

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte EDWARD C. PROSSER, ROBERT R. ROEDIGER
and WILLIAM J. SCHMIDT

Appeal No. 1999-0004
Application 08/593,309

ON BRIEF

Before KRASS, JERRY SMITH and RUGGIERO, 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 1-34, which constitute all the claims in the application. An amendment after final rejection was filed on November 20, 1997 and was entered by the examiner.

The disclosed invention pertains to a method and apparatus for improving the execution performance of a compiler within a computer system. More particularly, the compiler of the present invention receives block alignment information from an input source which is external to both the source code file and the compiler itself. The block alignment information is used to create blocks of instructions which will improve the performance of cache memory.

Representative claim 1 is reproduced as follows:

1. A computer system, said system comprising:

a bus;

a central processing unit;

computer system memory, said computer system memory being connected to said central processing unit via said bus;
and

a compiler program stored in said computer system memory for execution on said central processing unit, said compiler program including:

a code generator that converts a source code file into an object file, wherein said object file includes a plurality of basic blocks;

a block alignment information input mechanism that inputs block alignment information from a source external to both said source code file and said compiler; and

a block alignment processing mechanism that processes

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said external block alignment information and aligns certain of said plurality of basic blocks on a cache line boundary.

The examiner relies on the following references:

Gupta et al. (Gupta)	5,303,377	Apr. 12, 1994
Johnson	5,450,585	Sep. 12, 1995
Alpert et al. (Alpert)	5,452,457	Sep. 19, 1995
Srivastava et al. (Srivastava)	5,539,907	July 23, 1996 (filed Mar. 01, 1994)

Claims 1-34 stand rejected under 35 U.S.C. § 103. As evidence of obviousness the examiner offers Alpert in view of Johnson with respect to claims 1, 2, 6, 7, 12 and 15, adds Srivastava with respect to claims 3-5, 8-11, 13, 14, 16-20, 22-24 and 26-34, and additionally adds Gupta with respect to claims 21 and 25.

Rather than repeat the arguments of appellants or the examiner, we make reference to the brief 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

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into consideration, in reaching our decision, the appellants' arguments set forth in the brief along with the examiner's 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 1-34. 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

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ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), 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 independent claims 1 and 12 based on Alpert and Johnson. The examiner indicates how he interprets Alpert and Johnson so as to render these claims obvious under 35 U.S.C. § 103 [answer, pages 5-6]. With respect to claim 1, appellants argue that neither Alpert nor Johnson discloses "a block alignment information input mechanism that inputs block alignment information from a source external to both said source code and said compiler" as recited in claim 1 or "a block alignment processing mechanism that processes said external block alignment information and aligning certain of said plurality of basic blocks on a cache line boundary" as also recited in claim 1. With respect to claim 12, both the examiner and appellants rely on the same positions considered with respect to claim 1. The examiner's response to appellants' arguments is to essentially repeat the statement of the rejection.

At the outset, we acknowledge our appreciation of the examiner's effort to specifically read the language of the claims on the applied prior art. Such an effort makes it

substantially easier to consider the issues on appeal. Having said that, however, we must also note that the examiner's response to appellants' arguments with the statement "The examiner does not agree" followed by a simple reiteration of the rejection is not very helpful in determining the merits of the examiner's position. As noted above, a determination of obviousness requires the fact finder to consider the relative persuasiveness of the positions articulated by the examiner and appellants. The examiner's response to arguments section of the answer adds nothing to buttress the persuasiveness of the examiner's original rejection.

For example, appellants have raised two serious deficiencies in the examiner's interpretation of Alpert. First, appellants note that in the first aspect of Alpert, there is no external source for inputting information into the compiler. Instead, Alpert requires that the source code be changed by a programmer and then recompiled. Second, appellants note that in the second aspect of Alpert, Alpert teaches a separate optimizer program which is apart from the compiler and optimizes an already compiled object file. According to appellants, this separate optimizer means that

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any block alignment processing of Alpert is not taking place within the compiler based on externally applied information as claimed.

Both of appellants' arguments with respect to Alpert raise serious deficiencies in the propriety of the rejection based on Alpert. Since these arguments of appellants are very persuasive, the examiner was compelled to address these arguments and to explain to us why these arguments should not be persuasive of nonobviousness. As noted above, rather than respond to these arguments, the examiner merely noted his disagreement with the arguments and then restated the rejection. On this record we are constrained to agree with appellants' persuasive arguments which have essentially gone un rebutted by the examiner. We note that Johnson does not overcome the deficiencies in the teachings of Alpert. Therefore, the rejection of claims 1, 2, 6, 7, 12 and 15 based on the teachings of Alpert and Johnson is not sustained.

We now consider the rejection of independent claims 8, 16, 22, 27 and 29 based on Alpert, Johnson and Srivastava. The examiner relies on the teachings of Alpert and Johnson in the same manner discussed above with respect to claims 1 and

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12. Appellants repeat the arguments discussed above as well as pointing out additional deficiencies in Srivastava. The examiner's response to appellants' arguments fails to persuasively rebut appellants' arguments for the same reasons discussed above. Since Srivastava does not overcome the deficiencies noted above in Alpert and Johnson, we do not sustain the examiner's rejection of claims 3-5, 8-11, 13, 14, 16-20, 22-24 and 26-34.

We now consider the rejection of dependent claims 21 and 25 based on Alpert, Johnson, Srivastava and Gupta. Since Gupta does not overcome the deficiencies noted above in Alpert, Johnson and Srivastava, we do not sustain the examiner's rejection of claims 21 and 25.

In summary, we have not sustained any of the examiner's rejections of the appealed claims. Therefore, the decision of the examiner rejecting claims 1-34 is reversed.

REVERSED

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