

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte MAYAN MOUDGILL

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Appeal No. 1995-3690  
Application No. 08/000,342<sup>1</sup>

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ON BRIEF

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Before HAIRSTON, JERRY SMITH, and CRAWFORD, Administrative Patent Judges.

CRAWFORD, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1 through 3, 5, and 7 through 9 which are all of the claims pending in this application. Claims 4, 6 and 10-26 have been canceled.

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<sup>1</sup> Application for patent filed January 4, 1993.

Appeal No. 1995-3690  
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The appellant's invention relates to a method for implementing speculative instruction in computing systems. An understanding of the invention can be derived from a reading of exemplary claim 1, which appears in the appendix to the appellant's brief.

The prior art

The prior art of record relied upon by the examiner in rejecting the appealed claims is:  
Background section in the specification.

The rejections

Claims 5, and 7 through 9 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention

Claims 1 through 3, 5, and 7 through 9 stand rejected under 35 U.S.C. § 102(b) as being anticipated by the prior art in the background of the specification.

Rather than reiterate the conflicting viewpoints advanced

by the examiner and the appellant regarding the above-noted rejections, we make reference to the examiner's answer (Paper No. 16, mailed October 16, 1995) for the examiner's complete reasoning in support of the rejections, and to the appellant's brief (Paper No. 13, filed February 24, 1995).

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellant's specification and claims, and to the respective positions articulated by the appellant and the examiner. As a consequence of our review, we make the determinations which follow.

We turn first to the examiner's rejection under 35 U.S.C. § 112, second paragraph, of claims 5 and 7 through 9, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The examiner states:

It's not clear how tags are used in the trap processing to enable the generation of a precise interrupt during compilation and permit re-execution. The link between the limitations in the

dependent claims and those in the base claim is not stated and unclear. The limitation in the dependent claims are totally out of context from the base claim. . . . each limitation in a claim should be linked to other limitations in the claim and that reciting a limitation with no linking element or operation leaves the claims indefinite. [examiner's answer at page 3].

The appellant argues that:

The explanation of the wording deemed unclear in claims 5 and 7 is in Appellant's specification. It is Appellant's contention that the claims rest upon those teachings, and, further, that they need not recite the results of these method steps. [brief at page 7].

The second paragraph of 35 U.S.C. § 112 requires claims to set out and circumscribe a particular area with a reasonable degree of precision and particularity. In re Johnson, 558 F.2d 1008, 1015, 194 USPQ 187, 193 (CCPA 1977). In making this determination, the definiteness of the language employed in the claims must be analyzed, not in a vacuum, but always in light of the teachings of the prior art and of the particular application disclosure as it would be interpreted by one possessing the ordinary level of skill in the pertinent art. Id.

The examiner's focus during examination of claims for compliance with the requirement for definiteness of 35 U.S.C. § 112, second paragraph, is whether the claims meet the threshold requirements of clarity and precision, not whether more suitable language or modes of expression are available. Some latitude in the manner of expression and the aptness of terms is permitted even though the claim language is not as precise as the examiner might desire. If the scope of the invention sought to be patented cannot be determined from the language of the claims with a reasonable degree of certainty, a rejection of the claims under 35 U.S.C. § 112, second paragraph, is appropriate.

With this as background, we analyze the specific rejection under 35 U.S.C. § 112, second paragraph, made by the examiner of the claims on appeal.

The appellants specification defines a tag as a:

. . . mechanism . . . which is used to identify speculative instructions grouped together. Every speculative instruction in a group is labeled with an identical tag. [specification at page 13].

A precise interrupt is a mechanism to report traps (i.e. errors) in instructions in which:

- a) the program counter points to the instruction which caused the trap; and
- b) all instructions that preceded the trapping instruction in the program have executed without a trap and have correctly modified the state; and
- c) all instructions succeeding the trapping instruction are unexecuted and have not modified the state [specification at pages 5 and 6].

The specification discloses a method for implementing speculative instructions in which all speculative<sup>2</sup> instructions from the same basic block have the identical tag (specification at page 18). The tagged instructions are issued speculatively and the results are stored in a shadow buffer. A checkpoint instruction is inserted before the "origin point"<sup>3</sup> of the tagged instructions. This checkpoint instruction takes the corresponding tag as an argument and reports any tag that has

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<sup>2</sup> An instruction is considered speculative if it is issued before unresolved previous branches.

<sup>3</sup> An origin point of a tagged instructions is the point in the program where the tagged instruction would have issued had it not been tagged.

trapped. If no trap has occurred, the stores in the shadow buffer are committed to memory (specification at page 17). After the execution of the tagged speculative instruction, the program proceeds to the next instruction which would have followed the tagged instructions at its origin point.

If a trap has occurred, the trap handler uses the address of the checkpoint instruction to find the beginning of the associated block with the trapped instruction. It adds the issue counter value to this address to find the instruction which trapped (specification at page 22). A flush instruction clears the buffer memory after the stores in the buffer memory are committed to memory or if the program takes a direction not leading to the origin point of the tagged instructions (specification at pages 4, and 18 to 19).

From the foregoing, it is our view that the specification is clear on how tags are utilized to generate a precise interrupt.

The program utilizes the address of the checkpoint instruction (which takes a specific tag as an argument) to find the address of the trapped instruction. In addition, the tagged

instructions are not executed until the program reaches their origin point in the program and before the instructions which are after the origin point are executed. In any case, as the claims do not recite that tags are utilized to generate a precise interrupt, appellant is not required to make this "clear" in the claims.

In regard to the examiner's contention that each of the limitations in the dependent claims should be linked to other limitations in the base claim and that reciting a limitation with no linking element or operation leaves the claims indefinite, we simply do not agree with the examiner. The claims are set out as a method of performing steps in which one step follows another. The dependent claims merely state further steps to be taken. In our view, the claims are clear when read in light of the specification.

In view of the foregoing, we will not sustain the rejection of claims 5 and 7 through 9 under 35 U.S.C. § 112, second paragraph.

We turn next to the examiner's rejection of claims 1 through 3, 5, and 7 through 9 under 35 U.S.C. § 102(b) as

being anticipated by prior art in the background of the specification.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. Verdegaal Bros. Inc. v. Union Oil Co., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir.), cert. denied, 484 U.S. 827 (1987). The inquiry as to whether a reference anticipates a claim must focus on what subject matter is encompassed by the claim and what subject matter is described by the reference.

The examiner reasons:

. . . that claimed inventions that are taught in one publication, namely the background section of the specification, can be rejected under 35 U.S.C. 102(b). [examiner's answer at page 6].

However, the background section of the application is not a publication. In addition, the background section discusses several methods of speculative execution of instructions.

However, the examiner does not explain which method discussed in the background of the specification is the basis of the rejection.

As such, we will not sustain this rejection.

The decision of the examiner is reversed.

REVERSED

KENNETH W. HAIRSTON	)	
Administrative Patent Judge	)	
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	)	BOARD OF PATENT
JERRY SMITH	)	APPEALS
Administrative Patent Judge	)	AND
	)	INTERFERENCES
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