

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CSC SERVICEWORKS, INC.,
Petitioner,

v.

PAYRANGE, INC.,
Patent Owner.

IPR2023-01187
U.S. Patent No. 10,438,208

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

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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. 10,438,208 (“the ‘208 patent”) to Patel *et al.*

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

3. I have been asked to provide my opinions regarding whether claims 1-20 (“the challenged claims”) of the ‘208 patent are unpatentable insofar as they would have been anticipated by and/or 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 limitations of the challenged claims would have been anticipated and/or obvious to a POSITA.

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

- The ‘208 patent, Ex.1001;
- The prosecution history of the ‘208 patent (“‘208 file history”), Ex.1002;
- U.S. Patent No. 8,958,846 to Freeny (“Freeny”), Ex.1004;

- Amir Kou, Payment Technologies for E-Commerce, (“Kou”), Ex.1005; and
- U.S. Patent Application Publication No. US 2013/0054016 A1 to Canter *et al.* (“Canter”), Ex.1006.

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 1008. 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, a 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 '208 patent is December 18, 2013. A person of ordinary skill in the art ("POSITA") in the field of the '208 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 '208 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 '208 patent.

IV. RELEVANT LEGAL STANDARDS

21. I am not an attorney. In preparing and expressing my opinions and considering the subject matter of the '208 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 '208 patent includes patents and printed publications in the relevant art that predate the priority date of the alleged invention recited in the '208 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 ‘208 patent relates to systems and methods for automatically interacting with an unattended retail machine “by communicating with an electronic payment device that is coupled with an internal interface of the unattended machine.” ‘208 patent at 1:23-33. The background of the ‘208 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 ‘208 patent’s filing date. ‘208 patent at 2:4-3:54. For example, it was already known that mobile payments could be completed using a machine “that is designed to communicate with a cellular phone such that it dispenses a product when it receives information indicating that the product has been selected.” ‘208 patent at 2:37-40. The prior art systems included “an interface to communicate with users, a communications system that enables it to act as part of a network and communicate with a central system, and a controller, that articulates the

communication among the above mentioned components, so as to enable a central system to perform diverse actions on a vending machine” as well as authorization performed by a “remote payment server.” ‘208 patent at 2:12-17, 51:54.

27. But, according to the ‘208 patent specification, the ‘208 patent seeks to minimize or eliminate user interaction with the mobile device. ‘208 patent at 10:64-11:2. According to its specification, the ‘208 patent purportedly achieves this goal by utilizing a “Manual (Swipe to Pay) Mode,” wherein a user gestures on the display of a mobile device to effect a transaction with a vending machine, and a “Hands-Free Mode,” wherein the user’s mobile device automatically connects with a “payment accepting unit” and the user need only select a product or service on the vending machine display. ‘208 patent at 10:65-11:57.

28. As explained in further detail below, this purported benefit of the ‘208 patent was not novel. Each of the limitations in the ‘208 patent claims are found in prior art references before the date of the ‘208 patent, including in the Freeny, Kou, and Canter references.

VI. OVERVIEW OF THE ‘208 PATENT

29. The ‘208 patent relates to the use of trigger conditions and authorization grants to facilitate transactions between mobile devices and unattended retail machines. ‘208 patent at 1:22-33. The specification of the ‘208 patent acknowledges that “unattended retail machines” have “been around for thousands of years.” /208

patent at 1:36-40. The specification refers to vending machines as both “unattended retail machines” and “payment accepting units.” ‘208 patent at 1:36-59. Other examples of “payment accepting units” include: parking meters, toll booths, laundromat washers and dryers, arcade games, kiosks, photo booths, and toll booths, transit ticket dispensing machines.” ‘208 patent at 1:48-59.

30. The ‘208 patent claims systems and methods for mobile transactions with payment accepting units. The payment accepting unit includes an adapter module which communicates with a customer’s personal mobile device, such as a smartphone or tablet, via a short-range communications technology (*e.g.*, Bluetooth). ‘208 patent at 3:65-4:5. 12:32-55. The adapter module sends an authorization request for funds to the user’s mobile device, which then forwards that request to the server using long-range communication technology such as Wi-Fi or a cellular connection. ‘208 patent at 4:1-15. The server then sends an authorization grant back to the mobile device via long-range communication technology, and the mobile device “forwards the authorization grant for funds to the adapter module using short-range communication technology.” ‘208 patent at 4:11-18. The payment accepting unit then dispenses the selected item or service. ‘208 patent at 4:18-21; Fig.5.

31. A schematic of the transmitted communications between the payment accepting device, the customer's mobile device, and the servers is summarized in Figure 5 of the '208 patent:

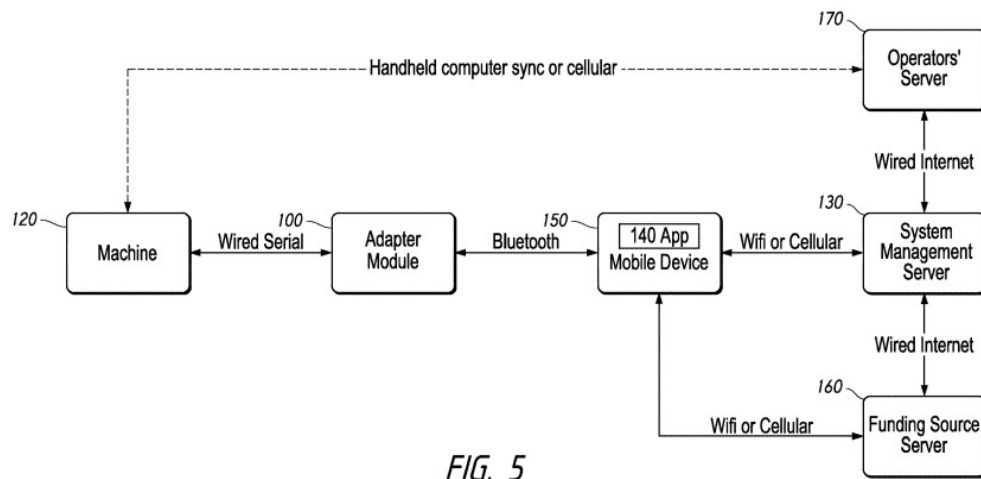


FIG. 5

'208 Patent, Fig.5

32. The '208 patent claims various other features of a mobile payment system, including the use of separate communication, authorization, and payment “zones.” The “communication zone” is the “Bluetooth range” of the adapter module, within which the mobile device may receive advertisements from the adapter module. '208 patent at 6:10-33, 23:12-19. The “authorization zone” is a zone within which the adapter module may manually or automatically send an authorization request from the adapter module to the mobile device. '208 patent at 6:10-24, 23:20-54. The “payment zone,” which may be within the authorization zone, is the area in which the mobile device may forward the authorization grant of funds to the adapter module. '208 patent at 6:10-24, 23:55-24:20.

VII. CLAIM CONSTRUCTION

33. It is my understanding that in order to properly evaluate the ‘208 patent, the terms of the claims must first be interpreted. It is my understanding that for the purposes of this *inter partes* review, the claims are to be construed under the so-called *Phillips* standard, under which claim terms are given their ordinary and customary meaning as would be understood by one of ordinary skill in the art in light of the specification and prosecution history, unless the inventor has set forth a special meaning for a term. For the purposes of my analysis below, I do not believe any claim terms require explicit construction.

VIII. IDENTIFICATION OF HOW THE CLAIMS ARE UNPATENTABLE

34. I have been asked to provide my opinions as to whether the challenged claims of the ‘208 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 ‘208 patent.

35. As part of my analysis, I have considered the scope and content of the prior art and any differences between the alleged invention and the prior art. I describe in detail below the scope and content of the prior art, as well as any differences between the alleged invention and the prior art, on an element-by-element basis for each challenged claim of the ‘208 patent.

36. As described in detail below, the alleged invention of the challenged claims is anticipated or 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 Freeny

37. Freeny discloses three embodiments of a communication and proximity authorization system: (1) a Pico Pay System (“PPS”), (2) a Proximity Authorization Transaction System (“PATAS”), and (3) a “Master Proximity Authorization System.”

38. Freeny’s first embodiment is the PPS, which facilitates connecting multiple wireless devices to public communications services. Freeny at 1:24-25. The PPS includes a “computer unit” that connects to and controls a “wireless front end unit.” Freeny at 6:32-34. The wireless device front end unit includes a multiple channel wireless transceiver, which receives “request authorization codes” from “a plurality of wireless devices” when the wireless devices enter within “a pre-determined proximity distance” (an authorization zone). Freeny at 6:45-53. The PPS obtains “connection authorization” either by obtaining credit card information or entering a request authorization code.

39. Freeny’s second embodiment is the PATAS, which discloses adding various components such as but not limited to the “Advanced Wireless

Authorization Unit (“AWAU”) to “payment accepting units” like a vending machine. Freeny at 9:50-10:25. The addition of components such as the AWAU allows a customer to wireless operate “payment accepting units” that would not otherwise have had wireless capabilities. Freeny at 10:20-25. Freeny makes clear that any number of pre-existing systems (including vending machines) can be supplemented with components such as the AWAU. Freeny at 2:8-19.

40. Like the PPS of the first embodiment, the AWAU is provided with a wireless transceiver that receives request authorization codes from a plurality of wireless devices once those devices enter into “a predetermined proximity distance” (the authorization zone) of the payment accepting unit. Freeny at 11:18-31. The wireless transceiver can detect when a wireless device enters a proximity distance associated with the payment accepting unit. Freeny at 12:65-13:2. Moreover, a customer’s wireless device may automatically or manually activate upon entering the previously discussed proximity distance. Freeny at 13:49-59.

41. Once the wireless device enters one proximity distance, the wireless transceiver can detect a “first signal strength” and begin an authorization process. Freeny at 13:2-43. The transceiver can also detect a “second signal strength” at a closer proximity distance to the payment accepting unit. Freeny at 13:2-11. After the authorization process initialized at the first proximity distance results in an approved authorization, a “service authorization code” is output to a “legacy

activation unit' and the requested good/service is provided to the customer. Freeny at 14:37-44. In systems like vending machines, the PATAS removes the need for a customer to carry cash or credit cards. Freeny at 30:9-13.

42. Freeny's third embodiment is a "Master Proximity Authorization System," which facilitates the activation of "proximity service units." Freeny at 30:45-62. This embodiment allows for either automatic or manual activation of "payment accepting units" by mobile devices, such as a "proximity authorization unit" specifically disclosed in Freeny when the mobile device enters a "predetermined proximity distance." Freeny 32:45-62.

43. The Master Proximity Authorization System differentiates between a first proximity distance and a second proximity distance, activating certain features (*i.e.*, those that do not require physical contact with the vending machine) at the first distance and activating menu features at the second distance. Freeny at 32:49-65. A request authorization code is transmitted from the wireless device to the wireless adapter element to begin the authorization process. Freeny at 32:65-33:4.

b. Summary of Kou

44. Kou is a textbook published by Springer-Verlag Berlin Heidelberg GmbH ("Springer"), which is an established publisher of textbooks and other academic works. Kou relates to payment methodologies for electronic transactions. Chapter 12 of Kou, entitled "Micropayments" illustrates a typical, well-known

framework for authorizing mobile payments in consumer-initiated transactions. Kou at 249; Fig.12.3.

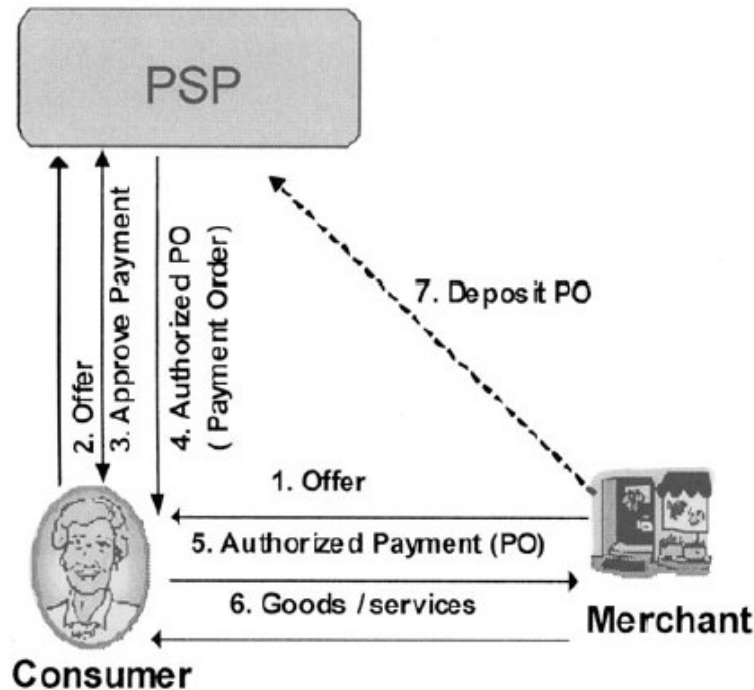


Fig. 12.3 Online payments invoked by consumer

Kou at 249, Fig.12.3

45. In this framework, a consumer initiates a transaction. This then prompts the merchant to respond with an offer. Kou at Fig. 12.3. This offer may be accompanied by a “request for authorization” to ensure the consumer has sufficient funds to execute the transaction. The consumer then forwards the offer to a Payment Service Provider (“PSP”), that “operate[s] as an efficient server application.” Kou at 248. The PSP sends an authorization for funds back to the consumer, who forwards

the authorization to the merchant. Kou at Fig. 12.3. At this point, the consumer is allowed to select their desired goods/services. Kou at Fig. 12.3.

46. Kou also teaches a pre-authorization method. Kou at 276. This pre-authorization method allows a PSP to authorize a maximum amount of funds for a transaction with a specific merchant. Kou at 276. To increase efficiency of its transaction framework, Kou also teaches using “one-time...public key digital signature[s],” which expire after a single use. Kou at 278.

c. Summary of Canter

47. Canter relates to retail transactions with unattended retail machines (e.g., vending machines) and teaches personalizing the customer experience at any given vending machine using “detailed consumer profile information.” Ex.1006 ¶¶[0002], [0016], Fig.4 (reproduced below). Canter discloses receiving such information from a customer’s mobile device during a wireless transaction by offering incentives, such as “a discount or loyalty program rewards points.” Ex.1006 ¶¶[0016], [0027].

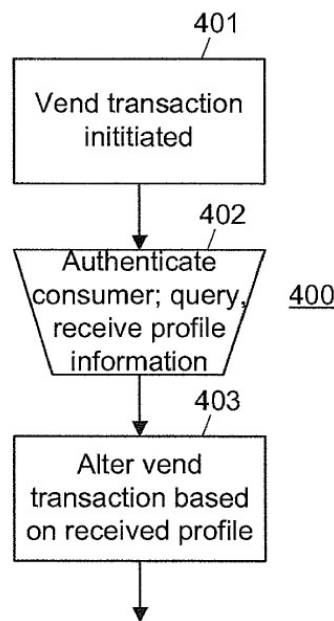


FIGURE 4
Ex.1006, Fig.4.

48. Canter also discloses an authorization process taking place at a vending machine's "consumer user interface 204," (e.g., touch screen) before a wireless transaction is initiated. Ex.1006 ¶¶[0020], [0026], Fig. 2. The vending machine detects "user devices within communications range, selected based on proximity or other criteria" and displaying "a list of names or 'tags' identifying various user devices." Ex.1006 ¶[0026]. The vending machine then prompts a user to "select one of the names or tags, followed by an invitation for the consumer to enter a personal identification number (PIN) that may be used by the vending machine to authenticate that the selected user device is actually possessed by the consumer engaged in the vend transaction." Ex.1006 ¶[0026]. According to Canter, "[s]uch authentication

would be inherent and/or necessary, for example, to use of a user device [] to authorize payment on a credit or debit account” Ex.1006 ¶[0026].

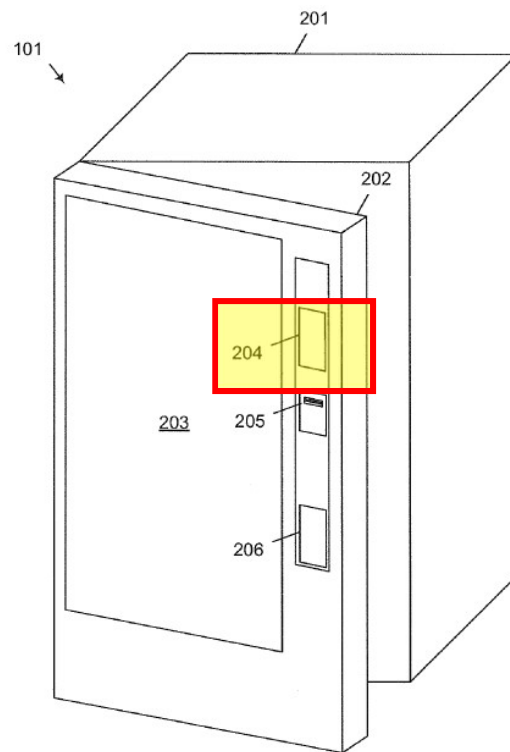


FIGURE 2

Ex.1006, Fig.2 (annotated).

B. Reasons to Combine

a. Kou and Canter are Analogous to Freeny and the ‘208 Patent.

49. In my opinion, Freeny, Kou, and Canter are each analogous art to the ‘208 patent. All three prior art references relate to electronic payment systems, and all of them describe applying their teachings to unattended retail machines, such as vending machines. *See* Freeny at 2:8-20 (“The specific improved proximity systems include...(13) vending machine systems...”); Kou at 276 (“When the PSP pre-

authorizes payments...it actually delegates it [sic] authority to the customer, who provides the final payment authorization directly to the merchant or point-of-sale (e.g., vending machine.”); Canter at [0003] (“Vending machines offer unattended sales of commodities such as snacks, canned or bottled beverages...”). This is the same art to which the ‘208 patent relates. *See* ‘208 patent at 3:58-61 (“Disclosed herein are mobile-device-to-machine payment systems . . .”), 1:23-26 (describing the field as relating to interactions with unattended retail machines using electronic payment devices).

50. With regard to Kou, both Freeny and Kou describe authorization processes and communications between a vending machine and a mobile device, and between a mobile device and a remote server or processor. *See* Freeny at 13:2-43, 32:49-33:4; Kou at 249, 276-78. As such, both Freeny and Kou are analogous art to the ‘208 patent. ‘208 patent at 3:58-4:20.

51. With regard to Canter, both Freeny and Canter describe vending machine transactions initiated by mobile devices via near-field communications. *See* Freeny at 11:26-31, 31:12-42; Canter at [0014]. As such, both Canter and Freeny are analogous art to the ‘208 patent. ‘208 patent at 4:9-21.

b. Reasons to Combine Freeny and Kou

52. A POSITA would have been motivated to combine Freeny's systems and methods for automatic transactions with the authorization frameworks described in Kou. It would have been obvious, beneficial, and predictable to do so.

53. Freeny itself recognizes that an "authorization process" is one step of its proximity authorization system. In particular, Freeny teaches that a wireless transaction requires authorization in advance of the vending machine providing the selected goods/services. Freeny at 13:2-43, 32:65-33:4. Freeny assumes that a POSITA would have knowledge of basic transaction and authorization frameworks and the ability to implement those frameworks, as the specification describes the authorization process only at a high level.

54. A POSITA starting with the high-level description of authorization in Freeny would have looked to Kou for more detailed teachings about the traditional frameworks of remote authorization, including pre-authorization and limited use authorization signatures. Kou at 248-49, 276-78, Fig. 12-3. A POSITA would have recognized that the authorization frameworks taught by Kou would have improved the Freeny system, in the same way, to improve the efficiency of the remote authorization.

55. Kou teaches the framework used in most consumer-initiated electronic transactions, as well as pre-authorization for a predetermined maximum amount of

funds, and one-time digital authorization signatures. Kou at 248-49, 276-78, Fig. 12-3. A POSITA would have understood all of these authorization methods to be suitable options for the “authorization process” required by Freeny. Moreover, Kou teaches using timers to expire “stale” transactions. Kou at 202, 242.

56. A POSITA would have had a reasonable expectation of success in making the combination between Freeny’s system and Kou’s authorization techniques and methods. Kou describes both frameworks that are regularly used in consumer-initiated transactions and authorization methods that lead to better efficiency in remote authorization. Thus, a POSITA would have naturally expected success.

57. These modifications to Freeny’s system would have been within the level of ordinary skill in the art, especially because Freeny teaches the use of an authorization process to effect wireless transactions between mobile devices and vending machines, so the POSITA would have been familiar with authorization techniques. Freeny at 13:2-43, 32:65-33:4. It would have been within the background knowledge and standard capabilities of a POSITA to incorporate authorization techniques (including Kou’s pre-authorization) to make the authorization process more efficient.

58. The combination of Freeny and Kou represents applying known techniques (authorization methods) to a known device ready for improvement

(Freeny's system for wireless transactions) to yield predictable results (improved efficiency in the remote authorization process).

c. Reasons to Combine Freeny and Canter

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

60. First, Canter discloses a specific interface by which authenticated (*i.e.*, authorized) mobile devices can be unambiguously identified to ensure vending machine purchases are paid for by the right customer. *See* Ex.1006 ¶ [0026]. Freeny discloses communications protocols for use in authorizing vending machine payments, *see, e.g.*, Freeny at 32:49-33:4, 34:56-35:11, but it omits details about a menu interface for the vending machine. A POSITA would have found it obvious to apply interface details taught by Canter to the vending machines in Freeny's system because Canter supplies details missing from Freeny.

61. Second, Canter recognizes that a vending machine incorporating its teachings may be part of a larger vending machine network, for example, teaching that "VMC 301 is also coupled to and communicates with a communication interface 303 enabling data transfer to external devices, such as . . . a network operations center or another vending machine." Ex.1006 ¶ [0021]. Moreover, Canter teaches benefits from applying its teachings in the context of such a network, including

leveraging “limited information that the customer has authorized to be transferred from the user device 106 to the vending machine 101” using remotely located “servers 103 and/or 104.” *Id.* ¶ [0028].

62. Freeny contemplates a similarly widespread vending machine network. For example, Freeny describes a network of vending machines being operated remotely through to single, centralized web portal “based on a single set of customer ID and wireless device information.” Freeny at 30:28-33; *see also id.*, 29:55-57 (“Vending machine systems are currently installed in almost every conceivable place and offer almost every conceivable product.”). A POSITA would recognize the similarities between Freeny’s centralized web portal and Canter’s servers, which Canter uses to leverage customer information. *See* Ex.1006 ¶ [0028]. Accordingly, it would have been obvious to improve Freeny by implementing Canter’s teachings about collecting and leveraging customer information, *e.g.*, using loyalty rewards as incentives, in order to gain the benefits proposed by Canter, including personalizing the customer experience. Implementing the teachings of Canter would not interfere with the combination of Freeny and Kou. Thus, a POSITA would also have found it obvious to combine Canter with the combination of Freeny and Kou.

C. Ground 1: Claims 1-2, 5-13, and 16-18 are obvious under 35 U.S.C. § 103 over Freeny in view of Kou.

1. Claim 1

[1(pre)] A method comprising:

63. Freeny discloses a method. Freeny at 26:13-16 (“Although these can be implemented in a number of ways by those skilled in the art, a preferred **method** which improves existing checking methods is as follows.”) (emphasis added), 31:12-15 (“The invention also relates to a unique **method for activating proximity service units** 2920 wherein each proximity service unit 2920 provides a predetermined service in response to receiving a request authorization code.”) (emphasis added). A POSITA would have understood that the disclosure of Freeny is a method.

[1(a)] at a mobile device with one or more processors, memory, and a communications unit, and prior to user selection of any items or services provided by an automatic retail machine:

64. Because Freeny discloses using any number of wireless devices to interact with a “public communications unit” using a wireless link, and Kou discloses pre-authorization, Freeny, alone or in view of Kou, discloses “*a mobile device with one or more processors, memory, and a communications unit, and prior to user selection of any items or services provided by an automatic retail machine*” as claimed.

65. The “public communications unit” or Freeny is an automatic retail machine that “several hundred wireless callers can each use.” Freeny at 5:58-

59. Freeny also discloses interacting wirelessly with various automatic retail machines, including “(1) vehicle toll systems . . . (4) ATM systems . . . [and] (13) vending machine systems . . .” via wireless device. Freeny at 2:8-19. Further, the wireless devices disclosed in Freeny include such devices as “a simple wireless home phone,” “a sophisticated portable computer” (i.e., laptop computer), a “PDA [] that has an infrared modem with multimedia capability,” or “analog and digital cell and pager phones.” Freeny at 5:12-28.

66. A POSITA would have understood that the wireless devices disclosed in Freeny would all have “*one or more processors, memory, and a communications unit*” for use in transmitting and receiving wireless signals, so said wireless devices are “*mobile devices with one or more processors, memory, and a communications unit.*”

67. Additionally, Freeny teaches a *mobile device* embodied by its description of a “proximity authorization unit” (“PAU”). Freeny specifically discloses that the PAU has “a portable housing,” “a computer unit,” “and a transmitter/receiver unit.” Freeny at 30:63-65, Fig. 30.

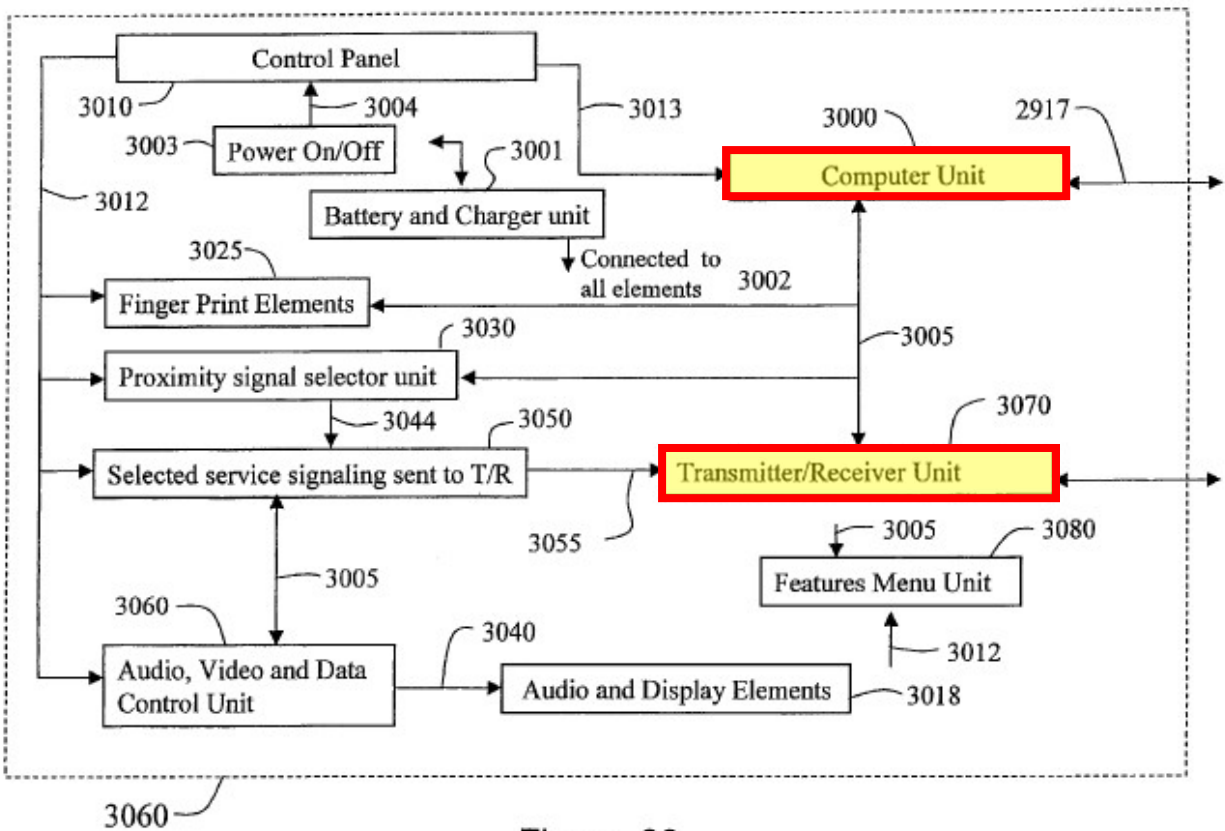


Figure 30

Freeny at Fig. 30 (annotated).

68. Freeny also states that the computer unit shown in Fig. 30 above includes a processor and data storage with “program memory.” See Freeny at 34:7-8, 12-14 (“there is the computer unit [] such as a Motorola 68000 series or TI DSP 6000 series unit or a **modified Ericsson Bluetooth Baseband Processor...**”). Thus, a POSITA would have understood from Freeny’s description that the PAU is a “mobile device with one or more processors, memory, and a communications unit.”

69. Freeny describes mobile devices “activating” an assortment of *automatic retail machines* in advance of conducting a transaction with said devices. Freeny at 6:44-54, 13:22-54, 14:37-47, 31:16-42, 32:31-33, 32:50-60. In one

example, Freeny discusses the PAU or other wireless device transmitting a “request authorization code” that activates a vending machine. Freeny at 13:7-11, 32:50-55. Freeny also describes a vending machine being “activated...at one distance for services not requiring the owner of the proximity authorization unit [] to physically use the menu on the...vending machine system.” Freeny at 32:55-60. A POSITA would have understood that a consumer would require use of the menu before they are able to select their desired good or service. Accordingly, a POSITA would have understood that the authorization steps which occur at this distance are occurring “*prior to user selection of any items or services provided by an automatic retail machine.*”

70. Additionally, a POSITA would have found it obvious to perform the authorization step “*prior to user selection of any items or services provided by an automatic retail machine,*” as Kou teaches a pre-authorization technique. Kou at 276. The pre-authorization method of Kou involves a PSP authorizing “customer payments up to a pre-defined limit to a specific merchant.” Kou at 276. A POSITA would have understood that this pre-authorization takes place “*prior to user selection of any items or services provided by an automatic retail machine*” as claimed.

71. A POSITA would have been motivated to combine the pre-authorization technique of Kou with Freeny’s proximity transaction system because

implementing such a technique reduces the “airtime cost,” which can be prohibitive of profitable microtransactions. *See* Freeny at 29:63-65, Kou at 274-76. Thus, Freeny either discloses or, in combination with Kou, renders obvious “*a mobile device with one or more processors, memory, and a communications unit, and prior to user selection of any items or services provided by an automatic retail machine*” as claimed.

[1(b)] notifying an electronic payment device coupled with the automatic retail machine that the mobile device has entered an authorization zone associated with the automated retail machine;

72. Because Freeny discloses system components that interact with legacy automatic retail machines (e.g., vending machines) to authorize transactions via a consumer’s wireless device, Freeny discloses “*notifying an electronic payment device coupled with the automatic retail machine that the mobile device has entered an authorization zone associated with the automated retail machine*” as claimed.

73. Freeny discloses an assortment of ATM systems, vending machine systems, toll payment systems, etc. which are all considered *automatic retail machines* by the ‘208 patent. ‘208 patent at 1:48-59; Freeny at 2:8-25. Freeny further describes that any device providing a “predetermined service upon activation” is a proximity service unit, and specifically contemplates “an ATM system, a vending machine system, a gas pump system, a store checkout system, [or] a toll booth

system.” Freeny at 31:34-40. A POSITA would have understood that all of the proximity service units listed in Freeny are examples of “*automatic retail machines.*”

74. Further, Freeny teaches that its invention is intended to allow wireless operation of “existing proximity systems” as an alternative to the ‘original device 710 L . . . that operates the original [proximity] system.” Freeny at 10:26-41, 15:7-12. To accomplish this, Freeny adds (*i.e., coupl[es]*) certain components to existing proximity machines. Freeny at 10:26-64, 11:32-36, 15:7-12. Freeny expressly teaches adding new components such as a “physical adapter element [and] a wireless adapter element” to an existing proximity unit. Freeny at 31:54-57, 35:51-59, Fig. 31. These components act as alternatives or replacements for traditional payment methods like a “coin payment box.” Freeny at 11:38-43, 30:9-11, 37:60-38:7.

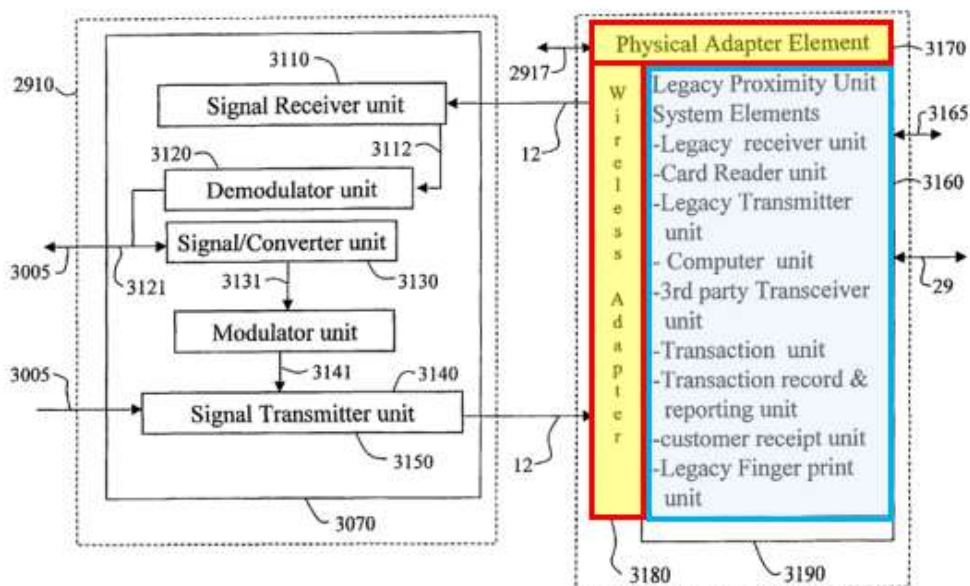


Figure 31

Freeny at Fig. 31 (annotated).

75. Freeny also teaches “notifying [the] electronic payment device . . . that the mobile device has entered an authorization zone associated with the automated retail machine” because it discloses a wireless device initiating an authorization process by transmitting a signal, which may include a “request authorization code” and/or a “preamble code” to the AWAU or wireless adapter element. Freeny at 31:16-20, 32:66-33:2. The wireless device may initiate the authorization sequence either automatically or manually upon entering a predetermined proximity distance from the AWAU. Freeny at 11:18-31, 32:51-55. A POSITA would have understood that the “predetermined distance” is equivalent to the authorization zone, while the transmission from the wireless device including the request authorization code notif[ies] the electronic payment device.

76. Because Freeny describes activating a vending machine system that includes components constituting an *electronic payment device* once a *mobile device* enters a predetermined proximity distance (*i.e., authorization zone*) of the vending machine system, Freeny discloses or renders obvious “*notifying an electronic payment device coupled with the automatic retail machine that the mobile device has entered the authorization zone associated with the automated retail machine*” as claimed.

[1(c)] in response to notifying the electronic payment device that the mobile device has entered the authorization zone, receiving from the electronic payment device, via the communications unit, a request to preemptively obtain authorization to make funds available for cashless transactions with the automatic retail machine;

77. Because Freeny describes a proximity authorization system and a POSITA would have found it obvious to supplement Freeny's system with the pre-authorization framework described in Kou, Freeny, in combination with Kou, discloses or renders obvious "*in response to notifying the electronic payment device that the mobile device has entered the authorization zone, receiving from the electronic payment device, via the communications unit, a request to preemptively obtain authorization to make funds available for cashless transactions with the automatic retail machine*" as claimed.

78. Freeny describes collaboration between "a service company and a wireless company" so that a consumer can make purchases after receiving approval from a credit card company over the phone. Freeny at 29:57-63. Further a consumer using a PAU can refill (authorize) additional funds during a transaction with a vending machine. Freeny at 38:7-14. Freeny extends its preemptive authorization to other services, such as a toll/subway system. Freeny at 13:34-37. A POSITA would have understood that the aforementioned examples are all "*request[s] to preemptively obtain authorization to make funds available for cashless transactions with [an] automatic retail machine.*"

79. Freeny also discloses an “authorization process,” by which the customer obtains authorization to enter into a transaction with a proximity service unit. Freeny at 32:66-33:2. A POSITA would have understood that this “authorization process” could be used in combination with a pre-authorization scheme for payment, like that disclosed in Kou.

80. Kou discloses that a typical framework for a transaction invoked by a consumer involves a merchant sending an offer to a consumer as part of the authorization process. Kou at Fig. 12.3. Kou also discloses a pre-authorization method to reduce communication costs for micropayment systems. Kou at 274-76. Thus, a POSITA would have known to incorporate this pre-authorization method into both offer depicted in Figure 12.3.

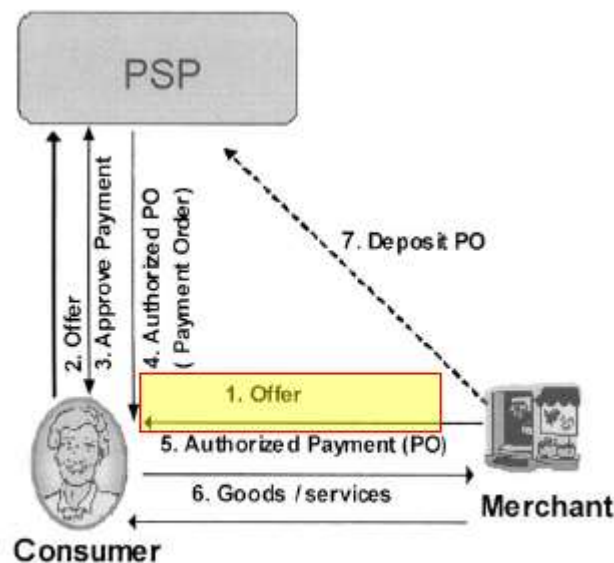


Fig. 12.3 Online payments invoked by consumer

Kou at Fig. 12.3 (annotated).

81. A POSITA would have also known to apply the teachings of Kou in systems like that of Freeny. Kou explains that the authorization framework of 12.3 is most useful when the consumer is able to communicate with the PSP. Kou at 274. Kou also explains that the consumer is usually able to communicate with the PSP “when paying using communication devices, such as mobile phones or computers connected to the internet.” Kou at 274. Finally, Kou references a vending machine as one potential “merchant of point-of-sale” in connection with its pre-authorization scheme. Kou at 276. Thus a POSITA would have been motivated to implement Kou’s teachings in Freeny’s system, and would have expected to succeed in creating such a combination. Accordingly, Freeny and Kou disclose or render obvious “*in response to notifying the electronic payment device that the mobile device has entered the authorization zone, receiving from the electronic payment device, via the communications unit, a request to preemptively obtain authorization to make funds available for cashless transactions with the automatic retail machine*” as claimed.

[1(d)] sending the request to a server via the communications unit;

82. Because Freeny teaches an “authorization process” and Kou discloses an authorization process that includes a preemptive request for authorization that is sent to a PSP for approval, Freeny and Kou disclose or render obvious “*sending the request to a server via the communications unit.*”

83. As discussed above in paragraph 80, Kou teaches that a consumer's mobile device can receive an offer (including the *request to preemptively obtain authorization to make funds available for cashless transactions*) from a merchant and/or vending machine. Kou at 248-49, 274-76, Fig.12.3. The next step of the authorization process involves the consumer's mobile device transmitting the offer (including the *request*) to a PSP, which Kou explains "operate[s] as an efficient server application." Kou at 248. A POSITA would have understood that sending the *request* to a PSP that "operate[s] as an efficient server application" is equivalent to "*sending the request to a server.*"

84. A POSITA would have found it obvious to apply Kou's disclosure of *sending the request to a server* to Freeny's authorization process. As discussed in paragraphs 64-68, Freeny discloses a plurality of consumer wireless devices, each having a *communications unit*. A POSITA would have found it obvious to "*send the request to a server via the communications unit*" as claimed.

[1(e)] in response to sending the request to the server, receiving, from the server, an authorization grant of an amount of funds corresponding to a maximum amount associated with an item or service provided by the automatic retail machine, wherein the authorization grant expires upon satisfaction of one or more predetermined criteria;

85. Because Freeny teaches proximity-based communication that effects an authorization process for a transaction between a wireless device and a vending machine, and Kou teaches pre-authorizing a maximum amount of funds, Freeny and

Kou disclose or render obvious *in response to sending the request to the server, receiving, from the server, an authorization grant of an amount of funds corresponding to a maximum amount associated with an item or service provided by the automatic retail machine, wherein the authorization grant expires upon satisfaction of one or more predetermined criteria* as claimed.

86. As discussed in paragraphs 82-84, Freeny in view of Kou discloses or renders obvious the *sending the request to the server* step.

87. After the offer (including the *request*) is sent to the PSP, Kou explains that the PSP sends back an “authorized PO as a response to the consumer.” Kou at 248, Fig.12.3. A POSITA would have understood the “Authorized PO” is an *authorization grant* that the consumer receives *in response to sending the request to the server*.



Fig. 12.3 Online payments invoked by consumer

Kou at Fig. 12.3 (annotated).

88. If the PSP engages in the pre-authorization taught in Kou, this *authorization grant* provides authority for “customer payments up to a pre-defined limit.” Kou at 276. By pre-authorizing funds up to a maximal amount, the PSP “delegates it [sic] authority to the customer, who provides the final payment authorization directly to the merchant or point-of-sale (e.g., vending machine).” Kou at 276. A POSITA would have understood that a “pre-defined limit” corresponds to *an authorization grant of an amount of funds corresponding to a maximum amount associated with an item or service provided by the automatic retail machine.*

89. The *authorization grant* can also take the form of a “one-time...public key digital signature.” Kou at 278. If this is the case, a PSP “pre-authorizes the one-time signature [] for a particular merchant and a specific maximal amount.” Kou at 278. The single use signature can be used in conjunction with the pre-authorization framework, and Kou even suggests doing as much. Kou at 278. A POSITA would have understood that a “one-time signature” for a “specific maximal amount” constitutes *an authorization grant of an amount of funds corresponding to a maximum amount associated with an item or service provided by the automatic retail machine.*

90. Kou also teaches that wireless transactions can expire upon the lapse of a predetermined condition. The pre-authorization taught by Kou sets a “maximal amount” for a “particular merchant.” Kou at 276-78. A POSITA would have

understood that, upon a consumer spending the maximum amount of authorized funds, the transaction would expire. In the case of a single-use signature, the *authorization grant* expires when the customer makes their purchase.

91. This predetermined condition can also be a timer. Kou at 202. Kou teaches that “[t]he time stamp portion of [an] EPOID [(“electronic payment order ID”)] is used to expire stale transactions. Kou at 202. Further, a timer can be used to expire a transaction if one of the parties does not advance to a next step within a “predetermined time interval.” Kou at 242. A POSITA would have found it obvious to incorporate this time-out mechanism into the pre-authorization framework, as Freeny expressly discloses temporary authorizations may be stored in the wireless device. Freeny at 23:24-26. Thus, Freeny and Kou render obvious *in response to sending the request to the server, receiving, from the server, an authorization grant of an amount of funds corresponding to a maximum amount associated with an item or service provided by the automatic retail machine, wherein the authorization grant expires upon satisfaction of one or more predetermined criteria* as claimed.

[1(f)] detecting, by an application executing on the mobile device, a trigger condition to initiate a cashless transaction with the automatic retail machine;

92. Because Freeny discloses using proximity triggers to automatically or manually effect wireless transactions, Freeny discloses or renders obvious *detecting, by an application executing on the mobile device, a trigger condition to initiate a cashless transaction with the automatic retail machine* as claimed. Moreover, to the

extent Freeny does not disclose this claim limitation, Freeny in view of Kou renders this limitation obvious.

93. The system of Freeny detects proximity-based *trigger conditions*. In the case of a toll/subway service, Freeny automatically provides the desired service upon the customer reaching a predefined distance from the AWAU; once the customer is within the predefined distance (*e.g.*, 20 feet) the AWAU automatically directs the proximity service unit to provide the desired service. Freeny at 12:65-13:37, 13:57-63, 14:37-44. Other systems, such as an ATM or vending machine, can be automatically activated using a proximity-based trigger condition. Freeny at 30:40-44, 32:50-66. These systems can also be activated via a manual *trigger condition*. Freeny discloses one such *trigger condition* as “a connect button on the control panel” of a PAU. Freeny at 35:1-11. A POSITA would have understood that entering a “predetermined proximity distance” and pressing a “connect button” are both *trigger conditions*.

94. Freeny also discusses *mobile devices* having “program memory,” such as the PAU, mobile phones, and portable computers. Freeny at 10:5-7, 34:13-14. The PAU in particular includes a “computer unit” with “program memory” that controls other system components and signaling functionalities. Freeny at 34:27-44. A POSITA would have understood that a computer unit with program memory would utilize one or more *applications* running in program memory to *detect trigger*

conditions and give appropriate instructions to other components and direct signal functionalities.

95. Alternatively, a POSITA would have found it obvious to implement the steps of this claim limitation on an *application* because it was well known in the art to use *applications* to facilitate wireless payments before the earliest priority date of the '208 patent. Kou even anticipated that the payment authentication frameworks it teaches “may require dedicated payment software.” Kou at 258-59. Accordingly, Freeny, alone or in view of Kou, discloses or renders obvious *detecting, by an application executing on the mobile device, a trigger condition to initiate a cashless transaction with the automatic retail machine* as claimed.

[1(g)] in response to detecting the trigger condition and in accordance with a determination that the one or more predetermined criteria have not been satisfied, sending to the electronic payment device the authorization grant via the communications unit, enabling a user to select an item or service provided by the automatic retail machine for less than or equal to the amount of funds.

96. Because Freeny and Kou teach starting and completing an authorization process before entering into a transaction for goods/services, and Kou also teaches pre-authorization for a maximum *amount of funds*, Freeny and Kou disclose or render obvious *in response to detecting the trigger condition and in accordance with a determination that the one or more predetermined criteria have not been satisfied, sending to the electronic payment device the authorization grant via the*

communications unit, enabling a user to select an item or service provided by the automatic retail machine for less than or equal to the amount of funds as claimed.

97. The online payment framework disclosed by Kou teaches that “the PSP sends the authorized PO as a response to the consumer, who forwards it to the merchant.” Kou at 248, Fig. 12.3.

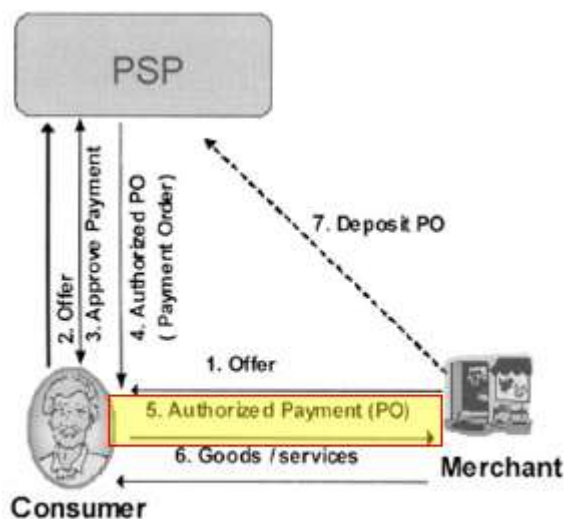


Fig. 12.3 Online payments invoked by consumer

Kou at Fig.12.3 (annotated).

98. This authorization process, as well as pre-authorization, are used when a consumer transacts with a vending machine by using their “communications devices, such as mobile phone or computers connected to the Internet.” Kou at 274-76. The system disclosed in Freeny enables such transactions by allowing consumers to use their *mobile devices* to enter into transactions with devices such as vending machines. Freeny at 2:7-25. Thus, Kou contemplates that its teachings of pre-authorization will be implemented into systems such as the one disclosed by

Freeny. A POSITA would have been motivated to combine the teachings of Kou with the system of Freeny and would have expected reasonable success in doing so. In which case, Freeny and Kou disclose or render obvious *sending to the electronic payment device the authorization grant via the communications unit* as claimed.

99. Kou's pre-authorization framework allows a PSP to "authorize the customer payments up to a pre-defined limit." Kou at 276. Also, single-use signature schemes allow a PSP to authorize a maximal amount of funds for a particular merchant. Kou at 278. A POSITA would have understood that a "predefined limit" and a "maximal amount of funds" would *enable a user to select an item or service provided by the retail machine for less than or equal to the amount of funds* (i.e., the "predefined limit" or "maximal amount of funds."

100. A POSITA would have understood that Freeny and Kou disclose performing this limitation in response to detecting the trigger condition and in accordance with a determination that the one or more predetermined criteria have not been satisfied. As noted above at paragraphs 92-93, Freeny teaches both automatic and manual trigger conditions to continue a transaction after the authorization process is complete. See ¶¶ 85-86 supra. The authorization process entails transmitting the authorization grant to Freeny's electronic payment device (e.g., the AWAU or adapter elements). Kou also teaches that the authorization grant expires when one of the predetermined criteria is satisfied, such as the maximum

amount of authorized funds being spent. See ¶¶ 88-90 supra. A POSITA would have understood that the authorization framework of Kou would require a determination that the authorization grant was not expired before continuing with a transaction. Thus, Freeny and Kou disclose or render obvious *in response to detecting the trigger condition and in accordance with a determination that the one or more predetermined criteria have not been satisfied, sending to the electronic payment device the authorization grant via the communications unit, enabling a user to select an item or service provided by the automatic retail machine for less than or equal to the amount of funds as claimed.*

2. Claim 2

[2] The method of claim 1, further comprising: determining a current mode of operation for the application executing on the mobile device with respect to cashless transactions at the automatic retail machine; and selecting the trigger condition based on the determined mode of operation.

101. Because Freeny describes a system using PAUs with both automatic and manual functionalities, Freeny discloses or renders obvious *the method of claim 1, further comprising: determining a current mode of operation for the application executing on the mobile device with respect to cashless transactions at the automatic retail machine; and selecting the trigger condition based on the determined mode of operation as claimed.*

102. The PAUs described in Freeny, which constitute *mobile devices*, communicate with “proximity authorization units,” which constitute *electronic*

payment devices coupled with automatic retail machines in one of two disclosed modes: “automatic mode” or “manual mode.” Freeny at 34:56-35:11, 13:57-65. The PAU alters its “method of communication” when it is acting in “automatic mode” as opposed to “manual mode” and vice versa. Freeny at 34:56-35:11. A POSITA would have understood that selecting different methods of communication depending on the *mode of operation* requires that the *current mode of operation* is *determined* in accordance with this claim limitation.

103. If a user is in manual mode, the PAU may activate a “connect button” on the PAU, allowing the user to *initiate a transaction* with a vending machine by gesturing on the PAU. Freeny at 35:1-11. In automatic mode, however, an authorization process can be automatically initiated at a first distance from the vending machine, while “the menu operation can be enabled at a closer distance using the signal strength detected by the wireless adapter element.” Freeny at 32:555-67. This disclosure contrasts with the following sentence, which describes a manual *trigger condition*—creating “a physical connection between the proximity authorization unit 2910 and the physical adapter element 3170.” Freeny at 33:2-33:4. A POSITA would have understood that the *trigger conditions* described in Freeny are determined at least partially on the selected *mode of operation*, so Freeny discloses or renders obvious *selecting the trigger condition based on the determined mode of operation*.

104. Thus, Freeny discloses or renders obvious the method of claim 1, further comprising: determining a current mode of operation for the application executing on the mobile device with respect to cashless transactions at the automatic retail machine; and selecting the trigger condition based on the determined mode of operation as claimed.

3. Claim 5

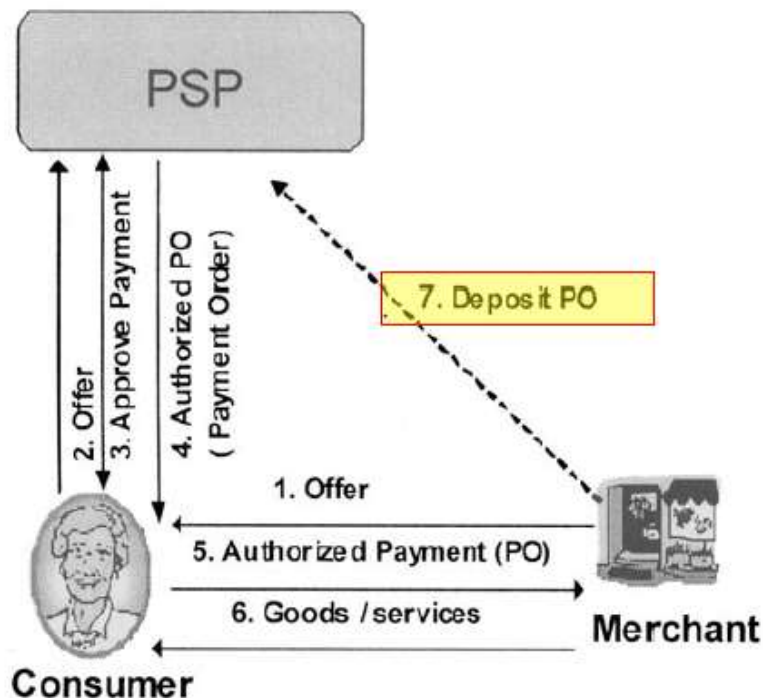
[5] The method of claim 1, wherein the authorization grant is configured to authorize a single cashless transaction with the automatic retail machine and the method further includes erasing the authorization grant from the mobile device upon satisfaction of at least one of the one or more predetermined criteria.

105. Because Freeny, in combination with Kou, describes using single-use authorization keys for a wireless transaction, Freeny and Kou disclose or render obvious *the method of claim 1, wherein the authorization grant is configured to authorize a single cashless transaction with the automatic retail machine and the method further includes erasing the authorization grant from the mobile device upon satisfaction of at least one of the one or more predetermined criteria* as claimed.

106. As discussed above at paragraphs 46, 55, and 89, Kou teaches a “one-time (or limited use) public key digital signature scheme,” that is easily implemented for semi-offline payments where a PSP pre-authorizes a maximum amount of funds for a specific merchant. Kou at 276-78. Accordingly, a POSITA would understand the pre-authorization framework can be used in conjunction with the “one-time” authorization key. A POSITA would have also understood that a “one-time” digital

signature is *configured to authorize a single cashless transaction with the automatic retail machine*.

107. A POSITA would have also understood that a *mobile device* should erase single-use authorization keys after the key has been used to effect a transaction. Because a single-use authorization is no longer valid after it is used (or otherwise expires), a POSITA would have understood that storing the invalid/expired authorization key serves no purpose and needlessly fills up the memory of a *mobile device*. Kou specifically discloses that the merchant, upon receiving the record of a pre-authorized transaction, transmits the same to the PSP. Kou at Fig. 12.3. Thus, the consumer need not retain the key for any future communication with the PSP.



Kou at Fig. 12.3 (annotated)

Accordingly, Freeny in view of Kou discloses or renders obvious *the method of claim 1, wherein the authorization grant is configured to authorize a single cashless transaction with the automatic retail machine and the method further includes erasing the authorization grant from the mobile device upon satisfaction of at least one of the one or more predetermined criteria* as claimed.

4. Claim 6

[6] The method of claim 1, wherein a first determined criterion of the one or more predetermined criteria is an expiration time determined based on one or more of the following: (i) trustworthiness of a user of the mobile device, (ii) a number of other users, distinct from the user of the mobile device, near the automatic retail machine, (iii) a time period defined by the user of the mobile device, and (iv) current time of day.

108. Because the combination of Freeny and Kou describes a timer which serves to expire transactions, as well as vending machines with limited resources for servicing consumers, Freeny and Kou discloses or renders obvious *the method of claim 1, wherein a first determined criterion of the one or more predetermined criteria is an expiration time determined based on one or more of the following: (i) trustworthiness of a user of the mobile device, (ii) a number of other users, distinct from the user of the mobile device, near the automatic retail machine, (iii) a time period defined by the user of the mobile device, and (iv) current time of day* as claimed.

109. As discussed above at paragraph 91, Kou teaches that a transaction can expire after a “predetermined time” has passed (*i.e., an expiration time* has lapsed).

Kou at 202, 242. Further, a POSITA would have found it obvious to discard unused or expired authorization tokens to free up resources once a consumer leaves a vending machine without making a purchase.

110. In view of the teachings of Freeny and Kou, a POSITA would have found it obvious to base the *expiration time* on at least one of the four criteria discussed by this limitation. For example, a POSITA would have found it obvious to use a comparatively short expiration time when many *other users, distinct from the user of the mobile device* are *near the automatic retail machine*. A POSITA would have understood that vending machines are optimally placed in locations with sufficient foot traffic to be profitable, but, as explained in Freeny, the *electronic payment device* can only service a limited number of consumers at any given time. Freeny at 12:32-39, Fig.8.

111. In addition to explaining that the *electronic payment device* has limited resources for connecting to consumers' *mobile devices*, Freeny explains that a "signal connection is maintained between the wireless device [] and the wireless transceiver [] units" until a transaction is complete. Freeny at 13:45-52. Given the limited connection resources of Freeny, a POSITA would understand that these resources should not be allocated to "window shopping" consumers or individuals who are merely passing by the vending machine. But, a POSITA would also have to balance efficient resource allocation with the desire to provide convenient

automatic pre-authorization. This dilemma is solved by the timers disclosed by Kou. Kou at 242 (“[I]f the timer expires the transaction is assumed to be aborted.”) When more potential customers might be kept waiting, the amount of time that can reasonably be spent waiting for any one customer to make a purchase decreases. This is true regardless whether a merchant’s “limited resources” are human clerks or automated communication channels.

112. Similarly, a POSITA would have found it obvious to allow a consumer to select a shorter expiration time. A user may want a shorter expiration time to prevent cybercriminals from obtaining their authorization token and using the same to make purchased for which the user must foot the bill. As of the filing date of the ‘208 patent, it was well known in the art that certain users may wish to lower the expiration time of their own authorizations, so a POSITA would have been motivated to offer this choice to consumers and would have reasonably expected to succeed in implementing the feature. Thus, Freeny and Kou disclose or render obvious *the method of claim 1, wherein a first determined criterion of the one or more predetermined criteria is an expiration time determined based on one or more of the following: (i) trustworthiness of a user of the mobile device, (ii) a number of other users, distinct from the user of the mobile device, near the automatic retail machine, (iii) a time period defined by the user of the mobile device, and (iv) current time of day as claimed.*

5. Claim 7

[7] The method of claim 1, wherein receiving the request via the communications unit includes receiving a baseline signal strength threshold from a transmission sent by the electronic payment device.

113. Because Freeny describes proximity-based *trigger conditions* which involve estimating the distance between a *mobile device* and an *automatic payment machine* by measuring the signal strength of received signals, Freeny discloses or renders obvious *the method of claim 1, wherein receiving the request via the communications unit includes receiving a baseline signal strength threshold from a transmission sent by the electronic payment device* as claimed.

114. One method that Freeny discloses to detect these signal strengths is “incorporating a signal strength detector in the wireless adapter element” of the proximity service unit. Freeny at 33:15-16. A POSITA would have immediately understood that there is a second alternative: incorporating the signal strength detector into a proximity authorization unit or other *mobile device*. To utilize this alternative method, the PAU or other *mobile device* would require appropriate signal strength thresholds for the proximity service unit or AWAU. In other words, if Freeny is implemented by using the *mobile device* to detect signal strengths, said *mobile device* would have to know what signal strength corresponds with each proximity-based *trigger condition*, such as the 20 feet distance to initiate a toll gate transaction. Freeny at 13:23-37. A POSITA would have understood that information

corresponding to the signal strength at certain distances constitutes a *baseline signal strength threshold*.

115. Freeny also discloses that “Bluetooth” is among “the preferred data communication protocols.” Freeny at 37:35-38. A POSITA would have been familiar with the Bluetooth protocol and known that Bluetooth (like several other wireless protocols at the time) may include dynamically adjusting transmission strength to improve power efficiency. *See, e.g.*, Ex.1007, Bluetooth Core Specification (v1.2) (2003), Vol. 2, Part E § 7.5.4 (“Read RSSI Command”). The dynamic adjustments are triggered when the receiving device detects that “the measured Received Signal Strength Indication (RSSI)” is above or below the threshold limits of “the Golden Receive Power Range,” with the goal being that the RSSI stays within the desired range. *Id.* This would sometimes counteract the changes in RSSI one would expect to see from the changes in the distance between the transmitter and receiver changes. Because of this characteristic of the Bluetooth protocol, a POSITA would have understood that—when Freeny is implemented with a signal strength detector in the proximity authorization unit or other *mobile device* and uses the preferred communication protocols (including Bluetooth)—the mobile device would need to receive signal strength thresholds from the proximity service unit/AWAU.

116. Using Freeny's example at column 13, lines 23-37, to illustrate: when the *mobile device* is used to detect signal strengths, it needs information from the AWAU involved to determine when the *mobile device* is 20 feet away in order to initiate the transaction. This is because, as the AWAU adjusts its power output, per the Bluetooth specification, to stay within the "Golden Receive Power Range," this changes the measured signal strength at the mobile device. Increases in measured RSSI may be offset by corresponding decreases in signal output. Accordingly, a POSITA would have understood that the *mobile device* would need to receive information from the AWAU/proximity service unit about the signal strength corresponding to each proximity trigger (such as the 20-foot distance from the toll example) at the current power output at the AWAU's transmitter. A POSITA would have understood this information constitutes a *baseline signal strength threshold*, as recited in claim 7.

117. In addition, a POSITA would have understood that the *mobile device* would necessarily receive this information **before** determining a distance based on that information. Indeed, that is simple logic. The *mobile device* needs certain information to be able to determine distance and thus to detect Freeny's proximity-based triggers, so that information would be received from the AWAU/proximity service unit (*electronic payment device*) before *detecting the trigger condition*. Hence, Freeny discloses embodiments in which the *receiving* from the *electronic*

payment device necessarily includes receiving a baseline signal strength threshold as claimed. Thus, Freeny discloses or renders obvious the method of claim 1, wherein receiving the request via the communications unit includes receiving a baseline signal strength threshold from a transmission sent by the electronic payment device as claimed.

6. Claim 8

[8] The method of claim 7, wherein the baseline signal strength is one of a plurality of baseline signal strengths included in the transmission sent by the electronic payment device and the baseline signal strength is selected based on a model type of the mobile device.

118. In my opinion, Freeny discloses or renders obvious *the method of claim 7, wherein the baseline signal strength is one of a plurality of baseline signal strengths included in the transmission sent by the electronic payment device and the baseline signal strength is selected based on a model type of the mobile device as claimed.*

119. First, Freeny suggests or discloses *wherein the baseline signal strength is one of a plurality of baseline signal strengths included in the transmission sent by the electronic payment device* because the power-level adjustments in the Bluetooth protocol typically involve a sequence of step-wise adjustments. As I explained above in discussing claim 7, Freeny discloses using the Bluetooth protocol, and a POSITA would have known that Bluetooth may include dynamically adjusting transmission strength. *See Ex.1007, Vol. 2, Part E § 7.5.4.* These adjustments to transmission

strength are made incrementally. *See id.*, Vol. 2, Part C, § 4.1.3; *id.* § 3.1 (definition of “Power Control Requests”). As shown by the Bluetooth specification, a device with Bluetooth’s “Power Control Requests” feature is “capable of determining if the transmit power level of the other device should be adjusted and will send the LMP_incr_power and LMP_decr_power PDUs to request the adjustments.” *Id.* § 3.2 (definition of “Power Control Requests”). When the other device receives the request, “the output power shall be increased or decreased one step.” *Id.* § 4.1.3. (The step sizes are permitted to vary between transmitters, but the Bluetooth specification requires the step to be no smaller than 2 dBm and no greater than 8 dBm, *Id.*, Vol. 2, Part A, § 3.) Returning to the scenario described above in connection with claim 7: When the *mobile device* requests a power adjustment, the AWAU/proximity service unit responds by increasing or decreasing power by one step. If the RSSI measured at the *mobile device* is still outside the Golden Receive Power Range, another adjustment is requested, and the AWAU/proximity service unit adjusts its transmission power by another step. This can be repeated until the RSSI is in the optimal range. Accordingly, a POSITA would have understood that dynamic power adjustment may require *a plurality of baseline signal strengths*, of which one is ultimately selected (*e.g.*, when the RSSI is within the Golden Receive Power Range).

120. The *baseline signal strength* is selected based on the Golden Receive Power Range for the *mobile device*, which is based on the characteristics of the Bluetooth receiver. See Ex.1007, Vol. 2, Part E § 7.5.4 (“The lower threshold level corresponds to a received power between -56 dBm and 6 dB above the actual sensitivity of the receiver. The upper threshold level is 20 dB above the lower threshold level to an accuracy of +/- 6 dB.”). Furthermore, different device models may have different receivers, as Freeny discloses. See Freeny at 35:34-42. To the extent the phrase “selected based on a model type of the mobile device” includes selecting based on parameters or characteristics that vary with differences between model types, Freeny discloses or suggests that *the baseline signal strength is selected based on a model type of the mobile device*. Thus, Freeny, in view of Kou, renders claim 8 obvious.

7. Claim 9

[9] The method of claim 7, further comprising: before detecting the trigger condition to perform the cashless transaction, determining a payment zone threshold based on the baseline signal strength threshold; and in accordance with a determination that a received signal strength corresponding to the transmission sent by the electronic payment device satisfies the payment zone threshold, detecting the trigger condition to perform the cashless transaction.

121. Because Freeny describes enabling menu operation at a vending machine based upon a detected signal strength, as well as automatically triggering a toll transaction based on detected signal strength, Freeny discloses or renders obvious *the method of claim 7, further comprising: before detecting the trigger*

condition to perform the cashless transaction, determining a payment zone threshold based on the baseline signal strength threshold; and in accordance with a determination that a received signal strength corresponding to the transmission sent by the electronic payment device satisfies the payment zone threshold, detecting the trigger condition to perform the cashless transaction as claimed.

122. Freeny explains that the authorization process of a vending machine system “can be activated either automatically or manually by the proximity authorization unit [] when the person is within a predetermined proximity distance of the...vending machine system.” Freeny at 32:55. If a user needs to physically interact with the vending machine to use a menu, for example, “the menu operation can be enabled at a closer distance using the signal strength detected by the wireless adapter element.” Freeny at 32:63-66.

123. Likewise, Freeny describes automatically triggering a toll transaction after detecting a “first signal strength” and a “second signal strength” wherein “[t]he first proximity distance is greater than the second proximity distance.” Freeny at 13:23-31. In both cases, the second signal strength is detected at a closer distance than that at which the authorization process occurs. Freeny at 13:23-31, 32:63-66.

124. A POSITA would have understood that a received signal strength would be measured and compared to a baseline value (*i.e., payment zone threshold*) to determine whether or not the vending machine system should trigger certain

functionalities, such as a menu. A POSITA would have understood that the *payment zone threshold* would have to be determined and established before the system can compare it with a received signal strength. As discussed above at paragraphs 113-115, the *baseline signal strength threshold* of claim 7 is the signal strength corresponding to the distance at which a proximity-based *trigger condition* will be activated. Accordingly, a POSITA would have understood from the disclosure of Freeny that the *payment zone threshold* would be equivalent to the *baseline signal strength threshold*, albeit the *payment zone threshold* may include minor adjustments and/or corrections. A POSITA would have found it obvious to make the *payment zone threshold* equal the *baseline signal strength threshold* of the AWAU/proximity service unit, so long as no other parameters necessitate adjustment of the same.

125. As discussed at paragraphs 92-100, Freeny describes using proximity-based *trigger conditions to perform [] cashless transaction[s]* and renders obvious measuring the signal strength at the wireless device/PAU. Further, as discussed in paragraphs 122-124, a POSITA would have understood that Freeny teaches comparing a measured signal strength to a *payment zone threshold* and triggering a wireless transaction if the *received signal strength* equals or exceeds the value of the *payment zone threshold*. Freeny at 13:11-18, 32:55-65, 33:10-17. In the obvious implementation in which the signal strength is measured at the wireless device/PAU,

the *received signal strength* measured would be received as part of the *transmission sent by the electronic payment device*. Thus, Freeny discloses or renders obvious *the method of claim 7, further comprising: before detecting the trigger condition to perform the cashless transaction, determining a payment zone threshold based on the baseline signal strength threshold; and in accordance with a determination that a received signal strength corresponding to the transmission sent by the electronic payment device satisfies the payment zone threshold, detecting the trigger condition to perform the cashless transaction as claimed.*

8. Claim 10

[10] The method of claim 9, wherein determining the payment zone threshold based on the baseline signal strength includes using an offset that corresponds to a model type of the mobile device, the method further comprising transmitting the model type of the mobile device to the electronic payment device.

126. Because Freeny describes a proprietary communications system in which a POSITA would have information about the characteristics of *mobile devices*, Freeny discloses or renders obvious *the method of claim 9, wherein determining the payment zone threshold based on the baseline signal strength includes using an offset that corresponds to a model type of the mobile device, the method further comprising transmitting the model type of the mobile device to the electronic payment device as claimed.*

127. By the earliest priority date of the '208 patent, it was well-known in the art that a received signal strength does not perfectly reflect the distance of the

transmitting device. A number of interferences can dilute the received signal strength, including but not limited to differences between particular transmission mediums, objects through which the signal must pass, or even the housing around the transmitter and the receiver. If a POSITA had information regarding the characteristic attenuation associated with a known receiving device, the POSITA would have found it obvious to develop an offset that accounts for signal dilution, and the POSITA would have been motivated to do so in order to achieve a more accurate determination of distance as a function of signal strength.

128. Freeny teaches a system wherein a POSITA would know (or easily be able to determine) the characteristic attenuation of *mobile devices*. Specifically, the “specialty devices” of Freeny, such as the PAU, and proximity service units (*i.e.*, vending machines) that may be supported by a single company or organization. Freeny at 37:43-57, 38:57-39:6. A POSITA would have understood that a PAU and a proximity service unit supported by a single organization may also be manufactured by the same organization. Because this system involving both the PAU and proximity service unit is heavily dependent on an accurate distance measurement, a POSITA would have found it obvious to include *an offset that corresponds to a model type of the mobile device* in the signaling functionality for determining distance.

129. Freeny also explains that “[e]ach of the request authorization codes” stored and transmitted by the PAU’s computer unit “uniquely identif[ies] the proximity authorization unit.” Freeny at 31:1-2. Thus, a POSITA would have found it obvious that uniquely identifying a PAU to another device in a proprietary communications system (as discussed in paragraph 128) would also identify the *model type* of the PAU. A POSITA would have understood that identifying the *model type* of a wireless device such as the PAU would allow the proximity service unit to use the predefined characteristics of the device, such as a required offset, to achieve the most accurate distance determination possible. Thus, Freeny discloses or renders obvious *the method of claim 9, wherein determining the payment zone threshold based on the baseline signal strength includes using an offset that corresponds to a model type of the mobile device, the method further comprising transmitting the model type of the mobile device to the electronic payment device as claimed.*

9. Claim 11

[11] The method of claim 9, wherein determining the payment zone threshold further includes adjusting the payment zone threshold based on transmission strength of the communications unit of the mobile device.

130. Because Freeny describes a proprietary communications system in which a POSITA would have information about the characteristics of *mobile devices*, Freeny discloses or renders obvious *the method of claim 9, wherein*

determining the payment zone threshold further includes adjusting the payment zone threshold based on transmission strength of the communications unit of the mobile device as claimed, for the same reasons discussed in paragraphs 127-129, above.

10. Claim 12

[12(pre.)] A system comprising:

131. Freeny discloses *a system*. Freeny at 9:45-50, 30:45-50. Thus, Freeny discloses or renders obvious the preamble of this claim.

[12(a)] an electronic payment device with one or more processors, memory, and a first communications unit, the electronic payment device configured to:

132. As discussed above in paragraphs 72-76, Freeny discloses *an electronic payment device* because, it discloses the AWAU and other components which are analogous to an *electronic payment device*.

133. The *electronic payment devices* in Freeny can be supplemented with “new computers” which may run “Windows” or “Linux” operating systems. Freeny at 37:40-42. A POSITA would have understood that these “new computers” would require *one or more processors [and] memory* in order to run “Windows” or “Linux” operating systems. Similarly, the AWAU interface units control a series of tasks such as “develop[ing] a queue for delivering the requested service in the correct order and to the correct wireless device” Freeny at 13:57-14:11. A POSITA would have understood that a computer unit performing these tasks would *one or more processors* and a *memory*. Further, it was well known in the art as of the ‘208

patent's earliest priority date to automate administrative tasks via a *processor*, which requires *memory*.

134. Finally, the AWAU "is provided with a multiple channel wireless transceiver..." Freeny at 11:18-20. A POSITA would have understood that this transceiver includes a transmitter and a receiver, which is equivalent to a *first communications unit*. Thus, Freeny discloses or renders obvious *the method of claim 9, wherein determining the payment zone threshold further includes adjusting the payment zone threshold based on transmission strength of the communications unit of the mobile device* as claimed.

[12(b)] receive a notification from a mobile device that the mobile device has entered an authorization zone associated with an automated retail unit coupled with the electronic payment device;

135. Because Freeny discloses system components that interact with legacy automatic retail machines (e.g., vending machines) to authorize transactions via a consumer's wireless device, Freeny discloses or renders obvious *receiv[ing] a notification from a mobile device that the mobile device has entered an authorization zone associated with an automated retail unit coupled with the electronic payment device* for the same reasons discussed in paragraphs 72-76 above.

[12(c)] in response to receiving the notification that the mobile device has entered the authorization zone, send, via the first communications unit and prior to user selection of any items or services provided by the automatic retail machine a request to preemptively obtain authorization to make funds available for cashless transactions with the automatic retail machine; and

136. Because Freeny describes a proximity authorization system and a POSITA would have found it obvious to supplement Freeny's system with the pre-authorization framework described in Kou, Freeny, in combination with Kou, discloses or renders obvious *in response to receiving the notification that the mobile device has entered the authorization zone, send, via the first communications unit and prior to user selection of any items or services provided by the automatic retail machine a request to preemptively obtain authorization to make funds available for cashless transactions with the automatic retail machine* for the same reasons discussed in paragraphs 77-81 above.

[12(d)] wherein the mobile device includes one or more processors, memory, and a second communications unit, and is configured to:

137. Because Freeny discloses using any number of wireless devices to interact with a "public communications unit" using a wireless link, Freeny discloses *a mobile device include[ing] one or more processors, memory, and a second communications unit* for the same reasons discussed in paragraphs 64-71 above.

[12(e)] prior to user selection of any items or services provided by the automatic retail machine:

138. Because Freeny discloses using any number of wireless devices to interact with a “public communications unit” using a wireless link, Freeny discloses performing steps *prior to user selection of any items or services provided by the automatic retail machine* for the same reasons discussed in paragraphs 64-71 above.

[12(f)] receive, via the second communications unit, the request from the electronic payment device;

139. Because Freeny describes a proximity authorization system and a POSITA would have found it obvious to supplement Freeny’s system with the pre-authorization framework described in Kou, Freeny, in combination with Kou, discloses or renders obvious *receiv[ing], via the second communications unit, the request from the electronic payment device* for the same reasons discussed in paragraphs 77-81 above.

[12(g)] send the request to a server via the second communications unit;

140. Because Freeny teaches an “authorization process” and Kou discloses an authorization process that includes a preemptive request for authorization that is sent to a PSP for approval, Freeny and Kou disclose or render obvious *send[ing] the request to a server via the second communications unit* for the same reasons discussed in paragraphs 82-84, above.

[12(h)] in response to sending the request to the server, receive, from the server, an authorization grant of an amount of funds, wherein the amount of funds is set in accordance with a maximum amount associated with an item or service provided by the automatic retail machine, and wherein the authorization grant expires upon satisfaction of one or more predetermined criteria;

141. Because Freeny teaches proximity-based communication that effects an authorization process for a transaction between a wireless device and a vending machine, and Kou teaches pre-authorizing a maximum amount of funds, Freeny and Kou disclose or render obvious *in response to sending the request to the server, receive, from the server, an authorization grant of an amount of funds, wherein the amount of funds is set in accordance with a maximum amount associated with an item or service provided by the automatic retail machine, and wherein the authorization grant expires upon satisfaction of one or more predetermined criteria* for the same reasons discussed in paragraphs 85-91, above.

[12(i)] detect, by an application executing on the mobile device, a trigger condition to initiate a cashless transaction with the automatic retail machine; and

142. Because Freeny discloses using proximity triggers to automatically or manually effect wireless transactions, Freeny discloses or renders obvious *detect[ing], by an application executing on the mobile device, a trigger condition to initiate a cashless transaction with the automatic retail machine* for the same reasons discussed in paragraphs 92-95, above.

[12(j)] in response to detecting the trigger condition and in accordance with a determination that the one or more predetermined criteria have not been satisfied, send to the electronic payment device the authorization grant via the second communications unit, enabling a user to select an item or service provided by the automatic retail machine for less than or equal to the amount of funds.

143. Because Freeny and Kou teach starting and completing an authorization process before entering into a transaction for goods/services, and Kou also teaches pre-authorization for a maximum *amount of funds*, Freeny and Kou disclose or render obvious *in response to detecting the trigger condition and in accordance with a determination that the one or more predetermined criteria have not been satisfied, send to the electronic payment device the authorization grant via the second communications unit, enabling a user to select an item or service provided by the automatic retail machine for less than or equal to the amount of funds* for the same reasons discussed at paragraphs 96-100, above.

11. Claim 13

[13] The system of claim 12, wherein the mobile device is further configured to: determine a current mode of operation for the application executing on the mobile device with respect to cashless transactions at the automatic retail machine; and select the trigger condition based on the determined mode of operation.

144. Because Freeny describes a system using PAUs with both automatic and manual functionalities, Freeny discloses or renders obvious *[t]he system of claim 12, wherein the mobile device is further configured to: determine a current mode of operation for the application executing on the mobile device with respect to cashless transactions at the automatic retail machine; and select the trigger condition based*

on the determined mode of operation for the same reasons discussed at paragraphs 101-104, above.

12. Claim 16

[16] The system of claim 12, wherein the authorization grant is configured to authorize the amount of funds for a single cashless transaction with the automatic retail machine, and wherein the mobile device is further configured to: erase the authorization grant from the mobile device upon satisfaction of at least one of the one or more predetermined criteria.

145. Because Freeny, in combination with Kou, describes using single-use authorization keys for a wireless transaction, Freeny and Kou disclose or render obvious *[t]he system of claim 12, wherein the authorization grant is configured to authorize the amount of funds for a single cashless transaction with the automatic retail machine, and wherein the mobile device is further configured to: erase the authorization grant from the mobile device upon satisfaction of at least one of the one or more predetermined criteria* for the same reasons discussed at paragraphs 105-107, above.

13. Claim 17

[17(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 and a communications unit, cause the mobile device to perform operations comprising:

146. As discussed in paragraphs 64-71 and 92-95, Freeny in view of Kou describes using its system and method via a *mobile device* with a “computer unit” and “program memory.” Freeny at 34:4-17. Thus, for the same reasons discussed in

the aforementioned paragraphs, the combination of Freeny and Kou discloses or renders obvious using an *applciation* to implement their combined teachings. Accordingly, Freeny and Kou disclose or render 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 and a communications unit, cause the mobile device to perform operations* for the same reasons discussed in paragraphs 64-71 and 92-95 above.

[17(a)] prior to user selection of any items or services provided by an automatic retail machine:

147. Because Freeny discloses using any number of wireless devices to interact with a “public communications unit” using a wireless link, Freeny discloses performing steps *prior to user selection of any items or services provided by the automatic retail machine* for the same reasons discussed in paragraphs 64-71 above.

[17(b)] notifying an electronic payment device coupled with the automatic retail machine that the mobile device has entered an authorization zone associated with the automated retail machine;

148. Because Freeny discloses system components that interact with legacy automatic retail machines (e.g., vending machines) to authorize transactions via a consumer’s wireless device, Freeny discloses or renders obvious *notifying an electronic payment device coupled with the automatic retail machine that the mobile device has entered an authorization zone associated with the automated retail machine* for the same reasons discussed in paragraphs 72-76 above.

[17(c)] in response to notifying the electronic device that the mobile device has entered the authorization zone, receiving from the electronic payment device, via the communications unit, a request to preemptively obtain authorization to make funds available for cashless transactions with the automatic retail machine;

149. Because Freeny describes a proximity authorization system and a POSITA would have found it obvious to supplement Freeny's system with the pre-authorization framework described in Kou, Freeny, in combination with Kou, discloses or renders obvious *in response to notifying the electronic device that the mobile device has entered the authorization zone, receiving from the electronic payment device, via the communications unit, a request to preemptively obtain authorization to make funds available for cashless transactions with the automatic retail machine* for the same reasons discussed in paragraphs 77-81 above.

[17(d)] sending the request to a server via the communications unit;

150. Because Freeny teaches an "authorization process" and Kou discloses an authorization process that includes a preemptive request for authorization that is sent to a PSP for approval, Freeny and Kou disclose or render obvious *sending the request to a server via the communications unit* for the same reasons discussed in paragraphs 82-84, above.

[17(e)] in response to sending the request to the server, receiving, from the server, an authorization grant of an amount of funds corresponding to a maximum amount associated with an item or service provided by the automatic retail machine, wherein the authorization grant expires upon satisfaction of one or more predetermined criteria;

151. Because Freeny teaches proximity-based communication that effects an authorization process for a transaction between a wireless device and a vending machine, and Kou teaches pre-authorizing a maximum amount of funds, Freeny and Kou disclose or render obvious *in response to sending the request to the server, receiving, from the server, an authorization grant of an amount of funds corresponding to a maximum amount associated with an item or service provided by the automatic retail machine, wherein the authorization grant expires upon satisfaction of one or more predetermined criteria* for the same reasons discussed in paragraphs 85-91, above.

[17(f)] detecting, by an application executing on the mobile device, a trigger condition to initiate a cashless transaction with the automatic retail machine; and

152. Because Freeny discloses using proximity triggers to automatically or manually effect wireless transactions, Freeny discloses or renders obvious *detecting, by an application executing on the mobile device, a trigger condition to initiate a cashless transaction with the automatic retail machine* for the same reasons discussed in paragraphs 92-95, above.

[17(g)] in response to detecting the trigger condition and in accordance with a determination that the one or more predetermined criteria have not been satisfied, sending to the electronic payment device the authorization grant via the communications unit, enabling a user to select an item or service provided by the automatic retail machine for less than or equal to the amount of funds.

153. Because Freeny and Kou teach starting and completing an authorization process before entering into a transaction for goods/services, and Kou also teaches pre-authorization for a maximum *amount of funds*, Freeny and Kou disclose or render obvious *in response to detecting the trigger condition and in accordance with a determination that the one or more predetermined criteria have not been satisfied, sending to the electronic payment device the authorization grant via the communications unit, enabling a user to select an item or service provided by the automatic retail machine for less than or equal to the amount of funds* for the same reasons discussed at paragraphs 96-100, above.

14. Claim 18

[18] The non-transitory computer-readable storage medium of claim 17, wherein the one or more programs further comprise instructions which, when executed by the mobile device, cause the mobile device to perform operations comprising: determining a current mode of operation for the application executing on the mobile device with respect to cashless transactions at the automatic retail machine; and selecting the trigger condition based on the determined mode of operation.

154. Because Freeny describes a system using PAUs with both automatic and manual functionalities, Freeny discloses or renders obvious *[t]he non-transitory computer-readable storage medium of claim 17, wherein the one or more programs*

further comprise instructions which, when executed by the mobile device, cause the mobile device to perform operations comprising: determining a current mode of operation for the application executing on the mobile device with respect to cashless transactions at the automatic retail machine; and selecting the trigger condition based on the determined mode of operation for the same reasons discussed at paragraphs 101-104, above.

D. Ground 2: Claims 3-4, 14-15, and 19-20 would have been obvious over Freeny in view of Kou and further in view of Canter.

15. Claim 3

[3] The method of claim 2, further comprising: when the retail machine is a favorite automatic retail machine for the user of the mobile device, selecting a proximity-based trigger condition that does not require user input at the application executing on the mobile device.

155. Because the combination of Freeny and Canter describe selecting a proximity-based trigger condition at a vending machine and joining a discount or loyalty point program at said vending machine, Freeny in view of Canter discloses or renders obvious *[t]he method of claim 2, further comprising: when the retail machine is a favorite automatic retail machine for the user of the mobile device, selecting a proximity-based trigger condition that does not require user input at the application executing on the mobile device as claimed.*

156. As discussed at paragraphs 122-123, above, Freeny teaches that a menu can be enabled at a vending machine based on the proximity of a mobile device. *See*

¶ 113 *supra*. Further, Freeny discusses a toll gate transaction that also automatically provides the request service upon the user entering a predetermined proximity distance from the proximity service unit. *See* ¶ 114 *supra*. Freeny also indicates that the AWAU will receive a “request authorization code” from a wireless device once the wireless device “is within a predetermined proximity distance” from the AWAU. Freeny at 11:18-31. A POSITA would have understood that automatically enabling a menu at a vending machine based on the consumer’s proximity, initializing a toll gate transaction based on the consumer’s proximity, and sending a request authorization code based on the consumer’s proximity are all *proximity-based trigger conditions that do not require user input at the application executing on the mobile device*.

157. Canter teaches that the customer experience at a vending machine can be changed according to each individual customer. Canter at [0006]. This is accomplished by personalizing the customer experience based on “consumer profile information” transmitted from a consumer’s smart phone to the vending machine. Canter at [0027].

158. The consumer is incentivized to transmit their “detailed consumer profile information” to the vending machine “by the prospect of a discount or loyalty program rewards points.” Canter at [0027]. A POSITA would have understood that joining a “discount or loyalty program” at a specific vending machine is equivalent

to designating that vending machine as a *favorite automatic retail machine*. A POSITA would have understood (or it would have been obvious) that the *favorite* vending machine would retain the “detailed consumer profile information” to continue personalization of the consumer experience in future transactions.

159. A user that has previously shared “detailed consumer profile information” can authenticate their device at the vending machine to verify the user’s identity. Canter at [0026]. Specifically, Canter suggests that “a list of the names or ‘tags’ identifying various user devices [] may be displayed on the customer user interface [] together with a prompt for the consumer to enter a . . . (PIN) that may be used by the vending machine to authenticate that the selected user device is actually possessed by the consumer. “ Canter at [0026].

160. A POSITA would have understood that the vending machine would list recognized users on the vending machine’s touchscreen interface. Canter at [0026]. A POSITA would have also understood that interacting with the vending machine touchscreen is a form of *proximity-based trigger condition*, and because the inputs all occur on the vending machine interface, the combination of Freeny and Canter *do not require user input at the application executing on the mobile device*. Thus, Freeny and Canter disclose or render obvious *[t]he method of claim 2, further comprising: when the retail machine is a favorite automatic retail machine for the*

user of the mobile device, selecting a proximity-based trigger condition that does not require user input at the application executing on the mobile device as claimed.

16. Claim 4

[4] The method of claim 2, further comprising: when the automatic retail machine is not a favorite automatic retail machine for the user of the mobile device, providing, in a user interface of the application executing on the mobile device, a visual indication of the automatic retail machine and selecting a trigger condition that corresponds to a predefined gesture at the visual indication of the automatic retail machine within the user interface of the application executing on the mobile device.

161. Because the combination of Freeny and Canter describes user interfaces that include virtual buttons to connect with vending machines, Freeny and Canter disclose or render obvious *[t]he method of claim 2, further comprising: when the automatic retail machine is not a favorite automatic retail machine for the user of the mobile device, providing, in a user interface of the application executing on the mobile device, a visual indication of the automatic retail machine and selecting a trigger condition that corresponds to a predefined gesture at the visual indication of the automatic retail machine within the user interface of the application executing on the mobile device as claimed.*

162. As discussed at paragraph 158, a user can designate a *favorite automatic retail machine* by sharing “detailed consumer profile information” with said vending machine. Canter at [0027]. The user can also decline to share, or limit the amount of information shared with a vending machine. Canter at [0027]. A

POSITA would have understood that opting not to share “detailed consumer information” with a vending machine means that said vending machine *is not a favorite automatic retail machine for the user of the mobile device*.

163. Canter also describes authenticating a consumer’s identity with a prompt sent from the vending machine to the user’s *mobile device*. Canter at [0026]. “[T]he vending machine [] may transmit a request to one or more user devices within communications range, selected based on proximity or other criteria, asking the user to confirm their identity by actuating a physical or virtual (user interface) button on the user device.” Canter at [0026]. A POSITA would have understood that a “virtual [] button” on a user’s *mobile device* is a *visual indication of the automatic retail machine* because the button will only materialize when the consumer is within a certain proximity distance of the vending machine. Canter at [0026]. A POSITA would have also understood to display a “virtual button” *in a user interface of the application executing on the mobile device*.

164. Further, a POSITA would have understood that actuating the “virtual button” to confirm a consumer’s identity and authorize a transaction with a vending machine is a *trigger condition* for initiating the transaction. Also, because the “virtual button” requires the consumer to actuate the button on a touchscreen, a POSITA would have understood that “actuating” the “physical or virtual [] button on the user device” is a *predefined gesture at the visual indication of the automatic*

retail machine within the user interface of the application executing on the mobile device.

165. A POSITA would have been motivated to combine Canter's "virtual button" with the system/method taught by Freeny because touch screen interfaces were well known in the art by the '208 patent's earliest priority date. Further, touch screen interfaces had been implemented to improve systems similar to that of Freeny, as illustrated by the implementation of touch screens in systems like that of Canter. Thus, Freeny and Canter disclose or render obvious *[t]he method of claim 2, further comprising: when the automatic retail machine is not a favorite automatic retail machine for the user of the mobile device, providing, in a user interface of the application executing on the mobile device, a visual indication of the automatic retail machine and selecting a trigger condition that corresponds to a predefined gesture at the visual indication of the automatic retail machine within the user interface of the application executing on the mobile device as claimed.*

17. Claim 14

[14] The system of claim 13, wherein the mobile device is further configured to: when the automatic retail machine is a favorite automatic retail machine for the user of the mobile device, select a proximity-based trigger condition that does not require user input at the application executing on the mobile device.

166. Because the combination of Freeny and Canter describe selecting a proximity-based trigger condition at a vending machine and joining a discount or loyalty point program at said vending machine, Freeny in view of Canter discloses

or renders obvious *[t]he system of claim 13, wherein the mobile device is further configured to: when the automatic retail machine is a favorite automatic retail machine for the user of the mobile device, select a proximity-based trigger condition that does not require user input at the application executing on the mobile device as claimed for the same reasons discussed at paragraphs 155-160, above.*

18. Claim 15

[15] The system of claim 13, wherein the electronic payment device is further configured to: before sending the request, send, via the first communications unit, information identifying the automatic retail machine that is coupled with the electronic payment device, and wherein the mobile device is further configured to: when the automatic retail machine is not a favorite automatic retail machine for the user of the mobile device, provide, in a user interface of the application executing on the mobile device, a visual indication of the automatic retail machine that is based on the information identifying the automatic retail machine, and select a trigger condition that corresponds to a predefined gesture at the visual indication of the automatic retail machine within the user interface of the application executing on the mobile device.

167. Because the combination of Freeny and Canter describes user interfaces that include virtual buttons to connect with vending machines, Freeny and Canter disclose or render obvious *[t]he system of claim 13, wherein the electronic payment device is further configured to: before sending the request, send, via the first communications unit, information identifying the automatic retail machine that is coupled with the electronic payment device, and wherein the mobile device is further configured to: when the automatic retail machine is not a favorite automatic retail machine for the user of the mobile device, provide, in a user interface of the*

application executing on the mobile device, a visual indication of the automatic retail machine that is based on the information identifying the automatic retail machine, and select a trigger condition that corresponds to a predefined gesture at the visual indication of the automatic retail machine within the user interface of the application executing on the mobile device as claimed, for the same reasons discussed at paragraphs 161-165, above.

168. In addition, Canter discloses or suggests *wherein the electronic payment device is further configured to: before sending the request, send, via the first communications unit, information identifying the automatic retail machine that is coupled with the electronic payment device* because, as discussed above, Canter discloses that user-authentication is prompted by a request from a given vending machine, and the user then authorizes payment to that vending machine. See paragraph 163 above; Canter at [0026].

19. Claim 19

[19] The non-transitory computer-readable storage medium of claim 18, wherein the one or more programs further comprise instructions which, when executed by the mobile device, cause the mobile device to perform operations comprising: when the automatic retail machine is a favorite automatic retail machine for the user of the mobile device, selecting a proximity-based trigger condition that does not require user input at the application executing on the mobile device.

169. Because the combination of Freeny and Canter describe selecting a proximity-based trigger condition at a vending machine and joining a discount or loyalty point program at said vending machine, Freeny in view of Canter discloses

or renders obvious *[t]he non-transitory computer-readable storage medium of claim 18, wherein the one or more programs further comprise instructions which, when executed by the mobile device, cause the mobile device to perform operations comprising: when the automatic retail machine is a favorite automatic retail machine for the user of the mobile device, selecting a proximity-based trigger condition that does not require user input at the application executing on the mobile device as claimed for the same reasons discussed at paragraphs 155-160, above.*

20. Claim 20

[20] The non-transitory computer-readable storage medium of claim 18, wherein the one or more programs further comprise instructions which, when executed by the mobile device, cause the mobile device to perform operations comprising: when the automatic retail machine is not a favorite automatic retail machine for the user of the mobile device, providing, in a user interface of the application executing on the mobile device, a visual indication of the automatic retail machine and selecting a trigger condition that corresponds to a predefined gesture at the visual indication of the automatic retail machine within the user interface of the application executing on the mobile device.

170. Because the combination of Freeny and Canter describes user interfaces that include virtual buttons to connect with vending machines, Freeny and Canter disclose or render obvious *[t]he non-transitory computer-readable storage medium of claim 18, wherein the one or more programs further comprise instructions which, when executed by the mobile device, cause the mobile device to perform operations comprising: when the automatic retail machine is not a favorite automatic retail machine for the user of the mobile device, providing, in a user interface of the*

application executing on the mobile device, a visual indication of the automatic retail machine and selecting a trigger condition that corresponds to a predefined gesture at the visual indication of the automatic retail machine within the user interface of the application executing on the mobile device as claimed, for the same reasons discussed at paragraphs 161-165, above.

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: 7/17/2023



B. Clifford Neuman