UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ALLIANCE LAUNDRY SYSTEMS, LLC,
Petitioner,

v.

PAYRANGE LLC,
Patent Owner.

PGR2025-00028
U.S. Patent No. 11,972,423

DECLARATION OF DR. B. CLIFFORD NEUMAN UNDER 37 C.F.R. § 1.68 IN SUPPORT OF PETITION FOR POST-GRANT REVIEW

Mail Stop Patent Board
Patent Trial and Appeal Board
P.O. Box 1450
Alexandria, VA 22313-1450

TABLE OF CONTENTS

I. INTRODUCTION 1

II. DOCUMENTS RELIED UPON 1

III. QUALIFICATIONS AND PROFESSIONAL EXPERIENCE 2

IV. LEVEL OF ORDINARY SKILL IN THE ART 6

V. RELEVANT LEGAL STANDARDS 8

VI. BACKGROUND OF THE '423 PATENT AND THE PRIOR ART 11

A. The State of the Art Prior to December 2013 11

B. Overview of the Alleged Invention of the '423 Patent 16

C. Summary of the Prosecution History 18

VII. SUMMARY OF THE ASSERTED PRIOR ART 19

A. *Low*: U.S. Patent No. 10,210,501 (Ex. 1005) 19

B. *Arora*: U.S. Patent No. 9,898,884 (Ex. 1006) 20

C. *Freeny*: U.S. Patent No. 8,958,846 (Ex. 1007) 20

D. *Casey*: U.S. Patent No. 8,255,323 (Ex. 1008) 21

VIII. CLAIM CONSTRUCTION: 37 C.F.R. § 42.204(B)(3) 21

IX. CONCLUSIONS REGARDING PATENTABILITY 22

A. Ground 1: Claims 1–6, 8, 10, 12–20 Are Anticipated Under 35 U.S.C. § 102 By *Low* 23

1. Each Element of Claim 1 is Found in *Low* 23

2. Each Element of Claim 2 is Found in *Low* 37

3. Each Element of Claim 3 is Found in *Low* 38

4. Each Element of Claim 4 is Found in *Low* 39

5. Each Element of Claim 5 is Found in *Low* 41

6. Each Element of Claim 6 is Found in *Low* 43

7. Each Element of Claim 8 is Found in *Low* 45

8. Each Element of Claim 10 is Found in *Low* 46

9. Each Element of Claim 12 is Found in *Low* 47

10. Each Element of Claim 13 is Found in *Low* 48

11. Each Element of Claim 14 is Found in *Low* 54

12. Each Element of Claim 15 is Found in *Low* 54

13. Each Element of Claim 16 is Found in *Low* 59

14. Each Element of Claim 17 is Found in *Low* 60

15. Each Element of Claim 18 is Found in *Low* 62

16. Each Element of Claim 19 is Found in *Low* 63

17. Each Element of Claim 20 is Found in *Low* 64

B. Ground 2: Claims 7 and 9 are Rendered Obvious Under 35 U.S.C. § 103 Over *Low* in View of *Arora* 65

1. Obviousness Standards and Analysis 65

2. Each Element of Claim 7 is Rendered Obvious by *Low* in View of *Arora* 71

3. Each Element of Claim 9 is Rendered Obvious by *Low* in View of *Arora* 75

C. Ground 3: Claim 11 is Rendered Obvious Under 35 U.S.C. § 103 Over *Low* in View of *Arora* in Further View of *Freeny* and *Casey* 77

1. Obviousness Standards and Analysis 77

2. Each Element of Claim 11 is Rendered Obvious by *Low* in View of *Arora* in Further View of *Freeny* and *Casey* 92

D. Ground 3: Claims 1-20 Recite Generic and Conventional Components....100

1. Independent Claims 1, 13, and 15....100

2. Dependent Claims 2-6, 8-10, 14, and 16-19....114

3. Dependent Claims 7, 11-12, and 20....121

X. CONCLUSION....126

TABLE OF EXHIBITS[1]

Exhibit No.[2]	Description	Publication Date (unless otherwise noted)	Type of Prior Art
1001	USPN 11,972,423 (the '423 Patent) (Patent submitted for Post-Grant Review)	December 18, 2013 (earliest possible priority date based on filing of provisional application)	N/A
1002	File History for USPN 11,972,423	N/A	N/A
1003	Declaration of Dr. B. Clifford Neuman Under 37 C.F.R. § 1.68 in Support of Petition for Post-Grant Review of the '423 Patent	N/A	N/A
1004	*Curriculum Vitae* of Dr. B. Clifford Neuman	N/A	N/A
1005	USPN 10,210,501 ("*Low*")	July 25, 2013	§ 102(a), (d)
1006	USPN 9,898,884 ("*Arora*")	April 4, 2013	§ 102(a), (d)

[1] For the Board's convenience, this Table of Exhibits includes all references cited in this Declaration and in the corresponding Petition. Accordingly, the Table of Exhibits in the Declaration and the Petition are identical.

[2] For ease of review, I adopt the following citation convention for this Declaration. U.S. patent references are cited by the reference's internal column:line, page:line, or ¶ number (not stamped pagination). Supporting papers (file history, definitions, C.V.) are cited by stamped pagination number.

Exhibit No.[2]	Description	Publication Date (unless otherwise noted)	Type of Prior Art
1007	USPN 8,958,846 ("*Freeny*")	Aug. 23, 2006	§ 102(a), (d)
1008	USPN 8,255,323 ("*Casey*")	Aug.28, 2012 (issuance date)	§ 102(a)(1)
1009	PayRange's Statutory Disclaimer of USPN 11,481,772 claims 1-6, 8-10, and 12-20	Filed on November 22, 2023	N/A
1010	Redline comparison of Claim 1 of the '423 Patent to Claims 13 and 15 of the '423 Patent	N/A	N/A
1011	Redline comparison of claims of USPN 10,891,614 and corresponding claims of the '423 Patent	N/A	N/A
1012	USPN 3,457,391 ("*Yamamoto*")	July 22, 1969 (issuance date)	§ 102(a)(1)
1013	USPN 3,931,497 ("*Gentile*")	Jan. 6, 1976 (issuance date)	§ 102(a)(1)
1014	USPN 6,810,234 ("*Räsänen*")	Oct. 26, 2004 (issuance date)	§ 102(a)(1)
1015	US Patent Pub. No. 2003/0172028 ("*Abell*")	Mar. 7, 2002	§ 102(a), (d)
1016	US Patent Pub. No. 2003/0130902 ("*Athwal*")	Nov. 4, 2002	§ 102(a), (d)
1017	PayRange Claim Chart for the USPN 11,481,772, attached as Exhibit L to PayRange's Amended Counterclaims in *Alliance Laundry Systems, LLC v. PayRange, Inc.*, 24-cv-733-MN, Dkt. 18, PageID.1404-1416 (D. Del., filed Oct. 4, 2024)	N/A	N/A

Exhibit No.[2]	Description	Publication Date (unless otherwise noted)	Type of Prior Art
1018	Slip Opinion, *Linfo IP, LLC v. TrustPilot, Inc.*, 24-cv-2796, slip. op., Dkt. No. 37 (S.D.N.Y. Jan. 3, 2025)	N/A	N/A
1019	Transcript, *Chemours Co. FC, LLC v. Daikin Indus. Ltd.*, 1:17-cv-01612, Dkt. No. 77, at 29:1-33:16, PageID.1319-1351 (D. Del. Jan. 3, 2019).	N/A	N/A
1020	Excerpted Copy of U.S. District Courts—Combined Civil and Criminal Federal Court Management Statistics-Profiles for the Reporting Period ending June 30, 2024, available at https://www.uscourts.gov/data-news/reports/statistical-reports/federal-court-management-statistics/federal-court-management-statistics-june-2024.	N/A	N/A
1021	US Patent Pub. No. 2015/0302411 ("*Bondessen*")	April 22, 2014	N/A
1022	US Patent Pub. No. 2014/0279537 ("*Cicoretti*")	Mar. 12, 2014	N/A
1023	USPN 11,010,759 ("*Maeng*")	Sep. 11, 2018	N/A
1024	USPN 309,219 ("*Fruen*")	Dec. 16, 1884 (issuance date)	N/A

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

I. INTRODUCTION

1. I am making the present Declaration at the request of Alliance Laundry Systems LLC ("Petitioner") in support of the Petition for Post-Grant Review (PGR) of Claims 1–20 ("the Challenged Claims") of U.S. Patent No. 11,972,423 ("the '423 Patent," Ex. 1001).

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

3. I have been asked to provide my opinions regarding whether the Challenged Claims of the '423 Patent are unpatentable insofar as they would have been obvious to a person having ordinary skill in the art ("POSA") at the time of the alleged invention, in view of the prior art.

4. It is my opinion that all of the Challenged Claims would have been obvious to a POSA at the time of the alleged invention.

II. DOCUMENTS RELIED UPON

5. In reaching my opinions in this case, I reviewed the currently filed Petition for Post-Grant Review of U.S. Patent No. 11,972,423 ("the PGR Petition") and the various exhibits referenced therein, such as, for example, the '423 Patent

itself and the prior art references cited in the PGR Petition. I agree with the contents of the PGR Petition for at least the reasons expressed in this Declaration, and I believe my opinions expressed below are consistent with the contents of the PGR Petition.

6. I also reviewed each of the documents listed in the Table of Exhibits at the beginning of this Declaration (which is identical to the Table of Exhibits in the PGR Petition).

7. In forming the opinions expressed below, I have also considered the relevant legal standards, including the standards for anticipation and obviousness, any additional authoritative documents as cited in the body of this Declaration, and my own knowledge and experience based upon my work in the field of electronic payments and distributed networks as described below.

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

III. QUALIFICATIONS AND PROFESSIONAL EXPERIENCE

9. My complete qualifications and professional experience are described in my *Curriculum Vitae*, a copy of which can be found in Exhibit 1004. The following is a summary of my relevant qualifications and professional experience.

10. I received a Ph.D. in Computer Science in 1992 and an M.S. in Computer Science in 1988 from the University of Washington, and an S.B.

(Bachelor's) in Computer Science and Engineering in 1985 from the Massachusetts Institute of Technology.

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

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

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

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

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

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

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

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

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

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

19. In 2023, I submitted four declarations in support of four separate petitions filed by CSC Serviceworks, Inc. for *Inter Partes* Review of the following patents owned by PayRange, Inc.: (1) U.S. Pat. No. 10,891,608 (IPR2023-01188); (2) U.S. Pat. No. 10,438,208 (IPR2023-01187); (3) U.S. Pat. No. 8,856,045 (IPR2023-01186); and (4) U.S. Pat. No. 11,481,772 (IPR2023-01449). My opinions herein are independent of those expressed in my prior declarations, but none of my opinions herein are inconsistent with those prior opinions.

IV. LEVEL OF ORDINARY SKILL IN THE ART

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

21. It is my understanding that the earliest possible priority date for the '423 Patent is December 18, 2013.

22. A person of ordinary skill in the art ("POSA") in the field of the '423 Patent, as of December 18, 2013, would have had a bachelor's degree in electrical engineering, computer engineering, computer science, or equivalent training, and approximately three years of experience with electronic payment systems, vending machine technologies, or distributed network systems. Lack of work experience can be remedied by additional education, and vice versa.[3]

23. I understand that, in the Post-Grant Review of related Patent No. 10,891,614 ("the '614 Patent"), *KioSoft Technologies, LLC v. PayRange, Inc.*,

[3] *See CSC ServiceWorks, Inc. v. PayRange Inc.*, No. IPR2023-01449, Institution Decision (Paper 14) at *13 (PTAB April 12, 2024) (Board adopting the same level of skill in the art for related patent to the '423 Patent).

PGR2021-00093 ("the '614 PGR"), the Board adopted the Petitioner's definition of a POSA, which was:

> A [POSA] at the time of the earliest claimed filing date of the '614 Patent would have had an education background of, or practical experience providing an equivalent to, a Bachelor of Science in Electrical Engineering, Computer Science, Information Technology, or a related/equivalent field and at least 3 years of academic or industry experience in electronic payment systems.

PGR2021-00093, Paper 38 at 8-9.

24. The definition of a POSA that was adopted by the Board in the '614 PGR is consistent with the definition of a POSA that I have offered here. Specifically, both definitions include an education background in electrical engineering, computer science, or a similar field, such as information technology or computer engineering. Further, both definitions include approximately three years of experience in a related field, such as electronic payment systems.

25. Based upon my education and experience as set forth above, I believe that I would qualify as at least a POSA in the relevant time frame. At the time of the alleged invention, I had a sufficient level of knowledge, experience, and education to provide an expert opinion in the field of the '423 Patent.

26. For purposes of this Declaration, in general, and unless otherwise noted, my statements and opinions, such as those regarding my experience and the

understanding of a POSA generally (and specifically related to the references I consulted herein), reflect the knowledge that existed in the field as of the alleged priority date of the '423 Patent (i.e., December 18, 2013). Unless otherwise stated, when I provide my understanding and analysis below, it is consistent with the level of a POSA as of the alleged priority date of the '423 Patent.

V. RELEVANT LEGAL STANDARDS

27. I am not an attorney. In preparing and expressing my opinions and considering the subject matter of the '423 Patent, I am relying on certain basic legal principles that counsel have explained to me. These principles are discussed below.

28. I understand that prior art to the '423 Patent includes patents and printed publications in the relevant art that predate the priority date of the alleged invention recited in the '423 Patent.

29. I have been informed and understand that a patent claim may be invalid as "anticipated" under 35 U.S.C. § 102 if each element of that claim is disclosed either explicitly or inherently in a single prior art reference. I understand that a disclosure is "inherent" if the missing element is necessarily present in view of the explicit disclosure. The fact that the reference might possibly practice or contain a claimed limitation is insufficient to establish that the reference inherently teaches the limitation. For anticipation by a prior art publication or document, I further

understand that the reference's description must enable a POSA to practice the claimed invention without undue experimentation.

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

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

art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

32. I have been informed by counsel and understand that 35 U.S.C. § 101 defines the four categories of invention deemed to be the appropriate subject matter of a patent: processes, machines, manufactures and compositions of matter.

33. I have been informed and understand that claims directed to a judicial exception, including laws of nature, natural phenomenon, and abstract ideas, are not patent eligible.

34. I have been informed and understand that the USPTO has enumerated a two-step test for determining subject-matter eligibility under Section 101. I understand that Step 1 of the USPTO's subject matter eligibility analysis addresses whether the claimed invention falls into at least one of the four categories of patentable subject matter (i.e., processes, machines, manufactures and compositions of matter). Step 2 of the USPTO's subject matter eligibility analysis applies the Supreme Court's two-part framework (*Alice/Mayo* Steps 1 and 2) to identify claims that are directed to a judicial exception and to then evaluate if additional elements of the claim provide an inventive concept.

35. I understand that, if the claim is found to be directed to a judicial exception under *Alice/Mayo* Step 1, the inquiry then turns to whether the claim contains an additional element or combination of elements which provide an

"inventive concept." An inventive concept is provided where the additional element or elements amount to significantly more than the judicial exception itself. If the additional element or elements provide an inventive concept, then the claim is eligible. I understand that the elements of a claim must be considered both individually and also as an ordered combination in determining whether they include an inventive concept. I understand that it is insufficient for patent-eligibility if the additional elements merely append to the claim well-understood, routine and conventional activities previously known to the industry.

VI. BACKGROUND OF THE '423 PATENT AND THE PRIOR ART

A. The State of the Art Prior to December 2013

36. "Vending machines (or 'automatic retailing' machines) . . . have been around for thousands of years." Ex. 1001, 1:51-52. In fact, the "first simple mechanical coin operated vending machines were introduced in the 1880s." *Id.*, 1:53-54. For example, a patent from 1884 entitled "Automatic Liquid-Drawing Device" ("*Fruen*"), discloses a coin-operated machine that dispenses liquid. *See generally* Ex. 1024.

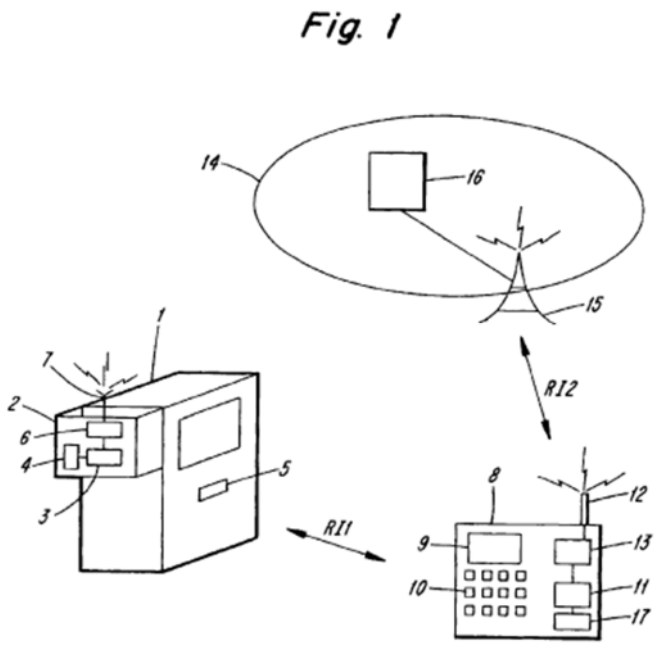
37. Since at least as early as the 1960's, alternative payment methods for a vending machine transaction—such as credit card—were in use. For instance, a 1969 patent, entitled "Vending Apparatus for use with Credit Cards" ("*Yamamoto* et al."),

discloses a vending machine that accepts payment by credit card for various articles. *See generally* Ex. 1012.

38. Vending machine payment over communication lines also existed before the invention of the internet. For instance, a 1976 patent entitled "Automated Fuel Dispenser" ("*Gentile* et al.") discloses an automated fuel dispensing system that authorizes credit and billing via direct connection to a credit center over communication lines. *See generally* Ex. 1013.

39. Using a personal mobile device, such as a mobile phone, to conduct a vending machine transaction was also well-known more than a decade before the earliest possible priority date for the '423 Patent. For example, a patent that was filed in 1999 entitled "Mobile Telephone Network Access" ("*Räsänen* et al.") discloses a method of conveying information from a vending machine to a mobile phone to conduct a transaction. *See generally* Ex. 1014.

40. *Räsänen* teaches that "a mobile telephone 8 which may be thought of as a 'smart phone'" comprises "a display 9 and a keyboard 10, as well as a central processing unit (or digital signal processor) 11." *Id.*, 3:50-55. The phone communicates with the control unit 2 of a vending machine 1 using local radio air interface protocol (RI1) and with the cellular telephone network 14 using an antenna 12 and transceiver 13 to conduct a transaction. *See id.*, 3:43-49, 3:55-65. *See also id.*, Fig. 1, reproduced below:



Ex. 1014, Figure 1 (annotated).

41. Using a personal mobile device to identify available vending machines based on proximity was also well-known more than a decade before the earliest possible priority date for the ’423 Patent. For instance, *Räsänen* teaches that communications over the local radio air interface protocol (RI1) are carried out over a small range, “e.g. of the order of 10 metres.” *Id.*, 3:46-49. The disclosed vending machine is arranged to broadcast a terminal alert over its approximately 10-meter broadcast range. *See id.*, 3:66-4:1. Mobile phones within that range can then receive an alert that the mobile phone user is within range of the vending machine. *See id.*, 4:1-10.

42. Identifying available vending machines based on proximity to a mobile phone continued to evolve years before the earliest possible priority date for the ’423

Patent. For instance, a U.S. patent publication published in 2003 entitled "Authorization of Payment for a Commercial Transaction Via a Bluetooth Enabled Device" discloses detecting an available vending machine using a cellular phone's Bluetooth capabilities. *See* Ex. 1015 ("*Abell* et al.").

43. The concept of enabling mobile payment to an offline vending machine was also introduced long before the earliest possible priority date for the '423 Patent. For example, U.S. Publication No. 2003/0130902 ("*Athwal* et al."), entitled "Short Range Wireless System," published on July 10, 2003, describes a method for transacting a payment that does not require the vending machine (referred to as an "electronic retail system") to be connected to a wireless network. Ex. 1016, ¶ 19. Like the '423 Patent, *Athwal* uses short-range communication between a vending machine (or other electronic retail system) and a mobile device to transact payment. *See id.*, ¶ 22; *see also* Fig. 1:

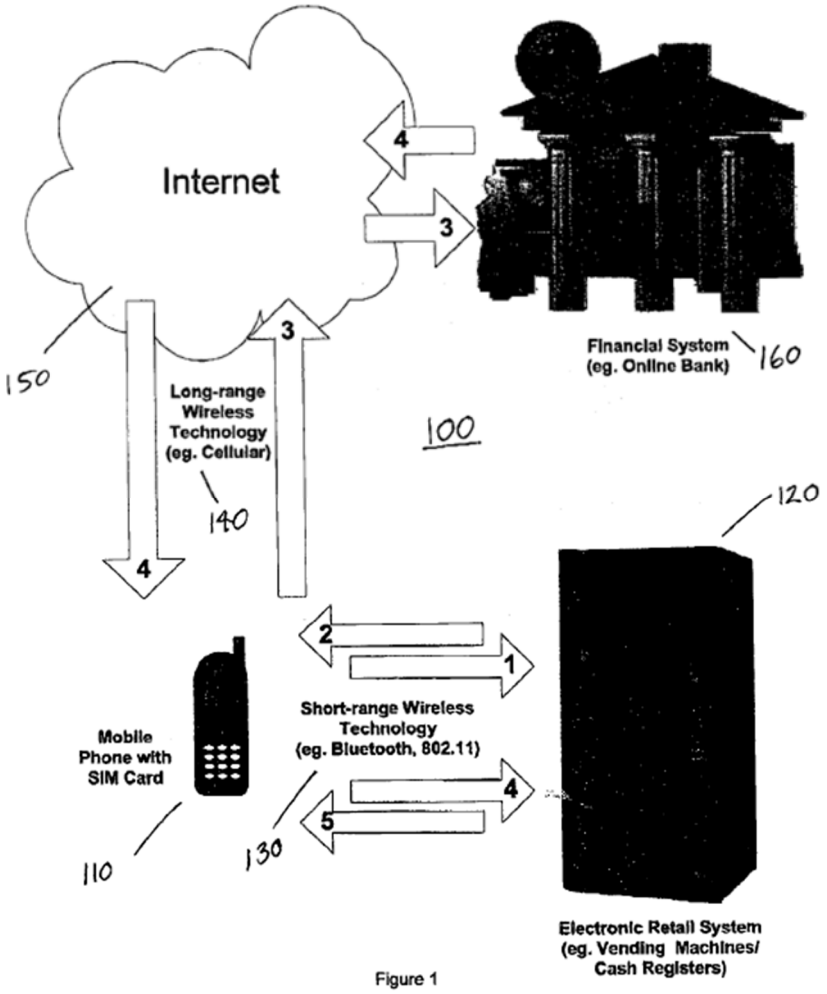


Figure 1

44. Using a mobile phone to provide the user-interface for conducting a vending machine transaction was also well-known more than a decade before the earliest possible priority date for the '423 Patent. *Räsänen* teaches downloading a set of interface software instructions to the mobile phone which configures the user interface of the mobile phone according to the vending machine's requirements. *See* Ex. 1014, 4:40-47. *Räsänen* further teaches that these downloadable instructions may provide the user with a list of available goods, the prices of the goods, and an

affordance that, when pressed, indicates conclusion of the transaction. *See id.*, 4:47-58 ("The user may then conclude the transaction by again pressing the accept key.").

B. Overview of the Alleged Invention of the '423 Patent

45. The '423 Patent is entitled "Method and System for Presenting Representations of Payment Accepting Unit Events." The specification explains that vending, or automatic retailing machines, "have been around for thousands of years." Ex. 1001, 1:51-52. It further explains that vending machines are "one type of 'payment accepting unit,'" which is described as "equipment that requires payment for the dispensing of products and/or services." *Id.*, 1:60-64. It also explains that, historically, these vending machines or "payment accepting units" required "insertion of coins, bills, or cards," but "[a]s the number of people with Internet-connected mobile devices proliferates…[m]obile payment is a logical extension." *Id.*, 2:5-18.

46. The '423 Patent discloses using a mobile device to "present[] representations of payment accepting unit events on a display." *Id.*, Abstract. Figure 27A is a flowchart diagram for presenting representations of payment accepting unit events. *Id.*, 37:29-32. Figures 27A and 27B are shown below:

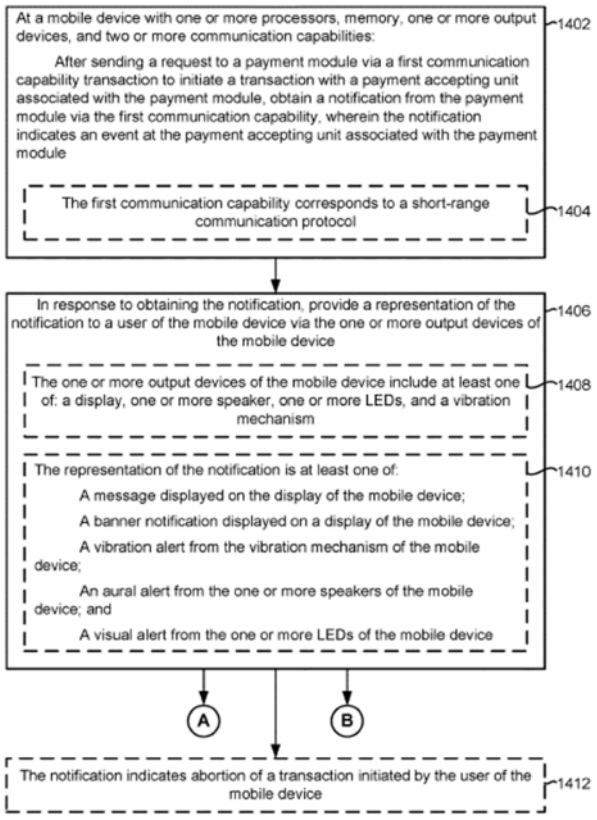


Figure 27A

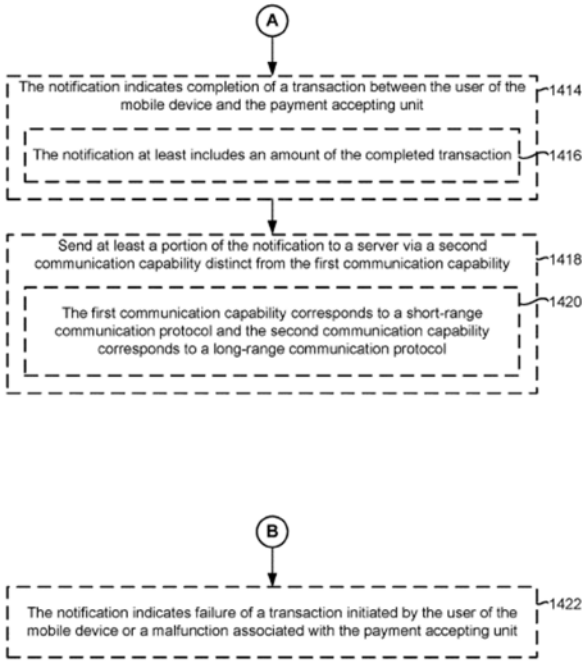


Figure 27B

Ex. 1001, Figures 27A, 27B.

47. The ’423 Patent specification explains that “in some implementations, the method 1400 is performed by the mobile device 150…or a component thereof (*e.g.*, the application 140).” *Id.*, 37:35-37. The mobile device sends a request to a payment module to initiate a transaction with a payment accepting unit (*e.g.*, a vending machine). *Id.*, 37:45-53. “After sending [the] request…the mobile device obtains (1402) a notification from the payment module via the first communication capability, where the notification indicates an event at the payment accepting unit associated with the payment module.” *Id.* Then, “the mobile device provides (1406)

a representation of the notification to a user of the mobile device via the one or more output devices of the mobile device." *Id.*, 38:6-9.

48. The '423 Patent includes twenty claims, three of which are independent. Each independent claim is directed to substantially the same subject matter in method, system, and computer-readable forms.

C. Summary of the Prosecution History

49. The earliest patent application to which the '423 Patent claims priority is U.S. Provisional Application No. 61/917,936, filed December 18, 2013 ("the '936 Provisional"). Ex. 1001, p. 2.

50. The prior art relied upon herein pre-dates the earliest alleged priority date of the '423 Patent.

51. The application that issued as the '423 Patent (Application No. 18/197,070, the "'070 Application") was filed on May 14, 2023. Ex. 1001, p. 1.

52. The only Office Action on the merits in connection with the '070 Application rejected all pending claims under the doctrine of obviousness-type double patenting over claims of the '614 Patent, USPN 11,501,296 ("the 1,296 Patent"), the '772 Patent, and provisionally over Application No. 17/973,507 ("the '507 Application"). Ex. 1002, pp. 151-53. The Examiner remarked that "[t]he only difference between the instant application and the '614 Patent is merely a labeling

difference…. [A]ll the features of claims 1-20 are contained in claims 1-25 of the '614 Patent." *Id.*, p. 152.

53. In the Notice of Allowance for the '070 Application, the Examiner found that certain references cites by the Examiner failed to teach or suggest limitations [1.5]-[1.7], [1.11]. Ex. 1002, pp. 193. But as discussed below, these limitations were well-known, as demonstrated by at least the prior art relied upon herein.

VII. SUMMARY OF THE ASSERTED PRIOR ART

A. *Low*: U.S. Patent No. 10,210,501 (Ex. 1005)

54. U.S. Patent No. 10,210,501 to Low et al ("*Low*") is titled "Electronic Payments to Non-Internet Connected Devices Systems and Methods." *Low* issued on February 19, 2019 from an application filed on July 25, 2013 and I understand, based on discussions with counsel, that it is therefore prior art to the '423 Patent under 35 U.S.C. §§ 102(a) and/or 102(d).

55. *Low* teaches using a consumer's wireless device to conduct transactions with unmanned devices such as vending-machines. Ex. 1005, 1:16-20. The wireless device communicates with unmanned devices, which transmit a machine identifier to said device. *Id*., 2:11-28. "[I]n some embodiments, multiple machines may send their unique identifiers, such that the user is able to select one or more machines to

purchase from." *Id*., 2:11-28. The user then selects their desired items, makes a purchase, and the vending machine dispenses said item. *Id*., 5:19-30.

B. *Arora*: U.S. Patent No. 9,898,884 (Ex. 1006)

56. U.S. Patent No. 9,898,884 to Arora et al ("*Arora*") is titled "Method and System of Personal Vending." *Arora* issued on February 20, 2018 from an application filed on April 4, 2013 and I understand, based on discussions with counsel, that it is therefore prior art to the '423 Patent under 35 U.S.C. §§ 102(a) and/or 102(d).

57. *Arora* teaches using a "personal electronic device" to utilize "a group of vending machines managed by a vending machine company[.]" Ex. 1006, Abstract. Arora displays to the consumer "either products or vending machines from a list of options provided via the user interface of the personal electronic device, wherein the list of options depends on the actual available inventory[.]" *Id*., Abstract. The systems and methods of Arora disclose tracking a consumer's purchase history and offering coupons to a consumer based upon the same. *Id*., 13:47–14:16; *id.*, Fig. 3.

C. *Freeny*: U.S. Patent No. 8,958,846 (Ex. 1007)

58. U.S. Patent No. 8,958,846 to Freeny, Jr. ("*Freeny*") is titled "Communication and Proximity Authorization Systems." *Freeny* issued on February 17, 2015 from an application filed August 23, 2006 and I understand, based

on discussions with counsel, that it is therefore prior art to the ’423 Patent under 35 U.S.C. §§ 102(a) and/or 102(d).

59. *Freeny* discloses methods of transacting with a proximity service unit via a consumer’s wireless device. Ex. 1007, Abstract. Moreover, Freeny discloses a proximity authorization unit (which is a form of wireless device) that “can operate just like a smart card with the approved credit amount stored in the proximity authorization unit 2910 until transactions are authorized[.]” *Id*., 37:60-63. The customer’s approved credit balance “can be checked at any time by the user of the proximity authorization unit[.]” *Id*., 38:3-5.

D. *Casey*: U.S. Patent No. 8,255,323 (Ex. 1008)

60. U.S. Patent No. to Casey et al (“*Casey*”) is titled “Motion Based Payment Confirmation.” *Casey* issued on August 28, 2012 and I understand, based on discussions with counsel, that it is therefore prior art to the ’423 Patent under 35 U.S.C. § 102(a)(1).

61. *Casey* describes techniques for confirming a payment transaction on an electronic device that includes a touchscreen. Ex. 1008, Abstract. Casey discloses methods of using a touchscreen to select payment methods or confirm payment. *Id*., Fig. 5. In particular, a consumer may swipe their finger across a touchscreen to confirm payment. *Id*., 16:36-47, Fig. 5.

VIII. CLAIM CONSTRUCTION: 37 C.F.R. § 42.204(B)(3)

62. It is my understanding that in order to properly evaluate the ’423 Patent, the terms of the claims must first be interpreted. It is my understanding that for the purposes of this post-grant review, the claims are to be construed under the so-called *Phillips* standard, under which claim terms are given their ordinary and customary meaning as would be understood by one of ordinary skill in the art in view of the specification and prosecution history, unless the inventor has set forth a special meaning for a term.

63. For purposes of my analysis below, I do not believe any claim terms require explicit construction.

IX. CONCLUSIONS REGARDING PATENTABILITY

64. It is my opinion that the Challenged Claims of the ’423 Patent are not patentable for at least the reasons proposed in Grounds 1–4 of the PGR Petition:

Ground	Claim(s)	35 U.S.C. §	Basis
1	1–6, 8, 10, 12–20	102	*Low*
2	7, 9	103	*Low* in view of *Arora*
3	11	103	*Low* in view of *Arora* in further view of *Freeny* and *Casey*
4	1–20	101	Unpatentable for being directed to an abstract idea

65. Ground 1 shows how *Low* teaches all the limitations of Claims 1–6, 8, 10, 12–20.

66. Ground 2 shows how a POSA would have modified *Low* to include (i) a user device having an accelerometer to detect when a user has departed a zone and then to cancel the transaction and (ii) to transmit a coupon to the user device, as taught by *Arora*.

67. Ground 3 shows how a POSA would have modified the user interface of *Low's* user device to include a visual representation of an available payment accepting unit, as taught by *Arora*, a visual representation of an indication of a balance, as taught by *Freeny*, and an affordance that when slid, indicates the initiation of the transaction, wherein the affordance is slid in response to receiving a user input of swipe on the affordance displayed on the display of the mobile device, as taught by *Casey*.

68. Ground 4 shows how Claims 1–20 are unpatentable for being directed to an abstract idea.

A. Ground 1: Claims 1–6, 8, 10, 12–20 Are Anticipated Under 35 U.S.C. § 102 By *Low*

1. Each Element of Claim 1 is Found in *Low*

a. [1.P] A method of presenting representations of payment accepting unit events

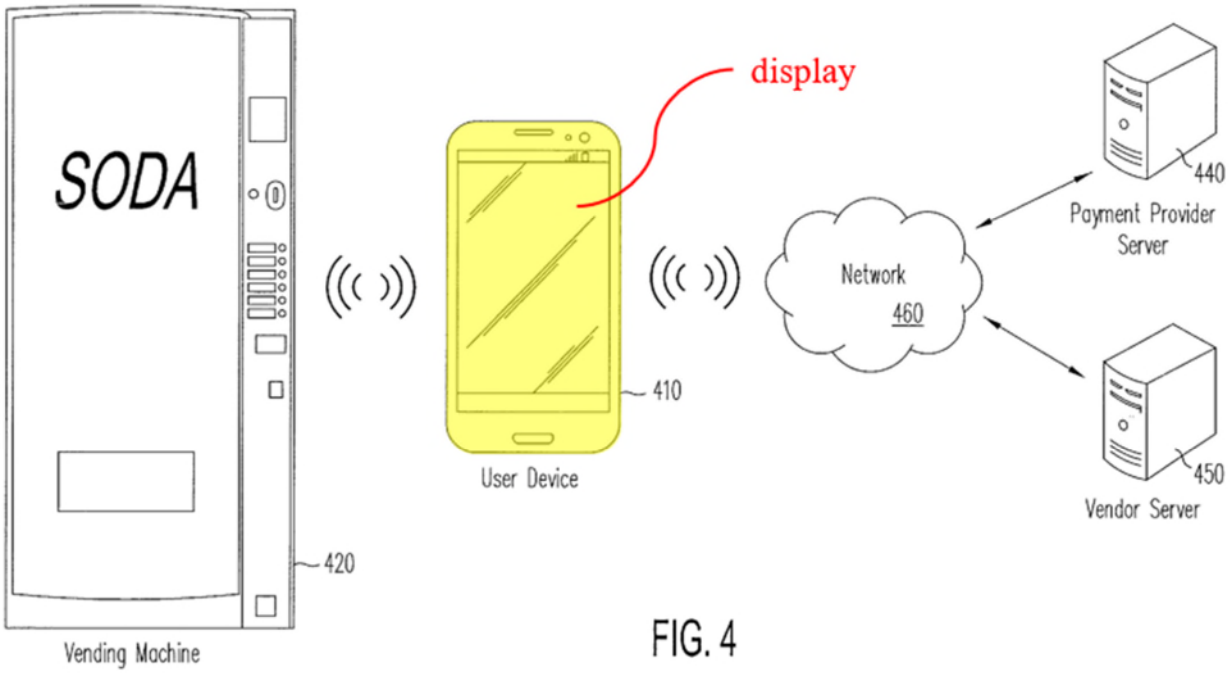
69. *Low* discloses "systems and method[s] for an electronic payment to a non-Internet connected device." Ex. 1005, Abstract. More specifically, *Low* teaches "a consumer device, such as a smart phone or computing tablet, communicates with a non-Internet connected unmanned device/machine via wireless communication,

such as Bluetooth or NFC (Near Field Communication) means, for making a payment to the device utilizing a payment provider." *Id.*, 2:11–16. *Low* teaches that the user device 110 may include a purchase application 112 stored thereon, which provides "a convenient interface to permit user 102 to select, purchase, and dispense products for sale at a vending machine 120." *Id.*, 3:49–60. *Low* further teaches a method whereby a user may interact with the purchase application 112 via a display of a user device 110 to "add desired item(s) from one or more machines to a cart and make the purchase through a payment provider." *Id.*, 2:29–34. Thus, to the extent the preamble is found to be limiting, it is my opinion that *Low* teaches a method of presenting representations (e.g., through the display of user device 110) of payment accepting unit events (e.g., indicia of various aspects of a transaction such as identification of a product, a purchase price, etc.).

b. [1.1] at a mobile device with one or more processors, memory, one or more output devices including a display, and one or more radio transceivers:

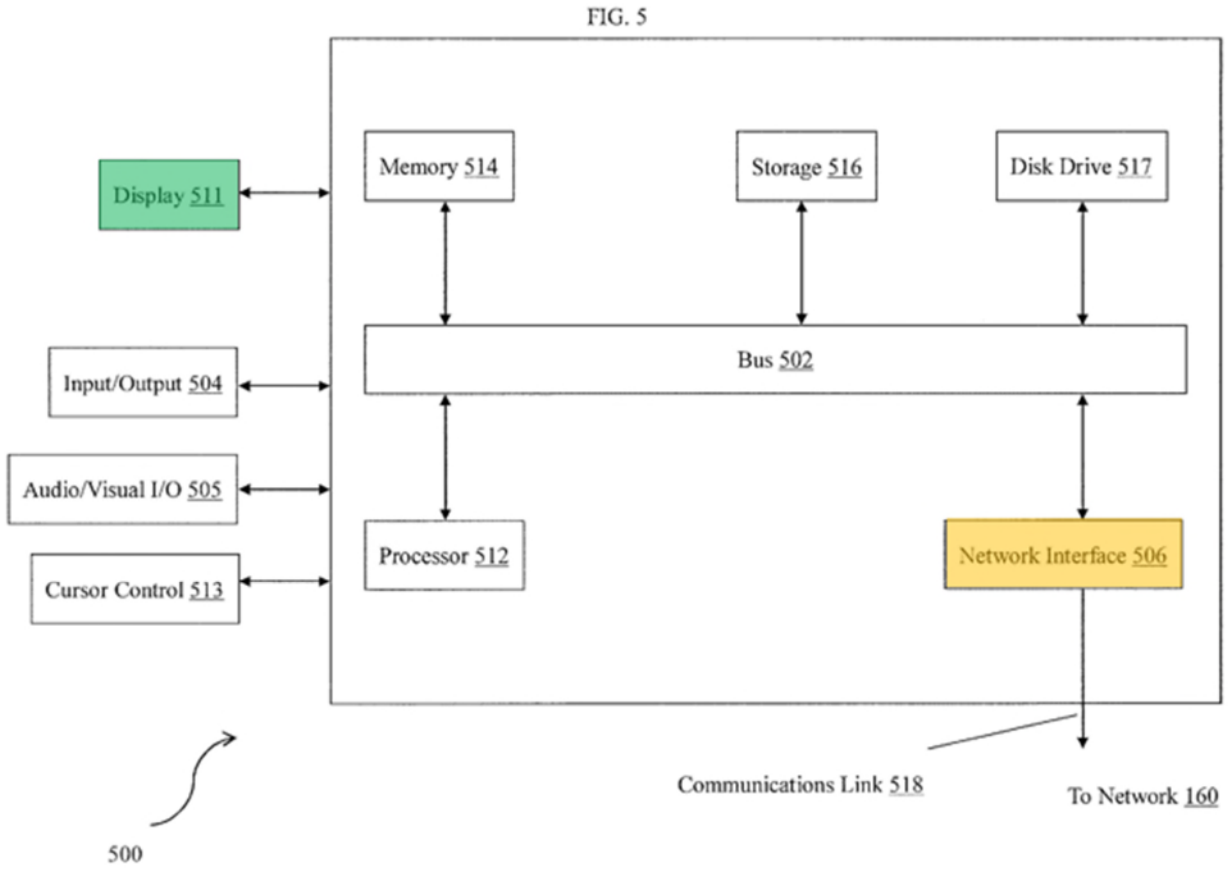
70. *Low* teaches "a user device 110" that includes "one or more processors, memories, and other appropriate components for executing instructions such as program code and/or data stored on one or more computer readable mediums to implement the various applications, data, and steps described herein." Ex. 1005, 3:26–32. The "user device 110 may be implemented as a personal computer (PC), a smart phone, personal digital assistant (PDA), laptop computer, and/or other types

of computing devices." *Id.*, 3:40–44. *Low* similarly describes a "user device 410," highlighted in yellow in Figure 4 (reproduced below). *Id.*, 11:11–13. The user device 410 includes a display as shown in Figure 4.



Ex. 1005, Figure 4 (annotated).

71. *Low* teaches that user device 110/410 can be "implemented as computer system 500," which includes a "display 511" (shown in green below) and a "transceiver or network interface 506" (shown in orange below) that "transmits and receives signals between computer system 500 and other devices, such as another user device, a merchant server, or a payment provider server via network 560." *Id.*, 12:52–56.



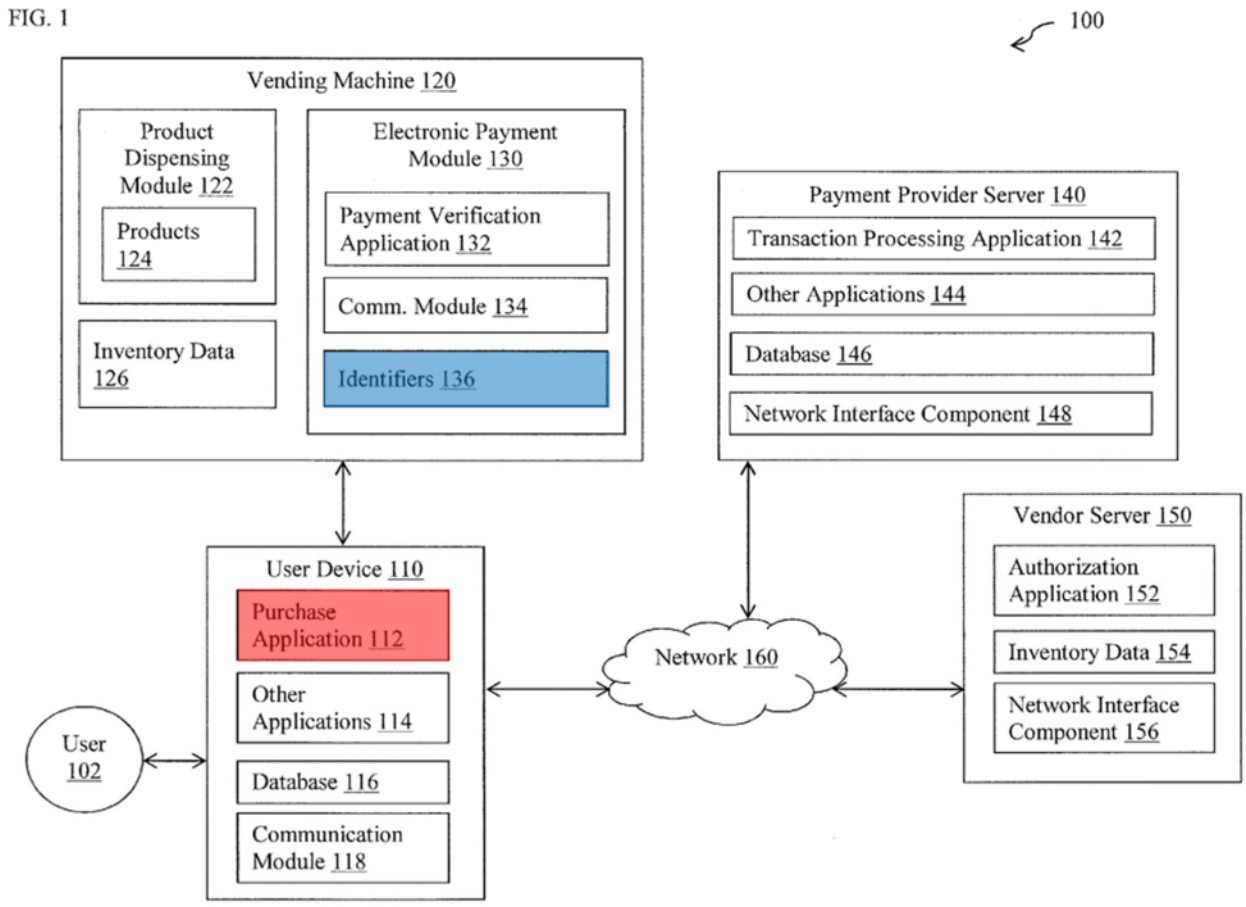
Ex. 1005, Figure 5 (annotated).

72. Thus, it is my opinion that *Low* teaches at a mobile device (user device 110/410) with one or more processors (e.g., processor 512), memory (e.g., memory 514), one or more output devices including a display (e.g., display 511), and one or more radio transceivers (e.g., transceiver or network interface 506).

c. [1.2] identifying one or more payment accepting units in proximity to the mobile device that are available to accept payment from a mobile payment application executing on the mobile device

73. *Low* teaches that user device 110 includes a "purchase application 112" which is used "to provide a convenient interface to permit user 102 to select,

purchase, and dispense products for sale at a vending machine 120." Ex. 1005, 3:57–60. The "[u]ser device 110 may further include one or more identifiers 136 which may be implemented, for example, as…data associated with hardware of vending machine 120…or other appropriate data used for authentication/identification of vending machine 120." *Id.*, 6:16–21. *Low* further teaches that "the user may utilize a user device to access payment provider server 140 and receive locations of available [non-Internet connected machines] NICMs," and can further receive "information corresponding to a plurality of NICM near user device 110," such as "directions, map coordinates, and/or a GPS location of desired NICM." *Id.*, 9:4–23. According to one embodiment of *Low*, "multiple machines may send their unique identifiers, such that the user is able to select one or more machines to purchase from." *Id.*, 2:26–28. The purchase application 112 is shown in blue and the identifiers 136 are shown in red in the annotated version of Figure 1 of *Low* below.



Ex. 1005, Figure 1 (annotated).

74. Thus, it is my opinion that *Low* teaches identifying (e.g., via identifiers 136) one or more payment accepting units (e.g., NICMs, such as vending machine 120) in proximity to the mobile device (e.g., "near user device 110") that are available to accept payment from a mobile payment application (e.g., purchase application 112) executing on the mobile device (e.g., user device 110).

d. [1.3] the identifying based at least in part on an identifier corresponding to the one or more payment accepting units

75. As set forth above, *Low* teaches that "[u]ser device 110 may further include one or more identifiers 136 which may be implemented, for example, as…data associated with hardware of vending machine 120…or other appropriate data used for authentication/identification of vending machine 120." Ex. 1005, 6:16–21. "The non-Internet connected machine (NICM) transmits a machine identifier to the user device, which allows the user device to retrieve a menu of items at the specific machine from the payment provider or an operator of the machine." *Id*., 2:16–20. *Low* further teaches that "the user may utilize a user device to access payment provider server 140 and receive locations of available NICMs," and "can further receive directions, map coordinates, and/or a GPS location of desired NICM." *Id*., 9:16–23.

76. Thus, it is my opinion that *Low* teaches the identifying based at least in part on an identifier (e.g., machine identifier, such as the identifiers 136) corresponding to the one or more payment accepting units (i.e., NICMs, such as vending machine 120).

e. [1.4] wherein the one or more payment accepting units are payment operated machines that accept payment for dispensing of products and/or services

77. *Low* teaches that "vending machine 120 may be a vending machine, kiosk, terminal, or other device for dispensing items that are purchased." Ex. 1005, 4:57–59.

78. Thus, it is my opinion that *Low* teaches wherein the one or more payment accepting units (i.e., vending machine 120) are payment operated machines that accept payment for dispensing of products and/or services (e.g., "dispensing items that are purchased").

f. [1.5] displaying a user interface of the mobile payment application on the display of the mobile device

79. *Low* teaches "[p]urchase application 112 may be used, for example, to provide a convenient interface to permit user 102 to select, purchase, and dispense products for sale at a vending machine 120." Ex. 1005, 3:57–60. A "menu is…displayed on the user device, and the user selects desired item(s) for purchase." *Id*., 2:24–25.

80. Thus, it is my opinion that *Low* teaches displaying a user interface (e.g., "interface") of the mobile payment application (e.g., purchase application 112) on the display (e.g., display 511) of the mobile device (e.g., user device 110).

g. [1.6] the user interface being configured to display a visual indication of the one or more payment accepting units

81. *Low* teaches that a "non-Internet connected machine (NICM) transmits a machine identifier to the user device, which allows the user device to retrieve a menu of items at the specific machine from the payment provider or an operator of the machine." Ex. 1005, 2:16–20. *Low* further teaches that the user device 110 may

"receive a machine identifier from identifiers 136." *Id*., 8:66–9:2. "[M]ultiple machines may send their unique identifiers, such that the user is able to select one or more machines to purchase from." *Id*., 2:26–28. In my opinion, the user device 110 is configured to display the available machines such that the user is able to interact with the display to select the one or more machines from which to make a purchase.

82. Thus, it is my opinion that *Low* teaches the user interface (e.g., "interface") being configured to display (e.g., "such that the user is able to select one or more machines to purchase from") a visual indication of the one or more payment accepting units (e.g., "machine identifier").

h. [1.7] the user interface being configured to…accept user input selecting an available payment accepting unit of the one or more payment accepting units

83. *Low* teaches that a "non-Internet connected machine (NICM) transmits a machine identifier to the user device." Ex. 1005, 2:16–20. *Low* further teaches that "multiple machines may send their unique identifiers, ***such that the user is able to select one or more machines to purchase from***." *Id*., 2:26–28 (emphasis added). In my opinion, the user device 110 is configured to display either (i) the available machines such that the user is able to interact with the display to select the one or more machines from which to make a purchase or (ii) products available at particular

machines, whereby selecting the product(s) necessarily selects the available machine that offers the product(s).

84. Thus, it is my opinion that *Low* teaches the user interface (e.g., "interface") being configured to…accept user input selecting an available payment accepting unit of the one or more payment accepting units ("multiple machines may send their unique identifiers, such that the user is able to select one or more machines to purchase from").

i. [1.8] establishing via the one or more radio transceivers a wireless communication path including the mobile device and the available payment accepting unit of the one or more payment accepting units

85. *Low* teaches that "a consumer device, such as a smart phone or computing tablet, communicates with a non-Internet connected unmanned device/machine via wireless communication, such as Bluetooth or NFC (Near Field Communication) means, for making a payment to the device utilizing a payment provider." Ex. 1005, 2:11–16. *Low* further teaches that "a NICM and a user device are paired, e.g., through a NFC or Bluetooth communication." *Id*., 2:38–39. *Low* teaches that the user device 110 may receive inventory data 154 from a vending machine 120 "using an Internet connection of user device 110 ***after a short range communication link is established*** between user device 110 and vending machine 120." *Id*., 8:24–28 (emphasis added). In my opinion, the inventory data 154 (e.g.,

what is available for purchase at the vending machine 120) would not be available on the user device 110 until "after a short range communication link is established between user device 110 and vending machine 120," as the vending machine 120 is not connected to the Internet and cannot otherwise transmit data to the user device 110.

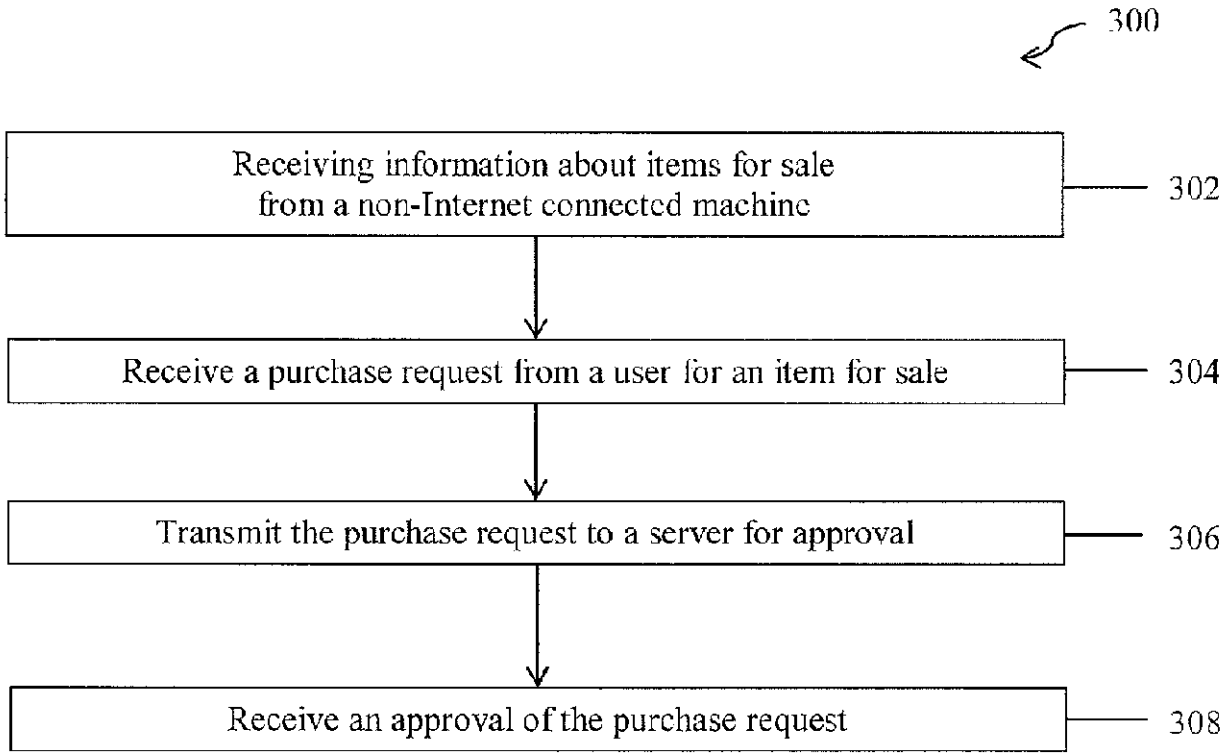
86. Thus, it is my opinion that *Low* teaches establishing via the one or more radio transceivers (e.g., "transceiver or network interface 506") a wireless communication path (e.g., "communication link is established," "device[s] are paired") including the mobile device (e.g., user device 110) and the available payment accepting unit of the one or more payment accepting units (e.g., NICMs, such as vending machine 120).

j. [1.9] after establishing the wireless communication path, enabling user interaction with the user interface of the mobile payment application to complete a transaction with the available payment accepting unit

87. *Low* teaches that the user device 110 may receive inventory data 154 from a vending machine 120 "using an Internet connection of user device 110 ***after a short range communication link is established*** between user device 110 and vending machine 120." Ex. 1005, 8:24–28 (emphasis added). "Inventory data 154 may correspond generally to data of…purchasable products at vending machine 120." *Id*., 8:22–24. Referring to Figure 3 of *Low* (reproduced below), "a flowchart

illustrating a method for use by a user device for an electronic payment to a non-Internet connected device" is shown. *Id.*, 10:1–3.

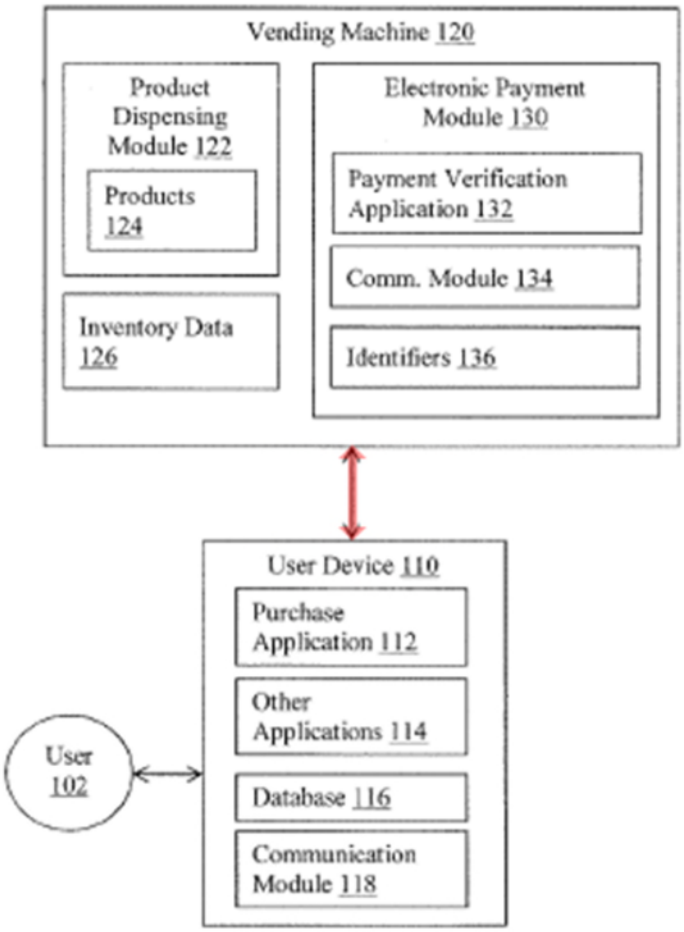
FIG. 3



Ex. 1005, Figure 3.

88. Furthermore, it is my understanding that the bi-directional arrow (shown in red below) between the user device 110 and the vending machine 120 of Figure 1 of *Low* reflects an established communication path between the user device 110 and the vending machine 120, as shown in the excerpt of Figure 1 below.

FIG. 1



Ex. 1005, Figure 1 (excerpted).

89. Thus, it is my opinion that *Low* teaches after establishing the wireless communication path (e.g., "communication link is established," "device[s] are paired"), enabling user interaction with the user interface of the mobile payment application (e.g., purchase application 112) to complete a transaction with the available payment accepting unit (e.g., "a method for use by a user device for an electronic payment to a non-Internet connected device," as shown in Figure 3 of *Low*).

k. [1.10] exchanging information with the available payment accepting unit via the one or more radio transceivers, in conjunction with the transaction

90. *Low* teaches that "[e]lectronic payment module 130 includes generally a payment verification application 132, communication module 134, and identifiers 136 necessary to effectuate and verify and electronic payment of products 124." Ex. 1005, 5:54–57. "Payment verification application 132…may receive an approval of a payment from user device 110, verify the approval, and dispense items purchased from products 124 using product dispensing module 122." *Id*., 5:66–6:3. *Low* teaches that this information is exchanged via the "communication module 134 [which is] adapted to communicate with user device 110" via "wireless short range communication devices including microwave, radio frequency, infrared, Bluetooth, and near field communication devices." *Id*., 6:9–15.

91. Thus, it is my opinion that *Low* teaches exchanging information (e.g., information such as approval of payment) with the available payment accepting unit via the one or more radio transceivers (e.g., "wireless short range communication devices"), in conjunction with the transaction (e.g., approval of payment is in conjunction with the transaction).

l. [1.11] after exchanging the information, displaying, on the display, an updated user interface of the mobile payment application to the user of the mobile device

92. *Low* teaches user device 110 may "display to user 102…lists of products 124," and "[i]nventory data 126 may…adjust viewable inventory levels of products 124 for display to user 102." Ex. 1005, 8:31–33, 9:8–11. I understand this to mean that after a product 124 is purchased at a vending machine 120, the user device 110 displays an updated inventory level of products 124 to account for that purchased product (i.e., displaying one less product available for purchase).

93. Thus, it is my opinion that *Low* teaches after exchanging the information, displaying, on the display (i.e., display 511), an updated user interface (i.e., "adjust[ed] viewable inventory") of the mobile payment application (i.e., purchase application 112) to the user of the mobile device (i.e., user device 110).

94. Additionally or alternatively, at a minimum, it is my understanding that *Low* teaches a user device 110 having a user interface that would revert to its initial, pre-transaction state following the completion of the transaction so that the user device 110 could be utilized to complete a subsequent transaction.

95. This reversion by the user interface back to its initial, pre-transaction state likewise represents "displaying, on the display, an updated user interface of the mobile payment application to the user of the mobile device."

96. Accordingly, it is my opinion that *Low* discloses all limitations of, and therefore anticipates, Claim 1.

2. Each Element of Claim 2 is Found in *Low*

97. Claim 2 recites: "The method of claim 1, wherein the updated user interface of the mobile payment application includes at least one of: a message displayed on the display of the mobile device; a banner notification displayed on a display of the mobile device; and/or a visual alert from one or more light-emitting diodes (LEDs) of the mobile device."

98. *Low* discloses that "database 146 may include cross-promotional products and/or preferences for use in upselling products, for example, displaying a message to user 102 after purchasing a drink such as, 'Would you like chips with your drink.'" Ex. 1005, 7:24–39. In my opinion, the message displayed to user 102 would be displayed on the user interface of the user device 110.

99. Thus, it is my opinion that *Low* teaches wherein the updated user interface of the mobile payment application includes at least one of: a message displayed on the display of the mobile device (e.g., "displaying a message to user 102 after purchasing a drink such as, 'Would you like chips with your drink'"); a banner notification displayed on a display of the mobile device; and/or a visual alert from one or more light-emitting diodes (LEDs) of the mobile device.

3. Each Element of Claim 3 is Found in *Low*

100. Claim 3 recites: "The method of claim 1, wherein the information indicates completion of the transaction between the user of the mobile device and the available payment accepting unit."

101. *Low* teaches that payment provider server 140 includes a database 146, which "include[s] information associated with the ***transaction history*** processing" described in *Low*. Ex. 1005, 7:22–24 (emphasis added). I understand this to mean that the information associated with the transaction history indicates completion of one or more transactions. That is, the transaction history is a record of one or more completed transactions, and this information is exchanged between the user device 110 and the vending machine 120 and ultimately sent to the payment provider server 140 via the network 160 (*id*., 4:45–48). Because *Low* describes a system with no direct connection between the vending machine 120 and the payment provider server 140, and instead only describes a connection between the user device 110 and the payment provider server 140, the "transaction history" information necessarily must be communicated from the user device 110 to the payment provider server 140.

102. Thus, it is my opinion that *Low* teaches wherein the information indicates completion of the transaction (e.g., "transaction history") between the user of the mobile device (e.g., user device 110) and the available payment accepting unit (e.g., vending machine 120).

4. Each Element of Claim 4 is Found in *Low*

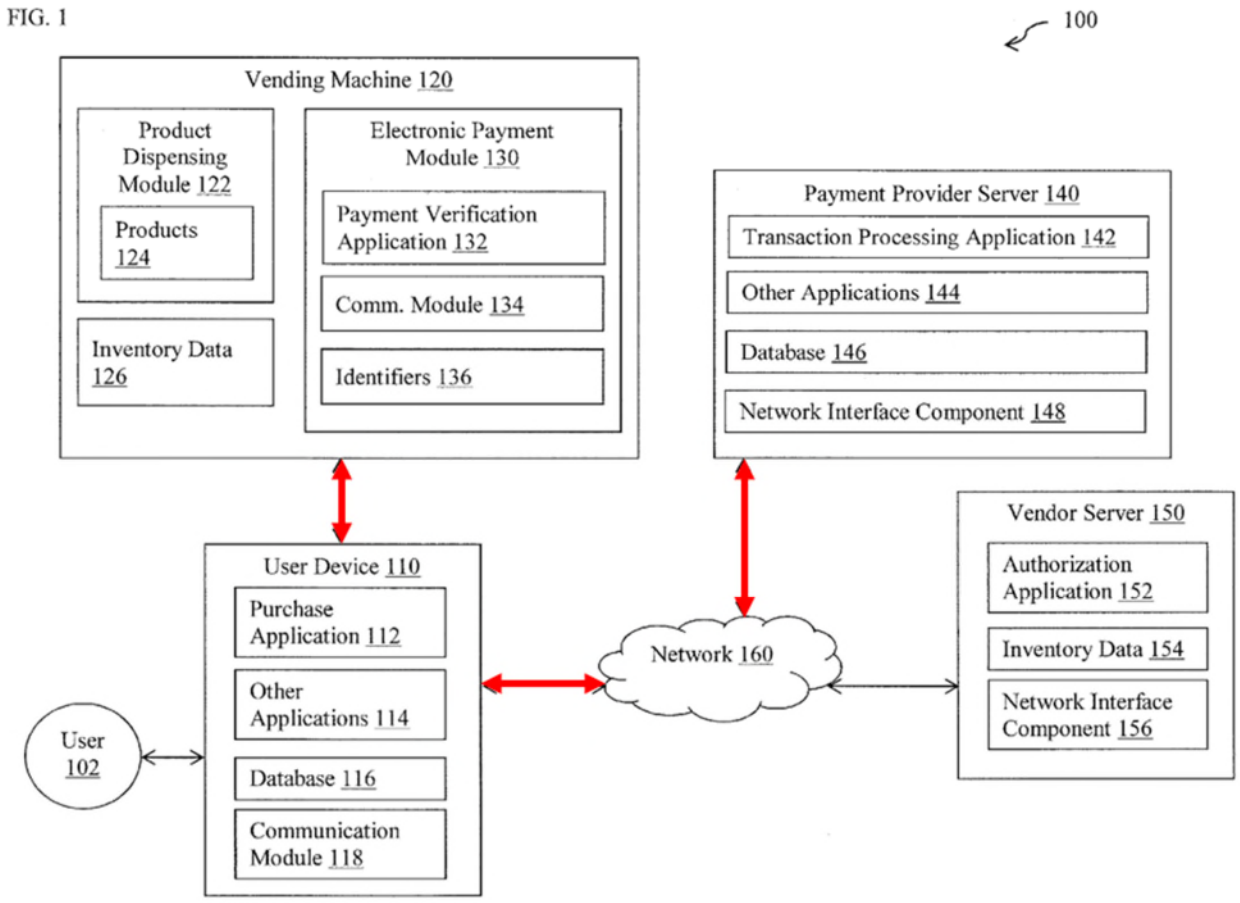
103. Claim 4 recites: "The method of claim 3, wherein the mobile device includes a long-range transceiver and the information at least includes an amount of

the completed transaction, and the method further comprises: sending at least the amount of the completed transaction to a server via the long-range transceiver."

104. *Low* teaches that the user device 110 includes a communication module 118, which "may include a DSL (e.g., Digital Subscriber Line) modem, a PSTN (Public Switched Telephone Network) modem, an Ethernet device, a broadband device, a satellite device and/or various other types of wired and/or wireless network communication devices." Ex. 1005, 4:48–54.

105. *Low* also teaches user device 110 transmits to payment provider server 140 "a purchase request including…***product price***," and that payment provider server 140 includes a database 146, which "include[s] information associated with the transaction history processing" described in *Low*. Ex. 1005, 6:3–8, 7:22–24 (emphasis added).

106. The transmission of this information from the user device 110 to the payment provider server 140 is accomplished through a long-range transceiver, as demonstrated by the user device 110 communicating with the payment provider server 140 via a network 160, as shown below. *Id*., Figure 1 (reproduced below).



Ex. 1005, Figure 1 (annotated).

107. Thus, it is my opinion that *Low* teaches wherein the mobile device includes a long-range transceiver (e.g., communication module 118) and the information at least includes an amount of the completed transaction (e.g., product price, transaction history), and the method further comprises: sending at least the amount of the completed transaction to a server via the long-range transceiver (e.g., user device 110 transmits to payment provider server 140 product price and transaction history).

5. Each Element of Claim 5 is Found in *Low*

108. Claim 5 recites: "The method of claim 1, wherein the information indicates abortion of the transaction initiated by the user of the mobile device."

109. *Low* teaches that "the user device transmits the purchase request to a server for approval," which "may determine if there are any restrictions and/or limitations corresponding to the user account and may take appropriate actions as desired." Ex. 1005, 10:41–54. Determining whether there are any restrictions and/or limitations includes "checking for adequate funds and charging the account/funding card." *Id*., 11:64–66. "Once user device 410 has received an approval with a payment authorization, user device 410 may, in some embodiments, transmit the payment authorization to vending machine 420 to dispense and receive the product." *Id*., 12:9–12.

110. In my opinion, *Low's* disclosure of a server determining whether there are any restrictions and/or limitations, including whether there are adequate funds for the transaction, encompasses a scenario where the transaction is aborted (e.g., because of a restriction and/or limitation on the user account or inadequate funds).

111. Similar to how the user device 410 transmits a payment authorization to the vending machine 420, in my opinion, *Low* contemplates the user device 410 transmitting information indicating an abortion of the transaction (e.g., "tak[ing] appropriate actions as desired", Ex. 1005, 10:41-54) to the vending machine 420 in a similar manner. For example, in most communication protocols, including

Bluetooth, a closing of the connection involves the sending of a "close" or "terminate" protocol message. Thus, the transmitted information taught by *Low* may simply be the closing of the connection between the user device and the vending machine without transmitting any authorization information, indicating an abortion of the transaction.

112. Thus, it is my opinion that *Low* teaches wherein the information indicates abortion of the transaction initiated by the user of the mobile device (e.g., "determin[ing] if there are any restrictions and/or limitations corresponding to the user account and [taking] appropriate actions as desired").

6. Each Element of Claim 6 is Found in *Low*

113. Claim 6 recites: "The method of claim 1, wherein the information indicates failure of the transaction initiated by the user of the mobile device or a malfunction associated with the available payment accepting unit."

114. *Low* teaches that "the user device transmits the purchase request to a server for approval," which "may determine if there are any restrictions and/or limitations corresponding to the user account and may take appropriate actions as desired." Ex. 1005, 10:41–54. Determining whether there are any restrictions and/or limitations includes "checking for adequate funds and charging the account/funding card." *Id.*, 11:64–66. "Once user device 410 has received an approval with a payment authorization, user device 410 may, in some embodiments, transmit the

payment authorization to vending machine 420 to dispense and receive the product." *Id*., 12:9–12.

115. In my opinion, *Low's* disclosure of a server determining whether there are any restrictions and/or limitations, including whether there are adequate funds for the transaction, encompasses a scenario where the transaction fails (e.g., because of a restriction and/or limitation on the user account or inadequate funds).

116. Similar to how the user device 410 transmits a payment authorization to the vending machine 420, in my opinion, *Low* contemplates the user device 410 transmitting information indicating a failure of the transaction (e.g., "tak[ing] appropriate actions as desired") to the vending machine 420 in a similar manner. For example, in most communication protocols, including Bluetooth, a closing of the connection involves the sending of a "close" or "terminate" protocol message. Thus, the transmitted information taught by *Low* may simply be the closing of the connection between the user device and the vending machine without transmitting any authorization information, indicating a failure of the transaction.

117. Thus, it is my opinion that *Low* teaches wherein the information indicates failure of the transaction initiated by the user of the mobile device (e.g., "determine[ing] if there are any restrictions and/or limitations corresponding to the user account and [taking] appropriate actions as desired") or a malfunction associated with the available payment accepting unit.

7. Each Element of Claim 8 is Found in *Low*

118. Claim 8 recites: "The method of claim 1, wherein the information reflects availability of the available payment accepting unit to conduct a transaction."

119. To the extent "availability of the available payment accepting unit" means locations or operations of available payment accepting units, it is my opinion that *Low* discloses this. For example, *Low* discloses the electronic payment module 130 (that is within the vending machine) includes a communication module 134 that "may include various types of wired and/or wireless short range communication devices including microwave, radio frequency, infrared, Bluetooth, and near field communication devices." Ex. 1005, 6:9-16; Fig. 1. "Identifiers" are then used (also shown in Figure 1 as being within the vending machine), including an "identifier" for a "vending machine 120." *Id.* at Fig. 1; 6:17-31.

120. Thus, it is my opinion that *Low* teaches "information" that reflects "availability of the available payment accepting unit to conduct a transaction" (i.e., sending information about an "identifier" for a "vending machine 120").

121. To the extent "availability of the available payment accepting unit" means inventory data on a payment accepting unit, it is my opinion that this is also disclosed by *Low*. For example, *Low* discloses that "[i]nventory data 154 may be received from vending machine 120, for example using an Internet connection of

user device 110 after a short range communication link is established between user device 110 and vending machine 120." Ex. 1005, 8:24–28. "Inventory data 154 may correspond generally to data of purchased and ***purchasable products*** at vending machine 120," including "***current stocks of products 124***, sold out products of products 124, purchase demands and/or rates of products 124, or other desired data." *Id*., 8:22–36 (emphasis added).

122. In my opinion, the inventory data including "purchasable products at vending machine" and "current stocks of products" reflects availability of the vending machine to conduct a transaction.

123. Thus, it is also my opinion that *Low* in view of *Arora* in further view of *Freeny* teaches wherein the information reflects availability of the available payment accepting unit to conduct a transaction (e.g., "purchasable products at vending machine" and "current stocks of products" transmitted to user device).

8. Each Element of Claim 10 is Found in *Low*

124. Claim 10 recites: "The method of claim 1, wherein the user interface of the mobile payment application, after establishing the wireless communication path, indicates that the wireless communication path has been established with the available payment accepting unit."

125. *Low* teaches that "[i]nventory data 154 may be received from vending machine 120, for example using an Internet connection of user device 110 after a

short range communication link is established between user device 110 and vending machine 120." Ex. 1005, 8:24–28. The inventory data "may be utilized with user device 110 to display to user 102." *Id*., 5:41–42.

126. In my opinion, the user device 110 receiving and displaying the inventory data of the particular vending machine 120 indicates that the wireless communication path has been established with the vending machine 120, as the inventory data could not be displayed unless the wireless communication path had successfully been established.

127. Thus, it is my opinion that *Low* teaches wherein the user interface of the mobile payment application, after establishing the wireless communication path, indicates that the wireless communication path has been established with the available payment accepting unit (e.g., by displaying the inventory data to the user device 110).

9. Each Element of Claim 12 is Found in *Low*

128. Claim 12 recites: "The method of claim 1, wherein the payment operated machines include a payment activated washer, a payment activated dryer, a vending machine, a parking meter, a toll booth, an arcade game, a kiosk, a photo booth, or a ticket dispensing machine."

129. *Low* teaches that "vending machine 120 may be a vending machine, kiosk, terminal, or other device for dispensing items that are purchased." Ex. 1005, 4:57–59.

130. Thus, it is my opinion that *Low* teaches wherein the payment operated machines include a payment activated washer, a payment activated dryer, a vending machine (e.g., vending machine 120), a parking meter, a toll booth, an arcade game, a kiosk (e.g., "kiosk"), a photo booth, or a ticket dispensing machine.

10. Each Element of Claim 13 is Found in *Low*

a. [13.P] A mobile device

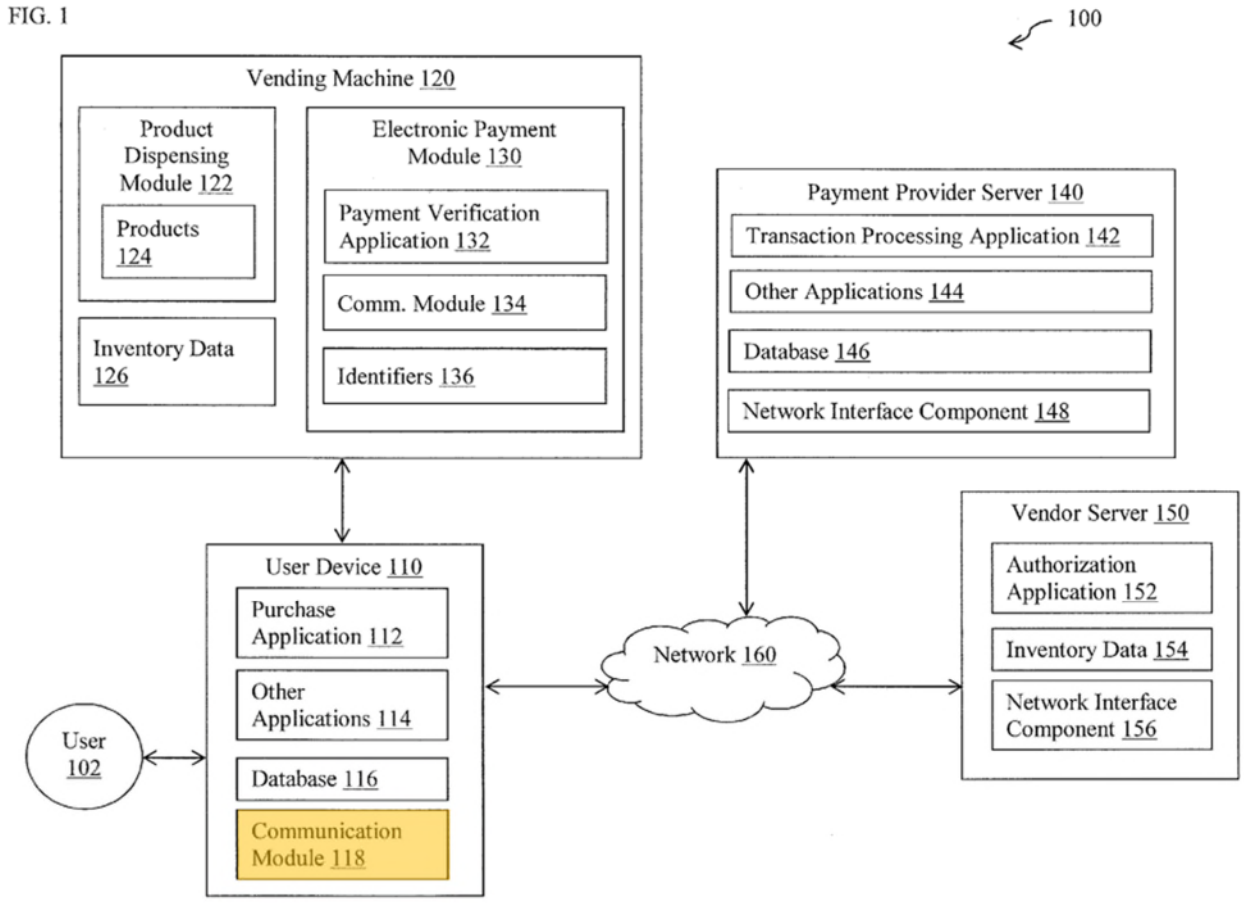
131. *Low* teaches a "user device 110," which "may be implemented as a personal computer (PC), a smart phone, personal digital assistant (PDA), laptop computer, and/or other types of computing devices capable of transmitting and/or receiving data." Ex. 1005, 3:37–44.

132. Thus, to the extent the preamble is found to be limiting, it is my opinion that *Low* teaches a mobile device (e.g., user device 110).

b. [13.1] one or more radio transceivers

133. *Low* teaches the user device 110 includes a "communication module 118" (shown in orange below), which "may include a DSL (e.g., Digital Subscriber Line) modem, a PSTN (Public Switched Telephone Network) modem, an Ethernet device, a broadband device, a satellite device and/or various other types of wired and/or wireless network communication devices including microwave, radio

frequency, infrared, Bluetooth, and near field communication devices." Ex. 1005, 4:45–56.



Ex. 1005, Figure 1 (annotated).

134. Thus, it is my opinion that *Low* teaches one or more radio transceivers (e.g., communication module 118).

c. [13.2] one or more output devices including a display

135. *Low* teaches a "user device 410," highlighted in yellow in Figure 4 (reproduced below). Ex. 1005, 11:11–13. The user device 410 includes a display as shown in Figure 4.

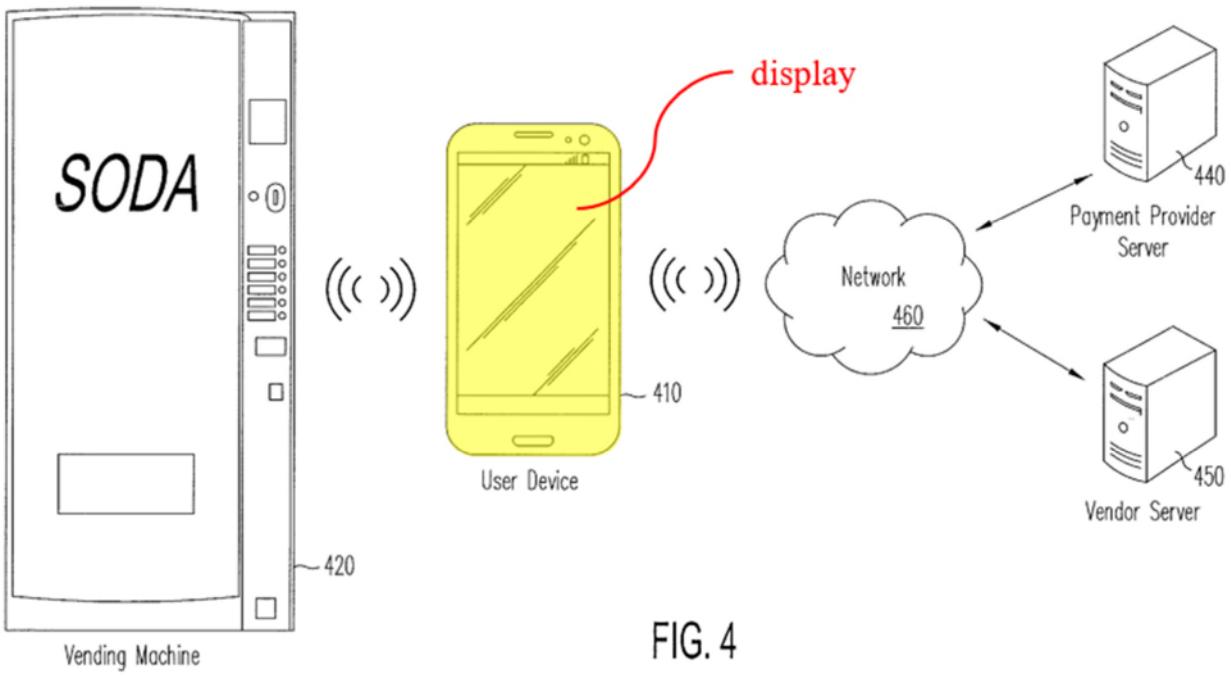
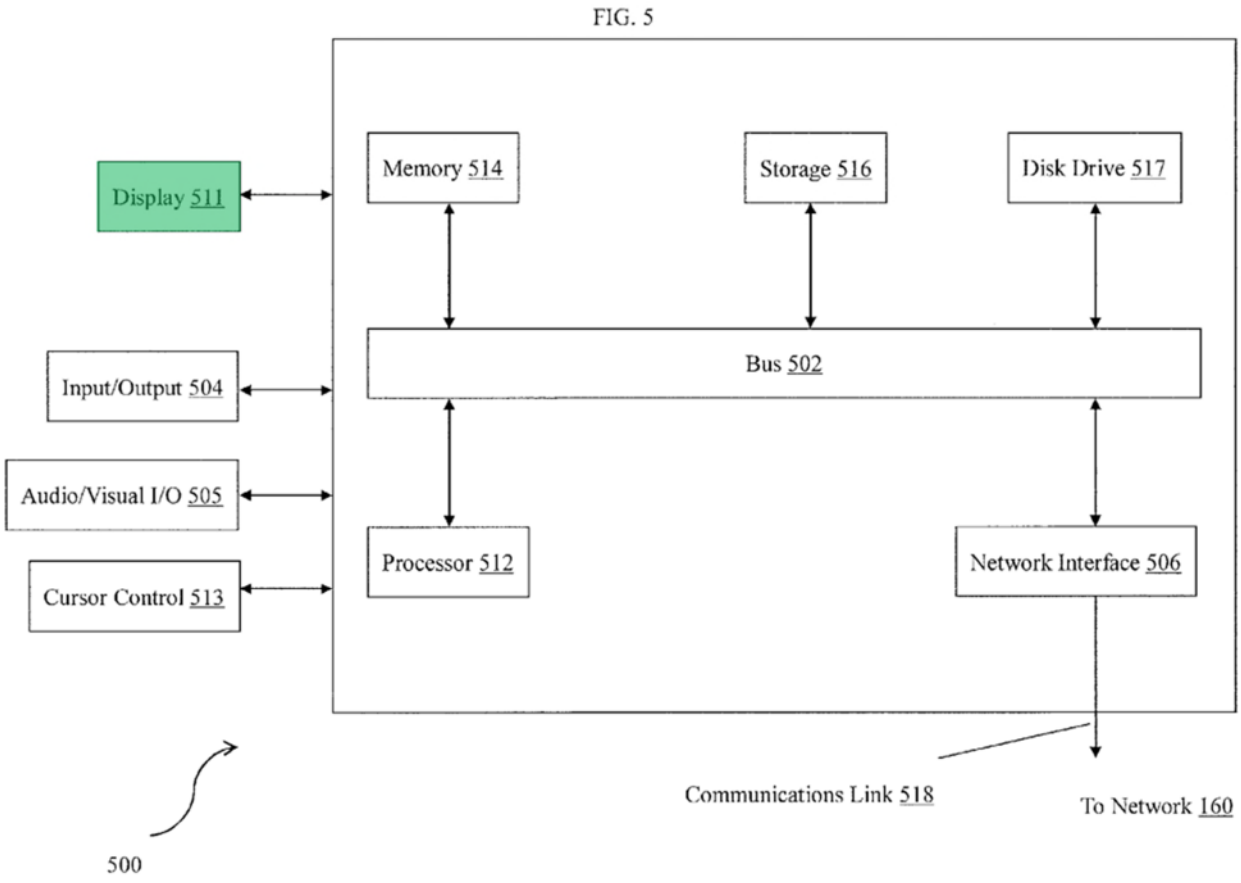


FIG. 4

Ex. 1005, Figure 4 (annotated).

136. *Low* teaches that user device 410 can be "implemented as computer system 500," which includes a "an input/output (I/O) component 504 that processes a user action" and includes a "display 511" (shown in green below). *Id.*, 12:42–56.



Ex. 1005, Figure 5 (annotated).

137. Thus, it is my opinion that *Low* teaches one or more output devices including a display (e.g., display 511).

d. [13.3] one or more processors

138. *Low* teaches "a user device 110" that includes "one or more processors, memories, and other appropriate components for executing instructions such as program code and/or data stored on one or more computer readable mediums to implement the various applications, data, and steps described herein." Ex. 1005, 3:26–32, Figure 5 (showing processor 512).

139. Thus, it is my opinion that *Low* teaches one or more processors (e.g., "one or more processors").

e. [13.4] memory storing one or more programs to be executed by the one or more processors, the one or more programs comprising instructions for

140. *Low* teaches "a user device 110" that includes "one or more processors, memories, and other appropriate components for executing instructions such as program code and/or data stored on one or more computer readable mediums to implement the various applications, data, and steps described herein." Ex. 1005, 3:26–32, Figure 5 (showing memory 514).

141. Thus, it is my opinion that *Low* teaches memory (e.g., "memories") storing one or more programs to be executed by the one or more processors, the one or more programs comprising instructions (e.g., "for executing instructions such as program code").

f. [13.5] identifying one or more payment accepting units in proximity to the mobile device that are available to accept payment from a mobile payment application executing on the mobile device

142. *See supra* Section IX.A.1.c.

g. [13.6] the identifying based at least in part on an identifier corresponding to the one or more payment accepting units

143. *See supra* Section IX.A.1.d.

h. [13.7] wherein the one or more payment accepting units are payment operated machines that accept payment for dispensing of products and/or services

144. *See supra* Section IX.A.1.e.

i. [13.8] displaying a user interface of the mobile payment application on the display of the mobile device

145. *See supra* Section IX.A.1.f.

j. [13.9] the user interface being configured to display a visual indication of the one or more payment accepting units

146. *See supra* Section IX.A.1.g.

k. [13.10] and accept user input selecting an available payment accepting unit of the one or more payment accepting units

147. *See supra* Section IX.A.1.h.

l. [13.11] establishing via the one or more radio transceivers a wireless communication path including the mobile device and the available payment accepting unit of the one or more payment accepting units

148. *See supra* Section IX.A.1.i.

m. [13.12] after establishing the wireless communication path, enabling user interaction with the user interface of the mobile payment application to complete a transaction with the available payment accepting unit

149. *See supra* Section IX.A.1.j.

n. [13.13] exchanging information with the available payment accepting unit via the one or more radio transceivers, in conjunction with the transaction

150. *See supra* Section IX.A.1.k.

o. [13.14] after exchanging the information, displaying, on the display, an updated user interface of the mobile payment application to the user of the mobile device

151. *See supra* Section IX.A.1.l.

11. Each Element of Claim 14 is Found in *Low*

152. Claim 14 recites: "The mobile device of claim 13, wherein identifying the one or more payment accepting units includes identifying a payment activated washer, a payment activated dryer, a vending machine, a parking meter, a toll booth, an arcade game, a kiosk, a photo booth, or a ticket dispensing machine."

153. *Low* teaches that "vending machine 120 may be a vending machine, kiosk, terminal, or other device for dispensing items that are purchased." Ex. 1005, 4:57–59.

154. Thus, it is my opinion that *Low* teaches wherein identifying the one or more payment accepting units includes identifying a payment activated washer, a payment activated dryer, a vending machine (e.g., vending machine 120), a parking meter, a toll booth, an arcade game, a kiosk (e.g., "kiosk"), a photo booth, or a ticket dispensing machine.

12. Each Element of Claim 15 is Found in *Low*

a. [15.P] A non-transitory computer readable storage medium storing one or more programs, the one or more programs comprising instructions, which, when executed by a mobile device with one or more processors, one or more output devices including a display, and one or more radio transceivers, cause the mobile device to perform operations comprising

155. *Low* teaches "a user device 110" that includes "one or more processors, memories, and other appropriate components for executing instructions such as program code and/or data stored on one or more computer readable mediums to implement the various applications, data, and steps described herein." Ex. 1005, 3:26–32. The "user device 110 may be implemented as a personal computer (PC), a smart phone, personal digital assistant (PDA), laptop computer, and/or other types of computing devices." *Id.*, 3:40–44. *Low* teaches that software, "such as program code and/or data, may be stored on one or more machine readable mediums, including non-transitory machine readable medium." *Id.*, 13:54–57.

156. *Low* similarly describes a "user device 410," highlighted in yellow in Figure 4 (reproduced below). *Id.*, 11:11–13. The user device 410 includes a display as shown in Figure 4.

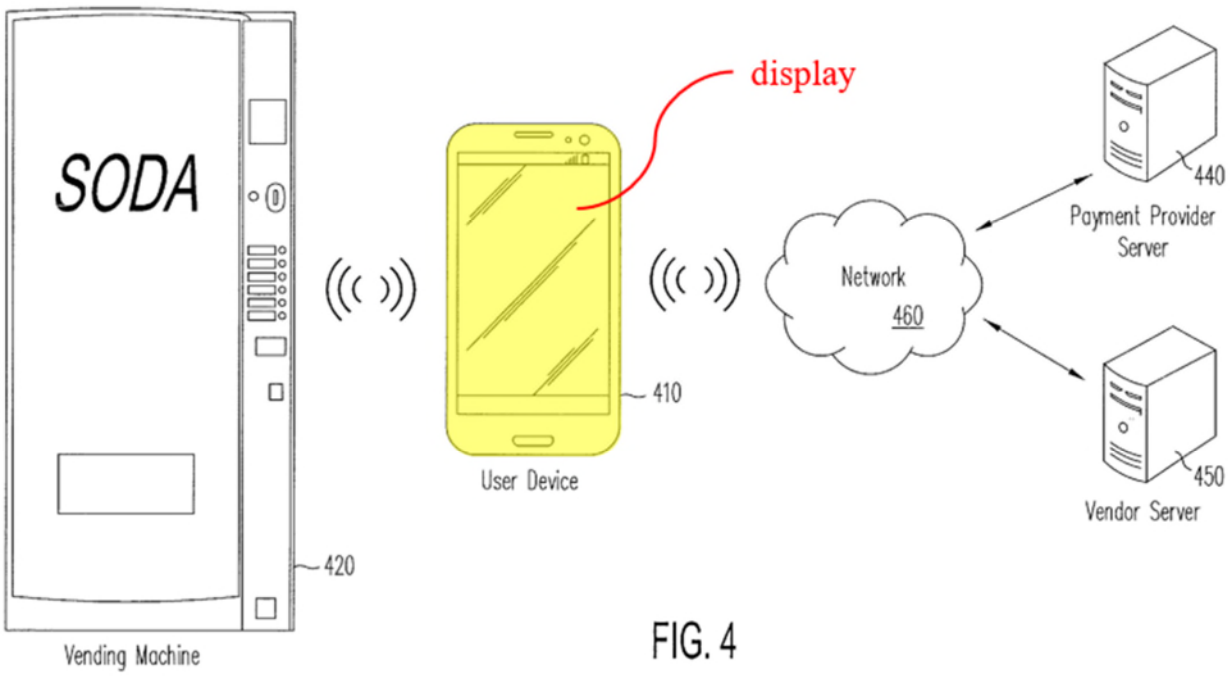
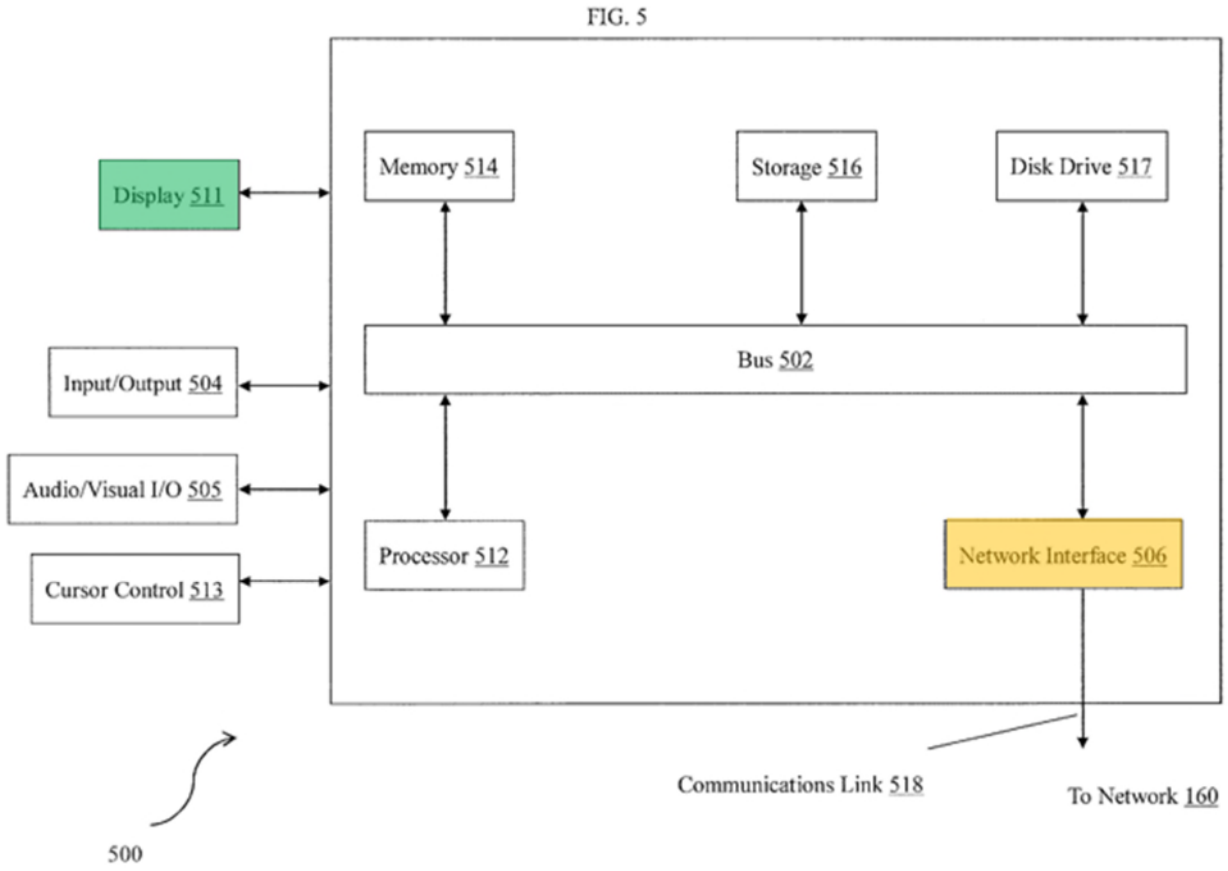


FIG. 4

Ex. 1005, Figure 4 (annotated).

157. *Low* teaches that user device 110, 410 can be "implemented as computer system 500," which includes a "display 511" (shown in green below) and a "transceiver or network interface 506" (shown in orange below) that "transmits and receives signals between computer system 500 and other devices, such as another user device, a merchant server, or a payment provider server via network 560." *Id.*, 12:52–56.



Ex. 1005, Figure 5 (annotated).

158. Thus, to the extent the preamble is found to be limiting, it is my opinion that *Low* teaches a non-transitory computer readable storage medium storing one or more programs (e.g., "program code and/or data, may be stored on one or more machine readable mediums, including non-transitory machine readable medium"), the one or more programs comprising instructions, which, when executed by a mobile device (e.g., user device 110) with one or more processors (e.g., "one or more processors"), one or more output devices including a display (e.g., display 511), and

one or more radio transceivers (e.g., network interface 506), cause the mobile device to perform operations.

b. [15.1] identifying one or more payment accepting units in proximity to the mobile device that are available to accept payment from a mobile payment application executing on the mobile device

159. *See supra* Section IX.A.1.c.

c. [15.2] the identifying based at least in part on an identifier corresponding to the one or more payment accepting units

160. *See supra* Section IX.A.1.d.

d. [15.3] wherein the one or more payment accepting units are payment operated machines that accept payment for dispensing of products and/or services

161. *See supra* Section IX.A.1.e.

e. [15.4] displaying a user interface of the mobile payment application on the display of the mobile device

162. *See supra* Section IX.A.1.f.

f. [15.5] the user interface being configured to display a visual indication of the one or more payment accepting units

163. *See supra* Section IX.A.1.g.

g. [15.6] and accept user input selecting an available payment accepting unit of the one or more payment accepting units

164. *See supra* Section IX.A.1.h.

h. [15.7] establishing via the one or more radio transceivers a wireless communication path including the mobile device and the available payment accepting unit of the one or more payment accepting units

165. *See supra* Section IX.A.1.i.

i. [15.8] after establishing the wireless communication path, enabling user interaction with the user interface of the mobile payment application to complete a transaction with the available payment accepting unit

166. *See supra* Section IX.A.1.j.

j. [15.9] exchanging information with the available payment accepting unit via the one or more radio transceivers, in conjunction with the transaction

167. *See supra* Section IX.A.1.k.

k. [15.10] after exchanging the information, displaying, on the display, an updated user interface of the mobile payment application to the user of the mobile device

168. *See supra* Section IX.A.1.l.

13. Each Element of Claim 16 is Found in *Low*

169. Claim 16 recites: "The non-transitory computer readable storage medium of claim 15, wherein the updated user interface of the mobile payment application includes at least one of: a message displayed on the display of the mobile device; a banner notification displayed on a display of the mobile device; and/or a visual alert from one or more light-emitting diodes (LEDs) of the mobile device."

170. *Low* discloses that "database 146 may include cross-promotional products and/or preferences for use in upselling products, for example, displaying a message to user 102 ***after purchasing a drink*** such as, 'Would you like chips with your drink.'" Ex. 1005, 7:24–28 (emphasis added).

171. In my opinion, the message displayed to user 102 would be displayed on the user interface of the user device 110.

172. Thus, it is my opinion that *Low* teaches wherein the updated user interface of the mobile payment application includes at least one of: a message displayed on the display of the mobile device (e.g., "displaying a message to user 102 after purchasing a drink such as, 'Would you like chips with your drink'"); a banner notification displayed on a display of the mobile device; and/or a visual alert from one or more light-emitting diodes (LEDs) of the mobile device.

14. Each Element of Claim 17 is Found in *Low*

173. Claim 17 recites: "The non-transitory computer readable storage medium of claim 15, wherein: the information indicates completion of the transaction between the user of the mobile device and the available payment accepting unit; the information at least includes an amount of the completed transaction; and the instructions further cause the mobile device to send at least the amount of the completed transaction to a server."

174. *Low* teaches that "[e]lectronic payment module 130 includes generally a payment verification application 132, communication module 134, and identifiers 136 necessary to effectuate and verify and electronic payment of products 124." Ex. 1005, 5:54–57. "Payment verification application 132…may receive an approval of a payment from user device 110, verify the approval, and dispense items purchased from products 124 using product dispensing module 122." *Id*., 5:66–6:3.

175. In my opinion, receiving an approval of a payment which leads to dispensing of the product(s) indicates completion of the transaction.

176. *Low* teaches that "[v]endor server 150 may include one or more authorization application 152, which may be configured [to] interact with purchase application 112 of user device 110 and/or transaction processing application 142 over network 160 to facilitate dispensing of products 124 of vending machine 120." Ex. 1005, 8:3–7. The authorization application 152 receives from the user device 110 "approvals of purchase requests, for example an approval designating a purchase request including a…product price…and effectuate dispensing of the designated item." *Id*., 8:7–13. The user device 110 includes a communication module 118, which "may include a DSL (e.g., Digital Subscriber Line) modem, a PSTN (Public Switched Telephone Network) modem, an Ethernet device, a broadband device, a satellite device and/or various other types of wired and/or wireless network communication devices." *Id*., 4:48–54.

177. Thus, it is my opinion that *Low* teaches the information indicates completion of the transaction (e.g., information such as approval of payment and dispensing of products) between the user of the mobile device (e.g., user device 110) and the available payment accepting unit (e.g., vending machine 120); the information at least includes an amount of the completed transaction (e.g., product price); and the instructions further cause the mobile device to send at least the amount of the completed transaction to a server (e.g., authorization application 152 of vendor server 150 receives from the user device 110 "approvals of purchase requests").

15. Each Element of Claim 18 is Found in *Low*

178. Claim 18 recites: "The non-transitory computer readable storage medium of claim 15, wherein the information indicates abortion of the transaction initiated by the user of the mobile device."

179. *Low* teaches that "the user device transmits the purchase request to a server for approval," which "may determine if there are any restrictions and/or limitations corresponding to the user account and may take appropriate actions as desired." Ex. 1005, 10:41–54. Determining whether there are any restrictions and/or limitations includes "checking for adequate funds and charging the account/funding card." *Id.*, 11:64–66. "Once user device 410 has received an approval with a payment authorization, user device 410 may, in some embodiments, transmit the

payment authorization to vending machine 420 to dispense and receive the product." *Id*., 12:9–12.

180. In my opinion, *Low's* disclosure of a server determining whether there are any restrictions and/or limitations, including whether there are adequate funds for the transaction, encompasses a scenario where the transaction is aborted (e.g., because of a restriction and/or limitation on the user account or inadequate funds).

181. Similar to how the user device 410 transmits a payment authorization to the vending machine 420, in my opinion, *Low* contemplates the user device 410 transmitting information indicating an abortion of the transaction (e.g., "tak[ing] appropriate actions as desired") to the vending machine 420 in a similar manner.

182. Thus, it is my opinion that *Low* teaches wherein the information indicates abortion of the transaction initiated by the user of the mobile device (e.g., "determine[ing] if there are any restrictions and/or limitations corresponding to the user account and [taking] appropriate actions as desired").

16. Each Element of Claim 19 is Found in *Low*

183. Claim 19 recites: "The non-transitory computer readable storage medium of claim 15, wherein the information indicates failure of the transaction initiated by the user of the mobile device or a malfunction associated with the available payment accepting unit."

184. *Low* contemplates situations where the purchase request fails: "The payment provider processes the request, and ***if approved***, sends approval information back to the user device." Ex. 1005, 2:32–34 (emphasis added). *Low* further teaches the "transaction processing application 142 may determine if there are any restrictions and/or limitations corresponding to the user account and may take appropriate actions as desired." *Id*., 10:41–54.

185. In my opinion, "restrictions and/or limitations corresponding to the user account" could result in situation where the "appropriate actions" include failing to approve the transaction.

186. Thus, it is my opinion that *Low* teaches wherein the information indicates failure of the transaction initiated by the user of the mobile device or a malfunction associated with the available payment accepting unit (e.g., "restrictions and/or limitations corresponding to the user account" which require "appropriate actions").

17. Each Element of Claim 20 is Found in *Low*

187. Claim 20 recites: "The non-transitory computer readable storage medium of claim 15, wherein identifying the one or more payment accepting units includes identifying a payment activated washer, a payment activated dryer, a vending machine, a parking meter, a toll booth, an arcade game, a kiosk, a photo booth, or a ticket dispensing machine."

188. *Low* teaches that "vending machine 120 may be a vending machine, kiosk, terminal, or other device for dispensing items that are purchased." Ex. 1005, 4:57–59.

189. Thus, it is my opinion that *Low* teaches wherein identifying the one or more payment accepting units includes identifying a payment activated washer, a payment activated dryer, a vending machine (e.g., vending machine 120), a parking meter, a toll booth, an arcade game, a kiosk (e.g., "kiosk"), a photo booth, or a ticket dispensing machine.

B. Ground 2: Claims 7 and 9 are Rendered Obvious Under 35 U.S.C. § 103 Over *Low* in View of *Arora*

1. Obviousness Standards and Analysis

190. I have been informed by counsel that questions of obviousness under 35 U.S.C. § 103(a) 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.

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

191. *Low* does not explicitly disclose that its user device includes an accelerometer, "based on data from the accelerometer, determining whether the user is walking away from the available payment accepting unit[,] and in accordance with a determination that the user is walking away from the available payment accepting unit, canceling the wireless communication path," as recited in dependent Claim 7.

192. However, *Arora* explicitly discloses a personal electronic device that includes an "accelerometer" (Ex. 1006, 26:65–27:6), and the location of a customer relative to two vending machines 30, 31 and a defined transaction distance therefrom may be determined through data from the accelerometer. *Id*., 13:28–35.

193. It is my opinion that because *Arora* determines the customer is walking away from the vending machine based on data from the accelerometer, then *Arora* teaches cancelling the wireless communication path between the personal electronic device and the vending machine.

194. Additionally, *Low* does not explicitly disclose "receiving, via the one or more radio transceivers, a coupon that is targeted to the user of the mobile device based on the transaction," as recited in Claim 9.

195. However, *Arora* explicitly discloses "an incentive or promotion, such as a coupon, sale or discount, points, contest entry, ability to vote, games or other products, services or features" that is communicated "from the vending company to the customer" for display in box 51 on the display of the user's electronic device 40. Ex. 1006, 5:35–38, 14:5–9.

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

196. In my opinion, a POSA would have been motivated to modify the user device of *Low* to include an accelerometer and cancel the wireless communication

path between the user device and the vending machine if data from the accelerometer indicates that the user device was walking away from the vending machine, as taught by *Arora*.

197. As just one example, A POSA would have found it obvious to modify *Low* with *Arora* in this manner because such a modification would represent use of a known technique to improve similar devices in the same way with a reasonable expectation of success.

198. Additionally, *Low* discloses establishing a connection between the user device 110 and the vending machine 120 via "a short range communication link." Ex. 1005, 8:24–28. A near-field communication is, by definition, limited by the distance at which it can transmit information.

199. Thus, the vending machine could only communicate with the user device at a certain range, further motivating a POSA to cancel the communication path between the vending machine and user device if data from the accelerometer indicated that the user was departing or walking toward the limits of the range of near field communication to, among other things, conserve resources by preventing the vending machine 120 of *Low* from trying to maintain a short range communication link with a user device 110 that is moving away from the vending machine 120.

200. That is, *Arora* provided a finite number of approaches to determining a customer's location: "Determining customer 17 location may use one or more technologies, including GPS 11, cellular geolocation 15, LAN identification from access points such as 22 and 20, inertial guidance, vision based location determination, RFID, badge reading (not shown in FIG. 2), NFC 21, manual location entry by the customer, 17, and other technologies." Ex. 1006, 13:28–32. That location is used to determine the zones and communication that should occur with particular devices.

201. One of ordinary skill in the art would have understood that maintaining connections requires resources on both ends of the connection (i.e., between the user device and the vending machine), and that such connections should not remain active when not needed in order to preserve those resources for other interactions.

202. Therefore, a POSA would have understood that it was necessary to cancel or close those connections when no longer needed. Given the finite number of approaches for determining that a connection is no longer needed when a user moves away from a vending machine, it would have been obvious to a POSA armed with *Low* to implement the "inertial guidance" taught by *Arora* for this purpose.

203. Additionally, the use of coupons was well-known years prior to the priority date of the '423 Patent to incentivize potential consumers to conduct a transaction, as demonstrated by *Arora*.

204. A POSA would have been motivated to modify *Low* to include a coupon that is targeted to the user based on the transaction, as taught by *Arora*, for example, to create an incentive for the user to conduct a transaction, to reward the user for loyalty, or to try to sell certain products that are high in stock or about to expire, etc.

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

205. Once motivated to modify *Low* with *Arora*, it is my opinion that 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.

206. For example, a POSA would have understood that the accelerometer present in a mobile device, such as that described in *Arora*, was one of a finite possible means described in *Arora* to determine the location or trajectory of a user. Using that information to cancel the wireless connection when the user was walking away from the vending machine would have been a simple modification to the system of *Low* to conserve resources.

207. Additionally or alternatively, it would have been within the knowledge of a POSA at the time to understand that conservation of resources would be desirable to reduce costs and energy. Armed with the understanding that the location

and trajectory of a user can be determined based on the teachings of *Arora*, a POSA would have understood that cancelling the wireless communication path would conserve resources in situations where the user was walking away from the vending machine and was thus no longer a potential customer.

208. Additionally, a POSA would have understood how to update the software code to modify the user interface of *Low* to include coupon information targeted to the user based on the transaction.

209. For example, a POSA would have understood that the user interface of the purchase application 112 of *Low* could display a variety of information based on the nature of graphical user interfaces and *Low's* teachings that the "purchase application 112 may be implemented as a downloadable application having a user interface enabling the user to purchase products for sale at vending machine 120" or "may correspond more generally to a web browser configured to view information available over the Internet or access a website corresponding to products purchasable at vending machine 120." Ex. 1005, 3:57–4:2.

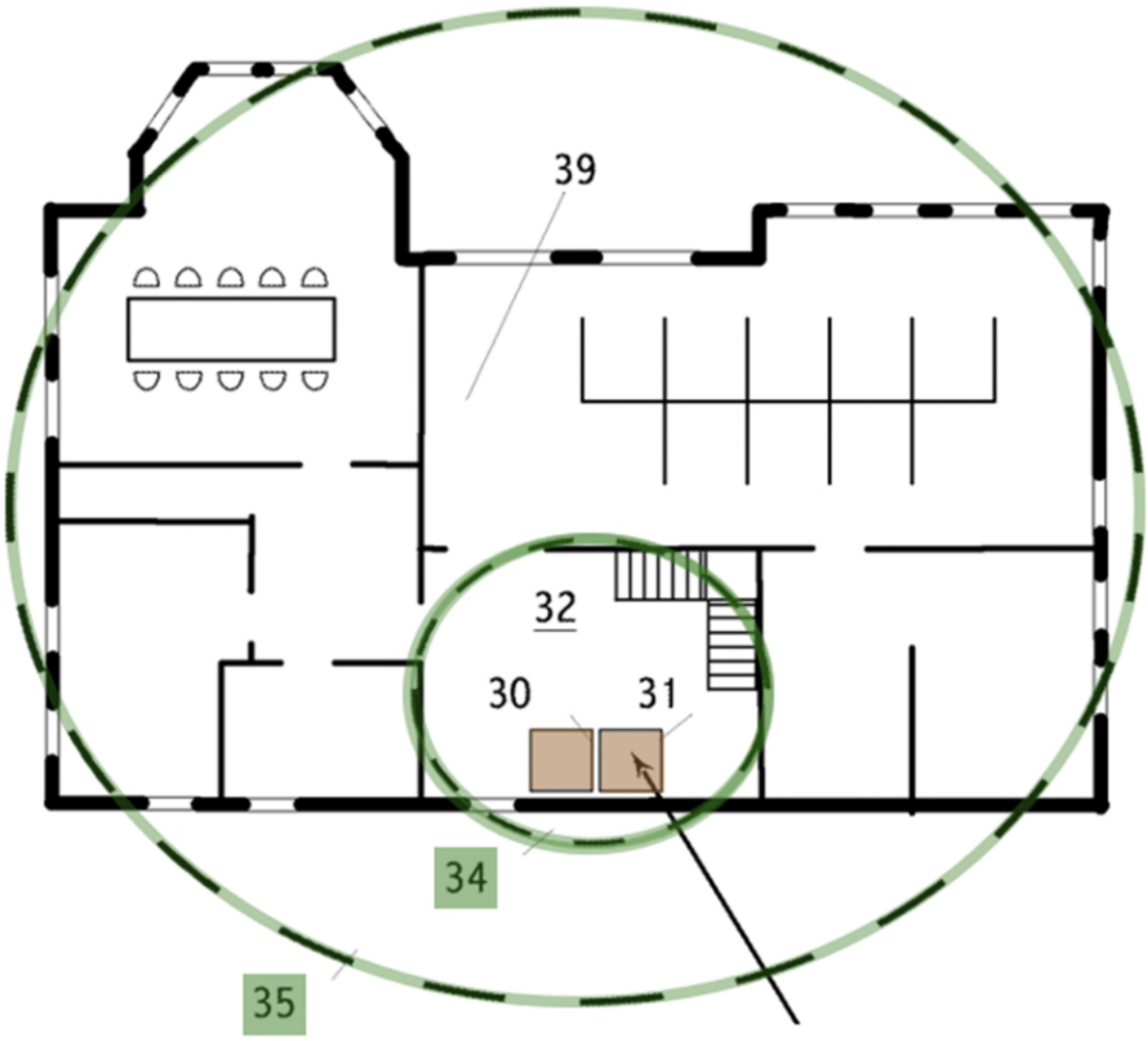
210. In my opinion, modifying the purchase application 112, e.g., by modifying the software corresponding to the purchase application 112 or modifying the website that the purchase application 112 accesses, would have been a simple and routine task by a POSA to receive "a coupon that is targeted to the user of the mobile device based on the transaction."

2. Each Element of Claim 7 is Rendered Obvious by *Low* in View of *Arora*

211. Claim 7 recites: "The method of claim 1, wherein the mobile device includes an accelerometer and the method further comprises: based on data from the accelerometer, determining whether the user is walking away from the available payment accepting unit; and in accordance with a determination that the user is walking away from the available payment accepting unit, canceling the wireless communication path."

212. *Arora* discloses two vending machines 30, 31 that define multiple transaction distances from the vending machines 30, 31, including a "within sight" distance 34 and a "potential buyer" distance 35. Ex. 1006, 12:34–13:5, Figure 1 (excerpt reproduced below).

Fig. 1

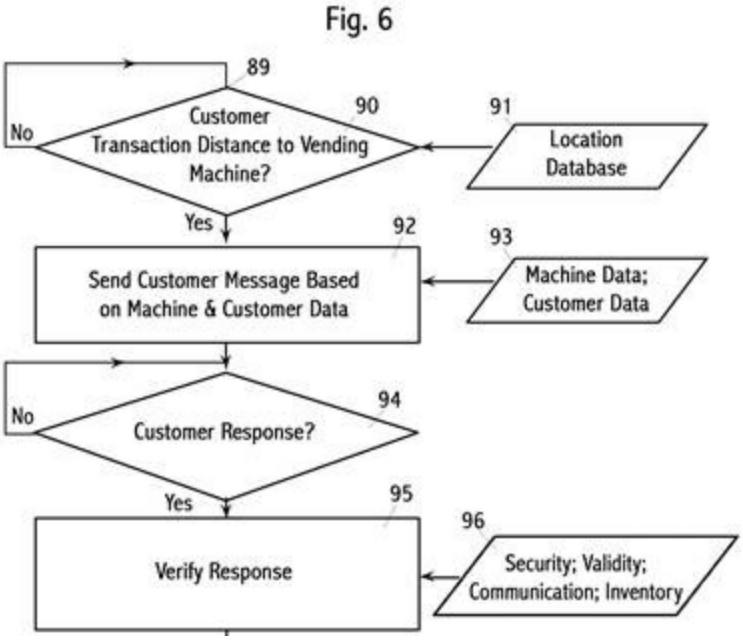


Ex. 1006, Figure 1 (excerpt).

213. *Arora* further discloses a personal electronic device that includes an "accelerometer" (*id.*, 26:65–27:6), and the location of the customer relative to the vending machines 30, 31 and the defined distances 34, 35 may be determined through "[i]nertial guidance [which] may use an accelerometer and other sensors in

the customer 17's personal electronic device 18." *Id.*, 13:28–35. Based, in part, on the inertial guidance, if *Arora* determines the customer is located within the transaction distance, "a message appropriate to the potential transaction is sent to the customer," including "inventory in the vending machine(s)." *Id.*, 18:37–51, Figure 6.

214. *Arora* further describes a method for a customer to purchase a product, referring to Figure 6, a portion of which is reproduced below.



Ex. 1006, Figure 6.

215. At step 90, the system in *Arora* determines whether a customer is within a transaction distance based on location information 91, and, if yes, sends the customer a message at step 92. *Id.*, 18:39–53. Then, the system waits for a customer response at step 94 and verifies the validity of the response at step 95. *Id.*, 18:53–

55. "There are many ways to verify validity, as those trained in the art know. For example, the message may…fall within predetermined bounds such as ***time***, ***location***… ." *Id*., 18:57–61 (emphasis added).

216. Given *Arora's* prior teachings of determining customer location through inertial guidance, the verification of the message through predetermined bounds such as time and location clearly encompasses determining whether the customer is walking away from the machine. This is further supported by *Arora* specifying that step 90 and the determination of the customer location is based on "[t]ransaction distances [that] are discussed elsewhere, herein." *Id*., 18:39–43. "If the customer response fails verification, the flowchart reverts to step 90 or 92." *Id*., 18:65–67.

217. Additionally, because *Arora* describes when the inertial guidance indicated that the personal electronic device was moving away from the vending machine, then a POSA would have been motivated to incorporate these teachings from *Arora* into *Low* to cancel the wireless communication path between the personal electronic device and the vending machine to conserve resources.

218. I have already explained why and how a POSA would have modified *Low* with *Arora*.

219. Thus, it is my opinion that *Low* in view of *Arora* teaches wherein the mobile device includes an accelerometer (i.e., "accelerometer" of *Arora*) and the

method further comprises: based on data from the accelerometer, determining whether the user is walking away from the available payment accepting unit (e.g., *Arora's* teachings of determining customer location based on "[i]nertial guidance [which] may use an accelerometer and other sensors in the customer 17's personal electronic device 18"); and in accordance with a determination that the user is walking away from the available payment accepting unit, canceling the wireless communication path (e.g., a POSA armed with *Low* would have been motivated to cancel the wireless communication path between the user device 110 and the vending machine 120 to conserve resources if it was determined that the user device 110 was moving away from the vending machine 120).

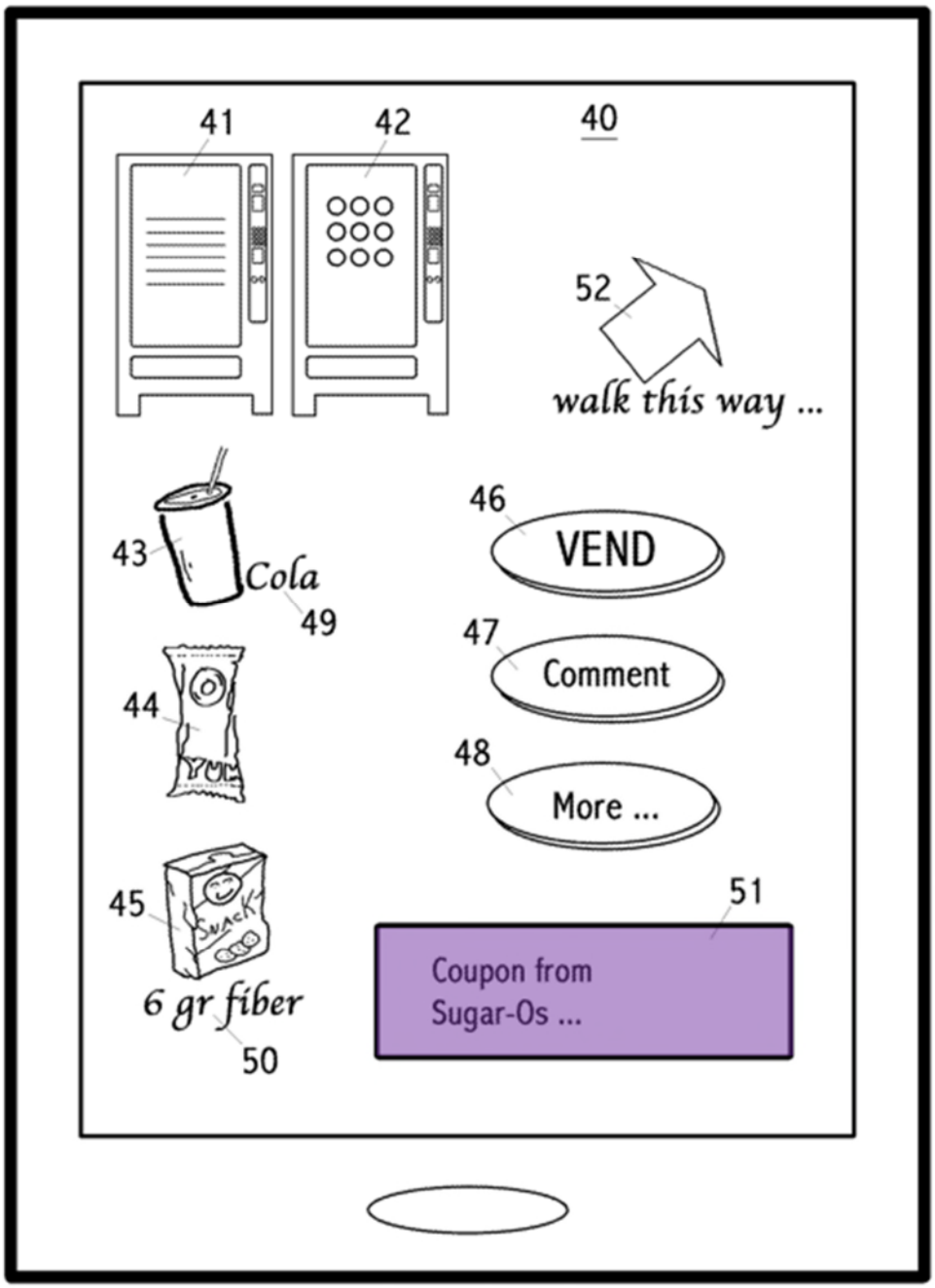
3. Each Element of Claim 9 is Rendered Obvious by *Low* in View of *Arora*

220. Claim 9 recites: "The method of claim 1, further comprising: in addition to exchanging the information, receiving, via the one or more radio transceivers, a coupon that is targeted to the user of the mobile device based on the transaction."

221. *Arora* teaches a transaction which utilizes "an incentive or promotion, such as a coupon, sale or discount, points, contest entry, ability to vote, games or other products, services or features" that is communicated "from the vending company to the customer" for display in box 51 on the user's electronic device 40. Ex. 1006, 5:35–38, 14:5-9. As shown in Figure 3 of *Arora* (reproduced below), a

coupon 51 (shown in purple) is received on the user interface of the user's electronic device 40 that is targeted to the user of the mobile device based on the transaction. *Id*., 14:4–8, Figure 3.

Fig. 3



Ex. 1006, Figure 3 (annotated).

222. I have already explained why and how a POSA would have modified *Low* with *Arora*.

223. Thus, it is my opinion that *Low* in view of *Arora* teaches, in addition to exchanging the information, receiving, via the one or more radio transceivers, a coupon (e.g., coupon 51) that is targeted to the user of the mobile device based on the transaction.

C. Ground 3: Claim 11 is Rendered Obvious Under 35 U.S.C. § 103 Over *Low* in View of *Arora* in Further View of *Freeny* and *Casey*

1. Obviousness Standards and Analysis

224. *See supra* Section IX.B.1.

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

225. *Low* teaches almost every element of dependent Claim 11. *See supra* Section IX.A.1. Specifically, *Low* teaches "[c]omputer system 500 includes…an input/output (I/O) component 504 that processes a user action, such as selecting keys from a keypad/keyboard, selecting one or more ***buttons or links, etc.***," (Ex. 1005, 12:39–46 (emphasis added)) and "the user selects a ***payment button or option*** on the user device" (*id*., 2:46–49 (emphasis added)).

226. However, *Low* does not explicitly disclose that the user interface of the purchase application 112 includes "a visual representation of the available payment accepting unit," as recited in Claim 11.

227. However, *Arora*, which is in the same field of endeavor as *Low*—conducting a transaction at an unmanned machine with a user device—explicitly discloses a user interface including "a visual representation of the available payment accepting unit," and it is my opinion that a POSA would have found it obvious to modify *Low* to include this feature.

228. Specifically, *Arora* discloses a personal electronic device 40 including "two different vending machines, 41 and 42" displayed on the screen of the personal electronic device 40. Ex. 1006, 13:47–49, Figure 3.

229. Additionally, *Low* does not explicitly disclose that the user interface of the purchase application 112 includes "an indication of a prepaid balance," as recited in Claim 11.

230. However, *Freeny*, which is also in the same field of endeavor as *Low*, explicitly discloses a user interface including "an indication of a prepaid balance," and it is my opinion that a POSA would have found it obvious to modify *Low/Arora* to include this feature.

231. Specifically, *Freeny* discloses a customer performing a "customer bank balance request after the customer is connected to their bank," where an "approved credit amount" "can be checked at any time by the user of the proximity authorization unit." Ex. 1007, 9:32-35, 38:3-5.

232. Finally, *Low* does not explicitly disclose that the user interface of the purchase application 112 includes "an affordance that when slid, indicates the initiation of the transaction" and "wherein the affordance is slid in response to receiving a user input of swipe on the affordance displayed on the display of the mobile device," as recited in Claim 11.

233. However, *Casey*, which is in the same field of endeavor as *Low*—conducting a transaction at an unmanned machine with a user device—explicitly discloses a slide bar 182 whereby "a user may drag the slide bar to the left to the decline position 186 to decline the payment or the user may drag the slide bar 182 to the right to the confirmation position 188 to confirm the payment transaction." Ex. 1008, 13:44–51.

b. Obviousness Rationale for Why a POSA Would Have Modified *Low* with *Arora*, *Freeny*, and *Casey* to Arrive at the Claimed Subject Matter

234. In view of the collective teachings of *Low*, *Arora*, *Freeny*, and *Casey* it would have been obvious to a POSA to include in the user interface of the purchase application 112 of *Low* any suitable graphical user interface elements that would be "convenient…to permit user 102 to select, purchase, and dispense products for sale at a vending machine 120" (Ex. 1005, 3:57–60), a visual representation of the available payment accepting unit, as taught by *Arora*, an indication of a prepaid

balance, as taught by *Freeny*, and an affordance that is slid in response to a user input of a swipe to indicate initiation of the transaction, as taught by *Casey*.

(1) Modifying *Low* with *Arora*

235. A POSA would have found it obvious to modify *Low* with *Arora* based on, at a minimum, the express teachings in *Low*.

236. Specifically, *Low's* disclosure that "[u]ser device 110 may further include one or more identifiers 136 which may be implemented, for example, as…other appropriate data used for authentication/identification of vending machine 120" (*id*., 6:16-22), and that "the user may utilize a user device to…receive locations of available NICMs" and "directions, map coordinates, and/or a GPS location of desired NICM" (*id*., 9:14-23) indicates that *Low*, to the extent it does not explicitly do so, provides—under the former, more rigid "TSM" standard—a teaching, suggestion, or motivation to a POSA to modify the user interface to include "a visual representation of the available payment accepting unit," such as that taught by *Arora*.

237. Specifically, in my opinion, providing a visual representation of the available payment accepting unit (i.e., "icons or photographs, 41 and 42 [that] are representative of two actual machines," as taught by *Arora*) would make the user interface of *Low* more "convenient," for example, if the user of the user device 110 might have difficulty interpreting textual descriptions to identify the desired payment accepting unit.

238. As another example, some users may find visual representations of available payment accepting units to be more "convenient" when interacting with the user interface of *Low* as this would improve the speed and efficiency of the user selecting the desired payment accepting unit.

239. In addition to *Low* expressly describing the user device 110 including machine identifiers and receiving data regarding desired machines, there are a variety of other rationales for why a POSA would have been motivated to modify the user interface of *Low* to include a visual representation of the available payment accepting unit (i.e., "icons or photographs, 41 and 42 [that] are representative of two actual machines"), as taught by *Arora*.

240. First, modifying *Low's* user interface, which is not expressly described as including a visual representation of the available payment accepting unit, to include the machine icon interface elements 41, 42 taught by *Arora*'s user interface reflects a simple combination of prior art elements (i.e., *Low's* user interface lacking a visual representation of the available payment accepting unit with *Arora's* user interface that includes the machine icons 41, 42) to yield predictable results. This is because in my opinion, presenting machine icons 41, 42 of *Arora's* user interface on the user interface of the purchase application 112 of *Low* would predictably allow a user to easily identify the machine they wish to purchase from.

241. Second, replacing a portion of *Low's* user interface lacking a visual representation of the available payment accepting unit with the portion of *Arora's* user interface that includes the machine icons 41, 42 represents a simple substitution of one known element (i.e., a portion of *Low's* user interface lacking a visual representation of the available payment accepting unit) for another (i.e., the portion of *Arora's* user interface that includes the machine icons 41, 42) to obtain predictable results, because in my opinion, presenting machine icons 41, 42 on the user interface of the purchase application 112 of *Low* would predictably allow a user to easily identify the machine they wish to purchase from.

242. Third, both *Low* and *Arora* disclose user devices (i.e., user device 110 of *Low* and personal electronic device 40 of *Arora*) configured to complete a transaction at a payment accepting unit (i.e., vending machine 120 of *Low* and vending machines 41, 42 of *Arora*) in proximity to the user of the user device. Ex. 1005, 3:20–23; Ex. 1006, 13:47–52. Therefore, implementing a visual representation of the available payment accepting unit (i.e., "icons or photographs, 41 and 42 [that] are representative of two actual machines"), as taught by *Arora*, on the user interface of the user device 110 of *Low* represents use of a known technique (i.e., displaying "icons or photographs, 41 and 42 [that] are representative of two actual machines") to improve similar devices (i.e., user devices) in the same way

(i.e., displaying, as a graphical user interface element on a graphical user interface, an available payment accepting unit).

243. Fourth, implementing a visual representation of the available payment accepting unit (i.e., "icons or photographs, 41 and 42 [that] are representative of two actual machines"), as taught by *Arora*, on the user interface of the user device 110 of *Low* represents applying a known technique (i.e., displaying "icons or photographs, 41 and 42 [that] are representative of two actual machines") to a known device (i.e., user device) ready for improvement (i.e., the user device 110 of *Low* could be improved by providing a more "convenient" visual representation of the available vending machine 120 to purchase from) to yield predictable results, because in my opinion, presenting machine icons 41, 42 on the user interface of the purchase application 112 of *Low* would predictably allow a user to easily identify the machine they wish to purchase from.

244. Fifth, a POSA armed with *Low* would have found it "obvious to try" to provide a visual representation of the available payment accepting unit (i.e., "icons or photographs, 41 and 42 [that] are representative of two actual machines"), as taught by *Arora*, on the user interface of *Low*, because doing so represents one of a finite number of identified, predictable solutions, with a reasonable expectation of success, because in my opinion, presenting machine icons 41, 42 on the user

interface of the purchase application 112 of *Low* would predictably allow a user to easily identify the machine they wish to purchase from.

245. Sixth, the known work of providing "icons or photographs, 41 and 42 [that] are representative of two actual machines" on a user interface, as taught by *Arora*, in the field of endeavor of conducting a transaction at an unmanned machine with a user device would have prompted a POSA to implement a variation of it (i.e., a similar icon or photograph of available vending machines 120 displayed on the user interface of the user device 110 of *Low*) based on the design incentives of a visual representation providing a more "convenient interface to permit user 102 to select, purchase, and dispense products for sale at a vending machine 120." Ex. 1005, 3:57–60. A POSA would have found such a variation to be obvious because in my opinion, presenting machine icons 41, 42 on the user interface of the purchase application 112 of *Low* would predictably allow a user to easily identify the machine they wish to purchase from.

246. Once motivated to modify the user interface of *Low* with the user interface of *Arora*, it is my opinion that a POSA would further be motivated to modify the user device of *Low* to include an accelerometer and cancelling the wireless communication path between the user device and the vending machine if inertial guidance based on data from the accelerometer indicates that the user device

was departing or walking toward the limits of a transaction distance from the vending machine, as taught by *Arora*.

247. A POSA would have found it obvious to modify *Low* with *Arora* in this manner because, as just one example, doing so represents use of a known technique (i.e., using an accelerometer and data from the same to determine location and trajectory) to improve similar devices (i.e., user devices) in the same way (i.e., determining location and trajectory of the user device and cancelling the communication path between the vending machine and user device if data from the accelerometer of the user device indicated that the user was departing or walking toward the limits of the range of communication) with a reasonable expectation of success.

248. Additionally, a near field communication is, by definition, limited by the distance at which it can transmit information. Thus, the vending machine 120 could only communicate with the user device 110 at a certain range, further motivating a POSA to cancel the communication path between the vending machine 120 and user device 110 if data from the accelerometer of the user device 110 indicated that the user was departing or walking toward the limits of the range of near field communication.

(2) Modifying *Low/Arora* with *Freeny*

249. In my opinion, a POSA would have found it obvious to modify *Low/Arora* with *Freeny* based on, at a minimum, the express teachings in *Low*.

250. Specifically, *Low* teaches that "user device 110 may request funding source information…[which] may include a funding card and/or a user account." Ex. 1005, 10:34–38. The funding source information is used by the payment provider server 440 to "check[] for adequate funds and charg[e] the account/funding card." *Id*., 11:64–66. These teachings indicate that *Low*, to the extent it does not explicitly do so, provides—under the former, more rigid "TSM" standard—a teaching, suggestion, or motivation to a POSA to modify the user interface to include "an indication of a prepaid balance" (i.e., an "approved credit amount" that "can be checked at any time by the user of the proximity authorization unit," as taught by *Freeny*).

251. Specifically, in my opinion, providing an indication of a prepaid balance (i.e., an "approved credit amount" that "can be checked at any time by the user of the proximity authorization unit," as taught by *Freeny*) would make the user interface of *Low* more "convenient," for example, by providing the user with information regarding the funds that are available to purchase items at the vending machine 120. This would allow the user to make informed purchasing decisions, such that when the payment provider server 440 "check[s] for adequate funds and

charg[es] the account/funding card" (Ex. 1005, 11:64–66), the user has confidence that the transaction will be accepted.

252. In addition to *Low* expressly describing the user device 110 requesting funding source information to ensure there are adequate funds available, there are a variety of other rationales for why a POSA would have been motivated to modify the user interface of *Low/Arora* to include an indication of a prepaid balance (i.e., an "approved credit amount" that "can be checked at any time by the user of the proximity authorization unit"), as taught by *Freeny*.

253. First, modifying the user interface of *Low/Arora*, which lacks an indication of a prepaid balance, with *Freeny's* user interface that includes an "approved credit amount" that "can be checked at any time by the user of the proximity authorization unit," represents a combination of prior art elements (i.e., the user interface of *Low/Arora* lacking an indication of a prepaid balance with *Freeny's* user interface that includes an "approved credit amount") to yield predictable results. This is because, in my opinion, presenting the "approved credit amount" of *Freeny's* user interface on the user interface of the purchase application 112 of *Low/Arora* would predictably inform a user of the funds that are available to purchase items from the machine.

254. Second, replacing a portion of the user interface of *Low/Arora* lacking an indication of a prepaid balance with the portion of *Freeny's* user interface that

includes the "approved credit amount" represents a simple substitution of one known element (i.e., a portion of the user interface of *Low/Arora* lacking an indication of a prepaid balance) for another (i.e., the portion of *Freeny's* user interface that includes the "approved credit amount") to obtain predictable results, because in my opinion, presenting the "approved credit amount" of *Freeny's* user interface on the user interface of the purchase application 112 of *Low/Arora* would predictably inform a user of the funds that are available to purchase items from the machine.

255. Third, both *Low/Arora* and *Freeny* disclose user devices (i.e., user device 110 of *Low*, as modified by *Arora*, and wireless device 40 of *Freeny*) configured to complete a transaction at a payment accepting unit (i.e., vending machine 120 of *Low* and vending machine system 738 of *Freeny*) in proximity to the user of the user device. Ex. 1005, 3:20–23; Ex. 1007, 9:60–10:2. Therefore, implementing an indication of a prepaid balance (i.e., an "approved credit amount"), as taught by *Freeny*, on the user interface of the user device 110 of *Low*, as modified by *Arora*, represents use of a known technique (i.e., displaying an "approved credit amount") to improve similar devices (i.e., user devices) in the same way (i.e., displaying, as a graphical user interface element on a graphical user interface, an "approved credit amount").

256. Fourth, implementing an indication of a prepaid balance (i.e., an "approved credit amount"), as taught by *Freeny*, on the user interface of the user

device 110 of *Low*, as modified by *Arora*, represents applying a known technique (i.e., displaying an "approved credit amount") to a known device (i.e., user device) ready for improvement (i.e., the user device 110 of *Low*, as modified by *Arora*, could be improved by providing a more "convenient" an indication of a prepaid balance) to yield predictable results, because, in my opinion, presenting the "approved credit amount" of *Freeny's* user interface on the user interface of the purchase application 112 of *Low/Arora* would predictably inform a user of the funds that are available to purchase items from the machine.

257. Fifth, a POSA armed with *Low/Arora* would have found it "obvious to try" to provide an indication of a prepaid balance (i.e., an "approved credit amount"), as taught by *Freeny*, on the user interface of *Low*, as modified by *Arora*, because doing so represents one of a finite number of identified, predictable solutions, with a reasonable expectation of success, because, in my opinion, presenting the "approved credit amount" of *Freeny's* user interface on the user interface of the purchase application 112 of *Low/Arora* would predictably inform a user of the funds that are available to purchase items from the machine.

258. Sixth, the known work of providing an "approved credit amount" on a user interface, as taught by *Freeny*, in the field of endeavor of completing a transaction at a vending machine with a user device would have prompted a POSA to implement a variation of it (i.e., a similar graphical user interface element of an

approved credit amount on the user interface of the user device 110 of *Low*, as modified by *Arora*) based on the design incentives of an approved credit amount providing a more "convenient interface to permit user 102 to select, purchase, and dispense products for sale at a vending machine 120." Ex. 1005, 3:57–60. A POSA would have found such a variation to be predictable because in my opinion, presenting the "approved credit amount" of *Freeny's* user interface on the user interface of the purchase application 112 of *Low/Arora* would predictably inform a user of the funds that are available to purchase items from the machine.

(3) Modifying *Low/Arora/Freeny* with *Casey*

259. A POSA would have found it obvious to modify *Low/Arora/Freeny* with *Casey* because, as just one example, a graphical user interface element that can be slid in response to a user input of a swipe represents one of a finite number of identified, predictable solutions, with a reasonable expectation of success.

260. Specifically, in my opinion, the user interface of *Low* can include any suitable graphical user interface elements responsive to any suitable user inputs, such as taps, swipes, or other gestures.

261. *Casey* presents a POSA with one of a finite number of identified, predictable solutions, i.e., a slide bar 182 "that may be moved to the right or to the left using the touch screen 54," whereby "a user may drag the slide bar to the left to the decline position 186 to decline the payment or the user may drag the slide bar

182 to the right to the confirmation position 188 to confirm the payment transaction." Ex. 1008, 13:44–51.

c. Obviousness Rationale for How a POSA Would Have Modified *Low* with *Arora, Freeny*, and *Casey* to Arrive at the Claimed Subject Matter

262. Once motivated to modify *Low* with *Arora*, *Low/Arora* with *Freeny*, and *Low/Arora/Freeny* with *Casey*, it is my opinion that 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.

263. For example, a POSA would have understood that the user interface of the purchase application 112 of *Low* could display a variety of information based on the nature of graphical user interfaces and *Low's* teachings that the "purchase application 112 may be implemented as a downloadable application having a user interface enabling the user to purchase products for sale at vending machine 120" or "may correspond more generally to a web browser configured to view information available over the Internet or access a website corresponding to products purchasable at vending machine 120." Ex. 1005, 3:57–4:2.

264. In my opinion, modifying the purchase application 112, e.g., by modifying the software corresponding to the purchase application 112 or modifying the website that the purchase application 112 accesses, would have been a simple

and routine task by a POSA to display whichever graphical user interface elements are desired, including "a visual representation of the available payment accepting unit," "an indication of a prepaid balance," and an affordance configured to receive a user input, wherein "the user input is a swipe that causes the affordance to be slid," as recited in Claim 11.

2. Each Element of Claim 11 is Rendered Obvious by *Low* in View of *Arora* in Further View of *Freeny* and *Casey*

a. [11.1] wherein the user interface of the mobile payment application, after establishing the wireless communication path, includes a visual representation of the available payment accepting unit

265. *Low* teaches that the user device 110 receives information from a vending machine 120 "using an Internet connection of user device 110 ***after a short range communication link is established*** between user device 110 and vending machine 120." Ex. 1005, 8:24–28 (emphasis added). *Low* teaches that a NICM "transmits a machine identifier to the user device." Ex. 1005, 2:16–20; 2:26–28. *Low* further teaches that the user device 110 may "receive a machine identifier from identifiers 136." *Id*., 8:66–9:2. *Low* teaches that the user device may "receive locations of available NICMs." *Id*., 9:16–21.

266. In my opinion, a POSA would have understood that the purchase application 112 of *Low* includes a user interface including a visual representation of one or more payment accepting units because *Low* teaches that "the user is able to

select one or more machines to purchase from," which selection would necessarily occur by virtue of the user making the selection through the user interface of the purchase application 112.

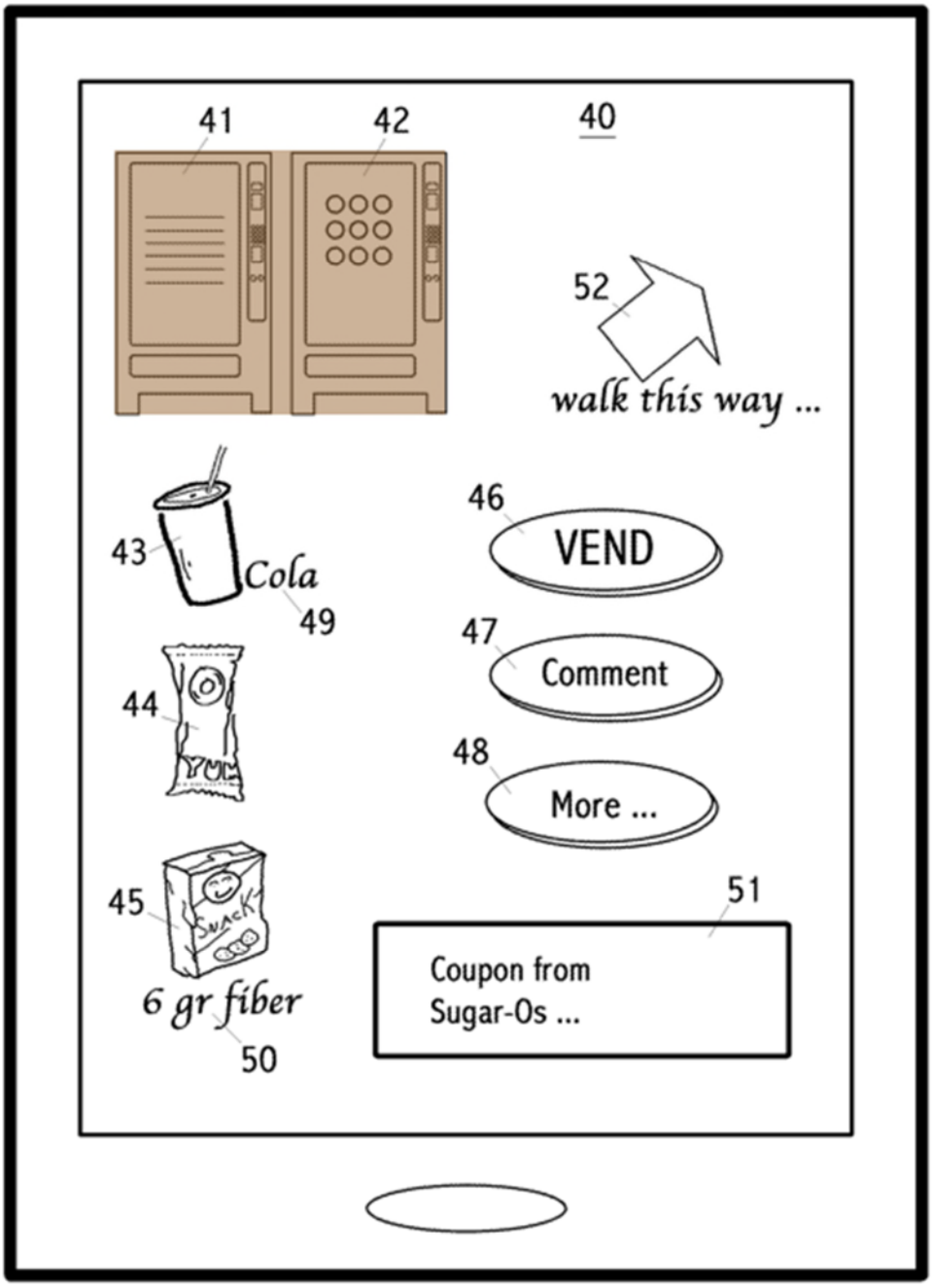
267. Thus, it is my opinion that *Low* teaches wherein the user interface (i.e., "interface") includes a visual representation of the available payment accepting unit (i.e., a POSA would understand that *Low's* teaching that "the user is able to select one or more machines to purchase from" means the user interface of the user device 110 displays a visual representation of the available machine).

268. However, to the extent Patent Owner may argue that *Low* does not explicitly teach "wherein the user interface includes a visual representation of the available payment accepting unit," *Arora* does, and it is my opinion that it would have been obvious to modify the user interface of *Low* to include a visual representation of one or more payment accepting units, as taught by *Arora*, with a reasonable expectation of success.

269. Specifically, Figure 3 of *Arora* (reproduced below) "shows an exemplary screen on a personal electronic device, 40" including "two different vending machines, 41 and 42," shown in brown below. Ex. 1006, 13:47–49, Figure 3. *Arora* further teaches that "the icons or photographs, 41 and 42 are representative of two actual machines co-located with a customer and owner of the personal

electronic device, whose screen is shown, 40," and "the customer selects which machine she wishes to use by touching icon 41 or 42." *Id*., 13:49–54.

Fig. 3



Ex. 1006, Figure 3 (annotated).

270. I have already explained why and how a POSA would modify *Low* with *Arora*.

271. Thus, *Low* in view of *Arora* teaches wherein the user interface of the mobile payment application (e.g., *Low's* user interface of the purchase application 112), after establishing the wireless communication path ("110 after a short range communication link is established"), includes a visual representation of the available payment accepting unit (e.g., *Low's* user interface modified to include visual representations of one or more payment accepting units, such as the visual representations of the "two different vending machines, 41 and 42," as taught by *Arora*).

b. [11.2] an indication of a prepaid balance

272. *Low* teaches that "user device 110 may request funding source information," which "may include a funding card and/or a user account." Ex. 1005, 10:34–38. *Low* further teaches that "user device 410 may communicate the purchase request to payment service provider 440," which "may validate the funding source, ***such as by checking for adequate funds*** and charging the account/funding card." *Id*., 11:56–66 (emphasis added).

273. I understand *Low's* teachings of the user device requesting funding source information including a funding card and/or a user account and the server

validating that there are adequate funds to complete the transaction as strongly implying that the user interface includes an indication of a prepaid balance.

274. Thus, *Low* in view of *Arora* teaches the user interface (e.g., "interface" of *Low*) includes an indication of a prepaid balance (e.g., "funding source information" of *Low*).

275. However, to the extent Patent Owner may argue that *Low* in view of *Arora* does not explicitly teach "the user interface includes…an indication of a prepaid balance," *Freeny* does, and it is my opinion that it would have been obvious to modify *Low/Arora* with the indication of a prepaid balance, such as taught by *Freeny*, with a reasonable expectation of success.

276. Specifically, *Freeny* teaches a customer performing a "customer bank balance request after the customer is connected to their bank." Ex. 1007, 9:32–35. An approved credit amount "can be checked at any time by the user of the proximity authorization unit." *Id*., 38:3–5.

277. I understand displaying an approved credit amount and credit balance as constituting an indication of a prepaid balance.

278. I have already explained why and how a POSA would modify *Low/Arora* with *Freeny*.

279. Thus, *Low* in view of *Arora* in further view of *Freeny* teaches the user interface (e.g., *Low's* user interface of the user device 110) includes an indication of

a prepaid balance (e.g., *Low's* user interface modified to include the approved credit amount and credit balance as taught by *Freeny*).

c. [11.3] an affordance that when slid, indicates the initiation of the transaction

280. *Low* teaches the "user selects a payment button or option on the user device, which communicates the payment request to a payment provider." Ex. 1005, 2:46-49. "After processing, the payment provider may approve the payment request," "transmit a purchase authorization to the user device," and "[t]he user device may then communicate the purchase authorization to the machine, which may…dispense the purchased items(s) associated with the transaction number." *Id*., 2:49–62.

281. In the related district court litigation, Patent Owner has argued that for a related patent, a similar "sliding" limitation is satisfied by a "Pay" button with no sliding functionality. *See* Ex. 1017 at 14 (Patent Owner arguing a "Pay" button is equivalent to an affordance that slides and stating "the differences between the pressed button and a swiped affordance would be regarded by a POSITA to be insubstantial").

282. To the extent Patent Owner's interpretation is correct, *Low* teaches this limitation.

283. Specifically, *Low* teaches "[c]omputer system 500 includes…an input/output (I/O) component 504 that processes a user action, such as selecting keys

from a keypad/keyboard, selecting one or more ***buttons*** or links, etc.," (Ex. 1005, 12:39–46) and "the user ***selects*** a ***payment button or option*** on the user device" (*id*., 2:46–49).

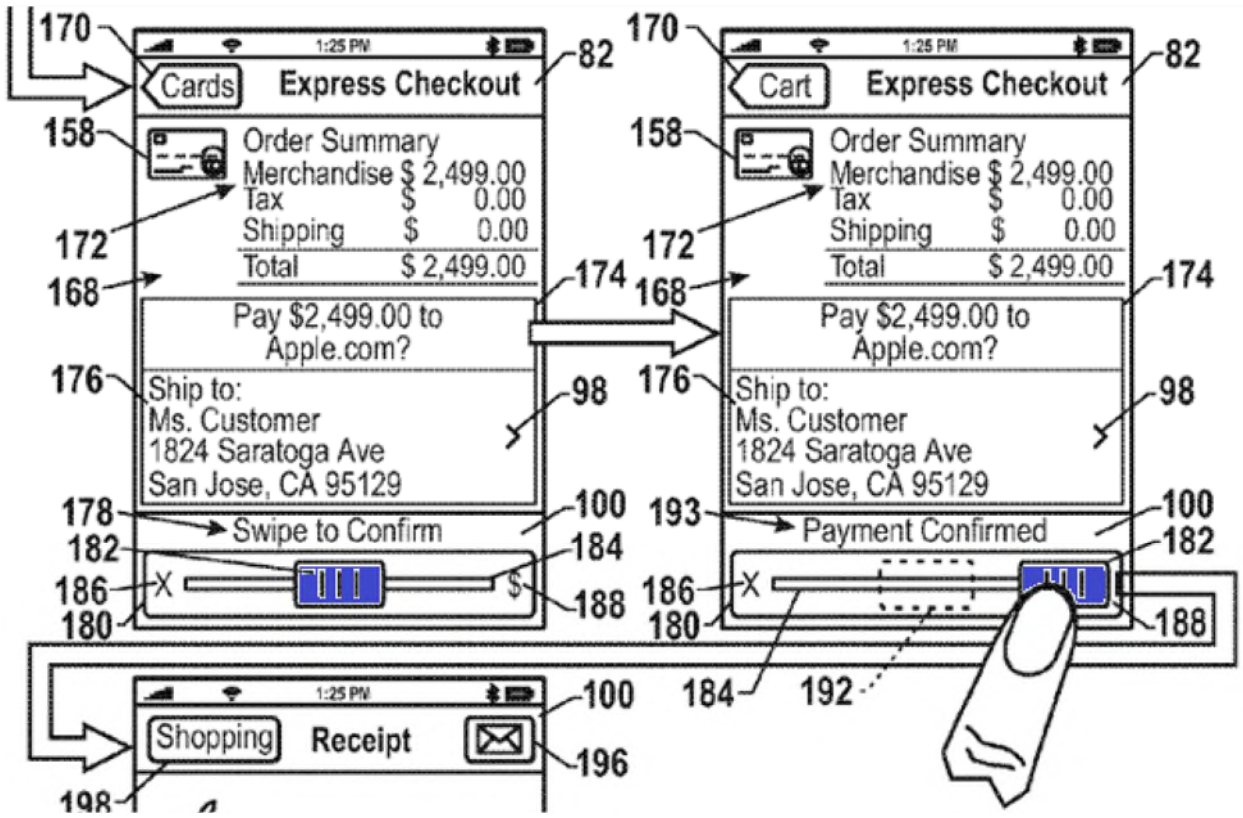
284. Insofar as the Board interprets this limitation as being satisfied by a graphical user interface element that slides, a POSA would understand that *Low* contemplates that any suitable user action is acceptable, and a user input swiping a graphical user interface element that slides is just one example of an acceptable input that was well known in the art at the time of the '423 Patent.

285. Thus, consistent with Patent Owner's interpretation for a related, similar claim limitation, *Low* in view of *Arora* in further view of *Freeny* teaches the user interface (e.g., *Low's* user interface of the user device 110) includes an affordance (e.g., "payment button or option on the user device") that when slid (e.g., "the user selects a payment button or option on the user device"), indicates initiation of the transaction (e.g., "the user selects a payment button or option on the user device, which communicates the payment request to a payment provider," resulting in the purchased item(s) being dispensed).

286. To the extent the Board disagrees with Patent Owner's interpretation that pressing a pay button is equivalent to "sliding," *Casey* teaches wherein the user input is a swipe that causes the affordance to be slid, as set forth below.

d. [11.4] wherein the affordance is slid in response to receiving a user input of swipe on the affordance displayed on the display of the mobile device

287. *Casey* discloses a slide bar 182 (shown in blue below) whereby "a user may drag the slide bar to the left to the decline position 186 to decline the payment or the user may drag the slide bar 182 to the right to the confirmation position 188 to confirm the payment transaction." Ex. 1008, 13:44–51.



Ex. 1008, Figure 5 (excerpted/annotated).

288. I have already explained why and how a POSA would modify *Low/Arora/Freeny* with *Casey*.

289. Thus, *Low* in view of *Arora* in further view of *Freeny* and *Casey* teaches wherein the user input is a swipe that causes the affordance to be slid (e.g., "button" of *Low* or *Low's* teaching that any suitable user action is acceptable, and a user input swiping a graphical user interface element that slides is just one example of an acceptable input that was well known in the art at the time of the '423 Patent, as demonstrated by *Casey*).

D. Ground 3: Claims 1-20 Recite Generic and Conventional Components

1. Independent Claims 1, 13, and 15

290. I have been informed by counsel and understand that, for purposes of my Section 101 analysis, the independent Claims 1, 13, and 15 are directed to the abstract idea of identifying a merchant and enabling completion of a purchase from the merchant. I have been asked to opine on whether the elements of each of the Challenged Claims, considered both individually and as an ordered combination, include an inventive concept or whether the claim elements append well-understood, routine, and conventional activities to perform the abstract idea.

291. It is my opinion that each of the Challenged Claims are directed to using well-understood, routine, and conventional wireless technology and graphical user interfaces of a mobile device (such as a generic smart phone), operating as such devices do, according to well-understood, routine, and conventional methods to

perform the concept of identifying a merchant and enabling completion of a purchase.

292. Moreover, it is my opinion that each of the Challenged Claims, considered on an element-by-element basis, and as an ordered combination, would have been considered by a POSA to be well-understood, routine, and conventional as of December 18, 2013, the earliest possible priority date for the '423 Patent.

293. In addition, as discussed in Sections IX.A through IX.C of this declaration, by December 18, 2013 a POSA was well-aware of at least the concepts already discussed by *Low*, *Arora*, *Freeny*, and *Casey*. Further, also as discussed in Section IX.A of this Petition, claims 1-6, 8, 10, 12, 13-20 are anticipated by *Low* and as discussed in Sections and IX.B and IX.C, claims 7, 9, and 11 would have been obvious to a POSA, further supporting my opinion that the Challenged Claims were well-understood, routine, and conventional.

a. Independent Claim 1 as a Whole

294. Below I conduct a high-level review of Claim 1 as a whole to demonstrate how Claim 1 is directed to nothing more than using well-understood, routine, and conventional technology to identify a merchant and enable completion of a purchase from the merchant.

295. For convenience, I have reproduced below independent Claim 1, with the bracketed numbering I will use when referring to each limitation.

[1.P] A method of presenting representations of payment accepting unit events, comprising:

[1.1] at a mobile device with one or more processors, memory, one or more output devices including a display, and one or more radio transceivers:

[1.2] identifying one or more payment accepting units in proximity to the mobile device that are available to accept payment from a mobile payment application executing on the mobile device, [1.3] the identifying based at least in part on an identifier corresponding to the one or more payment accepting units, [1.4] wherein the one or more payment accepting units are payment operated machines that accept payment for dispensing of products and/or services;

[1.5] displaying a user interface of the mobile payment application on the display of the mobile device, [1.6] the user interface being configured to display a visual indication of the one or more payment accepting units and [1.7] accept user input selecting an available payment accepting unit of the one or more payment accepting units;

[1.8] establishing via the one or more radio transceivers a wireless communication path including the mobile device and the available payment accepting unit of the one or more payment accepting units;

[1.9] after establishing the wireless communication path, enabling user interaction with the user interface of the mobile payment application to

> complete a transaction with the available payment accepting unit,;
>
> [1.10] exchanging information with the available payment accepting unit via the one or more radio transceivers, in conjunction with the transaction; and
>
> [1.11] after exchanging the information, displaying, on the display, an updated user interface of the mobile payment application to the user of the mobile device.

296. Independent Claim 1 is performed on a routine, conventional, and well-known mobile device. Ex. 1001, 8:63-9:30. For example, the '423 Patent explains that in "general, a mobile device 150 may be a user's personal mobile device 150," and include "smart phones, tablet or laptop computers." *Id.* The '423 Patent references, for instance, the iPhone 5. *Id.*, 21:3.

297. Claim 1 recites that the mobile device comprises a processor, memory, and one or more output devices including a display, and one or more radio transceivers. All of these elements were necessary for operation of, and found in, a conventional mobile device. For instance, the '423 Patent describes processors as generic, "known" hardware, "capable of executing instructions or steps[.]" *Id.*, 12:30-39. The server is also described generically as "includ[ing] appropriate processors 950, memory 960…, and communications systems 970," such as "cellular technology and/or Wi-Fi mechanisms." *Id.*, 10:36-43. The '423 Patent itself demonstrates that such long-range communications protocols were well-known

before December 18, 2013, as it discloses that any "known" technology may be used to conduct the long-range communication. *Id.*, 9:55-57.

298. The display recited in Claim 1 was also routine, conventional, and well-known before December 18, 2013. For example, the '423 Patent discloses that the user interface can be "a series of buttons, a key pad, touch screen, or other input mechanism." *Id.*, 2:9-15. The '423 Patent further describes that the display is inherent in the user's mobile device. *Id.*, 9:18-24. The software application that runs the user interface is described broadly as "any software program(s) capable of implementing the features described" by the patent. *Id.*, 9:16-19.

299. Furthermore, as discussed in Sections IX.A, IX.B, and IX.C of my report, numerous prior art references, such as *Low*, *Arora*, *Freeny*, and *Casey*, disclose mobile devices having these recited elements, demonstrating that a POSA would have understood that a mobile device would have included at least all of these features by December 18, 2013.

300. The routine, conventional, and well-known mobile device of claim 1 interacts with a routine, conventional, and well-known payment accepting unit. For instance, the '423 Patent describes the payment accepting unit as "equipment that requires payment for the dispensing of an[y] product and/or service" and "may be vending machines, parking meters, toll booths, laundromat washers and dryers, arcade games, kiosks, photo booths, toll booths, transit ticket dispensing machines,

and other known or yet to be discovered payment accepting units". *Id.* 9:31-39. The '423 Patent itself recognizes that such machines "have been around for thousands of years." *Id.*, 1:51-52.

301. The mobile phone and payment accepting unit communicate with one another using routine, conventional, and well-known means. For instance, the '423 patent describes that communications between the mobile device and payment accepting unit occur over "any wired or wireless technology that could be used to communicate a small distance (approximately a hundred feet or closer) that is known or yet to be discovered)," such as "Bluetooth," "radio frequency identification (RFID)," "infrared wireless," or "induction wireless." *Id.*, 10:2-20. Each of these forms of communications between a vending machine and a mobile phone were well-known, understood, routine, and conventional by December 18, 2013. For instance, *Low* describes a user device and a vending machine that are both adapted to communicate using various types of "wired and/or wireless network communication devices including microwave, radio frequency, infrared, Bluetooth, and near field communication devices." Ex. 1005, 4:45-64.

302. Thus, Claim 1 recites features and components that were all well-understood, routine or conventional and included in readily available off-the shelf mobile devices and payment accepting units. Taking the steps of [1.2-1.11] as a whole, these steps describe activities that would have been well-understood, routine,

or conventional. Specifically, a POSA would have understood well that a person could use a conventional mobile device from 2013, having a conventional user interface and software application, to send and receive information using existing, conventional, well-understood transceivers and existing communications protocols, to conduct a transaction with a conventional, well-understood payment accepting unit that likewise has existing, conventional, well-understood transceivers. Thus, claim 1 as a whole conveys to a POSA activities that were well-understood, routine, and conventional as of December 18, 2013.

b. Element-by-Element Analysis of Independent Claim 1

303. Below I conduct a high-level, element-by-element review of claim 1 to demonstrate how the claim is directed to nothing more than using well-understood, routine, conventional elements for identifying a merchant and enabling completion of a purchase in a well-understood, routine, conventional way.

304. Limitation [1.P] describes "a method of presenting representations of payment accepting unit events, comprising…" I have been informed by counsel and understand that this portion of the claim is called the "preamble," and that the preamble usually states a purpose or intended use for an invention. To the extent that the preamble is found to be limiting, it is my opinion that the preamble recites a well-understood, routine, and conventional activity. For example, as discussed in Section

IX.A.1.a, *Low* discloses a method of presenting representations of payment accepting unit events.

305. Limitation [1.1] recites that the method of claim 1 is performed at a well-understood, routine, and conventional mobile device having conventional one or more processors, memory, one or more output devices including a display, and one or more radio transceivers, as discussed above in Paragraphs 296-299 and 301.

306. Limitations [1.2] and [1.3] are directed to a customer using the generic mobile device to identify a merchant (i.e., a "payment accepting unit") in proximity to the customer (i.e., the "mobile device") for purchasing goods based on an identifier. In my opinion, using a mobile device to identify an available payment accepting unit in the proximity of the user based on an identifier was well-known, routine, and conventional as of December 18, 2013. For instance, as discussed in Sections IX.A.1.c and IX.A.1.d, *Low* teaches these limitations, demonstrating that they were well-known prior to December 18, 2013. Furthermore, as discussed in Paragraphs 296-301 the technology used to perform these steps was well-known, routine, and conventional technology.

307. Limitation [1.4] recites that the one or more payment accepting units are generic "payment operated machines that accept payment for dispensing of products and/or services." As discussed in Paragraph 300, payment operated machines were well-known, routine, and conventional as of December 13, 2018. For

instance, as discussed in Section IX.A.1.e, *Low* teaches this limitation, demonstrating that it was well-known prior to December 18, 2013. Furthermore, as discussed in Paragraph 301, payment accepting units with short-range communications capabilities were well-known, routine, and conventional as of December 18, 2013.

308. Limitation [1.5] recites a "user interface of the mobile payment application" for performing a purchase. As discussed in Paragraphs 297 and 298, such user interfaces were well-known, routine, and conventional as of December 18, 2013. For further example, as discussed in Section IX.A.1.f, *Low* teaches this limitation.

309. Limitation [1.6] recites that the user interface displays "a visual indication of the one or more payment accepting units[.]" Displaying a visual representation on a user interface was well-known, routine, and conventional as of December 18, 2013. For instance, the '423 Patent teaches that the software program used to implement the user interface "include[s] any software program(s) capable of implementing the features described herein" and that the user interface itself can be a generic "touch screen…enabled to …display information." Ex. 1001, 9:15-18, 36:14-25.

310. The prior art also demonstrates that user interfaces comprising visual representations were ubiquitous before December 18, 2013. For example, *Low*, as

discussed in Section IX.A.1.g, discloses a user interface that is configured to display an available machine. As another example, *Casey*, discussed further in Section IX.B, portrays a user interface comprising visual representations of a calculator, cash register, television, calendar, camera, etc.

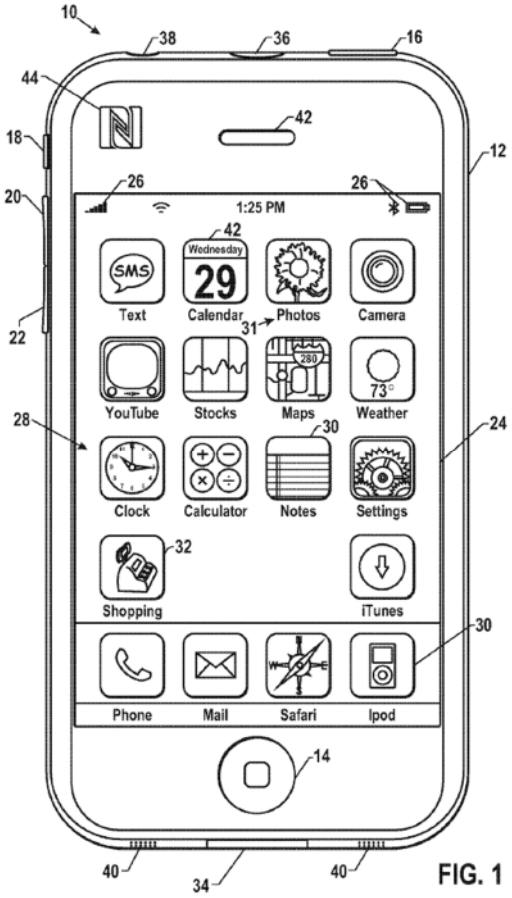


FIG. 1

Ex. 1008, Figure 1. As yet another example, *Arora* explicitly discloses a user interface including a visual representation of an available payment accepting unit, as discussed in Paragraphs 268 through 271 of my Declaration.

311. In addition, *Low*, *Arora* and *Casey* all disclose that the described user interfaces are employed using generic, well-known, and conventional technology.

For instance, *Casey* discloses that the existing iPhone could be used to display such visual representations. Ex. 1008, 3:51-5:2. *Arora* and *Low* disclose that a generic "smart phone" can be used. Ex. 1006, 3:64-67; Ex. 1005, 3:36-43. Thus, displaying a visual representation on a user interface was well-known, routine, and conventional as of December 18, 2013.

312. Limitation [1.7] allows the user interface to accept generic "user input selecting an available payment accepting unit." A user interface that can accept user input to select an available payment accepting unit was well-known, routine, and conventional as of December 18, 2013. For instance, the '423 Patent teaches that the software program used to implement the user interface "include[s] any software program(s) capable of implementing the features described herein" and that the user interface itself can be a generic "touch screen…enabled to receive one or more contacts and display information." Ex. 1001, 9:15-18, 36:14-25.

313. The prior art also demonstrates that mobile devices comprising user interfaces capable of accepting user input were ubiquitous before December 18, 2013. For example, as discussed in Section IX.A.1.h, *Low* teaches that a user device is configured to display available machines such that the user is able to interact with the display to select the machine from which to make a purchase. *Arora* also teaches that a customer may select a desired machine from the user interface. *See* Ex. 1006, 4:27-39. Thus, a user interface that can accept user input selecting an available

payment accepting unit was well-known, routine, and conventional as of December 18, 2013.

314. Limitation [1.8] recites establishing a wireless communication path including the mobile device and available payment accepting unit via one or more radio transceivers. As discussed in Paragraphs 297 and 301, such recited wireless communication capabilities and transceivers were well-known, routine, and conventional. *See also* Ex. 1001, 9:42-10:20, 13:40-14:33, 15:53-65 (describing well-known, routine, and conventional transceivers and wireless communication protocols). Furthermore, the prior art demonstrates that establishing a wireless communication path including the mobile device and available payment accepting unit via the one or more radio transceivers was well-understood, routine, and conventional. For example, as discussed in IX.A.1.i, *Low* teaches that "a consumer device, such as a smart phone or computing tablet, communicates with a non-Internet connected unmanned device/machine via wireless communication, such as Bluetooth or NFC (Near Field Communication) means."

315. Limitation [1.9] specifies that the user interface enables user interaction to complete a transaction. A user interface that enables user interaction to complete a transaction was well-known, routine, and conventional as of December 18, 2013. For instance, the '423 Patent teaches that the software program used to implement the user interface "include[s] any software program(s) capable of implementing the

features described herein" and that the user interface itself can be a generic "touch screen…enabled to receive one or more contacts and display information." Ex. 1001, 9:15-18, 36:14-25.

316. The prior art also demonstrates that using the user interface of a mobile device to complete a transaction was well-known, routine, and conventional as of December 18, 2013. For instance, as I discuss in Section IX.A.1.j, *Low* teaches enabling user interaction with the user interface of the mobile payment application to complete a transaction with the available payment accepting unit.

317. Limitation [1.10] recites the generic task of transmitting information regarding a transaction using generic radio transceivers. As discussed in Paragraphs 297, 299, and 301, these functions were well-known, routine, and conventional as of December 18, 2013. In addition, as discussed in Section IX.A.1.k, the prior art demonstrates that these functions were well-known, routine, and conventional.

318. Limitation [1.11] recites displaying an "updated user interface of the mobile payment application to the user of the mobile device." As discussed in Paragraphs 297 through 299 and 308 through 313above, displaying a user interface with generic information to the customer was well-known, routine, and conventional as of December 18, 2013. Furthermore, the prior art demonstrates that displaying an "updated user interface" was well-known, routine, and conventional. For instance, as discussed in Section IX.A.1.l, *Low* teaches this limitation.

319. Moreover, other than the idea of identifying a merchant and enabling completion of a purchase from the merchant, Claim 1 recites only generic elements: (1) a mobile device, with one or more processors, memory, a display, and a radio transceiver; (2) an application, with a user interface, executing on the mobile device; (3) a payment accepting unit (i.e., a vending machine); and (4) a user interface which includes a visual representation of the payment accepting unit, an indication of a balance, and an affordance that, in response to user input, indicates completion of the transaction. These elements were all routine, well-understood, and conventional as of December 18, 2013.

c. Independent Claims 13 and 15

320. Independent claim 13 recites substantially the same limitations as Claim 1, but is presented in the form of a mobile device, comprising "one or more radio transceivers; one or more output devices including a display; one or more processors; and memory storing one or more programs to be executed by the one or more processors, the one or more programs comprising instructions for:" performing the steps recited by claim 1. These are the same components recited in claim 1 which I have found in Paragraph 297 to be necessary for operation of, and found in, a conventional mobile device as of December 18, 2013.

321. Independent claim 15 recites substantially the same limitations as claim 1, but is presented in the form of a non-transitory computer storage readable medium

"storing one or more programs, the one or more programs comprising instructions, which, when executed by a mobile device with one or more processors, one or more output devices including a display, and one or more radio transceivers, cause the mobile device to perform operations comprising" the operations described in claim 1. The recited mobile device has the same components as the mobile device recited in claim 1, which I have found in Paragraph 297 to be necessary for operation of, and found in, a conventional mobile device as of December 18, 2013.

322. The recited "non-transitory computer readable storage medium storing one or more programs" was likewise routine, conventional, and well-understood as of December 18, 2013. For instance, the '423 Patent describes the non-transitory computer readable storage medium as storing one or more programs which, when executed by a device, perform the functions recited in claim 1, which I have already found in Sections IX.D.1.a and IX.D.1.b to be performed by well-understood, routine, and conventional technology as of December 18, 2013.

323. Thus, claims 13 and 15 likewise recite generic components that are well-understood, routine, and conventional for at least the same reasons as discussed above with respect to claim 1.

2. Dependent Claims 2-6, 8-10, 14, and 16-19

324. Claims 2 and 16 recite that the updated user interface displays or includes a message, banner notification, or visual alert from one or more light

emitting diodes ("LEDs"). Claim 3 recites that the information exchanged indicates completion of the transaction. Claim 8 adds only the requirement that the information displayed "reflects availability of the available payment accepting unit to conduct a transaction." In my opinion, the additional elements recited in claims 2, 3, 8 and 16 were well-understood, routine, and conventional as of December 18, 2013. For instance, as discussed in Paragraphs 297-298, 308-334, and 318, the '423 Patent discloses that the display comprising the user interface employs well-understood, routine, and conventional technology. Furthermore, neither the claims nor the specification provide additional information regarding the claimed message, notification, or visual alert, beyond that "appropriate technology may be used" and providing generic sample notifications and messages in Figures 26A through 26D (shown below) *See* Ex. 1001, 13:45-52, 34:18-30, 38:26-43.

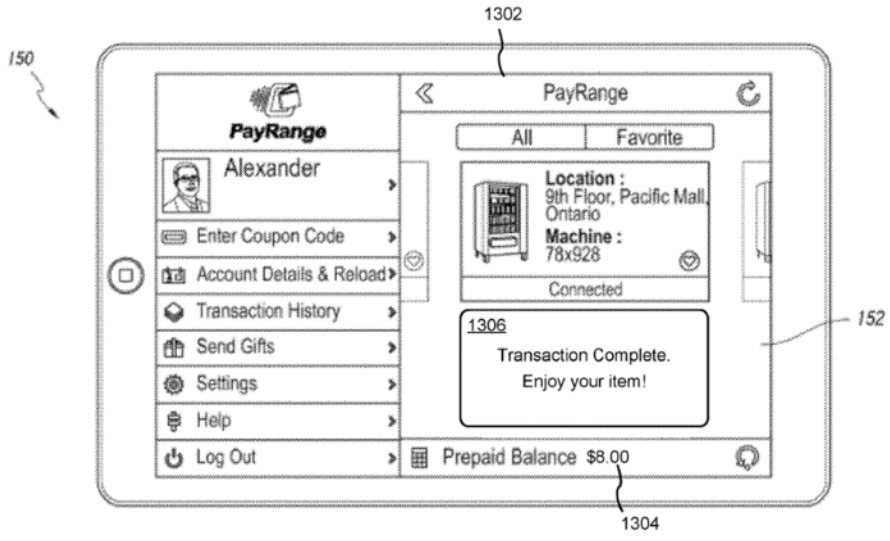


Figure 26A

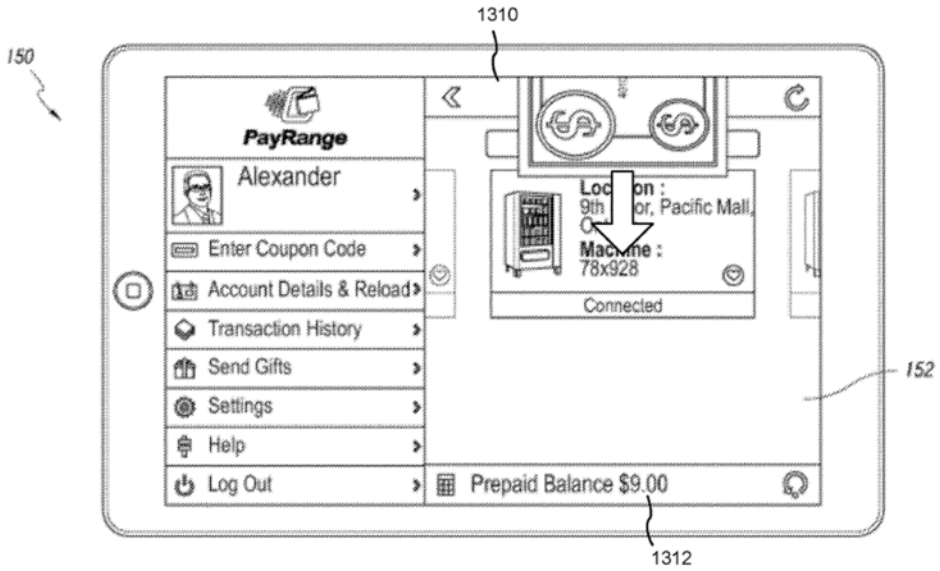


Figure 26B

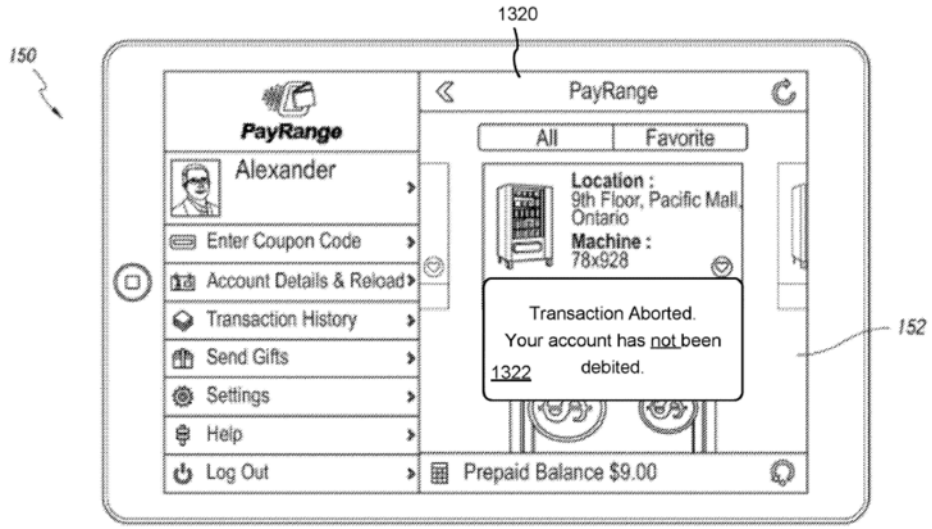


Figure 26C

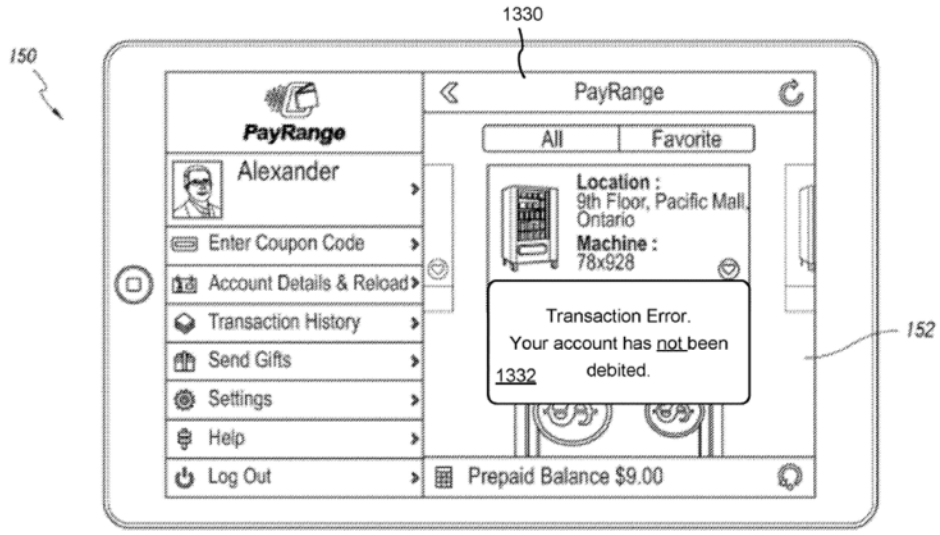


Figure 26D

Moreover, claims 2, 3, 8 and 16 recite nothing more than using a conventional display to convey generic information about a transaction. This is much like showing the user a printed receipt or stating it out loud. Applying this concept to the user device of a mobile device was, as of December 18, 2013, well-known, routine, and conventional. As discussed in Sections IX.A.2, IX.A.3, IX.A.7, and IX.A.13, the prior art discloses user interfaces which display or include the functions claimed in claims 2, 3, 8 and 16, further demonstrating that these functions were well-understood, routine, and conventional.

325. Claim 4 depends from Claim 3 and recites that the mobile device includes a long-range transceiver which sends the amount of the completed transaction to the server. Ex. 1001, 47:59-64. Claim 17 recites the same elements as

Claim 3, and recites that the information at least includes an amount of the completed transaction, and the instructions further cause the mobile device to send at least the amount of the completed transaction to a server. In my opinion, the additional elements recited in claims 4 and 17 were well-understood, routine, and conventional as of December 18, 2013. For instance, the '423 Patent discloses well-understood, routine, and conventional long-range communication protocols and technology, "such as GSM, CDMA, or Wi-Fi". *See* Ex. 1001, 3:1-6, 9:50-10:20. The '423 Patent also describes communication with a server to conduct transactions as a well-understood, routine, and conventional, process that has been performed by "traditional payment accept units," Ex. 1001, 6:57-60. The server itself is also describe generically as including "appropriate processors 950, memory 960…and communication systems." *Id.*, 10:36-39. Further, the mobile phone communicates with the server with the generic long-range communication technology inherent in a user's mobile device. *See id.*, 10:40-44. In addition, as discussed in Sections IX.A.4 and IX.A.14, the prior art discloses mobile devices with components and capabilities disclosed in claims 4 and 17, further demonstrating that these functions were well-understood, routine, and conventional.

326. Claims 5 and 18 recite that the information exchanged in claims 1 and 15, respectively, indicates abortion of the transaction. Claims 6 and 19 recite that the information exchanged indicates failure or malfunction. In my opinion, the

additional elements recited in claims 5, 6, 18 and 19 were well-understood, routine, and conventional as of December 18, 2013. Claims 5, 6, 18, and 19 recite nothing more than using a conventional display to convey generic information about a transaction. This is much like a cashier communicating the same information to a customer verbally. Applying this concept to the user device of a mobile device was, as of December 18, 2013, well-known, routine, and conventional. Furthermore, as discussed in Sections IX.A.5, IX.A.6, IX.A.15, and IX.A.16, the prior art discloses the additional elements of claims 5, 6, 18, and 19, further demonstrating that these functions were well-understood, routine, and conventional.

327. Claim 9 recites nothing more than using a conventional mobile device comprising a display and conventional communications protocols to transmit a coupon that is targeted to the user based on the transaction. Further, as discussed in Section IX.B.3, *Arora* teaches a transaction which uses a coupon targeted to the user based on the transaction, which is displayed on the user interface of the user's device, demonstrating that the concept of using a coupon for a mobile transaction was well-known, routine, and conventional as of December 18, 2013. Thus, in my opinion, the additional element of claim 9 was well-known, routine, and conventional as of December 18, 2013.

328. Claim 10 recites a generic user interface notification that a conventional communication path has been established. In my opinion, the additional elements

recited in claim 10 were well-understood, routine, and conventional as of December 18, 2013. Claim 10 recites nothing more than using a conventional display to convey generic information about a transaction. This is much like a cashier communicating the same information to a customer verbally. Applying this concept to the user device of a mobile device was, as of December 18, 2013, well-known, routine, and conventional. Furthermore, as discussed in Section IX.A.8, the prior art discloses the additional elements of claim 10, further demonstrating that these functions were well-understood, routine, and conventional.

329. Claim 14 recites that the payment accepting units can be from a group of well-known and conventional machines such as, *e.g.*, a payment activated washer, payment activated dryer, or a parking meter. In my opinion, incorporating the technology recited in the independent claims in one of these well-known and conventional machines was well-known, routine, and conventional as of December 18, 2013. The ’423 Patent itself acknowledges that vending machines have existed for “thousands of years.” Ex. 1001, 1:51-52. Further, claim 14 does not recite any additional components within the payment accepting units which would render them different from conventional payment accepting units in existence as of December 18, 2013. As already discussed, in Section IX.D.1, payment accepting units having the capabilities disclosed in the independent claims employed well-understood, routine, and conventional technology. Furthermore, as discussed in Section IX.A.11,

Low teaches that "vending machine 120 may be a vending machine, kiosk, terminal, or other device for dispensing items that are purchased." Ex. 1005, 4:57–59.

3. Dependent Claims 7, 11-12, and 20

330. Claim 7 recites the use of an accelerometer to detect when a user has departed and then to cancel the transaction. The '423 Patent discloses that the accelerometer data could come from the "mobile device 150," (Ex. 1001, 21:17–18), which is defined earlier in the patent generically: "a mobile device 150 may be a user's mobile device 150…Mobile devices include, but are not limited to smart phones, tablet or laptop computers…" Ex. 1001, 8:62-9:30. Thus, the '423 Patent discloses that this step may be performed using a conventional, well-known, and generic accelerometer inherent to the user's mobile phone.

331. In addition, using a standard accelerometer inherent to a mobile device to detect movement was already well-known. For instance, *Arora* describes determining a customer's location using well-known, routine and conventional technology such as "inertial guidance" which "may use an accelerometer and other sensors **in the customer 17's personal electronic device 18**." *See, e.g.*, Ex. 1006, 13:28-35 (emphasis added). As another example, *Casey* describes receiving user input based on a "motion sensing device," "such as an accelerometer or gyroscope." Ex. 1008, 7:61-8:3. *Casey* explains that the device is capable of "sens[ing] and

measur[ing] various types of motion including, but not limited to, velocity, acceleration, rotation, and direction." *Id.*

332. In fact, as discussed in Section IX.B.2, *Arora* discloses using an accelerometer in a personal electronic device to determine whether a customer is in transaction distance and, if the person is not within transaction distance, the transaction would be cancelled. Accordingly, using a generic, well-known accelerometer to apply the idea of cancelling a transaction when a customer walks away from a location was well-known, routine, and conventional.

333. Claim 11 recites that the user interface of the mobile payment application, after establishing the wireless communication path, includes a visual indication of the available payment accepting unit, an indication of a prepaid balance, and an "affordance" that when slid, indicates initiation of the transaction, wherein the affordance is slid in response to receiving a user input of swipe on the affordance displayed on the display of the mobile device. This claim is implemented using generic, well-known, and conventional user interface elements.

334. First, as discussed with regard to Limitation [1.6] above, displaying a visual indication of an available payment accepting unit was well-known, routine, and conventional as of December 18, 2013.

335. Second, a user interface that displays a prepaid balance was well-known, routine, and conventional as of December 18, 2013. For instance, the '423

Patent teaches that the software program used to implement the user interface "include[s] any software program(s) capable of implementing the features described herein" and that the user interface itself can be a generic "touch screen…enabled to…display information." Ex. 1001, 9:15-18, 36:14-25.

336. The prior art also demonstrates that using the user interface of a mobile device to display a prepaid balance was well-known, routine, and conventional as of December 18, 2013. For instance, as I discuss in Section IX.C.2, *Freeny* teaches a user interface that includes an "approved credit amount" that "can be checked at any time by the user of the proximity authorization unit."

337. Third, a user interface that includes an affordance, as recited in claim 11, was well-known, routine, and conventional as of December 18, 2013. For instance, the '423 Patent teaches that this function is performed using known, generic technology such as an iPhone 5. *See* Ex. 1001, 21:3. The '423 Patent states that the software program used to implement the user interface "include[s] any software program(s) capable of implementing the features described herein" and that the user interface itself can be a generic "touch screen…enabled to receive one or more contacts and display information." Ex. 1001, 9:15-18, 36:14-25. The '423 Patent further states that, for instance, the user input may use a generic "'swipe-to-pay' feature." *Id.*, 2:9-15, 7:13-19, 36:14-25. Further, throughout the '423 Patent, the term, affordance, is used generically. *See id.*, 37:9-12, 38:50-52. In addition, as

discussed in Section IX.C.2, the prior art demonstrates that a user interface that includes an "affordance" that, when slid, indicates initiation of the transaction, wherein the affordance is slid in response to receiving a user input of swipe on the affordance was well-known, routine and conventional as of December 18, 2013. In addition, prior art demonstrates that using a "swipe" on a generic user interface of a mobile phone (such as an iPhone) to initiate a transaction was well-known, routine, and conventional at the time of the invention. For instance, *Casey* shows a generic "swipe-to-pay" function on the iPhone, as discussed in Section IX.C.2.d. *See also* Ex. 1008, Figure 5 (showing a "swipe-to-pay" function on an iPhone screen), *id.*, 1:51-58 ("the GUI may display a two position slide bar that may be moved in one direction to confirm the payment transaction"); *id.*, 3:22-25 ("the user may slide the graphical elements to a confirmation position via the touch screen"); *id.*, 8:9-11; *id.*, 9:40-45; *id.*, 20:14-31.

338. Claims 12 and 20 recite that the payment accepting units can be from a group of well-known and conventional machines such as, *e.g.*, a payment activated washer, payment activated dryer, or a parking meter. In my opinion, incorporating the technology recited in the independent claims in one of these well-known and conventional machines was well-known, routine, and conventional as of December 18, 2013. The '423 Patent itself acknowledges that vending machines have existed for "thousands of years." Ex. 1001, 1:51-52. Further, claims 12 and 20 do not recite

any additional components within the payment accepting units which would render them different from conventional payment accepting units in existence as of December 18, 2013. As already discussed in Section IX.D.1, payment accepting units having the capabilities disclosed in the independent claims employed well-understood, routine, and conventional technology. Furthermore, as discussed in Sections IX.A.9 and IX.A.17, *Low* teaches that "vending machine 120 may be a vending machine, kiosk, terminal, or other device for dispensing items that are purchased." Ex. 1005, 4:57–59.

X. CONCLUSION

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

By: _____ Date: 1/16/2025
Dr. B. Clifford Neuman