

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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 JAMES E. CHLOUPEK and EDWARD N. JEFFREY

Appeal No. 2001-0294
Application No. 09/004,399¹

HEARD: SEPTEMBER 18, 2002

Before RUGGIERO, BLANKENSHIP and SAADAT, Administrative Patent Judges.

SAADAT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the Examiner's final rejection of claims 1-21, which are all of the claims pending in the present application.

We reverse.

¹ Application for patent filed January 8, 1998, which claims the filing priority benefit under 35 U.S.C. § 119 of provisional Application No. 60/033,760, filed January 15, 1997.

BACKGROUND

Appellants' invention is directed to a method and apparatus for braking a polyphase dc motor used in a hard disk drive. A braking circuit is used to brake the motor when the motor has slowed to an actual rotational speed (Specification, page 4). The braking circuit compares the signal corresponding to the motor speed with a clock signal from a clock generator (specification, page 9). Thus, by determining the actual velocity of the disk, braking of the motor will be timed to avoid premature or postmature braking and damage to the heads (specification, page 12).

Representative independent claim 1 is reproduced below:

1. A method for braking a polyphase dc motor, comprising:

generating a speed signal indicating a spinning velocity of the motor;

upon a loss of power that energizes the motor, determining from the speed signal that the motor has slowed at least to an actual predetermined spinning velocity;

and activating a tach braking circuit to brake the motor by using clock pulses when the motor speed has been determined to have reached said predetermined spinning velocity.

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The Examiner relies on the following references in rejecting the claims:

Davie	3,975,668	Aug. 17, 1976
Sander, Jr. (Sander)	4,658,308	Apr. 14, 1987
Aoshima et al. (Aoshima)	4,815,063	Mar. 21, 1989

Claims 1-21 stand rejected under 35 U.S.C. § 112, second paragraph as being indefinite.

Claims 1-21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sander, Davie and Aoshima.

Rather than reiterate the viewpoints of the Examiner and Appellants regarding the above-noted rejections, we make reference to the answer (Paper No. 22, mailed April 4, 2000)² and the final rejection (Paper No. 15, mailed September 21, 1999) for the Examiner's reasoning, the appeal brief (Paper No. 20, filed March 13, 2000) and the reply brief (Paper No. 23, filed June 8, 2000) for Appellants' arguments thereagainst.

OPINION

With respect to the rejection of the claims under the second paragraph of 35 U.S.C. § 112, Appellants argue that the claimed recitation of "clock pulses" is fully supported by the

² In a Supplemental Examiner's Answer (Paper No. 26, mailed February 7, 2002) the Examiner corrected the grounds of rejection to include the rejection under 35 U.S.C. § 112, as set forth in the final rejection.

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specification starting at line 22 of page 9 (brief, page 5). Appellants further assert that the term "clock pulses" is clear because it has no hidden or unusual meanings and can be ascertained by a dictionary definition (id.). Additionally, Appellants point to the paragraph bridging pages 11 and 12 of the specification to show how clock pulses are used to activate the tach braking circuit to brake the motor when its velocity is detected to be slow enough (reply brief, page 3 and oral hearing).

The Examiner's arguments are focused on the use of "clock pulses" as reference pulses rather than signals used to activate braking of the motor (answer, page 5). The Examiner further argues that the clock pulses do not correspond to any structural elements that are provided for braking the motor (id.).

Analysis of a rejection 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),

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citing In re Moore, 439 F.2d 1232, 1235, 169 USPQ 236, 238 (1971). "The legal standard for definiteness is whether a claim reasonably apprises those of skill in the art of its scope." In re Warmerdam, 33 F.3d 1354, 1361, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994). 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 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).

Upon a careful review of the claim language and the specification, we find that the claimed limitation of "clock pulses" refers to clock signals that are compared in the tach braking circuit with pulses of frequency or tach signals relating to the rotational speed of the motor (specification, page 9, lines 22-28). It is clear from the specification as a whole and page 10, line 18 through page 11, line 24 specifically, that clock pulses are used to activate the tach braking circuit to brake the motor by providing a reference pulse count for detecting when the rotational velocity of the disk reaches its predetermined speed.

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In view of our analysis above and in light of the specification as a whole, we find that the use of "clock pulses" to activate the tach braking circuit is sufficiently defined and would reasonably apprise those skilled in the art of the scope of this limitation. Accordingly, we will not sustain the rejection of claims 1-21 under the second paragraph of 35 U.S.C. § 112.

Turning to the 35 U.S.C. § 103 rejection of the claims, we note that the Examiner relies on the teachings of Sander for retracting disk heads and braking the motor using back-emf of the motor and the time delay provided by an RC timer (final rejection, page 1). The Examiner further relies on Davie for detecting speed signals and determining the speed of the motor as an alternative design choice that may be substituted for the time delay of Sander (final rejection, pages 1 & 2). Finally, the Examiner adds teachings from Aoshima that relate to comparing clock pulses from a pulse generator with pulses from a tachometer to determine speed (final rejection, page 2).

Appellants argue that the claimed method step of "activating a tach braking circuit to brake the motor by using clock pulses" is neither taught nor suggested by the cited prior art (brief, page 6). Additionally, Appellants assert that Davie discloses an analog circuit (speed sensing circuit 84) which, even if combined

with Sander, could not be activated to brake the motor by using clock pulses (brief, page 7, reply brief, page 3). With respect to the speed detector of Aoshima, Appellants urge that although the speed of the motor can be detected and used for acceleration or deceleration, nothing in Aoshima teaches the claimed tach braking circuit for braking the motor (id.).

In response to Appellants' arguments, the Examiner asserts that Sander teaches a motor controller that detects the motor speed before braking while Davie's speed sensing circuit 84 relates to the claimed "clock pulses" (answer, pages 7 & 8). With respect to Aoshima, the Examiner argues that the disclosed speed detector is used to actuate a brake circuit according to the desired acceleration or deceleration (answer, pages 10 & 11).

In rejecting claims under 35 U.S.C. § 103, the Examiner bears the initial burden of presenting a prima facie case of obviousness. See In re Rijckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). The conclusion that the claimed subject matter is obvious must be supported by evidence, as shown by some objective teaching in the prior art or by knowledge generally available to one of ordinary skill in the art that would have led that individual to combine the relevant teachings

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of the references to arrive at the claimed invention. See In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

Furthermore, the Examiner must produce a factual basis supported by teaching in a prior art reference or shown to be common knowledge of unquestionable demonstration, consistent with the holding in Graham v. John Deere Co., 383 U.S. 1 (1966). Our reviewing court requires this evidence in order to establish a prima facie case. In re Piasecki, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984); In re Cofer, 354 F.2d 664, 668, 148 USPQ 268, 271-72 (CCPA 1966).

A review of Sander confirms that the reference relates to a method and apparatus for retracting the head of a disc drive and braking the spindle motor in case of power loss. Sander further discloses (as depicted in fig. 2) that capacitors 60 and 70 which are charged during normal operation (col. 8 line 64 through col. 9, line 2), start to discharge during power loss and dynamically brake the motor (col. 10, lines 41-65). We find no reference by Sander to the use of clock pulses for activating a tach braking circuit or to the determination of the motor speed.

Davie discloses a circuit for rapid dynamic braking of polyphase motors. More specifically, as depicted in figure 7, Davie refers to speed sensing circuit 84 which generates a

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voltage output to be compared with the voltage output of bias means 88 and causes comparator means 90 to send a control signal to switch 86 for applying the dc braking current to the motor (col. 6, lines 43-57). However, Davie relies on electrical outputs of the speed sensing circuit and the bias means for determining the speed of the motor and provides no teaching related to using clock pulses.

Aoshima, on the other hand, relates to a disc motor control for achieving stable rotation and avoiding undesirable stopping of the motor (col. 2, lines 22-31). To maintain a higher accuracy of motor speed, Aoshima, as depicted in figure 8, provides for pulse counters that determine the speed of the motor and apply acceleration or deceleration signals to a brake circuit to speed up or slow down the motor rotation, not to brake the motor to a stop (col. 11, line 31 through col. 12, line 41). We also note that although Aoshima provides another embodiment related to braking the motor and refers to clock pulses for determining the speed of motor (col. 16, lines 48-56), the speed detection is used for determining the direction of motor rotation (col. 18, lines 51-60) instead of braking. A comparator detects the direction of the rotation so that acceleration to further speed up the motor or reverse rotation can be avoided and the

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motor can be braked in the right direction. Therefore, Aoshima does not use clock pulses to activate a tach braking circuit to brake the motor when the speed of the motor has been determined to have slowed to an actual predetermined spinning velocity.

We agree with Appellants' assertion (brief, page 8) that the combination of Sander, Davie and Aoshima fails to teach or suggest using clock pulses to activate a tach braking circuit to brake the motor. As discussed above, none of the references recognize the importance of "activating a tach braking circuit to brake the motor by using clock pulses" when the motor is determined to have reached a set velocity. Therefore, contrary to the Examiner's position, using clock pulses for activating a tach braking circuit, as recited in claim 1, cannot be derived from the combination of the references.

In view of our analysis above, we find that the Examiner has failed to set forth a prima facie case of obviousness with respect to claim 1 because the necessary teachings and suggestions related to the claimed use of clock pulses are not shown. We note that independent claims 7 and 15 include similar limitations related to "a tach braking circuit to brake said

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motor by using clock pulses." Accordingly, we do not sustain the 35 U.S.C. § 103 rejection of independent claims 1, 7 and 15, nor of claims 2-6, 8-14 and 16-21 dependent thereon.

CONCLUSION

In view of the foregoing, the decision of the Examiner rejecting claims 1-21 under 35 U.S.C. § 112 and under 35 U.S.C. § 103 is reversed.

REVERSED

JOSEPH F. RUGGIERO)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
HOWARD B. BLANKENSHIP)	APPEALS
Administrative Patent Judge)	AND
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