

Ex parte Holt.

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 22

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

*Ex parte* NICHOLAS P. HOLT

Appeal No. 95-4554  
Application 07/794,117<sup>1</sup>

ON BRIEF

MAILED

MAR 12 1997

PAT. & T.M. OFFICE  
BOARD OF PATENT APPEALS  
AND INTERFERENCES

Before HAIRSTON, KRASS and FLEMING, *Administrative Patent Judges*.  
FLEMING, *Administrative Patent Judge*.

**DECISION ON APPEAL**

This is a decision on appeal from the final rejection of claims 3, 4 and 7 through 10, all of the claims pending in the present application. Claims 1, 2, 5 and 6 have been canceled.

The invention relates to rotating memory systems such as disk memory systems. More specifically, the invention is directed to a disk memory system in which data is stored in a

<sup>1</sup> Application for patent filed November 15, 1991.

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manner that reduces the amount of head movement required for storing data on a rotating disk.

Appellant discloses on page 3 of the specification that Figure 1 is a block diagram of a disk memory system embodying the invention. Appellant discloses that the disk memory system comprises a disk drive unit 10 having one or more magnetic disks and moveable read/write heads for reading and writing data from selected areas of the disks. The drive unit has 500 cylinders. A cylinder is defined on page 1 of the specification as the portion of the memory that can be accessed by the heads at any given position of the head. Each cylinder holds 1000 data blocks. Each block stores 2 Kbytes of data. Figure 1 shows that the disk memory system further includes a disk scheduler 13, block map 14 and cylinder map 15.

On page 5 of the specification, Appellant discloses that Figure 2 shows the operation of the disk scheduler 13. Upon the disk memory system receiving a write request, the scheduler 13 examines the cylinder map 15 to determine the free block count of the current cylinder at which the heads are positioned. The free block count of the current cylinder is compared with a predetermined threshold value. If the free block count is greater than the threshold, a free block is allocated from the current cylinder and the write operation is performed storing the data in that block.

On pages 5 and 6 of the specification, Appellant discloses that the allocation of the block involves the following actions. The cylinder map 15 is updated to indicate that the free block is no longer free and the free block count for the cylinder is decremented. Also, block map 14 is updated to indicate that the physical block number of the allocated block is now associated with the logical block number of the write request.

The independent claim 9 is reproduced as follows:

9. A rotating memory system comprising:

(a) at least one rotating data storage member, having a plurality of blocks of data in each of a plurality of cylinders, each block having a physical block number;

(b) at least one moveable read/write head for accessing said data;

(c) means for executing read and write requests, each request containing a logical block number identifying a block to be written or read;

(d) means for maintaining a block map for converting the logical block numbers to physical block numbers;

(e) means for checking, in response to a write request, the number of unallocated blocks on a cylinder at which the heads are currently positioned; and

(f) means for allocating a block on that cylinder to be written to in the event that said number of unallocated blocks is greater than a predetermined threshold value.

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The Examiner relies on the following references:

Jons et al. (Jons)	5,065,354	Nov. 12, 1991 (filed Sep. 16, 1988)
Logan	5,146,571	Sep. 8, 1992 (filed Feb. 26, 1990)
Tohchi et al. (Tohchi)	5,179,684	Jan. 12, 1993 (filed Aug. 16, 1989)
Takada	5,210,716	May 11, 1993 (filed Jul. 23, 1990)

Claims 9 and 10 stand rejected under 35 U.S.C. § 103 as being unpatentable over Tohchi, Logan and Takada. Claims 3, 4, 7 and 8 stand rejected under 35 U.S.C. § 103 as being unpatentable over Tohchi, Logan, Takada and Jons.

Rather than reiterate the arguments of Appellant and the Examiner, reference is made to the brief<sup>2</sup> and answer<sup>3</sup> for the respective details thereof.

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<sup>2</sup> Appellant filed an appeal brief on December 21, 1994. We will reference this appeal brief as simply the brief. Appellants filed a reply brief on March 15, 1995. We will reference this reply brief as the reply brief. The Examiner stated in the Examiner's communication dated March 29, 1995 that the reply brief has not been entered. On April 6, 1995, Appellant filed a response to the March 29, 1995 communication and requested entry of the reply brief. The Examiner responded to the request with a supplemental Examiner's answer. We note that the Examiner considered the arguments of the reply brief. We will treat the reply brief as entered into the record and as properly before us for our consideration.

<sup>3</sup> The Examiner responded to the brief with an Examiner's answer, dated February 9, 1995. We will refer to the Examiner's answer as simply the answer. The Examiner responded to the reply brief with a supplemental Examiner's answer dated May 19, 1995. We will refer to the supplemental Examiner's answer as simply the supplemental answer.

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OPINION

We will not sustain the rejection of claims 3, 4 and 7 through 10 under 35 U.S.C. § 103.

The Examiner has failed to set forth a *prima facie* case. It is the burden of the Examiner to establish why one having ordinary skill in the art would have been led to the claimed invention by the reasonable teachings or suggestions found in the prior art, or by a reasonable inference to the artisan contained in such teachings or suggestions. *In re Sernaker*, 702 F.2d 989, 995, 217 USPQ 1, 6 (Fed. Cir. 1983). "Additionally, when determining obviousness, the claimed invention should be considered as a whole; there is no legally recognizable 'heart' of the invention." *Para-Ordnance Mfg. v. SGS Importers Int'l, Inc.*, 73 F.3d 1085, 1087, 37 USPQ2d 1237, 1239 (Fed. Cir. 1995), citing *W. L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1548, 220 USPQ 303, 309 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).

In regard to the rejection of claims 9 and 10 under 35 U.S.C. § 103 as being unpatentable over Tohchi, Logan and Takada, Appellant argues on page 3 of the brief that Tohchi, Logan and Takada, together or individually, fail to teach avoiding repositioning of the read/write heads for performing a write operation following a read operation by allocating a block on the

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means for allocating a block on the cylinder to be written to in the event that said number of unallocated blocks is greater than a predetermined threshold value are well known in the art. We note that none of the references cited teach these limitations.

Takada teaches in column 2, lines 20-68, an operation in which a first semiconductor memory array 11 is substituted for a second semiconductor memory array when it is determined that the first memory array is at the end of its operational life as determined by a writing level monitor 31. The monitor 31 determines the number of times that a data signal to be stored in the first semiconductor memory alternates from a "1"/"0" data signal to a "0"/"1" data signal. Takada teaches that it is the rewriting from a 1 to a 0 or a 0 to a 1 that causes the degradation of the memory and it is this extreme condition that must be monitored. Takada fails to teach a means for checking the number of unallocated blocks on a cylinder of a disk at which the heads are currently positioned or allocating a block on that cylinder to be written to in the event that the number of unallocated blocks is greater than a predetermined threshold value as recited in Appellant's claims 9 and 10.

Now we must consider the Examiner's argument that it would have been obvious to modify these three references to provide these limitations. The Federal Circuit states that "[t]he mere fact that the prior art may be modified in the manner suggested

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by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." *In re Fritch*, 972 F.2d 1260, 1266 n.14, 23 USPQ2d 1780, 1783-84—n.14 (Fed. Cir. 1992), *citing In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). "Obviousness may not be established using hindsight or in view of the teachings or suggestions of the inventor." *Para-Ordnance Mfg. v. SGS Importers Int'l*, 73 F.3d at 1087, 37 USPQ2d at 1239, *citing W. L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d at 1551-1553, 220 USPQ at 311-313.

As pointed out above, Takada is concerned with determining when one semiconductor memory has reached the end of its operational life and replacing the semiconductor memory that is at the end of its operational life with another memory. Takada does not suggest to those skilled in the art to manage the address access of the memory. Furthermore, Takada is not concerned with disk access time or read/write head positioning when storing data on a disk. We find that none of the references suggest that it is desirable to operate a rotating memory system by checking, in response to a write request, the number of unallocated blocks on a cylinder at which the heads are currently positioned and then allocating a block on that cylinder to be written to in the event that said number of unallocated blocks is



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