



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
14/066,437 10/29/2013 Jonathan J. Gamoneda DN30555NH 7364

54416 7590 02/26/2018
NXP-Yudell Isidore PLLC
6501 William Cannon Drive West
AUSTIN, TX 78735

Table with 1 column: EXAMINER

KO, CHAE M

Table with 2 columns: ART UNIT, PAPER NUMBER

2114

Table with 2 columns: NOTIFICATION DATE, DELIVERY MODE

02/26/2018

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip.department.us@nxp.com

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

*Ex parte* JONATHAN J. GAMONEDA and  
WILLIAM C. MOYER

---

Appeal 2017-009785  
Application 14/066,437  
Technology Center 2100

---

Before JOHN A. JEFFERY, BRUCE R. WINSOR, and  
JUSTIN BUSCH, *Administrative Patent Judges*.

BUSCH, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellants<sup>1</sup> appeal from the Examiner’s decision to reject claims 1, 2, 5–10, 13–16, and 18–25, which constitute all the claims pending in this application. We have jurisdiction under 35 U.S.C. § 6(b). Claims 3, 4, 11, 12, and 17 were cancelled.

We affirm.

---

<sup>1</sup> Appellants identify the real party of interest as “NXP USA, Inc. . . . and Morgan Stanley Senior Funding, Inc[.] as a security interest.” App. Br. 1.

CLAIMED SUBJECT MATTER

Claims 1, 9, and 16 are independent claims. The claims relate to switching trace modes without halting a processor. Spec. ¶ 1. “In one or more embodiments, program trace switches can occur on change of flow boundaries, such that no trace information is lost.” *Id.* ¶ 11. “In one example, a change of flow boundary can include [a] branch code and/or a branch instruction.” *Id.* ¶ 40. Claim 1 is representative and reproduced below:

1. A system, comprising:
  - a processing unit;
  - a memory coupled to the processing unit that is configured to store program instructions executable by the processing unit;
  - and
  - a debug/trace unit coupled to the processing unit;
  - wherein the processing unit executes a first portion of the program instructions utilizing a first trace mode;
  - wherein the debug/trace unit:
    - determines that there is a change of flow boundary of the program instructions based on at least one branch instruction;
    - determines that the first trace mode is to be switched to a second trace mode based on the change of flow boundary of the program instructions and based on a status of a hardware register of the debug/trace unit; and
    - switches from the first trace mode to the second trace mode without halting the processing unit; and
    - wherein the processing unit executes a second portion of the program instructions utilizing the second trace mode.

## REJECTIONS

Claims 1, 5–9, 13, 14, 16, and 18–25 stand rejected under 35 U.S.C. § 103 as being unpatentable over Mayer (US 2013/0185601 A1; July 18, 2013) and Smolders (US 6,253,338 B1; June 26, 2001). Final Act. 2–9.<sup>2</sup>

Claims 2 and 10 stand rejected under 35 U.S.C. § 103 as being unpatentable over Mayer, Smolders, and Moyer (US 2006/0195721 A1; Aug. 31, 2006). Final Act. 9–10.

Claim 15 stands rejected under 35 U.S.C. § 103 as being unpatentable over Mayer, Smolders, and Miller (US 2013/0007532 A1; Jan. 3, 2013). Final Act. 10–11.

### THE REJECTION OVER MAYER AND SMOLDERS

The Examiner finds Mayer discloses every recited element of claim 1 except for the recited determining a change of a program instructions' flow boundary based on at least one branch instruction, but cites Smolders as teaching this feature in concluding that the claim would have been obvious. Final Act. 3–4; Ans. 2–4.

Appellants argue the Examiner's reliance on Smolders is misplaced because neither of Smolders' two trace mode embodiments determine that a first trace mode is switched to a second trace mode based on a change of flow boundary of program instructions and based on a status of a hardware register of a debug/trace unit. App. Br. 5; Reply Br. 4. Appellants add that Mayer's selection of a trace mode (i.e., whether, and where, to output trace

---

<sup>2</sup> Claims 21–25 are mistakenly omitted from the header for this rejection, but otherwise appear in the body of the rejection. Final Act. 2–3, 7–9. We find the Examiner's typographical error to be harmless.

mode instructions generated by a debugger) are based on criteria not including a branch instruction. Reply Br. 3.

#### ISSUE

Under § 103, has the Examiner erred in rejecting claim 1 by finding that Mayer and Smolders collectively would have taught or suggested a debug/trace unit that

determines that there is a change of flow boundary of the program instructions based on at least one branch instruction; [and]

determines that the first trace mode is to be switched to a second trace mode based on the change of flow boundary of the program instructions and based on a status of a hardware register of the debug/trace unit,

as recited in claim 1?

#### ANALYSIS

Based on the record before us, we find no error in the Examiner's obviousness rejection of independent claim 1 which calls for, in pertinent part, determining that a first trace mode is to be switched to a second trace mode based on a determined change of flow boundary of the program instructions and based on a status of a hardware register of a debug/trace unit.

We begin by noting that the Examiner's obviousness rejection relies principally on Mayer for teaching many of the recited elements of claim 1. Final Act. 3; Ans. 2–3. Of particular note, the Examiner finds Mayer teaches or suggests determining that a first trace mode is to be switched to a second trace mode based on a buffer fill level. *See* Final Act. 3 (citing Mayer ¶¶ 27, 38–40); Ans. 2; *see also* Ans. 12 (finding Mayer's switching

between different tracing modes depends “on the condition of the current portion of the program that is executing”).<sup>3</sup>

The Examiner finds Mayer teaches switching a first trace mode to a second trace mode based on a buffer fill level, and the Examiner cites Smolders merely to show that such a switch could *also* be based on Smolders’ ability to determine a change of flow boundary of program instructions. Final Act. 3–4; Ans. 3–4, 12. That is, the Examiner cites Smolders merely to show that basing Mayer’s switching determination on a branch instruction (the claimed “change of flow boundary”) would have been obvious in light of Smolders’ functionality. Thus, Appellants’ arguments regarding (1) Mayer’s alleged shortcomings with respect to a branch instruction, Reply Br. 3; and (2) Smolders’ alleged shortcomings with respect to switching to a different trace mode, App. Br. 5; Reply Br. 4, are unavailing where, as here, the rejection is not based solely on either Mayer or Smolders, but rather on the cited references’ collective teachings. *See In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986).

Therefore, we are not persuaded that the Examiner erred in rejecting (1) independent claim 1; (2) independent claims 9 and 16, which recite commensurate limitations; and (3) dependent claims 5–8, 13, 14, and 18–25, which are not argued separately with particularity.

---

<sup>3</sup> Although the Examiner finds “Smolders teaches that the tracing mode changes from normal tracing mode to single-step mode,” the rejection does not rely on this finding. *Compare* Advisory Action 2 *with* Final Act. 3–4; Ans. 2–4, 11–12. Accordingly, Appellants’ arguments regarding Smolders’ failure to teach changing trace modes does not address the Examiner’s rejection. *See* App. Br. 5; Reply Br. 4.

### THE OTHER OBVIOUSNESS REJECTIONS

We also sustain the Examiner's obviousness rejections of claims 2, 10, and 15. Final Act. 9–11. Because these rejections were not argued separately with particularity, we are not persuaded of error for the reasons previously discussed.

### CONCLUSION

Based on this record, the Examiner did not err in rejecting claims 1, 2, 5–10, 13–16, and 18–25 under § 103.

### DECISION

For the above reasons, we affirm the Examiner's decision to reject claims 1, 2, 5–10, 13–16, and 18–25.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 41.50(f).

AFFIRMED