

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ALLIANCE LAUNDRY SYSTEMS, LLC,
Petitioner,

v.

PAYRANGE LLC,
Patent Owner.

IPR2025-00950
U.S. Patent No. 10,891,608

**PETITION FOR *INTER PARTES* REVIEW
UNDER 35 U.S.C. § 311-319 AND 37 C.F.R. § 42.100 *et seq.***

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Patent Trial and Appeal Board
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*Unless otherwise indicated, all *emphasis* has been added.

PETITIONER'S EXHIBIT LIST

Exhibit No.	Description	Publication Date (unless otherwise noted)	Type of Prior Art
1001	USPN 11,891,608 (the '608 Patent) (Patent submitted for <i>Inter Partes</i> Review)	Dec. 18, 2013 (earliest possible priority date based on filing of provisional application)	N/A
1002	File History for USPN 10,891,608	N/A	N/A
1003	Declaration of Dr. B. Clifford Neuman Under 37 C.F.R. § 1.68 in Support of Petition for <i>Inter Partes</i> Review of the '608 Patent	N/A	N/A
1004	<i>Curriculum Vitae</i> of Dr. B. Clifford Neuman	N/A	N/A
1005	USPN 9,092,768 (" <i>Breitenbach</i> ")	Jan. 11, 2011	§ 102(a)
1006	USPN 5,734,150 (" <i>Brown</i> ")	Oct. 16, 1995	§ 102(a)
1007	USPN 5,036,966 (" <i>Kaspar</i> ")	June 12, 1989	§ 102(a)
1008	Redline comparison of Claim 1 of the '608 Patent to Claims 7, 13, and 19 of the '608 Patent	N/A	N/A
1009	USPN 3,457,391 (" <i>Yamamoto</i> ")	July 19, 1965 (issuance date)	§ 102(a)(1)
1010	USPN 3,931,497 (" <i>Gentile</i> ")	Jan. 6, 1976 (issuance date)	§ 102(a)(1)
1011	USPN 6,810,234 (" <i>Räsänen</i> ")	Oct. 26, 2004	§ 102(a)(1)
1012	US Patent Pub. No. 2003/0130902 (" <i>Athwal</i> ")	Nov. 4, 2002	§ 102(a), (d)

Exhibit No.	Description	Publication Date (unless otherwise noted)	Type of Prior Art
1013	Michael L. Kasavana et al., <i>Innovative VDI Standards: Moving an Industry Forward</i> , 4 J. INT'L MGMT STUDIES 3 (2009).	December 2009	N/A
1014	Multi-Drop Bus / Internal Communication Protocol (National Automatic Merchandising Association, Version 3.0, March 26, 2003)	March 26, 2003	N/A

I. INTRODUCTION

Alliance Laundry Systems LLC (“Petitioner”) respectfully petitions for *Inter Partes* Review (“IPR”) of Claims 1–20 of U.S. Patent No. 10,891,608 (“the ’608 Patent,” Ex. 1001). Petitioner respectfully requests that the Board institute trial for IPR of, and find unpatentable, Claims 1–20 (“the Challenged Claims”) of the ’608 Patent.

II. MANDATORY NOTICE OF RELATED MATTERS (37 C.F.R. § 42.8(b)(2))

A. Prior Proceedings: Patent Owner & Kiosoft

PayRange asserted USPN 10,891,608 in litigation captioned *PayRange Inc. v. KioSoft Technologies, LLC et al.*, 1:20-cv-24342 (S.D. Fla.). KioSoft thereafter filed a Petition for Post-Grant Review against Claims 1–20 of the ’608 Patent. *See* PGR2021-00084. On December 16, 2021, the Board issued a decision denying institution of Post-Grant Review of the ’608 Patent. *See id.*, Paper 12.

The dispute between Patent Owner¹ and Kiosoft included district court actions and several PTAB proceedings, as shown below:

Patent Owner & Kiosoft Disputes		
Proceeding Number	Venue	Patent(s) at Issue
20-cv-20970	S.D. Florida	9,134,994
		9,659,296
20-cv-24342	S.D. Florida	10,719,833
		10,891,608
		10,891,614
CBM2020-00026	PTAB	9,659,296
IPR2021-00086	PTAB	9,659,296
PGR2021-00077	PTAB	10,719,833
PGR2021-00084	PTAB	10,891,608
PGR2021-00093	PTAB	10,891,614
PGR2022-00035	PTAB	11,074,580
PGR2023-00042	PTAB	11,481,772
PGR2023-00045	PTAB	11,488,174
PGR2023-00050	PTAB	11,501,296

¹ Patent Owner changed its name from PayRange Inc. to PayRange LLC on October 28, 2024. *See Alliance Laundry Systems LLC v. PayRange Inc.*, No. 1:24-cv-00733-MN, Dkt. 31, PageID.1649 (D. Del. Dec. 5, 2024).

23-2378	Fed. Cir.	9,134,994 9,659,296
23-2425	Fed. Cir.	9,134,994 9,659,296

B. Prior Proceedings: Patent Owner & CSC ServiceWorks

Patent Owner previously sued CSC ServiceWorks, Inc. (“CSC”) for infringement of the ’608 Patent (and others) in Delaware District Court: *PayRange, Inc. v. CSC ServiceWorks, Inc.*, 22-cv-502-MN (D. Del.); *see also* 23-cv-278-MN (D. Del.); 24-cv-279-MN (D. Del.). CSC thereafter filed a petition for IPR against Claims 1–2, 4–8, 10–14, 16–20 of the ’608 Patent. *See* IPR2023-01188. On January 24, 2024, the Board issued a decision denying institution of IPR for the ’608 Patent. *See id.*, Paper 12.

The dispute between Patent Owner and CSC included district court actions and several other PTAB proceedings, as shown below:

Patent Owner & CSC Disputes		
Proceeding Number	Venue	Patent(s) at Issue
22-cv-00502	D. Delaware	8,856,045 10,438,208 10,891,608
23-cv-00278	D. Delaware	8,856,045 10,438,208 10,891,608

		11,481,772
24-cv-000279	D. Delaware	10,719,833 10,891,614 11,488,174
IPR2023-01188	PTAB	10,891,608
IPR2023-01187	PTAB	10,438,208
IPR2023-01186	PTAB	8,856,045
IPR2023-01449	PTAB	11,481,772

C. Related Proceedings: Petitioner and Patent Owner

On June 20, 2024, Petitioner filed suit against Patent Owner for declaratory judgment of noninfringement of related USPNs 11,481,772 (“’772 Patent”), 11,966,920 (“’920 Patent”), and 11,972,423 (“’423 Patent”): *Alliance Laundry Systems, LLC v. PayRange Inc.*, 24-cv-733-MN (D. Del., filed June 20, 2024) (“the Delaware Litigation”). Patent Owner counterclaimed for infringement of the ’608 Patent, the ’772 Patent, the ’920 Patent, and the ’423 Patent. Petitioner subsequently filed a partial motion to dismiss Patent Owner’s counterclaims, which remains pending.

On January 17, 2025, Petitioner filed Petitions for Post-Grant Review of Claims 1–20 of the ’920 and ’423 Patents. *See* PGR2025-00027; PGR2025-00028. On February 3, 2025, Petitioner filed a Petition for *Inter-Partes* Review of Claims 7 and 11 of the ’772 Patent. *See* IPR2025-00573.

Shortly after Petitioner filed its complaint for declaratory judgment of noninfringement in the District of Delaware, Patent Owner filed complaints for infringement of the '772, '920, and '423 Patents in the Western District of Texas against Card Concepts, Inc. ("CCI") and Nayax Ltd. ("Nayax"). *See PayRange Inc. v. Card Concepts Inc.*, 6:24-cv-00339 (W.D. Tex., filed June 24, 2024); *PayRange Inc. v. Nayax Ltd.*, 24-cv-00340 (W.D. Tex., filed June 24, 2024). On December 19, 2024, PayRange voluntarily dismissed its claims against CCI without prejudice. *See PayRange Inc. v. Card Concepts Inc.*, 6:24-cv-00339, Dkt. 16 (W.D. Tex., Dec. 19, 2024). On March 10, 2025, PayRange voluntarily dismissed its claims against Nayax without prejudice. *See PayRange Inc. v. Nayax Ltd.*, 24-cv-00340, Dkt. 9 (W.D. Tex., Mar. 10, 2025).

III. IDENTIFICATION OF CHALLENGES: 37 C.F.R. § 42.104(b)

Petitioner respectfully requests IPR and a determination that the Challenged Claims of the '608 Patent are unpatentable based on the grounds listed below. Per 37 C.F.R. § 42.6(c), copies of the references are filed herewith. In support of the proposed grounds of unpatentability, this Petition is accompanied by the Declaration of Dr. B. Clifford Neuman (Ex. 1003).

Ground	35 U.S.C. Basis	Challenged Claims	References
1	§ 103	1–3, 5–9, 11–15, 17 and 18	<i>Breitenbach</i> in view of <i>Brown</i>

Ground	35 U.S.C. Basis	Challenged Claims	References
2	§ 103	4, 10, 16, 19, and 20	<i>Breitenbach</i> in view of <i>Brown</i> further in view of <i>Kaspar</i>

See also Ex. 1003, ¶¶ 1–30, 58–60.

For at least the reasons set forth in this Petition, Petitioner respectfully requests that the Board institute trial on the grounds set forth herein and determine that the Challenged Claims are unpatentable.

IV. BACKGROUND OF THE '608 PATENT AND THE PRIOR ART

A. The State of the Art Prior to December 2013

The '608 Patent states that vending machines “have been around for thousands of years.” Ex. 1001, 1:32–40. Vending machines that enable cashless transactions—including via the use of a mobile phone—existed long before the earliest possible priority date of the '608 Patent. For instance, *Yamamoto* discloses a vending machine that accepts credit card payments and *Räsänen* discloses a method of conducting a transaction using a mobile phone. *See generally* Exs. 1009, 1011; *see also* Ex. 1010; Ex. 1003, ¶¶ 31–34.

The concept of enabling mobile payment to an offline vending machine was also introduced long before the '608 Patent's earliest possible priority date. For example, *Athwal* describes using a short-range wireless transceiver to communication between a vending machine and mobile device, such that the

vending machine does not need to be connected to a wireless network. Ex. 1012, ¶¶ 19, 22; *see also* Fig. 1; Ex. 1003, ¶ 35.

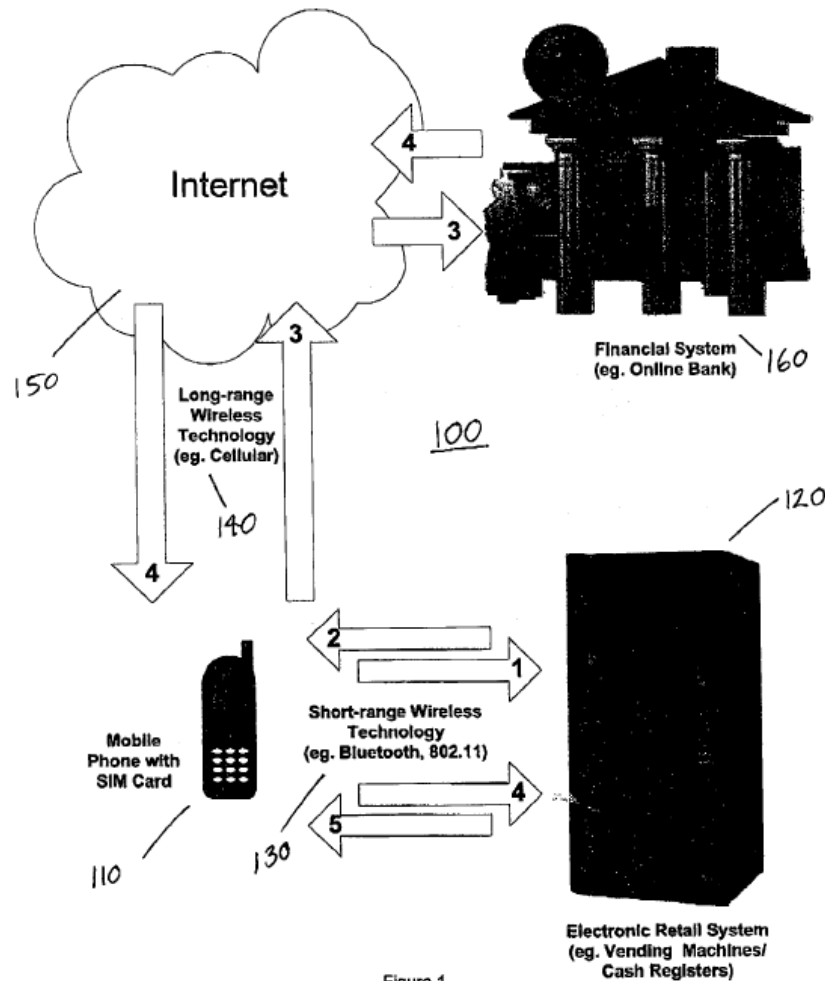


Figure 1

Ex. 1012, Figure 1.

More than two decades ago, the Multi-Drop Bus (“MDB”) Protocol was developed to standardize the method by which devices interface with a vending machine controller (VMC). *See* Ex. 1013 at 3–5; *see also* Ex. 1014 at 7, 12, 20. The

MDB Protocol defines a serial bus interface for electronically controlled vending machines. *Id.* at 18. The '608 Patent recognizes that “most vending machines made since 1995 have this industry standard MDB technology[.]” Ex. 1001, 6:21–29; Ex. 1003, ¶ 36–37.

Recording and exporting operation information from a vending machine was also well-known prior to the earliest priority date of the '608 Patent. Before the creation of the MDB Protocol, the Data EXchange (DEX) standard was created to standardize machine-level data collection, storage, and transmission. *See* Ex. 1013 at 2. DEX captures machine operation information, such as cash in/out data, product movement data, and malfunction alerts. *See id.* at 2, 6; *see also* Ex. 1003, ¶ 38.

B. Overview of the Alleged Invention of the '608 Patent

The '608 Patent is entitled “Method and System for an Offline-Payment Operated Machine to Accept Electronic Payments.” Ex. 1001. The '608 Patent discloses systems and methods for retrofitting an offline-payment operated machine, such as a coin-operated vending machine, to accept electronic payments. *See generally* Ex. 1001, 39:38–46:5; Figs. 28A–B, 29A–B, 30. Figure 28A of the '608 Patent depicts a block diagram of an offline-payment operated machine 1500. *Id.* at 39:38–40.

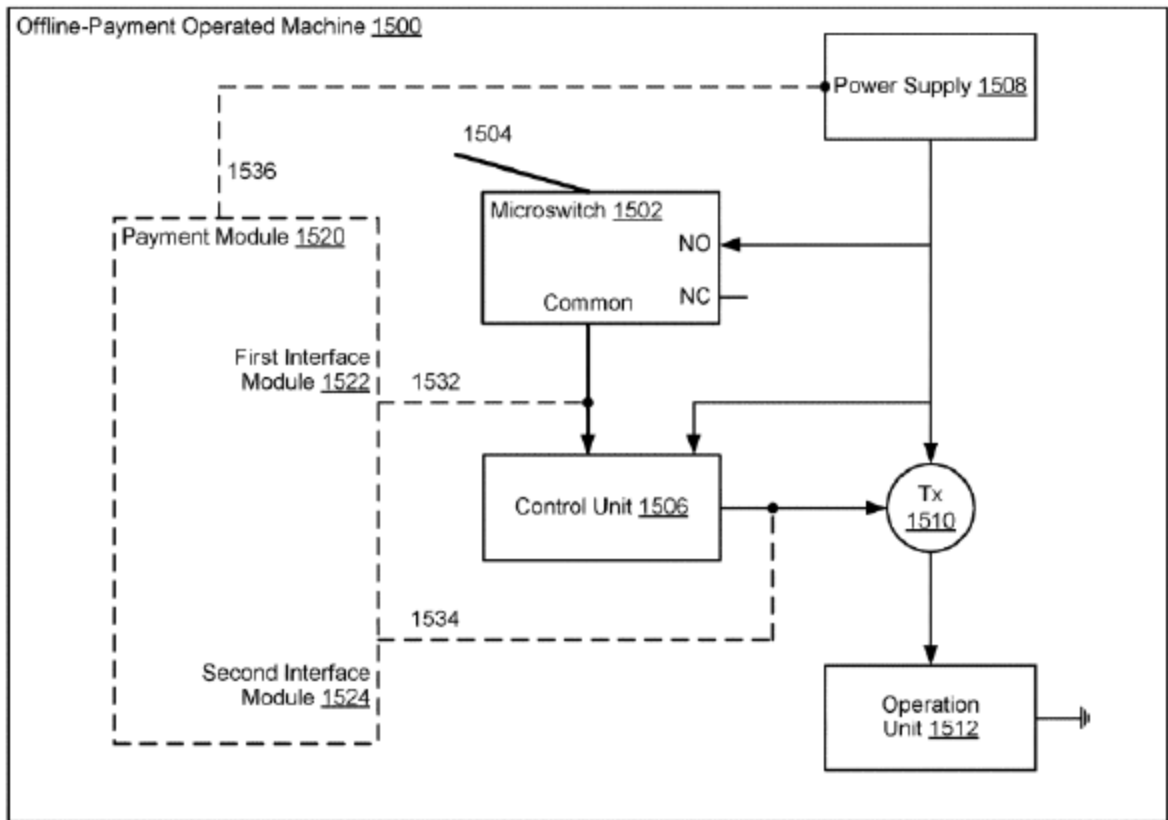


Figure 28A

“[O]ffline payment operated machine 1500 . . . 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).” *Id.* at 39:40–44. It has a microswitch 1502, which has a lever 1504 in the machine 1500’s coin slot. *Id.* at 39:49–65. When a coin slides down, lever 1504 is depressed, closing microswitch 1502 and sending a pulse to the control unit 1506. *Id.* at 39:61–40:6. When the control unit receives a sequence of payment acceptance signals “indicative of a preset number of coins being received,” the control unit initiates operation of the machine. *Id.* at 40:7–11.

Offline-payment operated machine 1500 is retrofitted to accept electronic payments by installing payment module 1520, which samples payment acceptance signals from microswitch 1502 and control signals from control unit 1506, to initiate operation of the machine. *Id.* at 40:22–49; *see also id.* at 41:43–48, 42:55–65; Ex. 1003, ¶¶ 39–44.

C. Summary of the '608 Patent Prosecution History

The earliest patent application that the '608 Patent claims priority to is U.S. Provisional Application No. 29/477,025, filed on December 18, 2013. Ex. 1002 at 15. The application that issued as the '608 Patent was filed on January 23, 2018. *Id.* at 2. The only Office Action rejecting the claims on the merits for the '608 Patent application rejected all pending claims under 35 U.S.C. § 101. *Id.* at 179. The claims were also rejected under double patenting over claims of USPN 9,875,473. *Id.* at 184–87. The Applicant filed claim amendments and a terminal disclaimer in response. *Id.* at 504–05; *see also* Ex. 1003, ¶¶ 45–48.

D. Priority Date of the Challenged Claims

For purposes of this Petition, Petitioner takes no position on the proper priority date for the Challenged Claims. Petitioner uses the earliest possible priority date claimed, December 18, 2013, for the invalidity grounds presented in this Petition. *See also id.*, ¶ 21.

E. The Challenged Claims

Claims 1–20 are challenged herein. Claim 1 recites:

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

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

[1.2] one or more processors;

[1.3] 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

[1.4] memory with one or more programs for execution by the one or more processors, the one or more programs including instructions for:

[1.4(a)] 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;

[1.4(b)] 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

[1.4(c)] in response to the wireless request:

[1.4(c)(i)] 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;

[1.4(c)(ii)] 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

[1.4(c)(iii)] 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.

Independent Claims 7 and 13 recite identical limitations to Claim 1, but are presented in the form of a method (Claim 7) and an offline payment-operated machine (Claim 13). *See* Ex. 1008 (redline comparison).

Independent Claim 19 recites many of the same limitations as Claim 1. *See* Ex. 1008. However, Claim 19 includes an additional limitation (limitation [19.4]), and limitations [19.5(c)(ii)] and [19.5(c)(iii)] differ from corresponding limitations [1.4(c)(ii)] and [1.4(c)(iii)], respectively. *See* Ex. 1008. The differing limitations are listed below:

[19.4] 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 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

[19.5(c)(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

[19.5(c)(iii)] 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.

Dependent Claim 2 recites the payment module of Claim 1, wherein the one or more programs comprise instructions for obtaining a notification from the offline payment-operated machine indicating initiation of the operation of the offline payment-operated machine and, in response to receiving the notification, generating operation information and storing the operation information in the payment module's memory.

Claims 8, 14, and 20 recite the same limitations as Claim 2, but they depend from Claims 7, 13, and 19 respectively.

Claims 3, 9, and 15 depend from Claims 2, 8, and 14, respectively and add that the notification includes inventory information.

Claim 4 depends from Claim 2 and adds a second interface module configured to store control signals wherein obtaining the notification from the offline payment-operated machine includes sampling the control signals.

Claims 10 and 16 depend from Claims 8 and 14, respectively, and are largely the same as Claim 4, except that they recite a “second interface module configured to **sample** control signals” rather than “store control signals.”

Claims 5, 11, and 17 depend from Claims 1, 7, and 13, respectively, and add that the offline payment-operated machine is not connected to any networks.

Claims 6, 12, and 18 depend from Claims 1, 7, and 13, respectively, and add that the offline payment-operated machine is a coin-operated laundry machine, a vending machine, or a kiosk.

V. SUMMARY OF THE ASSERTED PRIOR ART

A. *Breitenbach*: U.S. Patent No. 9,092,768 (Ex. 1005)

U.S. Patent No. 9,092,768 to Breitenbach et al. (“*Breitenbach*”) is titled “Machine Retrofits and Interactive Soda Fountains.” *Breitenbach* issued on July 28, 2015 from an application filed on January 11, 2011 and is therefore prior art to the ’608 Patent under 35 U.S.C. § 102(a). *See also* Ex. 1003, ¶ 49.

Breitenbach teaches systems, apparatus, methods, and articles of manufacture for a retrofit device which may be coupled to a conventional vending machine to facilitate remote, wireless, and/or cashless sales. *See* Ex. 1005, 2:16–22. In some embodiments, a wireless or cellular telephone may communicate directly with the retrofit device 120 to place an order. *Id.*, 3:1–15, 7:25–29. The retrofit device may then transmit a signal causing the machine to dispense the desired product. *Id.*, 8:53–58; *see also* Ex. 1003, ¶ 50.

Breitenbach discloses various embodiments which may consist of or include a retrofit device. *See id.*, ¶ 51. Petitioner’s discussion of *Breitenbach* refers generally to all of these embodiments, though only specific embodiments may be referenced in a given example. *See also id.*

B. *Brown*: U.S. Patent No. 5,734,150 (Ex. 1006)

U.S. Patent No. 5,734,150 to Brown et al. (“*Brown*”) is titled “Electronic Funds Acceptor for Vending Machines.” *Brown* issued on March 31, 1998 from an application filed on October 16, 1995 and is therefore prior art to the ’608 Patent under 35 U.S.C. § 102(a).

Brown teaches an electronic funds acceptor that replaces the mechanical coin acceptor mechanism of a standard vending machine. *See* Ex. 1006, 4:47–5:33, 5:65–6:1. The acceptor includes a funds controller circuit which outputs coin deposit signals to the vending machine. *Id.*, 5:17–33. The funds controller determines whether the customer has sufficient funds to make the requested purchase and, once verified, “outputs in a serial fashion coin deposit signal pulses” indicating to the vending machine “that the maximum purchase value has been received.” *Id.*, 6:5–25. The signals that are to be generated “may be predetermined and stored in memory.” *Id.*, 6:25–28; *see also* Ex. 1003, ¶¶ 52–53.

C. *Kaspar*: U.S. Patent No. 5,036,966 (Ex. 1007)

U.S. Patent No. 5,036,966 to Kaspar et al. (“*Kaspar*”) is titled “Newspaper Vending Rack Coin Box Incorporating a Retrofit Electronic Coin Mechanism.” *Kaspar* issued on August 6, 1991 from an application filed June 12, 1989 and is therefore prior art to the ’608 Patent under 35 U.S.C. § 102(a).

Kaspar teaches a retrofit coin measuring apparatus for a newspaper vending rack. Ex. 1007, 1:7–11. The retrofit apparatus confirms that inserted coins are legitimate and counts the correct purchase price. *Id.*, 1:50–60. The apparatus may store the time, day, and price of each sale. *See, e.g., id.* 1:61–64, 2:19–22. *See also* Ex. 1003, ¶¶ 54–55.

VI. CLAIM CONSTRUCTION: 37 C.F.R. § 42.104(B)(3)

A. Applicable Law

The claim construction standard of *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) applies to this proceeding. *See also id.*, ¶ 56.

B. A Person Having Ordinary Skill in the Art

A person of ordinary skill in the art (“POSA”) at the time of the earliest claimed filing date of the ’608 Patent would have had an educational background of, or practical experience equivalent to, 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. Ex. 1003, ¶¶ 20–26.

C. Claim Term(s)

Petitioner submits that, for purposes of this Petition, the Board need not construe any claim terms to resolve the parties’ disputes, and the claims should be

given their ordinary and customary meaning. *See id.*, ¶¶ 56–57. Petitioner reserves the right to further clarify those ordinary and customary meanings, to respond to any construction proposed by Patent Owner and/or to offer one or more constructions in response to any constructions proposed by Patent Owner.²

VII. DETAILED EXPLANATION OF GROUNDS

A. Ground 1: Claims 1–3, 5–9, 11–15, 17 and 18 are Rendered Obvious Under 35 U.S.C. § 103 Over *Breitenbach* in View of *Brown*

1. Obviousness Standards and Analysis

Questions of obviousness under 35 U.S.C. § 103 are resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; and (3) the level of skill in the art. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966); *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). *See* Ex. 1003, ¶ 61.

a. Differences Between the Claimed Subject Matter and *Breitenbach*

Breitenbach teaches almost every limitation of independent Claims 1, 7, and 13. *See infra* §§ VII.A.2, VII.A.7, VII.A.12. *Breitenbach* teaches that the retrofit

² Petitioner does not concede that any Challenged Claim meets the statutory requirements of 35 U.S.C. § 112.

device may include a retrofit processing device (e.g., 474) which may store instructions in memory. Ex. 1005, 15:31–40; *see also id.*, 29:66–30:6. *Breitenbach* teaches that the instructions are executed based on input, data, indications, and/or commands that are received. *See, e.g., id.*, 15:31–40, 12:8–14. *Breitenbach* further teaches that the retrofit device may include a memory device 940 which may store purchase instructions 942-1, which may be used to facilitate a purchase. *Id.*, 23:14–28, 24:39–25:5; *see also* Ex. 1003, ¶¶ 62–65.

Breitenbach also teaches that the retrofit device may transmit an indication of a proper payment amount sufficient to cause a provision of a desired product by “replicating a ‘coin-in’ signal indicative of the proper payment amount[.]” Ex. 1005, 14:60–15:2, 8:47–62; *see also infra* § VII.A.2.d. A POSA would have understood that, in a coin-operated machine, the retrofit device “replicates” the coin-in signal by generating the electrical pulses that must be received by the control unit to initiate an operation of the offline payment-operated machine. Ex. 1003, ¶ 66–68.

However, *Breitenbach* does not expressly teach “storing, *in the memory of the payment module*, a number of electrical pulses that must be received by the control unit to initiate an operation of the offline payment-operated machine.” *See id.*, ¶ 69.

However, *Brown*, which is directed to vending machine retrofits, is in the same field of endeavor as *Breitenbach* and expressly teaches this limitation. *Id.*

Furthermore, a POSA would have found it obvious to modify the retrofit processing device of *Breitenbach* to include instructions for performing this limitation. *Id.*, ¶¶ 69–70.

Brown discloses an electronic funds acceptor (i.e., payment module) which includes a “memory 22” and a “funds controller 21.” Ex. 1006, 5:13–21. The funds controller “outputs in a serial fashion coin deposit signal pulses” to signal to the vending machine “that the maximum purchase value has been received.” *Id.*, 6:21–25. “The *exact nature of which coin signals are to be generated may be predetermined and stored in memory 22 to improve the speed of the transaction[.]*” *Id.*, 6:25–27; Ex. 1003, ¶ 71.

Accordingly, *Breitenbach* in view of *Brown* teaches all of the limitations of independent Claims 1, 7 and 13 and dependent Claims 2–3, 5–6, 8–9, 11–12, 14–15, and 17–18. *Id.*, ¶ 72; *see infra* §§ VII.A.3–VII.A.16.

b. Obviousness Rationale for Why a POSA Would Have Modified *Breitenbach* with *Brown* to Arrive at the Claimed Subject Matter

In view of the collective teachings of *Breitenbach* and *Brown*, it would have been obvious to a POSA to modify the retrofit processing device 474 of *Breitenbach* to include instructions, for storing in the memory of the payment module, a number of electrical pulses that must be received by the control unit to initiate an operation

of the offline payment-operated machine based on the teachings of *Brown*. *See* Ex. 1003, ¶¶ 73–75.

Breitenbach discloses that the electronic processing device 374/474 may execute instructions which enable the retrofit device to operate in accordance with the described embodiments. Ex. 1005, 12:1–14. *Breitenbach* further teaches that the retrofit processing device comprises memory which may store instructions. *Id.*, 15:34–40; Ex. 1003, ¶¶ 76–77.

Breitenbach also teaches that the retrofit device may obtain pricing data and then “satisfy payment requirements” by “emulating a payment processing device.” Ex. 1005, 14:41–55. For instance, the retrofit device may derive pricing data by “utilizing a small monetary amount such as a five cent (\$0.05) ‘ping’ to retrieve a deficiency amount” and then use the “derived pricing data to transmit an indication of a proper payment/credit amount.” *See id.*, 14:40–15:2. A POSA would have understood that the retrofit device derives pricing data in the form of electrical pulses. Ex. 1003, ¶¶ 78–79. The retrofit device may then “‘fool’ the machine by replicating a coin-in signal [i.e., an electrical pulse, *id.*, ¶ 79] indicative of the proper payment amount for the desired unit of product[.]” *Id.*, 8:58–62; Ex. 1003, ¶ 80.

These disclosures indicate that *Breitenbach*, to the extent it does not expressly do so, provides—under the former, more rigid “TSM” standard—a teaching, suggestion, or motivation to a POSA to modify the retrofit processing device to store

in memory on the retrofit processing device a number of electrical pulses that must be received by the control unit to initiate an operation of an offline payment-operated machine based on the pricing data obtained via the data management port. Ex. 1003, ¶ 81. A POSA would have understood that storing the number of electrical pulses in the memory would make the retrofit device more efficient, for example, by eliminating the need for the retrofit device to determine the number of electrical pulses that are needed every time a transaction is conducted. *Id.*, ¶ 82. A POSA would have understood that storing the number of electrical pulses in local memory would reduce the load on the processing hardware of *Breitenbach* because it would reduce the need for the retrofit processing device to “ping” the machine every time it determines the payment amount. *Id.*, ¶ 83.

As another example, a POSA would have understood that storing the pricing data locally on the memory of the retrofit processing device would improve the speed of the transaction—a known desire in the art (*see id.*, ¶ 84; Ex. 1006, 6:25–27)—as compared to storing the pricing data, for example, remotely on a server. This is because a POSA would have understood that, if the pricing data were stored on a remote device, the retrofit processing device would need to re-query the remote device every time it derived pricing data, which would negatively increase the amount of time required to obtain such information thus slowing down the speed of any given transaction. A POSA would have understood that this would be a less

efficient process, requiring more hardware, than where the retrofit processing device stores the data locally. Ex. 1003, ¶ 84.

The foregoing rationales are exemplary in nature and additional rationales may equally apply as discussed in additional detail in the Declaration of Petitioner's expert Dr. Neuman. Ex. 1003, ¶¶ 73–87; *see KSR*, 550 U.S. at 417, 421.

c. Obviousness Rationale for How a POSA Would Have Modified *Breitenbach* with *Brown* to Arrive at the Claimed Subject Matter

Once motivated to modify *Breitenbach* with *Brown*, a POSA would have (i) readily understood how to do so with a reasonable expectation of success and (ii) found it obvious and routine to implement any modifications needed to make the combination work. Ex. 1003, ¶ 88. For example, a POSA would have understood from *Breitenbach*'s express teachings that the retrofit processing device of *Breitenbach* could store a variety of instructions. *See* Ex. 1005, 15:34–40; Ex. 1003, ¶ 89. A POSA would have understood it to be a simple and routine task to modify *Breitenbach*'s retrofit device to include instructions for storing in the memory of the payment module a number of electrical pulses, as taught by *Brown*. *Id.*, ¶ 90.

2. Claim 1

a. [1.P] A payment module for an offline payment-operated machine including a coin receiving switch

Breitenbach teaches systems, methods, and articles of manufacture for machine retrofits. Ex. 1005, 2:16–18. The retrofit device may be coupled to a

conventional vending machine. *Id.*, 2:18–22. The machine can be a “standard machine [that] does not comprise a device capable of and/or configured for external and/or remote communications.” *Id.*, 15:9–14; Ex. 1003, ¶ 91–93. A POSA would have understood that a machine lacking a device capable of external/remote communications is, by definition, offline. *Id.*

Additionally, *Breitenbach* teaches that the “machine 108” may include a “function device 114” (shown in blue) which may include a “payment acceptance mechanism[.]” Ex. 1005, 6:38–44. The “retrofit device 120” (red) may send a signal to the function device 114 that causes the machine to undertake a desired function. *See id.*, 8:47–53; Ex. 1003, ¶ 94.

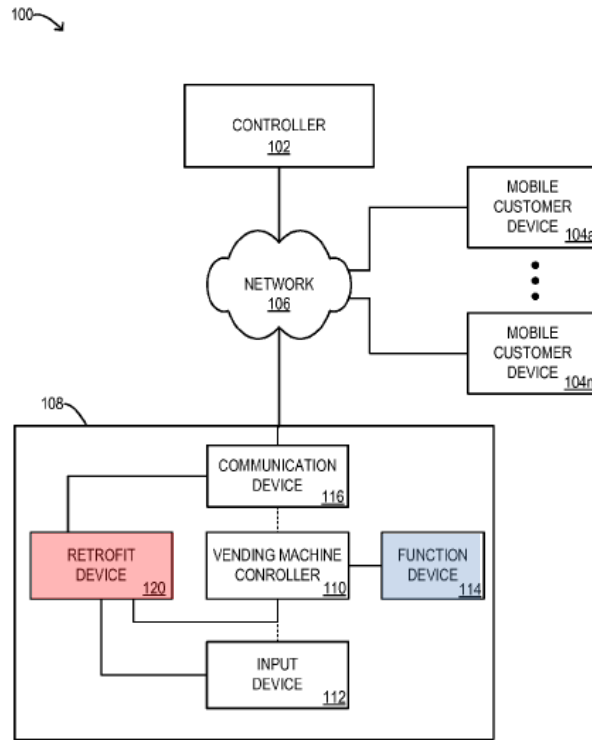


FIG. 1

Ex. 1005, Figure 1 (annotated).

The retrofit device may “fool” the machine by replicating a ‘coin-in’ signal indicative of the proper payment amount for the desired unit of product, causing the machine to dispense the unit of product.” *Id.*, 8:53–62. A POSA would have understood that a function device 114 that, in response to a “coin-in” signal, causes the machine to dispense the desired product, is a coin receiving switch. *See Ex. 1003, ¶ 95.*

Thus, *Breitenbach* teaches a payment module (e.g., retrofit device 120) for an offline payment-operated machine (e.g., machine 108) including a coin receiving switch (e.g., function device 114). *Id.*, ¶ 96.

b. [1.1] the payment module comprising: a short-range wireless transceiver configured to communicate with one or more mobile devices

Breitenbach teaches “a first customer device 104a may communicate directly with the retrofit device 120[.]” Ex. 1005, 7:26–27; *see also id.* 3:2–14. The customer device may communicate via the network 106, which may include a LAN, cellular, telephone, Bluetooth®, and/or RF network. *Id.*, 5:9–14. A POSA would have understood that at least some of these network types employ short-range wireless technology. *See* Ex. 1003, ¶ 97.

Breitenbach additionally teaches that the retrofit device may include a retrofit communication device 460 (shown in green) which may be a “wireless communication device.” Ex. 1005, 12:38–50, 13:2–7, 15:3–9.

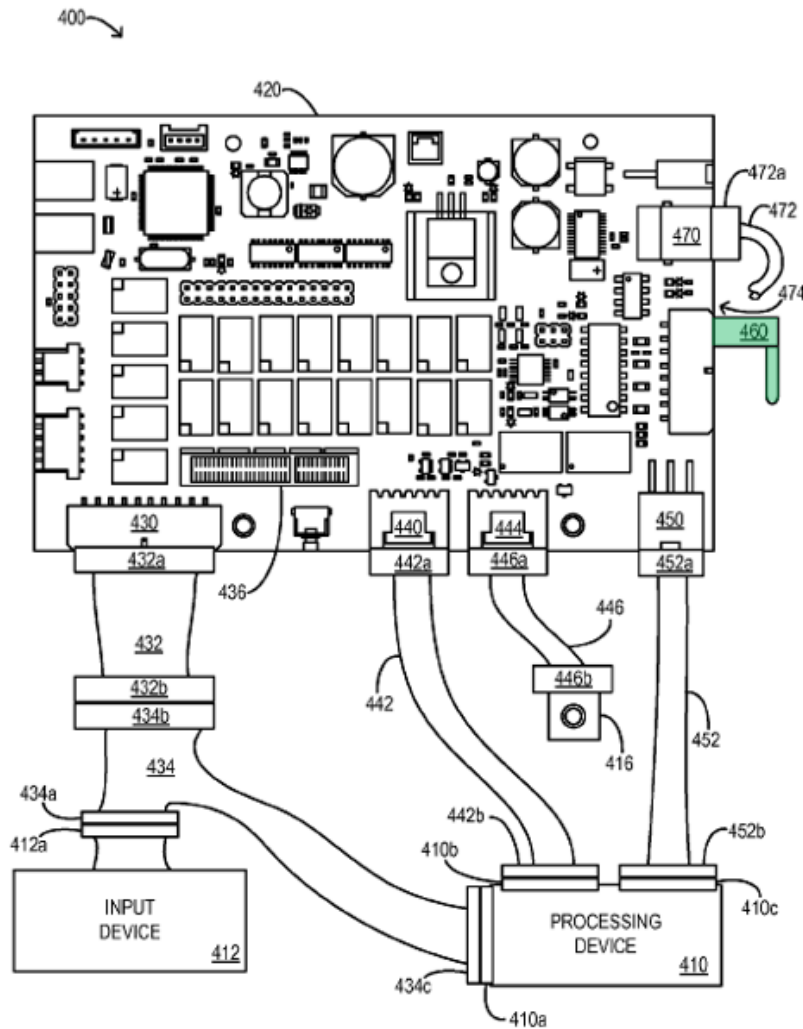


FIG. 4

Ex. 1005, Figure 4 (annotated).

The retrofit device 420 may “receive indications of machine input via the retrofit communication device 460 (*e.g., from a customer device . . .*)[.]” *Id.*, 15:24–30. A POSA would have understood that the retrofit communication device that is configured to communicate with a customer device, as taught by *Breitenbach*, includes a short-range wireless transceiver. Ex. 1003, ¶¶ 98–99.

Thus, *Breitenbach* teaches the payment module comprising a short-range wireless transceiver (e.g., retrofit communication device 460), configured to communicate with one or more mobile devices (e.g., mobile customer device 104). *Id.*, ¶ 100.

c. [1.2] the payment module comprising. . . one or more processors

Breitenbach teaches “apparatus 320,” which may be similar in functionality to retrofit device 120, and may include an “electronic processing device 374,” which is contained on the circuit board shown in yellow below. *Id.*, 9:29–52.

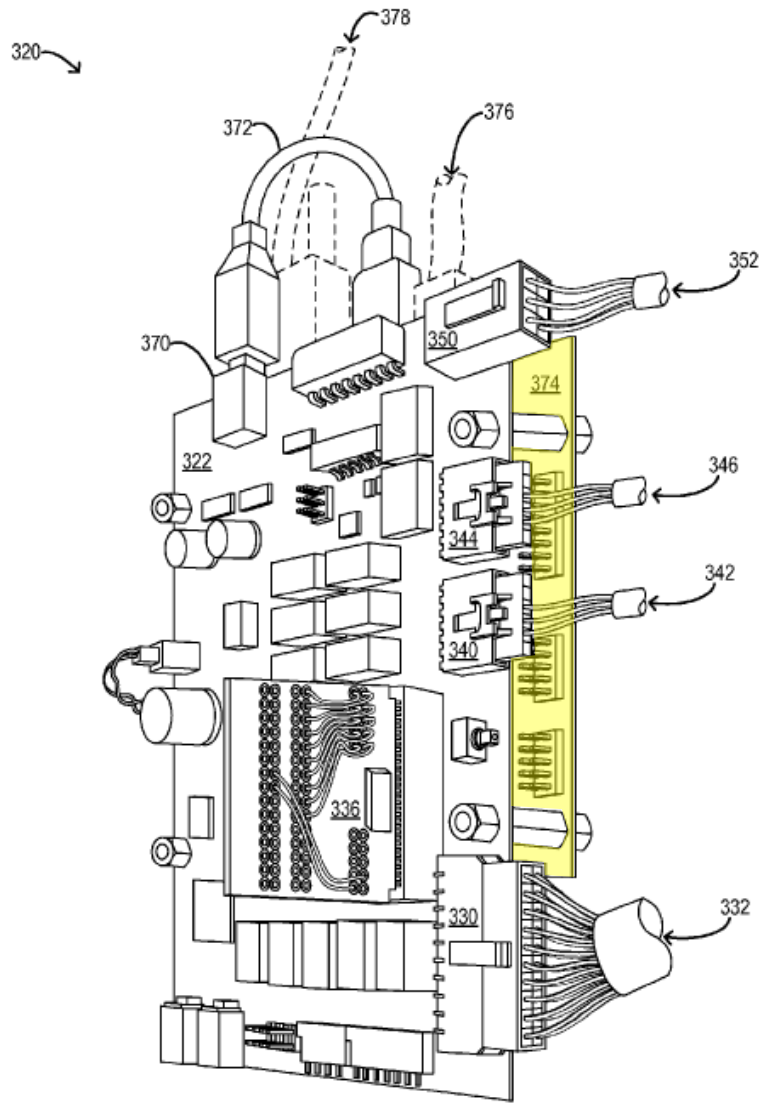


FIG. 3

Ex. 1005, Figure 3 (annotated).

Electronic processing device 374 may include any “electronic and/or computerized processor that is or becomes known.” *Id.*, 12:1–5; *see also id.*, 15:34–40.

Thus, *Breitenbach* teaches the payment module comprising one or more processors (e.g., electronic processing device 374/474). Ex. 1003, ¶¶ 101–03.

- d. **[1.3] the payment module comprising . . . 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**

Breitenbach teaches that the retrofit device may, based on a received indication of a desired function, cause the machine to execute the desired function. *Id.*, 8:47–53. For instance, if the desired function is dispensing a product, the retrofit device may “‘fool’ the machine *by replicating a ‘coin-in’ signal indicative of the proper payment amount for the desired unit of product[.]*” *Id.*, 8:47–62.

A POSA would have understood that a “coin-in” signal is an electrical pulse emulating an analog signal generated by the coin receiving switch of the offline payment-operated machine in response to insertion of a coin of a predetermined type. Specifically, a POSA would have understood that, when connected to a conventional coin-operated machine, the retrofit device emulates the number of coins that would need to be deposited for the VMC to initiate an operation by generating a “coin-in” electrical pulse which emulates the analog signal generated by the coin acceptance mechanism (e.g., 114). Ex. 1003, ¶¶ 104–105.

Breitenbach also teaches that the retrofit device (e.g., 420) may include a payment port 450 (shown in orange) which may be coupled to processing device 410 (gray) such that the retrofit device 420 can function as and/or emulate a payment acceptance device. Ex. 1005, 14:41–45.

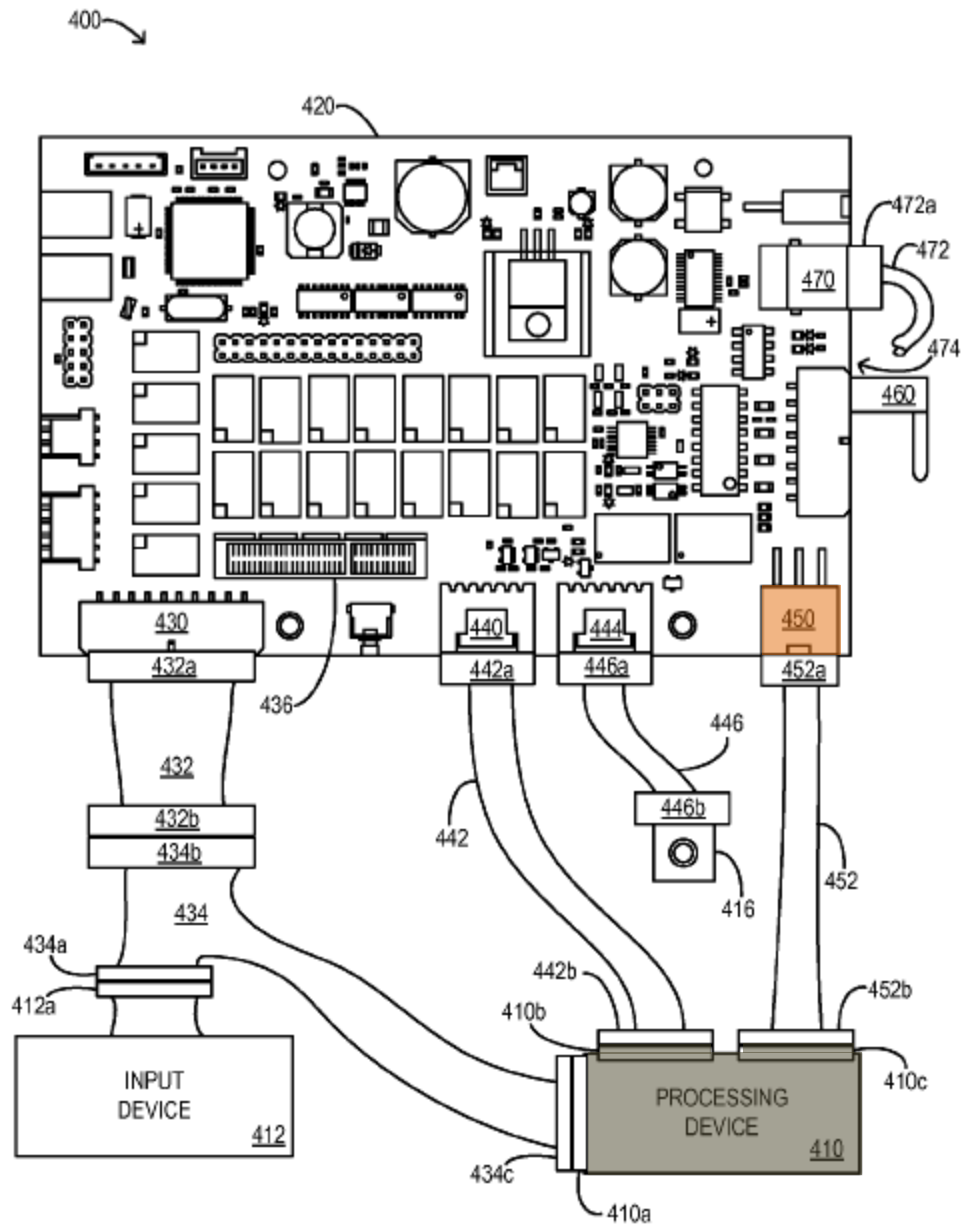


FIG. 4

Ex. 1005, Figure 4 (annotated).

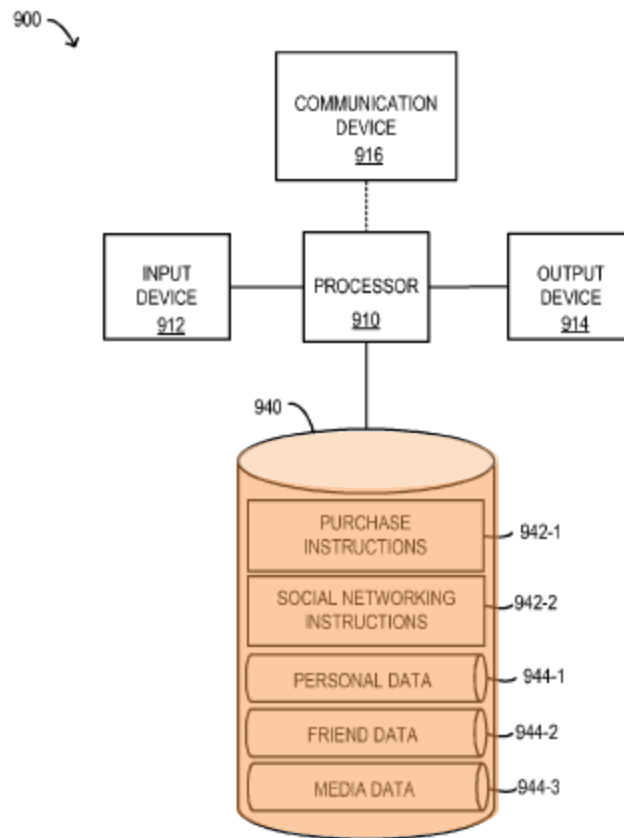
A POSA would understand that, in the case of a coin-operated machine, “emulating a payment processing device” means replicating coin-in electrical pulses

to “fool” the VMC into determining that the correct payment amount has been received by the coin-acceptance mechanism. Ex. 1003, ¶¶ 106–07.

Thus, *Breitenbach* teaches the payment module comprising a first interface module (e.g., processing device 374/474 executing instructions to output to processing device 410 via payment port 450 one or more electrical pulses) configured to output to a control unit of the offline payment-operated machine (e.g., processing device 410) one or more electrical pulses emulating an analog signal (e.g., “coin-in” signal) generated by the coin receiving switch (e.g., function device 114) of the offline payment-operated machine in response to insertion of a single coin of a predetermined type (e.g., “coin-in” signal) in the offline payment-operated machine. Ex. 1003, ¶ 108.

e. [1.4] the payment module comprising . . . memory with one or more programs for execution by the one or more processors

Breitenbach discloses that apparatus 900 may include “*a memory device* 940[,]” shown in orange. Ex. 1005, 23:25–28.



Memory device 940 may store purchase instructions (e.g., 942-1) which may be used by processor 910 to provide output information or to access personal data 944-1, which may be used to “to facilitate and/or effectuate a customer’s purchase[.]” *Id.*, 24:48–25:5; *see also id.*, 26:28–44; Ex. 1003, ¶¶ 109–111.

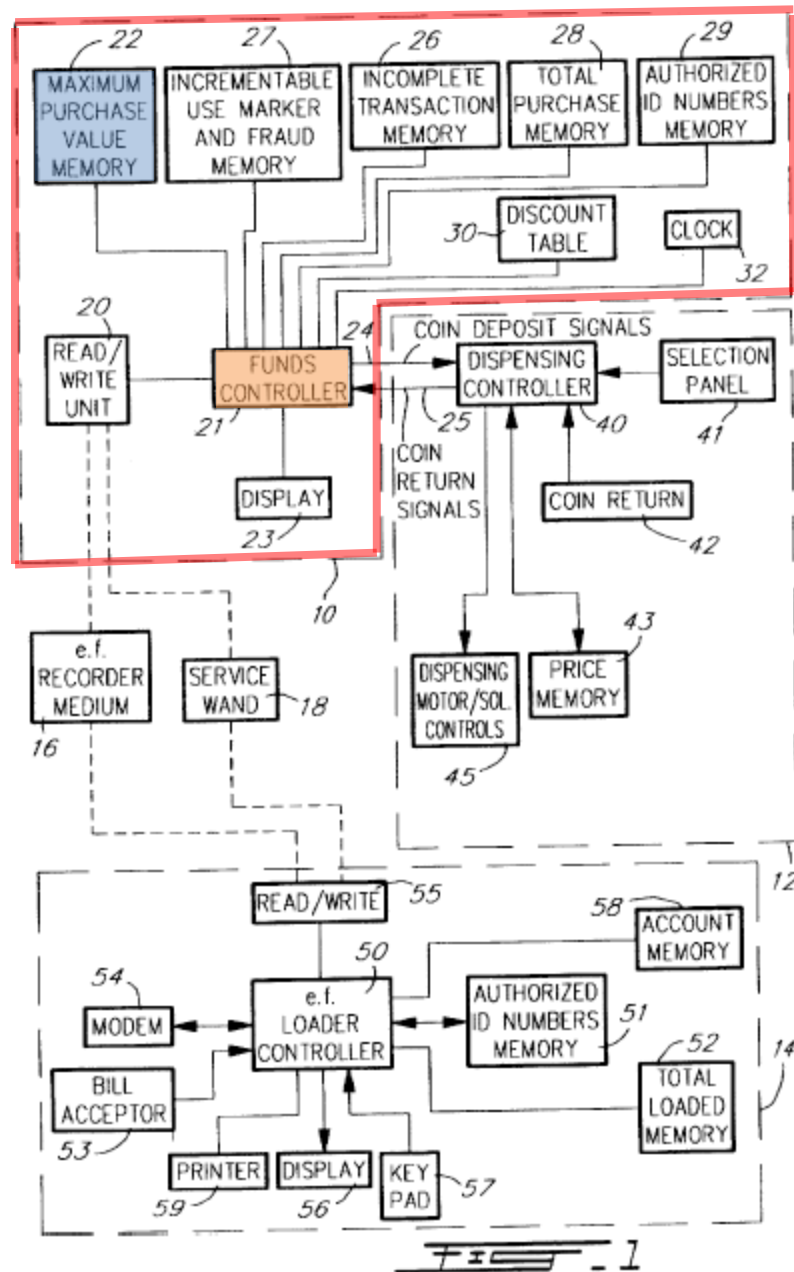
Thus, *Breitenbach* teaches the payment module comprising memory (e.g., memory device 940) with one or more programs (e.g., purchase instructions 942-1) for execution by the one or more processors (e.g., processor 910, retrofit processing device 374/474). *Id.*, ¶ 112.

- f. **[1.4(a)] the one or more programs including instructions for: 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**

To the extent that Patent Owner may argue that *Breitenbach* does not expressly teach this limitation, *Brown* does, and a POSA would have found it obvious to modify the one or more programs of *Breitenbach* to include instructions for storing, in the memory of the payment module, a number of electrical pulses that must be received by the control unit, as taught by *Brown*, with a reasonable expectation of success. Ex. 1003, ¶¶ 113–18; *see supra* § VII.A.1.

Brown teaches an electronic funds acceptor (outlined in red below), which replaces a mechanical coin acceptor mechanism. Ex. 1006, 5:24–30, 65–67. The acceptor includes a “funds controller circuit 21 [orange] which is “connected to a dispensing controller 40[.]” *Id.*, 5:17–33. The dispensing controller activates the appropriate dispensing motors for releasing a product. *Id.*, 5:34–47.

The acceptor also includes memory 22 (blue), which stores a predetermined maximum value of a product to be purchased from the vending machine. *Id.*, 5:18–20, 6:1–3; *see also* Ex. 1003, ¶¶ 115–16.



Ex. 1006, Figure 1 (annotated).

When the funds controller 21 determines that the funds available on a customer's credit card exceed the maximum purchase value in memory 22, the funds controller 21 "outputs in a serial fashion" coin deposit signal pulses indicating that

the maximum purchase value has been received. *Id.*, 6:5–18. “*The exact nature of which coin signals are to be generated may be predetermined and stored in memory 22[.]*” *Id.*, 6:15–32; *see also* Ex. 1003, ¶ 117.

Petitioner has explained why and how a POSA would modify *Breitenbach* with *Brown*. *See supra* § VII.A.1. Thus, *Breitenbach* in view of *Brown* teaches the one or more programs including instructions for: 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 (e.g., *Breitenbach*’s memory device including instructions to store the number of electrical pulses that must be received to initiate an operation, such as instructions to “predetermine[] and store in memory 22” the “which coin signals are to be generated,” as taught by *Brown*). Ex. 1003, ¶¶ 115–18.

- g. [1.4(b)] 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**

Breitenbach teaches that a customer device 104a may communicate directly with the retrofit device 120 via communication device 460 to place an order and/or request a function to be performed by the machine. Ex. 1005, 7:25–29, 15:24–30. *Breitenbach* further teaches that a customer device communicates via a network which may include short-range communication capabilities. *Id.*, 3:2–14, 5:9–14. A

POSA would have understood that the retrofit communication device 460 includes a short-range wireless transceiver. *See* Ex. 1003, ¶ 119. A POSA would further have understood that the purchase instructions may include instructions for receiving a wireless request via the short-range wireless transceiver. *Id.*, ¶ 120; *see supra* § VII.A.2.e.

Thus, *Breitenbach* in view of *Brown* teaches the one or more programs including instructions for receiving a wireless request (e.g., place an order and/or request a function to be performed) via the short-range wireless transceiver from a respective mobile device of the one or more mobile devices (e.g., retrofit communication device 460 that receives indications of machine input from a customer device having, e.g., Bluetooth® capabilities) to initiate a cashless operation of the offline-payment operated machine. Ex. 1003, ¶ 121.

- h. [1.4(c)(i)] 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**

Breitenbach teaches that the retrofit device may discern or calculate the actual price of a desired product. *Id.*, 9:18–27, 11:32–35. For example, the retrofit device may transmit a credit signal for a specific monetary amount to the machine, along with an identifier of a desired product for purchase. *Id.*, 11:20–23. In response, the machine may transmit to the retrofit device “an indication of the amount by which

the credited funds are deficient” for the desired purchase. *Id.*, 11:27–33. The retrofit device may then “*calculate the actual price of the desired product and/or service*” and transmit a second credit signal to the machine representing the determined actual price. *Id.*, 11:32–39.

Breitenbach also teaches that the retrofit device may cause the machine to dispense a desired product by replicating a coin-in signal indicative of the proper payment amount. Ex. 1005, 8:58–62. A POSA would have understood that a “coin-in” signal indicative of the proper payment amount for the desired product constitutes a particular number of electrical pulses associated with the price of an item. *See supra* § VII.A.2.d; Ex. 1003, ¶¶ 122–23. Moreover, a POSA would have understood that, when connected to a conventional coin-operated machine, the retrofit device determines a particular “coin-in” signal constituting a particular number of electrical pulses before it transmits such “coin-in” signal to the machine to cause the machine to dispense the product. *Id.*

A POSA would have understood that these functions are performed in response to the wireless request. By teaching that the retrofit device may “calculate the actual price of the *desired product*,” *Breitenbach* teaches that the retrofit device receives the wireless request for the desired product before it can calculate the actual price of the desired product. *See* Ex. 1003, ¶ 124; *see also id.*, ¶ 125, Ex. 1005, 7:60–66, 8:63–9:8.

Thus, *Breitenbach* in view of *Brown* teaches 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 (e.g., determine a particular “coin in” signal constituting a particular number of electrical pulses associated with the price of a product to cause the machine to dispense the product). Ex. 1003, ¶ 126.

- i. [1.4(c)(ii)] 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**

A POSA would have understood that replicating a “coin-in” signal indicative of the proper payment amount, as taught by *Breitenbach* (Ex. 1005, 8:47–62), constitutes a particular number of electrical pulses required to cause the offline payment-operated machine to initiate the requested cashless operation. *See supra* § VII.A.2.d.; Ex. 1003, ¶ 127. A POSA would have understood that these functions are performed in response to the wireless request for similar reasons as those described *supra*, § VII.A.2.h. *See also* Ex. 1003, ¶ 128.

Thus, *Breitenbach* in view of *Brown* teaches 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 (e.g., “replicating a ‘coin-in’ signal indicative of the proper payment amount”). *Id.*, ¶ 129.

- j. [1.4(c)(iii)] 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.**

Breitenbach teaches that the retrofit device may transmit and the customer device may receive information descriptive of various parameters and/or metrics associated with the vending machine. Ex. 1005, 19:32–37; *see also id.*, 18:13–46; Ex. 1003, ¶ 130–31. For example, the retrofit device may transmit “*a confirmation of the dispensing of a desired product[.]*” Ex. 1005, 19:37–52; Ex. 1003, ¶ 131.

Thus, *Breitenbach* in view of *Brown* teaches in response to the wireless request sending operation information corresponding to the initiated operation of the offline payment-operated machine (e.g., confirmation of dispensing) to the respective mobile device (e.g., customer device 104/704) via the short-range wireless transceiver (e.g., retrofit communications device 760). *Id.*, ¶ 132.

3. Claim 2

- a. [2.1] The payment module of claim 1, wherein the one or more programs further comprise instructions for: 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

Breitenbach teaches that the retrofit device may transmit information descriptive of various parameters associated with the machine, including “a *confirmation of the dispensing of the desired beverage*[.]” Ex. 1005, 19:32–52; Ex. 1003, ¶ 133.

A POSA would have understood that the retrofit device obtains the confirmation of the dispensing of the desired beverage from the machine because it is the machine itself that does the dispensing. *See Id.*, ¶ 134; *see also* Ex. 1005, 18:39–61, 19:32–52, 20:34–36. A POSA also would have understood that the notification is obtained after the retrofit device causes the machine to initiate operation because the machine receives the indication to initiate operation before any beverage will be dispensed. *See* Ex. 1003, ¶ 135. A POSA also would have understood that the notification is obtained prior to sending the operation information because the retrofit device obtains the confirmation of dispensing of the

desired beverage before it sends a confirmation of dispensing of the desired beverage to a customer device. *See id.*, ¶ 136.

Thus, *Breitenbach/Brown* teaches the payment module of Claim 1, wherein the one or more programs further include instructions for: 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 (i.e., obtaining a notification from the offline payment-operated machine in order to confirm to the retrofit device “dispensing of the desired beverage”) indicating initiation of the operation of the offline payment-operated machine (e.g., confirmation of dispensing). *Id.*, ¶ 137.

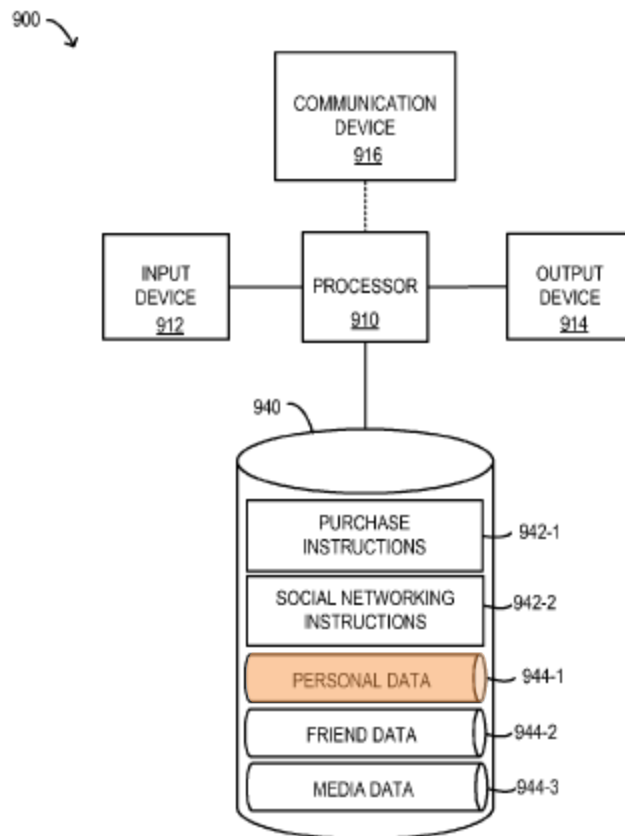
**b. [2.2(a)] in response to receiving the notification:
generating the operation information based at least in
part on the notification**

Breitenbach teaches that the retrofit device may transmit information descriptive of various parameters. *See supra* §§ VII.A.2.i–j; Ex. 1005, 19:32–44. A POSA would have understood that the retrofit device transmits such information based at least in part on the notification indicating initiation of the operation of the offline payment-operated machine. Ex. 1003, ¶ 138.

Thus, *Breitenbach/Brown* teaches, in response to receiving the notification: generating the operation information based at least in part on the notification (e.g., confirmation of dispensing). *Id.*, ¶ 139.

c. [2.2(b)] storing the generated operation information in the memory of the payment module.

A POSA would have understood that the retrofit device stores the operation information in the memory of the payment module. As discussed *supra* § VII.A.2.e, the retrofit device of *Breitenbach* includes “a memory device 940” which may store “personal data 944-1,” shown in orange, which may include data “*that is acquired via transactions conducted with the customer*[.]” *Id.*, 23:26–28, 25:26–40.



Thus, *Breitenbach/Brown* teaches in response to the notification storing the generated operation information (e.g., storing personal data 944-1) in the memory of the payment module (e.g., memory 940). Ex. 1003, ¶¶ 140–41.

4. Claim 3

Breitenbach/Brown teaches the elements of dependent Claim 2. *See supra* § VII.A.3. *Breitenbach/Brown* also teaches Claim 3, which depends from Claim 2. Ex. 1003, ¶ 142. Specifically, *Breitenbach* teaches that the retrofit device may transmit information descriptive of various parameters, including inventory levels. Ex. 1005, 19:37–44. A POSA would have understood that the retrofit device obtains the inventory information from the offline payment-operated machine because the inventory information comes from the offline payment-operated machine and not the retrofit device. *See* Ex. 1003, ¶¶ 142–44; *see also supra* § VII.A.3.a.

Thus, *Breitenbach/Brown* teaches wherein the notification obtained from the offline-payment operated machine includes inventory information (e.g., “inventory levels”). Ex. 1003, ¶ 145.

5. Claim 5

Breitenbach teaches the offline payment-operated machine can be a “standard machine [that] does not comprise a device capable of and/or configured for external and/or remote communications[.]” Ex. 1005, 15:9–14.

Thus, *Breitenbach/Brown* teaches the payment module of Claim 1, wherein the offline payment-operated machine is not connected to any networks. Ex. 1003, ¶¶ 146–47.

6. Claim 6

Breitenbach teaches that the “retrofit device may be coupled to a *conventional vending machine*[.]” Ex. 1005, 2:18–22. Thus, *Breitenbach/Brown* teaches the payment module of Claim 1, wherein the offline payment-operated machine is a coin-operated laundry machine, a vending machine, or a kiosk. Ex. 1003, ¶¶ 148–49.

7. Claim 7

a. [7.P] A method for accepting electronic payments at an offline payment-operated machine

To the extent the preamble is limiting, *Breitenbach* teaches a method for accepting electronic payments at an offline payment-operated machine (e.g., transaction using retrofit device 120 at machine 108). *See supra* § VII.A.2; Ex. 1003, ¶ 150.

b. [7.1] the method comprising: at a payment module with one or more processors, memory, a short-range wireless transceiver configured to communicate with one or more mobile devices,

As discussed *supra*, §§ VII.A.2.b, VII.A.2.c and VII.A.2.e, *Breitenbach* teaches the method comprising: at a payment module (e.g., retrofit device

120/320/420) with one or more processors (e.g., processing device 374/474), memory (e.g., memory device 940), and a short-range wireless transceiver (e.g., retrofit communication device 460) configured to communicate with one or more mobile devices (e.g., customer device 104). *See* Ex. 1003, ¶¶ 151–52.

- c. **[7.2] the method comprising . . . 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**

Breitenbach teaches this limitation. *See supra* § VII.A.2.d; Ex. 1003, ¶ 153.

- d. **[7.3] 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 operated machine**

Breitenbach/Brown teaches this limitation and a POSA would have been motivated to modify *Breitenbach* in view of *Brown* to perform the functions recited in this limitation for the same reasons stated *supra* § VII.A.1. *See* Ex. 1003, ¶ 154; *supra* § 0.

- e. **[7.4] 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**

Breitenbach/Brown teaches this limitation. *See id.*, ¶ 155; *supra* § VII.A.2.g.

- f. [7.5(a)] 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 supra § VII.A.2.h; Ex. 1003, ¶ 156.

- g. [7.5(b)] 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 id., ¶ 157; *supra* § VII.A.2.i.

- h. [7.5(c)] 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 supra § VII.A.2.j; Ex. 1003, ¶ 158.

8. Claim 8

Breitenbach/Brown teaches all limitations of Claim 8 for the same reasons stated *supra* § VII.A.3; Ex. 1003, ¶ 159.

9. Claim 9

See id., ¶ 160; *supra* § VII.A.4.

10. Claim 11

See supra § VII.A.5; Ex. 1003, ¶ 161.

11. Claim 12

See id., ¶ 162; *supra* § VII.A.6.

12. Claim 13

a. [13.P] An offline payment-operated machine

As discussed in Section VII.A.2.a, *Breitenbach* discloses an offline payment-operated machine (e.g., machine 108). *See* Ex. 1003, ¶¶ 163–64.

b. [13.1] comprising: 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

A POSA would have understood that the function device 114 of *Breitenbach* is a coin receiving switch that generates analog signals in response to insertion of a single coin. *See* Ex. 1003, ¶¶ 165–67; *supra* §§ VII.A.2.a, VII.A.2.d. Specifically, a POSA would have understood that a function device 114 comprising a payment acceptance mechanism which, in response to a “coin-in” signal, causes the machine to dispense the desired product, constitutes a coin receiving switch. This is because a POSA would have understood that a retrofit device would only replicate a coin-in signal to initiate dispensing of a product in a vending machine where the standard method to initiate dispensing of a product is by inserting the necessary number of coins. *See* Ex. 1003, ¶¶ 165–67.

Thus, *Breitenbach* teaches a machine comprising a coin-receiving switch that generates analog signals (e.g., function device 114) in response to insertion of a single coin of a predetermined type (e.g., “coin-in signal”) in the offline payment-operated machine. *Id.*, ¶ 168.

c. [13.2] comprising . . . a control unit

Breitenbach teaches the machine “may comprise a Vending Machine Controller (VMC)” which may include any type of processor. Ex. 1005, 4:17–18, 5:64–67. Thus, *Breitenbach* teaches an offline payment-operated machine comprising a control unit. Ex. 1003, ¶¶ 169–70.

d. [13.3] comprising . . . a payment module

Breitenbach teaches an offline payment-operated machine comprising a payment module (e.g., retrofit device 120). Ex. 1003, ¶¶ 171–72. *See supra* § VII.A.2.a.

e. [13.4] a payment module that includes: a short-range wireless transceiver configured to communicate with one or more mobile devices

Breitenbach teaches this limitation for the same reasons stated *supra* § VII.A.2.b; Ex. 1003, ¶ 173.

f. [13.5] a payment module that includes . . . one or more processors

See id., ¶ 174; *supra* § VII.A.2.c.

g. [13.6] a payment module that includes . . . a first interface module configured to output to a control unit of the offline payment-operated machine 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 supra § VII.A.2.d; Ex. 1003, ¶ 175.

- h. **[13.7] memory storing one or more programs to be executed by the one or more processors**

See id., ¶ 176; *supra* § VII.A.2.e.

- i. **[13.7(a)] the one or more programs comprising instructions for: 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**

Breitenbach/Brown teaches this limitation, and a POSA would have been motivated to modify *Breitenbach* with *Brown* to perform the recited functions for the same reasons stated *supra* §§ VII.A.1, 0. Ex. 1003, ¶ 177.

- j. **[13.7(b)] 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 supra § VII.A.2.g; Ex. 1003, ¶ 178.

- k. **[13.7(b)(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**

See id., ¶ 179; *supra* § VII.A.2.h.

- l. **[13.7(b)(ii)] 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 supra § VII.A.2.i; Ex. 1003, ¶ 180.

- m. **[13.7(b)(iii)] 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 id., ¶ 181; *supra* § VII.A.2.j.

13. Claim 14

See supra § VII.A.3; Ex. 1003, ¶ 182.

14. Claim 15

See id., ¶ 183; *supra* § VII.A.4.

15. Claim 17

See supra § VII.A.5; Ex. 1003, ¶ 184.

16. Claim 18

See id., ¶ 185, *supra* § VII.A.6.

B. Ground 2: Claims 4, 10, 16, and 19–20 are Rendered Obvious Under 35 U.S.C. § 103 Over *Breitenbach* in view of *Brown* further in view of *Kaspar*

1. Obviousness Standards and Analysis

See supra § VII.A.1; Ex. 1003, ¶ 186.

- a. **Differences Between the Claimed Subject Matter and *Breitenbach/Brown***

- (1) **Claims 4, 10, and 16**

Breitenbach/Brown teaches almost every element of dependent Claims 4, 10 and 16. *See infra* §§ VII.B.2–VII.B.4; Ex. 1003, ¶ 187. However,

Breitenbach/Brown does not expressly disclose 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, as recited by Claim 4. However, *Kaspar*, which is in the same field of endeavor as *Breitenbach* and *Brown*—vending machine retrofits—teaches this limitation and a POSA would have found it obvious to modify the instructions executed by the retrofit processing device of *Breitenbach/Brown* to perform this function. *Id.*

Kaspar teaches a retrofit coin measuring apparatus comprising a “coin reject mechanism 60.” Ex. 1007, 11:8–20 (“retrofit apparatus”). The mechanism determines the value of an inserted coin, “*provides a signal which is indicative of the monetary value*” of the coin, and that signal forms an output to the transaction register. *Id.* The transaction register then “*stores the total of the transaction for the moment.*” *Id.*, 11:20–22. The transaction register also totals the sum that has been input in a particular transaction. *Id.*, 11:10–13. As each transaction occurs, “incremental inputs to the total sales register 183 and the paper sold register 184 are made.” *Id.*, 11:40–43. “[T]he time and date are input to the memory 182 and the data is stored.” *Id.*, 11:42–44. This data is captured “in the form of line entries listing the time and date of each transaction. The price can optionally be included.” *Id.*, 12:15–17. *See* Ex. 1003, ¶ 188.

A POSA would have understood that *Kaspar* teaches storing data from the vending machine that indicates initiation of operation of the machine. Specifically, a POSA would have understood that the incremental inputs that reflect time, date, and price are data from the machine that indicate initiation of its operation. *See id.*, ¶ 189. A POSA also would have understood that *Kaspar*'s teaching of storing data from the vending machine that indicates initiation of operation is the way that *Kaspar* stores control signals from the control unit of the machine that initiate its operation. *See id.*, ¶ 190. Moreover, a POSA would have understood that the way *Kaspar* teaches storing a control signal that initiates operation of the vending machine is by storing data reflecting information regarding initiation of vending machine operation. *See id.*, ¶ 190. A POSA would have therefore understood that the retrofit apparatus of *Kaspar* is configured to store control signals from the control unit of the machine that initiate operation of the machine (e.g., stored data reflecting information regarding initiation of operation of the vending machine). *Id.*, ¶ 191.

Additionally, *Breitenbach/Brown* does not expressly disclose (a) a second interface module configured to *sample* control signals from the control unit of the offline payment-operated machine (as recited in Claims 10 and 16) or (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

(as recited in Claims 4, 10, and 16). However, *Kaspar* expressly discloses these limitations. *Id.*, ¶ 192.

Kaspar teaches that the retrofit apparatus provides a signal indicative of the coin's monetary value, totals up the sum that has been input in a particular transaction, and, as each transaction occurs, makes incremental inputs to the total sales register and the paper sold register. *Id.*, 11:3–22; 11:40–42. A POSA would have understood that the retrofit apparatus of *Kaspar* is configured to sample control signals from the control unit of the machine that initiate operation of the machine (e.g., provide signals indicative of the monetary value of the coin that is inserted). Ex. 1003, ¶¶ 192–94. A POSA would have also understood that the incremental inputs to the total sales and paper sold registers are notifications that are obtained by sampling the control signals from the control unit. *Id.*, ¶ 195.

(2) Claims 19 and 20

Breitenbach/Brown teaches almost every element of Claims 19 and 20. *See infra* § VII.B.5–VII.B.6; Ex. 1003, ¶ 196. However, *Breitenbach/Brown* does not expressly disclose 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. However, *Kaspar* expressly teaches

this limitation and a POSA would have found it obvious to modify *Breitenbach/Brown* to include this feature. *Id.*

Specifically, a POSA would have understood that the signal indicative of the monetary value that is provided by the coin reject mechanism of *Kaspar* is an electrical pulse generated by the coin receiving switch. *See* Ex. 1003, ¶ 197; *see supra* § VII.B.1.a(1). The retrofit apparatus of *Kaspar* then uses that signal (e.g., electrical pulse) to form an output. *Id.*; Ex. 1007, 11:8–20. Based on the provided signal, the retrofit apparatus totals up the sum that has been input in a particular transaction. *Id.* A POSA would have understood that the retrofit apparatus of *Kaspar* is configured to count one or more electrical pulses (e.g., total up the sum during a particular transaction based on the signal provided by the mechanism) generated by the coin receiving switch (e.g., coin reject mechanism) in response to the insertion of a single coin of a predetermined type (e.g., determining the value of a coin) in the offline payment-operated machine. Ex. 1003, ¶ 197–98.

Breitenbach/Brown also does not disclose wherein the second interface module is configured to store an output of the control unit corresponding to an operation of the offline payment-operated machine. Ex. 1003, ¶ 199. However, *Kaspar* expressly teaches this limitation and a POSA would have found it obvious to modify *Breitenbach/Brown* to include this feature. *Kaspar* teaches a retrofit apparatus that stores data from the vending machine indicating initiation of operation

of the vending machine, such as data related to the time, date, and price of a transaction. *Supra* § VII.B.1.a(1); Ex. 1003, ¶ 200. A POSA would have understood that the stored data is an output of the control unit of the machine corresponding to an operation of the machine. *Id.*, ¶ 201.

Breitenbach/Brown also does not expressly disclose 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. *Id.*, ¶ 202. However, *Kaspar* expressly teaches this limitation and a POSA would have found it obvious to modify *Breitenbach/Brown* to include this feature. *Id.* *Kaspar* discloses that the retrofit apparatus “provides a signal which is indicative of the monetary value,” and totals up the sum that has been input in a particular transaction. Ex. 1007, 11:3–22; 11:40–42; *supra* § VII.B.1.a(1). A POSA would have understood that the total sum that has been input in a particular transaction, which is determined based on the signal provided by the coin reject mechanism, is 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. Ex. 1003, ¶ 203.

Breitenbach/Brown and further in view of *Kaspar* also teaches all the elements of challenged dependent Claim 20. *Id.*, ¶ 204; *see infra* § VII.B.6.

b. Obviousness Rationale for Why a POSA Would Have Modified *Breitenbach* with *Brown* and *Kaspar* to Arrive at the Claimed Subject Matter

(1) Modifying *Breitenbach* with *Brown*

Petitioner has explained why a POSA would modify *Breitenbach* with *Brown*. *See supra* § VII.A.1; Ex. 1003, ¶ 205.

(2) Modifying *Breitenbach/Brown* with *Kaspar*

(a) Claims 4, 10, and 16

In view of the collective teachings of *Breitenbach*, *Brown*, and *Kaspar*, it would have been obvious to a POSA to modify the retrofit device of *Breitenbach/Brown* to implement a second interface module configured to store or sample control signals from the control unit of the offline payment-operated machine that initiate operation of the offline payment operated machine. *Id.*, ¶ 206.

For instance, modifying the instructions stored in the payment module of *Breitenbach/Brown* to include instructions for storing or sampling control signals from the control unit that initiate operation of the machine, as taught by *Kaspar*, reflects application of known techniques to known devices to yield predictable results. *See KSR*, 550 U.S. at 416. Specifically, *Breitenbach* discloses an apparatus which includes a DEX connector/first data management port, e.g., 340/440 (blue)

that may be used to send and/or receive machine data. Ex. 1005, 10:44–51; 12:61–65. The DEX connector may be connected to a VMC or processing device and may be used to poll or query a machine to determine various sales information such as prices, costs, and sales data. *Id.*, 10:53–57, 14:50–55. A POSA would have understood that the retrofit processing device 374/474 (on the circuit board shown in yellow) may be configured to sample or store control signals received from the DEX connector 340/440. Ex. 1003, ¶¶ 207–210.

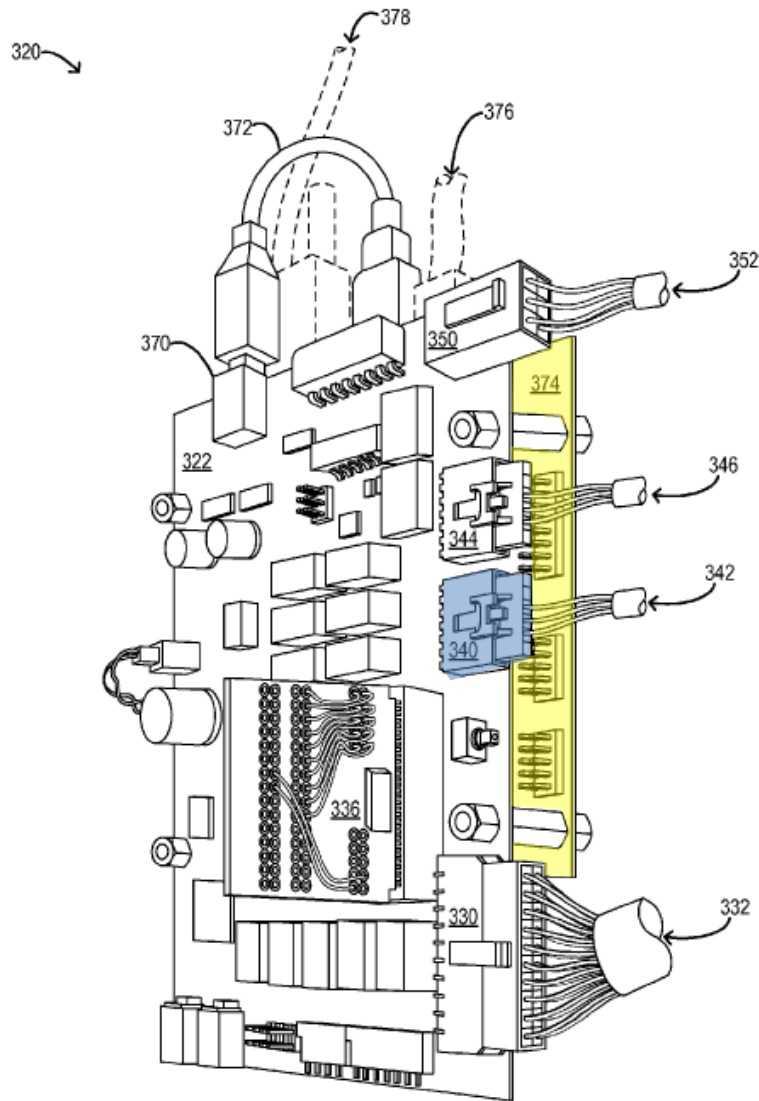


FIG. 3

Ex. 1005, Figure 3 (annotated).

It would have been obvious to a POSA to include instructions in the retrofit processing device to store or sample control signals from the controller of the offline payment-operated machine, as taught by *Kaspar*, by using the DEX connector, as taught by *Breitenbach*, because this would merely involve programming the retrofit

processing device to use the DEX connector in accordance with its typical operating procedures. Ex. 1003, ¶ 211.

A POSA would be motivated to modify the retrofit device to store control signals from the control unit, as taught by limitation [4.1], because a POSA would have understood from *Breitenbach* that storing the control signals could be used “to perform revenue management, restocking, and/or marketing analysis [.]” Ex. 1005, 22:35–40. In addition, *Kaspar* teaches that “[i]nformation on the time and frequency of sales would be very useful” because, as one example, this could inform the vending machine operator of the “optimum number of newspapers” to provide at a given time or day. Ex. 1007, 1:31–36, 12:14–28. Thus, a POSA would have been motivated to modify *Breitenbach/Brown* to include instructions to store control signals in view of the teachings of *Breitenbach* and *Kaspar*. Ex. 1003, ¶ 212.

A POSA would be motivated to modify the retrofit device to sample control signals from the control unit, as recited in limitations [10.1] and [16.1], because this would merely involve applying a known technique to a known device ready for improvement to yield predictable results. Specifically, a POSA would have understood from *Breitenbach/Brown* that the retrofit device may transmit information descriptive of various parameters, such as “a confirmation of the dispensing of the desired beverage[.]” Ex. 1005, 19:32–52. A POSA would have understood that one way to confirm dispensing of the desired beverage would be to

total up the sum that is input in a particular transaction based on signals that are indicative of the monetary value of the coin that is inserted, as taught by *Kaspar*. See *supra* § VII.B.1.a(1). Thus, a POSA would have been motivated to modify *Breitenbach/Brown* to include instructions to sample control signals in view of the teachings of *Breitenbach* and *Kaspar*. Ex. 1003, ¶ 213.

Once motivated to modify *Breitenbach/Brown* with a second interface module that is configured to store or sample control signals, a POSA would be further motivated to include instructions in the payment module to obtain the notification from the offline payment-operated machine indicating initiation of the operation of the offline payment-operated machine by sampling those control signals, as recited by Claims 4, 10, and 16. This would merely involve applying a known technique (sampling control signals from the control unit and obtaining notifications based on these control signals, as taught by *Kaspar*, see *supra* § VII.B.1.a(1)) to a known device (the retrofit processing device of *Breitenbach/Brown*, configured to sample control signals from the control unit via the DEX connector and provide a notification based on these control signals). Ex. 1003, ¶ 214.

In addition, as discussed in Section VII.A.3, a notification indicating initiation of a transaction comes from the machine because it is the machine that initiates the operation. A POSA would have understood that the most efficient way to obtain

such a notification would be to obtain the notification based on the control signals that must be received by the machine to initiate operation. *Id.*, ¶ 215.

(b) Claim 19

In view of the collective teachings of *Breitenbach*, *Brown*, and *Kaspar*, it would have been obvious to a POSA to include in the retrofit device of *Breitenbach/Brown* a second interface module configured to store an output of the control unit corresponding to an operation of the offline payment-operated machine. *Id.*, ¶ 216. *Breitenbach* discloses that the retrofit device may store information from the control unit of an offline payment-operated machine, such as dispensing data. Ex. 1005, 22:26–40; *see supra* § VII.B.1.b(2)(a). These teachings indicate that *Breitenbach/Brown*, to the extent it does not expressly do so, provides—under the former, more rigid “TSM” standard—a teaching, suggestion, or motivation to a POSA to include instructions in the retrofit processing device to store an output of the control unit (i.e., sales and/or dispensing data). *See KSR*, 550 U.S. at 407, 419. A POSA would have understood that the retrofit device could perform revenue management, restocking, and/or marketing analyses (Ex. 1005, 22:35–40) by tracking an output of the machine corresponding to an operation of the machine, such as dispensing of a product. Ex. 1003, ¶ 216; *see also supra* § VII.B.1.b(2)(a).

In addition to *Breitenbach/Brown*’s express teachings, there are a variety of other rationales for why a POSA would have been motivated to modify the retrofit

device of *Breitenbach/Brown* to store an output of the control unit corresponding to an operation of the offline payment-operated machine. Ex. 1003, ¶ 217; *See supra* § VII.B.1.b(2)(a).

Once motivated to modify *Breitenbach/Brown* with a second interface module configured to store an output of the control unit corresponding to an output of the offline payment-operated machine, a POSA would be further motivated to configure the second interface module 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. This is because *Kaspar* presents a POSA with one of a finite number of identified, predictable solutions by which the output of the control unit can be obtained, i.e., the retrofit coin measuring apparatus is configured to “total[] up the sum that has been input in [a] particular transaction” based on the signal provided by the coin reject mechanism. Ex. 1007, 11:10–22; Ex. 1003, ¶ 218; *see also supra* § VII.B.1.a(1)–(2).

Once motivated to modify *Breitenbach/Brown* with a second interface module configured to count one or more electrical pulses and to store an output of the control unit corresponding to an output of the offline payment-operated machine, a POSA would be further motivated to send operation information corresponding to the initiated operation of the offline payment-operated machine to the respective mobile device, the operation information including a value of the requested cashless

operation (i.e., the cost of the selected item for vending) 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.” Ex. 1001, Claim 19; Ex. 1003, ¶ 219.

A POSA would be motivated to modify *Breitenbach/Brown* with *Kaspar* in this manner based on, at a minimum, the express teachings in *Breitenbach*. *Breitenbach/Brown*’s disclosure that the transmission may include a “transaction receipt” (Ex. 1005, 19:37–52) indicates that *Breitenbach/Brown*, to the extent it does not explicitly do so, provides—under the former, more rigid “TSM” standard—a teaching, suggestion, or a motivation to a POSA to modify the operation information to include a value of the requested cashless operation corresponding to a number of coin insertions associated with a total number of pulses counted. A POSA would have understood that providing the “total of the transaction” based on the “signal which is indicative of the monetary value that is input to the” retrofit coin measuring apparatus, as taught by *Kaspar* (Ex. 1007, 11:15–22), is a type of “transaction receipt” as taught by *Breitenbach/Brown*. A POSA would have understood that including this in the operation information would make the payment module more convenient because it would allow a user to identify the transaction amount that was submitted to initiate the transaction. Ex. 1003, ¶ 220.

The foregoing rationales are exemplary in nature and additional rationales may equally apply as discussed in additional detail in the Declaration of Petitioner's expert Dr. Neuman. Ex. 1003, ¶¶ 216–21; *see KSR*, 550 U.S. at 417, 421.

c. Obviousness Rationale for How a POSA Would Have Modified *Breitenbach* with *Brown* and *Kaspar* to Arrive at the Claimed Subject Matter

Petitioner has explained how a POSA would modify *Breitenbach* with *Brown*. *See supra* § VII.A.1. Once motivated to modify *Breitenbach/Brown* with *Kaspar*, a POSA would have (i) readily understood how to do so with a reasonable expectation of success and (ii) found it obvious and routine to implement any modifications needed to make those combinations work. Ex. 1003, ¶ 222.

For example, a POSA would have understood that the retrofit device of *Breitenbach/Brown* would be able to monitor and store sales, transaction, dispensing, and other output from the offline payment-operated machine. *See* Ex. 1005, 22:26–40, 7:37–64, 14:20–24. A POSA would have understood that including instructions in the retrofit processing device of *Breitenbach/Brown* to monitor and store data based on control signals from the control unit of the machine, as taught by *Kaspar*, would be a simple and routine task. Sampling these control signals and obtaining the notification from the offline payment-operated machine by sampling these control signals would likewise be simple and routine tasks employing the

existing, prior art technology of *Breitenbach/Brown*, modified to include the instructions taught by *Kaspar*. Ex. 1003, ¶ 222–23.

A POSA also would have understood that including instructions in the retrofit processing device of *Breitenbach/Brown* to monitor data by counting one or more electrical pulses and to store an output based the counted electrical pulses, as taught by *Kaspar*, would be a simple and routine task involving the existing, prior art technology of *Breitenbach/Brown*, modified to include the instructions taught by *Kaspar*. *See supra* §§ VII.B.1.a–b; Ex. 1003, ¶ 224. Including in the operation information a value corresponding to a number of coins associated with a total number of the pulses counted would likewise be a simple and routine task employing the same existing technology. *Id.*

2. Claim 4

- a. [4.1] 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**

Breitenbach/Brown discloses all elements of Claims 1 and 2, from which Claim 4 depends. *See supra* §§ VII.A.2, VII.A.3; Ex. 1003, ¶ 225. To the extent that Patent Owner argues that *Breitenbach/Brown* does not explicitly teach Claim 4, *Kaspar* does and a POSA would have found it obvious to modify the retrofit processing device of *Breitenbach/Brown* such that the payment module comprises a

second interface module configured to store control signals that initiate operation of the offline payment-operated machine. *See id.*, ¶ 226.

As discussed in Section VII.B.1.a(1), a POSA would have understood that *Kaspar* teaches storing control signals from the control unit of the offline payment-operated machine that initiate operation of the offline payment-operated machine. *See* Ex. 1003, ¶¶ 227.

Petitioner has already explained why and how a POSA would modify *Breitenbach/Brown* with *Kaspar*. *See supra* § VII.B.1. Thus, *Breitenbach/Brown* in view of *Kaspar* teaches the payment module of Claim 2, further comprising a second interface module (e.g., retrofit processing device 374/474 of *Breitenbach/Brown* including instructions to store control signals as recited by limitation [4.1]) configured to store control signals (e.g., store data reflecting information regarding initiation of operation of the vending machine as taught by *Kaspar*) from the control unit of the offline payment-operated machine that initiate operation of the offline payment-operated machine. Ex. 1003, ¶ 228.

- b. [4.2] wherein obtaining the notification from the offline payment-operated machine includes sampling the control signals from the control unit via the second interface module**

Breitenbach/Brown in view of *Kaspar* teaches this limitation. As discussed in Section VII.B.1.a(1), *Kaspar* teaches a retrofit coin measuring apparatus that is

configured to sample control signals from the control unit of the offline payment-operated machine that initiate operation of the offline payment-operated machine (e.g., signals indicative of the monetary value) and obtaining notifications (e.g., incremental inputs) which are obtained by sampling the control signals (e.g., obtaining each incremental input includes receiving a signal indicative of the monetary value). Ex. 1003, ¶ 229. A POSA would have found it obvious to modify *Breitenbach/Brown* in further view of *Kaspar* to include instructions in the retrofit device to obtain the notification indicating initiation of the operation of the offline payment-operated machine by sampling control signals (a signal “indicative of the monetary value,” as taught by *Kaspar*). *Id.*

Thus, *Breitenbach* in view of *Brown* further in view of *Kaspar* teaches wherein obtaining the notification from the offline payment-operated machine (e.g., obtaining a notification to confirm dispensing) includes sampling the control signals (e.g., obtaining each incremental input includes receiving a signal indicative of the monetary value, as taught by *Kaspar*) from the control unit via the second interface module (e.g., retrofit processing device 374/474 of *Breitenbach/Brown* including instructions to sample control signals from the control unit, as taught by *Kaspar*). *Id.*, ¶ 230.

3. Claim 10

- a. [10.1] 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 that initiate operation of the offline payment-operated machine**

Breitenbach/Brown discloses all elements of Claims 7 and 8, from which Claim 10 depends. *See supra* §§ VII.A.7, VII.A.8; Ex. 1003, ¶ 231. To the extent that Patent Owner argues that *Breitenbach/Brown* does not explicitly teach this limitation, *Kaspar* does and a POSA would have found it obvious to modify the payment module of *Breitenbach/Brown* to include instructions to sample control signals that initiate operation of the offline payment-operated machine. *See* Ex. 1003, ¶ 232. As discussed in Section VII.B.1.a(1), *Kaspar* teaches a retrofit apparatus which is configured to sample control signals from the control unit of the offline payment-operated machine that initiate operation of the offline payment-operated machine (e.g., provide signals indicative of the monetary value of the coin that is inserted). A POSA would have understood that the retrofit of *Kaspar* is configured to sample the control signal provided by the coin reject mechanism. *Id.*

Thus, *Breitenbach* in view of *Brown* in further view of *Kaspar* teaches the payment module of Claim 8, further comprising a second interface module (e.g., retrofit processing device 374/474 including instructions to sample control signals, as taught by *Kaspar*) configured to sample control signals (e.g., sampling a signal

“indicative of the monetary value,” as taught by *Kaspar*) from the control unit of the offline payment-operated machine that initiate operation of the offline payment-operated machine. *Id.*, ¶ 233.

- b. [10.2] wherein obtaining the notification from the offline payment-operated machine includes sampling the control signals from the control unit via the second interface module.**

Breitenbach/Brown in view of *Kaspar* teach this limitation for the same reasons stated *supra* § VII.B.2.b; Ex. 1003, ¶ 234.

4. Claim 16

Breitenbach/Brown in view of *Kaspar* teach the limitations of Claim 16 for the same reasons stated *supra* §§ VII.A.13, VII.A.14, VII.B.3; Ex. 1003, ¶ 235.

5. Claim 19

- a. [19.P] A payment module for an offline payment-operated machine including a coin receiving switch**

Breitenbach teaches this limitation. *See supra* § VII.A.2.a; Ex. 1003, ¶ 236.

- b. [19.1] the payment module comprising: a short-range wireless transceiver configured to communicate with one or more mobile devices**

See supra § VII.A.2.b; Ex. 1003, ¶ 237.

- c. [19.2] the payment module comprising . . . one or more processors**

See supra § VII.A.2.c; Ex. 1003, ¶ 238.

- d. [19.3] 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**

Breitenbach teaches that “the payment port 450 may be utilized *to communicate* with the processing device 410 *via the MDB protocol.*” *Id.*, 14:41–50. A POSA would have understood that a payment port that is configured to communicate via the MDB protocol is a serial interface because the MDB is, by definition, a serial bus interface. *See supra* § IV.A; Ex. 1003, ¶¶ 239–40. *Breitenbach* further teaches that the retrofit device may cause the machine to provide a desired product by transmitting a credit signal via payment port 350/450 representing the actual price of the product. Ex. 1005, 11:35–40; Ex. 1003, ¶ 241.

Thus, *Breitenbach* teaches a first interface module (e.g., processing device 374/474 including instructions to communicate with processing device 410 via payment port 450) configured to communicate with a control unit (e.g., processing device 410) of the offline payment-operated machine using a serial interface (e.g., payment port 350/450 communicating via the MDB protocol) to send one or more commands to the control unit (e.g., transmit signal to cause machine to provide desired product). Ex. 1003, ¶ 242.

- e. **[19.4] 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**

To the extent that Patent Owner argues that *Breitenbach/Brown* does not explicitly teach this limitation, *Kaspar* does and a POSA would have found it obvious to modify *Breitenbach/Brown* in view of *Kaspar* to include this limitation. *See id.*, ¶ 243. *Kaspar* teaches that the retrofit determines the value of a coin, provides a signal which is indicative of the monetary value of the coin, (e.g., an electrical pulse), and based on the provided signal, totals up the sum that has been input in a particular transaction. Ex. 1007, 11: 5–22; *see also supra* § VII.B.1.a. A POSA would have understood that the retrofit coin measuring apparatus of *Kaspar* is configured to count one or more electrical pulses (e.g., total up the sum, based on the provided signal) generated by the coin receiving switch (e.g, coin reject mechanism) in response to insertion of a single coin of a predetermined type (e.g., determine the value of an inserted coin) in the offline payment-operated machine. *See supra* § VII.B.1.a; Ex. 1003, ¶ 243.

In addition, *Kaspar* teaches a retrofit coin measuring apparatus that stores data from the vending machine indicating initiation of the transaction, such as data related

to the time, date, and price of a transaction. *See supra* § VII.B.1.a; Ex. 1003, ¶ 244. A POSA would have understood that the captured data is an output of the control unit of the machine corresponding to an operation of the machine (i.e., a vending transaction). *See supra* § VII.B.1.a; Ex. 1003 ¶ 244.

Petitioner has already explained how and why a POSA would modify *Breitenbach* with *Brown* and *Breitenbach/Brown* with *Kaspar*. *See supra* §§ VII.A.1, VII.B.1. Thus, *Breitenbach* in view of *Brown* in further view of *Kaspar* teaches a second interface module (e.g., retrofit processing device 374/474 including instructions to count electrical pulses, as taught by *Kaspar*) configured to count one or more electrical pulses generated by the coin receiving switch of the offline payment-operated machine (e.g., total up the sum, based on the provided signal, as taught by *Kaspar*) in response to the insertion of a single coin of a predetermined type in the offline payment-operated machine (e.g., determine the value of an inserted coin, as taught by *Kaspar*) and to store an output of the control unit corresponding to an operation of the offline payment-operated machine (e.g., store data related to the transaction as taught by *Kaspar*). Ex. 1003, ¶¶ 244–45.

f. [19.5] memory with one or more programs for execution by the one or more processors

Breitenbach/Brown in view of *Kaspar* teaches this limitation. *See supra* § VII.A.2.e; Ex. 1003, ¶ 246.

- g. [19.5(a)] the one or more programs including instructions for: storing, in the memory of the payment module, a number of electrical pulses that must be received by the control unit to initiate an operation of the offline payment-operating machine**

See supra § 0; Ex. 1003, ¶ 247.

- h. [19.5(b)] the one or more programs including instructions for . . . 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 supra § VII.A.2.g; Ex. 1003, ¶ 248.

- i. [19.5(c)(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**

See supra § VII.A.2.h; Ex. 1003, ¶ 249.

- j. [19.5(c)(ii)] 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**

A POSA would have understood that *Breitenbach*'s teaching that the retrofit device may "fool" the machine by replicating a "coin-in" signal indicative of the proper payment amount is a first command issued to the control unit of the offline payment-operated machine that causes the machine to initiate the requested cashless operation. *See supra* §§ VII.A.2.d; Ex. 1003, ¶¶ 250–51.

Thus, *Breitenbach/Brown* in further view of *Kaspar* teaches in response to the wireless request (e.g., “place an order and/or request a function to be performed”) causing the offline payment-operated machine to initiate the requested cashless operation by issuing the command (e.g., “coin-in” signal) to the control unit (e.g., 410) via the first interface module (e.g., processing device 374/474 including instructions to communicate with the processing device 410 via the payment port 450). *Id.*

- k. [19.5(c)(iii)] 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 supra § VII.A.2.j; Ex. 1003, ¶ 252.

- l. [19.5(c)(iv)] . . . 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**

Breitenbach teaches that the retrofit device may transmit and the customer device may receive information, such as “a transaction receipt.” Ex. 1005, 19:32–52. In addition, a POSA would have understood that the total sum that has been input in a particular transaction, which is determined based on the signal provided by the coin reject mechanism, as taught by *Kaspar*, is a value of the requested cashless operation (i.e., the cost of the selected item for vending) corresponding to a

number of coin insertions associated with a total number of pulses counted by the second interface module to initiate the operation of the offline payment-operated machine. *See supra* § VII.B.1.a(2); Ex. 1003, ¶¶ 253–55.

Thus, *Breitenbach/Brown* further in view of *Kaspar* teaches 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 (e.g., “transaction receipt” consisting of total sum for a particular transaction, as determined by *Kaspar*) counted by the second interface module (e.g., retrofit processing device 374/474 including instructions to count one or more electrical pulses as taught by *Kaspar*) to initiate the operation of the offline payment-operated machine. *Id.*, ¶ 256.

6. Claim 20

See supra § VII.A.3; Ex. 1003, ¶ 257.

VIII. STIPULATION REGARDING DISTRICT COURT ACTION

Petitioner stipulates that, if the instant IPR is instituted, it will not pursue the same grounds asserted in the Petition—or any grounds that could have reasonably been raised in the Petition—against the ’608 Patent in the parallel district court proceeding.

IX. MANDATORY NOTICES, STANDING, AND FEES

A. Real Parties-in-Interest (37 C.F.R. § 42.8(b)(1))

Alliance Laundry Systems, LLC is the real party in interest for this matter.

B. Time for Filing (37 C.F.R. § 42.102)

The '608 Patent issued on January 12, 2021. This Petition is being filed more than nine months after the '608 Patent issued.

C. Petitioner's Lead and Backup Counsel and Service Information: 37 C.F.R. § 42.8(b)(3) and (4)

Pursuant to 37 C.F.R. § 42.8(b)(3), Petitioner provides the following designation of counsel:

Lead Counsel	Backup Counsel
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	Telephone: 312-429-6046 Facsimile: 312-701-9335 Email: jsaunders@honigman.com
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D. Notice of Service Information (37 C.F.R. § 42.8(b)(4))

Service on Petitioner may be made by mail or hand delivery to: Honigman LLP, 315 E. Eisenhower Parkway, Suite 100, Ann Arbor, Michigan 48108. The fax numbers for lead and backup counsel are shown above. Petitioner also consents to electronic service by email at swaidelich@honigman.com and sbarnett@honigman.com.

E. Grounds for Standing (37 C.F.R. § 42.204(a); 35 U.S.C. § 315)

The undersigned and Petitioner certify that (1) the '608 Patent is eligible for IPR and (2) Petitioner is not barred or estopped from requesting IPR on the grounds identified herein. Petitioner has not filed a civil action challenging the validity of a claim of the '608 Patent; in the Delaware action, Petitioner's Complaint seeks only declaratory judgment of noninfringement. *See* 35 U.S.C. § 315(a)(1); *see also, e.g., Ariosa Diagnostics v. Isis Innovation Ltd.*, IPR2012-00022, 2013 WL 2181162, at *4–5 (PTAB Feb. 12, 2013); *Intel Corp. v. PACT XPP Schweiz AG*, IPR2020-00539, 2020 WL 5467346, at *4–5 (PTAB Sept. 10, 2020).

Patent Owner's earliest Counterclaim asserting infringement of the '608 Patent by Petitioner was filed and effectively served on August 23, 2024. *Alliance v. PayRange*, 24-cv-733-MN, Dkt. 11, at ¶ 1 (D. Del. Aug. 23, 2024). Petitioner is

filing this Petition before the one-year deadline for filing an IPR proceeding under 35 U.S.C. § 315(b), which is August 22, 2025.

F. Payment of Fees (37 C.F.R. § 42.103); Procedural Statements

The undersigned authorizes the Director to charge any required fees, including those due under 37 C.F.R. § 42.15(a), to Deposit Account No. 503145. Concurrently filed herewith are Powers of Attorney and an Exhibit List per 37 C.F.R. § 42.10(b) and §42.63(e), respectively.

X. CONCLUSION

Petitioner respectfully requests the Board institute IPR for Claims 1–20 of the '608 Patent.

Respectfully submitted,

Dated: April 29, 2025

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Attorney for Petitioner Alliance Laundry Systems LLC

CERTIFICATE OF SERVICE OF THE PETITION

The undersigned certifies service pursuant to 37 C.F.R. §§42.6(e) and 42.105(b) on the Patent Owner on the signature date below by Priority Mail Express of a copy of this Petition for IPR, all exhibits thereto, and Petitioner's Power of Attorney, at the correspondence address of record for the '608 Patent:

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Dated: April 29, 2025

/Sarah E. Waidelich/
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**CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME
LIMITATION, TYPEFACE REQUIREMENTS, AND TYPE STYLE
REQUIREMENTS**

This Petition complies with the type-volume limitation in 37 C.F.R. §42.24(a) in that it contains 13,997 words, excluding the parts exempted by 37 C.F.R. § 42.24(a), as measured by the word processing software used to prepare the document.

This Petition complies with the general format requirements of 37 C.F.R. § 42.6(a) and has been prepared using Microsoft Office 365 in 14-point Times New Roman.

Dated: April 29, 2025

/Sarah E. Waidelich/
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