C. § 102 as being anticipated by Kanzaki. Claim 6 stands rejected under 35 U.S.C. § 102 as being anticipated by Takada.¹

Rather than repeat the arguments of Appellants and the Examiner, we make reference to the briefs² and the answers³ for the details thereof.

OPINION

After careful review of the evidence before us, we do not agree with the Examiner that claims 1 through 14 are properly rejected under 35 U.S.C. § 112. In addition, we do not sustain the rejection of claims 1 and 6 as anticipated under 35 U.S.C.

¹ The rejection of claims 1 and 6 over Kanzaki and Takada are new grounds of rejection included for the first time in the Examiner's answer mailed August 16, 1996.

² Appellants filed an appeal brief on May 20, 1996. Appellants also filed a reply brief on October 17, 1996 which was acknowledged and entered by the Examiner with further comments in a supplemental answer.

³ The Examiner mailed a supplemental answer on February 7, 1997.

§ 102. Accordingly, we reverse.

Turning to the rejection of claims 1 through 14 under 35 U.S.C. § 112, Appellants on page 4 of the brief argue that both claims recite method steps that are clear and have full support in the specification. Appellants add that the breadth of claims should not be addressed by a rejection under 35 U.S.C. § 112 rather by a prior art rejection. Appellants on pages 4 and 5 of the brief point out that 35 U.S.C. § 112, sixth paragraph, additionally permits the use of "functional" claims by construing it to cover the corresponding structure, material or acts described in the specification and equivalents thereof. Appellants on page 5 conclude that each of the limitations "operating said electric motor in a regeneration mode" at different "operating points" and "efficiency" levels as well as "providing a battery" are proper method steps and fully defined by the specification.

In response to Appellants' arguments, the Examiner on page 3 of the answer points out that the limitation of "operating said electric motor in a regeneration mode" is a functional statement. The Examiner adds that the claims fail to recite the actual and specific steps for operating the

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motor at each operating point. The Examiner on page 4 of the answer further argues that it is not clear whether the regeneration mode continues from the first operating point to the second point. The Examiner states that the step of "providing a battery," as recited in claim 6, is not only a method step to define a circuit but is also indefinite since it is not clear whether the battery is the source or in addition to the source.

Analysis of claims under 35 U.S.C. § 112, second paragraph, should begin with the determination of whether claims set out and circumscribe the particular area with a reasonable degree of precision and particularity; it is here where definiteness of the language must be analyzed, not in a vacuum, but always in light of teachings of the disclosure as it would be interpreted by one possessing ordinary skill in the art. *In re Johnson*, 558 F.2d 1008, 1015, 194 USPQ 187, 193 (CCPA 1977) (citing *In re Moore*, 439 F.2d 1232, 1235, 169 USPQ 236, 238 (1971)). Furthermore, our reviewing court points out that a claim which is of such breadth that it reads on subject matter disclosed in the prior art is rejected under 35 U.S.C. § 102 rather than under 35 U.S.C. § 112, second

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paragraph. **See *In re Hyatt***, 708 F.2d 712, 715, 218 USPQ 195, 197 (Fed. Cir. 1983) (citing ***In re Borkowski***, 422 F.2d 904, 909, 164 USPQ 642, 645-46 (CCPA 1970)). "The legal standard for definiteness is whether a claim reasonably appraises those of skill in the art of its scope." ***In re Warmerdam***, 33 F.3d 1354, 1361, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994).

Upon a careful review of the claim language and the specification, we find that "operating said electric motor in a regeneration mode" and "providing a battery to receive regeneration current from said motor," as recited in claims 1 and 6, are proper method steps. It is clear from the specification as a whole and page 1 specifically, that the "regeneration mode" occurs when the motor operates as a generator exerting a torque on the driver mechanism and providing current to the power source which is generally a battery. The specification on pages 2 and 5 also provides adequate details for "providing a battery" such that any person skilled in the art would immediately understand the step of connecting a battery and directing regeneration current from the motor. We further find that specification on pages 5 and 6 discloses the efficiency curve of the motor in

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its generator mode in Fig. 2 with different efficiency levels achieved by changing the current and rotor flux.

In view of the above and in light of the specification as a whole, we find that the steps of operating the motor at two different operating points with different efficiency levels and providing a battery for receiving the regeneration current are sufficiently defined and would reasonably appraise those skilled in the art of the scope of these limitations. Accordingly, we will not sustain the rejection of claims 1 through 14 under 35 U.S.C. § 112.

Turning to the rejection of claim 1 under 35 U.S.C. § 102, Appellants argue on pages 1 and 2 of the reply brief that Kanzaki's motor does not have any different operating points. Appellants further point out that Kanzaki connects and disconnects a load from the motor without changing the operating point.

The Examiner on page 2 of the supplemental answer responds to Appellants' arguments by stating that claim 1 does not recite changing of the operating points but merely requires the motor be in a regeneration mode at a second point of reduced efficiency. The Examiner characterizes the

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teachings of Kanzaki as operating the motor in a regeneration mode in two operating points by closing the switch and dissipating power in the resistor or opening the switch and preventing the power dissipation as the high and low efficiency points, respectively.

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). Claims will be given their broadest reasonable interpretation consistent with the specification, and limitations appearing in the specification are not to be read into the claims. *In re Etter*, 756 F.2d 852, 858, 225 USPQ 1, 5 (Fed. Cir. 1985).

We note that Appellants' claim 1 recites

... (a) operating said electric motor in a regeneration mode at a first operating point; and
(b) operating said electric motor in a regeneration mode at a second operating point of reduced efficiency with respect to said first operating point in response to a regeneration current generated by said electric motor (emphasis added).

We find that claim 1 requires two distinct operating points while the motor is in regeneration mode, the second point being at a lower efficiency than the first. We note that these operating points refer to how efficiently the motor is generating current. We further find that the claim recites that the change in the operating point is in response to a regeneration current from the motor. Therefore, the operating point of the motor in its regeneration mode is changed to the reduced efficiency point according to a specific condition of the regeneration current.

A rejection for anticipation under section 102 requires that each and every limitation of the claimed invention be disclosed in a single prior art reference. *In re Paulsen*, 30 F.3d 1475, 1478-79, 31 USPQ2d 1671, 1673 (Fed. Cir. 1994) (citing *In re Spada*, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990)).

Kanzaki in col. 2, lines 33 through 42 and Fig. 1 teaches that in response to increased DC bus voltage a switch connects the resistor 5 to the DC link so that the excess regenerated power is dissipated in the resistor. Kanzaki merely redirects the regenerated power to a resistor without making any changes to the way the regenerated power is produced. We do not find that the resistor 5 affects the efficiency of the regenerated power as recited in claim 1. It acts merely as a load for dissipating power that would otherwise be directed to the DC bus. Therefore, Kanzaki fails to teach the operating of an electric motor in regeneration mode at two different operating points where the second point has a reduced efficiency compared to the first point in response to a regeneration current as recited in Appellants' claim 1. Accordingly, we reverse the rejection of claim 1 under 35 U.S.C. § 102.

Turning to the rejection of claim 6, Appellants on pages 2 and 3 of the reply brief argue that Takada does not teach the limitation of operating the motor at a second operating point with reduced efficiency as recited in claim 6. Appellants further state that Takada is silent with regard to changing the operation point of the motor in response to

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either the regeneration current or the state of battery charge.

The Examiner on page 2 of the supplemental answer states that Takada in col. 6, lines 27 and 28 discloses the step of detecting the current supplied to the motor being related to the variation in charge of the battery. The Examiner further states that such battery charge detection in terms of regeneration current flowing to the battery is inherent in the regeneration mode.

We find that claim 6 requires that the operation of the motor at the second point with reduced efficiency be in response to both a "regeneration current flowing into the battery" and a "state of charge of said battery." Takada in col. 7, lines 35 through 44 teaches a deceleration apparatus for a motor where a part of the regenerated power is absorbed in a resistor and the rest is returned to the power source. Takada in col. 9, lines 24 through 47 further discloses that when the regeneration current is directed to the power supply, a specific timing imposed by the rotation speed control circuit 1 causes the motor to change from a first low efficiency intermittent regeneration mode to a second higher

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efficiency continuous regeneration mode in order to eventually stop the motor. It is after elapse of a specific time and not by any signal from the condition of the battery that Takada's motor changes its operating point. Therefore, we fail to find that Takada discloses, directly or inherently, a change of the regeneration operating point to a reduced efficiency in response to the current supplied to or a state of the charge of the battery. Accordingly, we reverse the rejection of claim 6 under 35 U.S.C. § 102 over Takada.

In view of the foregoing, the decision of the Examiner rejecting claims 1 through 14 under 35 U.S.C. § 112 is reversed. The decision of the Examiner rejecting claims 1 and 6 under 35 U.S.C. § 102 is reversed.

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

REVERSED

KENNETH W. HAIRSTON

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Administrative Patent Judge)	
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)	BOARD OF PATENT
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