

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CSC SERVICEWORKS, INC.,
Petitioner,

v.

PAYRANGE, INC.,
Patent Owner.

IPR2023-01188
U.S. Patent No. 10,891,608

**DECLARATION OF DR. B. CLIFFORD NEUMAN
UNDER 37 C.F.R. § 1.68 IN SUPPORT OF PETITION FOR
INTER PARTES REVIEW**

TABLE OF CONTENTS

I.	INTRODUCTION	4
II.	QUALIFICATIONS AND PROFESSIONAL EXPERIENCE.....	5
III.	LEVEL OF ORDINARY SKILL IN THE ART	8
IV.	RELEVANT LEGAL STANDARDS	9
V.	OVERVIEW OF THE ‘608 PATENT	11
VI.	CLAIM CONSTRUCTION.....	14
VII.	IDENTIFICATION OF HOW THE CLAIMS ARE UNPATENTABLE	14
A.	Summary of References	15
a.	Summary of Laaroussi.....	15
b.	Summary of LeMay	18
c.	Summary of Sugimoto	20
d.	Summary of Okuniewicz	22
B.	Reasons to Combine Secondary Prior Art References with Laaroussi	25
a.	Reasons to Combine Laaroussi and LeMay	25
b.	Reasons to Combine Laaroussi and Sugimoto	30
c.	Reasons to Combine Laaroussi and Okuniewicz	34
C.	Ground 1: Claims 1-3, 5, 7-9, 11, 13-15, 17, and 19-20 are obvious under 35 U.S.C. § 103 over Laaroussi in view of LeMay and Sugimoto	37

D. Ground 2: Claims 4, 6, 10, 12, 16, 18 are obvious over Laaroussi in view of LeMay, Sugimoto, and Okuniewicz	102
VIII. CONCLUSION	110

I, Dr. B. Clifford Neuman, do hereby declare as follows:

I. INTRODUCTION

1. I am making this declaration at the request of CSC Serviceworks, Inc. (“CSC”) in the matter of the *Inter Partes* Review of U.S. Patent No. 10,891,608 (“the ‘608 patent”) to Patel.

2. I am also being reimbursed for reasonable and customary expenses associated with my work and testimony in this investigation. My compensation is not contingent on the outcome of this matter or the specifics of my testimony, and I have no other interest in this case or the parties thereto.

3. I have been asked to provide my opinions regarding whether claims 1-2, 4-8, 10-14, and 16-20 (“the Challenged Claims”) of the ‘608 patent are unpatentable, as they would have been obvious to a person having ordinary skill in the art (“POSITA”) at the time of the alleged invention in light of the prior art. It is my opinion that all of the challenged claims would have been obvious to a POSITA.

4. In the preparation of this declaration, I have studied:

- a. The ‘608 patent, Ex.1001;
- b. The prosecution history of the ‘608 patent (“‘608 file history”), Ex.1002;
- c. U.S. Patent Publication No. 2010/0227671 to Laaroussi *et al.* (“Laaroussi”), Ex.1004;

- d. U.S. Patent No. 4,374,557 to Sugimoto *et al.* (“Sugimoto”), Ex.1005;
- e. U.S. Patent No. 10,121,318 to LeMay *et al.* (“LeMay”), Ex.1006;
- f. U.S. Patent No. 6,840,860 to Okuniewicz (“Okuniewicz”), Ex.1007;
- g. Specification of the Bluetooth System, Version 1.2 (November 5, 2003), Ex.1011; and
- h. Specification for RFID Air Interface, Version 1.2.0 (October 23, 2008), Ex. 1012.

5. In forming the opinions expressed below, I have considered: the documents listed above; the relevant legal standards, including the standard for obviousness; any additional authoritative documents as cited in the body of this declaration; and my own knowledge and experience based upon my work in the field of electronic payments and distributed networks as described below.

6. Unless otherwise noted, all emphasis in any quoted material has been added.

II. QUALIFICATIONS AND PROFESSIONAL EXPERIENCE

7. My complete qualifications and professional experience are described in my *Curriculum Vitae*, a copy of which can be found in Exhibit 1013. The following is a brief summary of my relevant qualifications and professional experience.

8. I received a Ph.D. in Computer Science in 1992 and an M.S. in Computer Science in 1988 from the University of Washington, and an S.B. (Bachelor’s) in

Computer Science and Engineering in 1985 from the Massachusetts Institute of Technology.

9. Since receiving my doctorate, I have devoted my career to the field of distributed computer systems development and research, with a significant portion of my experience in the area of electronic commerce and internet payments. I have studied, taught, practiced, and researched in the field of computer science for over forty years.

10. I am currently an Associate Professor of Computer Science Practice in the Department of Computer Science at the University of Southern California (USC), where I have taught since 1992. I am also the Director of the Center for Computer Systems Security, a Scientist at USC's Information Sciences Institute, and I direct the Computer Security Curricula within the Data Science Program at USC.

11. I teach and have taught numerous courses at USC, including advanced courses in computer science for upper-level undergraduates and graduate students, on topics such as distributed systems and computer network security.

12. As part of my research at USC, I have worked in a number of areas, including research in distributed computer systems with emphasis on scalability and computer security, especially in the areas of authentication, authorization, policy, electronic commerce, and protection of cyber-physical systems and critical infrastructure such as the power grid. I have worked on the design and development

of scalable information, security, and computing infrastructure for the Internet. I am also the principal designer of the Kerberos system, an encryption-based authentication system used among other things as the primary authentication method for most versions of Microsoft's Windows, as well as many other systems. I developed systems which used Kerberos as a base for more comprehensive computer security services supporting authorization, accounting, and audit.

13. In addition to my academic experience, I have many years of practical experience designing computer security systems. For example, from 1985-1986, I worked on Project Athena at MIT, to produce a campus-wide distributed computing environment. I also served as Chief Scientist at CyberSafe Corporation from 1992-2001. I have designed systems for network payment, which build upon security infrastructure to provide a secure means to pay for services provided over the Internet. For example, I designed the NetCheque and NetCash systems, which are suitable for micropayments (payments on the order of pennies where the cost of clearing a credit card payment would be prohibitive). In 2000 and 2001, I was on the advisory board for NetResearch Inc, d/b/a BayBuilder, which was a company developing online auction platforms.

14. As part of my research on computer security and electronic payment systems, I was involved with the integration of portable electronic devices such as

smart cards and PCMCIA cryptographic processors with other computer devices such as card readers and personal computers.

15. I have authored or co-authored over 50 academic publications in the fields of computer science and engineering. In addition, I have been a referee or editor for the following academic journals: ACM Transaction on Information and Systems Security and International Journal of Electronic Commerce. My curriculum vitae includes a list of publications on which I am a named author.

16. I am also a member of the IEEE, Association for Computer Machinery (ACM), and the Internet Society (ISOC), among others. I have also served as program and/or general chair of the following conferences: The Internet Society Symposium on Network and Distributed System Security and the ACM Conference on Computer and Communications Security.

17. My complete qualifications and professional experience are described in my Curriculum Vitae, a copy of which can be found in Exhibit 1013.

III. LEVEL OF ORDINARY SKILL IN THE ART

18. I understand there are multiple factors relevant to determining the level of ordinary skill in the pertinent art, including (1) the levels of education and experience of persons working in the field at the time of the invention; (2) the sophistication of the technology; (3) the types of problems encountered in the field; and (4) the prior art solutions to those problems.

19. It is my understanding that the earliest possible priority date for the ‘608 patent is December 18, 2013. A person of ordinary skill in the art (“POSITA”) in the field of the ‘608 patent, as of December 18, 2013, would have had a bachelor’s degree in electrical engineering, computer engineering, computer science, or equivalent training and approximately three years of experience with electronic payment systems, vending machine technologies, or distributed network systems. Lack of work experience can be remedied by additional education, and vice versa.

20. For purposes of this Declaration, in general, and unless otherwise noted, my statements and opinions, such as those regarding my experience and the understanding of a POSITA generally (and specifically related to the references I consulted herein), reflect the knowledge that existed in the field as of the alleged priority date of the ‘608 patent (*i.e.*, December 18, 2013). Unless otherwise stated, when I provide my understanding and analysis below, it is consistent with the level of a POSITA as of the alleged priority date of the ‘608 patent.

IV. RELEVANT LEGAL STANDARDS

21. I am not an attorney. In preparing and expressing my opinions and considering the subject matter of the ‘608 patent, I am relying on certain basic legal principles that counsel have explained to me. These principles are discussed below.

22. I understand that prior art to the ‘608 patent includes patents and printed publications in the relevant art that predate the priority date of the alleged invention recited in the ‘608 patent.

23. I have been informed that a claimed invention is unpatentable under 35 U.S.C. § 103 if the differences between the invention and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. I have also been informed by counsel that the obviousness analysis takes into account factual inquiries including the level of ordinary skill in the art, the scope and content of the prior art, and the differences between the prior art and the claimed subject matter.

24. I have been informed by counsel that the Supreme Court has recognized several rationales for combining references or modifying a reference to show obviousness of claimed subject matter. Some of these rationales include the following: (a) combining prior art elements according to known methods to yield predictable results; (b) simple substitution of one known element for another to obtain predictable results; (c) use of a known technique to improve a similar device (method, or product) in the same way; (d) applying a known technique to a known device (method, or product) ready for improvement to yield predictable results; (e) choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; and (f) some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

V. OVERVIEW OF THE ‘608 PATENT

25. The ‘608 patent issued on January 12, 2021. ‘608 patent, codes (45), (10). The background of the ‘608 patent explains that the concept of payment on a machine, or a “payment accepting unit,” has been around for “thousands of years.” ‘608 patent at 1:32-35. By the time the ‘608 patent application was filed, the concept of payment on machines was well known and used in commercial applications such as “vending machines,” “parking meters, toll booths, laundromat washers and dryers, arcade games, kiosks, photo booths, toll booths, [and] transit ticket dispensing machines.” ‘608 patent at 1:41-52.

26. The ‘608 patent describes retrofitting an offline-payment operated machine—such as the payment machines described above—with a payment module to facilitate electronic transactions. ‘608 patent at Abstract; 9:16-27; 39:38-46:5; Figs. 28A-B, 29A-B, 30. Figure 28A of the ‘608 patent is illustrative:

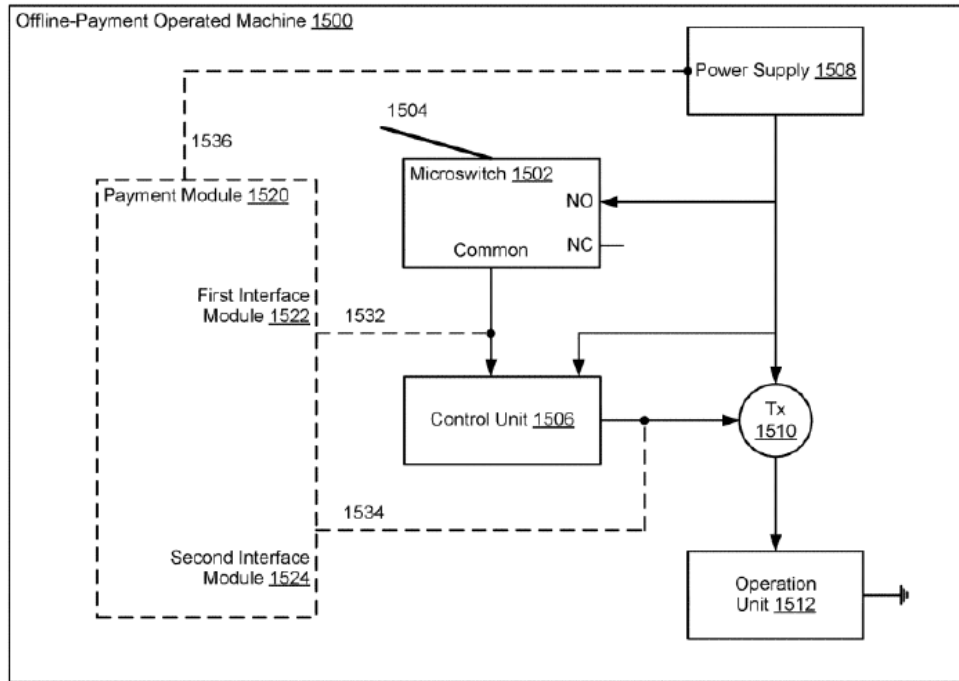


Figure 28A

27. Figure 28A illustrates a block diagram of the offline-payment operated machine 1500. ‘608 patent at 39:38-48. “[T]he offline-payment operated machine 1500 (e.g., a form of the machine 120) is an electro-mechanical machine capable of accepting currency (e.g., coins), which is not connected to any networks (e.g., telephone, cellular, or Wi-Fi). ‘608 patent at 39:40-44. The offline-payment operated machine includes, among other components, a coin microswitch 1502 and a control unit 1506. ‘608 patent at 39:49-56. Microswitch 1502 includes a lever 1504 in the coin slot of the offline-payment operated machine. ‘608 patent at 39:57-65. When a coin enters the coin slot, lever 1504 is depressed, closing the microswitch 1502 and sending a pulse to control unit 1506. ‘608 patent at 39:61-40:6. “[W]hen the control

unit 1506 receives a preset sequence of payment acceptance signals indicative of a preset number of coins being received by the microswitch 1502, the control unit 1506 initiates the operation of the offline-payment operated machine 1500.” ‘608 patent at 40:7-11.

28. The offline-payment operated machine is retrofitted with a payment module 1520 and functions to “accept electronic payments.” ‘608 patent at 40:22-26. In certain embodiments, payment module 1520 has a first interface module 1522 configured to output to control unit 1506 one or more electrical pulses emulating analog signals generated by a coin receiving microswitch 1502 when coins of a predetermined value pass through. ‘608 patent at 40:35-49. When the control unit 1506 receives a certain number of pulses it may initiate operation of the offline-payment operated machine. ‘608 patent at 40:35-49. The payment module 1520 further includes a short-range communication capability corresponding to a short-range protocol, where the payment module is configured to communicate with one or more mobile device that is also equipped with short-range communication capability. ‘608 patent at 4:14-20.

29. However, as explained in further detail below, the purported benefits of the ‘608 patent and each of the features and functionalities described above was not novel and, in fact, was previously known in the art before the priority date of the

‘608 patent. These features and functionalities were disclosed by the Laaroussi, LeMay, Sugimoto, and Okuniewicz references.

VI. CLAIM CONSTRUCTION

30. It is my understanding that in order to properly evaluate the ‘608 patent, the terms of the claims must first be interpreted. It is my understanding that for the purposes of this *inter partes* review, the claims are to be construed under the so-called *Phillips* standard, under which claim terms are given their ordinary and customary meaning as would be understood by one of ordinary skill in the art in light of the specification and prosecution history, unless the inventor has set forth a special meaning for a term. For the purposes of my analysis below, I do not believe any claim terms require explicit construction.

VII. IDENTIFICATION OF HOW THE CLAIMS ARE UNPATENTABLE

31. I have been asked to provide my opinion as to whether the Challenged Claims of the ‘608 patent would have been obvious in view of the prior art. The discussion below provides a detailed analysis of how the prior art references identified below teach the limitations of the Challenged Claims of the ‘608 patent.

32. As part of my analysis, I have considered the scope and content of the prior art and any differences between the alleged invention and the prior art. I describe in detail below the scope and content of the prior art, as well as any differences between

the alleged invention and the prior art, on an element-by-element basis for each Challenged Claims of the ‘608 patent.

33. As described in detail below, the alleged invention of the Challenged Claims would have been obvious in view of the teachings of the identified prior art references as well as the knowledge of a POSITA.

A. Summary of References

a. Summary of Laaroussi

34. U.S. Patent Publication No. 2010/0227671A1 to Laaroussi et al. (“Laaroussi”) relates to an offline payment-operated machine retrofitted with a payment module configured for wireless communication and coin pulse emulation. Laaroussi discloses “a currency media reader hub adapted to be retrofitted in a gaming machine and to interconnect various existing components thereof.” Laaroussi at [0002]. In certain embodiments, these gaming machines can be “vintage gaming machines” that rely on “older automated systems” that are “built with a primary controller” providing machine intelligence and an “input output controller” adapted to communicate with exterior components. Laaroussi at [0055]. Laaroussi teaches that the “currency media reader hub” is retrofitted to these gaming machines and adapted to (1) connect the currency media reader hub to a “peripheral component” such as a coins receiving module, (2) communicate with “virtual currency holding media” such as RFID-enabled devices, and (3) communicate

wirelessly with a network. Laaroussi at Abstract. This arrangement is shown in an annotated version of Figure 3 below:

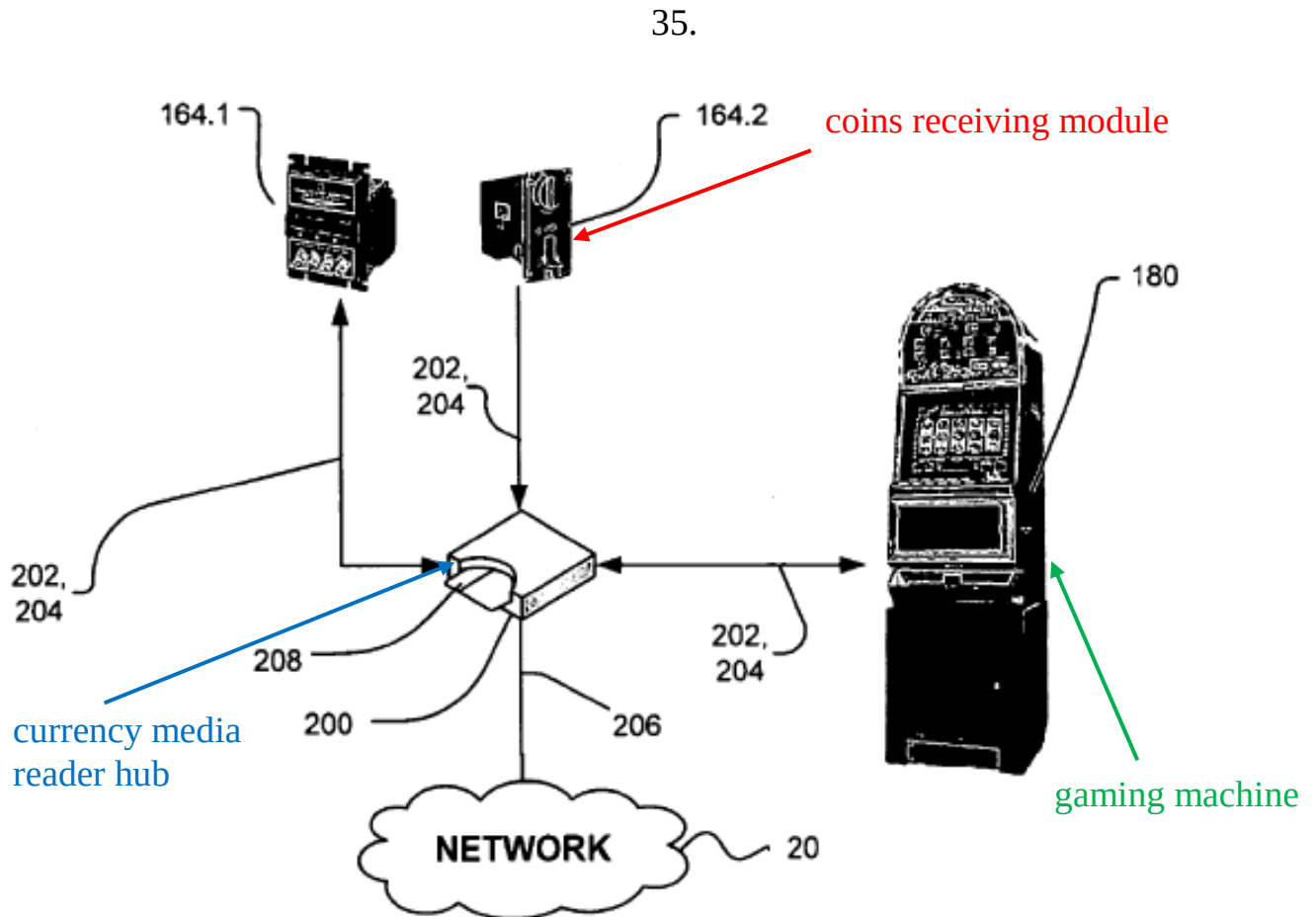


Fig. 3

36. The currency media reader hub “comprises a plurality of modules interacting together” to allow numerous functionalities, such as cashless payments. For instance, the currency media reader hub is adapted for cashless transactions with “virtual currency holding media suitable to carry virtual money,” such as an “RFID device” or a “chip-equipped card.” Laaroussi at [0061]. The currency media reader

hub has “both reading and writing capability” that allow it to modify data, the amount of money, or other information stored on the virtual currency holding media. Laaroussi at [0061].

37. The currency media reader hub is retrofitted between a peripheral component of the gaming machine and the electrical components of the gaming machine such that the currency media reader hub is “adapted to emulate a standard payment acceptance module such as a bill acceptor module or coin acceptor module” and communicate those signals to the gaming machine. Laaroussi at [0010], [0011], [0017]. Once connected, the currency media reader hub “act[s] as a gateway and a translator between peripherals (bill acceptor, coin acceptor, etc.) and the gaming machine.” Laaroussi at [0024]. When transferring data such as cashless transaction information to the gaming machine, the currency media reader hub “emulates a receiving module” such as a coins receiving module and, through a communication board module/port, uses “pulse string communication” to transmit that data to the electrical components of the gaming machine. Laaroussi at [0058], [0060].

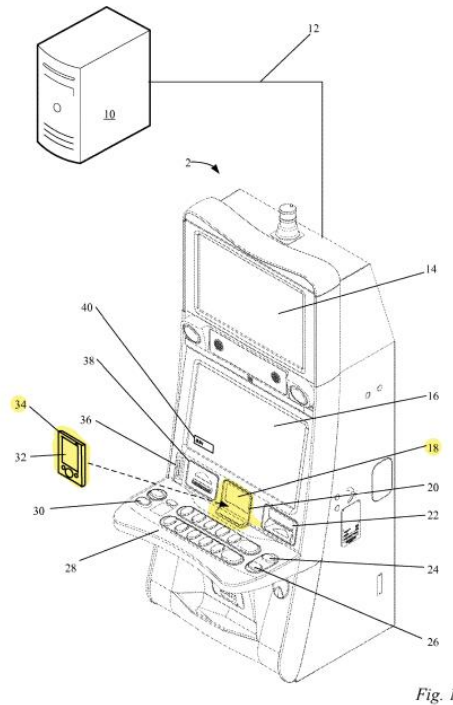
38. The currency media reader hub is further adapted “to store transactions occurring on a gaming machine in a memory when there is no connection with a network.” Laaroussi at [0026]. In particular, the currency media reader hub includes a “memory module” where it can store “all transactions” between the virtual

currency media and the gaming machine. Laaroussi at [0026], [0063], [0067], Fig. 4.

b. Summary of LeMay

39. U.S. Patent No. 10,121,318 to LeMay et al. (“LeMay”) relates to a “gaming system compatible with patron-controlled portable electronic devices, such as smart phones or tablet computers.” LeMay at Abstract. The electronic gaming machine of LeMay may include a “retrofit device” that communicates with a portable electronic device (e.g. mobile device) using a wireless interface and short-range communication protocols such as Bluetooth and near-field communication (“NFC”). LeMay at Abstract, 6:34-7:6, 22:64-23:11, Fig. 3A.

40. LeMay explains that the “wireless interface 18 can be configured to receive information, such as information associated with a virtual ticket voucher, from a portable electronic device” using short-range communication protocols such as the NFC protocol. LeMay at 6:34-50. The “[w]ireless interface 18 can be also used to accept information from a digital wallet application, such [as] an E-wallet application,” which may be “linked to a bank account” and “used to transfer ‘cash’ electronically to an [electronic gaming machine] that can be used for wagers.” LeMay at 6:51-62. The electronic gaming machine with the wireless interface configured to communicate with a portable electronic device is illustrated in annotated Figure 1 below:



41. With respect to the “retrofit device,” LeMay explains that it “can be coupled to an existing [electronic gaming machine] 2 that doesn’t provide virtual ticket voucher functionality to allow it to perform” these functions—i.e. to an offline gaming machine to allow it to perform virtual ticketing functions. LeMay at 22:64-23:11. The retrofit device can be configured to perform the virtual ticket voucher and E-wallet processing and wireless interface control. LeMay at 23:43-52, 26:47-65. Furthermore, the retrofit device can be configured to perform “device emulation” to respond to the controller 50 of the electronic gaming machine “as if it were another device on the [machine]” such as a bill validator. LeMay at 24:14-27.

42. LeMay also teaches that operation information (e.g., a voucher ticket, validation number, and/or amount) is sent to the mobile device via the short-range

50 is illustrated in annotated Figure 3A below:



c. Summary of Sugimoto

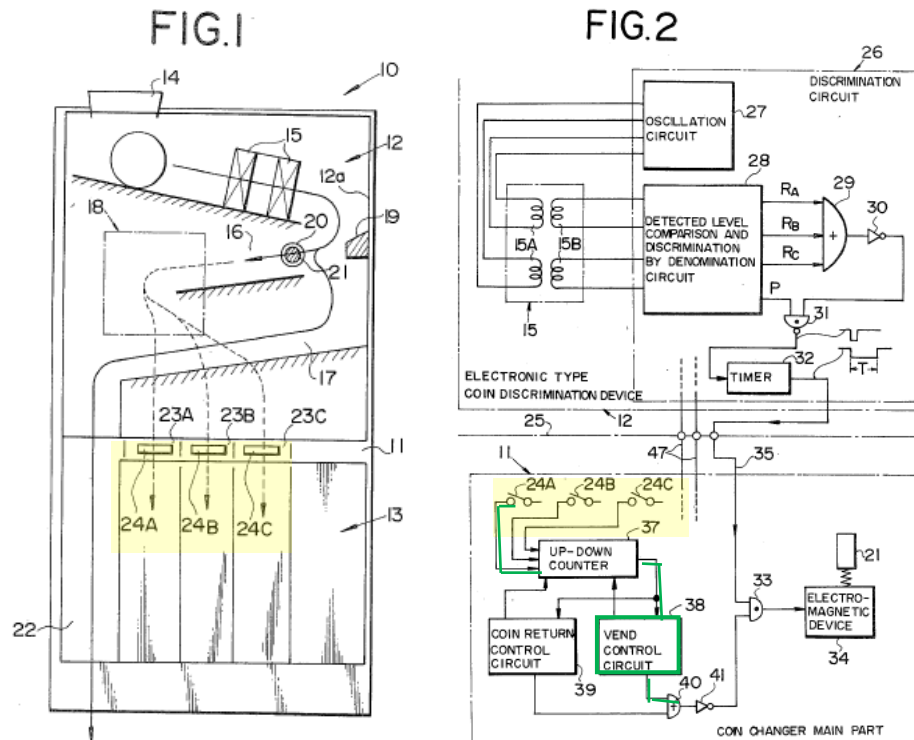
43. U.S. Patent No. 4,374,557 to Sugimoto et al. (“Sugimoto”) relates to vending machine circuitry and, in particular, the mechanical and electrical signals transmitted between coin switches and machine controller circuitry. Sugimoto discloses a coin changer for a vending machine comprising a coin changer main part and an electronic type coin discrimination device. Sugimoto at Abstract. The coin changer main part of Sugimoto “comprises coin switches for detecting coins of

respective denominations” with a receiving device for “receiving the coins which have passed through the coin switches.” Sugimoto at Abstract.

44. Sugimoto explains that the coin changer first sorts out coins by denomination, and then transfers the coins to the main part of the coin changer through passages 23A, 23B, and 23C. Sugimoto at 4:13-33. “Coin switches 24A, 24B, and 24C are provided in these passages 23A, 23B and 23C.” Sugimoto at 4:13-33. “Each of the coin switches 24A, 24B and 24C is actuated in response to passing of each coin and produces a coin detection pulse corresponding to weight of the coin of each denomination (i.e., amount of the coin).” Sugimoto at 7:30-51.

45. Once these analog detection pulses representing a single coin of a predetermined type are produced through actuation of the coin switches, the pulses “are applied to an up-down counter 37 in which an amount of deposited coins is counted by cumulatively adding amounts of the deposited coins.” Sugimoto at 5:31-66. A “vend control circuit 38 compares contents of the counter 37 (the amount of the deposited coins) [obtained by the analog coin pulses generated by the coin switches] with a preset vend price of the article to be [v]ended and thereupon supplies a vend possible signal to a vender unit” which “dispenses the selected article in response to this vend possible signal.” Sugimoto at 5:31-66. The vend control circuit 38 “also subtracts the price of the vended article from the contents of the counter 37.” Sugimoto at 5:31-66. “A coin return control circuit 39 controls payout

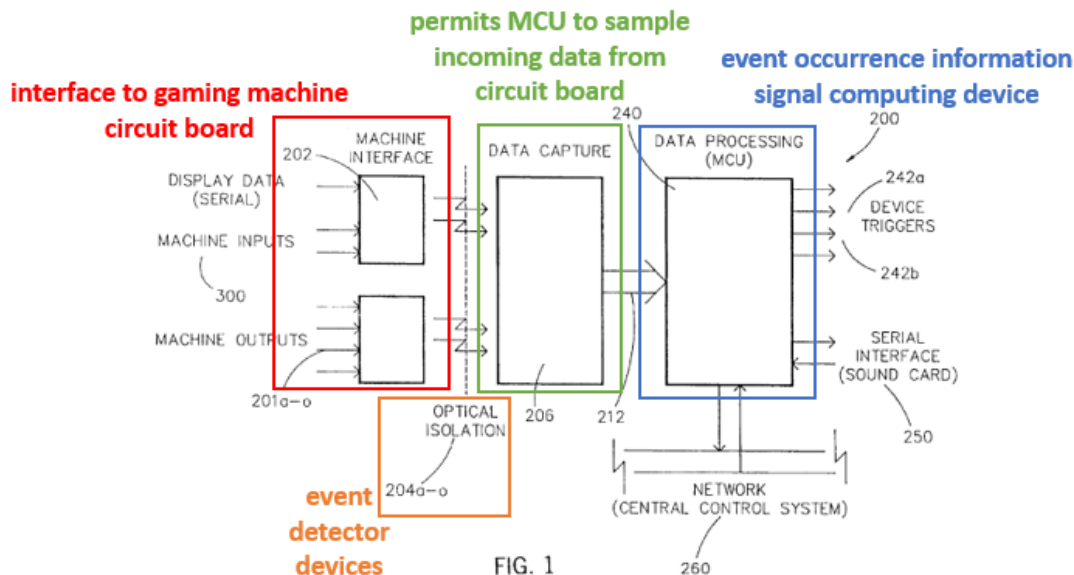
1 and 2 below:



d. Summary of Okuniewicz

46. U.S. Patent No. 6,840,860 to Okuniewicz (“Okuniewicz”) provides “a printing and dispensing bonusing system for electronic gaming devices, particularly a casino gaming device.” Okuniewicz at Abstract. The electronic gaming machine of Okuniewicz includes an electronic activity detector and command generator that is retrofit to the circuit board of an electronic device (such as a casino gaming device.) Okuniewicz at Abstract, 7:11-28, Fig. 1.

47. Okuniewicz explains that “there is a need for an electronic activity detector and command generator which is capable of detecting event occurrences on the circuit board of a gaming device and then issue appropriate demands in response to those event occurrences which will cause connected output devices to perform designated tasks.” *Id.* at 3:48-53. The electronic activity detector and command generator “will identify that an event is taking place within the machine” and “recognize[] the event and dictate[] the proper response,” which in Okuniewicz includes providing a printing and dispensing bonusing system for electronic gaming devices (e.g., casino gaming devices.). Okuniewicz at 3:54-59, 5:31-33. The electronic activity detector and command generator (200) is illustrated in annotated Figure 1 below:



48. With respect to the retrofit electronic activity detector and command generator, Okuniewicz explains that it “includes a machine interface 202 which consists of the connection of the programmable electronic activity detector and command generator 200 to the circuit board 300 of an electronic device,” for instance, a slot machine. Okuniewicz at 7:13-24. The machine input/output is either sampled on the circuit board itself or the gaming machine may include a wiring harness for simple connection. Okuniewicz at 7:13-24. In addition to the machine interface 202, the electronic activity detector and command generator includes event detector devices 204*a-o* (e.g., optical readers, electromagnetic pulse detectors, etc.) that are configured to detect when an event occurs on the machine output lines 201*a-o* and signify the occurrence of the event by transferring an event occurrence notification signal to the data capture segment 206. Okuniewicz at 7:29-46, 11:14-24. The data capture segment 206 receives the event occurrence notification signal and interfaces the signal to the event occurrence information signal computing device (MCU 240.) Okuniewicz at 7:46-52. Okuniewicz teaches that obtaining the notification from the offline payment-operated machine includes sampling the control signals from the control unit. For instance, data capture device 206 permits the MCU 240 to sample the incoming data to determine event occurrences on circuit board 300 of the gaming machine, for instance, by clock pulse synchronization or multiplexing in which the MCU 240 is programmed to periodically poll each of the

input registers to determine if an event has occurred. Okuniewicz at 8:1-10. The MCU “detects that a designated event has occurred in the slot machine by a match of a selected event occurrence information signal and an event held within the table” and “generates a command signal which is sent to connected output devices.” Okuniewicz at 9:11-15. The command signal is sent via a simple command pulse or device trigger or via a serial interface. Okuniewicz at 8:60-66, 9:15-23.

49. Okuniewicz further teaches vending machine functionality for a casino gaming machine, describing that “the system would include a dispensing device which could be a vending device or the like which operative to output bonus items including coin, cash, bonus tickets, lottery tickets, scratch off tickets, complimentaries, promotional materials, and other such bonus awards” or other bonusing items such as plush toys, vouchers for meals, and coupons. Okuniewicz at 15:43-48, 4:21-24.

B. Reasons to Combine Secondary Prior Art References with Laaroussi

a. Reasons to Combine Laaroussi and LeMay

50. It would have been obvious, beneficial, and predictable for Laaroussi’s currency media reader hub to account for currency values into and out of the gaming machine, for example, via soft meters and to accept virtual ticket vouchers, for instance, via a patron-controlled portable electronic device such as a smart phone. Doing so would have further enhanced the stated objectives of Laaroussi’s system,

including to “provide[] a currency media reader hub adapted to account an amount of money stored in a virtual currency media,” to “emulat[e] a gaming machine to accept money from peripherals installed thereon,” and “to transfer an amount of money from the virtual currency holding media to a gaming machine either automatically or by user request.” Laaroussi at [0015], [0021], [0023].

51. As an initial matter, one of ordinary skill in the art when considering the teachings of Laaroussi would have also considered the teachings of LeMay because they are both analogous art to each other and to the disclosures of the ‘608 patent. Both Laaroussi and LeMay relate to gaming machines with retrofit devices for accepting virtual currency. Laaroussi at [0010], [0061]; LeMay at Abstract, 1:8-12, 4:19-22. In particular, both describe in detail virtual currency devices that are retrofitted between the gaming machine controller and a peripheral component such as a currency (e.g., bill, coin, ticket) acceptor and capable of emulating, for example, a bill acceptor or coin module. Laaroussi at [0017], [0031], [0059-60]; LeMay at 24:14-27, 24:52-64. As such, both Laaroussi and LeMay are analogous art to each other and to the ‘608 patent. Laaroussi at [0002], [0010-11], [0013], [0017], [0021], [0023-24], [0031-32]; LeMay at Abstract, 22:64-23:11, 23:44-52, 24:52-64, 25:39-56; ‘608 patent at 1:41-52, 5:50-61, 6:1-8, 8:4-7.

52. In addition, LeMay identifies and solves known issues with accounting labor costs from using physical currency in electronic gaming machines (“EGMs.”)

For instance, LeMay explains that labor costs are significant and “involve periodically removing a cash box including received tickets and cash from the EGM and replacing it with an empty one, counting the cash and tickets removed from the EGM and refilling the ticket stacks on the EGM.” LeMay at 1:41-51. LeMay also acknowledges that other cash handling configurations, including coin acceptors and coin dispensers, involve similar labor costs (e.g., periodically removing, adding, and counting coins.). LeMay at 1:41-51. LeMay describes systems for providing virtual ticket voucher functionality that provides advantages such as reducing the material costs and environmental impact of having to refill a blank ticket stack, as well as reducing labor costs associated with refilling tickets, removing and replacing a full cash box, and simplifying the soft count process. LeMay at 15:9-25. A POSITA would have been motivated to modify Laaroussi in view of LeMay’s teachings to achieve the reductions in labor and material costs described by LeMay. Indeed, the gaming machine in Laaroussi also historically dealt with collection of physical cash and coins in the machine that would be reduced from implementing not only the cashless transactions disclosed by Laaroussi, but also by incorporating the additional wireless communications described by LeMay, such as using a mobile device to initiate cashless machine operation with several short-range wireless protocols.

53. Furthermore, Laaroussi describes that objects of the invention include providing a currency media reader hub adapted to account an amount of money

stored in a virtual currency holding media and providing a system adapted to manage gaming machines using only cash-in and cash-out transactions. Laaroussi at [0015], [0025]. Laaroussi acknowledges that gaming machines accept payment in the form of tickets, but does not specifically address how virtual ticket currency would be handled in a way that satisfies its objectives. Laaroussi at [0003]. LeMay provides detail about how a retrofit device can be configured to accept E-cash and virtual ticket vouchers, issue E-cash and virtual ticket vouchers, maintain soft meters (e.g., v-ticket-in, v-ticket-out, total value meters for accounting purposes), and report soft meter values to a remote device via a wired or wireless interface. LeMay at 23:53-63, 21:19. A POSITA would have recognized that the teachings of LeMay were helpful in achieving the objectives stated by Laaroussi. For example, where Laaroussi states that “[t]he currency media reader hub 200 will account for any currency transferred in or out of the gaming machine 180 and link it to” the virtual currency holding media, LeMay provides additional detail as to how such a module accounts for currency transferred in or out of the gaming machine (e.g., via soft meters) and link it to the virtual currency holding media belonging to the player (e.g., by storing unique device identification information associated with the user’s portable electronic device and associating that information with an issued virtual ticket voucher). Laaroussi at [0066]; LeMay at 23:53-63, 11:40-52.

54. As admitted by the '608 patent, there was a large development effort around bringing mobile payment to the retail sector in an effort to provide options to the user and to increase convenience, and mobile payment was a logical extension of use for Internet-connected mobile devices. '608 patent at 1:64-2:2. LeMay describes such an effort for bringing mobile payments via smart phones and tablets to gaming machines. LeMay at Abstract, 2:12-28, 31:39-59, 32:7-18. In particular, LeMay teaches that a wireless interface transmits and receives virtual ticket voucher information from a portable mobile device. LeMay at 15:65-16:12. LeMay's device is retrofit into an existing electronic gaming machine that does not provide virtual ticket voucher functionality, such that the gaming controller remains unmodified. LeMay at 15:31-35, 22:64-23:1. LeMay describes that the retrofit device is interposed between the bill validator and the game controller and performs peripheral device emulation. LeMay at 27:11-31. Similarly, Laaroussi describes that the currency media reader hub is connected in series between a bill acceptor and the electronic system of the gaming machine and performs peripheral device emulation. Laaroussi at [0059-61]. Modifying Laaroussi's currency media reader hub to include the virtual ticket voucher functionality and short-range wireless interfaces of the retrofit device taught by LeMay would have been well within the level of ordinary skill in the art, as Laaroussi already described communicating with an RFID device which would also use short-range wireless communication between the currency

media reader hub and the virtual currency holding media. In addition, the modification of Laaroussi in view of LeMay would not have required any undue experimentation by a POSITA because the POSITA would have merely needed to modify the currency media reader hub to receive and transmit communications to mobile devices using other known short-range wireless protocols such as Bluetooth and NFC described by LeMay, and doing so would have yielded predictable results—the ability to transmit and receive messages using these known protocols to initiate the cashless transactions.

55. Accordingly, the combination of Laaroussi and LeMay represents applying a known technique (accepting and issuing virtual ticket vouchers at a retrofit device and accounting for tickets and ticket values in and out of a gaming machine) to a known device ready for improvement (Laaroussi’s currency media reader hub) to yield predictable results (a retrofit device for a gaming machine that handles multiple forms of virtual currency and communicates wirelessly with a mobile device for the purpose of cashless transactions on the gaming machine).

b. Reasons to Combine Laaroussi and Sugimoto

56. A POSITA would have been motivated to combine the teachings of Laaroussi with those of Sugimoto. First, it would have been obvious, beneficial, and predictable to use Sugimoto’s coin switches in Laaroussi’s “coins receiving module.” Where Laaroussi’s system describes “an amusement machine or a gaming

machine adapted to receive bills and coins respectively with a bills receiving module 164.1 and a coins receiving module 164.2” and that “[t]he receiving modules 164.1, 164.2 are operatively connected with the gaming machine 180 using either a pulse string communication mode 202 or a serial port communication mode 204,” Sugimoto provides teachings for such a mechanism generating pulses based on the denominations of specific coins. Laaroussi at [0058].

57. One of ordinary skill in the art when considering the teachings of Laaroussi would have also considered the teachings of Sugimoto. Both Laaroussi and Sugimoto relate to coin receivers for unattended retail machines that communicate via pulse strings generated from coin receiving units on the machines. See Laaroussi at [0058], [0059], [0060]; Sugimoto at 1:5-8, 2:64-3:4, 5:31-66. As such, both Laaroussi and Sugimoto are analogous art to each other and to the ‘608 patent. Laaroussi at [0002], [0010-11], [0013], [0017], [0021], [0023-24], [0031-32], [0058-60]; Sugimoto at 1:5-8, 2:64-3:4, 5:31-66; ‘608 patent at 1:32-52, 5:50-61, 6:1-29, 8:4-7, 15:66-16:22.

58. Sugimoto describes a coin changer for a vending machine. In particular, Sugimoto describes coin changer systems for providing separate coin discrimination modules and coin counting and receiving modules with detail regarding how coin switches generate electrical pulses from the passing of a physical object, such as a coin, through the switch. Sugimoto at 1:9-40, 5:30-66. A POSITA would have been

motivated to modify Laaroussi in view of Sugimoto's teachings at least because Sugimoto provides additional detail about a known component in Laaroussi (e.g., a coins receiving module). Because Laaroussi relies on the same component for receiving coins described in Sugimoto, a POSITA would have been motivated to modify Laaroussi with the teachings of Sugimoto to further enhance the coin changer functionality of the vending machine. A POSITA would have been further motivated by Sugimoto's teachings on cost savings for repairs by including a coin changer that is compatible with either mechanical or electrical coin discriminators. Furthermore, where Sugimoto describes a control circuit provided on the side of the coin changer (e.g., a vending control circuit), a POSITA would have been able to adapt the teachings of Sugimoto to the system of Laaroussi by connecting Sugimoto's coin changer main part to a gaming controller instead of Sugimoto's vending control circuit or by incorporating the internal components (e.g., the coin switches, coin discriminator) into the coins receiving module of Laaroussi. Sugimoto at 5:31-47.

59. Laaroussi describes that gaming machines are generally equipped with a coins receiving module to receive money from a player, that a currency media reader hub is connected in series between such a coins receiving modules and the electronic system of the gaming machine, and that the currency media reader automatically selects the proper communication language (e.g., a pulse string communication mode) but does not specifically describe how coins are accepted, detected, and how

coin signals (e.g., pulses) are generated. Laaroussi at [0059-60]. Sugimoto, however, provides detail about how coin switches for detecting passing coins are provided through which coins of respective denominations pass, detection pulses are generated, and the numbers of coins of the respective denominations are counted. Sugimoto at 2:64-3:4. A POSITA would have recognized that the teachings of Sugimoto were helpful in achieving the objectives stated by Laaroussi. For example, where Laaroussi states that “receiving modules 164.1, 164.2 are operatively connected with the gaming machine 180 using either a pulse string communication mode 202 or a serial port communication mode 204” and that “a communication protocol is used to transmit signals from the receiving modules 164 to the gaming machine 180 in accordance with the amount of money received by the receiving modules 164,” Sugimoto provides additional detail as to how such a coins receiving module determines the amount of money received by the receiving modules (e.g., number and denominations) using coin switches. Laaroussi at [0058]; Sugimoto at 5:31-66.

60. Accordingly, the combination of Laaroussi and Sugimoto represents applying a known technique (determining the amount of money inserted into a coins receiving module via coin switches) to a known device ready for improvement (Laaroussi’s gaming machine with a coins receiving module) to yield predictable results (a gaming machine with a coins receiving module capable of counting the

number and currency denominations of coins that are entered, and communicating the number and currency denominations via pulse communications to the gaming machine).

c. Reasons to Combine Laaroussi and Okuniewicz

61. A POSITA would have been motivated to combine the teachings of Laaroussi with those of Okuniewicz. For instance, it would have been obvious, beneficial, and predictable for Laaroussi's currency media reader hub to sample incoming data (control signals) to determine event occurrences on the circuit board of the gaming machine. Doing so would have further enhanced the stated objectives of Laaroussi's system, including to "emulat[e] a gaming machine to accept money from peripherals installed thereon" by providing a specific implementation of that objective. Laaroussi at [0021]. Where Laaroussi's system describes that the currency media reader hub is "a physical apparatus generally adapted to be installed on existing gaming machines" that is "retrofitted on existing gaming machines," where the currency media reader hub is "connected in series between the receiving modules 164.1, 164.2 and the electronic system of the gaming machine 180" and "witnesses each money transaction (e.g., debit/credit) performed by the gaming machine," Okuniewicz provides teachings for how to use sampling techniques of signals provided to the control unit of the gaming machine in order to help generate

notifications to be transmitted to the retrofit device. Laaroussi at [0059]; Okuniewicz at 3:38-53, 7:11-28.

62. One of ordinary skill in the art when considering the teachings of Laaroussi would have also considered the teachings of Okuniewicz. Both Laaroussi and Okuniewicz relate to gaming machines with retrofit devices that interface with the gaming machine controller to communicate messages between the retrofit device and the machine controller related to operation of the machine. See Laaroussi at [0010], [0021], [0025], [0055], [0059-60]; Okuniewicz at Abstract, 3:29-53, 3:67-4:5, 7:11-28. As such, both Laaroussi and Okuniewicz are analogous art to each other and to the '608 patent. Laaroussi at [0002], [0010-11], [0013], [0017], [0021], [0023-24], [0031-32]; Okuniewicz at Abstract, 3:38-53, 1:34-36, 5:13-23, 6:21-26, 6:31-38; '608 patent at 1:41-52, 5:50-61, 6:1-8, 8:4-7.

63. Furthermore, Okuniewicz describes an electronic activity detector and command generator for a gaming machine such as a slot machine. In particular, Okuniewicz describes an "add-on electronic activity detector" that is "incapable of influencing the outcome probabilities of the gaming device" that can detect such occurrences such as "a bill accepted into the machine, a jackpot being hit, coin in, coin out and other display data" so that event occurrences on the circuit board of a gaming device can be detected and appropriate demands issued in response. Okuniewicz at 3:33-53. A POSITA would have been motivated to modify Laaroussi

in view of Okuniewicz's teachings at least because Okuniewicz provides additional detail on monitoring the flow of information from the machine controller and how signals that are processed and transmitted between a retrofit device and game controller, where Laaroussi describes that a connection is made between two devices (a retrofit currency media reader hub and a gaming machine controller) at a higher level without the level of detail of this information flow monitoring provided by Okuniewicz. A POSITA would have been further motivated by Okuniewicz's teachings on sampling input and control signal data such that the signals are not tampered with in order to conform to gaming regulations.

64. Laaroussi describes a currency media reader hub is connected in series between a coins receiving modules and the electronic system of the gaming machine, and that the currency media reader automatically selects the proper communication language (e.g., a pulse string communication mode) to communicate. Laaroussi at [0059-60]. Okuniewicz provides detail about how such a connection is made to the circuit board of a gaming machine. Okuniewicz at 7:11-28. A POSITA would have recognized that the teachings of Okuniewicz were helpful in achieving the objectives stated by Laaroussi. For example, where Laaroussi states that "receiving modules 164.1, 164.2 are operatively connected with the gaming machine 180 using either a pulse string communication mode 202 or a serial port communication mode 204" and that "a communication protocol is used to transmit signals from the receiving

modules 164 to the gaming machine 180 in accordance with the amount of money received by the receiving modules 164,” Okuniewicz provides additional detail as to how such input and output signals can be intercepted and sampled such that a designated event is detected as occurring in the gaming machine and an appropriate command signal (e.g., a command pulse or serial format command signal) is output by the detecting device. Laaroussi at [0058]; Okuniewicz at 7:11-8:19, 9:11-23.

65. Accordingly, the combination of Laaroussi and Okuniewicz represents applying a known technique (sampling control signals from the circuit board of a gaming machine) to a known device ready for improvement (Laaroussi’s currency media reader hub connected to and configured to emulate a gaming machine) to yield predictable results (a currency media reader hub configured to sample control signals from the circuit board of a gaming machine in order to emulate the control signals from the circuit board of a gaming machine).

C. Ground 1: Claims 1-3, 5, 7-9, 11, 13-15, 17, and 19-20 are obvious under 35 U.S.C. § 103 over Laaroussi in view of LeMay and Sugimoto

1. Claim 1

[1(pre)] A payment module for an offline payment-operated machine including a coin receiving switch, the payment module comprising:

66. Laaroussi renders obvious a payment module for an offline payment-operated machine including a coin receiving switch. In particular, Laaroussi describes a currency media reader hub (“payment module”) for an offline gaming

machine (“offline payment-operated machine”) that includes a coins receiving module/currency receiver module/peripheral component (“coin receiving switch”). As such, Laaroussi renders obvious “*a payment module for an offline payment-operated machine including a coin receiving switch,*” as claimed.

67. Laaroussi discloses a “payment module.” For example, Laaroussi describes a “currency media reader hub adapted to be retrofitted in a gaming machine and to interconnect various existing components thereof.” Laaroussi at [0002]. “The gaming machine 180 is . . . adapted to receive bills and coins respectively with a bills receiving module 164.1 and a coins receiving module 164.2,” which are “generally physically installed on the gaming machine 180 to receive physical money from a player.” Laaroussi at [0058]. “The currency media reader hub 200 is a physical apparatus generally adapted to be installed on existing gaming machines 180. . . . The currency media reader hub 200 is then connected in series between the receiving modules 164.1, 164.2 and the electronic system of the gaming machine 180.” Laaroussi at [0058].

68. Laaroussi also discloses an “offline payment-operated machine.” For instance, Laaroussi discloses a “gaming machine” retrofitted with the currency media reader hub, and the currency media reader hub communicates with a remote server over a network such as the Internet. Laaroussi at [0012]. The gaming machine can be a vintage gaming machine with a “primary controller providing the

intelligence of the machine” and an “input output controller adapted to communicate with exterior components.” Laaroussi at [0055]. The currency media reader hub, as the unit that communicates with a remote server via a network, stores all transactions such that the gaming machine is “operational and can be used by players when disconnected from its network.” Laaroussi at [0067], [0002] (describing retrofitting a conventional gaming machine with a currency media reader adapted to connect to a network for remote management of payment). As such, a POSITA would recognize that the gaming machine of Laaroussi, particularly in the vintage embodiments, is an “offline payment-operated machine” that may be connected to an online network through a payment module. This is further confirmed by the ‘608 patent, which describes the machines as operational when the network connection is temporarily unavailable. ‘608 patent at 6:30-48.

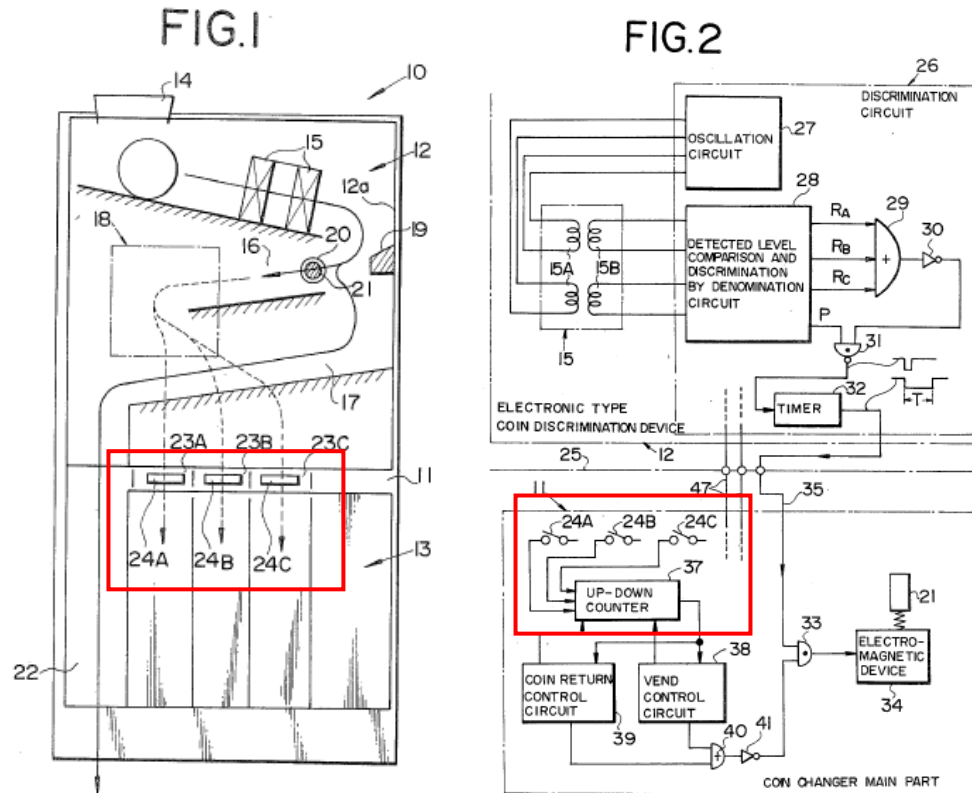
69. Laaroussi further discloses a “coin receiving switch.” The gaming machine of Laaroussi includes a “peripheral component” installed thereon. Laaroussi at [0010], [0011]. The peripheral component, as one example, “could be a money acceptor peripheral to transfer money to the gaming machine.” Laaroussi at [0011]. One such money acceptor peripheral described by Laaroussi is a “coin acceptor” or “coin receiving module” physically installed on the gaming machine. Laaroussi at [0021], [0024], [0058]. A POSITA would have understood peripherals such as a coin acceptor or coin receiving module to include a “coin receiving switch” because they

accept coins of a predefined amount and, in response, send signals such as pulses to begin operation of the gaming machine. Laaroussi at [0058] (describing coin receiving module 164.2 as “operatively connected with the gaming machine 180 using either a pulse string communication mode 202 or a serial port communication mode 204,” where the signals are communicated “in accordance with the amount of money received by the receiving modules 164”). Indeed, the ‘608 patent describes this process very similarly. ‘608 patent at 39:49-40:11.

70. Furthermore, it would have been obvious for a POSITA to incorporate a microswitch into the coins receiving module of Laaroussi. For example, the ‘608 patent specification explains that a leveraged microswitch, such as the off-the-shelf “CHERRY BRAND” microswitch, could be “incorporated into a coin slot of the offline-payment operated machine” such that the lever of the microswitch is “depressed whenever a coin slides down the coin slot into a coin reservoir of the offline-payment operated machine.” ‘608 patent at 39:57-65. The depression of the lever causes the switch to close, which allows the control unit of the machine to receive a pulse—or payment acceptance signal—from the microswitch indicating a coin has been received. ‘608 patent at 39:65-40:6. Laaroussi discloses a coins receiving module operatively connected to a gaming machine which, in response to receiving a coin, sends a pulse string communication to the gaming machine. Laaroussi at [0058]. Incorporating a known microswitch into the coins receiving

module would have been understood by a POSITA as one simple mechanism to transmit this pulse to the gaming machine. Indeed, generating pulses via a coin passing through a microswitch is a known method to yield the predictable result of pulse generation, long known in the art.

71. A POSITA would have also found it obvious to incorporate into the coins receiving module of Laaroussi the coin receiving mechanism, including coin switches, as taught by Sugimoto. Sugimoto teaches a coin changer for mounting to a vending machine that includes “a coin changer main part and an electronic type coin discrimination device.” Sugimoto at Abstract. “The coin changer main part comprises coin switches for detecting coins of respective denominations having been sorted out by the sort-out device,” and a “coin receiving device for receiving the coins which have passed through the coin switch.” Sugimoto at Abstract.



72. In Sugimoto, once coins enter the receiver and have been sorted based on denomination, “coin switches for detecting passing coins are provided in suitable places in coin passages of the coin changer main part through which coins of respective denominations having been sorted out by the coin discrimination device pass and the number of coins of the respective denominations are counted in accordance with the output of these coin switched.” Sugimoto at 2:64-3:19, Figs. 1-2 (at 24A, 24B, and 24C). “When the coin discrimination device 12 is accurately mounted in the main part 11, coins which have been sorted out by denomination by the sort-out device 18 are received in the coin receiving device 13 denomination by

denomination through passages 23A, 23B and 23C formed in the main part 11 for the respective denominations. Coin switches 24A, 24B and 24C are provided in these passages 23A, 23B and 23C. Each of the coin switches 24A, 24B and 24C is actuated in response to passing of each coin and produces a coin detection pulse corresponding to weight of the coin of each denomination (i.e., amount of the coin).” Sugimoto at 4:13-33, 7:30-51 (discussing detection pulses produced by the actuation of each coin switch).

73. A POSITA would have been motivated to implement Sugimoto’s technique of using the coin switches in the coins receiving module of the Laaroussi system. In particular, a POSITA would have been motivated to use the coin switches taught by Sugimoto in Laaroussi’s coins receiving module in order to detect coins of a particular denomination and send pulses to the gaming machine that represent the value of coins received by the coins receiving module. Laaroussi at [0058] (describing coin receiving module 164.2 as “operatively connected with the gaming machine 180 using either a pulse string communication mode 202 or a serial port communication mode 204,” where the signals are communicated “in accordance with the amount of money received by the receiving modules 164”). There are a limited number of identified and predictable solutions for generating pulses from a coin receiver, and incorporating the coin switches from Sugimoto into the coins receiving module of Laaroussi would have encompassed such a known and

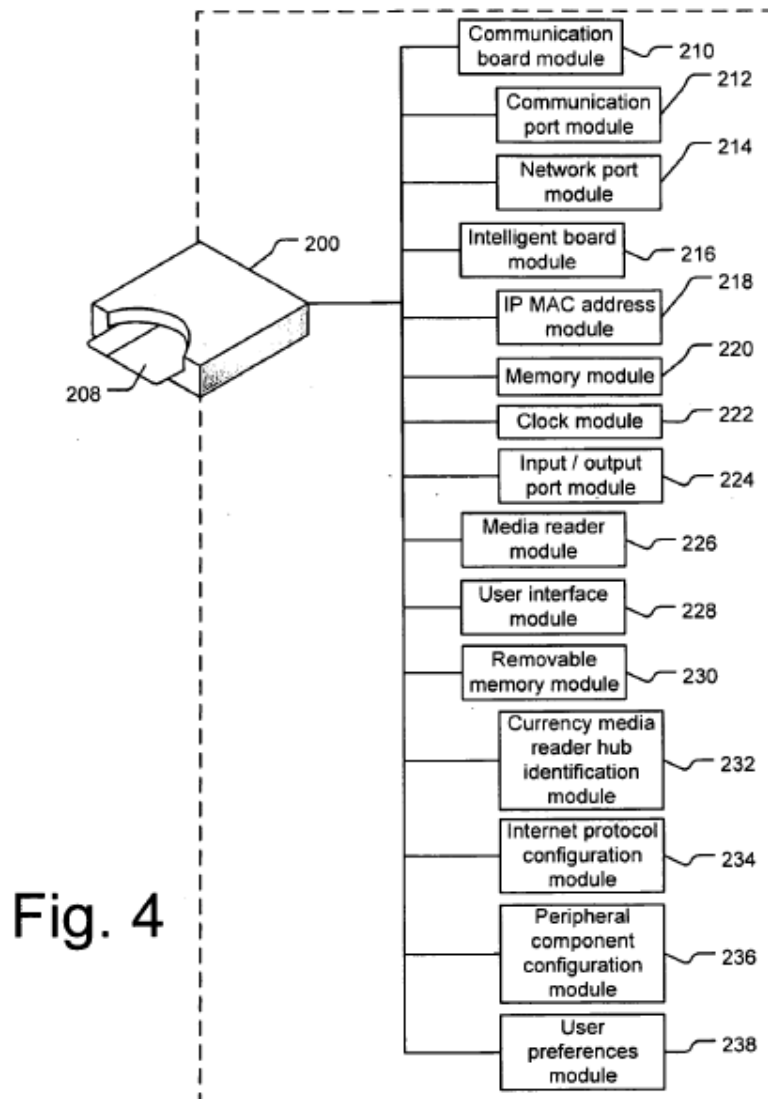
predictable solution for generating these pulse string communications in the manner described by Sugimoto.

74. Thus, because Laaroussi describes a currency media reader hub that is retrofitted to an offline gaming machine with a coins receiving module, where the currency media reader hub connects to a network for payments, Laaroussi renders obvious a “*payment module for an offline payment-operated machine including a coin receiving switch,*” as claimed. Alternatively, because Laaroussi discloses a coins receiving module operatively connected to the currency media reader hub of a gaming machine, and a POSITA would have found it obvious to incorporate the coin switches taught by Sugimoto into the coins receiving module of Laaroussi, Laaroussi in view of Sugimoto renders obvious this limitation.

[1(a)] a short-range wireless transceiver configured to communicate with one or more mobile devices,

75. Laaroussi renders obvious “*a short-range wireless transceiver configured to communicate with one or more mobile devices,*” as claimed.

76. Figure 4 of Laaroussi describes that the currency media reader hub includes a plurality of modules interacting together to provide certain functions.



77. For instance, the currency media reader hub “allows a player to prove that s/he is the holder [of] a determined amount of money that can be used in the gaming machine 180.” Laaroussi at [0061]. Laaroussi explains that a player’s money can be “virtually secured” in some medium, such as a “chip-equipped card,” an RFID device, or “any other virtual currency holding media suitable to carry virtual money.” Laaroussi at [0061]. The person can make use of the virtual money through

interaction with the currency media reader hub, which has both a reading and writing capability. Laaroussi at [0061]. A POSITA would appreciate that virtual currency holding media such as the “chip-equipped card” or “RFID device” in Laaroussi use short-range wireless communications, because these communication protocols are specifically used for wireless transmission over short distances. Furthermore, the ‘608 patent acknowledges that RFID and other wireless technologies capable of communicating a small distance are “short-range communication technology.” ‘608 at 9:54-64.

78. A POSITA would also understand that for the currency media reader hub in Laaroussi to interact with an RFID-enabled device, the currency media reader hub would include a transceiver for short-range wireless communication configured to communicate with the mobile, RFID-enabled device. For instance, Laaroussi discloses a “media reader module” for communication between the currency media reader hub and the virtual currency holding media, such as the RFID device, which a POSITA would understand to include a transceiver configured to communicate wirelessly between the currency media reader hub and virtual currency holding media, as RFID systems use RF transceivers to communicate. Ex.1012 at 10 (noting that an “Interrogator” in one RFID device transmits information to a “Tag” in another RFID device using radio waves of a specific range of frequencies, whereby

79. Thus, Laaroussi renders obvious a “*short-range wireless transceiver configured to communicate with one or more mobile devices.*”



47

FIGS. 3A and 3B, an EGM retrofitted with one or more devices that provide virtual ticket-in and/or virtual ticket-out services is described.” LeMay at 5:5-13. The portable electronic device, such as that depicted as element 34 of Figure 1, may be a “smartphone or a tablet computer,” such as an iPhone or iPad. LeMay at 31:39-59.

82. LeMay depicts an electronic gaming machine “where the game controller remains unmodified and where virtual ticket-in/ticket-out functions are performed by retrofit devices, such as a retrofit printer and/or a retrofit bill/ticket acceptor.” LeMay at 15:27-37. The “retrofit device 52 [on the electronic gaming machine 2] can be configured with device emulation 77. The device emulation 77 can allow the retrofit device 52 to respond to game controller 50 as if it were another device on the EGM 2.” LeMay at 24:14-27.

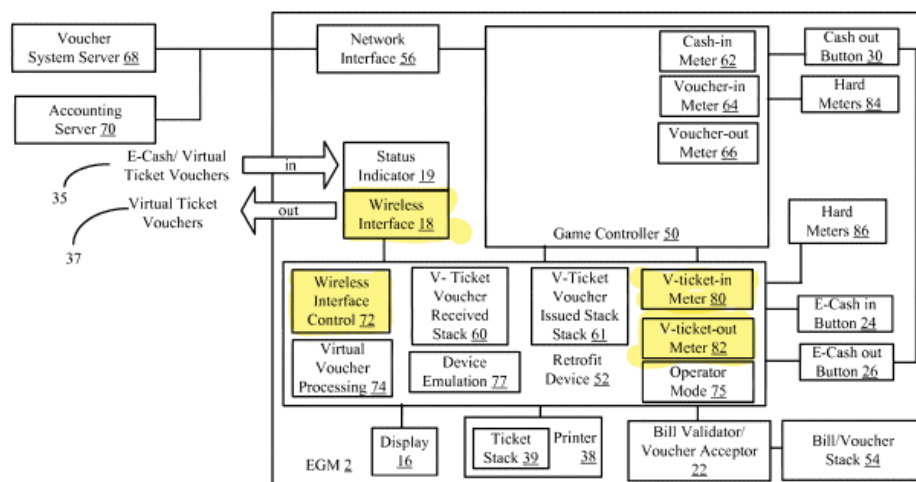


Fig. 3A

83. The retrofit device 52 on electronic gaming machine (“EGM”) 2 includes a wireless interface control 72 connected to wireless interface 18 accepting E-Cash/virtual ticket vouchers 35 into the EGM. LeMay at Fig. 3A. “The control of the wireless interface 18, such as powering it on and off in response to certain events, establishing communication sessions with portable electronic devices and sending information via the wireless interface 18, can be handled by the wireless interface control 72” of the retrofit device 52. LeMay at 15:56-64. A POSITA would understand the wireless interface control 72 of retrofit device 52 to include a “*wireless transceiver*” (wireless interface 18 coupled to interface control 72) that is “*configured to communicate with one or more mobile devices*” (portable electronic device 34). Indeed, Bluetooth communication requires the use of RF transceivers to transmit radio waves between Bluetooth-enabled devices. Ex. 1011 at 89 (“The Bluetooth core system consists of an RF transceiver, baseband, and protocol stack. . . .The Bluetooth RF (physical layer) operates in the unlicensed ISM band at 2.4 GHz. The system employs a frequency hop transceiver to combat interference and fading and provides many FHSS carriers.”), 108 (“Two [Bluetooth] devices that wish to communicate use a shared physical channel for this communication. To achieve this, their transceivers must be tuned to the same RF frequency at the same time, and they must be within a nominal range of each other.”).

84. Furthermore, LeMay teaches that the “wireless interface 18 can be configured to receive information . . . from a portable electronic device 34,” such as by near field communication (NFC) protocol “designed with a communication range of 4 cm or less.” LeMay at 6:34-50. Other protocols such as Bluetooth may also be used for communication between wireless interface 18 and the portable electronic device. LeMay at 13:51-63. A POSITA would thus understand that the wireless interface 18 coupled to wireless interface control 72 (“*wireless transceiver*”) is a “*short-range wireless transceiver*” because it communicates with mobile devices using short-range communication protocols like NFC and Bluetooth. The ‘608 patent acknowledges that both NFC and Bluetooth are short-range wireless protocols. ‘608 patent at 9:54-64 (describing Bluetooth and NFC as short-range communication protocols).

85. A POSITA would have been motivated to implement LeMay’s wireless interface coupled to an interface control to the currency media reader hub of Laaroussi’s system. In particular, a POSITA would have been motivated to incorporate a wireless transceiver into the currency media reader hub configured to communicate via short-range communication protocols because Laaroussi describes one purpose of the currency media reader hub is to receive transaction information from a virtual currency holding media and has the capability of wirelessly connecting to a network. Using a wireless transceiver to communicate via

short-range communication protocols with a mobile device for E-cash and virtual ticket vouchers—like the disclosure taught by LeMay—achieves the very same purpose as the transmission of transaction information from virtual currency holding media to the currency media reader hub disclosed in Laaroussi.

[1(b)] one or more processors,

86. Laaroussi renders obvious that the payment module comprises one or more processors.

87. For example, Laaroussi describes exemplary architecture in which aspects of the invention are implemented, including multiprocessor systems and microprocessor-based or programmable consumer electronics, minicomputers, set top boxes, etc. Laaroussi at [0051]. A POSITA would have understood the currency media reader hub of Laaroussi to include such a processor at least because the functionality that the currency media reader hub must satisfy (e.g., connecting to the Internet, uploading data to a database, etc.) would require one or more processors.

88. For instance, the currency media reader hub contains numerous modules, including a “currency media reader module” capable of communicating with a virtual currency holding media, and an intelligence board connected to a communication board for providing information for providing information to the network. Laaroussi at [0030], Fig. 4. The currency media reader hub also includes “both reading and writing capabilities” for transaction information from the virtual

currency holding media. Laaroussi at [0061]. As such, a POSITA would understand that one or more processor are included in the currency media reader hub in order to perform this signal processing and transaction information processing.

89. A POSITA also would have found it obvious to incorporate the virtual voucher processing unit from LeMay into the currency media reader hub of Laaroussi. LeMay describes a retrofit device 52 with a virtual voucher processing unit 74, which “can be configured to perform virtual voucher processing.” LeMay 1006 at 23:44-52. Through this unit, the retrofit device can accept and issue virtual ticket vouchers and maintain soft meters, such as v-ticket-in and v-ticket-out meters. LeMay at 23:53-63. As such, the retrofit device “can include a processor and memory for updating the software meters and a non-volatile memory for storing the soft meter values.” LeMay at 23:53-63.

90. A POSITA would have been motivated to implement LeMay’s retrofit device processor into the currency media reader hub of Laaroussi. For instance, like the currency media reader hub of Laaroussi that negotiates transactions between the virtual currency holding media, upon processing of the virtual ticket and meter information by the retrofit device in LeMay, the retrofit device can exchange this information with a portable electronic device such as a smartphone. A POSITA would have been motivated to include such a processor in the currency media reader hub of LeMay to process transaction information with a mobile device and other

forms of virtual currency holding media, as this is a known technique for transaction processing.

91. Thus, Laaroussi and LeMay render obvious “one or more processors” in the payment module.

[1(c)] a first interface module configured to output to a control unit of the offline payment-operated machine one or more electrical pulses, each of the one or more electrical pulses emulating an analog signal generated by the coin receiving switch of the offline payment-operated machine in response to insertion of a single coin of a predetermined type in the offline payment-operated machine; and

92. Laaroussi alone or in combination with Sugimoto renders obvious “a first interface module configured to output to a control unit of the offline payment-operated machine one or more electrical pulses, each of the one or more electrical pulses emulating an analog signal generated by the coin receiving switch of the offline payment-operated machine in response to insertion of a single coin of a predetermined type in the offline payment-operated machine,” as claimed.

93. Laaroussi describes a first interface module in the form of a communication board module. In Laaroussi, the communication board module is part of the currency media reader hub and allows the currency media reader hub to interface with other devices. Laaroussi at [0062]. For instance, the “communication board module compris[es] a communication port module adapted to connect the currency media reader hub with a peripheral component.” Laaroussi at [0030]. In general, the communication board module of the currency media reader hub is “utilized to

manage communication to/from the currency media reader hub.” Laaroussi at [0062].

94. Laaroussi describes that the communication board module/port (“first interface module”) is configured to output to a control unit of the offline payment-operated machine one or more electrical pulses. Laaroussi discloses that existing gaming machines are equipped with receiving modules, including a coins receiving module 164.2. Laaroussi at [0059]. A currency media reader hub is “connected in series between the [coins receiving module] 164.2 and the electronic system of the gaming machine.” Laaroussi at [0059]. Laaroussi provides that the gaming machine could include “a primary controller providing the intelligence of the machine” and “an input output controller adapted to communicate with exterior components,” (Laaroussi at [0055]) both of which are control units of the gaming machine, as claimed.

95. The currency media reader hub is “adapted to emulate a standard payment acceptance module such as a . . . coin acceptor module,” where the payment acceptance module that was originally connected to the gaming machine may be connected to the currency media reader hub that itself is connected to the gaming machine to provide communications thereto. Laaroussi at [0017]. “The receiving modules 164.1, 164.2 are generally physically installed on the gaming machine 180 to receive physical money from a player. The money put in the machine allows a

player to use the gaming machine 180. The receiving modules 164.1, 164.2 are operatively connected with the gaming machine 180 using either a pulse string communication mode 202 or a serial port communication mode 204.” Laaroussi at [0058]. Once the currency media reader hub including the communication board module/port is connected to the system, the currency media reader hub “emulates a receiving module” (such as the coins receiving module) to communicate with the gaming machine, typically using “a pulse string communication mode.” Laaroussi at [0060]. A POSITA would understand that the pulse string communications from the currency media reader hub are sent via the communication board module because this is the module responsible for managing communications to and from the currency media reader hub to other components, which would include the controllers of the gaming machine. Laaroussi at [0062]. A POSITA would thus understand that Laaroussi renders obvious a first interface module (the communication board/port of the currency media reader hub) that outputs to the control unit of the offline payment-operated machine (primary or input/output controllers of the gaming machine) one or more electrical pulses (pulse string communications between the currency media reader hub and the electronic systems of the gaming machine).

96. Laaroussi renders obvious that each of the one or more electrical pulses emulating an analog signal generated by the coin receiving switch of the offline payment-operated machine in response to insertion of a single coin of a

predetermined type in the offline payment-operated machine. For instance, Laaroussi explains that a communication protocol is used to transmit signals from the receiving modules, such as the coin receiving module of the gaming machine, to the gaming machine “in accordance with the amount of money received by the receiving modules.” Laaroussi at [0058]. A POSITA would understand these signals corresponding to the amount of money received to be “analog signal[s] generated by the coin receiving switch of the offline payment-operated machine in response to insertion of a single coin of a predetermined type,” at least because the pulses generated by actuation of the coin switch are analog pulses, and each analog pulse pertains to a coin of a particular denomination. Furthermore, the ‘608 patent describes these signals as “preset sequence[s] of payment acceptance signals” corresponding to a “preset number of coins.” ‘608 patent at 40:50-58. The currency media reader hub is connected in series between the coins receiving module and the gaming machine. Laaroussi at [0059]. The currency media reader hub can thus communicate the analog signals generated by the coins receiving switch to the gaming machine using a number of communication languages—“normally a pulse string communication mode.” Laaroussi at [0060].

97. The annotated illustration of Figure 2 below shows the pathway of the electrical pulses emulated by the currency media reader hub sitting between the currency receiver module (e.g., coins receiving module) and the gaming system.

Ordinarily, the currency receiver module **164** (e.g., coins receiving module) is connected to the gaming machine **120** through a serial port interface **146** coupled to the system bus **123**. Laaroussi at [0054]. The system bus 123 then couples various components to the processing unit 121 of the gaming system. Laaroussi at [0052]. In a gaming system, the processing unit may be a system controller for game operation. Laaroussi at [0052] (noting the system bus can include a memory controller bus structure), [0055] (noting that gaming machines could rely on systems built with a primary controller providing machine intelligence and an input output controller for communication with exterior components). As described above, the **currency media reader hub** sits between the currency receiver module **164** (e.g., coins receiving module) and gaming machine **120** to emulate the transaction signals typically produced by the coins receiving module and to pass those signals ultimately to the controller in the form of electric pulses for gaming operation. Laaroussi at [0026] (describing the connection of a currency media reader hub between the currency receiver module and gaming machine):

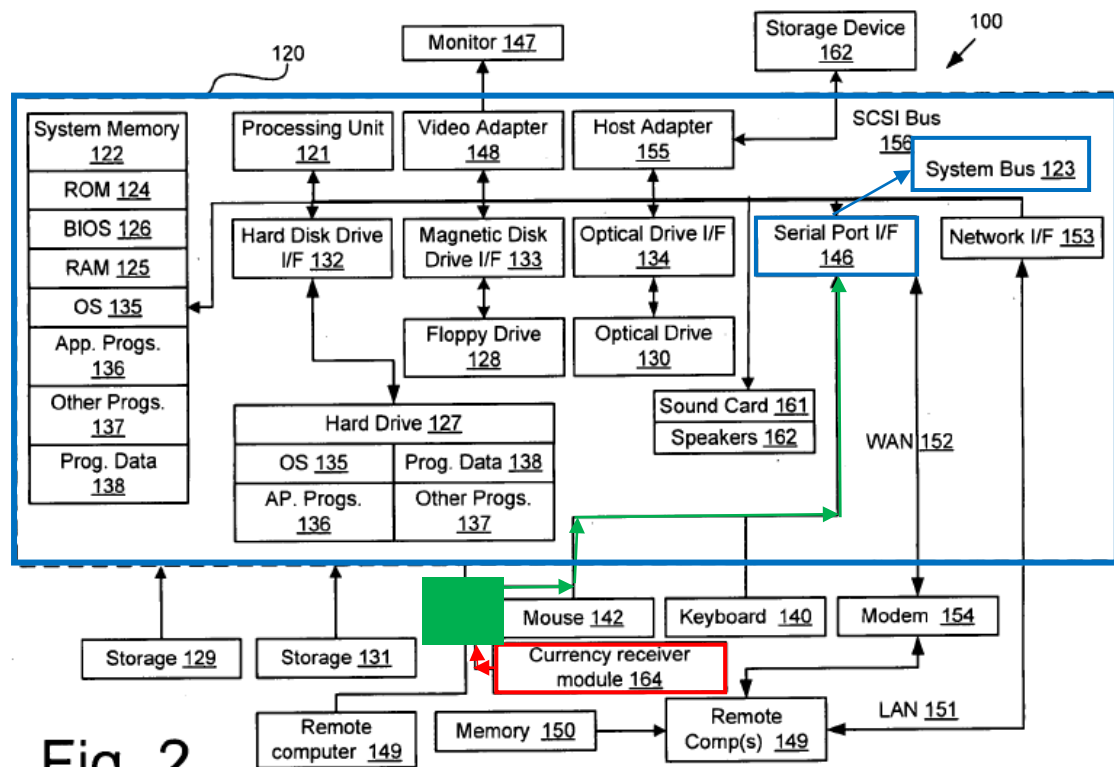


Fig. 2

98. Thus, because Laaroussi discloses a communications board module of the currency media reader hub that is adapted to communicate with peripheral devices such as a coin receiving module to emulate via electrical pulses the analog signals produced by coins inserted into the coins receiving module and transfer them to the electrical system of the gaming machine, Laaroussi renders obvious “a first interface module configured to output to a control unit of the offline payment-operated machine one or more electrical pulses, each of the one or more electrical pulses emulating an analog signal generated by the coin receiving switch of the offline

payment-operated machine in response to insertion of a single coin of a predetermined type in the offline payment-operated machine.”

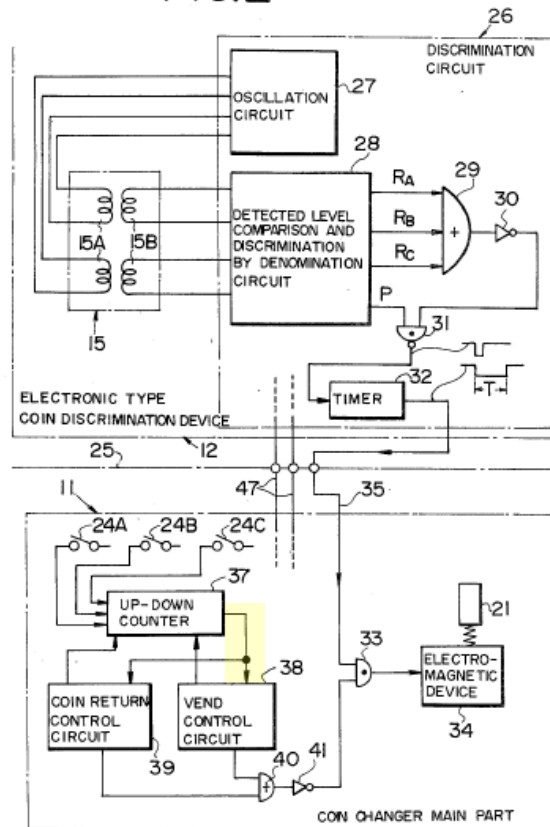
99. Furthermore, it would have been obvious to modify Laaroussi with the teachings of Sugimoto to disclose this limitation. Sugimoto discloses a coin changer with multiple coin receiving switches in the “main part” of the changer “for detecting coins of respective denominations.” Sugimoto at Abstract. The coin changer further includes a control circuit “for effecting control operations including a money amount counting control,” as well as a “vend control” mechanism. Sugimoto at Abstract.

100. In Sugimoto, “the number of coins of the respective denominations are counted in accordance with the output of the[] coin switches.” Sugimoto at 2:64-3:19. The coin switches produce “a signal for counting the number of coins.” Sugimoto at 2:64-3:19. More specifically, the sort-out device of the coin changer mechanically sorts out coins by denomination, such as, based on the coin’s configuration or other factors. Sugimoto at 4:13-33. Once the coins have been sorted by denomination, the coins of a predetermined type are received in the coin receiving device of the coin changer by passing through a particular coin switch. Sugimoto at 4:13-33. Each of the coin switches “is actuated in response to passing of each coin and produces a coin detection pulse corresponding to weight of the coin of each denomination (i.e., amount of the coin).” Sugimoto at 4:13-33, 7:30-51, Fig. 2.

101. A POSITA would understand this process from Sugimoto to involve “*an analog signal generated by the coin receiving switch of the offline payment-operated machine in response to insertion of a single coin of a predetermined type in the offline payment-operated machine,*” at least because the pulses generated by actuation of the coin switch are analog pulses, and each analog pulse pertains to a coin of a particular denomination. In fact, the ‘608 patent describes a nearly identical detection process where an electric pulse is detected based upon the passing of a coin of a predetermined value through a coin switch. ‘608 patent at 39:57-40:6.

102. Sugimoto also explains how these electrical pulses are counted and transmitted to the controller of a vending machine to cause operation of the machine. For instance, Sugimoto states that known control functions, “such as cumulatively counting deposited coins for judging whether a selected article is vendible or not and paying out change,” are performed with the circuitry of the vending machine controller. Sugimoto at 5:31-66. Each of the analog electrical pulses detected by the coin switches “are applied to an up-down counter 37 in which an amount of deposited coins is counted by cumulatively adding amounts of the deposited coins,” and providing a corresponding signal to a vend control circuit 38. Sugimoto at 5:31-66.

FIG. 2



103. “A vend control circuit 38 compares contents of the counter 37 (the amount of the deposited coins) with a preset vend price of the article to be [vended] and thereupon supplies a vend possible signal to a vender unit . . . and also subtracts the price of the vended article from the contents of the counter 37.” Sugimoto at 5:31-66. A POSITA would understand the vend control circuit in Sugimoto to be a “control unit of the offline payment-operated machine” because the vend control circuit receives the electrical pulses from the coin switches and supplies a signal to cause the dispensing an article. This process is similar to how the control unit in the

‘608 patent supplies a signal to the operation unit to start operation of the machine.

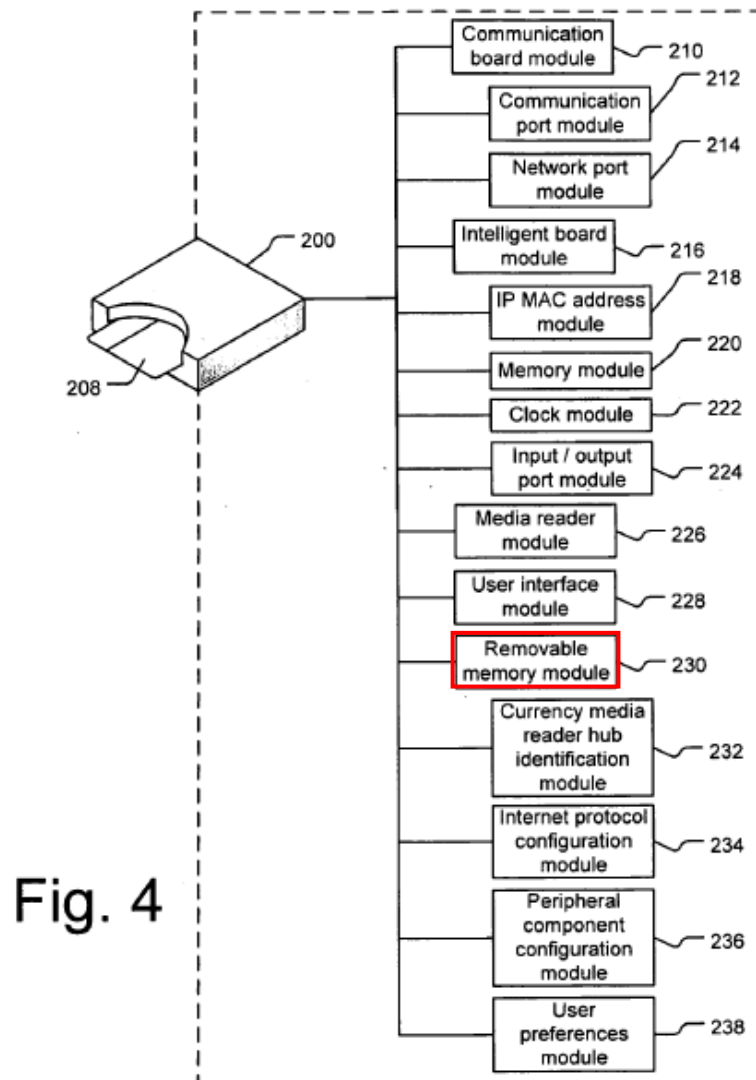
‘608 patent at Fig. 28A.

104. A POSITA would have found it obvious to incorporate the coin changer in Sugimoto to the coins receiving module of Laaroussi. In particular, a POSITA would have been motivated to utilize switch functionality in the coin changer of Sugimoto to produce analog signals in the form of electrical pulses corresponding to a coin of a predetermined amount, so that the currency media reader hub of Laaroussi, which is operatively connected to both the coins receiving module and gaming machine, could emulate the analog pulses. Furthermore, as Sugimoto describes passing the analog pulses corresponding to a particular coin denomination to a vend control circuit to operate the machine, a POSITA would have been motivated to apply that circuitry to the gaming machine of Laaroussi such that the “pulse string communication” emulating the analog signals could pass via the communication board module to the controller of the gaming machine to control operation of the machine. Thus, Laaroussi alone or in combination with Sugimoto render obvious “*a first interface module configured to output to a control unit of the offline payment-operated machine one or more electrical pulses, each of the one or more electrical pulses emulating an analog signal generated by the coin receiving switch of the offline payment-operated machine in response to insertion of a single coin of a predetermined type in the offline payment-operated machine.*”

[1(d)] memory with one or more programs for execution by the one or more processors, the one or more programs including instructions for:

105. Laaroussi renders obvious “*memory with one or more programs for execution by the one or more processors,*” where the processor includes one or more programs.

106. Laaroussi discloses a payment module that includes memory with one or more programs for execution by the one or more processors. Laaroussi explains that the invention is described in the general context of computer-executable instructions, such as program modules, being executed by a computerized device, where the program modules include routines, programs, objects, components, data structures, applets, WEB 2.0 type of evolved networked centered applications, etc. that perform a task(s) or implement particular abstract data types. Laaroussi at [0051]. Laaroussi notes that these program modules may be located in local and/or remote memory storage devices. Laaroussi at [0051]. The memory module in the currency media reader hub is depicted in Figure 4 below. Laaroussi at [0063].



107. Laaroussi explains that the memory module includes additional modules to “carry and transmit information,” to take actions to “properly manage the currency media reader hub 200 and its communications with the network.” Laaroussi at [0063]. As one example, the memory module includes a “peripheral component configuration module 236 adapted to further adjust the communication with the receiving modules 164.1, 164.2”—which includes the coins receiving module. Laaroussi at [0063]. The memory module also includes instructions to dialogue and

interact with other modules of the currency media reader hub. Laaroussi at [0063]. It is further adapted to store the transactions taking place on the gaming machine. Laaroussi at [0026]. A POSITA would understand these modules performing functions within the memory module of the currency media reader hub to be programs for executing instructions.

108. As discussed above, a POSITA would have understood Larroussi alone or in combination with LeMay to include a processor that executes the programs contained in the modules in the currency media reader hub.

109. Thus, Larroussi alone or in combination with LeMay renders obvious *“memory with one or more programs for execution by the one or more processors, the one or more programs including instructions.”*

[1(e)] storing, in the memory of the payment module, a number of the electrical pulses that must be received by the control unit to initiate an operation of the offline payment operating machine;

110. Laaroussi alone, or in combination with Sugimoto, renders obvious *“storing, in the memory of the payment module, a number of the electrical pulses that must be received by the control unit to initiate an operation of the offline payment operating machine,”* as claimed.

111. Laaroussi describes the critical role of the currency media reader hub in tracking transactions to the gaming machine—both from the coins receiving module and the virtual currency holding media. For instance, Laaroussi states that the

“currency media reader hub 200 witnesses each credit-debit event occurring with the receiving modules 164,” which as described above includes the coins receiving module. Laaroussi at [0065]. Laaroussi also explains that the “currency media reader hub” connected to the gaming machine “witnesses each money transaction (e.g. debit/credit)” between the player and the gaming machine. Laaroussi at [0066]. Once a player has inserted a card into the currency media reader hub, for example, the currency media reader hub may “proceed to transfer currency to the gaming machine 180 through any of the payment receiving modules 164,” including the coins receiving module. Laaroussi at [0066] “The currency media reader hub 200 will account for any currency transferred in or out of the gaming machine 180 and link it to the card 208 belonging to the player.” Laaroussi at [0066].

112. Laaroussi also explains that the currency media reader hub is “adapted to store transactions occurring on a gaming machine in memory.” Laaroussi at [0026]. Laaroussi further explains that the currency media reader hub may, for example, include a “removable memory module 230 . . . to carry and transmit information providing a unique identification to the currency media reader hub 200.” Laaroussi at [0063]. The removable memory module of the currency media reader hub might be a SIM card that further includes a “peripheral component configuration module” that is adapted to “further adjust the communication with the receiving modules,” including the coins receiving module 164.2. Laaroussi at [0063]. When the network

is offline, “all transactions between the [user’s] card 208 and the gaming machine 180 are stored in the memory module 220 of the currency media reader hub 200.” Laaroussi at [0067]. This allows the gaming machine to be operational when the overall system is disconnected from a network. Laaroussi at [0067]. A POSITA would thus understand that the currency media reader hub may store in its memory module all communications from peripheral components like the coins receiving module, as these are communications necessary to carry out the transactions.

113. Laaroussi further explains that the currency media reader hub is connected in series between the coins receiving module and the gaming machine (Laaroussi at [0059]), and emulates the communications of the coins receiving module—such as pulse string communications—for passing to the gaming machine to initiate operation of the machine. Laaroussi at [0058-60]. Since the currency media reader hub may store all such transaction information, particularly when it is disconnected from servers in the network, a POSITA would understand that when emulating the coins receiving module the currency media reader hub stores the electrical pulses for passing to the gaming machine for operation in an offline environment. *See* Laaroussi at [0067].

114. Because the currency media reader hub witnesses every transaction from the virtual currency holding media/card, stores that information in memory, and passes that information to the gaming machine for operation in multiple possible

communication formats, including electrical pulses, Laaroussi renders obvious *“storing, in the memory of the payment module, a number of the electrical pulses that must be received by the control unit to initiate an operation of the offline payment operating machine.”*

115. Furthermore, a POSITA would have found it obvious to store in the currency media reader hub of Laaroussi the number of electrical pulses produced by the coin switches necessary to initiate operation of an offline-payment operated machine, as taught by Sugimoto. As previously discussed, the coin changer in Sugimoto includes switches that generate electrical pulses based on the denomination of a particular coin. Those electrical pulses are applied to an up-down counter and passed to the vend control circuit, which “compares contents of the counter 37 (the amount of the deposited coins) with a preset vend price of the article to be [vended].” Sugimoto at 5:31-66. Once the vend control circuit has received enough electrical pulses to reach the preset vend price of an article, the vend control circuit “supplies a vend possible signal to a vender unit,” which “dispenses the selected article in response to this vend possible signal.” Sugimoto at 5:31-66. Because Laaroussi explains that the currency media reader hub is able to emulate the coins receiving module using pulse string communications, and includes a memory module adapted to store gaming machine transactions, a POSITA would have been motivated to modify the payment module memory of Laaroussi to include

the up-down electrical pulse counter of Sugimoto at least because this would reduce the number of serial signals to relay to the control module and improve the overall efficiency of Laaroussi's payment module. For example, a POSITA would understand storing the electrical pulses in the payment module memory would allow the payment module to compare the electrical pulses to threshold values, such as the price of a game or wager, before initiating the game operation through signaling the control unit circuitry using the number of electrical pulses needed to satisfy this threshold value. Sugimoto at 5:31-66. This would improve efficiency by helping minimize the amount of communications between the payment module and the machine controller.

116. Thus, Laaroussi and Sugimoto also render obvious “*storing, in the memory of the payment module, a number of the electrical pulses that must be received by the control unit to initiate an operation of the offline payment operating machine.*”

[1(f)] receiving a wireless request via the short-range wireless transceiver from a respective mobile device of the one or more mobile devices to initiate a cashless operation of the offline-payment operated machine; and

117. Laaroussi and LeMay together render obvious “*receiving a wireless request via the short-range wireless transceiver from a respective mobile device of the one or more mobile devices to initiate a cashless operation of the offline-payment operated machine,*” as claimed.

118. Laaroussi describes communicating transaction information between the currency media reader hub and “virtual currency holding media suitable to carry virtual money.” Laaroussi at [0061]. Several examples of such virtual currency holding media would be from a “mobile device” that transmits transaction information wirelessly, including a chip-equipped card or an RFID device. Laaroussi at [0061].

119. As described above, the electronic gaming machine of LeMay includes a retrofit device with a wireless interface and controller (“*wireless transceiver*”) for communicating with a portable electronic device using NFC and Bluetooth, among other communication protocols.

120. In LeMay, the retrofit device may be configured to provide “virtual ticket-in and/or virtual ticket-out services” for an electronic gaming machine. LeMay at 5:5-13. These include handling the interactions between a portable electronic device and the electronic gaming machine. LeMay at 5:5-13. The “wireless interface 18 can be configured to receive information, such as information associated with a virtual ticket voucher, from a portable electronic device,” including via NFC or Bluetooth protocols. LeMay at 6:34-7:6.

121. In one configuration in LeMay, once communications are established between the electronic gaming device and the portable electronic device (“*mobile device*”), “an application executing on the portable electronic device can generate a

touch screen button to initiate an E-cash in transaction or an E-cash out transaction.” LeMay at 28:8-25. “When portable electronic device detects one of the buttons [of the application] has been selected, a message requesting the [electronic gaming device] EGM 2 to initiate an E-cash in transaction or an E-cash out transaction can be sent to the EGM 2.” LeMay at 28:8-25. The message can be received by a device on the electronic gaming machine “configured to respond to the message,” such as the wireless interface of the retrofit device capable of communicating via a short-range protocol like NFC or Bluetooth. LeMay at 28:8-25. “In response to receiving the message [an] E-cash in transaction and/or an E-cash out transaction can be generated.” LeMay at 28:8-25.

122. As such, LeMay teaches a payment module of a gaming machine that *“receiv[es] a wireless request via the short-range wireless transceiver from a respective mobile device of the one or more mobile devices to initiate a cashless operation”* of the gaming machine.

123. A POSITA would have been motivated to implement LeMay’s technique of using a mobile device to generate a wireless request to initiate a cashless operation of the gaming machine in Laaroussi. In particular, a POSITA would have been motivated to use the portable electronic device and application from LeMay to initiate the cashless transaction with the gaming machine of Laaroussi via the currency media reader hub taught by Laaroussi because the currency media reader

hub is equipped for network communication and interaction with virtual currency holding media. A POSITA would have been motivated to use a mobile device with an application for E-cash transactions as one of the virtual currency holding media sources in Laaroussi used to initiate the operation of the gaming machine.

124. Thus, Laaroussi and LeMay render obvious “*receiving a wireless request via the short-range wireless transceiver from a respective mobile device of the one or more mobile devices to initiate a cashless operation of the offline-payment operated machine.*”

[1(g)(i)] in response to the wireless request: determining a first number of electrical pulses to output via the first interface module to the control unit of the offline payment-operated machine in order to initiate the requested cashless operation of the offline payment-operated machine;

125. Laaroussi renders obvious “*determining a first number of electrical pulses to output via the first interface module to the control unit of the offline payment-operated machine in order to initiate the requested cashless operation of the offline payment-operated machine.*”

126. As previously discussed, a POSITA would have understood that to emulate the coins receiving module, the currency media reader hub would determine a number of electrical pulses (e.g., using a pulse string communication mode) to output to the controller of the gaming machine via the communication board module in order to initiate the operation of the gaming machine.

127. As previously discussed, a POSITA would have been motivated to combine the teachings of Laaroussi and Sugimoto to render obvious this limitation. Sugimoto describes a vend control circuit in a coin changer with coin switches that determines the number of electrical pulses it must output to the vending machine to dispense an article, and Laaroussi discloses a currency media reader hub that emulates this device to output a pulse string to the controller of the gaming machine to initiate operation of the gaming machine.

128. Also as previously discussed, a POSITA would have been motivated to combine the portable electronic device with an application taught by LeMay to initiate a cashless transaction. Because the operation of the gaming machine described by Laaroussi alone or in combination with Sugimoto would not occur until initiated by the wireless request from the portable electronic device disclosed in LeMay, such as via the E-cash in/out requests, a POSITA would understand that this step occurs “*in response to the wireless request*” taught by LeMay.

[1(g)(ii)] in response to the wireless request: causing the offline payment-operated machine to initiate the requested cashless operation by issuing the first number of electrical pulses to the control unit via the first interface module; and;

129. Laaroussi renders obvious “*causing the offline payment-operated machine to initiate the requested cashless operation by issuing the first number of electrical pulses to the control unit via the first interface module.*”

130. As described above, Laaroussi describes that the currency media reader hub emulates the coins receiving module on one side and the gaming machine on the other side. A POSITA would have understood that to emulate the coins receiving module, the currency media reader hub would cause the controller of the gaming machine to initiate the operation using the virtual currency (“*cashless operation*”) by issuing the first number of electrical pulses (e.g., a number of electrical pulses equivalent to the pulses communicated by the number of coins being emulated as received using the pulse string communication mode) to the controller via the communications board module (“*first interface module*”).

131. Furthermore, as described above, a POSITA would have been motivated to combine the teachings of Laaroussi and Sugimoto to render obvious this limitation. Sugimoto describes a vend control circuit in a coin changer with coin switches that determines the number of electrical pulses it must output to the vending machine to dispense an article, and Laaroussi discloses a currency media reader hub that emulates this device and outputs a pulse string to the controller of the gaming machine to cause initiation of the cashless operation of the gaming machine.

132. Moreover, as discussed above, a POSITA would have been motivated to combine the portable electronic device with an application taught by LeMay to initiate a cashless transaction. Because the operation of the gaming machine described by Laaroussi alone or in combination with Sugimoto would not occur until

initiated by the wireless request from the portable electronic device disclosed in LeMay, a POSITA would understand that this step occurs “*in response to the wireless request*” taught by LeMay.

[1(g)(iii)] in response to the wireless request: sending operation information corresponding to the initiated operation of the offline payment-operated machine to the respective mobile device via the short-range wireless transceiver.

133. As discussed in more detail above, Laaroussi describes communicating transaction information between the currency media reader hub and “virtual currency holding media suitable to carry virtual money.” Laaroussi at [0061]. Several examples of such virtual currency holding media would be from a “mobile device” that transmits transaction information wirelessly, including a chip-equipped card or an RFID device. Laaroussi at [0061].

134. Furthermore, as described above, the electronic gaming machine of LeMay includes a retrofit device (“*payment module*”) with a wireless interface and controller (“*wireless transceiver*”) for communicating with a portable electronic device (“*mobile device*”) using NFC and Bluetooth, among other communication protocols (“*short-range wireless [communications]*”).

135. LeMay also teaches that operation information (e.g., a voucher ticket, validation number, and/or amount) is sent to the mobile device via the short-range wireless transceiver in response to the initial wireless request. LeMay at 4:53-5:4 (describing receipt of virtual ticket voucher information by the portable electronic

device sent from the electronic gaming machine); LeMay at 10:27-40 (describing the portable electronic device running an application allowing it to receive by NFC protocol virtual ticket voucher information from the EGM); LeMay at 11:20-24.

136. For instance, the E-cash in request initiates an operation to play on the gaming machine (e.g., by inserting virtual cash or credits.). LeMay at 9:33-45; 38:58-39:11 (EGM generating and notifying the portable electronic device as to the validity of the virtual ticket voucher for a particular amount); LeMay at 15:52-56, 16:35-42 (describing virtual ticket validation, redemption, and issuance by the retrofit device). The operation information (e.g., a voucher ticket, validation number, and/or amount) corresponds to the initiated operation of the gaming machine at least because it corresponds to the initiated operation of playing a game (and the resulting effect of, for instance, wagering money or credits.), as well as to the machine's operation of redeeming/issuing virtual ticket vouchers. *See* LeMay at Abstract (“The gaming system can include electronic gaming machines that are compatible to receive both virtual ticket vouchers and printed ticket vouchers that are redeemable for credits on the electronic gaming machine” or “additional game play” on the electronic gaming machine); LeMay at Claim 1 (describing sending virtual ticket voucher information including validation number and amount via the wireless interface to the portable electronic device, where the virtual ticket voucher

information corresponds to “play of a wagering game”), 12:3-28 (describing validation).

137. LeMay also explains this operation information can be sent from the retrofit device (“*payment module*”) to the portable electronic device. LeMay at 23:44-24:3. (“retrofit device 52 can be configured to accept virtual ticket vouchers, issue virtual ticket vouchers or combinations thereof”); LeMay at 25:57-26:27; LeMay at 15:27-37 (describing that the controller of the electronic gaming machine remains unmodified and the virtual ticket-in/ticket-out functions—virtual voucher processing—are performed by the retrofit device). Figure 3A of LeMay illustrates this concept.

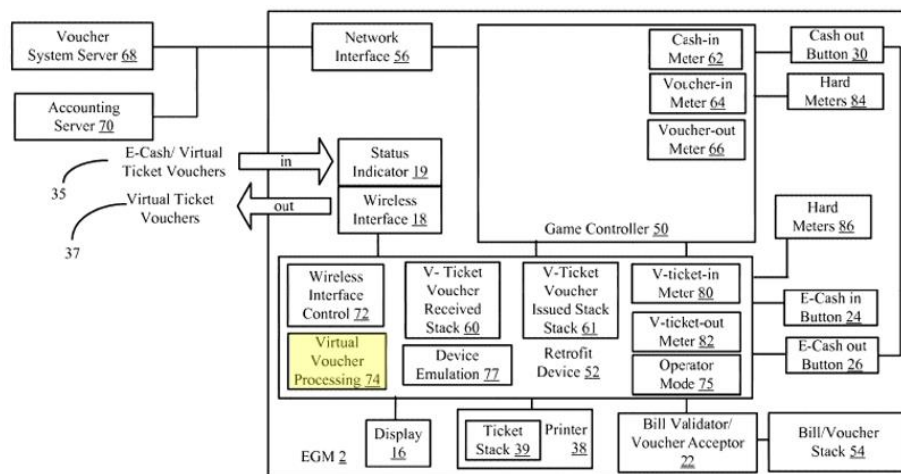


Fig. 3A

138. A POSITA would have been motivated to implement LeMay’s technique of providing operation information of the electronic gaming machine to a portable

electronic device in the Laaroussi system. In particular, a POSITA would have been motivated to adapt the Laaroussi system to allow for operation information to be transmitted by the currency media reader hub to a portable electronic device, as Laaroussi describes the communication between the currency media reader hub and virtual media currency and the desire to “connect a network to remotely manage payment information” of the gaming machine system. Laaroussi at [0002], [0061] (describing the reading and writing capabilities of the currency media reader hub to allow it to “modify the data, the amount of money or other information, stored on the card,” which is an example of virtual currency holding media).

139. Thus, because Laaroussi’s currency media reader hub is designed to communicate with virtual currency holding media including by modifying the information on that media and reading/transmitting information thereto, and a POSITA would have found it obvious to transfer similar operation information to a mobile device functioning to allow a cashless transaction for gameplay as taught by LeMay, Laaroussi and LeMay render obvious *“in response to the wireless request: sending operation information corresponding to the initiated operation of the offline payment-operated machine to the respective mobile device via the short-range wireless transceiver.”*

2. Claim 2

[2(pre)] The payment module of claim 1, wherein the one or more programs further comprise instructions for:

140. Because Laaroussi alone or in combination with LeMay describes a system wherein the payment module includes programs executing instructions, Laaroussi and LeMay render obvious “*the payment module of claim 1, wherein the one or more programs further comprise instructions. See [1(pre)], [1(d)].*

[2(a)] prior to sending the operation information and after causing the offline payment-operated machine to initiate operation by issuing the first number of electrical pulses to the control unit, obtaining a notification from the offline payment-operated machine indicating initiation of the operation of the offline payment-operated machine; and,

141. Laaroussi renders obvious, alone or in combination with LeMay and/or Sugimoto, “sending the operation information [to a mobile device]” and “causing the offline payment-operated machine to initiate operation by issuing the first number of electrical pulses to the control unit [of the offline payment-operated machine].” See [1(c)], [1(g)(iii)].

142. Furthermore, LeMay teaches the retrofit device causing the gaming machine to initiate operation (e.g. via an E-cash/virtual ticket voucher in operation received from a mobile device), and then, in response thereto, the retrofit device obtaining a notification (e.g., print instructions including a ticket voucher amount) from the gaming machine (e.g., from the game controller). For instance, LeMay explains that an E-cash in transaction is initiated on a portable electronic device and a message requesting an E-cash in transaction is sent to the electronic gaming

machine (“EGM”), where, in response to receiving the message, an E-cash in transaction and an E-cash out transaction may be generated. LeMay at 28:8-25. LeMay’s EGM is coupled to a retrofit device that allows it to perform virtual ticket functions and emulate a bill validator (configured to accept and validate cash currency and (printed) ticket vouchers.) LeMay at 22:64-23:11, 24:52-64, 1:28-31.

143. The retrofit device receives the virtual ticket voucher information and notifies the game controller “in the same way as the bill validator 22 notifies the game controller 50 when a printed ticket has been detected as being inserted,” thereby causing the gaming machine to initiate operation. LeMay at 24:65-25:10. LeMay describes that the game controller is configured to “control a wager-based game played on the electronic gaming machine.” LeMay at 3:1-3.

144. With respect to the redemption of virtual ticket vouchers, LeMay describes that the EGM stores virtual ticket voucher information, displays the amount of credits or currency redeemed, and generates a change voucher. LeMay at 39:12-33. In LeMay, the game controller can detect a redemption request and send a notification to a second device, such as the retrofit device, to take certain actions. LeMay at 39:12-33. For example, the game controller can send a notification to “generate a virtual ticket voucher of a particular amount” that is intended to pass to the machine printer. LeMay at 39:12-33. But instead, the retrofit device can sit between the game controller and the printer to intercept this message. LeMay at

27:11-25, 26:5-27. The retrofit device, including similar logic as the printer, can then use this notification to “construct and send a message that allows a virtual ticket voucher to be sent to the portable electronic device,” such as the virtual ticket voucher including operation information as described above (see 1[g][iii]). LeMay at 27:11-25, 26:5-27. In LeMay, the notification (e.g., message to generate a virtual ticket voucher of a particular amount) indicates initiation of the operation at least because the redeemed amount indicated by this notification represents a credit based on the amount wagered during gameplay and is also related to the initiation of the operation of the virtual ticket redemption/issuance of the machine. LeMay at 39:23-33, Claims 15, 34.

145. Thus, Laaroussi in view of LeMay and Sugimoto render obvious this limitation. The notification from the game controller to “generate a virtual ticket voucher of a particular amount” occurs prior to sending the operation information (e.g., a virtual ticket voucher including information such as validation number or amount) to a mobile device. Furthermore, the notification is generated and transmitted to the retrofit device from the game controller after causing the offline payment-operated machine to initiate operation (e.g. through the coin pulse emulations described by Laaroussi and Sugimoto in response to the E-cash in request of LeMay). A POSITA would have motivated to apply these same steps to the system taught by Laaroussi at least because Laaroussi describes the ability of the currency

media reader hub to both read and write information to the virtual currency media such as by modifying the data on the media and altering the amount of money stored thereon, but does not describe how redemptions (e.g., the credit balance or the difference in the amount of currency transferred to a gaming machine minus the amount required for play) are issued to the virtual currency holding media. See Sections VII.B.a and VII.B.b.

[2(b)(i)] in response to receiving the notification: generating the operation information based at least in part on the notification; and

146. LeMay teaches that the operation information (e.g., a virtual voucher ticket, validation number, and/or amount) that is sent to the mobile device (e.g., portable electronic device) is generated in response to and based at least in part on the notification (e.g., a message/print instructions to generate a virtual ticket voucher of a particular amount.) For instance, LeMay explains that the retrofit device generates a virtual voucher ticket with a validation number and an amount in response to receiving a message/instruction to print and sends the virtual ticket voucher to the portable electronic device. LeMay at 23:53-55 (“The retrofit device 52 can be configured to accept virtual ticket vouchers, issue virtual ticket vouchers or combinations thereof.”); 16:35-59 (describing that, in response to receiving a high-level message from the game controller such as “generate a virtual ticket voucher of a particular amount,” secondary devices “generate low-level commands” such as commands that “construct and send a message that allows a virtual ticket voucher to

be sent to the portable electronic device.”); 26:5-27 (describing that the retrofit device interposed on the communication path between the game controller and the printer receives print instructions from the game controller and transfers the virtual ticket voucher to the portable electronic device.) The virtual ticket voucher that is sent to the portable electronic device includes at least a validation number and/or amount that are based on the message/instructions to print from the game controller. LeMay at Figs. 4B, 4C; 35:30-45; 39:23-33 (“In another embodiment the EGM can issue a virtual ticket voucher for the change amount.”); Claim 1 (“receive, from the game controller and via the communication interface, a gaming establishment ticket voucher validation number and an amount associated with the gaming establishment ticket voucher validation number, and send, via the wireless interface, a second gaming establishment virtual ticket voucher to the portable electronic device, the second gaming establishment virtual ticket voucher including the gaming establishment ticket voucher validation number and the amount associated with the gaming establishment ticket voucher validation number.”).

147. As described above in Sec. [2(a)], a POSITA would have been motivated to combine the game controller messaging disclosed by LeMay to the system in Laaroussi. As such, Laaroussi and LeMay render obvious “*in response to receiving the notification: generating the operation information based at least in part on the notification.*”

[2(b)(ii)] in response to receiving the notification: storing the generated operation information in the memory of the payment module.

148. Laaroussi in combination with LeMay render obvious storing the generated operation information in the memory of the payment module. LeMay teaches that the generated operation information (e.g., a virtual voucher ticket, validation number, and/or amount) is stored in the memory of the retrofit device (“payment module”) in response to receiving a notification (e.g., a message/print instructions to generate a virtual ticket voucher of a particular amount.) For instance, LeMay describes that the retrofit device is configured to maintain a “v-ticket voucher issued stack 61.” LeMay at 24:4-13; Claim 7 (“7. The gaming device of claim 1, further comprising a non-volatile memory, wherein when executed by the processor, the instructions cause the processor to cause the non-volatile memory to store virtual ticket voucher information.”).

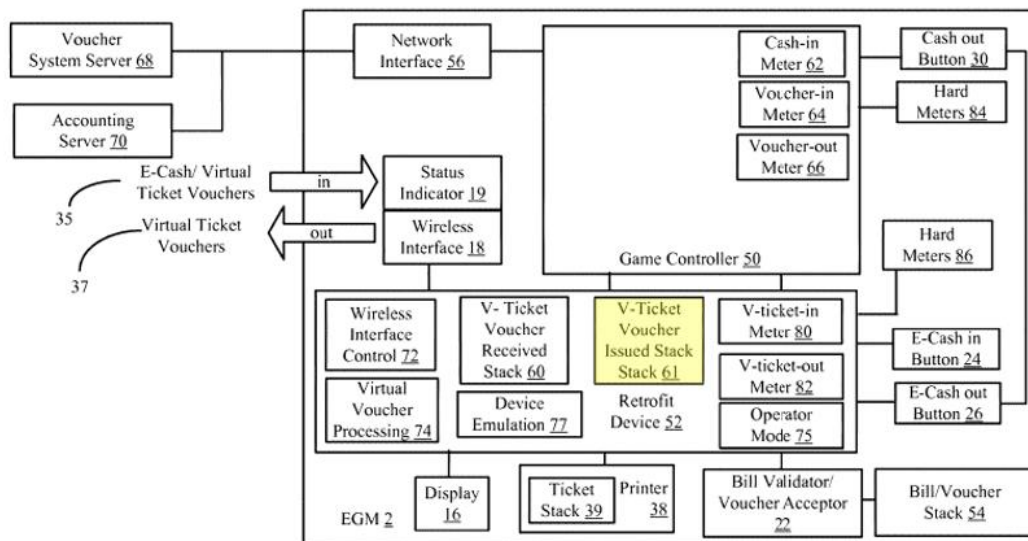


Fig. 3A

149. LeMay explains that virtual ticket voucher issued stacks can be used to help with dispute resolution and that images of issued virtual ticket vouchers or virtual ticket voucher data is saved to memory. LeMay at 21:32-35 (“In one embodiment, to help with dispute resolution, the game controller 50 can maintain a virtual ticket voucher received stack 60 and a virtual ticket voucher issued stack 61.”); 22:47-62 (“For instance, images of issued virtual ticket vouchers that have been rendered can be saved to memory or the virtual ticket voucher data of the issued vouchers can be saved to memory and later used to render images of virtual ticket vouchers that can be output to a display device.”).

150. A POSITA would have been motivated to store this operation information in the system of Laaroussi. For example, Laaroussi describes that, at least in

operating scenarios where the network is down, that “all transactions” between the virtual currency holding media (e.g. a card or RFID device) and the gaming machine “are stored in the memory module 220 of the currency media reader hub” (“payment module”). Laaroussi at [0067], [0026]. The stored transaction information includes, for example, money transferred to the virtual currency holding media from the gaming machine, card insertions and removals, and gaming machine’s related events such as restarts and errors. Laaroussi at [0066]. It would have been obvious to a POSITA to store the operation information disclosed by LeMay in the memory of the currency media reader hub of Laaroussi, as Laaroussi discloses that “all transactions” between the virtual currency holding media and the gaming machine may be stored in the memory module of the currency media reader hub, as well as gaming machine related events such as restarts and errors. Information corresponding to the initiated operation of the gaming machine would be considered a gaming machine related event and information involved in a gaming machine transaction.

3. Claim 5

[5] The payment module of claim 1, wherein the offline payment-operated machine is not connected to any networks.

151. Laaroussi discloses the payment module of claim 1, as set forth in detail above. See [1(pre)].

152. In addition, Laaroussi discloses the offline payment-operated machine is not connected to any networks. For example, Laaroussi explains that in certain embodiments, the gaming machine retrofitted with the currency media reader hub can be a “vintage gaming machine” that relies on “older automated systems” that are “built with a primary controller” providing machine intelligence and an “input output controller” adapted to communicate with exterior components. Laaroussi at [0055]. Laaroussi teaches that the “currency media reader hub” is retrofitted to these gaming machines and adapted to (1) connect the currency media reader hub to a “peripheral component” such as a coins receiving module, (2) communicate with “virtual currency holding media” such as RFID-enabled devices, and (3) communicate with a network. Laaroussi at Abstract. Laaroussi also describes that the currency media reader is configured to store all transaction information so that the gaming machine can be used by players when disconnected from its network. *See* [1(pre)]; Laaroussi at [0013] (describing that an object of the invention is to provide a currency media reader hub that works in online and offline environments so that an offline gaming machine may remain in service); [0067] (describing that the gaming machine is operational when disconnected from a network).

153. Because the gaming machine in Laaroussi may be a “vintage gaming machine” retrofitted with a currency media reader hub for network connection, and that the gaming machine may operate in the absence of network connection,

Laaroussi renders obvious “*the payment module of claim 1, wherein the offline payment-operated machine is not connected to any networks.*”

4. Claim 7

[7] A method for accepting electronic payments at an offline payment-operated machine, the method comprising:

154. Laaroussi renders obvious “*a method for accepting electronic payments at an offline payment-operated machine.*” See [1(pre)].

[7(a)] at a payment module with one or more processors, memory, a short-range wireless transceiver configured to communicate with one or more mobile devices, a first interface module configured to output to a control unit of the offline payment-operated machine one or more electrical pulses, each of the one or more electrical pulses emulating an analog signal generated by a coin receiving switch of the offline payment-operated machine in response to insertion of a single coin of a predetermined type in the offline payment-operated machine:

155. Laaroussi in view of LeMay and Sugimoto renders obvious “*at a payment module with one or more processors, memory, a short-range wireless transceiver configured to communicate with one or more mobile devices, a first interface module configured to output to a control unit of the offline payment-operated machine one or more electrical pulses, each of the one or more electrical pulses emulating an analog signal generated by a coin receiving switch of the offline payment-operated machine in response to insertion of a single coin of a predetermined type in the offline payment-operated machine.*” See [1(pre)], [1(a)], [1(b)], [1(c)], [1(d)].

[7(b)] storing, in the memory of the payment module, a number of the electrical pulses that must be received by the control unit to initiate an operation of the offline payment operating machine;

156. Laaroussi in view of Sugimoto renders obvious “storing, in the memory of the payment module, a number of the electrical pulses that must be received by the control unit to initiate an operation of the offline payment operating machine.” See [1(e)].

[7(c)] receiving a wireless request via the short-range wireless transceiver from a respective mobile device of the one or more mobile devices to initiate a cashless operation of the offline-payment operated machine; and

157. Laaroussi in view of LeMay renders obvious “receiving a wireless request via the short-range wireless transceiver from a respective mobile device of the one or more mobile devices to initiate a cashless operation of the offline-payment operated machine.” See [1(f)].

[7(d)(i)] in response to the wireless request: determining a first number of electrical pulses to output via the first interface module to the control unit of the offline payment-operated machine in order to initiate the requested cashless operation of the offline payment-operated machine;

158. Laaroussi in view of LeMay and Sugimoto renders obvious “in response to the wireless request: determining a first number of electrical pulses to output via the first interface module to the control unit of the offline payment-operated machine in order to initiate the requested cashless operation of the offline payment-operated machine.” See [1(g)(i)].

[7(d)(ii)] in response to the wireless request: causing the offline payment-operated machine to initiate the requested cashless operation by issuing the first number of electrical pulses to the control unit via the first interface module; and

159. Laaroussi in view of LeMay and Sugimoto renders obvious “*in response to the wireless request: causing the offline payment-operated machine to initiate the requested cashless operation by issuing the first number of electrical pulses to the control unit via the first interface module.*” See [1(g)(ii)].

[7(d)(iii)] in response to the wireless request: sending operation information corresponding to the initiated operation of the offline payment-operated machine to the respective mobile device via the short-range wireless transceiver.

160. Laaroussi in view of LeMay renders obvious “*in response to the wireless request: sending operation information corresponding to the initiated operation of the offline payment-operated machine to the respective mobile device via the short-range wireless transceiver.*” See [1(g)(iii)].

5. Claim 8

[8(pre)] The method of claim 7, further comprising:

161. See [2(pre)].

[8(a)] prior to sending the operation information and after causing the offline payment-operated machine to initiate operation by issuing the first number of electrical pulses to the control unit, obtaining a notification from the offline payment-operated machine indicating initiation of the operation of the offline payment-operated machine; and

162. Laaroussi in view of LeMay and Sugimoto renders obvious “*prior to sending the operation information and after causing the offline payment-operated machine to initiate operation by issuing the first number of electrical pulses to the control unit, obtaining a notification from the offline payment-operated machine*

indicating initiation of the operation of the offline payment-operated machine.” See [2(a)].

[8(b)(i)] in response to receiving the notification: generating the operation information based at least in part on the notification; and

163. Laaroussi in view of LeMay renders obvious “*in response to receiving the notification: generating the operation information based at least in part on the notification.*” See [2(b)(i)].

[8(b)(ii)] in response to receiving the notification: storing the generated operation information in the memory of the payment module.

164. Laaroussi in view of LeMay renders obvious “*storing the generated operation information in the memory of the payment module.*” See [2(b)(ii)].

6. Claim 11

[11] The method of claim 7, wherein the offline payment-operated machine is not connected to any networks.

165. Laaroussi renders obvious “*wherein the offline payment-operated machine is not connected to any networks.*” See [5].

7. Claim 13

[13(pre)] An offline payment-operated machine, comprising:

166. Laaroussi renders obvious “*an offline payment-operated machine.*” See [1(pre)].

[13(a)] a coin receiving switch that generates analog signals in response to insertion of a single coin of a predetermined type in the offline payment-operated machine;

167. Laaroussi alone or in view of Sugimoto renders obvious “*a coin receiving switch that generates analog signals in response to insertion of a single coin of a predetermined type in the offline payment-operated machine.*” See [1(pre)], [1(c)].

[13(b)] a control unit; and

168. Laaroussi renders obvious “*a control unit.*” See [1(pre)], [1(c)], [1(e)].

[13(c)] a payment module that includes:

169. Laaroussi renders obvious “*a payment module.*” See [1(pre)].

[13(d)] a short-range wireless transceiver configured to communicate with one or more mobile devices;

170. Laaroussi alone or in view of LeMay renders obvious “*a short-range wireless transceiver configured to communicate with one or more mobile devices.*” See [1(a)].

[13(e)] one or more processors;

171. Laaroussi alone or in view of LeMay renders obvious “*one or more processors.*” See [1(b)].

[13(f)] a first interface module configured to output to a control unit of the offline payment-operated machine one or more electrical pulses, each of the one or more electrical pulses emulating an analog signal generated by the coin receiving switch of the offline payment-operated machine in response to insertion of a single coin of a predetermined type in the offline payment-operated machine; and

172. Laaroussi in view of Sugimoto renders obvious “*a first interface module configured to output to a control unit of the offline payment-operated machine one or more electrical pulses, each of the one or more electrical pulses emulating an*

analog signal generated by the coin receiving switch of the offline payment-operated machine in response to insertion of a single coin of a predetermined type in the offline payment-operated machine.” See [1(c)].

[13(g)] memory storing one or more programs to be executed by the one or more processors, the one or more programs comprising instructions for:

173. Laaroussi alone or in view of LeMay renders obvious “*memory storing one or more programs to be executed by the one or more processors*” where the programs include instructions. See [1(d)].

[13(h)] storing, in the memory of the payment module, a number of the electrical pulses that must be received by the control unit to initiate an operation of the offline payment operating machine;

174. Laaroussi alone or in view of Sugimoto renders obvious “*storing, in the memory of the payment module, a number of the electrical pulses that must be received by the control unit to initiate an operation of the offline payment operating machine.*” See [1(e)].

[13(i)] receiving a wireless request via the short-range wireless transceiver from a respective mobile device of the one or more mobile devices to initiate a cashless operation of the offline-payment operated machine; and

175. Laaroussi in view of LeMay renders obvious “*receiving a wireless request via the short-range wireless transceiver from a respective mobile device of the one or more mobile devices to initiate a cashless operation of the offline-payment operated machine.*” See [1(f)].

[13(j)(i)] in response to the wireless request: determining a first number of electrical pulses to output via the first interface module to the control unit of the offline payment-operated machine in order to initiate the requested cashless operation of the offline payment-operated machine;

176. Laaroussi in view of LeMay and Sugimoto renders obvious “*in response to the wireless request: determining a first number of electrical pulses to output via the first interface module to the control unit of the offline payment-operated machine in order to initiate the requested cashless operation of the offline payment-operated machine.*” See [1(g)(i)].

[13(j)(ii)] in response to the wireless request: causing the offline payment-operated machine to initiate the requested cashless operation by issuing the first number of electrical pulses to the control unit via the first interface module; and

177. Laaroussi in view of LeMay and Sugimoto renders obvious “*in response to the wireless request: causing the offline payment-operated machine to initiate the requested cashless operation by issuing the first number of electrical pulses to the control unit via the first interface module.*” See [1(g)(ii)].

[13(j)(iii)] in response to the wireless request: sending operation information corresponding to the initiated operation of the offline payment-operated machine to the respective mobile device via the short-range wireless transceiver.

178. Laaroussi in view of LeMay renders obvious “*in response to the wireless request: sending operation information corresponding to the initiated operation of the offline payment-operated machine to the respective mobile device via the short-range wireless transceiver.*” See [1(g)(iii)].

8. Claim 14

[14(pre)] The offline payment-operated machine of claim 13, wherein the one or more programs further comprise instructions for:

179. Laaroussi renders obvious an “offline payment-operated machine” with one or more programs executing instructions. See [2(pre)].

[14(a)] prior to sending the operation information and after causing the offline payment-operated machine to initiate operation by issuing the first number of electrical pulses to the control unit, obtaining a notification from the offline payment-operated machine indicating initiation of the operation of the offline payment-operated machine; and

180. Laaroussi in view of LeMay and Sugimoto renders obvious “prior to sending the operation information and after causing the offline payment-operated machine to initiate operation by issuing the first number of electrical pulses to the control unit, obtaining a notification from the offline payment-operated machine indicating initiation of the operation of the offline payment-operated machine.” See [2(a)].

[14(b)(i)] in response to receiving the notification: generating the operation information based at least in part on the notification; and

181. Laaroussi in view of LeMay renders obvious “in response to receiving the notification: generating the operation information based at least in part on the notification.” See [2(b)(i)].

[14(b)(ii)] in response to receiving the notification: storing the generated operation information in the memory of the payment module.

182. Laaroussi in view of LeMay renders obvious “*in response to receiving the notification: storing the generated operation information in the memory of the payment module.*” See [2(b)(ii)].

9. Claim 17

[17] The offline payment-operated machine of claim 13, wherein the offline payment-operated machine is not connected to any networks.

183. Laaroussi renders obvious “*wherein the offline payment-operated machine is not connected to any networks.*” See [5].

10. Claim 19

[19(pre)] A payment module for an offline payment-operated machine including a coin receiving switch, the payment module comprising:

184. Laaroussi alone or in view of Sugimoto renders obvious “*a payment module for an offline payment-operated machine including a coin receiving switch.*” See [1(pre)].

[19(a)] a short-range wireless transceiver configured to communicate with one or more mobile devices;

185. Laaroussi alone or in view of LeMay renders obvious “*a short-range wireless transceiver configured to communicate with one or more mobile devices.*” See [1(a)].

[19(b)] one or more processors;

186. Laaroussi alone or in view of LeMay renders obvious “*one or more processors.*” See [1(b)].

[19(c)] a first interface module configured to communicate with a control unit of the offline payment-operated machine using a serial interface to send one or more commands to the control unit;

187. Laaroussi in view of LeMay renders obvious “a first interface module configured to communicate with a control unit of the offline payment-operated machine.” See [1(c)], [1(g)(ii)].

188. A POSITA would further understand that the communications described in these sections, which are commands, can be sent to the control unit using a serial interface. See Laaroussi at [0032] (describing a “serial communication mode” and “universal serial bus mode” as two communication modes for communication between the currency media reader hub and the gaming machine control unit), [0058], [0060].

[19(d)] a second interface module configured to count one or more electrical pulses generated by the coin receiving switch of the offline payment-operated machine in response to the insertion of a single coin of a predetermined type in the offline payment-operated machine and to store an output of the control unit corresponding to an operation of the offline payment-operated machine; and

189. Laaroussi in view of LeMay and Sugimoto renders obvious “a second interface module configured to count one or more electrical pulses generated by the coin receiving switch of the offline payment-operated machine in response to the insertion of a single coin of a predetermined type in the offline payment-operated machine and to store an output of the control unit corresponding to an operation of the offline payment-operated machine.” See [1(c)]. The “second interface module”

in this limitation is the communication board module/port of the currency media reader hub of Laaroussi. See '608 patent at 46:9-14 (describing that the labels “first,” “second,” and “third” are “meant solely for purposes of designation and not for order or limitation).

190. A POSITA would understand that the “*second interface module*” (e.g. communication board module/port) is configured to count one or more electrical pulses generated by the coin receiving switch of the offline payment-operated machine in response to the insertion of a single coin of a predetermined type in the offline payment-operated machine. See [1(c)].

191. Alternatively, for the reasons described in [1(c)], a POSITA would have been motivated to incorporate the “up-down counter” functionality of Sugimoto into the communication board module of the currency media reader hub of Laaroussi in order to count the electrical pulses generated by the coin switches of Sugimoto. See [1(c)].

192. Furthermore, for the reasons discussed in [2(b)(ii)], a POSITA would have been motivated to combine LeMay with Laaroussi to disclose a second interface module that “*store[s] an output of the control unit corresponding to an operation of the offline payment-operated machine.*” See [2(b)(ii)].

[19(e)] memory with one or more programs for execution by the one or more processors, the one or more programs including instructions for:

193. Laaroussi alone or in view of LeMay renders obvious “*memory with one or more programs for execution by the one or more processors, the one or more programs including instructions.*” See [1(d)].

[19(f)] storing, in the memory of the payment module, a number of the electrical pulses that must be received by the control unit to initiate an operation of the offline payment operating machine;

194. Laaroussi in view of Sugimoto renders obvious “*storing, in the memory of the payment module, a number of the electrical pulses that must be received by the control unit to initiate an operation of the offline payment operating machine.*” See [1(e)].

[19(g)] receiving a wireless request via the short-range wireless transceiver from a respective mobile device of the one or more mobile devices to initiate a cashless operation of the offline-payment operated machine; and

195. Laaroussi in view of LeMay renders obvious “*receiving a wireless request via the short-range wireless transceiver from a respective mobile device of the one or more mobile devices to initiate a cashless operation of the offline-payment operated machine.*” See [1(f)].

[19(h)(i)] in response to the wireless request: determining a first number of electrical pulses to output via the first interface module to the control unit of the offline payment-operated machine in order to initiate the requested cashless operation of the offline payment-operated machine;

196. Laaroussi in view of LeMay and Sugimoto renders obvious “*in response to the wireless request: determining a first number of electrical pulses to output via the first interface module to the control unit of the offline payment-operated machine in*

order to initiate the requested cashless operation of the offline payment-operated machine.” See [1(g)(i)].

[19(h)(ii)] in response to the wireless request: causing the offline payment-operated machine to initiate the requested cashless operation by issuing the first command to the control unit via the first interface module; and

197. Laaroussi in view of LeMay renders obvious “in response to the wireless request: causing the offline payment-operated machine to initiate the requested cashless operation by issuing the first command to the control unit via the first interface module.” See [1(g)(ii)].

[19(h)(iii)] in response to the wireless request: sending operation information corresponding to the initiated operation of the offline payment-operated machine to the respective mobile device via the short-range wireless transceiver, the operation information including a value of the requested cashless operation corresponding to a number of coin insertions associated with a total number of the pulses counted by the second interface module to initiate the operation of the offline payment-operated machine.

198. Laaroussi in view of LeMay renders obvious “in response to the wireless request: sending operation information corresponding to the initiated operation of the offline payment-operated machine to the respective mobile device via the short-range wireless transceiver.” See [1(g)(iii)].

199. A POSITA would also appreciate that the amount of credit issued on the virtual ticket voucher sent to the mobile device in LeMay indicates the value of the requested cashless operation corresponding to a number of coins insertions associated with a total number of the pulses counted by the second interface module to initiate the operation of the offline payment-operated machine, at least because

the amount of credit applied to the virtual ticket voucher would reflect the amount of pulses corresponding to an E-cash in transaction greater or less than the amount waged on gameplay. As such, Laaroussi in view of LeMay renders obvious “the operation information including a value of the requested cashless operation corresponding to a number of coin insertions associated with a total number of the pulses counted by the second interface module to initiate the operation of the offline payment-operated machine.” See also [1(c)], [19(d)].

11. Claim 20

[20(pre)] The payment module of claim 19, wherein the one or more programs further comprise instructions for:

200. Laaroussi renders obvious “*the payment module of claim 19*” with one or more programs executing instructions. See [2(pre)].

[20(a)] prior to sending the operation information and after causing the offline payment-operated machine to initiate operation by issuing the first command to the control unit, obtaining a notification from the offline payment-operated machine indicating initiation of the operation of the offline payment-operated machine; and

201. Laaroussi in view of LeMay and Sugimoto renders obvious “*prior to sending the operation information and after causing the offline payment-operated machine to initiate operation by issuing the first command to the control unit, obtaining a notification from the offline payment-operated machine indicating initiation of the operation of the offline payment-operated machine.*” See [2(a)], [19(c)].

[20(b)(i)] in response to receiving the notification: generating the operation information based at least in part on the notification; and

202. Laaroussi in view of LeMay renders obvious “*in response to receiving the notification: generating the operation information based at least in part on the notification.*” See [2(b)(i)].

[20(b)(ii)] in response to receiving the notification: storing the generated operation information in the memory of the payment module.

203. Laaroussi in view of LeMay renders obvious “*in response to receiving the notification: storing the generated operation information in the memory of the payment module.*” See [2(b)(ii)].

D. Ground 2: Claims 4, 6, 10, 12, 16, 18 are obvious over Laaroussi in view of LeMay, Sugimoto, and Okuniewicz

1. Claim 4

[4(a)] The payment module of claim 2, further comprising a second interface module configured to store control signals from the control unit of the offline payment-operated machine that initiate operation of the offline payment-operated machine;

204. As discussed above, a POSITA would have been motivated to apply the v-ticket voucher issued stack 61 of LeMay to the currency media reader hub (“*payment module*”) of Laaroussi. See [2(b)(ii)]. As described therein, the v-ticket voucher issued stack of the retrofit device in LeMay interfaces with the game controller 50. See [2(b)(ii)]. As such, a POSITA would understand the v-ticket voucher issued stack to be a “*second interface module*” as described in this claim.

205. Furthermore, as discussed above in Section [2(b)(ii)], the v-ticket voucher issued stack (“*second interface module*”) of the retrofit device in LeMay stores v-ticket voucher information, which would include the message/print instructions from the game controller 50 to generate a virtual ticket voucher of a particular amount. See [2(b)(ii)]. Moreover, a POSITA would understand this information used to generate the virtual ticket voucher that is sent via notification to the retrofit device constitutes “*control signals*” at least because they are signals generated by the game controller (“*control unit*”) related to game operation. The ‘608 patent also describes scenarios in which the notification is composed of these control signals used to generate the message with operation information. See ’608 patent at 44:1-18. For the reasons explained in Section [2(b)(ii)], a POSITA would have been motivated to incorporate this second interface module configured to store control signals into the currency media reader hub of the gaming system of Laaroussi. See Sec. [2(b)(ii)].

206. As such, Laaroussi in view of LeMay renders obvious “*the payment module of claim 2, further comprising a second interface module configured to store control signals from the control unit of the offline payment-operated machine that initiate operation of the offline payment-operated machine.*”

[4(b)] wherein obtaining the notification from the offline payment-operated machine includes sampling the control signals from the control unit via the second interface module.

207. For the reasons discussed above in Section [2(b)(ii)], Laaroussi in view of LeMay renders obvious a payment module that obtains the notification from the offline payment-operated machine. *See* Sec. [2(pre)], [2(a)].

208. A POSITA also would have found it obvious to use the sampling technique taught by Okuniewicz when obtaining this notification. In particular, Okuniewicz discloses a “detection device for detecting specific event occurrences on the electronic circuit board” of an electronic gaming device by “sampling” in order to “determine whether the particular event has occurred.” Okuniewicz at 3:29-53. Okuniewicz explains that such event sampling includes “a bill accepted into the machine, a jackpot being hit, coin in, coin out and other display data.” Okuniewicz at 3:29-53. As Okuniewicz teaches, the detection device/command generator “detect[s] event occurrences on the circuit board of a gaming device and then issue[s] appropriate [commands] in response to those event occurrences which will cause connected output devices to perform designated tasks.” Okuniewicz at 3:29-53; *see also* Okuniewicz at 4:48-57 (“the event detection sampling device operative to receive and detect the event occurrence notification signals from the detection devices, analyze the signals and output event occurrence information signals specifying the occurrence of a preselected event or events on the electronic apparatus circuit board”).

209. In the gaming device taught by Okuniewicz, the detection device/command generator includes (1) an “electronic activity detecting portion of the card” that “will identify that an event is taking place within the machine,” and (2) the “command portion of the card” which “recognizes the event and dictates the proper response.” Okuniewicz at 3:54-4:5. As such, this device can “read and react to gaming machine outputs, and, depending on the programming of the device, output the appropriate command signals to output devices to drive the output devices to perform their respective functions.” Okuniewicz at 3:54-4:5.

210. A POSITA would have been motivated to implement Okuniewicz’s technique of sampling event occurrence notification signals relating to the operation of a gaming machine event (“*control signals*”) from the electronic apparatus circuit board (“*control unit*”) to the gaming system of Laaroussi. In particular, a POSITA would have been motivated to modify the v-ticket voucher issued stack (“*second interface module*”) from LeMay with the technique taught by Okuniewicz to allow for sampling of the v-ticket voucher information (“*control signals*”) produced by the game controller (“*control unit*”) to obtain the notification. See Okuniewicz at Claim 4 (describing the storing of event data in the means for event detection sampling); see also Section VII.B.c. A POSITA would have further been motivated to modify the currency media reader hub in Laaroussi to incorporate the v-ticket voucher issued

stack to facilitate the communication of operation information to a mobile device. See Sections VII.B.b., VII.B.c., [1(d-e)].

211. Thus, Laaroussi in view of LeMay and Okuniewicz renders obvious “*wherein obtaining the notification from the offline payment-operated machine includes sampling the control signals from the control unit via the second interface module.*”

2. Claim 6

[6] The payment module of claim 1, wherein the offline payment-operated machine is a coin-operated laundry machine, a vending machine, or a kiosk.

212. As discussed in Section [1(pre)], Laaroussi discloses a payment module and offline payment-operated machine. See [1(pre)].

213. A POSITA would have found it obvious to modify the gaming machine of Laaroussi to allow it to dispense goods as bonuses in response to winning gameplay, as taught by Okuniewicz. Okuniewicz discloses “a printing and dispensing bonusing system for electronic gaming devices,” where the “operator/player of the electronic gaming device is awarded selected bonus items and awards.” Okuniewicz at Abstract. In particular, Okuniewicz explains that it “has also been found that increased game play can result from the dispensing or paying of bonuses in connection with particular reel or display combinations on the electronic gaming device.” Okuniewicz at 4:18-22. Such bonusing items dispensed from the electronic gaming device, as taught by Okuniewicz, could include plush toys, meal vouchers,

promotional materials, and “other prizes or almost any other type of prize award.” Okuniewicz at 4:22-40. As such, a POSITA would understand that the electronic gamine device of Okuniewicz is a vending machine that dispenses goods on demand.

214. For the reasons explained above at Section VII.B.c., a POSITA would have been motivated to implement Okuniewicz’s dispensing of bonusing items to Laaroussi’s gaming machine system. In particular, a POSITA would have been motivated to combine the bonusing payout system of Okuniewicz to Laaroussi to “both increase game play and decrease the dissatisfaction of the consumer” by providing a unique bonusing system of goods and articles other than merely coins or cash. See Okuniewicz at 4:18-40.

215. Thus, because Laaroussi’s gaming system can take many forms and does not limit the gaming machine to a particular type, and a POSITA would have found it obvious to modify Laaroussi to permit the bonusing of goods on demand during gameplay, Laaroussi and Okuniewicz render obvious “*the payment module of claim 1, wherein the offline payment-operated machine is a coin-operated laundry machine, a vending machine, or a kiosk.*”

3. Claim 10

[10(a)] The method of claim 8, wherein the payment module includes a second interface module configured to sample control signals from the control unit of the offline payment-operated machine that initiate operation of the offline payment-operated machine,

216. Laaroussi in view of LeMay renders obvious “*wherein the payment module includes a second interface module configured to sample control signals from the control unit of the offline payment-operated machine that initiate operation of the offline payment-operated machine.*” See [4(a)].

[10(b)] and obtaining the notification from the offline payment-operated machine includes sampling control signals from the control unit via the second interface module.

217. Laaroussi in view of LeMay and Okuniewicz renders obvious “*obtaining the notification from the offline payment-operated machine includes sampling control signals from the control unit via the second interface module.*” See [4(b)].

4. Claim 12

[12] The method of claim 7, wherein the offline payment-operated machine is a coin-operated laundry machine, a vending machine, or a kiosk.

218. Laaroussi in view of Okuniewicz renders obvious “*wherein the offline payment-operated machine is a coin-operated laundry machine, a vending machine, or a kiosk.*” See [6].

5. Claim 16

[16(a)] The offline payment-operated machine of claim 14, further comprising a second interface module configured to sample control signals from the control unit of the offline payment-operated machine that initiate operation of the offline payment-operated machine;

219. Laaroussi in view of LeMay renders obvious “*the offline payment-operated machine of claim 14, further comprising a second interface module configured to*

sample control signals from the control unit of the offline payment-operated machine that initiate operation of the offline payment-operated machine.” See [4(a)].

[16(b)] wherein obtaining the notification from the offline payment-operated machine includes sampling the control signals from the control unit via the second interface module.

220. Laaroussi in view of LeMay and Okuniewicz renders obvious “*wherein obtaining the notification from the offline payment-operated machine includes sampling the control signals from the control unit via the second interface module.*” See [4(b)].

6. Claim 18

[18] The offline payment-operated machine of claim 13, wherein the offline payment-operated machine is a coin-operated laundry machine, a vending machine, or a kiosk.

221. Laaroussi in view of Okuniewicz renders obvious “*the offline payment-operated machine of claim 13, wherein the offline payment-operated machine is a coin-operated laundry machine, a vending machine, or a kiosk.*” See [6].

VIII. CONCLUSION

1. This declaration and my opinions herein are made to the best of my knowledge and understanding, and based on the material available to me, at the time of signing this declaration. I declare that all statements made herein on my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 or Title 18 of the United States Code.

Date:

7/17/2023B. Clifford Neuman