

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

**PETITION FOR *INTER PARTES* REVIEW
UNDER 35 U.S.C. § 312 AND 37 C.F.R. § 42.104**

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	GROUND FOR STANDING	1
III.	NOTE	1
IV.	THE ‘208 PATENT	1
A.	Claims	2
B.	Specification	3
C.	Prosecution History.....	6
V.	LEVEL OF ORDINARY SKILL IN THE ART	6
VI.	CLAIM CONSTRUCTION.....	7
VII.	RELIEF REQUESTED AND THE REASONS FOR THE REQUESTED RELIEF.....	8
VIII.	DISCRETIONARY DENIAL WOULD BE INAPPROPRIATE.....	8
A.	Discretionary denial under the <i>Fintiv</i> factors is not appropriate	8
B.	Discretionary denial under <i>General Plastic</i> is not appropriate	9
C.	Discretionary denial under 35 U.S.C. § 325(d) is not appropriate	9
IX.	IDENTIFICATION OF HOW THE CLAIMS ARE UNPATENTABLE	10
A.	Challenged Claims	10
B.	Statutory Grounds for Challenges.....	10
C.	Ground 1: Claims 1–2, 5–6, 12–13, and 16–18 would have been obvious over Freeny in view of Kou	11
1.	Summary of Freeny	11
2.	Summary of Kou.....	15
3.	Reasons to Combine Freeny and Kou	17
4.	Claim 1	18
5.	Claim 2	44
6.	Claim 5	45
7.	Claim 6	47

8.	Claim 7	49
9.	Claim 8	51
10.	Claim 9	53
11.	Claim 10	55
12.	Claim 11	57
13.	Claim 12	57
14.	Claim 13	63
15.	Claim 16	64
16.	Claim 17	64
17.	Claim 18	67
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	67
1.	Summary of Canter	67
2.	Reasons to Combine Canter with Freeny/Kou	69
3.	Claim 3	70
4.	Claim 4	72
5.	Claims 14-15 and 19-20	74
X.	CONCLUSION	75
XI.	MANDATORY NOTICES	76
A.	Real Party-in-Interest	76
B.	Related Matters	76
C.	Lead and Back-up Counsel and Service Information	76

PETITIONER’S EXHIBIT LIST

Ex.1001	U.S. Patent No. 10,438,208
Ex.1002	Prosecution History of U.S. Patent No. 10,438,208
Ex.1003	Declaration of B. Clifford Neuman
Ex.1004	U.S. Patent No. 8,958,846 to Freeny
Ex.1005	Weidong Kou, <i>Payment Technologies for E-Commerce</i> ch. 12 pp.245-280, <i>Micropayments</i> (1st ed. 2003).
Ex.1006	U.S. Patent Application Publication No. US 2013/0054016 A1 to Canter et al.
Ex.1007	Excerpts from Specification of the Bluetooth System, v1.2 (2003)
Ex.1008	<i>Curriculum Vitae</i> of B. Clifford Neuman

I. INTRODUCTION

CSC ServiceWorks, Inc. (“Petitioner”) respectfully requests the Board institute *inter partes* review of and cancel claims 1-20 (“the Challenged Claims”) of U.S. Patent No. 10,438,208 (“the ‘208 Patent,” Ex.1001).

II. GROUNDS FOR STANDING

Petitioner certifies that the ‘208 patent is eligible for *Inter Partes* Review (“IPR”) and that Petitioner is neither barred nor estopped from requesting IPR challenging the patent claims. 37 C.F.R. § 42.104(a). This petition is timely because Petitioner first filed a waiver of service of a complaint asserting the ‘208 patent on July 18, 2022, which means Petitioner was served not more than one year ago. Ex.1012; Fed R. Civ. P. 4(d)(4) (complaint is deemed “served at the time of filing the waiver”).

III. NOTE

Unless Petitioner cites to exhibits’ original page numbers. **Emphasis** in quoted material has been added. Claim terms are presented in *italics*.

IV. THE ‘208 PATENT

The ‘208 patent is entitled “Systems and Methods for Interacting with Unattended Machines Using Detectable Trigger Conditions and Limited-Scope Authorization Grants” and generally relates to automatic authorization of transactions with unattended retail machines. It issued on October 8, 2019, from an

application filed December 14, 2015 and claims priority through several continuations to U.S. Design Patent No. 755,183 and U.S. Provisional Application No. 61/917,936, both filed on December 18, 2013. Because any potential effective filing date falls after March 16, 2013, the AIA's amendments to sections 102 and 103 apply. *See Leahy-Smith America Invents Act § 3(n)(1), Pub. Law 112-29, 125 Stat. 284, 293 (Sept. 16, 2011).*

A. Claims

The '208 patent has 20 claims, of which claims 1, 12, and 17 are independent. The claims of the '208 patent all recite well-known features of systems and methods for authorizing electronic payments, including: (i) communication between a mobile device and an electronic payment device coupled to an automatic retail machine; (ii) requesting authorization from a remote server; and (iii) using trigger conditions to allow a user to make their selection. Ex.1003 ¶¶29-32.

Independent claim 1 recites a method performed *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. See Ex.1001, 33:35-34:3.*

Independent claim 17 recites *[a] non-transitory computer-readable storage medium storing 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 corresponding to the method steps of claim 1. Ex.1003 ¶¶149-155; Ex.1001, 36:20-58.

Claim 12 recites *[a] system, comprising: an electronic payment device with one or more processors, memory, and a first communications unit that has an automatic retail machine coupled with it, wherein the electronic payment device is configured to operate with a mobile device (with components matching those recited in claim 1), and the electronic payment device and the mobile device together are configured to perform the method steps of claim 1.* Ex.1003 ¶¶133-145; *see* Ex.1001, 35:3–46.

Claims 2–11 depend from claim 1. Claims 13–16 depend from claim 12 and recite limitations corresponding to those of claims 2–5. Ex.1003 ¶¶103-132, 146-47, 157-169; *see* Ex.1001, 34:4–32, 35:47–36:19. Claims 18–20 depend from claim 17 and similarly correspond to claims 2–4. Ex.1003 ¶¶156, 170-171; *see* Ex.1001, 34:4–32, 36:59–37:26.

B. Specification

The ‘208 patent relates to payment authorization for payment systems for use in transactions between mobile devices and unattended retail machines. Ex.1001, 1:23-33; 3:58-61. As conceded in the specification, vending machines have long been well-known in the art, *id.*, 1:37-42, and the use of mobile devices to make

payments in vending-machine transactions was also known in the prior art. *See id.*, 2:7-3:54.

According to the ‘208 patent, the prior-art mobile payment systems required either (1) “payment accepting units” with a persistent or on-demand network connection, *id.*, 10:38-49, 31:51-54, or (2) “significant user interaction” with their mobile devices. *Id.*, 10:62-64, 32:16-36. The patent also asserts that known systems could only authorize payments for particular transactions, *i.e.*, after goods were selected for purchase. *Id.*, 32:47-50.

The ‘208 patent purports to improve on the prior art by teaching that a mobile device notifies an adapter module (*electronic payment device*) that the mobile device entered an authorization zone. *Id.*, 29:54-29:57. The adapter module then sends a request to preemptively authorize funds for cashless transactions, which the mobile device forwards to a remote server. *Id.*, 15:34-16:29, 4:9-15. The mobile device then receives an authorization grant for an amount of funds from the server, the user selects their desired product and/or service, and the retail machine associated with the adapter module dispenses the product/service. Ex.1001, 4:9-22; Figs. 5, 8B.

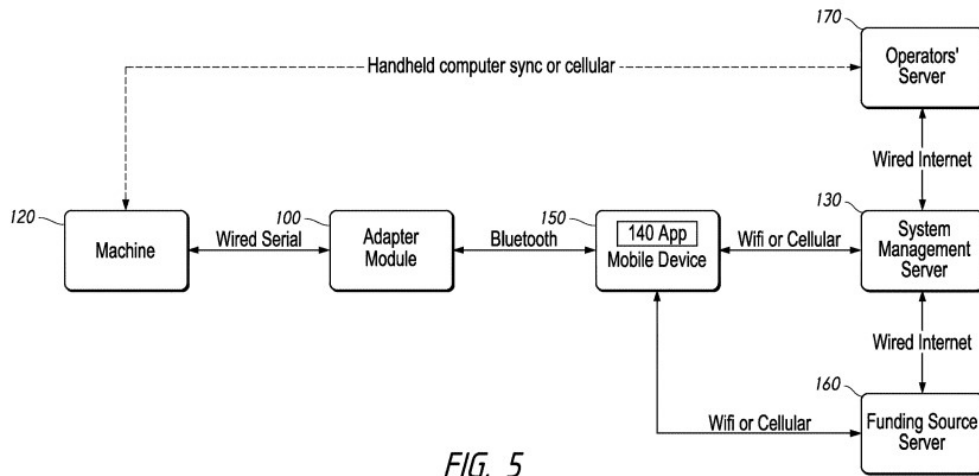


FIG. 5

Ex.1001, Fig.5

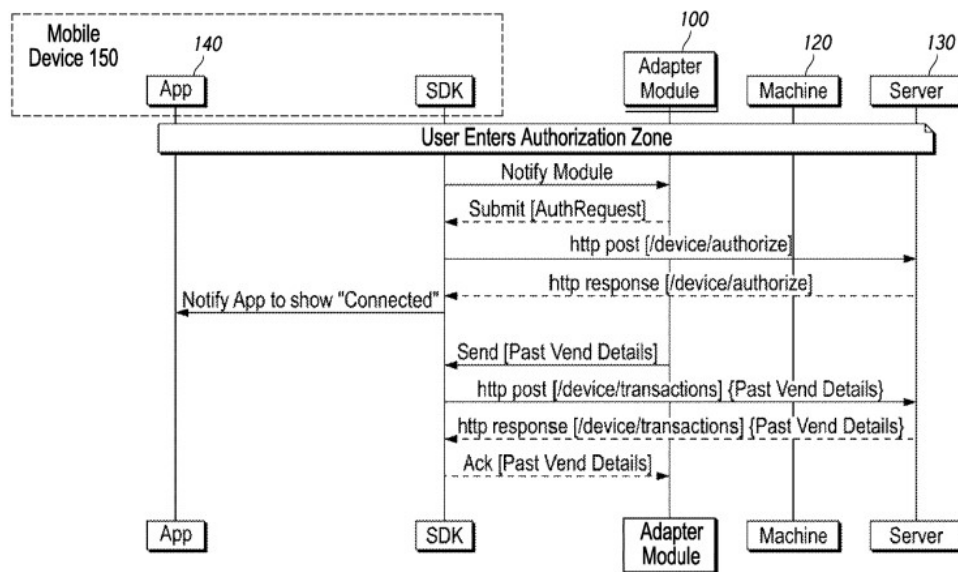


FIG. 8B

Ex.1001, Fig.8

As explained below, these purported improvements were already known in the art. Ex.1003 ¶¶34-36.

C. Prosecution History

During prosecution, Applicant obtained allowance in part by amending claims 1, 12, and 17 to “recite ‘notifying an electronic payment device . . . that the mobile device has entered an authorization zone’ and ‘in response to [the] notifying . . . , receiving from the electronic payment device, via the communications unit, a request to preemptively obtain authorization to make funds available,’” based on Examiner’s suggestion. Ex.1002, 77-78 (alterations, ellipsis, and underline in original). Applicant also amended the claims to clarify that the requested authorization is **preemptive**, both to distinguish the prior art and overcome a §112(a) rejection, and emphasized requirements that the mobile device receives “an authorization grant of an amount of funds corresponding to a maximum amount” from a server and sends it to the electronic payment device “prior to user selection of any items or services.” *See id.* Examiner allowed the claims after these amendments, citing certain of these features as missing from the “closest prior art” then of record. *Id.*, 15-16.

V. LEVEL OF ORDINARY SKILL IN THE ART

A person of ordinary skill in the art (“POSITA”) of the ‘208 patent in December of 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. Additional education can substitute for less work experience, and vice versa. Ex.1003, ¶19.

VI. CLAIM CONSTRUCTION

In an IPR, claims “shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b). The Board only construes the claims to the extent necessary to resolve the underlying controversy. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017). Petitioner submits that, for the purposes of this proceeding, the terms of the challenged claims should be given their plain and ordinary meaning, and no terms require specific construction.¹ Ex.1003 ¶33.

¹ Petitioner does not concede that any term in the challenged claims meets the statutory requirements of 35 U.S.C. § 112, or that the challenged claims recite patentable subject matter under 35 U.S.C. § 101.

VII. RELIEF REQUESTED AND THE REASONS FOR THE REQUESTED RELIEF

Petitioner asks that the Board institute a trial for IPR and cancel the Challenged Claims in view of the analysis below.

VIII. DISCRETIONARY DENIAL WOULD BE INAPPROPRIATE

A. Discretionary denial under the *Fintiv* factors is not appropriate

Under the Interim Guidance, “the PTAB will not discretionarily deny institution of an IPR or PGR in view of parallel district court litigation where a petitioner stipulates not to pursue in a parallel district court proceeding the same grounds as in the petition or any grounds that could have reasonably been raised in the petition.” Interim Guidance, 7. Referred to as a *Sotera* stipulation, “[t]his clarification avoids inconsistent outcomes between the PTAB and the district court and allows the PTAB to review grounds that the parallel district court litigation will not resolve.” *Id.* at 7–8. The Interim Guidance is “binding agency guidance” to the Board. Interim Guidance, 3.

Consistent with this guidance, Petitioner stipulates that, if the instant IPR is instituted, it will not pursue against the ‘208 patent in the parallel district court proceeding the same grounds as in the petition or any grounds that could have reasonably been raised in the petition.

Furthermore, (1) the parallel district court litigation between PayRange Inc. (“PayRange” or “Patent Owner”) and CSC that is pending in the District of Delaware

is at the pleading stage and no scheduling order has been entered (*See PayRange Inc. v. CSC ServiceWorks, Inc.*, 1:23-cv-00278-MN (D. Del.) (“PayRange Litigation”)); (2) Petitioner intends to seek a stay of the PayRange Litigation pending IPR; and (3) the Petition presents compelling evidence of unpatentability in light of the combinations of prior art references, such that, if unrebutted in trial, would lead to a conclusion that the Challenged Claims are unpatentable by a preponderance of the evidence. Interim Guidance, 4-5. Accordingly, the Board should not discretionarily deny institution under *Fintiv*.

B. Discretionary denial under *General Plastic* is not appropriate

The *General Plastic* factors also weigh heavily against discretionary denial. While there has been one prior PGR challenging the ‘208 patent, CSC is a different petitioner than the petitioner in that proceeding. *See* PGR2021-00084. Furthermore, CSC was not involved in any prior suit involving the petitioner in PGR2021-00084. The Board routinely finds that *General Plastic* does not apply to the circumstances here, where the petitioner was sued independently, was sued on largely different products, and has no significant relationship with the prior petitioner. *See, e.g., NetNut Ltd. v. Bright Data Ltd.*, IPR2021-00465, Paper 11 at 8-11 (Aug. 12, 2021).

C. Discretionary denial under 35 U.S.C. § 325(d) is not appropriate

Denial under § 325(d) is not warranted because the challenges presented in this petition are neither cumulative nor redundant to the prosecution of the ‘208

patent. The Examiner did not consider any of the references relied upon in this petition.

IX. IDENTIFICATION OF HOW THE CLAIMS ARE UNPATENTABLE

A. Challenged Claims

Petitioner challenges claims 1-20.

B. Statutory Grounds for Challenges

Grounds	Claim(s)	Basis
#1	1-2, 5-13, 16-18	35 U.S.C. § 103; the challenged claims are obvious over Freeny and Kou.
#2	3-4, 14-15, 19-20	35 U.S.C. § 103; the challenged claims are obvious over Freeny and Kou further in view of Canter.

U.S. Patent No. 8,958,846 to Freeny (“**Freeny**,” Ex.1004) was filed August 23, 2006 and issued on February 17, 2015. Freeny is thus prior art under at least 35 U.S.C. § 102(a)(2).

Payment Technologies for E-Commerce (2003) (“**Kou**,” Ex.1005) is a textbook published by Springer-Verlag Berlin Heidelberg GmbH in 2003; it was also registered for copyright in 2003 and assigned the ISBN 978-3-642-07887-3. Ex.1005 at iv (copyright page). Accordingly, Kou was publicly accessible before the earliest

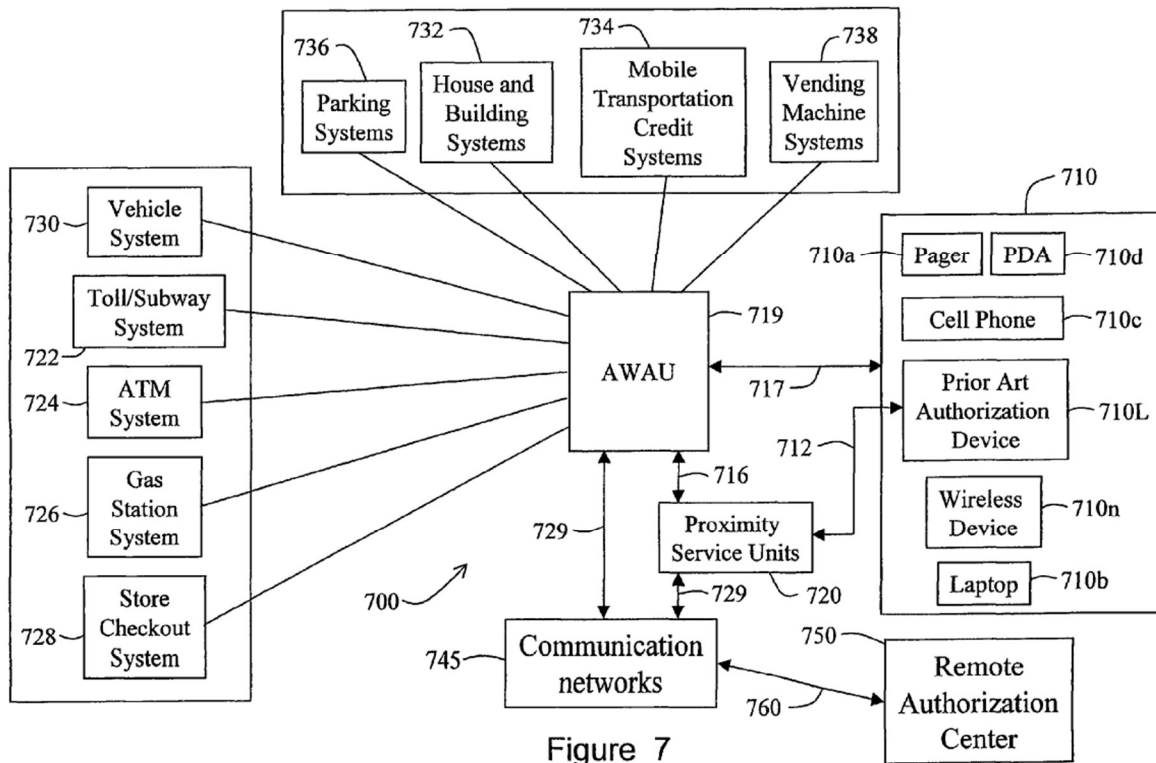
priority date of the '208 patent and is prior art under at least 35 U.S.C. § 102(a)(1). *See VidStream LLC v. Twitter, Inc.*, 981 F.3d 1060, 1065–66 (Fed. Cir. 2020) (“When there is an established publisher there is a presumption of public accessibility as of the publication date.”); Ex.1003 ¶44 (“Springer is an established publisher of textbooks and other academic works.”).

U.S. Patent Publication No. 2013/0054016 to Canter et al. (“**Canter**,” Ex.1006) was filed on August 29, 2012 and published on February 28, 2013. Canter is thus prior art under at least 35 U.S.C. § 102(a)(1).

C. Ground 1: Claims 1–2, 5–6, 12–13, and 16–18 would have been obvious over Freeny in view of Kou

1. Summary of Freeny

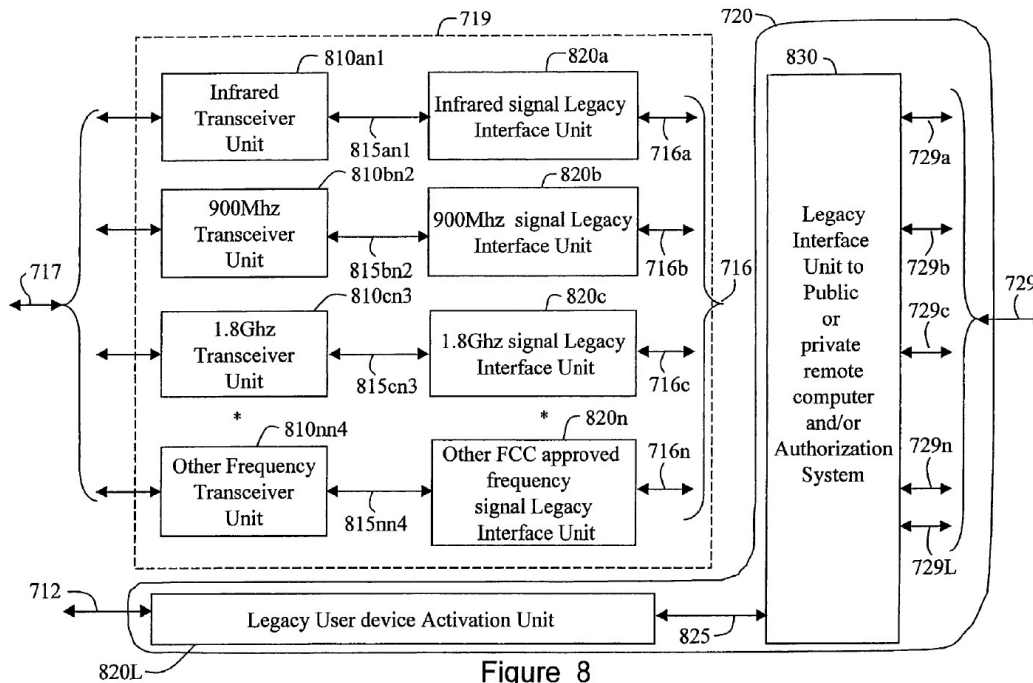
Freeny relates generally to mobile payment systems and describes devices and authorization protocols for use in such systems. For example, in a section titled “Proximity Authorization Transaction System,” Freeny describes the structure and operation of an “Advanced Wireless Authorization Unit (AWAU).” *See generally* Ex.1004, 9:50-14:58, Fig. 8. Freeny discloses connecting the AWAU to existing “proximity service units,” such as ATMs or vending machines, to enable cashless transactions with customers using “wireless devices 710 such as a digital cell phone, pager, computer, PDA or a specialty device.” *See* Ex.1004, 9:50-10:25, Fig. 7.



Ex.1004, Fig.7

Freney further teaches the AWAU using wireless communications to perform an automated authorization process when the customer's wireless device enters within a predetermined distance, as measured by detecting signal strength of received transmissions. *See* Ex.1004, 11:26-31, 12:65-13:37. For example, Freney teaches that a wireless device transmits a "request authorization code when [it] is within a predetermined proximity distance from the [AWAU's] multiple channel wireless transceiver." Ex.1004, 11:26-31. The wireless communication elements of the AWAU (719), and their connection to a proximity service unit (720), are depicted in Figure 8 (reproduced below). As it pertains to a vending machine, Freney

expressly teaches that the disclosed system eliminates the need for “carrying of cash or credit cards.” Ex.1004, 30:9-13.



Ex.1004, Fig.8.

In the section titled “Master Proximity Authorization System,” Freeny describes the signaling functionality for authorization and approval of transactions initiated via a wireless device in conjunction with Freeny’s other teachings. Ex.1003, ¶¶42-43. Freeny also describes specialized wireless devices for use with its payment and proximity authorization systems, calling these devices “proximity authorization units.” Ex.1004, 30:63-31:11; *see id.*, 34:6-55, Fig.30 (reproduced below).

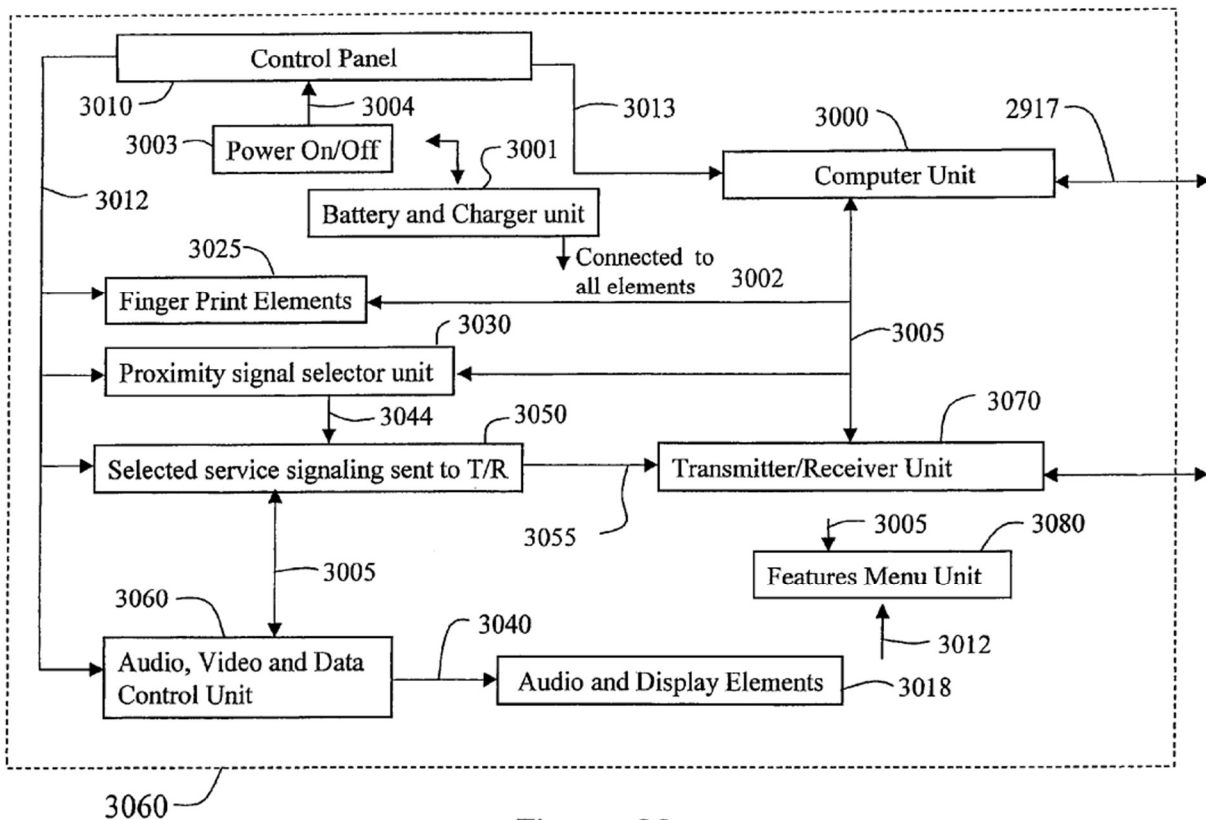


Figure 30

Ex.1004, Fig.30

Freeny describes implementing the previously discussed authorization process using a proximity authorization unit to activate a proximity service unit, such as an ATM, vending machine, or toll booth. Ex.1004, 31:12-33:4; see Ex.1003 ¶¶39-43. Freeny discloses the proximity authorization unit activating functions of the proximity service unit either automatically or manually. Ex.1004, 32:49-33:4; Ex. Ex.1003 ¶40. For example, Freeny discloses that a “vending machine system can be activated . . . at one distance for services not requiring the owner of the proximity authorization unit 2910 to physically use the menu on the . . . vending machine system.” Ex.1004, 32:55-60. “[T]he menu operation can be enabled at a closer

distance using the signal strength detected by [a] wireless adapter element 3180” attached to an existing vending machine. *Id.*, 32:60-65; *see id.*, 31:54-57, 35:51-59. Freeny also teaches that authorization may be automatic even when menu services are activated manually. *See id.*, 32:66-33:4. Manual activation may include using a “connect button” on the proximity authorization unit. *Id.*, 35:1-11.

2. Summary of Kou

Kou is a textbook describing a range of technologies used in electronic payment systems. Ex.1003 ¶44. In Chapter 12, Kou describes technologies useful for “a micropayment system,” *i.e.*, one that “can be used to charge sufficiently low amounts” without excessive transaction costs. Ex.1005 p.245. Kou explains that “most currently-deployed micropayment systems” implement an online payment process “invoked by the consumer,” as illustrated by Figure 12.3 (reproduced below). *Id.* p.249.

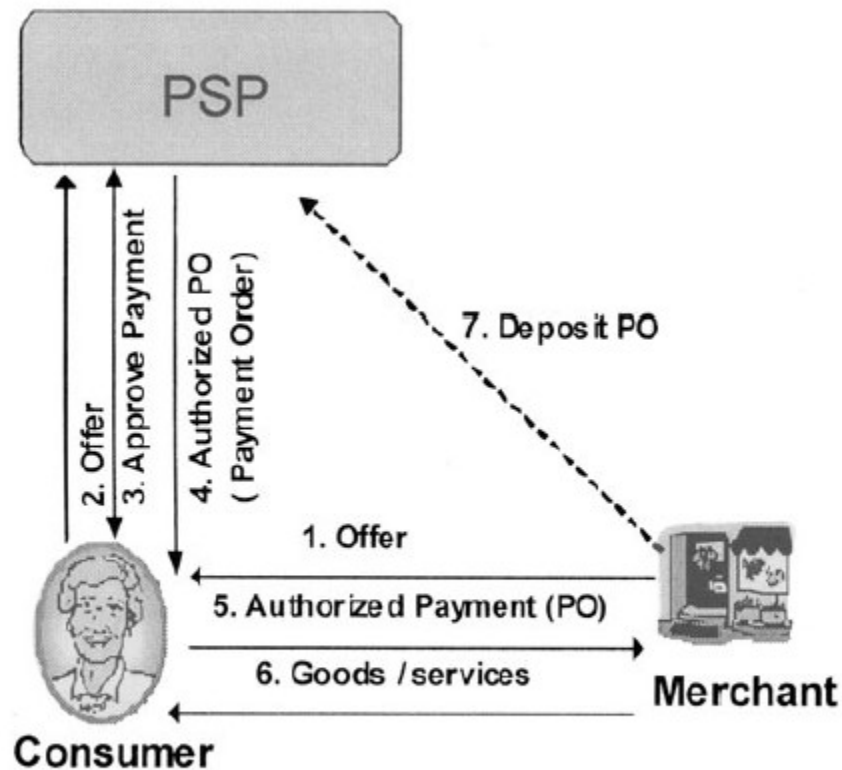


Fig. 12.3 Online payments invoked by consumer

Ex.1005 p.249 (Fig.12.3)

As illustrated, once the consumer initiates a transaction, the merchant sends an offer for sale of goods/services. Ex.1003 ¶¶44-45; Ex.1005, Fig.12.3. Because payment requires authorization, the consumer forwards it to a payment service provider (PSP), who responds with authorization, which the consumer forwards to the merchant to complete the transaction and receive the goods/services. Ex.1005, Fig.12.3.

Kou discloses improving this authorization framework to reduce communication costs, *e.g.*, “when paying using communication devices, such as

mobile phones.” *Id.* p.274. Kou further discloses a semi-offline “Pre-authorization” scheme in which “[t]he PSP may authorize the customer payments up to a pre-defined limit to a *specific* merchant,” and the consumer then provides this authorization “directly to the merchant or point-of-sale (e.g., vending machine).” *Id.*, p.276. Kou further describes adopting a “one-time (or limited-use) public key digital signature[s]” for “semi-offline payments where the PSP pre-authorizes the one-time digital signature.” *Id.*, p.278.

In other chapters, Kou discloses using timers to expire stale transactions. *E.g.*, Ex.1005, p.202.

3. Reasons to Combine Freeny and Kou

A POSITA would have been motivated to combine the teachings of Kou with those of Freeny for multiple reasons. Both Freeny and Kou identify a known inefficiency with micropayments. Ex.1004, 29:63-65; Ex.1005, p.245. Kou proposes improvements, including a pre-authorization scheme that reduces communication costs in scenarios where customers pay for vending machine transactions using a mobile phone or other communications device. Ex.1005 pp.276-278. A POSITA would have recognized that Freeny’s system fits this description and benefited from Kou’s cost-savings. Ex.1003 ¶¶52-58. Likewise, Kou discloses a single-use signature scheme that reduces computational complexity and “is easily adopted for semi-offline payments” using pre-authorization “for a particular merchant and a

specific maximal amount.” Ex.1005 p.278; *see id.* pp.276-278. A POSITA would have therefore understood this scheme would provide further cost-reduction benefits to Freeny and been motivated to incorporate these teachings. Ex.1003 ¶¶52-58.

Any modification of Freeny’s teachings, including supplementing software programming, to accommodate the teachings of Kou would have been within the level of ordinary skill in the art. Ex.1003 ¶57. Indeed, Kou explains that its disclosed payment methodology is “implemented by most currently-deployed micropayment systems.” Ex.1005, p.248. A POSITA would therefore have a reasonable expectation of success in making the proposed combination. *See* Ex.1003 ¶56. Kou’s teachings regarding expiration timers describe well-known techniques in the field of electronic payment systems with known benefits, which a POSITA would have known to combine with Freeny to achieve predictable results. Ex.1003 ¶¶55-57.

4. Claim 1

[1(pre)] A method comprising:

To the extent the preamble is limiting, Freeny describes a method. *E.g.*, Ex.1004, 26:13-16, 31:12-15; *see* Ex.1003 ¶63.

[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:

Freeny, alone or in view of Kou, discloses or renders obvious this limitation because it discloses using any of a number of wireless devices in connection with a

system and method of preauthorizing customer transactions involving automatic retail machines. Ex.1003 ¶¶64.

First, Freeny discloses or renders obvious several different types of *mobile device[s] with one or more processors, memory, and a communications unit*. Ex.1003 ¶¶65-66.

For example, Freeny discloses using any number of wireless devices 40 to interact with a “public communications unit” via wireless link. Ex.1004, 5:36-37, Fig.1 (reproduced below). This wireless device may be “a simple wireless home phone” “a sophisticated portable computer” (such as a laptop computer) a “PDA [personal digital assistant] [] that has an infrared modem with multimedia capability,” or “analog and digital cell and pager phones.” Ex.1004, 5:12-18; *see also id.*, 11:21-26, Fig.7. A POSITA would have understood the disclosed wireless devices such as cellular phones, portable computers, and/or PDAs each have *one or more processors, memory, and a communications unit* for transmitting and receiving wireless signals. Ex.1003 ¶66; *see* Ex.1004 5:12-21. Accordingly, these wireless devices are *mobile device[s]* with the recited elements. Ex.1003 ¶66.

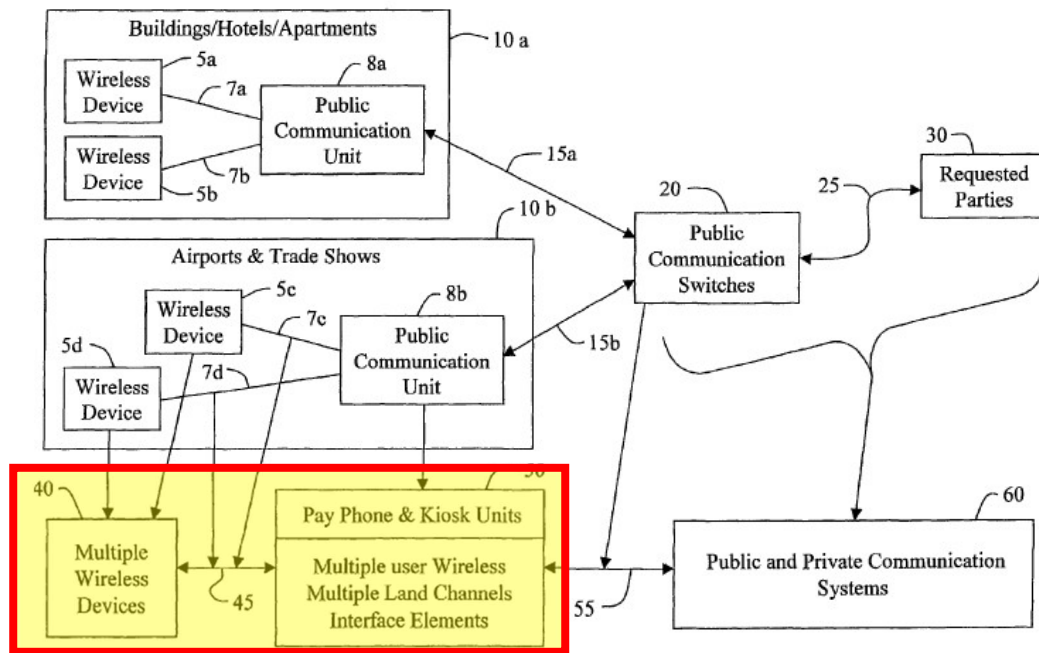
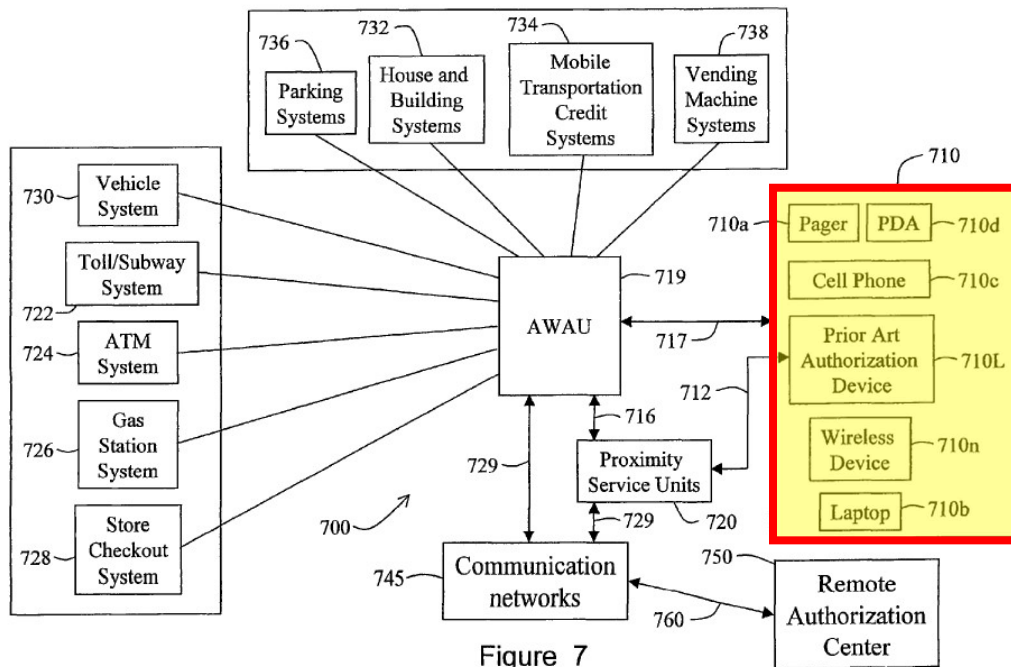


Figure 1

Ex.1004, Fig. 1 (annotated).

Freemy's "public communications unit" is an *automatic retail machine* that provides communication services to customers. *See* Ex.1003 ¶¶64-65, 69 (citing Ex.1004, 5:58-59). Freemy also discloses using wireless devices to interact with a broad range of *automatic retail machines*, ranging from toll and parking gates to ATMs and vending machines. *See id.* ¶¶65 (citing Ex.1004, 2:8-19, Fig.7); Ex.1004, Fig. 7 (reproduced below).



Ex.1004, Fig.7 (annotated).

Moreover, Freeny discloses structural and operational details for an illustrative *mobile device* in its description of a “proximity authorization unit” (hereinafter “PAU”). Ex.1003 ¶¶67-68. A POSITA would have understood that the PAU is a *mobile device*, and Freeny discloses that it has *one or more processors, memory, and a communications unit*. Ex.1003 ¶68. For example, a PAU has “a portable housing 2911, a computer unit 3000, and a transmitter/receiver unit 3070.” Ex.1004, 30:63-65; *see* Fig. 30 (reproduced below). It further discloses that computer unit 3000 comprising a processor (*e.g.*, “a modified Ericsson Bluetooth Baseband Processor”) and having data storage including “program memory.” *Id.*, 34:7–8, 34:12–14.

transmitting a “request authorization code” to a vending machine to activate it. Ex.1003 ¶69; *see* Ex.1004, 13:7–11 (describing transmission and validation of request authorization codes triggered by proximity) 32:50–55 (“[T]he vending machine system can be activated either automatically or manually by the proximity authorization unit 2910 when the person is within a predetermined proximity distance of the . . . vending machine system.”). Freeny further teaches that the vending machine “can be activated for example at one distance for services not requiring the owner of the proximity authorization unit 2910 to physically use the menu on the . . . vending machine system.” *Id.*, 32:55–60. A POSITA would have understood that the services requiring menu operation, as described in Freeny, would include the “*selection of any items or services*” on a vending machine system (or on any other system that provides more than one item or service). Ex.1003 ¶69. Thus, Freeny discloses the authorization steps occurring “*prior to user selection of any items or services provided by an automatic retail machine.*” *Id.* ¶69.

Third, regardless whether Freeny discloses or renders obvious performing the claimed method *prior to user selection of any items or services provided by an automatic retail machine*, a POSITA would have found this limitation obvious in view of Kou’s teachings on advance authorization of certain transactions. Ex.1003 ¶¶70-71. Kou explains that a payment service provider (“PSP”) “may authorize the customer payments up to a pre-defined limit to a *specific* merchant.” Ex.1005, p.276

(emphasis original). The consumer then “provides the final payment authorization directly to the merchant or point-of-sale (e.g., vending machine).” *Id.*

For at least the reasons explained above at IX(C)(3), a POSITA would have been motivated to implement Kou’s technique of pre-authorizing transactions in Freeny’s system. Ex.1003 ¶71. In particular, Freeny discusses the issue of “airtime cost” necessary for remote authorization outweighing the value of a particular transaction. Ex.1004, 29:63-65. Kou specifically discusses pre-authorization as a semi-offline means of reducing communication costs, so a POSITA would have been motivated to implement Kou’s pre-authorization technique to address the “airtime cost” issue discussed in Freeny. Ex.1003 ¶¶52-58; Ex.1005, p.274-76.

Thus, because Freeny discloses a proximity-based authorization method, and a POSITA would have found it obvious to incorporate Kou’s pre-authorization technique into the proximity authorization, Freeny and Kou render obvious performing the steps of the ‘208 patent “*prior to user selection of any items or services provided by an automatic retail machine.*” Ex.1003 ¶71.

[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;

Freeny discloses or renders obvious this limitation because it discloses system components that interact with legacy automatic retail machines (e.g., vending

machines) to pre-authorize transactions through customers' wireless devices. Ex.1003 ¶¶72-76.

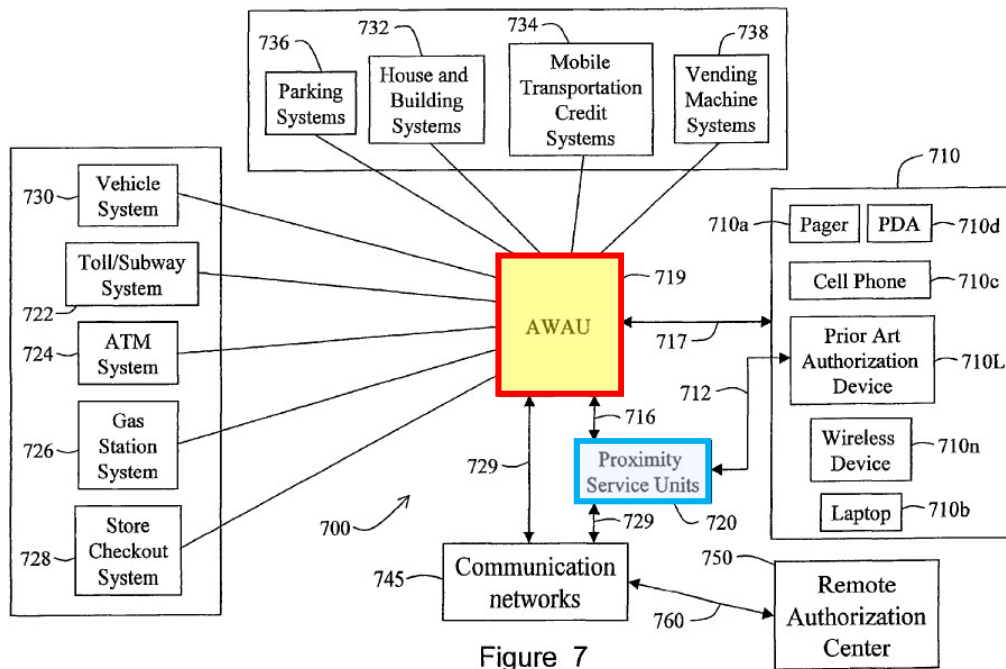
First, Freeny discloses or renders obvious an *electronic payment device coupled with [an] automatic retail machine*. Freeny discloses an assortment of *automatic retail machines*, including vending machines or toll payment devices. Ex.1003 ¶73. For example, Freeny discloses that a proximity service unit can be “any device which provides a predetermined service upon activation. For example, the proximity service unit 2920 can be . . . an ATM system, a vending machine system, a gas pump system, a store checkout system, [or] a toll booth system.” Ex.1004, 31:34-40; *see also id.*, Fig. 29 (listing examples in box 2920). Freeny similarly discloses examples in Figure 7 as even-numbered items 722–738, including vending machines and toll/subway systems. *See id.*, 9:60–10:2, Fig. 7. A POSITA would have understood all of these disclosed proximity service units (also called “proximity systems”) to be examples of *automatic retail machines*. Ex.1003 ¶73.

Freeny also discloses *coupling electronic payment devices* to these *automatic retail machines*. *See id.* ¶74. Freeny teaches that “[t]he purpose of the current invention” is to allow customers to operate “existing proximity systems” using the customers' wireless devices instead of using “an original device 710L . . . that operates the original [proximity] system.” Ex.1004, 10:38–41, 10:26–31; *see also*

id., 15:7-12. Freeny discloses doing so by coupling certain components of Freeny’s system to existing legacy machines. Ex.1003 ¶74 (citing Ex.1004, 10:26-64, 11:32-36, 15:7-12.). For example, Freeny discloses using an Advanced Wireless Authorization Unit (AWAU), Ex.1004, 9:50–59, which is coupled to proximity system 720. *See id.*, 10:61–64 (describing AWAU as “appended” to proximity system 720), 11:32–36 (disclosing AWAU “is connected to the general proximity system 720 via a line 716 housed therein”), Figs. 7, 8. Similarly, Freeny discloses that proximity service unit 2920 includes legacy elements 3160—which represent an existing unit, *e.g.*, vending machine—and new system components, including “a physical adapter element 3170 [and] a wireless adapter element 3180.” *Id.*, 31:54–57; *see id.*, 35:51–59, Fig. 31.

Furthermore, a POSITA would have understood these added components (*e.g.*, the AWAU 719 and/or the adapter elements 3170, 3180 of proximity service unit 2920) to comprise an *electronic payment device*. Ex.1003 ¶¶73-75. In particular, Freeny teaches that these components can serve as a replacement and/or alternative to an existing payment device, ““which might be something as simple as a coin payment box,” allowing customers to activate the proximity system using their wireless devices 710*a–n* instead of using, *e.g.*, “a coin.” Ex.1004, 11:38-43; *see id.*, 30:9-11 (“carrying of cash or credit cards is eliminated”), 37:60–38:7 (disclosing use of proximity authorization units for payment); Ex.1003 ¶74.

The red and yellow annotations to Figures 7 and 31 of Freeny (below) indicate components that comprise an *electronic payment device coupled to an automatic retail machine* (indicated in blue). Ex.1003 ¶¶74-76.



Ex.1004, Fig.7 (annotated).

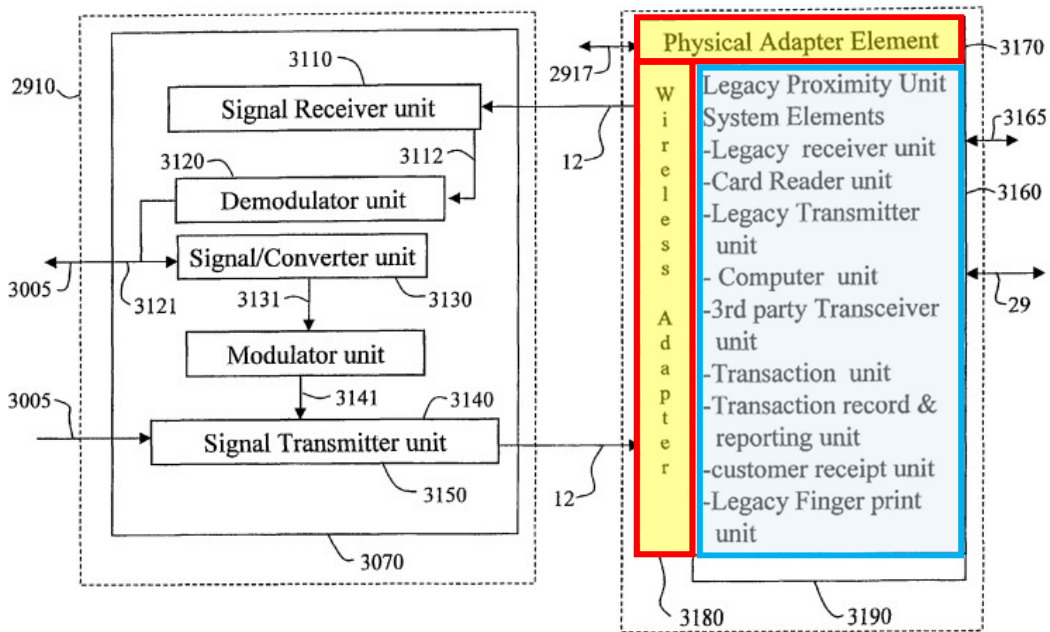


Figure 31

Ex.1004, Fig.31 (annotated).

Second, Freeny discloses or renders obvious “*notifying [the] electronic payment device . . . that the mobile device has entered an authorization zone associated with the automated retail machine.*” In particular, Freeny discloses a wireless device (such as a proximity authorization unit) beginning an authorization process by transmitting messages, which may include a “request authorization code” and/or a “preamble code,” to an AWAU or wireless adapter element. *See* Ex.1004, 31:16-20 (disclosing “each proximity authorization unit” stores and outputs “the request authorization code and the preamble code”), 32:66-33:2 (“In the case of the ATM system and the vending machine system, the request authorization code can be transmitted to the wireless adapter element 3180 to begin the authorization process.”). This may occur automatically when the device enters within some

predetermined distance. Ex.1003 ¶75; *see* Ex.1004, 11:18-31 (“Each wireless device 710a-n is capable of communicating the request authorization code when the wireless device is within a predetermined proximity distance from the multiple channel wireless transceiver 740.”), 32:51-55 (“the vending machine system can be activated either automatically or manually by the proximity authorization unit 2910 when the person is within a predetermined proximity distance of . . . the vending machine system”). That “predetermined distance” defines an *authorization zone*, and the transmission that includes the request authorization code constitutes *notifying the electronic payment device*. Ex.1003 ¶75.

Thus, because Freeny describes activating a vending machine system that includes components which constitute an *electronic payment device* once a *mobile device* enters a predetermined proximity distance 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. Ex.1003 ¶76.

[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;

Freeny, in combination with Kou, discloses or renders obvious this limitation because a POSITA would have found it obvious to supplement the system and method of Freeny with the framework for pre-authorization of funds as taught by Kou. Ex.1003 ¶¶77-81.

First, Freeny discloses *a request to preemptively obtain authorization to make funds available for cashless transactions with the automatic retail machine.* Ex.1003 ¶78. Specifically, Freeny describes a collaboration between “a service company and a wireless company . . . so that vending machine purchases could be made after getting approval from the credit card company over the wireless phone.” Ex.1004, 29:57–63. Freeny also discusses the user of a proximity authorization unit refilling (*i.e.*, authorizing) additional funds during the interaction with a vending machine. *See id.*, 38:7–14; Ex.1003 ¶78. Freeny also discloses preemptively obtaining authorization in other circumstances, such as a “toll/subway system.” Ex.1004, 13:34–37.

Second, a POSITA would have found it obvious to receive at a mobile device a request for pre-authorization of funds, as taught by Kou. Ex.1003 ¶¶79-80. Kou

discloses a merchant sending an offer to a consumer as part of a payment authorization process. Ex.1005, p.248, Fig.12.3.

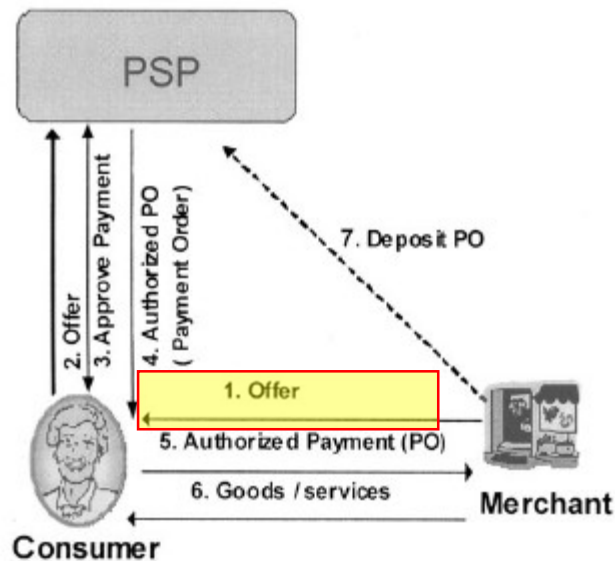


Fig. 12.3 Online payments invoked by consumer

Ex.1005, Fig.12.3 (annotated); Ex.1003 ¶¶80-81.

Kou also discloses a pre-authorization scheme as one way to reduce communication costs for micropayment systems. See Ex.1005, p.274–75 (describing the following “mechanisms” as “eliminating or reducing the costs of the communication”), p.276 (“the PSP [may] pre-authorize[] payments (up to some limit, for a given merchant)”). Accordingly, a POSITA would have understood the offer in Fig.12.3 to include *a request to preemptively obtain authorization to make funds available*. Ex.1003 ¶¶80-81.

Kou also suggests applying these teachings in systems like those disclosed in Freeny. Ex.1003 ¶¶79, 52-58. For example, Kou explains that the authorization

framework shown in Fig. 12.3 is useful when the customer/buyer can communicate with the PSP, which “is usually the case when paying using communication devices, **such as mobile phones** or computers connected to the internet.” Ex.1005, p.274 (emphasis added). Also, Kou expressly identifies a “vending machine” as a concrete example of a “merchant or point-of-sale” in describing the pre-authorization scheme. *Id.*, p.276. Accordingly, a POSITA would have understood that Kou’s teachings would be well-suited for use in implementing Freeny’s system and would have had a reasonable expectation of success in doing so. Ex.1003 ¶81.

As explained at section IX(C)(3), a POSITA would have been motivated to implement Kou’s technique of pre-authorizing transactions in Freeny’s system. Ex.1003 ¶¶52-58. In particular, Freeny discusses the issue of “airtime cost” necessary for pre-authorization outweighing the value of a particular transaction. Ex.1004, 29:63-65. Kou specifically discusses pre-authorization as a semi-offline means of reducing communication costs. Ex.1005, p.274-76. A POSITA therefore would have been motivated to implement Kou’s pre-authorization technique to address the “airtime cost” issue discussed in Freeny. Ex.1003 ¶¶52-58.

Thus, Freeny and Kou 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. Ex.1003 ¶81.

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

Freeny, in combination with Kou, discloses or renders obvious this limitation. Ex.1003 ¶82-84. In particular, Kou discloses an authorization process during which *the request for preemptive authorization* from the *receiving* step is sent to a server. Ex.1003 ¶83. It would have been obvious to a POSITA to apply these teachings to the authorization process of Freeny such that *the request* would be sent *via the communications unit* of the *mobile device*. *Id.* ¶84.

As discussed above, Kou discloses that a consumer’s mobile device receives an offer (which includes the *request*) from a merchant, which may be a vending machine. Ex.1003 ¶83; *see* Ex.1005, pp.248–49, 274–76, Fig.12.3; [1(c)] *supra*. Kou further discloses and sends the offer, including the *request*, to a payment service provider (“PSP”), as shown in Figure 12.3 (reproduced with annotations below). Ex.1003 ¶83; Ex.1005, Fig. 12.3.

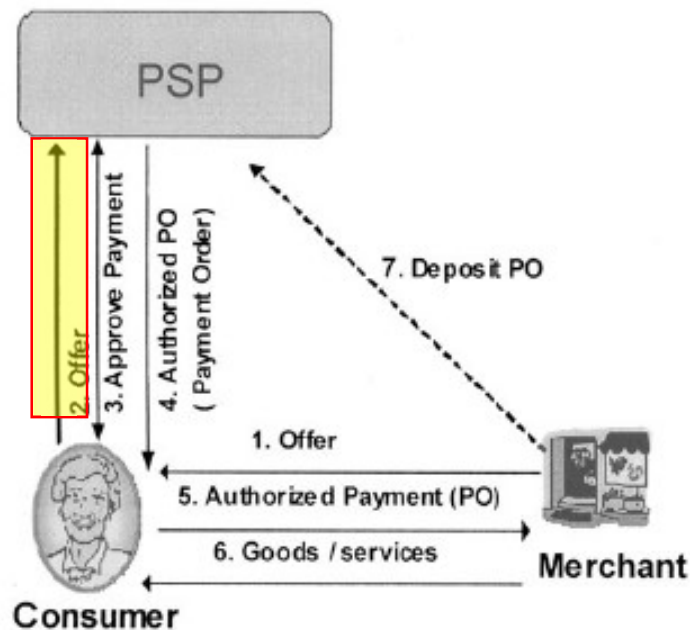


Fig. 12.3 Online payments invoked by consumer

Ex.1005, Fig. 12.3 (annotated); Ex.1003 ¶83.

Kou explains that the PSP “operate[s] as an efficient server application.” Ex.1005, p.248. Accordingly, a POSITA would have understood that Kou discloses “*sending the request to a server.*” Ex.1003 ¶83.

As discussed at [1(c)] above, a POSITA would have found it obvious to apply Kou’s teachings to Freeny’s authorization process using, *e.g.*, customers’ wireless devices, each with a *communications unit*. Ex.1003 ¶84. Thus, a POSITA would have found it obvious to *send the request to a server via the communications unit*, as claimed. Ex.1003 ¶84.

[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;

Freemy, in combination with Kou, discloses or renders obvious this limitation.

Ex.1003 ¶¶85-91. Freemy teaches proximity-based communication between a *mobile device* and an *automatic retail unit*, as well as initiating an authorization process.

Ex.1003 ¶85. Kou discloses a method for pre-authorization which authorizes a maximum amount of funds. Ex.1003 ¶88.

First, for the reasons explained above, Freemy in view of Kou renders obvious the *sending* step. Ex.1003 ¶82-84.

Second, Kou teaches *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* as part of the disclosed pre-authorization scheme. Ex.1003 ¶¶87-89. After the consumer sends the request to the PSP (the *server*), Kou discloses the PSP sending an “authorized PO as a response to the consumer.” Ex.1005, p.248, Fig. 12.3. A POSITA would have understood this authorized PO constitutes an *authorization grant*, which the customer receives *in response to the sending* step. Ex.1003 ¶87.

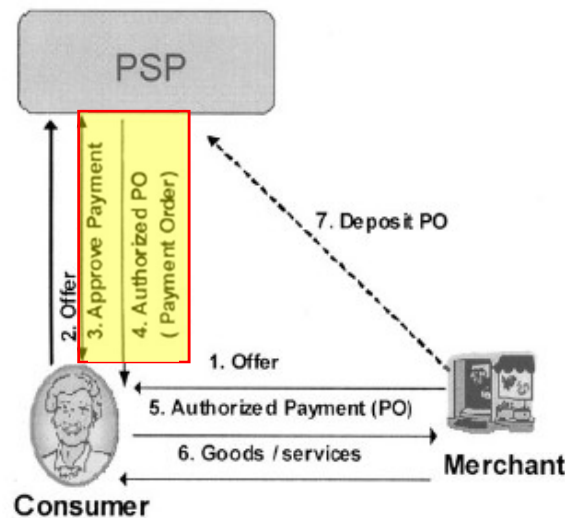


Fig. 12.3 Online payments invoked by consumer

Ex.1005, Fig. 12.3 (annotated).

In the context of pre-authorization, Kou discloses this grant authorizing “customer payments up to **a pre-defined limit.**” Ex.1005, p.276 (emphasis added). The PSP thus delegates authority to the customer to authorize payment (up to the limit) for whatever purchase the customer ultimately makes, if any. Ex.1003 ¶88 (citing Ex.1005, p.276). Kou also teaches an *authorization grant* in the form of a “one-time (or limited-use) public key digital signature,” by which “the PSP pre-authorizes the one-time signature scheme for a particular merchant and **a specific maximal amount.**” Ex.1005, p.278 (emphasis added). Kou further suggests using such schemes in combination with the pre-authorization scheme. *See id.*; Ex.1003 ¶89. A POSITA would have understood that the “pre-defined limit” and “specific maximal amount” each constitute a *maximum amount associated with an item or service*. Ex.1003 ¶88.

Third, Kou discloses or renders obvious *wherein the authorization grant expires upon satisfaction of one or more predetermined criteria*. Ex.1003 ¶90. A POSITA would have understood that a pre-authorization up to a maximal amount *expires* once the consumer reaches the maximal amount or (in the one-time signature scheme) when the consumer makes a purchase. Ex.1003 ¶90. These two *criteria* are *predetermined* by the PSP's pre-authorization scheme, and *expiration* occurs when either is satisfied. Ex.1003 ¶90.

Further, the use of “*predetermined criteria*” that govern the “*expir[ation]*” of an authorization grant was well known in the art, and would have been obvious to a POSITA to prevent stale authorization tokens from persisting, *e.g.*, after a “window-shopping” consumer moves on from a given merchant. Ex.1003 ¶91. For example, Kou explains that “[t]he **time stamp portion** of [an] EPOID [(“electronic payment order ID”)] is used to **expire stale transactions**.” Ex.1005, p.202 (emphasis added). Kou also describes a sequential transaction wherein “[a] timer is used at each step to protect against unusual situation where one of the parties (buyer, merchant, or TTP) is not proceeding to the next step within a predetermined time interval. For steps 1 to 6, **if the timer expires the transaction is assumed to be aborted**.” Ex.1005, p.242 (emphasis added). A POSITA would have found it obvious to incorporate such a time-out mechanism in the pre-authorization scheme from the combined teachings of Freeny and Kou. Ex.1003 ¶91. Indeed, Freeny expressly discloses storing

temporary authorizations in the wireless device for other implementations. *Id.*; see Ex.1004, 23:24–26.

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

Freeny, in combination with Kou, discloses or renders obvious this limitation in at least two different ways. Freeny discloses *initiating cashless transactions* based on (1) proximity triggers, *e.g.*, for toll/subway systems, and (2) manual activation triggers, *e.g.*, using a “connect button” to initiate a transaction with a vending machine. Ex.1003 ¶¶92-95.

First, Freeny discloses or renders obvious “*detecting . . . a trigger condition to initiate a cashless transaction with the automatic retail machine.*” Ex.1003 ¶¶92-93. Freeny describes using proximity-based *trigger conditions*. *Id.* In one detailed example, Freeny discloses a service (*e.g.*, toll/subway service) being provided automatically when the customer reaches a given distance (*e.g.*, 20 feet) from the AWAU; the AWAU then signals the proximity service unit to provide the service. *Id.* ¶93; see Ex.1004, 12:65–13:37, 13:57–63, 14:37–44. Freeny also discloses activating an ATM or vending machine automatically, using a proximity-based trigger condition. See Ex.1004, 32:50–66; see also *id.*, Fig. 28 (“2. Authorizes and activates different services within selected predetermined distances”), 30:40–44 (describing Fig. 28 as “special features and functions of the vending machine

system”). In addition, Freeny discloses that a proximity service unit (*e.g.*, vending machine or ATM) can be activated using a manual *trigger condition*, such as “a connect button on the control panel” of using a proximity authorization unit. Ex.1004, 35:1–11. A POSITA would have understood that a person entering a “predetermined proximity distance,” and activating a “connect button” are both examples of *trigger conditions*. Ex.1003 ¶93.

Second, Freeny (alone or in combination with Kou) suggests and renders obvious that *detecting* is *by an application executing on the mobile device*. Freeny discloses *mobile devices* having “program memory,” including the proximity authorization unit and other common devices, such as PDAs, mobile phones, and portable computers. Ex.1004, 10:5–7, 34:13–14; *see* Ex.1003 ¶94. Moreover, Freeny’s “computer unit 3000,” which includes the program memory, controls the components that select signals to send and protocols to use. Ex.1003 ¶94; *see* Ex.1004, 34:27–44 (describing control of “signal selector unit 3030” and “control panel 3010”). A POSITA would have understood that the computer unit uses logic comprised within one or more *applications* running in program memory to *detect trigger conditions* and to select the appropriate signals and/or protocols for any response. In the alternative, this would have been an obvious way to implement Freeny because, by the filing date of the ‘208 patent, it was well known in the art to use *applications* to facilitate wireless payment systems and methods, like Freeny’s.

Ex.1003 ¶95. Indeed, Kou expressly suggests that payment authentication, like that in Figure 12.3, “may require dedicated payment software.” Ex.1005, p.259; *see* Ex.1003 ¶95 (citing Ex.1005, p.258–59).

Thus, 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.* Ex.1003 ¶95.

[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.

Freeny, in combination with Kou, discloses or renders obvious this limitation. Each of Freeny and Kou teaches completing an authorization process prior to the user entering into a transaction for goods or services, and Kou discloses or suggests this pre-authorization may include sending the *authorization grant* for a maximum *amount of funds* from the *mobile device* to the *electronic payment device*. Ex.1003 ¶¶96-100. It would have been obvious to incorporate these teachings from Kou in a system based on Freeny, resulting in the claimed limitation. *Id.*

First, Freeny and Kou disclose or render obvious *sending to the electronic payment device the authorization grant via the communications unit.* Ex.1003 ¶98. For example, Kou discloses that “the PSP sends the authorized PO as a response to the consumer, who forwards it to the merchant.” Ex.1005, p.248, Fig.12.3

(reproduced with annotations below). As discussed above, the authorized PO includes the *authorization grant* received from the *server* (here, the PSP). Ex.1003 ¶¶97-98.

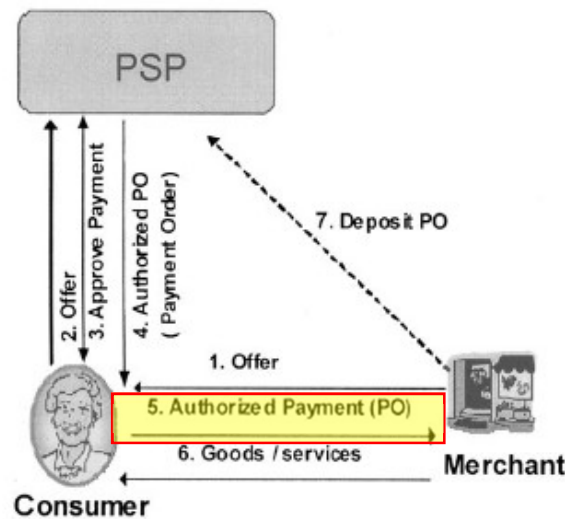


Fig. 12.3 Online payments invoked by consumer

Ex.1005, Fig.12.3 (annotated).

Kou further discloses using this kind of authorization process for a pre-authorization scheme in scenarios where the consumer (or buyer) pays for a vending-machine purchase “using communications devices, such as mobile phones or computers connected to the Internet.” Ex.1005, p.274; *see id.*, p.276. Freeny discloses a system that enables such payments using mobile phones (and other *mobile devices*), which include *a communications unit*, as shown above. Ex.1003 ¶98; *see [1(a)] supra*. Accordingly, Kou suggests implementing its teachings regarding pre-authorization in an environment like the one Freeny discloses, and a POSITA would have reasonably expected to succeed in doing so. Ex.1003 ¶98. As explained above, a

POSITA would have been motivated to do so to gain the benefits of a semi-offline payment scheme (*e.g.*, reduced communications cost), as taught by Kou. *Id.* (citing Ex.1005, pp.274–75).

Second, Kou discloses *sending . . . the authorization grant . . . 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*. Ex.1003 ¶99. For example, Kou discloses that the PSP’s pre-authorization “may authorize the customer payments up to a pre-defined limit.” Ex.1005, p.276. In addition, Kou discloses that “the PSP pre-authorizes the one-time signature scheme for a particular merchant and a specific maximal amount, and the consumer applies the one-time signature to authorize a specific amount (up to the maximal).” Ex.1005, p.278. A POSITA would have understood from Kou’s description of a “pre-defined limit” and “authoriz[ing] a specific amount (up to the maximal)” that the customer is enabled to make their selection and complete their purchase, provided the selected item or service costs less than the maximum amount of authorized funds. Ex.1003 ¶99.

Third, Freeny and Kou disclose or render obvious performing this step *in response to detecting the trigger condition and in accordance with a determination that the one or more predetermined criteria have not been satisfied*. Ex.1003 ¶100. As noted above, Freeny discloses both automatic and manual *trigger conditions* for proceeding with a transaction after obtaining prior authorization. *Id.*; *see* [1(f)]

supra. This, in view of Kou's teachings, means transmitting the *authorization grant*, as previously discussed, to Freeny's *electronic payment device* (e.g., the AWAU or the adapter elements of a proximity service unit). Ex.1003 ¶100. Moreover, as explained above, Kou suggests or discloses that the *authorization grant expires* when one of the *predetermined criteria* occurs, including prior use of a one-time authorization, passage of a predetermined period of time, or the maximal amount of authorized funds has already been spent. *Id.*; see [1(e)] *supra*. A POSITA would have understood from Kou that a determination would be required to confirm that the *authorization grant* had not expired (*i.e., that the one or more predetermined criteria have not been satisfied*) before proceeding with the transaction. Ex.1003 ¶100.

Thus, Freeny and Kou 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. Ex.1003 ¶100.

5. 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.

Freeny discloses or renders obvious the limitations added by claim 2.

First, Freeny discloses or renders obvious *determining a mode of operation for the application executing on the mobile device with respect to cashless transactions at the automatic retail machine*. Ex.1003 ¶101. For example, Freeny teaches that proximity authorization units (*mobile devices*) can communicate with proximity authorization units (*electronic payment devices coupled with automatic retail machines*) in either “automatic mode” or “manual mode.” Ex.1004, 34:56-35:11; *see id.*, 13:57–65 (similar); Ex.1003 ¶102. Freeny also discloses different “method[s] of communication,” depending on the mode of operations. Ex.1004, 34:56-35:11; Ex.1003 ¶102. Thus, a POSITA would have understood this to mean that the *current mode of operation is determined* in the manner recited by claim 2. Ex.1003 ¶102.

Second, Freeny discloses or renders obvious *selecting the trigger condition based on the determined mode of operation* by disclosing, for example, using one *trigger condition* in the *manual mode of operation* and using a different one in the *automatic mode*. Ex.1003 ¶103; *see* Ex.1004, 32:50-67, 35:1-11. In manual mode,

Freeny discloses activating a “connect button” on the *mobile device* to *initiate a transaction*. Ex.1004, 35:1-11. In automatic mode, Freeny discloses a customer “physically us[ing] the menu” on a vending machine and the menu being enabled by a proximity-based trigger condition. Ex.1004, 32:55-67; *see* Ex.1003 ¶103. (Freeny’s disclosure of different *trigger conditions* for different *modes of operation* is also discussed above in connection with Limitation [1(f)] above.) Thus, Freeny discloses or suggests *selecting the trigger condition based on the determined mode of operation*. Ex.1003 ¶¶103-104.

Accordingly, Freeny, in view of Kou, renders claim 2 obvious. *Id.* ¶¶101-104.

6. 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.

The combination of Freeny and Kou discloses or renders obvious the limitations added by claim 5.

First, Kou discloses *wherein the authorization grant is configured to authorize a single cashless transaction with the automatic retail machine*. Ex.1003 ¶106. For example, Kou teaches using single-use authorization keys in a “public key digital signature scheme.” Ex.1005, p.278. Moreover, Kou expressly discloses using such schemes with the pre-authorization scheme discussed in connection with claim

1 above. *See id.* (teaching that single-use, public-key schemes “are easily adopted” in the semi-offline, pre-authorization context); Ex.1003 ¶106. Kou’s single-use key constitutes an *authorization grant configured to authorize a single cashless transaction with the automatic retail machine*. Ex.1003 ¶¶106-107.

Second, a POSITA would have understood that a customer’s mobile phone or other communications device would erase Kou’s single-use key from memory after the key was used to authorize a transaction. Ex.1003 ¶107. It would have been obvious to erase a single-use key to free up memory and prevent accumulation of expired data because the key ceases to be valid after it is used or expires, so keeping it serves no purpose. *Id.*; *see also* Limitation [1(e)], above (discussing expiration of *authorization grants*). Indeed, Kou discloses that the **merchant** transmits the record of the pre-authorized transaction to the PSP for processing, so the consumer does not need to retain the key for future communication with the PSP. *Id.*; Ex.1005, Fig.12.3 (reproduced with annotations below). Thus, Kou suggests *erasing the authorization grant from the mobile device upon satisfaction of at least one of the one or more predetermined criteria*. Ex.1003 ¶107.

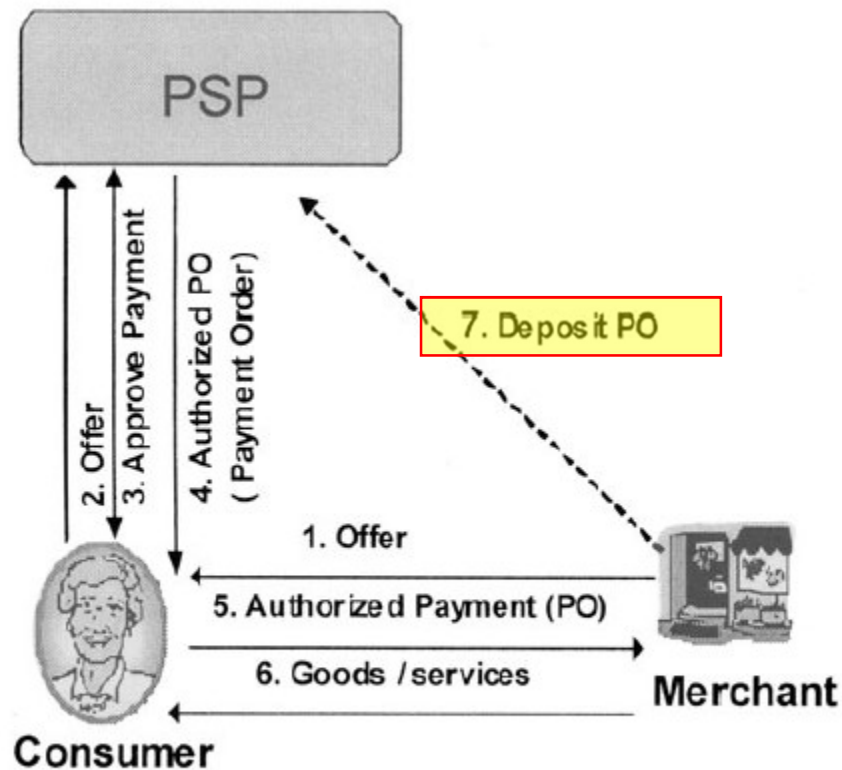


Fig. 12.3 Online payments invoked by consumer

Ex.1005, Fig.12.3

Accordingly, Freeny, in view of Kou, renders claim 5 obvious. Ex.1003

¶¶105-107.

7. 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.

The combination of Freeny and Kou discloses or renders obvious the limitations added by claim 6. Ex.1003 ¶¶108-112.

First, Kou discloses *wherein a first determined criterion of the one or more predetermined criteria is an expiration time* because it discloses *expiration* after the lapse of a predetermined period of time, as discussed for Limitation [1(e)] above. Ex.1003 ¶109; *see* Ex.1005 pp.202, 242. Moreover, it would have been obvious to prevent stale authorization tokens from persisting, *e.g.*, after a “window-shopping” consumer moves on from a given merchant. Ex.1003 ¶109.

Second, Freeny and Kou render obvious *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*. Ex.1003 ¶¶110-112. For example, it would have been obvious to use a relatively shorter expiration time when there are many *other users, distinct from the user of the mobile device, near the automatic retail machine* to prevent inefficient allocation of the *electronic payment device’s* limited, finite communication resources. *Id.* Freeny discloses that an AWAU has capacity for a finite number of communication channels, which it uses to maintain a signal connection with customer wireless devices from authorization through transaction. *See* Ex.1004, 12:32–39, Fig.8, 13:45–52; Ex.1003 ¶¶110-111. Given this, a POSITA would have been motivated to use Kou’s expiration timers to ensure that limited connection resources are not allocated to consumers who are not going to make a

purchase while also providing automatic pre-authorization. Ex.1003 ¶111; *see* Ex.1005 p.242 (“[I]f the timer expires the transaction is assumed to be aborted.”). As Dr. Neuman explains, “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.” Ex.1003 111.

In addition, it would have been obvious to allow users to choose a shorter expiration time because it was well-known in the art that some users would want the choice to decrease the expiration time of their own authorizations, *e.g.*, for security reasons. Ex.1003 ¶112. Knowing this, a POSITA would have been motivated to give users this choice and would have had a reasonable expectation of success in implementing this feature, *e.g.*, as a configuration option on their *mobile device*. *Id.*

Accordingly, Freeny, in view of Kou, renders claim 6 obvious. Ex.1003 ¶¶108-112.

8. 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

Freeny discloses or renders obvious the limitations added by claim 7.

As noted above, Freeny discloses using proximity-based *trigger conditions*. Ex.1003 ¶¶113-114; *see* Limitation [1(f)] above. Freeny further discloses

determining the distance between the *mobile device* and the *automatic payment machine* by detecting the signal strength of received signals. Ex.1003 ¶114; *see, e.g.*, Ex.1004, 13:4-7, 33:10-16. As Freeny explains, “[t]his can be accomplished by incorporating a signal strength detector in the wireless adapter element” of the proximity service unit, Ex.1004, 33:15-16, but Freeny does not preclude other approaches. Ex.1003 ¶114. In particular, as Dr. Neuman testifies, “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*.” *Id.*

Freeny also discloses that “Bluetooth” is among “the preferred data communication protocols.” Ex.1004, 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) includes dynamically adjusting transmission strength to improve power efficiency. Ex.1003 ¶115; *see* Ex.1007 at 525-526. This involves adjusting power output (at the transmitter) to keep the received signal within an optimal range, even as the distance between transmitter and receiver changes. *See* Ex.1003 ¶115.

Thus, in embodiments using Bluetooth where signal strength is detected by the *mobile device*, the *mobile device* would need to receive information from the AWAU/proximity service unit about the signal strength corresponding to each

proximity trigger. Ex.1003 ¶¶114-116; *see also* Ex.1004, 13:23-37 (disclosing proximity triggers at different distances). This information constitutes a *baseline signal strength threshold*, as recited in claim 7. Ex.1003 ¶116. Moreover, as Dr. Neuman testified, the *mobile device* would necessarily receive such before determining a distance based on that information. Ex.1003 ¶117 (“[T]hat is simple logic.”). The information would therefore be received from the *electronic payment device* before *detecting* a proximity-based trigger condition. *Id.*

Accordingly, claim 7 would have been obvious over the combination of Freeny and Kou. Ex.1003 ¶117.

9. 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.

Freeny discloses or renders obvious the limitations added by claim 8. Ex.1003 ¶¶118-120.

In the same embodiments of Freeny discussed for claim 7, a POSITA would have understood Freeny to disclose *wherein the baseline signal strength is one of a plurality of baseline signal strengths included in the transmission sent by the electronic payment device* based on the known operation of the Bluetooth protocol. *See* Ex.1003 ¶119. The process for dynamically adjusting transmission power occurs

in a sequence of iterative steps. *See id.*; Ex.1007, 33-34, 211-212, 525-526. In the dynamic power control process (referred to as the “Power Control Requests” feature), the transmitting device receives a request from the receiving device to adjust transmission power, then “the output power [is] increased or decreased one step.” Ex.1007, 211. This process is repeated until the signal strength at the receiving device is within the Golden Receive Power Range. Ex.1003 ¶119. This means the transmission may have *a plurality of baseline signal strengths*, and the one that falls in the desired range is ultimately *selected*. *Id.*

Moreover, the limits of the Golden Receive Power Range depend on the characteristics of the Bluetooth receiver. *Id.* ¶120 (citing Ex.1007, 525-526). Different device models may have different receivers. *Id.*; *see* Freeny at 35:34-42. Thus, Freeny discloses or suggests *the baseline signal strength is selected based on a model type of the mobile device* because the selection is based on parameters or characteristics that vary with differences between model types. Ex.1003 ¶120.

Accordingly, Freeny, in view of Kou, renders claim 8 obvious. *Id.*

10. 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.

Freeny discloses or renders obvious the limitations added by claim 9.

First, Freeny discloses or suggests *before detecting the trigger condition to perform the cashless transaction, determining a payment zone threshold based on the baseline signal strength threshold*. Ex.1003 ¶122. Freeny discloses measuring a received signal strength and comparing it to a threshold value (*i.e.*, a *payment zone threshold*) to determine whether the user is within the requisite distance for the disclosed proximity-based *trigger conditions*. Ex.1003 ¶124; *see, e.g.*, Ex.1004, 13:11-18 (describing events triggered by “detecting the second signal strength”), 32:60-65 (disclosing “menu operations” being enabled when the user’s device is at a predetermined distance). Moreover, Freeny discloses examples where the detected signal strength corresponds to a closer distance than the one at which the authorization process occurs. Ex.1003 ¶123; *see* Ex.1004, 13:23-37, 32:55-65, Fig.28 (“Authorizes and activates different services within selected predetermined distances”). Similarly, Freeny discloses automatically triggering a toll transaction based on a detected signal strength. Ex.1004, 13:11-37.

Moreover, a POSITA would have understood that the *payment zone threshold* must be determined before it can be used in the comparison with the received signal strength, *i.e.*, it occurs *before detecting the trigger condition to perform the cashless transaction*. Ex.1003 ¶124. As shown above, *see* Claim 7 above, the *baseline signal strength threshold* of claim 7 is the signal strength corresponding to the distance that triggers a given proximity-based event. Ex.1003 ¶124. Thus, Freeny discloses or suggests that the *payment zone threshold* would be equal to the *baseline signal strength threshold*, potentially adjusted by any known correction factors. *Id.*; *see* Claim 10 below. Moreover, it would have been obvious to set the *payment zone threshold* equal to the *baseline signal strength threshold* provided by the AWAU/proximity service unit in Freeny's system, in the absence of any other known parameters requiring an adjustment. *Id.*

Second, Freeny discloses or renders obvious *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*. Ex.1003 ¶125. As shown above, Freeny discloses using proximity-based *trigger conditions to perform the cashless transaction*. *Id.*; *see* Limitations [1(f)], [1(g)]above. Moreover, as just shown, a POSITA would have understood that Freeny discloses comparing a measured signal strength to the *payment zone threshold* and, if the *received signal*

strength equals or exceeds the threshold, this indicates a distance that triggers a particular event. *See* Ex.1003 ¶125; Ex.1004, 13:11-18, 32:55-65, 33:10-17. In implementations of Freeny where signal strength is measured at the wireless device/proximity authorization unit—which is an obvious implementation (*see* Claim 7 above)—the *received signal strength* being measured would be that of *the transmission sent by the electronic payment device*. Ex.1003 ¶125.

Accordingly, Freeny, in view of Kou, renders obvious claim 9. Ex.1003 ¶¶121-125.

11. 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.

Freeny renders obvious the limitations added by claim 10.

First, it would have been obvious to *use an offset that corresponds to a model type of the mobile device* as part of *determining the payment zone threshold based on the baseline signal strength*, given the right information about the device model. Ex.1003 ¶127. It was well-known that received signal strength is an imperfect representation of distance, *e.g.*, because of signal attenuation caused by intervening objects. *Id.* Even the housing of the receiving device causes attenuation. *Id.* Accordingly, given attenuation information for a particular device, a POSITA would

have been motivated and able to determine an offset that the mobile device could use to correct for that attenuation in order to improve the accuracy of distance determinations. *Id.*

Moreover, Freeny discloses or suggests a system in which information about the characteristic attenuation of *mobile devices* would be known because Freeny discloses using wireless devices that are “specialty devices,” such as Freeny’s proximity authorization unit. Ex.1004, 10:3-7, 34:4-44, 39:54-41:9; *see* Ex.1003 ¶128. Freeny also discloses or suggests the proximity service units and proximity authorization units may have the same manufacturer and may be supported by the same organization. Ex.1003 ¶128 (citing Ex.1004, 37:43-57, 38:57-39:6). Because of this, and because Freeny’s system that relies heavily on determining distances using signal strength measurements, it would have been obvious to include *an offset that corresponds to a model type of the mobile device* in the protocols for determining distance. Ex.1003 ¶128.

Second, *transmitting the model type of the mobile device to the electronic payment device* would have been obvious so that the proximity service units could use known characteristics of the proximity authorization unit, including but not limited to the offset discussed above, to improve accuracy of distance measurements. Ex.1003 ¶129. Indeed, Freeny discloses that the proximity authorization unit is “uniquely identif[ied]” by “the request authorization codes” sent to a proximity

service unit during the authorization process. Ex.1004, 31:1-2. As noted above, these devices may have the same manufacturer, Ex.1003 ¶128, so uniquely identifying a device would also identify its *model type* to the receiving device. *Id.* ¶129.

Accordingly, Freeny, in view of Kou renders claim 10 obvious. Ex.1003 ¶¶126-129.

12. 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.

Freeny discloses or renders obvious the limitations of claim 11 for the same reasons discussed in conjunction with claim 10, above. Ex.1003 ¶130. Because Freeny teaches that the proximity service unit and the proximity authorization unit may have the same manufacturer and can work together in a proprietary communications system, it would have been obvious to use known radio parameters of other devices to improve the accuracy of distance measurements. Ex.1003 ¶¶126-130. Accordingly, claim 11 would have been obvious over Freeny, in view of Kou.

13. Claim 12

[12(pre.)] A system comprising:

To the extent the preamble is limiting, Freeny discloses *a system*. Ex.1004, 9:45-50, 30:45-50; *see* Ex.1003 ¶131. Accordingly, Freeny, in view of Kou, discloses or renders obvious the preamble. *Id.*

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

Freeny, in view of Kou, discloses or renders obvious Limitation [12(a)].

First, as shown above for Limitation [1(b)], Freeny discloses *an electronic payment device* because, for example, it discloses an Advanced Wireless Authorization Unit (AWAU) 719. Ex.1003 ¶132. Likewise, as shown above, the elements added to the legacy components of proximity service unit 2920 comprise *an electronic payment device*. Ex.1003 ¶132.

Second, Freeny discloses or suggests that the *electronic payment device* has *one or more processors, memory, and a first communications unit*. *See id.* For example, Freeny discloses adding “new computers 3400 [to the legacy elements of proximity service unit 2920] if one needs to be added when making the upgrades discussed herein,” and these computers may run “Windows CE or Linux” operating systems. Ex.1004, 37:40–42. A POSITA would have understood that such computers necessarily included *one or more processors* [and] *memory* because both were required to run “Windows CE or Linux” operating systems. Ex.1003 ¶133. Likewise, Freeny discloses that the AWAU’s interface units (820a–n) handle a number of “administrative items,” including, *e.g.*, using identifying parameters “to develop a queue for delivering the requested service in the correct order and to the correct wireless device 710a.” Ex.1004, 13:65-67, 14:9-11; *see id.*, 13:57-14:13. A

POSITA would have understood these “administrative items” would be performed by a computer unit comprising *one or more processors* and a *memory*. Ex.1003 ¶133. In the alternative, it was well-known at the time of the invention to implement automated administrative functions (like those of the AWAU) using a programmable general purpose *processor*, which would also require a *memory* from which to execute computer programs, and it would have been an obvious way to do so in Freeny. *Id.*

In addition, Freeny discloses that “AWAU 719 is provided with a multiple channel wireless transceiver 740 capable of receiving at least two signal types.” Ex.1004, 11:18-20. Freeny also discloses that the wireless adapter element of proximity service unit 2920 includes transmit unit 3420 and receiver unit 3410. *Id.*, 37:7-11, Fig.34. Thus, Freeny discloses the *first communications unit*. Ex.1003 ¶134.

Accordingly, Freeny discloses or renders obvious Limitation [12(a)]. Ex.1003 ¶134.

[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;

This limitation is disclosed or rendered obvious for the same reasons as Limitation [1(b)], above. Ex.1003 ¶135. Limitation [1(b)] recites *a mobile device notifying an electronic payment device*, and Limitation [12(b)] recites *an electronic*

payment device configured to a notification with the same characteristics from a mobile device. Id. (citing Ex.1001, claims 1 & 12). The mobile device of the two claims even have the same required components. *See* Limitation 12(d) below. Accordingly, Freeny, in view of Kou, discloses or renders obvious Limitation [12(b)]. Ex.1003 ¶135.

[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

This limitation is disclosed or rendered obvious for the same reasons as Limitations [1(c)] and [1(a)], above. Ex.1003 ¶136. Limitation [1(c)] recites *a mobile device receiving a request from the electronic payment device*, and Limitation [12(c)] recites *an electronic payment device configured to send a request with the same characteristics. Id.* Limitation [12(c)] also recites a requirement that the *request is sent prior to user selection of any items or services provided by the automatic retail machine*, which is identical to a requirement recited in Limitation [1(a)] regarding timing for all the steps of claim 1 (including Limitation [1(c)]). *See* Ex.1001, claims 1, 12. Accordingly, Freeny, in view of Kou, discloses or renders obvious Limitation [12(c)]. Ex.1003 ¶136.

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

This limitation is disclosed or rendered obvious for the same reasons as Limitation [1(a)], above. Ex.1003 ¶137. Limitation [1(a)] and Limitation [12(d)] both recite a *mobile device* with the same required components. *See* Ex.1001, claims 1, 12. Accordingly, Freeny, in view of Kou, discloses or renders obvious Limitation [12(c)]. Ex.1003 ¶137.

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

This limitation is disclosed or rendered obvious for the same reasons as Limitation [1(a)], above. Ex.1003 ¶138. Limitation [12(e)] recites the same timing that Limitation [1(a)] requires for performing the steps of claim 1. *See* Ex.1001, claims 1, 12. Accordingly, Freeny, in view of Kou, discloses or renders obvious Limitation [12(e)]. Ex.1003 ¶138.

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

This limitation is disclosed or rendered obvious for the same reasons as Limitation [1(c)], above. Ex.1003 ¶139. Limitation [12(f)] recites *a mobile device configured to receive the request from the electronic payment device*, and Limitation [1(c)] recites the same thing as a method step. *Id.* (citing Ex.1001, claims 1 & 12).

Accordingly, Freeny, in view of Kou, discloses or renders obvious Limitation [12(f)]. Ex.1003 ¶139.

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

This limitation is disclosed or rendered obvious for the same reasons as Limitation [1(d)], above. Ex.1003 ¶140. Limitation [12(g)] recites *a mobile device configured to send the request to a server via the mobile device's communications unit*, and Limitation [1(d)] recites the same thing as a method step. *Id.* (citing Ex.1001, claims 1 & 12). Accordingly, Freeny, in view of Kou, discloses or renders obvious Limitation [12(g)]. Ex.1003 ¶140.

[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;

This limitation is disclosed or rendered obvious for the same reasons as Limitation [1(e)], above. Ex.1003 ¶141. Where Limitation [12(h)] recites an operation that *a mobile device is configured to do*, Limitation [1(e)] recites the same thing as a method step. *Id.* (citing Ex.1001, claims 1 & 12). Accordingly, Freeny, in view of Kou, discloses or renders obvious Limitation [12(h)]. Ex.1003 ¶141.

[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

This limitation is disclosed or rendered obvious for the same reasons as Limitation [1(f)], above. Ex.1003 ¶142. Where Limitation [12(i)] recites an operation that *a mobile device is configured to do*, Limitation [1(f)] recites the same thing as a method step. *Id.* (citing Ex.1001, claims 1 & 12). Accordingly, Freeny, in view of Kou, discloses or renders obvious Limitation [12(i)]. Ex.1003 ¶142.

[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.

This limitation is disclosed or rendered obvious for the same reasons as Limitation [1(g)], above. Ex.1003 ¶143. Where Limitation [12(j)] recites an operation that *a mobile device is configured to do*, Limitation [1(g)] recites the same thing as a method step. *Id.* (citing Ex.1001, claims 1 & 12). Accordingly, Freeny, in view of Kou, discloses or renders obvious Limitation [12(j)]. Ex.1003 ¶143.

14. 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.

The limitation added by claim 13 is disclosed or rendered obvious for the same reasons as Claim 2, above. Ex.1003 ¶144. Where claim 13 recites an operation that

the mobile device of the system of claim 12 is *configured* to do, claim 2 recites the same thing as an additional step for the method of claim 1. *Id.* (citing Ex.1001, claims 2 & 13). Accordingly, Freeny, in view of Kou, discloses or renders obvious Claim 13. Ex.1003 ¶144.

15. Claim 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.

The limitations added by claim 16 are disclosed or rendered obvious for the same reasons as those in Claim 5, above. Ex.1003 ¶145. Claims 5 and 16 both recite the same additional limitation of the *authorization grant*. *Id.* And, where claim 16 recites an operation that *the mobile device* of the system of claim 12 is *configured* to do, claim 5 recites the same thing as an additional step for the method of claim 1. *Id.* (citing Ex.1001, claims 5 & 16). Accordingly, Freeny, in view of Kou, discloses or renders obvious Claim 16. Ex.1003 ¶145.

16. 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:

To the extent it is limiting, Freeny, in combination with Kou, discloses or renders obvious the preamble of claim 17. For example, Freeny teaches

implementing its system and method using a *mobile device* with a “computer unit” and “program memory.” Ex.1003 ¶146; Ex.1004, 34:4-17. As shown for Limitations [1(a)] and [1(f)] above, Freeny, in combination with Kou, discloses or renders obvious the use of an *application* in program memory to implement the combined teachings of the references. Ex.1003 ¶146. For the same reasons, 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.* Ex.1003 ¶146.

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

The combination of Freeny and Kou discloses or renders obvious Limitation [17(a)] for the same reasons set forth above for Limitation [1(a)]. Ex.1003 ¶147.

[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;

The combination of Freeny and Kou discloses or renders obvious Limitation [17(b)] for the same reasons set forth above for Limitation [1(b)]. Ex.1003 ¶148.

[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;

The combination of Freeny and Kou discloses or renders obvious Limitation [17(c)] for the same reasons set forth above for Limitation [1(c)]. Ex.1003 ¶149.

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

The combination of Freeny and Kou discloses or renders obvious Limitation [17(d)] for the same reasons set forth above for Limitation [1(d)]. Ex.1003 ¶150.

[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;

The combination of Freeny and Kou discloses or renders obvious Limitation [17(e)] for the same reasons set forth above for Limitation [1(e)]. Ex.1003 ¶151.

[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

The combination of Freeny and Kou discloses or renders obvious Limitation [17(f)] for the same reasons set forth above for Limitation [1(f)]. Ex.1003 ¶152.

[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.

The combination of Freeny and Kou discloses or renders obvious Limitation [17(g)] for the same reasons set forth above for Limitation [1(g)]. Ex.1003 ¶153.

17. 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

The limitation added by claim 18 is disclosed or rendered obvious for the same reasons as Claim 2, above. Ex.1003 ¶154. Claim 18 recites an operation performed by *a mobile device* executing instructions of claim 17, and claim 2 recites the same thing as an additional step for the method of claim 1. *Id.* (citing Ex.1001, Claims 2 & 18). Accordingly, Freeny, in view of Kou, discloses or renders obvious Claim 18. Ex.1003 ¶154.

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

1. Summary of Canter

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].

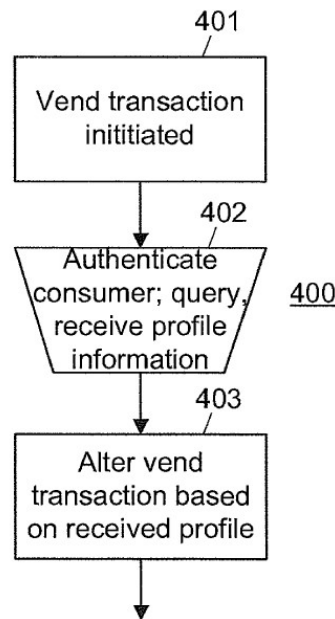


FIGURE 4
Ex.1006, Fig.4.

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. 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].

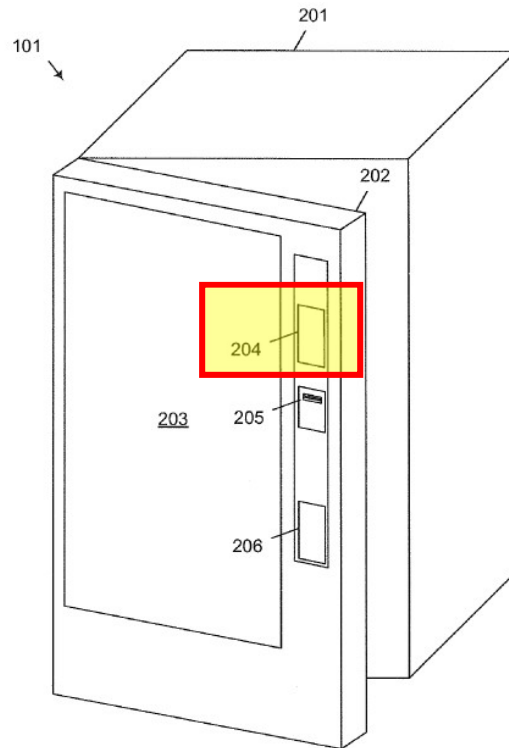


FIGURE 2

Ex.1006, Fig.2 (annotated).

2. Reasons to Combine Canter with Freeny/Kou

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. Canter recognizes that a vending machine incorporating its teachings may be part of a larger vending machine network. Ex.1006 ¶ [0021] (“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.**”) (emphasis added). Freeny also contemplates a similarly widespread vending machine network, both expressly and via its disclosure of proprietary hardware such as the proximity authorization unit.

Ex.1004, 29:55-57 (“Vending machine systems are currently installed in almost every conceivable place and offer almost every conceivable product.”); Ex.1003 ¶59-62.

Thus, a POSITA would have found it obvious to implement the improved personalization methods discussed taught by Canter into the system/method disclosed by Freeny to improve the profitability of Freeny’s vending machine network. Ex.1003 ¶59-62. Nothing taught by Canter interferes with the combination of Freeny and Kou, so a POSITA would have understood that Canter could be incorporated into the combination of Freeny and Kou. Ex.1003 ¶ 62.

3. 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

The combination of Canter and Freeny discloses or renders obvious the limitations added by claim 3. Ex.1003 ¶¶155-160.

First, Canter discloses *the retail machine being a favorite automatic retail machine for the user of the mobile device* because Canter teaches personalizing the customer experience at a vending machine based on a user profile transmitted to said vending machine by the user’s smart phone. Ex.1003 ¶¶157-158. Specifically, Canter discloses customers may agree to provide personal information by joining “a

discount or loyalty program” associated with a vending machine, Ex.1006 ¶[0027], which “is synonymous with designating a *favorite automatic retail machine*.” Ex.1003 ¶158. Canter further suggests to a POSITA that the same vending machine would retain, or receive again, the personal information for future transactions. *Id.*

Second, Freeny discloses or renders obvious *selecting a proximity-based trigger condition that does not require user input at the application executing on the mobile device* because it teaches enabling a menu at the vending machine based on the proximity of a *mobile device*. Ex.1003 ¶156; *see* Ex.1004, 32:60-66 (disclosing “menu operation can be enabled at a closer distance using the [detected] signal strength”); Ex.1003 ¶¶113-114. Freeny also discloses wireless devices “communicating the request authorization code when [they are] within a predetermined proximity distance” from the transceiver of the AWAU, Ex.1004, 11:18-31, which also discloses or suggests this limitation. Ex.1003 ¶156.

Even if Freeny does not disclose or suggest this limitation, Canter does because it discloses or suggests that a vending machine may identify recognized users (*e.g.*, those that designated it as a *favorite* and shared information) within a given proximity. Ex.1003 ¶¶157-159; *see* Ex.1006 ¶[0026] (disclosing that nearby customers’ “names or ‘tags’ . . . may be displayed on the customer user interface”). These users may then confirm their identities using a touchscreen interface on the vending machine interface and enjoy a personalized experience. Ex.1006 ¶[0026];

Ex.1003 ¶157. Using a touchscreen to select the user device also constitutes a *proximity-based trigger condition*. See Ex.1003 ¶160. Moreover, because all input occurs through the vending machine's interface, the systems described by Freeny and Canter *do not require user input at the application executing on the mobile device*. Ex.1003 ¶156.

Accordingly, Freeny, in view of Kou and further in view Canter renders claim 3 obvious. Ex.1003 ¶¶155-160.

4. 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.

The combination of Canter and Freeny discloses or renders obvious the limitations recited by claim 4. Ex.1003 ¶161.

First, Canter discloses an *automatic retail machine that is not a favorite automatic retail machine for the user of the mobile device*. Ex.1006 ¶[0027]. As discussed for claim 3, Canter discloses a vending machine being a *favorite automatic retail machine for the user*. Ex.1003 ¶¶149, 162. Canter discloses or suggests consumers may opt not to participate in the “discount or loyalty program” by declining to share their personal information, 1006 ¶[0027], in which case the

vending machine *is not a favorite automatic retail machine for the user of the mobile device*. Ex.1003 ¶162.

Second, Canter discloses or renders obvious *providing, in a user interface of the application executing on the mobile device, a visual indication of the automatic retail machine*. Ex.1003 ¶¶163-164. Canter discloses the authenticating a user's identity by transmitting a request to the user's device "asking the user to confirm their identity by actuating a physical or virtual (user interface) button on the user device." Ex.1006 ¶[0026]. Canter's "virtual (user interface) button" suggests or discloses *a visual indication of the automatic retail machine in a user interface of the application executing on the mobile device* because it appears within a certain proximity of the vending machine and, when actuated, authorizes a transaction with that vending machine. Ex.1003 ¶163.

Third, Canter discloses actuating a "virtual button" to authorize transactions with a vending machine. Ex.1006 ¶[0026]. This constitutes *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 because it initiates a transaction with a vending machine. Ex.1003 ¶164.

It would have been obvious to improve Freeny's *mobile device*, and its "connect button," Ex.1004, 35:1-7, using Canter's touch screen and "virtual button"

because touch screen interfaces were common and a well-known improvement for mobile devices by the '208 patent's filing date. Ex.1003 ¶165; *see KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007) (“[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious.”). Thus, Freeny, in view of Kou and further in view Canter renders claim 4 obvious. Ex.1003 ¶¶161-165.

5. Claims 14-15 and 19-20

Claims 14 and 19 recite the same limitations added by claim 3, and claims 15 and 20 recite the same limitations added by claim 4. *See* Ex.1001, 34:11-26, 35:54-36:10, 37:3-26. As shown above, the combination of Canter and Freeny discloses or renders obvious those limitations. *See* Ex.1003 ¶¶166-167, 169-170. Claim 15 also recites *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.* Canter discloses this limitation because it discloses that user-authentication is prompted by a request from a given vending machine and the user then authorizes payment to that vending machine. Ex.1006 ¶[0026]; Ex.1003 ¶168. Accordingly, Freeny, in view of Kou and further in view Canter, renders claims 14-15 and 19-20 obvious. Ex.1003 ¶¶166-170.

X. CONCLUSION

Petitioner respectfully requests that the Board institute review and find the Challenged Claims unpatentable.

Respectfully submitted,

Dated: July 17, 2023
Shook, Hardy & Bacon
Customer No. 27683

/Kyle E. Friesen/
Jason R. Mudd
Lead Counsel for Petitioner
Shook, Hardy & Bacon
2555 Grand Blvd.
Kansas City, MO 64108
Reg. No. 57,700

Mark Schafer
Back-up Counsel for Petitioner
Shook, Hardy & Bacon
1660 17th St., Suite 450
Denver, CO 80202
Reg. No. 72,616

Kyle E. Friesen
Back-up Counsel for Petitioner
Shook, Hardy & Bacon
600 Travis St., Suite 3400
Houston, TX 77002
Reg. No. 65,371

XI. MANDATORY NOTICES

A. Real Party-in-Interest

Pursuant to 37 C.F.R. § 42.8(b)(1), Petitioner certifies that it is the real party-in-interest.

B. Related Matters

Pursuant to 37 C.F.R. § 42.8(b)(2), to the best knowledge of Petitioner, the ‘208 patent is or was involved in the following cases:

Case Heading	Number	Venue	Filed
<i>PayRange, Inc. v. CSC ServiceWorks, Inc.</i>	1:23-cv-00278	D. Del.	Mar. 15, 2023
<i>PayRange, Inc. v. CSC ServiceWorks, Inc.</i>	1:22-cv-00502	D. Del	Apr. 19, 2022

C. Lead and Back-up Counsel and Service Information

Lead Counsel

Jason R. Mudd
Shook, Hardy & Bacon
2555 Grand Blvd.
Kansas City, MO 64108

Phone: (816) 559-2437
Fax: (816) 421-5547
jmudd@shb.com
USPTO Reg. No. 57,700

Back-up Counsel

Mark Schafer
Shook, Hardy & Bacon
1660 17th St., Suite 450
Denver, CO 80202

Phone: (303) 592-5164
Fax: (303) 285-5301
mschafer@shb.com
USPTO Reg. No. 72,616

Kyle Friesen
Shook, Hardy & Bacon
600 Travis St., Suite 3400
Houston, TX 77002

Phone: (713) 546-5671
Fax: (713) 227-9508
kfriesen@shb.com
USPTO Reg. No. 65,371

Please address all correspondence in this proceeding to lead and back-up counsel. Petitioner consents to service in this proceeding by email at the addresses above.

CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), Petitioner hereby certifies, in accordance with and reliance on the word count provided by the word-processing system used to prepare this Petition, that the number of words in this paper is 13,997. Pursuant to 37 C.F.R. § 42.24(d), this word count excludes the table of contents, table of authorities, mandatory notices under § 42.8, certificate of service, certificate of word count, appendix of exhibits, and any claim listing.

Dated: July 17, 2023

/Kyle E. Friesen/
Kyle E. Friesen
Back-up Counsel for Petitioner
Reg. No. 65,371

CERTIFICATE OF SERVICE

The undersigned certifies that, in accordance with 37 C.F.R. § 42.6(e) and 37 C.F.R. § 42.105, service was made on Patent Owner as detailed below.

<i>Date of service</i>	July 17, 2023
<i>Manner of service</i>	FEDERAL EXPRESS
<i>Documents served</i>	Petition for <i>Inter Partes</i> Review Under 35 U.S.C. § 312 and 37 C.F.R. § 42.104 of U.S. 8,856,045; Petitioner's Exhibit List; and Exhibits 1001-1008.
<i>Persons served</i>	Morgan, Lewis & Bockius LLP 1400 Page Mill Road Palo Alto, CA 94304

/Kyle E. Friesen/
Kyle E. Friesen
Back-up Counsel for Petitioner
Reg. No. 65,371