

UNITED STATES PATENT AND TRADEMARK OFFICE

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Ex parte S. BABAR RAZA and SOMNATH PAUL

Appeal No. 2004-0856
Application No. 09/676,704

ON BRIEF

Before KRASS, GROSS, and BARRY, *Administrative Patent Judges*.

BARRY, *Administrative Patent Judge*.

DECISION ON APPEAL

A patent examiner rejected claims 1-20. The appellants appeal therefrom under 35 U.S.C. § 134(a). We reverse.

BACKGROUND

The invention at issue on appeal implements a "multiqueue," first-in-first-out ("FIFO") storage. Figure 1 of the appellants' specification shows what they term a "conventional system" for implementing a multiqueue, FIFO storage. (Spec. at 1.) Generally, the system 10 comprises a write selector 12, a read selector 14, and FIFO

memories 16a-16n. Each FIFO is implemented as an independent physical memory, which the appellants consider "inefficient." (*Id.* at 2.)

In contrast, Figure 2 of the specification shows that the appellants' storage element 111 comprises one or more virtual, multiqueue FIFO memories 103a-103n. A circuit 110 detects a fastest one of a plurality of clocks (*write_clk* and *read_clk*) and operates the storage element in a single clock domain (FAST Clock Domain) corresponding to the faster clock. (Appeal Br. at 3-4.)

A further understanding of the invention can be achieved by reading the following claim (indentations added):

1. A circuit configured to provide a storage element comprising one or more virtual multiqueue FIFOs, wherein said circuit is configured to
 - (i) detect a fastest one of a plurality of clocks and
 - (ii) operate said storage element in a single clock domain corresponding to said fastest one of said plurality of clocks.

Claims 1-11 and 13-20¹ stand rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 5,963,499 ("Leong"); U.S. Patent No. 4,965,794 ("Smith"); and U.S. Patent No. 5,914,757 ("Dean"). Claim 12 stands rejected under § 103(a) as obvious over Leong; Smith; Dean; and U.S. Patent No. 4,970,499 ("Ryherd").

OPINION

Rather than reiterate the positions of the examiner or the appellants *in toto*, we focus on the point of contention therebetween. The examiner admits that Leong "does not disclose that his device detects a fastest one of a plurality of clocks and operates in a clock domain of that fastest clock." (Examiner's Answer at 4.) Noting that "Leong clearly teaches that buffers can connect devices that operate at different speeds," (*id.* at 11), however, he asserts, "what is clearly understood by the skilled artisan is that the buffer therefore must operate at the faster of the two speeds. Otherwise errors or unacceptable inefficiencies result." (*id.*) The appellants argue, "the Examiner fails to show that Leong's device with the asserted modification would necessarily **detect** a fastest one of a plurality of clocks and operate a storage element in a **single** clock

¹Although the examiner's statement of the rejection over Leong, Smith, and Dean encompasses claim 12, (Examiner's Answer at 4), his explanation thereof omits the claim. (*Id.* at 4-9.) Furthermore, the examiner includes a separate rejection for claim 12. (*Id.* at 9.) Accordingly, we treat the former rejection as inapplicable to claim 12.

domain corresponding to the fastest one of a plurality of clocks, as presently claimed."
(Reply Br. at 2-3.)

In addressing the point of contention, the Board conducts a two-step analysis. First, we construe claims at issue to determine their scope. Second, we determine whether the construed claims would have been obvious.

1. CLAIM CONSTRUCTION

"Analysis begins with a key legal question — *what is the invention claimed?*" *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1567, 1 USPQ2d 1593, 1597 (Fed. Cir. 1987). In answering the question, "every limitation positively recited in a claim must be given effect in order to determine what subject matter that claim defines." *In re Wilder*, 429 F.2d 447, 450, 166 USPQ 545, 548 (CCPA 1970). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 1424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

Here, claim 1 recites in pertinent part the following limitations: "(i) detect a fastest one of a plurality of clocks and (ii) operate said storage element in a single clock domain of [sic] corresponding to said fastest one of said plurality of clocks." Claims 16

and 17 include similar limitations. Giving effect to all the limitations, claims 1, 16, and 17 require detecting a fastest one of a plurality of clocks and operating a storage element in a single clock domain corresponding to the fastest clock.

2. OBVIOUSNESS DETERMINATION

Having determined what subject matter is being claimed, the next inquiry is whether the subject matter would have been obvious. "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.'" *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (quoting *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991)) "Inherency . . . may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *In re Oelrich*, 666 F.2d 578, 581, 212 USPQ 323, 326 (CCPA 1981) (citing *Hansgig v. Kemmer*, 102 F.2d 212, 214, 40 USPQ 665, 667 (Cust. & Pat.App. 1939)).

Here, Leong discloses "a cascadable multi-channel memory with dynamic allocation suitable for use in a network environment." Col. 1, ll. 6-9. As

aforementioned, the examiner admits that Leong "does not disclose that his device detects a fastest one of a plurality of clocks and operates in a clock domain of that fastest clock." (Examiner's Answer at 4.) He alleges, however, "[w]hen Leong's device was modified to work with devices having different clocks, then the device would **necessarily** operate in the clock domain of the faster clock, since it would be able to handle interfacing at the higher speed." (*Id.* at 7 (emphasis added).)

The examiner offers no evidence, however, to support his allegation. To the contrary, evidence of record belies the examiner's assertion. "For example, FIG. 6 of the Appellants' specification provides an example of a storage element capable of operating in the clock domains of both an input device and an output device." (Reply Br. at 3.) To wit, their specification explains that "[i]mplementing the dual port memory 102' may eliminate a need for [a] [single] clock domain FAST_CLOCK_DOMAIN. . . ." (Spec. at 19.)

Furthermore, Smith discloses that when "the transmission and receiving clocks at a multiplexer point are not synchronized, a method to compensate for this lack of synchronization is to provide a first-in, first-out (FIFO) buffer in which data is written into the buffer using the transmission clock frequency and read from the buffer at the receiving clock frequency." Col. 1, ll. 41-47. We are persuaded by the appellants'

explanation that because "the memory storage device of Smith operates with both a write clock and a read clock, Smith clearly teaches operating a storage device in multiple clock domains, rather than in a **single** clock domain corresponding to the fastest one of a plurality of clocks, as presently claimed." (Reply Br. at 4.)

Because the examiner offers no evidence to support his allegation, and the appellants' specification and Smith each discloses buffers operating in plural clock domains, we are unpersuaded that persons of ordinary skill would have recognized that the combination of Leong, Smith, and Dean would necessarily have detected a fastest one of a plurality of clocks and operated a storage element in a single clock domain corresponding to the fastest clock. Therefore, we reverse the obviousness rejection of claim 1; of claims 2-11 and 13-15, which depend therefrom; of claim 16; and of claim 17 and claims 18-20, which depend therefrom.

The examiner does not allege, let alone show, that the addition of Ryherd cures the aforementioned deficiency of Leong, Smith, and Dean. Therefore, we reverse the obviousness rejection of claim 12, which depends from claim 1.

CONCLUSION

In summary, the rejections of claims 1-20 under § 103(a) are reversed.

REVERSED

ERROL A. KRASS
Administrative Patent Judge

ANITA PELLMAN GROSS
Administrative Patent Judge

LANCE LEONARD BARRY
Administrative Patent Judge

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CHRISTOPHER P. MAIORANA, P.C.
24840 HARPER
ST. CLAIR SHORES, MI 48080