

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte NAWAF K. BITAR, ROBERT M. ENGLISH,
and RAJAGOPAL ANANTHANARAYANAN

Appeal No. 2001-2326
Application No. 08/752,909

ON BRIEF

Before KRASS, FLEMING, and BLANKENSHIP, Administrative Patent Judges.
BLANKENSHIP, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1-38, which are all the claims in the application.

We reverse.

BACKGROUND

The invention relates to time-share scheduling performed by computer operating systems. Representative claim 1 is reproduced below.

1. A method of time-share scheduling a plurality of jobs in a computer system operating across a plurality of time segments, the method comprising the steps of:

apportioning, during each time segment, earnings to each of the jobs based on time each job spent in a queue requesting execution on a processor in the computer system during the time segment, wherein apportioning earnings includes reducing earnings as a function of time each job ran on the processor during the time segment;

adding a number to accumulated earnings for each job as a function of earnings apportioned to each job during the time segment;

selecting a job for execution on the processor as a function of accumulated earnings for each of the jobs.

The examiner relies on the following references:

Mueller	4,481,583	Nov. 6, 1984
Sherrod	4,642,756	Feb. 10, 1987
Hejna, Jr. et al. (Hejna)	5,287,508	Feb. 15, 1994
Anderson et al. (Anderson)	5,628,013	May 6, 1997 (filed Sep. 30, 1992)

Claims 1-4, 10-12, 18-21, 27-31, and 35 stand rejected under 35 U.S.C. § 103 as being unpatentable over Mueller.

Claims 5-9, 22, and 32-34 stand rejected under 35 U.S.C. § 103 as being unpatentable over Mueller and Anderson.

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Claims 13, 14, 17, 23, 26, and 38 stand rejected under 35 U.S.C. § 103 as being unpatentable over Mueller and Sherrod.

Claims 15, 16, 24, 25, 36, and 37 stand rejected under 35 U.S.C. § 103 as being unpatentable over Mueller, Sherrod, and Hejna.

We refer to the Final Rejection (Paper No. 15) and the Examiner's Answer (Paper No. 22) for a statement of the examiner's position and to the Brief (Paper No. 21) for appellants' position with respect to the claims which stand rejected.

OPINION

The instant independent claims (1, 18, and 28) stand rejected under 35 U.S.C. § 103 as being unpatentable over Mueller. (Answer at 3-4.) Appellants argue (Brief at 10-11) that, contrary to the examiner's findings, Mueller does not teach apportioning "earnings" as the term is defined by appellants. Further, appellants allege that Mueller does not teach accumulating earnings or making a selection based on the accumulated earnings.

Appellants also contest the examiner's finding that Mueller teaches adding a number to accumulated earnings. According to the rejection (Answer at 3), Mueller teaches adding a number "M" to accumulated earnings, with the number "M" shown in the equation at column 6, line 34 of the reference. Appellants argue that "M" is a constant representing the highest value of priority, rather than relating to adding a number to accumulated earnings as claimed. The examiner, in response, reiterates

(Answer at 9-10) that “M” is a number added to the accumulated earnings, as shown in the equation in column 6, line 33 of the reference.

The instant specification (p. 9, ll. 14-16) relates that “[a]n Earnings of a job is the accumulated time a job has purchased and spent while on the VMP [virtual multiprocessor] queue and is stored as the accumulated_time variable.” The definition is consistent with use in the claims. Instant claim 1, for example, recites that “earnings” are apportioned to each of the jobs “based on time each job spent in a queue requesting execution on a processor.”

In view of the express requirements of the instant claims, we fail to see how Mueller may be deemed to teach adding a number to accumulated earnings for each job as a function of earnings apportioned to each job, and selecting a job for execution as a function of accumulated earnings for each of the jobs. As suggested by appellants, Mueller’s teaching is that, after each processing interval, priorities of the various competing processes are recalculated. Col. 2, ll. 30-38.

Further, consistent with appellants’ position, Mueller discloses that “M” is the highest value of priority, rather than a number to be added to accumulated earnings. Mueller’s algorithm, principally described at columns 4 through 7 of the reference, does take into account whether a process is waiting for processor resources, as opposed to executing. As depicted in Figure 3, priority increases while waiting for processor time, and decreases while running. Further, as shown in the formulas in columns 5 and 6,

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and described therein, a decrease in recent processing rate for a job leads to an increasing value of priority.

However, we are persuaded by appellants that Mueller's teachings with respect to periodically recalculating priority fail to disclose or suggest the specific claim limitations at issue. As disclosed by Mueller (e.g., col. 6, ll. 26-45; Fig. 3), "M" is simply the highest value of priority, serving as a basis from which relative priorities of processes may be measured at each processing interval. We find no disclosure or suggestion of adding a number to accumulated earnings for each job, as required by instant claim 1.

The remaining independent claims (18 and 28) contain limitations similar to those of claim 1 for which we consider Mueller to be lacking. Further, since the remaining rejections applied against the dependent claims do not remedy the basic deficiency of the Mueller reference, we do not sustain any of the section 103 rejections.

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CONCLUSION

The rejections of claims 1-38 under 35 U.S.C. § 103 are reversed.

REVERSED

ERROL A. KRASS)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
MICHAEL R. FLEMING)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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HOWARD B. BLANKENSHIP)	
Administrative Patent Judge)	

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