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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ROGER I. KHAZAN, JOSHUA KRAMER, DANIIL M. UTIN, MANKUAN MICHAEL VAI, and DAVID WHELIHAN

Appeal 2018-004758
Application 13/937,884
Technology Center 2400

Before ALLEN R. MacDONALD, CAROLYN D. THOMAS, and DAVID J. CUTITTA II, *Administrative Patent Judges*.

THOMAS, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's decision to reject claims 1–39. We have jurisdiction over the appeal under 35 U.S.C. § 6(b). An oral Hearing was held on January 13, 2020.

We AFFIRM IN PART.

[1] We use the word "Appellant" to refer to "applicant" as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Massachusetts Institute of Technology. Appeal Br. 1.

The present invention relates generally to secure cryptography and key management. Spec. ¶ 2.

Claim 1 is illustrative:

> 1. An integrated circuit for secure operation comprising:
>
> a plurality of circuit zones including a first circuit zone having a first level of security and a second circuit zone having a second level of security less than the first level of security;
>
> one or more gate circuits each configured to limit transfer of data between the circuit zones, the one or more gate circuits configured to provide all data connectivity between the first circuit zone and the second circuit zone and being statically configured to prevent unmodified transfer of data from the first circuit zone to the second circuit zone;
>
> wherein each circuit zone of the plurality of circuit zones is associated with a region of circuitry in the integrated circuit and the regions of circuitry of the plurality of circuit zones are mutually exclusive.

Appellant appeals the following rejections:

Claims 1–39 are rejected under 35 U.S.C. § 103(a) as being unpatentable over at least Wootten (US 6,754,819 B1, June 22, 2004) and Kudelski (US 2007/0150756 A1, June 28, 2007) in combination with various other prior art (*see* Final Act. 4–36).

We review the appealed rejections for error based upon the issues identified by Appellant, and in light of the arguments and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential).

ANALYSIS

Rejections under § 103(a)

Claims 1–18, 25–32, 37, and 38

Issue 1: Did the Examiner err in finding that *Wootten* teaches and/or suggests "one or more gate circuits configured to provide all data connectivity between the first circuit zone and the second circuit zone," as set forth in representative claim 1?

Appellant contends that "*Wootten* describes a system that, at least in some scenarios, allows certain data to pass between circuit zones of differing levels of security without passing through any '*gate circuit*.'" Appeal Br. 8. Specifically, Appellant contends that "the Examiner has failed to establish a proper prima facie rejection of the claim by failing to provide at least some evidence . . . to support his position that *Wootten's* application objects necessarily pass through the data security system prior to being loaded onto first controllers on the red side of the red/black boundary." *Id.* at 10, (emphasis omitted). Appellant further contends that "*Wootten's* FIG. 1 . . . shows that the application objects 50, even those that bridge the red and black zones, are in direct communication with one another (see the links between the objects 50 in *Wootten's* FIG. 1)." *Id.* at 11.

Here, Appellant emphasizes that "[s]ince *Wootten's* application objects 50 (which span the red and black zones) communicate with one another without passing through the data security system 26, the data security system 26 is not '*one or more gate circuits configured to provide* ***all*** *data connectivity between the first circuit zone and the second circuit zone.*'" Appeal Br. 11.

Figure 1 of Wootten is depicted below (with added notes showing red/black zones):

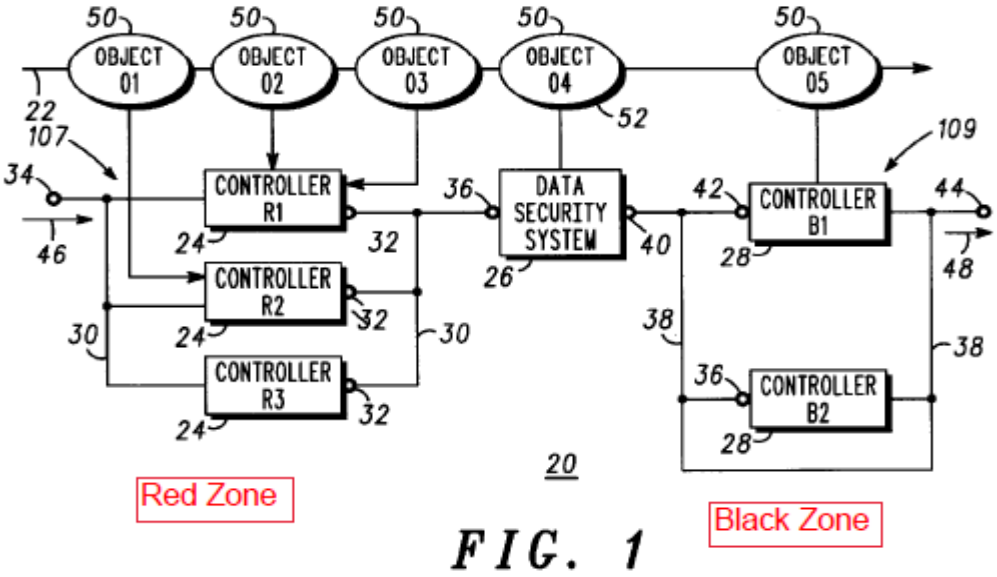

FIG. 1

Figure 1 of Wootten illustrates a multiprocessor platform supporting a distributed application 22.

Appellant's arguments highlight the "messages between the objects [50,]" and contends that such messages do not appear to have to pass through the data security system 26, i.e., the gate circuit. Appeal Br. 12. We agree with Appellant that at least *Wootten's* Figure 1 suggests that there may be a direct connection between the objects themselves, i.e., bypassing the gate circuit. *See Wootten's* Fig. 1, elements 50.

Furthermore, Wootten discloses:

> Application objects 50 interact with each other and multiprocessor platform 20 through well defined interfaces called messaging to perform the functionality of distributed application 50. In order to facilitate communication between application objects 50 distributed across multiple controllers, distributed object communication mechanisms have been

> created. These distributed object communication mechanisms are also referred to as middleware.

Wootten, 5:39–46.

> The ORB [Object Request Broker] allows application objects 50 to transparently make requests to, and receive responses from, other application objects 50 located locally or remotely.

Wootten, 5:56–58.

In other words, consistent with Appellant's aforementioned argument, Wootten describes application objects 50 (which span the red and black zones) are in direct communication with one another, without passing through the data security system 26. Appellant points out that the Examiner attempts to rebut this apparent teaching in Wootten by referring "to 'all cryptographic data' apparently in contrast to 'all data.'" Reply Br. 2.

Specifically, the Examiner finds that "[i]n Wootten, the data security system is configured in the same manner as Appellant's 'gate circuit,' because the data security system is configured to be the only communication path that provides all cryptographic data connectivity between a first circuit zone (i.e., elements 24 and 30) and a second circuit zone (i.e., elements 28 and 40)." Ans. 8. However, we highlight that representative claim 1 requires a gate circuit to "provide all data connectivity" not merely all cryptographic data connectivity.

Additionally, the Examiner finds that "Wootten requires the initial loading of the objects . . . thereby configuring the data security system to provide all data connectivity between the circuit zones." Ans. 11. The Examiner also finds that "claim 1 merely requires 'the one or more gate circuits **configured to** provide all data connectivity between the first circuit

and the second circuit zone' (emphasis added), and thus does not preclude any such initial configuration of 'the one or more gate circuits' themselves." *Id.*

As noted by Appellant, "the Examiner appears to further attempt to distinguish data for 'initial configuration' data from the 'cryptographic data.'" Reply Br. 2. We agree with Appellant that "the Examiner appears to at least tacitly acknowledge that *Wootten's* initial configuration may load application objects across the red/black boundary without passing those application objects through the data security system." *Id.* Furthermore, the Examiner is attempting to associate the claimed "all data" with data exclusive of an initial configuration procedure for loading application objects. We disagree with the Examiner's interpretation because claim 1 fails to limit the claimed "all data" in any fashion, particularly to data following a loading procedure.

Thus, we disagree with the Examiner's finding that Wootten teaches *one or more gate circuits configured to provide all data connectivity*, as recited in independent claims 1 and 16. The Examiner also has not found that any of the other references of record teach this feature. Since we agree with at least one of the arguments advanced by Appellant, we need not reach the merits of Appellant's other arguments regarding independent claims 1 and 16. Accordingly, we do *not* sustain the Examiner's obviousness rejection of claims 1–18, 25–32, 37, and 38. Independent claim 19, and the claims dependent thereon, do not require the aforementioned limitation, and therefore will be addressed separately.

Claims 19–24, 33–36, and 39

Issue 2: Does Wootten teach away from any realizations of the platform on a single integrated circuit?

Appellant contends that Wootten "recognizes that the physical separation afforded by the distributed processing environment in which the platform 20 is realized is essential to the invention and therefore teaches away from any realizations of the platform that do not afford the physical separation of a distributed processing environment." Appeal Br. 13 (emphasis omitted). Appellant further contends that "[t]he type of physical separation afforded by the distributed processing environment . . . would not exist if Woot[t]en's platform were realized on a single integrated circuit" (*id.*), i.e., "where they are separated by microns." Reply Br. 10.

The Examiner finds, and we agree, Kudelski provides motivation "to implement the entirety of the multiprocessor platform within a system-on-chip configuration which would not alter or teach away from the teachings of Wootten." Ans. 15.

For example, Wootten discloses that "[d]ata security system 26 provides the physical separation between first controllers 24 and second controllers 28 . . . in which the software components of the data processing are performed by separate controllers." Wootten, 3:58–67. Wootten further discloses that "[t]hose skilled in the art will readily recognize that a multiprocessor platform may [be] arranged in any of a number of configurations with any number of controllers as long as data security system 26 provides the physical separation between the controllers processing plain text data and the controllers processing cipher text data." Wootten, 4:13–18.

However, we do not find, and Appellant does not establish, that Wootten criticizes, discredits, or otherwise discourages implementing the multiprocessor platform on an integrated circuit. "The prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternative because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed . . . ." *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004).

Accordingly, we sustain the Examiner's rejection of independent claim 19. Appellant does not argue separate patentability for dependent claims 20–24, 33–36, and 39. We, therefore, also sustain the Examiner's rejection of claims 20–24, 33–36, and 39.

CONCLUSION

Claims Rejected	**35 U.S.C. §**	**Reference(s)/Basis**	**Affirmed**	**Reversed**
1–18, 25–32, 37, 38	§ 103	(At least) Wootten, Kudelski		1–18, 25–32, 37, 38
19–24, 33–36, 39	§ 103	(At least) Wootten, Kudelski	19–24, 33–36, 39	
Overall Outcome			19–24, 33–36, 39	1–18, 25–32, 37, 38

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

AFFIRMED IN PART