

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

Paper No. 13

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JOHN C. KAN and NEAL BERTRAM

Appeal No. 2000-1952
Application No. 09/006,920

ON BRIEF

Before BARRETT, RUGGIERO and DIXON, **Administrative Patent Judges**.
DIXON, **Administrative Patent Judge**.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1-23, which are all of the claims pending in this application.

We REVERSE.

BACKGROUND

Appellants' invention relates to a motor shaft having integral heat pipe. An understanding of the invention can be derived from a reading of exemplary claim 1, which is reproduced below.

1. A spindle motor assembly for use in a magnetic storage system, comprising:

a bearing assembly having an inner peripheral surface;

a stationary shaft having a central axis and an outer peripheral surface attached to said inner peripheral surface of said bearing assembly, said stationary shaft capable of operating as a heat pipe which incorporates evaporation and condensation;

a hub positioned external to said bearing assembly; and

a motor positioned between said hub and said stationary shaft, said motor operable to rotate said hub with respect to said central axis of said stationary shaft.

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

Heintz	2,330,121	Sep. 21, 1943
Turner	2,743,384	Apr. 24, 1956
Lloyd et al. (Lloyd)	3,914,630	Oct. 21, 1975
Gururangan	5,160,865	Nov. 03, 1992
Cox et al. (Cox)	5,705,868	Jan. 06, 1998

Claims 1-23 stand rejected under 35 U.S.C. § 112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which appellants regard as the invention. The examiner indicated that appellants' response overcame the rejection. (See answer at page 4.)

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Claims 1-6 and 14-21 stand rejected under 35 U.S.C. § 103 as being unpatentable over Gururangan in view of Lloyd. Claims 7, 10, 11, and 22 stand rejected under 35 U.S.C. § 103 as being unpatentable over Gururangan in view of Lloyd further in view of Turner. Claims 8, 9, and 23 stand rejected under 35 U.S.C. § 103 as being unpatentable over Gururangan in view of Lloyd further in view of COMMON KNOWLEDGE (see specification at page 3, lines 16-19). Claims 1-6 and 12-15 stand rejected under 35 U.S.C. § 103 as being unpatentable over Cox in view of Lloyd. Claims 1 and 14-16 stand rejected under 35 U.S.C. § 103 as being unpatentable over Gururangan in view of Heintz.

Rather than reiterate the conflicting viewpoints advanced by the examiner and appellants regarding the above-noted rejections, we make reference to the examiner's answer (Paper No. 12, mailed Feb. 15, 2000) for the examiner's reasoning in support of the rejections, and to appellants' brief (Paper No. 11, filed Dec. 9, 1999) for appellants' arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to appellants' specification and claims, to the applied prior art references, and to the respective positions articulated by appellants and the examiner. As a consequence of our review, we make the determinations which follow.

35 USC § 103

The examiner maintains that Gururangan or Cox teaches all of the limitations except the use of a heat pipe which incorporates evaporation and condensation. The examiner relies upon the teachings of Lloyd which clearly teaches the use of a heat pipe in servomotors for cooling of the motor. Alternatively, the examiner relies upon the teachings of Heintz to teach the use of a heat pipe in a motor system. The examiner maintains that the heat tube of Lloyd may be used with or without a finned heat remover. (See Lloyd at column 4, lines 17-21 and answer at page 6.) We agree with the examiner that the use of fins is an alternative embodiment and not deemed to be critical to the operation of the heat pipe.

The examiner maintains that it would have been obvious to one of ordinary skill in the art to incorporate a heat pipe of Lloyd into the hollow motor shaft of Gururangan for the purpose of cooling the motor. (See answer at page 5.) While we agree with the examiner that cooling of the motor is always desirable, and Lloyd appears to be directed to servomotors as may be used in a drive system, we are left with a question of why would the skilled artisan be motivated to implement such a system of a spindle motor assembly of a magnetic storage system with a risk of contamination. Clearly, Gururangan and Cox teach the routing of electrical connections through the hollow portion of central shaft of the motor. Cox even states that the problem of space for routing the wires is due to the tight space constraints within the housing of the drive. (Cox at column 2, lines 17-23 and column 3, line 54-column 4, line 9.)

Appellants argue that it would not have been obvious to one of ordinary skill in the art to combine the teachings unless Gururangan also had a cooling mechanism, such as fins. (See brief at page 6.) We disagree with appellants, and we agree with the examiner that it would appear at first glance that it would have been obvious to one of ordinary skill in the art to cool any motor in the manner disclosed by Lloyd.

Appellants argue that the presence of the electrical wires within the shaft of Gururangan and Cox would interfere with the placement of the wick and would interfere with any evaporative process. While the language of independent claim 1 does not require the presence of a wick, the examiner has not addressed how the shaft would be sealed with the wires routed therethrough at the top and the bottom so as to prevent the liquid from evaporating and being lost through the opening without condensing. At page 6 of the answer, the examiner maintains that the wires would not have to be rerouted since the wick would be incorporated into the sides of the walls. The examiner maintains that appellants have not provided any facts to support the argument that the wires would interfere with the evaporation/condensation process. (See answer at pages 6-7.) We agree with the examiner that appellants have not expanded upon the basic argument, but we find that a closed system would be required in either Gururangan or Cox to prevent contamination within the memory system. In our view the incorporation of the wires through the hollow shaft would not make the sealing thereof readily apparent to skilled artisans. Therefore, we find that it would not have

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been obvious to one of ordinary skill in the art to combine the teachings of Gururangan or Cox with the teachings of Lloyd absent some additional teaching of showing of wires or other articles traversing the hollow shaft while sealed. Therefore, we cannot sustain the rejection of independent claim 1 over the combination of Gururangan or Cox with Lloyd.

In an attempt to meet the limitation of dependent claim 7 the examiner turns to the teachings of Turner to show sealing a heat pipe. (See answer at page 7.) Here we note that the teachings of Turner are to weld the heat pipe end cap. Here we find that this would not work well with the use of electrical wires traversing the hollow shaft. Therefore, the use of Turner for later dependent claims would not remedy the deficiency in the original combinations. Similarly, the examiner's reliance upon COMMON KNOWLEDGE as shown at page 3 of appellants' specification would not remedy the above noted deficiency in the combination. Therefore, we cannot sustain the rejection of dependent claims 2-15.

We find that independent claim 16 contains similar limitations, and we will not sustain the rejection of independent claim 16 and dependent claims 17-23.

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With respect to the combination of Gururangan and Heintz, appellants argue that Heintz is similar to the teachings of Lloyd and relies upon similar arguments. (See brief at page 8.) While not overly detailed, we again find that the examiner has not made a *prima facie* case of obviousness for the combination of the teachings of both references, and we will not sustain the rejection of independent claim 1 and dependent claims 14 and 15.

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CONCLUSION

To summarize, the decision of the examiner to reject claims 1-23 under 35 U.S.C. § 112 is reversed, and the decision of the examiner to reject claims 1-23 under 35 U.S.C. § 103 is reversed.

REVERSED

LEE E. BARRETT)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
JOSEPH F. RUGGIERO)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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JOSEPH L. DIXON)	
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