

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CSC SERVICEWORKS, INC.,
Petitioner,

v.

PAYRANGE, INC.,
Patent Owner.

IPR2023-01449
U.S. Patent No. 11,481,772

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

Table of Contents

I. INTRODUCTION	1
II. QUALIFICATIONS AND PROFESSIONAL EXPERIENCE	2
III. LEVEL OF ORDINARY SKILL IN THE ART	6
IV. RELEVANT LEGAL STANDARDS.....	7
V. BACKGROUND	9
VI. OVERVIEW OF THE ‘772 PATENT	10
VII. CLAIM CONSTRUCTION	12
VIII. IDENTIFICATION OF HOW THE CLAIMS ARE UNPATENTABLE.....	13
A. Summary of References	13
a. Summary of Zhou.....	13
b. Summary of Athwal	15
c. Summary of Low.....	16
d. Summary of Arora.....	16
e. Summary of Casey	17
f. Summary of Freeny	17
B. Reasons to Combine	18
a. Athwal and Low are Analogous to Zhou and the ‘772 Patent.....	18
b. Reasons to Combine Zhou and Athwal.....	20
c. Reasons to Combine Zhou and Low	22
d. Reasons to combine Zhou and Arora	24
e. Reasons to Combine Zhou and Casey.....	25
f. Reasons to Combine Zhou and Freeny	26
C. Ground 1: Claims 1-6, 8, and 12-20 are obvious under 35 U.S.C. § 103 over Zhou and Athwal further in view of Low.....	27
D. Ground 2: Claim 9 is obvious under 35 U.S.C. § 103 over Zhou and Athwal further in view of Low and even further in view of Arora.	70
E. Ground 3: Claim 10 is obvious under 35 U.S.C. § 103 over Zhou and Athwal further in view of Low and even further in view of Casey.....	73

F. Ground 4: Claim 11 is obvious under 35 U.S.C. § 103 over Zhou and Athwal further in view of Low and even further in view of Arora, Casey, and Freeny ..76

IX. CONCLUSION.....82

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

I. INTRODUCTION

1. I am making this declaration at the request of CSC Serviceworks, Inc. in the matter of the *Inter Partes* Review of U.S. Patent No. 11,481,772 (“the ‘772 patent”) to Patel.

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 investigation. My compensation is not contingent on the outcome of this matter or the specifics of my testimony, and I have no other interest in this case or the parties thereto.

3. I have been asked to provide my opinions regarding whether claims 1-6 and 8-20 (“the challenged claims”) of the ‘772 patent are unpatentable insofar as they would have been obvious to a person having ordinary skill in the art (“POSITA”) at the time of the alleged invention, in light of the prior art.

4. It is my opinion that all of the challenged claims would have been obvious to a POSITA.

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

- The ‘772 patent, Ex.1001;
- The prosecution history of the ‘772 patent (“‘772 file history”), Ex.1002;

- U.S. Patent No. 7,458,510 to Zhou, Ex.1004;
- U.S. Patent App. Pub. No. 2003/0130902 to Athwal, Ex.1005;
- U.S. Patent No. 10,210,501 to Low *et al.*, Ex.1006;
- U.S. Patent No. 9,898,884 to Arora *et al.*, Ex.1007;
- U.S. Patent No. 8,255,323 to Casey *et al.*, Ex.1008;
- U.S. Patent No. 8,958,846 to Freeny, Ex.1009; and
- U.S. Patent App. Pub. No. 2010/0082485 to Lin *et al.*, Ex. 1010.

6. In forming the opinions expressed below, I have considered: the documents listed above, 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.

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

II. QUALIFICATIONS AND PROFESSIONAL EXPERIENCE

8. My complete qualifications and professional experience are described in my *Curriculum Vitae*, a copy of which can be found in Exhibit 1011. The

following is a brief summary of my relevant qualifications and professional experience.

9. 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.

10. 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.

11. 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.

12. 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.

13. 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.

14. 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.

15. 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.

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

17. I am also a member of the IEEE, Association for Computer Machinery (ACM), and the Internet Society (ISOC), among others. I have also served as program and/or general chair of the following conferences: The Internet Society

Symposium on Network and Distributed System Security and the ACM Conference on Computer and Communications Security.

III. LEVEL OF ORDINARY SKILL IN THE ART

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

19. It is my understanding that the earliest possible priority date for the ‘772 patent is December 18, 2013. A person of ordinary skill in the art (“POSITA”) in the field of the ‘772 patent, as of December 18, 2013, would have had a bachelor’s degree in electrical engineering, computer engineering, computer science, or equivalent training, and approximately three years of experience with electronic payment systems, vending machine technologies, or distributed network systems. Lack of work experience can be remedied by additional education, and vice versa.

20. For purposes of this Declaration, in general, and unless otherwise noted, my statements and opinions, such as those regarding my experience and the understanding of a POSITA generally (and specifically related to the references I consulted herein), reflect the knowledge that existed in the field as of the alleged

priority date of the '772 patent (*i.e.*, December 18, 2013). Unless otherwise stated, when I provide my understanding and analysis below, it is consistent with the level of a POSITA as of the alleged priority date of the '772 patent.

IV. RELEVANT LEGAL STANDARDS

21. I am not an attorney. In preparing and expressing my opinions and considering the subject matter of the '772 patent, I am relying on certain basic legal principles that counsel have explained to me. These principles are discussed below.

22. I understand that prior art to the '772 patent includes patents and printed publications in the relevant art that predate the priority date of the alleged invention recited in the '772 patent.

23. 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 POSITA to practice the claimed invention without undue experimentation.

24. 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.

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

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

V. BACKGROUND

26. The ‘772 patent relates to systems and methods for transacting with unattended retail machines (*i.e.*, vending machines) whereby a consumer is notified of certain events occurring at a vending machine by “notification to a user of the mobile device via...one or more output devices of the mobile device (e.g., a message displayed on a display of the mobile device...).” ‘772 patent at 2:39-46. The background of the ‘772 patent explains that methods for facilitating mobile payments on vending machines—including by wireless communications between the machine and a consumer’s mobile device—were known in the art as of the ‘772 patent’s filing date. *See* ‘772 patent at 1:66-2:15.

27. The ‘772 patent seeks to enable user interaction with a vending machine via a user interface on a consumer’s mobile device to allow said user to select a particular vending machine, trigger payment, and complete a transaction with the selected vending machine. ‘772 patent at Abstract. The specification of the ‘772 patent explains that a mobile device displays “a user interface 1320 of the application 140 on touch screen 152....” ‘772 patent at 37:4-14. This user interface facilitates notifications from a vending machine: “after sending a request to a payment

module...the mobile device obtains (1402) a notification from the payment module...where the notification indicates an event at the payment accepting unit associated with the payment module.” ‘772 patent at 37:43-51.

28. As explained in further detail below, this purported benefit of the ‘772 patent was not novel. Each of the limitations in the challenged claims are found in prior art references before the earliest priority date of the ‘772 patent, including in the Zhou, Athwal, Low, Arora, Casey, Freeny, and Lin references.

VI. OVERVIEW OF THE ‘772 PATENT

29. The ‘772 patent relates to systems and methods for transacting with unattended retail machines (*i.e.*, vending machines) whereby a consumer is notified of certain events occurring at a vending machine by “notification to a user of the mobile device via...one or more output devices of the mobile device (e.g., a message displayed on a display of the mobile device...).” ‘772 patent at 2:39-46. The specification of the ‘772 patent acknowledges that vending machines “have been around for thousands of years.” ‘772 patent at 1:45-46. The specification refers to vending machines as both “automatic retailing machines” and “payment accepting units.” ‘772 patent at 1:45-65. Other examples of “payment accepting units” include: parking meters, toll booths, laundromat washers and dryers, arcade games,

kiosks, photo booths, toll booths, and transit ticket dispensing machines.” ‘772 patent at 1:54-65.

30. The ‘772 patent claims systems and methods for providing representations of payment accepting unit events. The method of providing such representations is implemented by a “mobile device 150 . . . or a component thereof (e.g., the application 140).” ‘772 patent at 37:30-35. The mobile device sends a request to a vending machine in order to initiate a transaction with said machine. ‘772 patent at 37:43-50. In response, “the mobile device obtains (1402) a notification from the payment module . . . where the notification indicates an event at the payment accepting unit associated with the payment module.” ‘772 patent at 37:43-50. The mobile device then represents that notification to the user via visual, aural, or tactile means. *See* ‘772 patent at 38:4-7, 24-41. These representations indicate events such as a completed transaction or an aborted transaction. ‘772 patent at 38:4-16, 38:51-39:8, 39:22-34. Figures 27A and 27B provide an overview of this process:

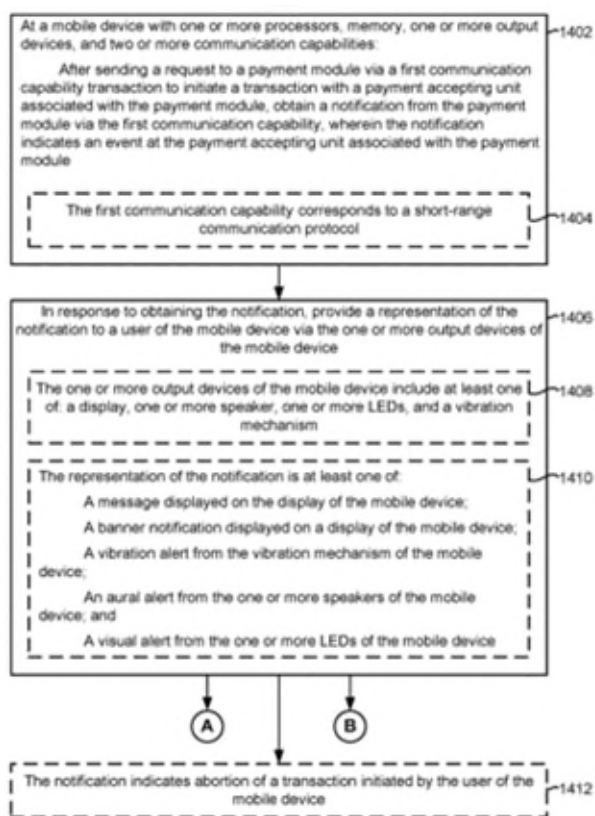


Figure 27A

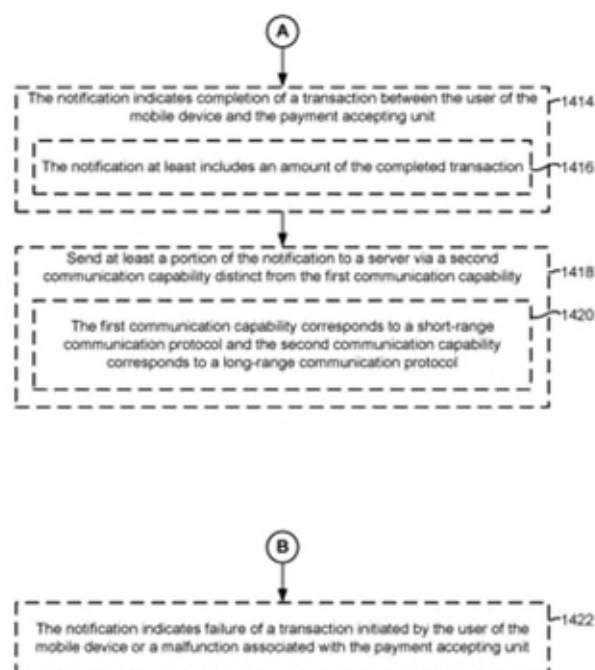


Figure 27B

‘772 patent, Figs. 27A-B.

VII. CLAIM CONSTRUCTION

31. It is my understanding that in order to properly evaluate the ‘772 patent, the terms of the claims must first be interpreted. It is my understanding that for the purposes of this *inter partes* review, the claims are to be construed under the so-called *Phillips* standard, under which claim terms are given their ordinary and customary meaning as would be understood by one of ordinary skill in the art in light of the specification and prosecution history, unless the inventor has set forth a special

meaning for a term. For purposes of my analysis below, I do not believe any claim terms require explicit construction.

VIII. IDENTIFICATION OF HOW THE CLAIMS ARE UNPATENTABLE

32. I have been asked to provide my opinions as to whether the challenged claims of the '772 patent would have been anticipated or obvious in view of the prior art. The discussion below provides a detailed analysis of how the prior art references identified below teach the limitations of the challenged claims of the '772 patent.

33. As part of my analysis, I have considered the scope and content of the prior art and any differences between the alleged invention and the prior art. For each challenged claim of the '772 patent, I provide an element by element analysis of the scope and content of the prior art and any differences between the alleged invention and the prior art.

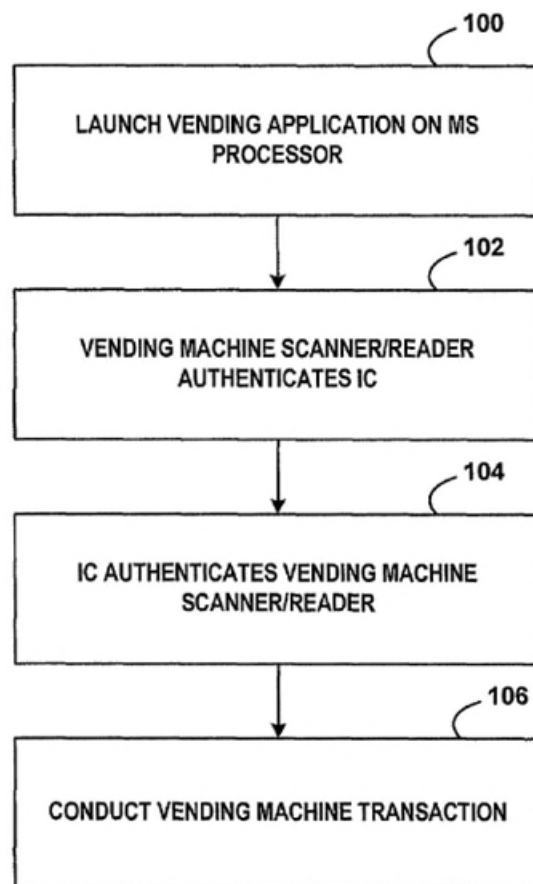
34. As described in detail below, the alleged invention of the challenged claims would have been obvious in view of the teachings of the identified prior art references as well as the knowledge of a POSITA.

A. Summary of References

a. Summary of Zhou

35. Zhou discloses methods and systems “for conducting a transaction between a wireless communication device, such as a cell phone, personal digital

assistant, pocket personal computer, and the like, and a vending machine.” Zhou at 2:15-18, Fig. 3 (reproduced below).



Ex.1004, Fig.3.

36. Zhou discloses using a “vending machine application” on the processor of a wireless device. Zhou at 5:29-31. This application is launched once the wireless device enters into a certain proximity distance of the vending machine. Zhou at 5:29-31. After the application launches, “the vending machine scanner/reader 16 performs an authentication of the IC card 14” that is included in the wireless device.

Zhou at 5:42-53. Once this authentication is complete, the wireless device then sends a “challenge message” to the vending machine. Zhou at 5:54-59, 6:28-30. The vending machine responds to this “challenge message” with credential information, which the wireless device forwards to a “vending machine authorization server” for validation. Zhou at 6:37-49. The authorization server indicates whether the vending machine is “OK or NOT OK,” and the wireless device displays this as a notification to the user. Zhou at 6:58-7:3. The user may then choose to continue or abort a transaction based upon the result of the authentication process. Zhou at 7:3-10.

b. Summary of Athwal

37. Athwal relates to electronic commerce methods for transacting with an “electronic retail system” (“ERS”), such as a vending machine, via a consumer’s mobile device, which communicates with the ERS using short range wireless technology and communicates with a financial system using long range wireless technology. Athwal at Abstract, [0002], [0004], [0015]. Specifically, Athwal discloses that a consumer uses a mobile communication device (“MCD”) to search for all available ERS’s in their vicinity. Athwal at [0017]. The nearby ERS’s respond with a wireless signal that includes the name, available products, and prices of each available ERS. Athwal at [0017]. The consumer then chooses their desired

product from the appropriate ERS and receives an “electronic ‘bill’” for the amount due. Athwal at [0017]-[0018].

38. Once the ERS has sent the electronic bill, it uses the long range wireless technology capabilities of the consumer’s mobile device to contact a third-party payment system, such as a financial system, to transfer funds and complete the electronic transaction. Athwal at [0019], [0022]. If funds transfer correctly, the ERS provides an electronic receipt to the MCD and delivers the requested product/service to the consumer. Athwal at [0030]-[0035]

c. Summary of Low

39. Low teaches using a consumer’s wireless device to conduct transactions with unmanned devices such as vending-machines. Low at 1:16-20. The wireless device communicates with unmanned devices, which transmit a machine identifier to said device. Low at 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.” Low at 2:11-28. The user then selects their desired items, makes a purchase, and the vending machine dispenses said item. Low at 5:19-30.

d. Summary of Arora

40. Arora teaches using a “personal electronic device” to utilize “a group of vending machines managed by a vending machine company[.]” Arora at 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[.]” Arora at Abstract. The systems and methods of Arora disclose tracking a consumer’s purchase history and offering coupons to a consumer based upon the same. Arora at Fig. 3.

e. Summary of Casey

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

f. Summary of Freeny

42. Freeny discloses methods of transacting with a proximity service unit via a consumer’s wireless device. See Freeny at 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[.]” Freeny at

37:60-63. The customer's approved credit balance "can be checked at any time by the user of the proximity authorization unit[.]" Freeny at 38:3-5.

B. Reasons to Combine

a. Athwal, Low, Arora, Casey, and Freeny are Analogous to Zhou and the '772 Patent.

43. In my opinion, Zhou, Athwal, and Low are each analogous art to the '772 patent. All three prior art references relate to electronic payment systems and describe applying their teachings to unattended retail machines, such as vending machines. See Zhou at 1:7-11 ("This invention relates generally to the field of methods and devices for conducting transactions with automated vending machines, kiosks, and the like . . ."); Athwal at [0016] ("Mobile commerce or 'm-commerce' transactions utilizing personal mobile devices 110 will become one of the normal methods for payment for simple purchases such as pop from vending machines 120 . . ."); Low at 1:15-20 ("The present application generally relates to electronic payments, and more particularly, to wireless electronic payments to non-Internet connected machines through user devices.").

44. With regard to Athwal, both Zhou and Athwal describe a system by which a consumer's wireless device displays notifications of certain events pertaining to transactions with vending machines. Zhou at 7:1-14; Athwal at [0029]-

[0032]. As such, both Zhou and Athwal are analogous art to the ‘772 patent. ‘772 patent at Abstract.

45. With regard to Low, both Zhou and Low relate to methods of conducting wireless transactions with automated vending machines by facilitating communications between a vending machine and a mobile device. Zhou at 1:7-11; Low at 2:10-28. Thus, both Zhou and Low are analogous art to the ‘772 patent. ‘772 patent at 1:66-2:15.

46. Similarly, Arora “allows a vending customer to use her own mobile electronic device as a second, virtual, or replacement ‘front panel’ for one or more physical vending machines.” Arora at 2:6-9. The disclosure of Arora involves a customer “selecting either products or vending machines from a list of options provided via the user interface of the personal electronic device[.]” Arora at Abstract. Because the disclosure of Zhou also allows a customer to conduct transactions with a vending machine via their mobile device, both Zhou and Arora are analogous art to the ‘772 patent. Zhou at 1:7-11; ‘772 patent at 1:66-2:23.

47. Casey relates to “[m]ethods and devices for confirming payment transactions[.]” Casey at Abstract. Casey specifically contemplates that “[t]he electronic device 234 may include a handheld portable electronic device . . . a vending machine or kiosk, or other suitable payment receiving device.” Casey at

16:36-40. Thus, Casey recognizes that its method for confirming transactions may be used in transactions with vending machines, such as those detailed in Zhou and the ‘772 patent. Zhou at 1:7-11; ‘772 patent at 1:45-2:23. Accordingly, both Zhou and Casey are analogous art to the ‘772 patent.

48. Freeny relates to methods of conducting proximity authorization/transactions. Freeny at Abstract. Freeny lists a number of systems which may be improved via its disclosure, including “vending machine systems[.]” Freeny at 2:8-25. Thus, because both Zhou and the ‘772 patent relate to vending transactions which could be improved by the disclosure of Freeny, both Freeny and Zhou are analogous art to the ‘772 patent. Zhou at 1:7-11; ‘772 patent at 1:66-23.

b. Reasons to Combine Zhou and Athwal

49. A POSITA would have found it obvious to combine the teachings of Athwal with those of Zhou to achieve obvious and predictable benefits to the system and method described in Zhou.

50. First, Athwal discloses a method of alleviating the cost associated with maintaining a wired or wireless data connection for each vending machine. Athwal at [0020]-[0022]. Athwal teaches a method of using short-range wireless technology to communicate with a wireless device and use that wireless device’s long-range wireless technology to establish a connection with a third-party financial system.

Athwal at [0022]. While Zhou discloses that a consumer's wireless device transmits an authentication request to a remote vending machine authentication server, it omits details regarding how the method effects payment. Zhou at 6:37-49. A POSITA would have found it obvious to apply the payment method of Athwal to the electronic commerce framework of Zhou because Athwal reduces the cost of transactions, resulting in greater profits for a vending machine operator. Further, by using the wireless device's long-range communication capabilities to send both authentication and payment requests promotes efficiency in vending machine transactions.

51. Second, Athwal teaches that a consumer's wireless device "will initiate an electronic transaction by first performing a search for all available ERS 120 in their vicinity" Athwal at [0017]. Implementing Athwal's disclosure of identifying all nearby vending machines into Zhou's authentication method results in a mobile application that quickly provides a consumer with an identification of all nearby, "trustworthy" vending machines with which the consumer may wish to transact. A POSITA would have found it obvious to combine the teaching of Athwal with that of Low for this reason as well.

52. A POSITA would have had a reasonable expectation of success in making the combination between Zhou's system and Athwal's signaling

functionality. Athwal describes methods that are capable of reducing the cost associated with wireless vending machine transactions. Thus, a POSITA would have naturally expected success.

53. These modifications to Zhou's system would have been within the level of ordinary skill in the art, particularly because Zhou teaches using a mobile device to transmit vending machine credential information to a remote authentication server. Zhou at 6:37-40. It would have been within the background knowledge and standard capabilities of a POSITA to incorporate Athwal's disclosure of utilizing a consumer's mobile device to facilitate long-range wireless communication between a vending machine and a remote payment server.

54. Accordingly, the combination of Zhou and Athwal represents applying known techniques to a known device ready for improvement to yield predictable results.

c. Reasons to Combine Zhou and Low

55. A POSITA would have been found it obvious to combine the teachings of Low with those of Zhou to achieve obvious and predictable benefits to the system and method described in Zhou.

56. Low discloses a user interface that displays a representation of multiple nearby vending machines to consumers. Low at 2:25-28. This user interface may

also display the details of products available at each of said vending machines, and allow users to select specific vending machines with which to transact. Low at 2:11-28. A POSITA would have found it obvious to incorporate this teaching into the e-commerce method disclosed by Zhou, resulting in an e-commerce application that allows users to authorize a subset of available vending machines, such as those machines containing goods and/or services they wish to purchase. Thus, a POSITA would have been motivated to combine the disclosure of Low with the method of Zhou to promote efficiency and convenience.

57. A POSITA would have had a reasonable expectation of success in making the combination between Zhou's system and Low's disclosure of selecting a subset of available vending machines and this modification would have been within the level of ordinary skill in the art. Zhou already discloses that a mobile device will recognize a vending machine upon entering into a predetermined proximity distance of the same. Zhou at 5:29-31. Thus, the combination of Zhou and Low represents applying a known technique (selecting a subset of nearby vending machines) to a known method ready for improvement (Zhou's authentication/e-commerce method) to yield predictable results.

58. Moreover, implementing the teachings of Low would not interfere with the combination of Zhou and Athwal, so a POSITA would also have found it obvious to combine Low with the combination of Zhou and Athwal.

d. Reasons to combine Zhou and Arora

59. A POSITA would have been found it obvious to combine the teachings of Arora with those of Zhou to achieve obvious and predictable benefits to the system and method described in Zhou.

60. For example, Zhou, Athwal, and Low all disclose methods of conducting e-commerce with vending machines via a consumer's wireless device. Zhou at 2:15-18; Athwal at [0017]; Low at 1:16-20. Similarly, Arora discloses conducting e-commerce with vending machines via a consumer's wireless device and tracking consumer data and using said data to provide recommendations or coupons based upon that consumer data. Arora at 2:51, 5:23-39, 14:5-8. A POSITA would have found it obvious incorporate Arora's disclosure to incentivize consumers to repeatedly shop at one vending machine in particular, thereby increasing a vending machine operator's profits. Arora states "[o]ne example of increased profit to the vending machine company is the ability to put products that are about to expire on sale. The customer benefits by receiving discounted products and the company

benefits by selling products that otherwise would have to be discarded at a loss.”
Arora at 6:32-36.

61. A POSITA would have had a reasonable expectation of success in making the combination between Zhou’s system and Arora’s disclosure of distributing coupons based upon consumer preferences. This modification would have been within the level of ordinary skill in the art; Zhou already discloses that a mobile device will recognize a vending machine upon entering into a predetermined proximity distance of the same. Zhou at 5:29-31. It would have been within the knowledge of a POSITA to implement the ability to distribute coupons into Zhou’s pre-existing vending machine application. Thus, the combination of Zhou and Arora represents applying a known technique (distributing coupons to customers) to a known method ready for improvement (Zhou’s authentication/e-commerce method) to yield predictable results.

e. Reasons to Combine Zhou and Casey

62. A POSITA would have been found it obvious to combine the teachings of Casey with those of Zhou to achieve obvious and predictable benefits to the system and method described in Zhou.

63. Zhou, Athwal, and Low all utilize smartphones or other wireless devices to conduct transactions with vending machines. Zhou at 2:15-23; Athwal at

[0014]; Low at 1:22-39. Casey discloses a convenient “swipe-to-pay” feature that is absent from Zhou, Athwal, and Low. A POSITA would have understood that adding this feature to the user interface of Zhou would make said user interface more convenient and reliable for consumers by providing a simple way for consumers to confirm payments.

64. A POSITA would have had a reasonable expectation of success in making the combination between Zhou’s system and Casey’s disclosure of a swipe-to-pay functionality. This modification would have been within the level of ordinary skill in the art; Zhou already discloses a user interface for transacting with vending machines. Zhou at 5:55-56. It would have been within the knowledge of a POSITA to implement the swipe-to-pay feature into Zhou’s pre-existing vending machine application. Thus, the combination of Zhou and Casey represents applying a known technique (swipe-to-pay) to a known method ready for improvement (Zhou’s authentication/e-commerce method) to yield predictable results.

f. Reasons to Combine Zhou and Freeny

65. A POSITA would have been found it obvious to combine the teachings of Freeny with those of Zhou to achieve obvious and predictable benefits to the system and method described in Zhou.

66. Zhou discusses authenticating vending machines upon a consumer entering a predetermined proximity distance. Zhou at 2:31-50. Thus, a POSITA would have been motivated to implement Freeny's method for proximity-based transactions into Zhou's discussion of proximity-based authentication. Freeny states that it is intended to improve proximity systems such as vending machine systems, which is directly applicable to the system of Zhou. Freeny at 2:8-25. Thus, a POSITA would have had a reasonable expectation of success in making the combination between Zhou's authentication method and Freeny's method for conducting transactions. The combination of Zhou and Freeny represents applying a known technique (proximity transactions) to a known method ready for improvement (Zhou's authentication/e-commerce method) to yield predictable results.

C. Ground 1: Claims 1-6, 8, and 12-20 are obvious under 35 U.S.C. § 103 over Zhou and Athwal further in view of Low.

1. Claim 1

[1(pre)] A method of presenting representations of payment accepting unit events, comprising:

67. First, Zhou discloses a method. Zhou at 8:38-62 (Claim 1) ("The invention claimed is...A method of conducting a transaction between a wireless

communication device and a vending machine. . .”). A POSITA would have understood that the disclosure of Zhou is a method.

68. Second, Zhou discloses “*presenting representations of payment accepting unit events*.” Zhou explains, “[t]he vending machine application presents to the user via the device 10 display various screen displays and prompts to facilitate a transaction with the vending machine.” Zhou at 5:32-34. Zhou also teaches displaying notifications regarding whether a particular vending machine was successfully authenticated, displaying either a “VENDING MACHINE NOT APPROVED” or a “VENDING MACHINE APPROVED” message depending on the outcome of the authorization process. Zhou at 7:1-14. A POSITA would have understood both displaying various prompts to facilitate a transaction and indicating whether a vending machine has been successfully authenticated to constitute “*presenting representations of payment accepting unit events*” as claimed.

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

69. Because Zhou discloses using a wireless device to interact with a vending machine, Zhou discloses or renders obvious “*a mobile device with one or more processors, memory, one or more output devices including a display, and one or more radio transceivers*” as claimed.

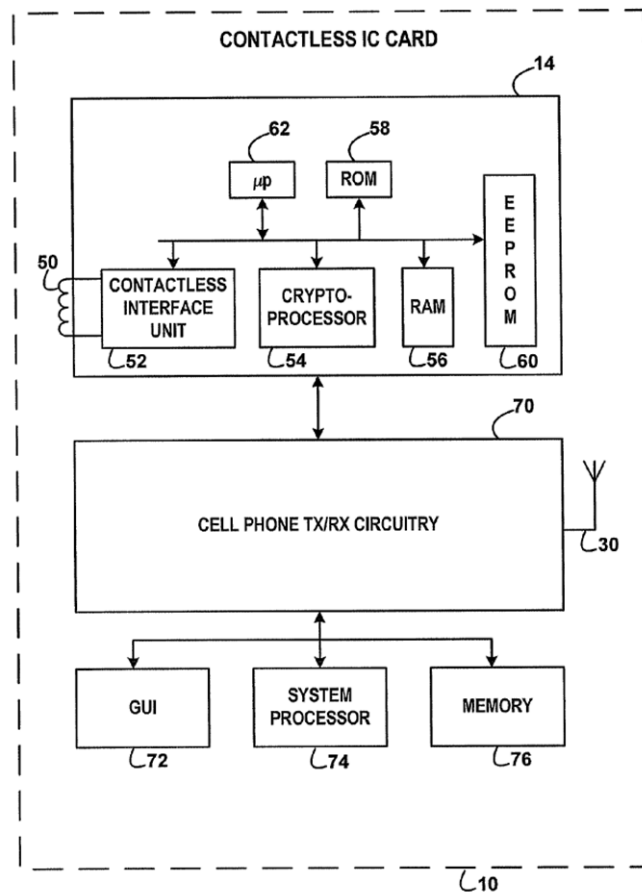
70. The wireless device described in Zhou includes “a main system processor 74” that can be any “state of the art processor commonly used for wireless devices” Zhou at 4:52-62. The wireless device of Zhou further includes a “crypto-processor for encryption and decryption of messages” within the device’s “contactless IC card.” Zhou at 5:3-16. This IC card “will also typically include its own microprocessor 62 for executing program instructions allowing it to communicate with the IC scanner/reader 16 in the vending machine. Zhou at 5:13-16. Thus, a POSITA would have understood that the wireless device of Zhou includes “*one or more processors*” as claimed.

71. The wireless device described in Zhou also includes “a memory 76 storing program instructions for execution by the system processor.” Zhou at 4:59-60. Similarly, the IC card may include “memory devices 56, 58, and 60 for storing program instructions, data and device identification information. Zhou at 5:11-13. Accordingly, a POSITA would have understood that the wireless device of Zhou includes “*memory*” as claimed.

72. The wireless device described in Zhou also includes a “graphical user interface module 72 for presentation of information on the display of the device 10 and receiving user input via the screen display or manual buttons or keys” Zhou

at 4:52-60. A POSITA would have understood that such a screen display constitutes “one or more output devices including a display” as claimed.

73. The wireless device described in Zhou also includes “a first contactless communications means 14 for communication with a corresponding second contactless communication means 16 included in the vending machine 12. The first contactless means 14 may take the form of a contactless IC card, RFID transponder, a transmitter/receiver in accordance with WiFi, Bluetooth, 802.11 or other standard” Zhou at 3:63-4:2. Said wireless device “includes . . . conventional cellular telephone circuitry represented by transmit/receive circuitry 70” Zhou at 4:52-60, Fig. 2 (reproduced below). A POSITA would have understood that each of these contactless means constitutes “one or more radio transceivers” as claimed.



Zhou at Fig. 2.

74. As such, Zhou discloses or renders obvious “a mobile device with one or more processors, memory, one or more output devices including a display, and one or more radio transceivers” as claimed.

[1(b)] 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, the identifying based at least in part on an identifier corresponding to the one or more payment accepting units, wherein the one or more payment accepting units are payment operated machines that accept payment for dispensing of products and/or services;

75. Because Zhou teaches a wireless device authenticating a vending machine, and Athwal describes searching for all nearby vending machines, the combination of Zhou and Athwal discloses or renders obvious *“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, the identifying based at least in part on an identifier corresponding to the one or more payment accepting units, wherein the one or more payment accepting units are payment operated machines that accept payment for dispensing of products and/or services.”*

76. Zhou describes launching a vending machine application once “the user of the wireless device 10 comes into close proximity with the vending machine” Zhou at 5:29-30. This application then “presents to the user via the device 10 display . . . and prompts to facilitate a transaction with the vending machine.” Zhou at 5:29-34.

77. The wireless device of Zhou also “authenticates the vending machine 12” to “insure that the vending machine is not a rogue machine—i.e., that its credentials as a trustworthy machine can be verified.” Zhou at 5:54-59. To authenticate a vending machine, the wireless device “obtain[s] vending machine credential information.” Zhou at 5:61-63. A POSITA would have understood that

displaying prompts to facilitate a transaction with a particular vending machine as well as authenticating said vending machine by obtaining “vending machine credential information,” are both examples of “*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*” as claimed.

78. Zhou also describes that the aforementioned “vending machine credential information” includes among other things, a “digital certificate.” Zhou at 5:66-6:1. A POSITA would have understood that a “digital certificate” is one form of identifier, since the purpose of the certificate is to bind a public key to a name or other such identifying information. In which case, a POSITA would have understood Zhou to disclose identification “*based at least in part on an identifier corresponding to the one or more payment accepting units*” as claimed.

79. Similarly, Athwal teaches that a mobile device searches for all nearby Electronic Retail Systems (“ERS”), which include vending machines, and the available ERS’s respond to the inquiry with information including “name, available products and prices.” Athwal at [0017]. A POSITA would have understood searching for and receiving name, product, and price information from available nearby vending machines to constitute “*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.” Further, a POSITA also would have understood that at least a name associated with a particular vending machine is one example of an “identifier corresponding to the one or more payment accepting units.”

80. Finally, Zhou explains that for the purposes of its disclosure, “vending machine” means “any automated machine for vending or providing goods or services with a consumer in exchange for payment, including ATMs, automated kiosks, conventional vending machines, etc.” Zhou at 2:15-23. Accordingly, the combination of Zhou and Athwal disclose or render obvious “*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, the identifying based at least in part on an identifier corresponding to the one or more payment accepting units, wherein the one or more payment accepting units are payment operated machines that accept payment for dispensing of products and/or services*” as claimed.

[1(c)] displaying a user interface of the mobile payment application on the display of the mobile device, the user interface being configured to display a visual indication of the one or more payment accepting units and accept user input to (i) receive selection by a user of the mobile device of an available payment accepting unit of the one or more payment accepting units and (ii) trigger payment by the mobile payment application for a transaction initiated by the user of the mobile

device with the available payment accepting unit of the one or more payment accepting units;

81. The combination of Zhou and Athwal, or, alternatively, the combination of Zhou, Athwal, and Low renders obvious “*displaying a user interface of the mobile payment application on the display of the mobile device, the user interface being configured to display a visual indication of the one or more payment accepting units and accept user input to (i) receive selection by a user of the mobile device of an available payment accepting unit of the one or more payment accepting units and (ii) trigger payment by the mobile payment application for a transaction initiated by the user of the mobile device with the available payment accepting unit of the one or more payment accepting units;*” as claimed.

82. Zhou describes a “vending machine application” that “presents to the user via the device 10 display various screen displays and prompts to facilitate a transaction with the vending machine.” Zhou at 5:32-34. Moreover, the wireless device of Zhou includes a “graphical user interface module 72 for presentation of information on the display of the device 10 and receiving user input via the screen display” Zhou at 4:52-58. A POSITA would have understood that a graphical user interface module allowing a wireless device to present “screen displays and prompts to facilitate a transaction with [a] vending machine” is “*displaying a user*

interface of the mobile payment application on the display of the mobile device” as claimed.

83. As described above, Zhou also displays visual notifications regarding the authentication status of a vending machine. See Zhou at 7:1-14. A POSITA would have understood that messages indicating a particular vending machine is “APPROVED” or “NOT APPROVED” constitutes “*display[ing] a visual indication [] of one or more payment accepting units.*”

84. Similarly, Athwal teaches that a mobile device will request and receive “detailed information such as [] name, available products and prices” from all nearby vending machines. Athwal at [0017]. “The MCD 110 will display this information to the customer and the customer will select the desired product or service from the appropriate ERS 120.” Athwal at [0017]. A POSITA would have understood that displaying a name associated with a nearby vending machine is “*display[ing] a visual indication [] of one or more payment accepting units*” as claimed.

85. The wireless device of Zhou “includes a contactless IC card 14, and conventional cellular telephone circuitry represented by transmit receive circuitry 70, graphical user interface module 72 for presentation of information on the display of the device 10 and **receiving user input** via the screen display or manual buttons

or keys” Zhou at 4:52-60 (emphasis added). Thus, Zhou discloses a user device configured to “*accept user input*” as claimed.

86. Zhou further teaches allowing a user to complete or abort a transaction contingent upon the successful authorization of a vending machine by the user’s wireless device. See Zhou at 7:1-8. For instance, “[i]f the user sees a VENDING MACHINE NOT APPROVED response (or the like) displayed on the display of their device, they thus are notified of the security risk and able to abort the vending processing prior to transmission of sensitive financial or credit card information.” Zhou at 7:1-8. “If the message such as VENDING MACHINE APPROVED (or the like) is displayed, the user of the device 10 can proceed to complete the transaction.” Zhou at 7:8-10. A POSITA would have understood that choosing to continue a transaction with a given authenticated vending machine to be “*receiv[ing] selection by a user of the mobile device of an available payment accepting unit of the one or more payment accepting units.*”

87. Athwal also discusses allowing a user to select an available payment accepting unit. As discussed above, Athwal teaches a mobile device that receives identifying information from a plurality of nearby available vending machines and displays this information to the customer. Athwal at [0017]. The customer then “select[s] the desired product or service from the appropriate ERS 120” and “[t]he

MCD 110 will then send a WES to the appropriate ERS 120 indicating a customer request to perform a transaction.” Athwal at [0017]. A POSITA would have understood that by selecting a product offered by a specific vending machine, the customer is *selecting* that vending machine, and, thus, Athwal discloses “*receiv[ing] selection by a user of the mobile device of an available payment accepting unit of the one or more payment accepting units.*”

88. Similarly, Low describes that “a consumer device, such as a smart phone or computing tablet communicates with a non-Internet connected unmanned device/machine via wireless communication” Low at 2:11-14. “[I]n some embodiments, multiple machines may send their unique identifiers” Low at 2:25-27. After receiving the multiple vending machine identifiers, “the user is able to select one or more machines to purchase from.” Low at 2:27-28. A POSITA would have understood that a user choosing to purchase goods and/or services from one or more of the nearby vending machines constitutes “*receiv[ing] selection by a user of the mobile device of an available payment accepting unit of the one or more payment accepting units.*” Thus, the combination of Zhou, Athwal, and Low renders obvious this limitation.

89. Finally, Zhou, alone or in combination with Athwal, discloses or renders obvious “*trigger[ing] payment by the mobile payment application for a*

*transaction initiated by the user of the mobile device with the available payment accepting unit of the one or more payment accepting units.” Zhou discloses “if the authentication from the server 42 indicates that the vending machine is ‘OK’ (i.e., trustworthy), then the IC card can provide a prompt to the vending machine application indicating that the vending machine is approved and that completion of the transaction and transfer of sensitive payment information . . . may safely proceed.” Zhou at 6:12-20. A POSITA would have understood that by completing a transaction, including transferring “sensitive payment information,” the vending machine application (i.e., *mobile payment application*) of Zhou receives user input that “*trigger[s] payment by the mobile payment application for a transaction initiated by the user of the mobile device with the available payment accepting unit.*”*

90. Athwal teaches that once a consumer selects their desired product and/or service, “[t]he ERS 120 will confirm availability of the desired product/service, calculate the cost and send an electronic ‘bill’ to the MCD 110 for the amount of the purchase,” after which the consumer is “prompted . . . to verify the purchase and to select the customer’s account which should be used to make the purchase” and “[t]he MCD 110 will [] transmit payment account information and an authorization key . . . to the ERS 120” Athwal at [0017]. A POSITA would have understood a user selecting to transmit payment account information and an

authorization key to constitute receiving user input *“trigger[ing] payment by the mobile payment application for a transaction initiated by the user of the mobile device with the available payment accepting unit of the one or more payment accepting units.”* Thus, the combination of Zhou and Athwal disclose or render obvious this limitation.

91. As discussed above at paragraphs 43-58, a POSITA would have found it obvious to implement the teachings of Athwal and Low in Zhou’s method, and would have been motivated to do so. Thus, the combination of Zhou and Athwal, or alternatively, Zhou, Athwal, and Low renders obvious *“displaying a user interface of the mobile payment application on the display of the mobile device, the user interface being configured to display a visual indication of the one or more payment accepting units and accept user input to (i) receive selection by a user of the mobile device of an available payment accepting unit of the one or more payment accepting units and (ii) trigger payment by the mobile payment application for a transaction initiated by the user of the mobile device with the available payment accepting unit of the one or more payment accepting units”* as claimed.

[1(d)] 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;

92. Because Zhou describes establishing a wireless connection between a consumer's wireless device and a vending machine, Zhou discloses or renders obvious *“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.”*

93. Various methods of wireless communications were well known in the art as of the '772 patent's earliest priority date. For example, Zhou explains, “[t]he art has proposed using contactless communications devices such as contactless Integrated Circuit (IC) cards and Radio Frequency Identification Devices (RFIDs) as a means for communication with a vending machine and exchanging payment information.” Zhou at 1:21-25.

94. Zhou further teaches that the wireless communications device described therein includes a “first contactless means 14 [that] may take the form of a contactless IC card, RFID transponder, a transmitter/receiver in accordance with WiFi, Bluetooth, 802.11 or other standard.” Zhou at 3:67-4:2. Zhou explains that this “first contactless communication means communicates with a corresponding second contactless communication means (e.g., RFID transponder or contactless IC reader/scanner) that is included in the vending machine.” Zhou at 2:24-30. A POSITA would have understood that Zhou discloses using its contactless

communications means to establish a wireless communication path between a wireless communication device and a vending machine, so Zhou discloses or renders obvious “*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*” as claimed.

[1(e)] after establishing the wireless communication path, enabling user interaction with the user interface of the mobile payment application to complete the transaction;

95. Because Zhou teaches a user interface that displays prompts for a user and accepts inputs to effect a transaction after wireless communication has been established between the vending machine and the user’s device and after authentication has been completed, Zhou discloses or renders obvious “*after establishing the wireless communication path, enabling user interaction with the user interface of the mobile payment application to complete the transaction.*”

96. Zhou describes a wireless communications device that “includes a . . . graphical user interface module 72 for presentation of information on the display of the device 10 and receiving user input via the screen display or manual buttons or keys[.]” Zhou at 2:52-58. Zhou’s vending machine application “presents to the user via the device 10 display various screen displays and prompts to facilitate a transaction with the vending machine.” Zhou at 5:32-34. By connecting to the

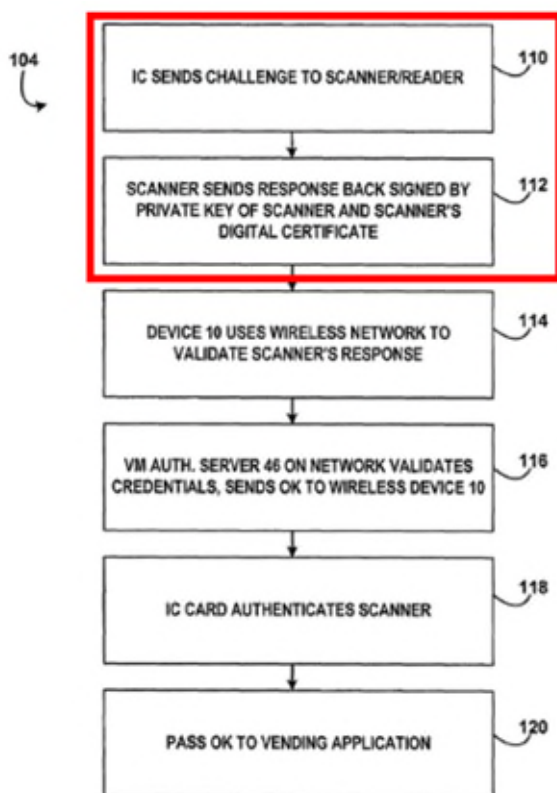
vending machine, the application may display “product information” and “price information” on the display of the device. Zhou at 5:35-40.

97. After establishing a connection with the vending machine, the wireless device authenticates the vending machine, and upon a successful authentication, “[t]he method further continues with a step b) of completing the transaction including the exchange of payment information[.]” Zhou at 7:37-39. A POSITA would have understood that the “various screen displays and prompts to facilitate a transaction” would include prompts for exchanging payment information and completing the transaction. Thus, because Zhou performs authentication after wireless communication is established and because Zhou requires authentication before a user is allowed to complete the transaction, Zhou discloses or renders obvious “*after establishing the wireless communication path, enabling user interaction with the user interface of the mobile payment application to complete the transaction*” as claimed.

[1(f)] exchanging information with the available payment accepting unit via the one or more radio transceivers, in conjunction with the transaction; and

98. Because Zhou describes sending information wirelessly from a wireless communication device to a vending machine as part of a transaction, Zhou discloses or renders obvious “*exchanging information with the available payment accepting unit via the one or more radio transceivers, in conjunction with the transaction.*”

99. As discussed above at paragraphs 73, 93-94, Zhou describes a wireless device that includes means such as an “IC card, RFID transponder, [and/or] a transmitter/receiver” for communicating and exchanging information with a vending machine. Zhou at 3:67-4:2. Zhou also teaches that this communication/information exchange occurs as part of a transaction. Specifically, Zhou’s method “includes a step a) of performing an authentication of the vending machine using the contactless communications means of the wireless communications device and the vending machine,” which “may include steps of exchanging challenge and response messages, wherein the contactless communications means in the vending machine provides a private key signature and a digital certificate.” Zhou at 3:31-37. As a part of Zhou’s authentication process, a wireless device may “send[] a challenge message from the IC card to the scanner module” to which the “scanner module respond[s]...with a private key signature and a digital certificate” Zhou at 2:60-64, Fig. 4 (reproduced below).



Zhou at Fig. 4 (annotated).

100. After a vending machine is successfully authenticated, “the user of the device 10 can proceed to complete the transaction.” Zhou at 7:8-10. Zhou discloses that this authentication process precedes every completed transaction. Zhou at 7:8-14. Thus, a POSITA would have understood that the exchange of challenge and response messages described by the authentication process occurs “*in conjunction with the transaction.*” Accordingly, Zhou discloses or renders obvious “*exchanging information with the available payment accepting unit via the one or more radio transceivers, in conjunction with the transaction*” as claimed.

[1(g)] after exchanging the information, displaying, on the display, an updated user interface of the mobile payment application to the user of the mobile device.

101. Because Zhou, either alone or in combination with Athwal, teaches displaying messages regarding a transaction with a vending machine, Zhou, or, alternatively, the combination of Zhou and Athwal discloses or renders obvious “*after exchanging the information, displaying, on the display, an updated user interface of the mobile payment application to the user of the mobile device.*”

102. As discussed at paragraphs 68, 83, 86, and 99-100, Zhou describes updating a user interface of a mobile device to display messages such as “VENDING MACHINE NOT APPROVED” or “VENDING MACHINE APPROVED” depending on the results of the authentication process. Zhou at 7:1-14. A POSITA would have understood that these messages are dependent on the result of the authentication process, and thus must occur after exchanging the challenge and response information as described in paragraphs 99-100.

103. Further, Athwal teaches that once funds transfer correctly to a vending machine account, “the ERS 120: a) Sends 5 a WES to the customers [sic] MCD 110 informing the customer that the transaction has been completed successfully; [and] b) Provides 5 and electronic receipt to the MCD 110.” Athwal at [0030]-[0032]. A POSITA would have understood sending a notification to the mobile device informing the customer that the transaction has successfully completed as well as an

electronic receipt constitutes or renders obvious “*displaying . . . an updated user interface of the mobile payment application.*” Thus, Zhou, in view of Athwal, discloses or renders obvious “*after exchanging the information, displaying, on the display, an updated user interface of the mobile payment application to the user of the mobile device*” as claimed.

2. Claim 2

[2] 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 LEDs of the mobile device.

104. Because Zhou, either alone or in view of Athwal, discloses displaying response messages to a consumer via the screen of a wireless device, Zhou, either alone or in view of Athwal, discloses or renders obvious “[t]he method of claim 1 wherein the updated user interface of the mobile device payment application includes . . . a message displayed on the display of the mobile device.”

105. Zhou teaches that, after an authentication process, a “response message from the vending machine authentication server 42 is passed to the vending machine application for display to the user.” Zhou at 7:1-14. These include messages such as “VENDING MACHINE NOT APPROVED” and “VENDING MACHINE APPROVED.” Zhou at 7:1-14. A POSITA would have understood that displaying approval/disapproval messages after exchanging authentication information

constitutes an “*updated user interface . . . includ[ing] . . . a message displayed on the display of the mobile device.*”

106. Likewise, Athwal teaches that customers are informed of successful transactions via a wireless signal to their mobile device. See Athwal at [0030]-[0032]. Following a successful transfer of funds, the system of Athwal “a) Sends 5 a WES to the customers [sic] MCD 110 informing the customer that the transaction has been completed successfully; [and] b) Provides 5 an electronic receipt to the MCD 110[.]” Athwal at [0030]-[0032]. A POSITA would have understood or found obvious that the customer’s MCD would display a representation of the wireless signal to the consumer to represent a completed transaction. A POSITA would have also understood or found obvious that an electronic receipt would be displayed to the consumer. Thus, both of these examples disclose or render obvious *message[s] displayed on the display of the mobile device*. The combination of Zhou and Athwal, therefore, discloses or renders obvious “[t]he method of claim 1 wherein the updated user interface of the mobile device payment application includes . . . a message displayed on the display of the mobile device” as claimed.

3. Claim 3

[3] 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.

107. Because the system of Athwal sends a wireless signal informing the customer of the successful transaction and sends an electronic receipt to the customer following a successful transaction, Athwal discloses or renders obvious “[t]he 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.”

108. After a consumer has selected their desired good and/or service, Athwal explains that an Electronic Retail System forwards “an electronic ‘bill’ to the MCD 110 for the amount of [a] purchase.” Athwal at [0017]. Payment information is transferred from the wireless device to the ERS, which “provides a positive feedback if the funds have transferred correctly” and “a) Sends 5 a WES to the customers [sic] MCD 110 informing the customer that the transaction has been completed successfully; [and] b) Provides 5 an electronic receipt to the MCD 110.” Athwal at [0029]-[0032]. A POSITA would have understood that a wireless signal “informing the customer that the transaction has been completed” is “*information indicat[ing] completion of the transaction between the user of the mobile device and the available payment accepting unit.*” Likewise, a POSITA would have understood that the purpose of an electronic receipt is to memorialize an electronic transaction, which would logically occur after, and thus indicate, “*completion of the transaction.*” Thus, Athwal discloses or renders obvious “[t]he 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” as claimed.

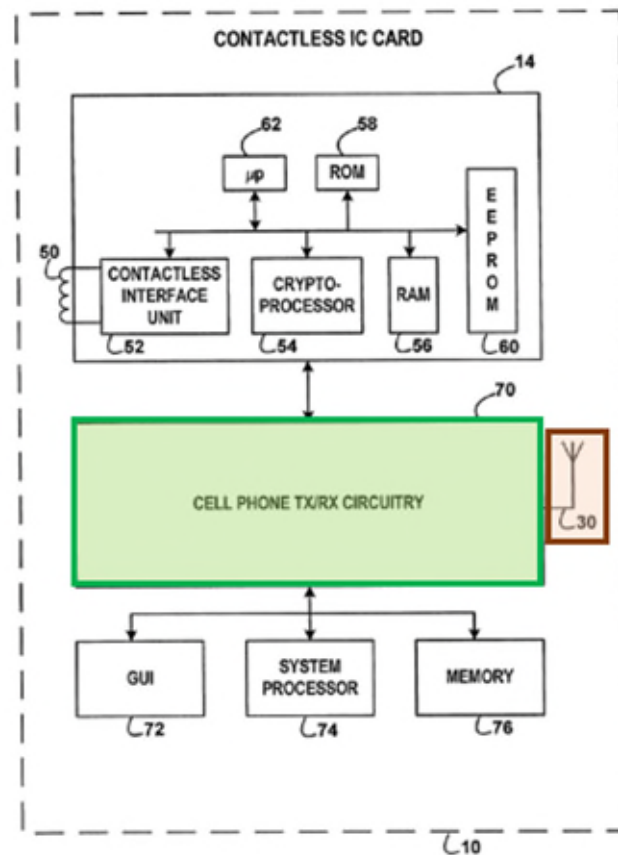
4. Claim 4

[4] 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.

109. Because Zhou discloses a wireless device capable of long-range communication and Athwal discloses sending the amount of a transaction via long-range communication, the combination of Zhou and Athwal disclose or render obvious “[t]he 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.”

110. Zhou describes a wireless communications device that utilizes both short-range and long-range wireless communication: “The wireless communication device 10 is capable of two types of wireless communications: 1) communications over an air interface 24 with the vending machine communications means 16 using the contactless communication device 14, and 2) communications over an air interface 34 with a vending machine authentication server 46 via a radio access network 36, which may . . . take the form of a conventional CDMA cellular telephone

network.” Zhou at 4:12-20. The device also includes an “antenna 30 [that] communicates with a CDMA base transceiver station antenna 32” and “conventional cellular telephone transmit/receive circuitry 70.” Zhou at 4:32-33, 52-55, Fig. 2 (reproduced below).



Zhou at Fig. 2.

111. A POSITA would have understood that both the aforementioned cellular telephone transmit/receive circuitry and antenna communicating with a CDMA base transceiver station constitute “*long range transceiver[s]*.” Such cellular telephone transmit/receive circuitry and antenna communicating with a

CDMA base transceiver station is consistent with the “long-range communication technology” disclosed in the ‘772 patent. See ‘772 patent at 9:46-53 (disclosing “cellular technology (e.g., GSM, CDMA, or the like)” as an example of “long-range communication technology”). Because these transceivers are included in a wireless communications device, Zhou discloses or renders obvious “*mobile device includ[ing] a long range transceiver*” as claimed.

112. Athwal describes transmitting the amount of a completed transaction. As discussed above at paragraphs 106-108, the system of Athwal sends an “electronic receipt” to a consumer’s mobile device once a transaction is complete. A POSITA would have understood that such an electronic receipt would include the “*amount of the completed transaction*” as claimed.

113. Athwal also teaches sending a request for funds to a remote Financial System. See Athwal at [0025]-[0028]. The system of Athwal uses mobile communications device software (“MCDS”) to establish a long-range wireless connection with a Financial System. See Athwal at [0025]-[0028]. Specifically, “the ERSS requests a LRWT data connection from the MCD 120 by invoking the MCDS.” Athwal at [0025]. Next, “[t]he ERSS utilizes the data connection provided by the MCD 110 to establish 3 a secure LRWT connection to its Financial System 160 (e.g., an on-line bank).” Athwal at [0027]. Finally, “[t]he ERSS . . . request a

finds [sic] transfer from the Financial System 160, **in the amount of the price of the goods/service**, from the customer's account to an ERS account." Athwal at [0028] (emphasis added).

114. A POSITA would have understood, or would have found it obvious, that an online bank as described in Athwal would operate on a server, as it was well known in the art as of the earliest priority date of the '772 patent for online financial systems to use servers. Additionally, a POSITA would have understood that the price of the goods/services sent to the Financial System would be equivalent to the *"amount of the completed transaction."* Thus, the combination of Zhou and Athwal discloses or renders obvious *"[t]he 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"* as claimed.

5. Claim 5

[5] The method of claim 1, wherein the information indicates abortion of the transaction initiated by the user of the mobile device.

115. Because Zhou describes aborting a transaction in response to security risk(s) and Athwal discloses notifying a consumer of failed funds transfers, Zhou, either alone or in combination with Athwal, discloses or renders obvious *"[t]he*

method of claim 1, wherein the information indicates abortion of the transaction initiated by the user of the mobile device.”

116. If the authentication process detailed in Zhou does not successfully authenticate a vending machine, “the user sees a VENDING MACHINE NOT APPROVED response (or the like) displayed on the display of their device . . . and [is] able to abort the vending processing prior to transmission of sensitive financial or credit card information.” Zhou at 7:3-8. A POSITA would have understood, or would have found it obvious, that the method of Zhou would also include a notification confirming to a user that the transaction has been aborted to indicate no sensitive payment information has been shared with an unauthenticated vending machine. Thus, Zhou discloses or renders obvious “[t]he method of claim 1, wherein the information indicates abortion of the transaction initiated by the user of the mobile device” as claimed.

117. Athwal teaches “the ERSS provides . . . negative feedback if the funds did not transfer correctly.” Athwal at [0029]. If the ERS receives negative feedback, it “sends 5 a WES to the MCD 110 indicating that there was a problem transferring the finds [sic] and the nature of the problem.” Athwal at [0029]. A POSITA would have understood that a consumer’s decision to abort a transaction is one reason funds may not properly transfer, and the WES sent by the ERS would thus “indicate

abortion of the transaction initiated by the user.” Accordingly, the combination of Zhou and Athwal discloses or renders obvious “[t]he method of claim 1, wherein the information indicates abortion of the transaction initiated by the user of the mobile device” as claimed.

6. Claim 6

[6] 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.

118. Because Athwal describes sending an error message if funds fail to transfer, Athwal discloses or renders obvious “*[t]he 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.*”

119. Athwal teaches “the ERSS provides . . . negative feedback if the funds did not transfer correctly.” Athwal at [0029]. If the ERS receives negative feedback, it “sends 5 a WES to the MCD 110 indicating that there was a problem transferring the finds [sic] and the nature of the problem.” Athwal at [0029]. A POSITA would have understood that a WES “indicating that there was a problem transferring the [funds] and the nature of the problem” is synonymous with “*indicat[ing] failure of the transaction initiated by the user of the mobile device or a malfunction associated with the available payment accepting unit.*” Thus, Athwal discloses or renders

obvious “[t]he 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” as claimed.

7. Claim 8

[8] The method of claim 1, wherein the information reflects availability of the available payment accepting unit to conduct a transaction.

120. Because Zhou teaches displaying price and product information of a vending machine and Athwal describes receiving responsive signals from all nearby available vending machines, Zhou, either alone or in combination with Athwal, discloses or renders obvious “[t]he method of claim 1, wherein the information reflects availability of the available payment accepting unit to conduct a transaction.”

121. Zhou discloses that “[t]he vending machine application presents to the user via the device 10 display . . . and prompts to facilitate a transaction with the vending machine” once a consumer enters a certain proximity threshold of the vending machine. Zhou at 5:32-34. “[T]he vending machine application may . . . obtain product information from the vending machine and present it on the display of the device 10” such information including “price information for the goods[.]” Zhou at 5:36-41. A POSITA would have understood that price and product information pertaining to a vending machine as well as prompts facilitating a

transaction with said vending machine are indicative of the “*availability of the available payment accepting unit to conduct a transaction.*”

122. Athwal teaches a user will search for and send an inquiry to “all available ERS 120 in their vicinity from their MCD 110.” Athwal at [0017]. “All ERS 120 will respond with WES that convey detailed information such as their name, available products and prices. The MCD 110 will display this information to the customer[.]” Athwal at [0017]. A POSITA would have understood, or would have found it obvious, that the responsive signals from available vending machines detailing information such as “name, available products and prices” “*reflect[] [the] availability of the available payment accepting unit to conduct a transaction.*” Thus, the combination of Zhou and Athwal disclose or render obvious “[t]he method of claim 1, wherein the information reflects availability of the available payment accepting unit to conduct a transaction” as claimed.

8. Claim 12

[12] The method of claim 1, wherein the payment operated machines included 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.

123. Because the method of Zhou is expressly applied to any automated machine that provides goods and/or services in exchange for money, including a vending machine, Zhou discloses or renders obvious “[t]he method of claim 1,

wherein the payment operated machines included 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.”

124. The method of Zhou is intended to facilitate transactions with “automated vending machines, kiosks, and the like[.]” Zhou at 1:7-9. Zhou later states that “the term ‘vending machine’ is intended to be interpreted to cover generally any automated machine for vending or providing goods or services with a consumer in exchange for payment, including ATMs, automated kiosks, conventional vending machines, etc.” Zhou at 2:18-23. A POSITA would have understood that “any automated machine for vending or providing goods or services with a consumer in exchange for payment” encompasses “*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, [and] a ticket dispensing machine.*” Accordingly, Zhou discloses or renders obvious “[t]he method of claim 1, wherein the payment operated machines included 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” as claimed.

9. Claim 13

[13(pre)] A mobile device comprising:

125. To the extent the preamble is limiting, Zhou discloses a wireless communications device for transacting with a vending machine, so Zhou discloses or renders obvious “*a mobile device*” for the reasons set forth above in paragraphs 69-74.

[13(a)] one or more radio transceivers; one or more output display 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:

126. Because Zhou expressly describes a wireless device including transceivers, display devices, processors, and memory, Zhou discloses or renders obvious a mobile device including “*one or more radio transceivers; one or more output display devices including a display; one or more processors; and memory*” for the reasons set forth above in paragraphs 69-74.

127. Zhou further discloses that the wireless communications device includes “a main system processor 74, and a memory 76 storing program instructions for execution by the system processor” and these instructions “will typically include applications such as telephone and email applications, as well as web browser, entertainment or game applications, and vending machine applications[.]” Zhou at 4:52-5:2. A POSITA would have understood that this is synonymous with “*memory storing one or more programs to be executed by the one or more processors.*” Thus, Zhou discloses or renders obvious “*one or more radio transceivers; one or more*

output display devices including a display; one or more processors; and memory storing one or more programs to be executed by the one or more processors” as claimed.

[13(b)] 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, the identifying based at least in part on an identifier corresponding to the one or more payment accepting units, wherein the one or more payment accepting units are payment operated machines that accept payment for dispensing of products and/or services;

128. Because Zhou teaches a method of authenticating a vending machine via a wireless communications device and Athwal teaches searching for all nearby machines via a wireless communications device, Zhou, either alone or in combination with Athwal, discloses or renders obvious “*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, the identifying based at least in part on an identifier corresponding to the one or more payment accepting units, wherein the one or more payment accepting units are payment operated machines that accept payment for dispensing of products and/or services*” for the same reasons discussed at paragraphs 75-80 above.

[13(c)] displaying a user interface of the mobile payment application on the display of the mobile device, the user interface being configured to display a visual indication of the one or more payment accepting units and accept user input to (i) receive selection by a user of the mobile device of an available payment accepting unit of the one or more payment accepting units and (ii) trigger payment by the

mobile payment application for a transaction initiated by the user of the mobile device with the available payment accepting unit of the one or more payment accepting units;

129. Because Zhou teaches a mobile application used to transact with vending machines and display notifications regarding authentication, Athwal teaches requesting and receiving detailed identification information from nearby vending machines, and Low teaches a user selecting a subset of available vending machines with which to transact, the combination of Zhou and Athwal, or alternatively the combination of Zhou, Athwal, and Low, discloses or renders obvious “*displaying a user interface of the mobile payment application on the display of the mobile device, the user interface being configured to display a visual indication of the one or more payment accepting units and accept user input to (i) receive selection by a user of the mobile device of an available payment accepting unit of the one or more payment accepting units and (ii) trigger payment by the mobile payment application for a transaction initiated by the user of the mobile device with the available payment accepting unit of the one or more payment accepting units*” for the same reasons discussed above at paragraphs 81-91.

[13(d)] 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;

130. Because Zhou teaches establishing a wireless connection between a consumer's wireless device and vending machines, Zhou discloses or renders obvious *“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”* for the same reasons set forth in paragraphs 92-94.

[13(e)] after establishing the wireless communication path, enabling user interaction with the user interface of the mobile payment application to complete the transaction;

131. Because Zhou discloses a user interface that displays prompts to a user to facilitate transactions with a vending machine after wireless communication has been established, Zhou discloses or renders obvious *“after establishing the wireless communication path, enabling user interaction with the user interface of the mobile payment application to complete the transaction”* for the same reasons disclosed in paragraphs 95-97 above.

[13(f)] exchanging information with the available payment accepting unit via the one or more radio transceivers, in conjunction with the transaction; and

132. Because Zhou discloses sending challenge messages from a wireless device to a vending machine as part of facilitating a transaction, Zhou discloses or renders obvious *“exchanging information with the available payment accepting unit*

via the one or more radio transceivers, in conjunction with the transaction” for the same reasons set forth above at paragraphs 98-100.

[13(g)] after exchanging the information, displaying, on the display, an updated user interface of the mobile payment application to the user of the mobile device.

133. Because Zhou discloses displaying notifications regarding authentication status and Athwal notifies a user upon the successful completion of a transaction, Zhou, either alone or in combination with Athwal, discloses or renders obvious “*after exchanging the information, displaying, on the display, an updated user interface of the mobile payment application to the user of the mobile device*” for the same reasons discussed at paragraphs 101-103 above.

10. Claim 14

[14] 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.

134. Because Zhou discloses a method for transacting with any machine that exchanges goods and/or services for money, Zhou discloses or renders obvious “[t]he 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” for the same reasons set forth above at paragraphs 123-124.

11. Claim 15

[15(pre)] 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:

135. Because Zhou discloses or renders obvious memory that stores instructions for implementation by a processor, Zhou discloses or renders obvious “[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”* for the same reasons set forth at paragraphs 69-74 and 126-127 above.

[15(a)] 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, the identifying based at least in part on an identifier corresponding to the one or more payment accepting units, wherein the one or more payment accepting units are payment operated machines that accept payment for dispensing of products and/or services;

136. Because Zhou teaches a method of authenticating a vending machine via a wireless communications device and Athwal teaches searching for all nearby

machines via a wireless communications device, Zhou, either alone or in combination with Athwal, discloses or renders obvious “*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, the identifying based at least in part on an identifier corresponding to the one or more payment accepting units, wherein the one or more payment accepting units are payment operated machines that accept payment for dispensing of products and/or services*” for the same reasons discussed at paragraphs 75-80 above.

[15(b)] displaying a user interface of the mobile payment application on the display of the mobile device, the user interface being configured to display a visual indication of the one or more payment accepting units and accept user input to (i) receive selection by a user of the mobile device of an available payment accepting unit of the one or more payment accepting units and (ii) trigger payment by the mobile payment application for a transaction initiated by the user of the mobile device with the available payment accepting unit of the one or more payment accepting units;

137. Because Zhou teaches a mobile application used to transact with vending machines and display notifications regarding authentication, Athwal teaches requesting and receiving detailed identification information from nearby vending machines, and Low teaches a user selecting a subset of available vending machines with which to transact, the combination of Zhou and Athwal, or alternatively the combination of Zhou, Athwal, and Low, discloses or renders obvious “*displaying a user interface of the mobile payment application on the*

display of the mobile device, the user interface being configured to display a visual indication of the one or more payment accepting units and accept user input to (i) receive selection by a user of the mobile device of an available payment accepting unit of the one or more payment accepting units and (ii) trigger payment by the mobile payment application for a transaction initiated by the user of the mobile device with the available payment accepting unit of the one or more payment accepting units” for the same reasons discussed above at paragraphs 81-91.

[15(c)] 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;

138. Because Zhou teaches establishing a wireless connection between a consumer’s wireless device and vending machines, Zhou discloses or renders obvious “*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”* for the same reasons set forth in paragraphs 92-94.

[15(d)] after establishing the wireless communication path, enabling user interaction with the user interface of the mobile payment application to complete the transaction;

139. Because Zhou discloses a user interface that displays prompts to a user to facilitate transactions with a vending machine after wireless communication has

been established, Zhou discloses or renders obvious “*after establishing the wireless communication path, enabling user interaction with the user interface of the mobile payment application to complete the transaction*” for the same reasons disclosed in paragraphs 95-97 above.

[15(e)] exchanging information with the available payment accepting unit via the one or more radio transceivers, in conjunction with the transaction; and

140. Because Zhou discloses sending challenge messages from a wireless device to a vending machine as part of facilitating a transaction, Zhou discloses or renders obvious “*exchanging information with the available payment accepting unit via the one or more radio transceivers, in conjunction with the transaction*” for the same reasons set forth above at paragraphs 98-100.

[15(f)] after exchanging the information, displaying, on the display, an updated user interface of the mobile payment application to the user of the mobile device.

141. Because Zhou discloses displaying notifications regarding authentication status and Athwal notifies a user upon the successful completion of a transaction, Zhou, either alone or in combination with Athwal, discloses or renders obvious “*after exchanging the information, displaying, on the display, an updated user interface of the mobile payment application to the user of the mobile device*” for the same reasons discussed at paragraphs 101-103 above.

12. Claim 16

[16] 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 LEDs of the mobile device.

142. Because Zhou, either alone or in view of Athwal, discloses displaying response messages to a consumer via the screen of a wireless device, Zhou discloses or renders obvious “[t]he 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 LEDs of the mobile device” for the same reasons set forth at paragraphs 104-106 above.

13. Claim 17

[17] 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.

143. Because Zhou discloses a wireless device capable of long-range communication and Athwal discloses sending the amount of a transaction via long-range communication, the combination of Zhou and Athwal disclose or render obvious “[t]he 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” for the same reasons set forth at paragraphs 107-114 above.

14. Claim 18

[18] 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.

144. Because Zhou describes aborting a transaction in response to security risk(s) and Athwal discloses notifying a consumer of failed funds transfers, Zhou, either alone or in combination with Athwal, discloses or renders obvious “[t]he 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” for the same reasons set forth in paragraphs 115-117 above.

15. Claim 19

[19] 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.

145. Because Athwal describes sending an error message if funds fail to transfer, Athwal discloses or renders obvious “[t]he 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” for the same reasons set forth at paragraphs 118-119 above.

16. Claim 20

[20] 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.

146. Because Zhou discloses a method for transacting with any machine that exchanges goods and/or services for money, Zhou discloses or renders obvious “[t]he 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” for the same reasons set forth above at paragraphs 123-124.

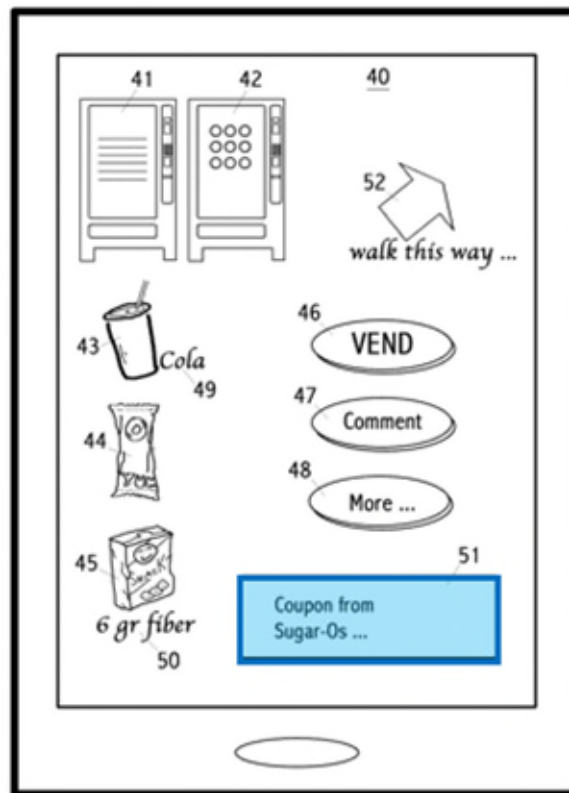
D. Ground 2: Claim 9 is obvious under 35 U.S.C. § 103 over Zhou and Athwal further in view of Low and even further in view of Arora.

1. Claim 9

[9] 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.

147. Because Arora discloses presenting coupons to a customer based on their purchasing history, the combination of Zhou and Arora disclose or render obvious “[t]he 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.”

148. The methods and systems of Arora monitor “[a consumer’s] preferences and purchasing history, including products and typical purchasing times.” Arora at 4:43-44. “Because the app is aware of the customer preferences for purchasing products at a particular time of day or on a particular day of the week, this knowledge may be used to make recommendations or to prioritize recommendations.” Arora at 7:33-37. This knowledge can also be used to offer “[a]dditional, optional, communication from the vending company to the customer [as] shown in the box 51 [such as] a coupon for a product[.]” Arora at 14:5-8, Fig. 3 (reproduced below). Because the coupon is based on the products offered by the nearby vending machine, the coupon is targeted to the user “based on the transaction.”



Arora at Fig. 3 (annotated).

149. A POSITA would have understood, or would have found it obvious, that presenting a consumer coupons based upon the consumer's transaction history and the products available at the nearby vending machine constitutes the consumer "receiving, via the one or more radio transceivers, a coupon that is targeted to the user of the mobile device based on the transaction." Accordingly, the combination of Zhou and Arora discloses or renders obvious "[t]he 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" as claimed.

- E. Ground 3: Claim 10 is obvious under 35 U.S.C. § 103 over Zhou and Athwal further in view of Low and even further in view of Casey.**

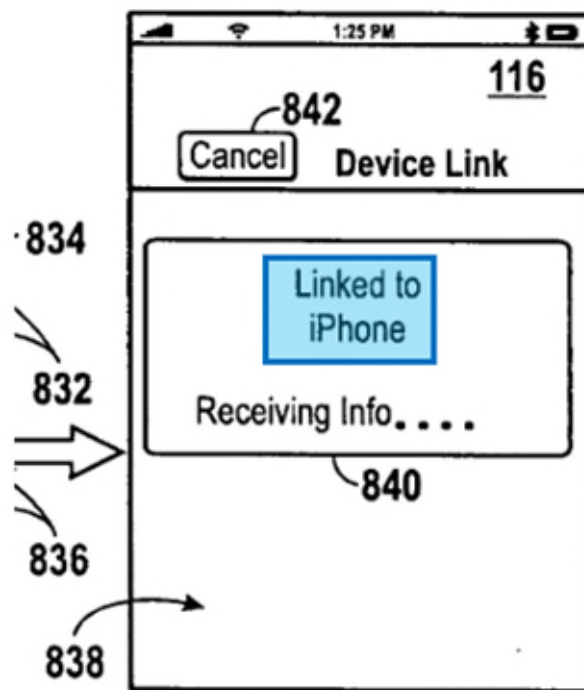
2. Claim 10

[10] 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.

150. Because Casey discloses presenting a notification that a wireless link has been established, the combination of Zhou and Casey discloses or renders obvious “[t]he 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.”

151. Casey incorporates by reference U.S. Patent Application Publication No. 2010/0082485 to Lin. See Casey at 16:43-54. Figure 39 of Lin depicts a user interface of a merchant’s mobile payment application wherein a link has been established between a customer’s iPhone and the merchant’s mobile device. Lin at Fig. 39 (reproduced below), ¶[0050] (“FIG. 39 is a front view of screens of the device of FIG. 30 illustrating a method of linking devices in accordance with one embodiment”); ¶[0041] (“FIG. 30 is a front view of a portable electronic device illustrating another home screen for conducting sales transactions in accordance with

one embodiment”); ¶[0050] (“FIG. 30 illustrates an alternate embodiment of the device 10[.]”); ¶[0064] (“the electronic device 10 may be a model of an iPhone, or a derivative thereof[.]”), Fig. 1 (showing device 10), ¶¶[00259-0261] (describing Fig. 39’s status screen 838 containing display window 840 “indicating the status of the device link”).



Lin at Fig. 39 (annotated).

152. A POSITA would have found it obvious and would have been motivated to display the link notification disclosed by Lin on the consumer’s device in addition to displaying it on the merchant’s device, because a consumer would have wanted to know when the link is established and ready for use for the same reasons as the merchant. That is, a consumer would want to know when the link is

ready so that the transaction can proceed just as the merchant would want to know. Further, a POSITA implementing Lin's method would have been motivated to and would have required the consumer to consent to a link between their device and a merchant's device to avoid the possibility of unwanted or forced links between devices. A POSITA would have found it obvious to display a request for a link on the consumer's mobile device and, once the request is accepted, display a link notification on the consumer's mobile device to notify the consumer of a successful link. A POSITA would have appreciated that displaying the link notification on the consumer's device would have provided the same benefit and improved the device in the same way as Lin's display of the link notification on the merchant's device.

153. A POSITA would have understood that a mobile payment application notifying when a wireless link has been established between a user's iPhone and a merchant's device renders obvious *"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."* Accordingly, the combination of Zhou and Casey discloses or renders obvious *"[t]he 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” as claimed.

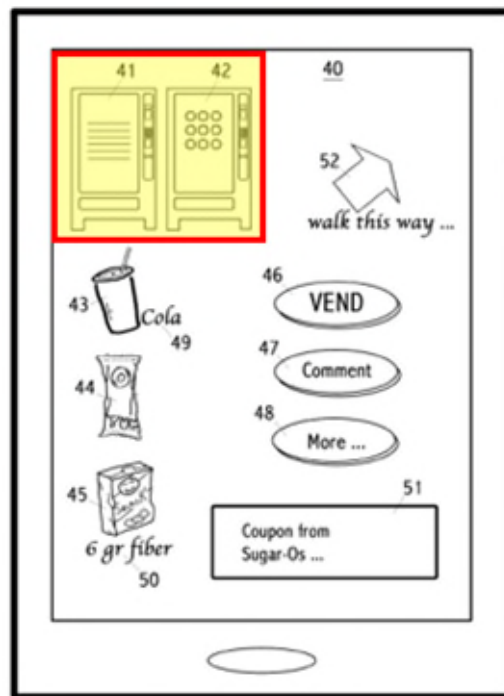
F. Ground 4: Claim 11 is obvious under 35 U.S.C. § 103 over Zhou and Athwal further in view of Low and even further in view of Arora, Casey, and Freeny

[11] The method of claim 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; an indication of a prepared balance; 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 a swipe on the affordance displayed on the display of the mobile device.

154. Because Zhou discloses a vending machine application that provides visual representations pertaining to approval status of a vending machine, Arora teaches displaying icons or photographs representing vending machines, Freeny discloses storing an approved credit amount, and Casey teaches moving a graphical element to confirm a transaction, the combination of Zhou, Athwal, Low, Arora, Casey, and Freeny discloses or renders obvious “[t]he method of claim 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; an indication of a prepared balance; 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 a swipe on the affordance displayed on the display of the mobile device.”

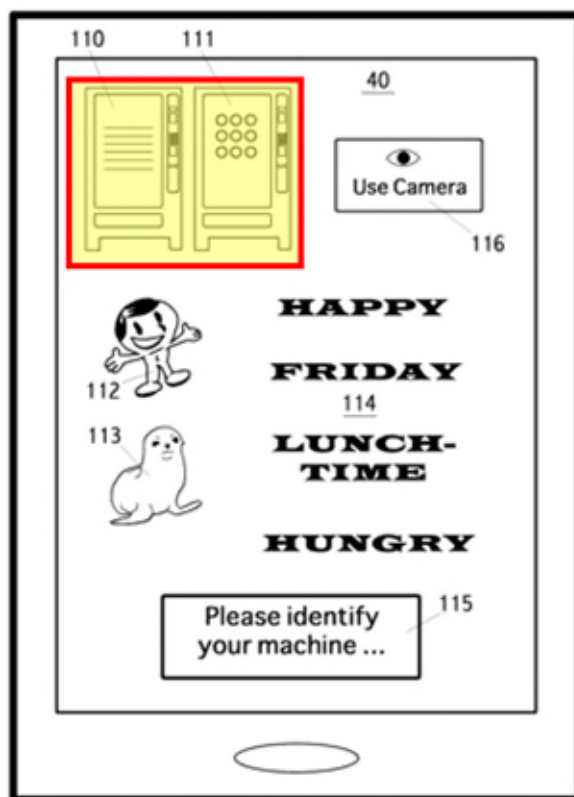
155. As discussed above at paragraphs 68, 83, 86, 102, and 105, Zhou discloses providing notifications regarding the authorization status of a vending machine to the user of a wireless communications device. A POSITA would have understood that these messages are “*visual representation[s] of the available payment accepting unit.*” Thus, Zhou discloses or renders obvious “*the method of claim 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*” as claimed.

156. Further, Arora teaches that the screen of a “personal electronic device” displays “icons or photographs 41 and 42 [that] are representative of two actual machines co-located with a customer and owner of the personal electronic device[.]” Arora at 13:47-52, Fig. 3 (reproduced below).



Ex.1007, Fig. 3 (annotated).

157. Arora also discloses that this display can indicate differences between vending machines. See Arora at 19:34-36. For example, Figure 7 (reproduced below) shows “[t]wo different vending machine types[], 110 and 111. Machine type 110 vends consumer packaged goods (CPG), while machine 111 vends beverages.” Arora at 19:34-36, Fig. 7.



Arora at Fig. 7 (annotated).

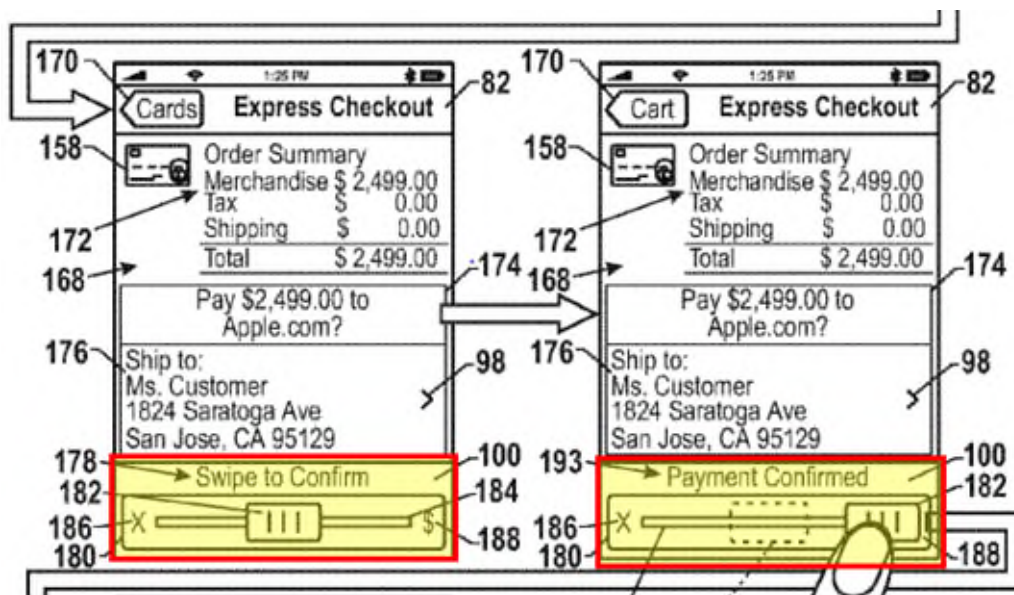
158. A POSITA would have understood that showing representations of vending machines to a consumer via a display constitutes “*a visual representation of the available payment accepting unit.*” Thus, the combination of Zhou and Arora also discloses or renders obvious “*the method of claim 1, wherein the user interface of the mobile payment application, after establishing the wireless communication path, includes: a visual representation of the available payment accepting unit*” as claimed.

159. Freeny teaches a proximity authorization method wherein a consumer’s wireless device may make a “customer bank balance request after the customer is

79

connected to their bank.” Freeny at 9:32-35. The wireless device may also “operate just like a smart card with the approved credit amount stored in the proximity authorization unit 2910 until transactions are authorized[.]” A consumer’s credit balance “can be checked at any time by the user[.]” A POSITA would have understood that displaying an approved credit amount and credit balance constitutes “*indication[s] of a prepared balance.*”

160. Casey discloses a user interface allowing a user to swipe the screen of their wireless device to confirm a transaction. *See* Casey at 14:13-21. Specifically, “a user may user her finger 190, or another object, to move the graphical element 182 from a center position 192 to the confirmation position 188. In response to, or contemporaneously with, the movement, the device 10 may display a message 193 indicating that they payment has been confirmed. When the graphical element 182 reaches the confirmation position 188, the device 10 may transmit payment information to confirm the payment transaction.” Casey at 14:13-21, Fig. 5 (reproduced below).



Casey at Fig. 5 (annotated).

161. A POSITA would have understood that the sliding graphical element of Casey, which initiates transmitting payment information upon reaching a confirmation position, to constitute an “affordance” that “is slid in response to receiving a user input of swipe on the affordance displayed on the display of the mobile device.” Accordingly, the combination of Zhou, Athwal, Low, Arora, Casey, and Freeny discloses or renders obvious “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; an indication of a prepared balance; 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 claimed.

IX. 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.

Date:

10/5/2023B. Clifford Neuman