

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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

Appeal No. 1998-1802
Application 08/245,786

ON BRIEF

Before JERRY SMITH, BARRY and LEVY, Administrative Patent Judges.

JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's rejection of claims 1-20, which constitute all the claims in the application. An amendment after final rejection was filed on March 27, 1997 but was denied entry by the examiner.

The disclosed invention pertains to the arrangement of a data processor, a level 2 (L2) cache and a main memory within a computer system. More particularly, the invention relates to the integration and interconnection of these components in a manner to reduce the time it takes to access data from the L2 cache or from the main memory and provide such data to the processor.

Representative claim 1 is reproduced as follows:

1. A computer system including a processing unit, L2 cache and memory, comprising:

a storage control unit including an integrated cache controller and memory controller for controlling operations of said L2 cache and said memory, respectively;

means for simultaneously initiating a first operation to retrieve information from said L2 cache and a second operation to retrieve information from said memory;

means for determining if information required by said processing unit is stored in said L2 cache; and

means for aborting said second operation by providing a stop memory operation signal directly from said cache controller to said memory controller concurrent with a determination that said information is in said L2 cache;

wherein said second operation is aborted before any request signals are output to said memory and said memory continues operations independent of said second operation.

The examiner relies on the following references:

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Lange et al. (Lange)	3,896,419	July 22, 1975
Capozzi	4,323,968	Apr. 06, 1982
Aichelmann, Jr. et al. (Aichelmann)	4,823,259	Apr. 18, 1989
Gusefski et al. (Gusefski)	5,202,972	Apr. 13, 1993

Claims 1-4, 10-14 and 20 stand rejected under 35
U.S.C.
§ 103 as being unpatentable over the teachings of Lange and
Capozzi. Claims 2-10 and 12-20 stand rejected under 35 U.S.C.
§ 103 as being unpatentable over the teachings of Lange,
Capozzi, Gusefski and Aichelmann.

Rather than repeat the arguments of appellants or the
examiner, we make reference to the briefs and the answer for
the respective details thereof.

OPINION

We have carefully considered the subject matter on
appeal, the rejections advanced by the examiner and the
evidence of obviousness relied upon by the examiner as support
for the rejections. We have, likewise, reviewed and taken
into consideration, in reaching our decision, the appellants'
arguments set forth in the briefs along with the examiner's

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rationale in support of the rejections and arguments in rebuttal set forth in the examiner's answer.

It is our view, after consideration of the record before us, that the evidence relied upon and the level of skill in the particular art would not have suggested to one of ordinary skill in the art the obviousness of the invention as set forth in claims 1-20. Accordingly, we reverse.

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.),

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cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If that burden is met, the burden then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. See Id.; In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976). Only those arguments actually made by appellants have been considered in this decision. Arguments which appellants could have made but chose not to make in the brief have not been considered [see 37 CFR § 1.192(a)].

We consider first the rejection of claims 1-4, 10-14 and 20 based on the teachings of Lange and Capozzi. Claims 1-3, 10-13 and 20 stand or fall together as a single group [brief, page 11]. With respect to independent claims 1 and 11, the examiner basically finds that Lange teaches all the features of these claims except for the cache being an L2 cache and the cache controller and the memory controller being integrated. The examiner cites Capozzi as teaching the integration of a cache controller and a memory controller into a single unit. The examiner concludes that it would have been obvious to the artisan to integrate the cache controller and memory controller of Lange based on the teachings of Capozzi. The recitation of an L2 cache is dismissed since multiple caches were conventional in the art [answer, pages 3-4].

Appellants argue that neither Lange nor Capozzi teaches the claimed feature of "providing a stop memory operation signal directly from said cache controller to said memory controller concurrent with a determination that said information is in said L2 cache" [brief, pages 14-15].

After a careful consideration of the complete record in this case, we agree with the position argued by appellants.

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The examiner points to the "INT" signal of Lange as meeting the stop memory operation signal. Although the "INT" signal does stop operation of the memory controller, this signal is a function of the "MATCH" signal output from comparator 29. The "MATCH" signal indicates a determination that desired information is in the cache. Claims 1 and 11 would require that signals "MATCH" and "INT" be generated concurrently and directly from the cache controller to the memory controller. These two signals are not generated concurrently. Lange states that the "match signal is generated between the time the strobe address register signal SAR is generated and the time that an interrupt signal INT is to be generated by the interrupt generator 16" [column 8, lines 16-19]. Thus, signals MATCH and INT are clearly not concurrent as required by independent claims 1 and 11 nor is the stop memory operation signal in Lange sent directly from the cache controller to the memory controller.

The examiner has also cited a per se rule that shifting the location of parts is not patentable [answer, page 6]. Examiners should avoid the application of such per se rules without considering the particular facts of each case.

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In this case, the rule is incorrectly applied because the location of parts is not an irrelevant design choice. It is precisely the location of the various parts of the claimed invention which achieves the desirable speed advantages described in appellants' specification. The examiner must provide a record to support the obviousness of the claimed invention. Such record is lacking here.

In summary, the rejection of independent claims 1 and 11 based on the teachings of Lange and Capozzi is not sustained. Therefore, Lange and Capozzi alone do not support the rejection of dependent claims 2-4, 10 and 12-14 either. Although dependent claims 2-10 and 12-20 are also rejected on the collective teachings of Lange, Capozzi, Gusefski and Aichelmann, the additional teachings of Gusefski and Aichelmann do not overcome the deficiencies of Lange discussed above. Therefore, we do not sustain the rejection of any of claims 1-20 based on the prior art applied by the examiner. Accordingly, the decision of the examiner rejecting claims 1-20 is reversed.

REVERSED

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	JERRY SMITH)	
	Administrative Patent Judge)	
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