

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board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. 12

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KNUT GRIMSRUD
and
RICK COULSON

Appeal No. 2001-0462
Application 08/885,325

ON BRIEF

Before THOMAS, BARRETT and BLANKENSHIP, Administrative Patent Judges.

THOMAS, Administrative Patent Judge.

DECISION ON APPEAL

Appellants have appealed to the Board from the examiner's final rejection of claims 1, 3-14, 16-32 and 34-38.

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Representative claim 20 is reproduced below:

20. A machine implemented method comprising:

- a) tracing a sequence of logical file accesses of interest;
- b) mapping the traced logical file accesses to physical data blocks, and outputting the mapped physical data blocks as trace;
- c) analyzing the trace data, and generating, if possible, a new set of disk blocks that yield improvement on overall access time, over the disk blocks accessed.

The following references are relied on by the examiner:

McGillis et al. (McGillis) 5,548,788 Aug. 20, 1996

Akyürek et al. (Akyürek), "Adaptive Block Rearrangement,"
ACM Transactions on Computer Systems, Vol. 13, No. 2, pages
89-121 (May 1995).

Claims 1, 3-14, 16-32 and 34-38 stand rejected under
35 U.S.C. § 103. As evidence of obviousness, the examiner relies
upon McGillis in view of Akyürek.

Rather than repeat the positions of the appellants and the
examiner, reference is made to the brief and answer for the
respective details thereof.

OPINION

Generally for the reasons set forth by the examiner in the answer, as amplified here, we sustain the rejection of all claims on appeal under 35 U.S.C. § 103. Since appellants have indicated at the bottom of page 5 of the brief that all claims on appeal fall together, and because appellants' arguments beginning at page 6 of the brief consider independent claims 1, 20 and 34 in a corresponding equivalent manner, we take as a representative claim for our consideration independent claim 20. Even among these claims there are no arguments directed as to any specific feature but only to the general features common to each of them. Therefore, since there are also no arguments presented as to any dependent claim, they all fall with our consideration of representative claim 20 on appeal.

The examiner appears to rely upon McGillis to provide a structural environment in which the system of Akyürek may be implemented. The entire disk storage subsystem 12 of Figure 1 of McGillis provides an environment in which to implement the adaptive block rearrangement system for disks in Akyürek. It is noted that page 96 of that reference details prior art computer systems comparable to McGillis and known to Akyürek such as those specifically listed at the top of page 97 of that reference.

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Appellants' brief presents no arguments as to McGillis and no arguments against the combinability of McGillis and Akyürek together within 35 U.S.C. § 103. Appellants' arguments focus only upon Akyürek.

Although the examiner's statement of the teachings of Akyürek at page 4 of the answer appear initially to be somewhat broad, unclear and weakly reasoned, the responsive arguments portion at page 6 contains a relatively clear correspondence of the features argued in representative claim 20 on appeal of tracing a sequence of logical file addresses and the resulting mapping thereof to physical data blocks. We therefore reproduce here the substantive remarks of the examiner at page 6 of the answer:

A component labeled Reference Stream Analyzer monitors the stream of data requests. Periodically, it produces a list of hot (frequently referenced) blocks, ordered by frequency of reference to be stored in a Hot-Block Table (see page 92, last paragraph and page 93, 1st paragraph.) The Hot-Block Table is used for containing a list of those most frequently accessed blocks and their location addresses in the reserved cylinders where the most often accessed data blocks are stored in (see page 92, 7th paragraph.) And the incoming requests are compared against this list and directed to the reserved cylinders if the requested block resides there (i.e., the incoming data requests are compared with the logical addresses inside the hot-block-table, if there is a match, then a

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logical-physical addresses transformation will take place). Since only the tracing of data access requests are monitored without actually accessing the data, and furthermore, even if a physical data block needs to be transferred, a logical to physical address translation/mapping has to take place first, thus Akyurek clearly teaches tracing of accesses at the logical file access level.

We are persuaded by the examiner's reasoning taken with the teachings and suggestions and reasonable inferences the artisan would have made based upon the examiner's reliance upon topic 2 at pages 92-93 as they relate to Figure 1 in Akyürek. We, as well as the examiner, do not agree with the appellants' initial assertion at page 7 of the brief that Akyürek does not teach monitoring be done at a logical level, and that tracing of accesses is done at a physical disk block level rather than at a logical file access level. The reference stream analyzer in Figure 1, as correlated by the examiner, appears to us to perform a monitoring or tracing function, to the extent broadly recited in the claims on appeal, of logical blocks desired to be read from or written to the disk shown in this figure. The Hot-Block Table performs the mapping of these logical blocks of data to the reserved space in the disk shown in this figure. As expressed at the bottom of page 92 the "component labeled Hot-Block Table contains a list of these blocks and their locations in the

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reserved cylinders." Although this logical file access to physical locations correspondence could have been better developed in Akyürek, we are satisfied that the artisan would have well appreciated the broadly defined mapping function in representative claim 20 on appeal is taught if not strongly suggested or implied to the reader-artisan according to the general teachings outlined between pages 92 and 93 of this reference.

Moreover, we note that Akyürek's Topic 6, and specifically its Implementation Subtopic 6.1 at pages 101 and 102, not only indicates the equivalence of monitoring the performance of Akyürek's disk-based system as a kind of tracing operation, this portion indicates that the disk driver has been modified to perform the functions essentially set forth in the structure shown in Figure 1. The showing in Figure 2 at page 102 and the discussion on that page also clearly indicates a correspondence of a logical to physical mapping of logical blocks of data to be written on a disk and shows their rearrangement within the reserved area on the disk.

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As noted by the examiner, the block arranger in Figure 1 of Akyürek essentially teaches the feature of analyzing trace data and then essentially generating a new or updated set of logical files having a correspondence to physical, reserved space locations in the disk of Figure 1 as set forth at the end of representative claim 20 on appeal.

As a final matter, the virtual memory comments made by the examiner in the Advisory Action appear to us to be subject to being misconstrued. It appears to us that the examiner is merely attempting to convey to the reader that within the concept of virtual addressing, there is a translation or mapping operation of logical to physical addresses. Appellants's arguments at pages 8 and 9 of the brief confirm the well-known generalized understanding in the art for virtual addressing techniques but are not persuasive to us of patentability of the presently claimed subject matter. The environment of the claims is not specific to virtual memory operations, although they appear to encompass, because of their breadth, the subject matter of virtual addressing. Logical addressing techniques may occur in

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the art in non-virtual memory environments. It is noted, however, that Akyürek has provided teachings according to Topic 8 beginning at page 116 of applying his invention to a well-known prior art virtual memory system associated with DEC computers.

It is stated at the end of representative independent claim 20 on appeal that the method of that claim has an aim to improve overall access time for disk-based systems. This is essentially what the overall aim of Akyürek is as set forth in the abstract and in the introductory paragraph at Topic 1 of page 89 of his article. The disclosed and claimed invention as well as Akyürek itself are reminiscent to us of conventional disk file defragmentation concepts well-known to the artisan.

In view of the foregoing, the decision of the examiner rejecting claims 1, 3-14, 16-32, and 34-38 under 35 U.S.C. § 103 is affirmed.

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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

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Administrative Patent Judge)	
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Lee E. Barrett)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
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