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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.	PR:MDMP1
First Named Inventor	Paresh K. Patel
Title	Mobile-Device-to-Machine Payment Systems
Express Mail Label No.	

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. ☑ **Fee Transmittal Form** (PTO/SB/17 or equivalent)
2. ☑ **Applicant asserts small entity status.** See 37 CFR 1.27
3. ☐ **Applicant certifies micro entity status.** See 37 CFR 1.29. Applicant must attach form PTO/SB/15A or B or equivalent.
4. ☑ **Specification** [*Total Pages* 63] Both the claims and abstract must start on a new page. *(See MPEP § 608.01(a) for information on the preferred arrangement)*
5. ☑ **Drawing(s)** (35 U.S.C. 113) [*Total Sheets* 44]
6. **Inventor's Oath or Declaration** [*Total Pages* 2] *(including substitute statements under 37 CFR 1.64 and assignments serving as an oath or declaration under 37 CFR 1.63(e))*
   a. ☑ Newly executed (original or copy)
   b. ☐ A copy from a prior application (37 CFR 1.63(d))
7. ☑ **Application Data Sheet** ** See note below.* See 37 CFR 1.76 (PTO/AIA/14 or equivalent)
8. **CD-ROM or CD-R** in duplicate, large table, or Computer Program (*Appendix*)
   ☐ Landscape Table on CD
9. **Nucleotide and/or Amino Acid Sequence Submission** (*if applicable, items a. – c. are required*)
   a. ☐ Computer Readable Form (CRF)
   b. ☐ Specification Sequence Listing on:
      i. ☐ CD-ROM or CD-R (2 copies); or
      ii. ☐ Paper
   c. ☐ Statements verifying identity of above copies

ADDRESS TO:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

ACCOMPANYING APPLICATION PAPERS

10. ☐ **Assignment Papers** (cover sheet & document(s))
    Name of Assignee _____
11. ☑ 37 CFR 3.73(c) Statement and Power of Attorney (& copy of assignment) ☐ **Power of Attorney**
12. ☐ **English Translation Document** (*if applicable*)
13. ☑ **Information Disclosure Statement** (PTO/SB/08 or PTO-1449)
    ☑ copies of non- U.S. patent citations
14. ☐ **Preliminary Amendment**
15. ☐ **Return Receipt Postcard** (*MPEP § 503*) (*Should be specifically itemized*)
16. ☐ **Certified Copy of Priority Document(s)** (*if foreign priority is claimed*)
17. ☑ **Nonpublication Request** Under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or equivalent.
18. ☐

***Note**: (1) Benefit claims under 37 CFR 1.78 and foreign priority claims under 1.55 **must** be included in an Application Data Sheet (ADS).
(2) For applications filed under 35 U.S.C. 111, the application must contain an ADS specifying the applicant if the applicant is an assignee, person to whom the inventor is under an obligation to assign, or person who otherwise shows sufficient proprietary interest in the matter. See 37 CFR 1.46(b).

19. CORRESPONDENCE ADDRESS

☑ The address associated with Customer Number: 26790 **OR** ☐ Correspondence address below

Name					
Address					
City		State		Zip Code	
Country		Telephone		Email	

Signature	/Karen Dana Oster, Reg. No. 37,621/	Date	March 14, 2014
Name (Print/Type)	Karen Dana Oster	Registration No. (Attorney/Agent)	37,621

This collection of information is required by 37 CFR 1.53(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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FEE TRANSMITTAL

Complete if known	
Application Number	
Filing Date	March 14, 2014
First Named Inventor	Paresh K. Patel
Examiner Name	
Art Unit	
Practitioner Docket No.	PR:MDMP1

☑ Applicant asserts small entity status. See 37 CFR 1.27.

☐ Applicant certifies micro entity status. See 37 CFR 1.29. Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

TOTAL AMOUNT OF PAYMENT ($)

METHOD OF PAYMENT (check all that apply)

☐ Check ☑ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

☑ Deposit Account Deposit Account Number: 50-2115 Deposit Account Name: _____

For the above-identified deposit account, the Director is hereby authorized to (check all that apply):

☑ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, **except for the filing fee**

☑ Charge any additional fee(s) or underpayment of fee(s) under 37 CFR 1.16 and 1.17 ☑ Credit any overpayment of fee(s)

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES (U = undiscounted fee; S = small entity fee; M = micro entity fee)

	FILING FEES			SEARCH FEES			EXAMINATION FEES			
Application Type	**U ($)**	**S ($)**	**M ($)**	**U ($)**	**S ($)**	**M ($)**	**U ($)**	**S ($)**	**M ($)**	**Fees Paid ($)**
Utility	280	140*	70	600	300	150	720	360	180	730
Design	180	90	45	120	60	30	460	230	115	
Plant	180	90	45	380	190	95	580	290	145	
Reissue	280	140	70	600	300	150	2,160	1,080	540	
Provisional	260	130	65	0	0	0	0	0	0	

* The $140 small entity status filing fee for a utility application is further reduced to $70 for a small entity status applicant who files the application via EFS-Web.

2. EXCESS CLAIM FEES

Fee Description	**Undiscounted Fee ($)**	**Small Entity Fee ($)**	**Micro Entity Fee ($)**
Each claim over 20 (including Reissues)	80	40	20
Each independent claim over 3 (including Reissues)	420	210	105
Multiple dependent claims	780	390	195

Total Claims		**Extra Claims**		**Fee ($)**		**Fee Paid ($)**
26	-20 or HP =	6	x	$40	=	$240

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims		**Extra Claims**		**Fee ($)**		**Fee Paid ($)**
	-3 or HP =	0	x	$210	=	$0

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims	**Fee ($)**	**Fee Paid ($)**

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $400 ($200 for small entity) ($100 for micro entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets		**Extra Sheets**		**Number of each additional 50 or fraction thereof**		**Fee ($)**		**Fee Paid ($)**
	- 100 =		/ 50 =	(round **up** to a whole number)	x	$200	=	$0

4. OTHER FEE(S)

	Fees Paid ($)
Request for prioritized examination	$2,000
Other (e.g., late filing surcharge): _____	

SUBMITTED BY

Signature	/Karen Dana Oster, Reg. No. 37,621/	Registration No. (Attorney/Agent) 37,621	Telephone (503) 810-2560
Name (Print/Type)	Karen Dana Oster		Date March 14, 2014

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	PR-MDMP1
	Application Number	
Title of Invention	MOBILE-DEVICE-TO-MACHINE PAYMENT SYSTEMS	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
Dr.	Paresh	K.	Patel	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Portland	State/Province	OR	Country of Residence i	US

Mailing Address of Inventor:

Address 1	11324 NE Sandy Blvd.
Address 2	

City	Portland	State/Province	OR
Postal Code	97220	Country i	US

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
Mr.	Chau	M.	Doan	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Beaverton	State/Province	OR	Country of Residence i	US

Mailing Address of Inventor:

Address 1	340 SW 132nd Ave.
Address 2	

City	Beaverton	State/Province	OR
Postal Code	97005	Country i	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	PR-MDMP1
	Application Number	
Title of Invention	MOBILE-DEVICE-TO-MACHINE PAYMENT SYSTEMS	

☐ An Address is being provided for the correspondence Information of this application.			
Customer Number	26790		
Email Address	karen@kdopatent.com	Add Email	Remove Email

Application Information:

Title of the Invention	MOBILE-DEVICE-TO-MACHINE PAYMENT SYSTEMS		
Attorney Docket Number	PR-MDMP1	**Small Entity Status Claimed**	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	44	**Suggested Figure for Publication (if any)**	

Filing By Reference :

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☒ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	26790		

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	PR-MDMP1
	Application Number	
Title of Invention	MOBILE-DEVICE-TO-MACHINE PAYMENT SYSTEMS	

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the application number blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Claims benefit of provisional	61/917936	2013-12-18
Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation in part of	29/477025	2013-12-18

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(d). When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) [i]the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(h)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove

Application Number	Country [i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	PR-MDMP1
	Application Number	
Title of Invention	MOBILE-DEVICE-TO-MACHINE PAYMENT SYSTEMS	

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Authorization to Permit Access:

☐ Authorization to Permit Access to the Instant Application by the Participating Offices

If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	PR-MDMP1
	Application Number	
Title of Invention	MOBILE-DEVICE-TO-MACHINE PAYMENT SYSTEMS	

Applicant 1 Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

(•) Assignee	( ) Legal Representative under 35 U.S.C. 117	( ) Joint Inventor
( ) Person to whom the inventor is obligated to assign.	( ) Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor :

If the Applicant is an Organization check here. [X]

Organization Name	PayRange Inc.

Mailing Address Information:

Address 1	12815 NE Marx Street		
Address 2			
City	Portland	**State/Province**	OR
Country [i]	US	Postal Code	97230
Phone Number	855-856-6398	Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not subsitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication . An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. [X]

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	PR-MDMP1
	Application Number	
Title of Invention	MOBILE-DEVICE-TO-MACHINE PAYMENT SYSTEMS	

Organization Name	PayRange, Inc.

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1	12815 NE Marx Street		
Address 2			
City	Portland	**State/Province**	OR
Country i	US	Postal Code	97230
Phone Number	855-856-6398	Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

Remove

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications

Signature	/ Karen Dana Oster #37,621 /			Date (YYYY-MM-DD)	2014-03-14
First Name	Karen	Last Name	Oster	Registration Number	37621

Additional Signature may be generated within this form by selecting the Add button. Add

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

MOBILE-DEVICE-TO-MACHINE PAYMENT SYSTEMS

The present application is an application claiming the benefit of U.S. Provisional Patent Application Number 61/917,936, filed December 18, 2013, and a continuation-in-part of U.S. Design Patent Application Number 29/477,025, filed December 18, 2013. The present application is based on and claims priority from these applications, the disclosures of which are hereby expressly incorporated herein by reference.

BACKGROUND OF THE INVENTION

Disclosed herein are mobile-device-to-machine payment systems and, more specifically, mobile-device-to-machine payment systems over a non-persistent network connection and featuring hands-free and manual modes.

Vending machines (or "automatic retailing" machines), in the broadest sense, have been around for thousands of years. The first simple mechanical coin operated vending machines were introduced in the 1880s. Modern vending machines stock many different types of products including, but not limited to drinks (e.g. water, juice, coffee, and soda) and edible food products/items (e.g. snacks, candy, fruit, and frozen meals), as well as a wide variety of non-food items. In this fast paced world, vending machines are ubiquitous.

Vending machines are one type of "payment accepting unit" (payment accepting units are also referred to herein generically as "machines"). A payment accepting unit (or machine) is equipment that requires payment for the dispensing of products and/or services. In addition to vending machines, payment accepting units can also be other machines that require payment for the dispensing of a product and/or services including, but not limited to parking meters, toll booths, laundromat washers and dryers, arcade games, kiosks, photo booths, toll booths, transit ticket dispensing machines, and other known or yet to be discovered payment accepting units.

In using a payment accepting unit, a user will (1) approach the payment accepting unit, (2) determine from the face of the payment accepting unit the product (or service) he desires, (3) insert payment (e.g. coins, bills, or payment cards), and (4) input his selection into the payment accepting unit using a user interface (e.g. a series of buttons, a key pad, touch screen, or other input mechanism using, for example, the column and row at which a product is located). Based on the user's inputted selection, technology within the payment accepting unit provides the desired product (or service) to the user.

As the number of people with internet-connected mobile devices proliferates, so does the variety of uses for such devices. Mobile payment is a logical extension.

There is a large development effort around bringing mobile payment to the retail sector in an effort to not only provide options to the user, but also increased convenience.

In recent years, many improvements to modern vending machines have been suggested. Many of the innovations relate to means for communicating with the vending machine. Some of these communication innovations are detailed in U.S. Patent No. 6,584,309 to Whigham (the "Whigham reference"), U.S. Patent No. 7,085,556 to Offer (the "Offer reference"), U.S. Patent No. 7,127,236 to Khan et al. (the "Khan reference"), U.S. Patent No. 7,721,958 to Belfer et al. (the "Belfer reference"), U.S. Patent No. 8,396,589 to Katzenstein Garibaldi et al. (the "Garibaldi reference"), U.S. Patent No. 8,489,140 to Weiner et al. (the "Weiner reference"), and International Publication No. WO/2008/083025 to Carlson (the "Carlson reference").

The Whigham reference is directed to a system and method for purchasing a product from an automatic vending machine by means of a consumer's cellular telephone. The consumer requests a product available from the vending machine by dialing a specified telephone number that connects the consumer's cellular telephone to a server operated by a billing agency. The server recognizes the request for the product, creates a transaction record, and communicates a vend code to the consumer. Upon receiving the vend code from the server, the consumer transmits the vend code to the vending machine. The vend code may be an RF code, an audible tone code, or a manual code. Upon receipt of the vend code from the consumer, the vending machine dispenses the requested product.

The Offer reference is directed to a vending machine that is designed to communicate with a cellular phone such that it dispenses a product when it receives information indicating that the product has been selected. The Offer reference teaches permitting the cashless utilization of a vending machines via a communications service, such as a cellular telephone. A response to a signal from the cellular telephone from

the vending machine that indicates that a connection has been established between the vending machine and the cellular phone may be a visual indication that is displayed on the cellular telephone. The vending machine outputs the cost of the product and that cost is debited from an account to pay for the product.

The Khan reference describes a point of sale MicroAdapter device that enables payment transactions to be effected through a purchaser's personal trusted device (e.g. the user selecting the micropayment application on his personal trusted device and confirming or cancelling the purchase thereon) without relying upon tokens or prepayment cards. In one embodiment, the MicroAdapter includes a transceiver configured to receive a purchase signal from the personal trusted device including order and payment information. In response, the MicroAdapter communicates via wireless telephony with a transaction authorizer to receive authorization for effectuating the purchase transaction. The MicroAdapter can effectuate micropayment transactions authorized by a Billing On Behalf of Others program administered through a wireless carrier/ISP or third party.

The Belfer reference is directed to a system wherein a vending machine has an audio code collector and a code validator that is adapted to receive audio tones from a mobile device. The audio tones include authentication codes and dispense codes to control dispensing of product from the vending machine. To start the transaction, the consumer dials a unique set of symbols and digits to route the call to a verification server. The symbols and digits may correspond to a unique vending machine identification number and product identification numbers.

The Garibaldi reference is directed to an electronic device for the sale of intangible products through vending machines that include interfaces to communicate with external peripherals through the MDB protocol, the RS232 standard, and the DEX protocol, an interface to communicate with users, a communications system that enables it to act as part of a network and communicate with a central system, and a controller, that articulates the communication among the above-mentioned components, so as to enable a central system to perform diverse actions on a vending machine.

The Weiner reference is directed to a system and method for providing product or service with a cellular telephone. The problem identified in the Weiner reference is that mobile communication devices are long-range electronic devices designed to be used for long-range communications. Eschewing the use of near- field communication because it requires special design or modification of the mobile station (e.g. the vending machine), the Weiner reference teaches a mobile communication device identifier, consisting of: a shielding defining a coverage area, the shielding arranged to reduce radio signals originating externally of the coverage area to be less than a pre-determined signal strength; an antenna associated within the defined coverage area; a transceiver coupled to the antenna, the transceiver communicating with a mobile station inserted within the defined coverage area utilizing a signal strength greater than the pre-determined signal strength; and a service control unit responsive to the transceiver, the service control unit responsive to the communication to output a signal indicative of an authorization to provide a product or service.

The Carlson reference is directed to a system and a method for using a portable consumer device such as a mobile phone for payments and the like. One embodiment of the Carlson system is directed to a method that includes the steps of receiving a payment request message (that includes a request to pay for a product from a vending machine) from a portable consumer device operated by a consumer, sending an authorization response message back to the vending machine wherein the vending machine subsequently prompts the consumer to enter a selection if the authorization response message indicates that the consumer is authorized to make a purchase, and receiving an acknowledgement message from the vending machine that the product was purchased. The step of "sending an authorization response message back to the vending machine" is performed by a remote payment server and would require a persistent network connection.

BRIEF SUMMARY OF THE INVENTION

Disclosed herein are mobile-device-to-machine payment systems and, more specifically, mobile-device-to-machine payment systems over a non-persistent network connection and featuring hands-free and manual modes.

Described herein is a mobile-device-to-machine payment system for facilitating a cashless transaction for purchase of at least one product or service by a user from a payment accepting unit that preferably has input mechanisms. The user has a mobile device that has both short-range communication technology and long-range communication technology. The payment accepting unit is capable of dispensing at least one product or service. The system includes an adapter module and a server. The adapter module is associated with the payment accepting unit and has short-range communication technology for communicating with the short-range communication technology of the mobile device. The server has long-range communication technology for communicating with the long-range communication technology of the mobile device. The adapter module is for sending an authorization request for funds to the mobile device using short-range communication technology. The mobile device then forwards the authorization request for funds to the server using long-range communication technology. The server is for sending an authorization grant for funds to the mobile device using long-range communication technology. The mobile device the forwards the authorization grant for funds to the adapter module using short-range communication technology. The payment accepting unit dispenses the at least one product or service in response to receiving user input to the payment accepting unit input mechanism if the adapter module has received the authorization grant.

The adapter module may have security technology and the server may have security technology. The authorization request may be secured by the adapter module security technology to create a secured authorization request. The authorization grant may be secured by the server security technology to create a secured authorization grant. The secured authorization request and the secured authorization grant are preferably undecipherable to the mobile device.

The adapter module and the server may share a unique private key. The adapter module may have encryption/decryption technology and the server may have encryption/decryption technology. The authorization request may be encrypted by the adapter module encryption/decryption technology using the unique private key to create an encrypted authorization request. The encrypted authorization request may be decrypted by the server encryption/decryption technology using the unique private key. The authorization grant may be encrypted by the server encryption/decryption technology using the unique private key to create an encrypted authorization grant. The encrypted authorization grant may be decrypted by the adapter module encryption/decryption technology using the unique private key. The encrypted authorization request and the encrypted authorization grant are preferably undecipherable to the mobile device.

The adapter module is preferably surrounded by two zones, a payment zone and an authorization zone, wherein the payment zone is within the authorization zone. The adapter module sends the authorization request when the mobile device is within the authorization zone. The mobile device forwards the authorization grant for funds to the adapter module when the mobile device is within the payment zone. A third zone possible zone is a communication zone, the authorization zone being within the communication zone. The mobile device preferably receives advertising broadcast signals from the adapter module within the communication zone.

The system may have a hands-free mode in which the payment accepting unit dispenses the at least one product or service without the user interacting with the mobile device. A display of the payment accepting unit may be used for displaying funds available based on information from the authorization grant. The input mechanisms of the payment accepting unit may be used for receiving user selection input when the user interacts with the input mechanisms to select the at least one product or service to be dispensed.

The adapter module may be an in-line dongle for in-line insertion within a multi-drop bus of the payment accepting unit. Further, the payment accepting unit may have a multi-drop bus to a payment receiving mechanism. The multi-drop bus may

have a male adapter and a female adapter. The adapter module may have a male adapter and a female adapter. The adapter module is preferably insertable in serial with the multi-drop bus by connecting the male adapter of the adapter module to the female adapter of the multi-drop bus and by connecting the female adapter of the adapter module to the male adapter of the multi-drop bus.

Also described herein is a method for using a mobile-device-to-machine payment system for facilitating a cashless transaction for purchase of at least one product or service by a user from a payment accepting unit may have input mechanisms. The user may have a mobile device having both short-range communication technology and long-range communication technology. The payment accepting unit is preferably capable of dispensing at least one product or service. The method includes the steps of: (a) sending an authorization request for funds to the mobile device using short-range communication technology of an adapter module associated with the payment accepting unit; (b) receiving the authorization request for funds from the short-range communication technology of the adapter module at the short-range communication technology of the mobile device; (c) forwarding the authorization request for funds to a server using the long-range communication technology of the mobile device; (d) receiving the authorization request for funds from the long-range communication technology of the mobile device at long-range communication technology of the server; (e) sending an authorization grant for funds to the mobile device using the long-range communication technology of the server; (f) receiving the authorization grant for funds from long-range communication technology of the server at the long-range communication technology of the mobile device; (g) forwarding the authorization grant for funds to the adapter module using the short-range communication technology of the mobile device; and (h) receiving the authorization grant for funds from the short-range communication technology of the mobile device at short-range communication technology of the adapter module. At least one product or service may then be dispensed from the payment accepting unit in response to receiving user input to the payment accepting unit input mechanism if the adapter module has received the authorization grant.

The method may include the steps of securing the authorization request using security technology associated with the adapter module to create a secured authorization request, securing the authorization grant using security technology associated with the server to create a secured authorization grant, and the secured authorization request and the secured authorization grant are preferably undecipherable to the mobile device.

The method may include the steps of (a) sharing a unique private key between the adapter module and the server, (b) encrypting using the unique private key the authorization request using encryption/decryption technology associated with the adapter module to create an encrypted authorization request, (c) decrypting using the unique private key the encrypted authorization request using encryption/decryption technology associated with the server, (d) encrypting using the unique private key the authorization grant using the encryption/decryption technology associated with the server to create an encrypted authorization grant, (e) decrypting using the unique private key the encrypted authorization grant using encryption/decryption technology associated with the adapter module, and (e) the encrypted authorization request and the encrypted authorization grant are preferably undecipherable to the mobile device.

The method may include the steps of (a) surrounding the adapter module with two zones, a payment zone and an authorization zone, wherein the payment zone is within the authorization zone, (b) the adapter module sending the authorization request when the mobile device is within the authorization zone; and (c) the mobile device forwarding the authorization grant for funds to the adapter module when the mobile device is within the payment zone. The adapter module may also include a third zone, a communication zone, wherein the authorization zone is within the communication zone. The mobile device receives advertising broadcast signals from the adapter module within the communication zone.

The method may have a hands-free mode in which the payment accepting unit dispenses the at least one product or service without the user interacting with the mobile device. The method may further include the steps of (a) displaying funds available on a display of the payment accepting unit, the funds available may be based

on information from the authorization grant; and (b) receiving user selection input when the user interacts with input mechanisms of the payment accepting unit to select the at least one product or service to be dispensed.

The method may include the step of inserting the adapter module as an in-line dongle for in-line insertion within a multi-drop bus of the payment accepting unit. The method may include the step of inserting the adapter module in serial with the multi-drop bus by connecting a male adapter of the adapter module to a female adapter of the multi-drop bus and by connecting a female adapter of the adapter module to a male adapter of the multi-drop bus.

The subject matter described herein is particularly pointed out and distinctly claimed in the concluding portion of this specification. Objectives, features, combinations, and advantages described and implied herein will be more readily understood upon consideration of the following detailed description of the invention, taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

FIG. 1 is a schematic diagram that shows three zones: a first "communication zone" (e.g. "Bluetooth range"), a second "authorization zone," and a third "payment zone." The payment zone (that can't be zero) is smaller than or equal to (overlapping completely) the authorization zone.

FIG. 2 is a schematic diagram that shows the three zone of FIG. 1 with multiple users therein, the mobile-device-to-machine payment systems providing for managing and resolving multiple users.

FIG. 3 is a table that illustrates the hands-free credit or alert user principle.

FIG. 4 is a flow chart showing the logging RSSI at User Input.

FIG. 5 is a block schematic that shows elements of the system including, but not limited to, the adapter module, the machine, the mobile device, and exemplary servers, as well as communications therebetween.

FIG. 6 is a block schematic that shows there are three areas of encryption used (each is bi-directional) between the adapter module, the machine, the mobile device, and/or exemplary servers.

FIG. 7 is a block diagram that communications, messaging, vending sequence, and purchase flow between the adapter module, the mobile device, and a system management server.

FIG. 8A is a timing schematic diagram that shows additional elements and features of the system including, but not limited to, communications medium, messaging, vending sequence, and purchase flow, when the user enters the communication zone (Bluetooth Range).

FIG. 8B is a timing schematic diagram that shows additional elements and features of the system including, but not limited to, communications medium, messaging, vending sequence, and purchase flow, when the user enters the Authorization Zone.

FIG. 8C is a timing schematic diagram that shows additional elements and features of the system including, but not limited to, communications medium,

messaging, vending sequence, and purchase flow, when the user enters the Payment Zone and, in particular, detailing the hands-free mode alternative and the swipe mode alternative.

FIG. 8D is a timing schematic diagram that shows additional elements and features of the system including, but not limited to, communications medium, messaging, vending sequence, and purchase flow, in a vending transaction including a loop for multiple transactions.

FIG. 8E is a timing schematic diagram that shows additional elements and features of the system including, but not limited to, communications medium, messaging, vending sequence, and purchase flow, in the Login mode.

FIG. 8F is a timing schematic diagram that shows additional elements and features of the system including, but not limited to, communications medium, messaging, vending sequence, and purchase flow, during Module bootup.

FIG. 8G is a timing schematic diagram that shows additional elements and features of the system including, but not limited to, communications medium, messaging, vending sequence, and purchase flow, during Account Check/Update.

FIGS. 9A - 9E are flow charts that show exemplary steps and features of the system including, but not limited to, communications, messaging, vending sequence, and purchase flow.

FIGS. 10A - 10D show an exemplary mobile device with a graphical representation of an exemplary mobile application shown thereon, the mobile application being used as part of the mobile-device-to-machine payment systems.

FIG. 11 is a perspective view of the exemplary first preferred in-line dongle adapter module.

FIG. 12 is a front plan view of the in-line dongle adapter module of FIG. 11.

FIG. 13 is a back plan view of the in-line dongle adapter module of FIG. 11.

FIG. 14 is a first side view of the in-line dongle adapter module of FIG. 11, the second side being a mirror image of that shown.

FIG. 15 is a first end view of a connector receptacle of the in-line dongle adapter module of FIG. 11.

FIG. 16 is a second end view of a connector receptacle of the in-line dongle adapter module of FIG 11.

FIG. 17 is a perspective view taken from the first end of the in-line dongle adapter module of FIG. 11, the connectors and cables between which the in-line dongle adapter module is inserted being shown in broken lines for environmental purposes.

FIG. 18 is a perspective view taken from the second end of the in-line dongle adapter module of FIG. 11, the connectors and cables between which the in-line dongle adapter module is inserted being shown in broken lines for environmental purposes.

FIG. 19 is a perspective view of the in-line dongle adapter module of FIG. 11 within a vending machine.

FIG. 20 is a perspective view of the exemplary second preferred in-line dongle adapter module.

FIG. 21 is a front plan view of the in-line dongle adapter module of FIG. 20.

FIG. 22 is a back plan view of the in-line dongle adapter module of FIG. 20.

FIG. 23 is a first side view of the in-line dongle adapter module of FIG. 20, the second side being a mirror image of that shown.

FIG. 24 is a first end view of a connector receptacle of the in-line dongle adapter module of FIG. 20.

FIG. 25 is a second end view of a connector receptacle of the in-line dongle adapter module of FIG 20.

FIG. 26 is a perspective view taken from the first end of the in-line dongle adapter module of FIG. 20, the connectors and cables between which the in-line dongle adapter module is inserted being shown in broken lines for environmental purposes.

FIG. 27 is a perspective view taken from the second end of the in-line dongle adapter module of FIG. 20, the connectors and cables between which the in-line

dongle adapter module is inserted being shown in broken lines for environmental purposes.

FIG. 28 is a perspective view of the in-line dongle adapter module of FIG. 20 within a vending machine.

FIG. 29 is a perspective view of the exemplary third preferred in-line dongle adapter module with a gap indicating the in-line dongle adapter module can be of any length.

FIG. 30 is a front plan view of the in-line dongle adapter module of FIG. 29.

FIG. 31 is a back plan view of the in-line dongle adapter module of FIG. 29.

FIG. 32 is a first side view of the in-line dongle adapter module of FIG. 29, the second side being a mirror image of that shown.

FIG. 33 is a first end view of a connector receptacle of the in-line dongle adapter module of FIG. 29.

FIG. 34 is a second end view of a connector receptacle of the in-line dongle adapter module of FIG. 29.

FIG. 35 is a perspective view taken from the first end of the in-line dongle adapter module of FIG. 29, the connectors and cables between which the in-line dongle adapter module is inserted being shown in broken lines for environmental purposes.

FIG. 36 is a perspective view taken from the second end of the in-line dongle adapter module of FIG. 29, the connectors and cables between which the in-line dongle adapter module is inserted being shown in broken lines for environmental purposes.

FIG. 37 is a perspective view of the in-line dongle adapter module of FIG. 29 within a vending machine.

FIG. 38 is a perspective view of the exemplary fourth preferred in-line dongle adapter module with two vertical gaps indicating the in-line dongle adapter module can be of any width.

FIG. 39 is a front plan view of the in-line dongle adapter module of FIG. 38.

FIG. 40 is a back plan view of the in-line dongle adapter module of FIG. 38.

FIG. 41 is a first side view of the in-line dongle adapter module of FIG. 38, the second side being a mirror image of that shown.

FIG. 42 is a first end view of a connector receptacle of the in-line dongle adapter module of FIG. 38.

FIG. 43 is a second end view of a connector receptacle of the in-line dongle adapter module of FIG 38.

FIG. 44 is a perspective view taken from the first end of the in-line dongle adapter module of FIG. 38, the connectors and cables between which the in-line dongle adapter module is inserted being shown in broken lines for environmental purposes.

FIG. 45 is a perspective view taken from the second end of the in-line dongle adapter module of FIG. 38, the connectors and cables between which the in-line dongle adapter module is inserted being shown in broken lines for environmental purposes.

FIG. 46 is a perspective view of the in-line dongle adapter module of FIG. 38 within a vending machine.

FIG. 47 is a perspective view of the exemplary fifth preferred in-line dongle adapter module and, specifically, the longitudinal center portion thereof, the dashed line depiction of the sides indicating the sides of the in-line dongle adapter module can be of any shape or curvature.

FIG. 48 is a front plan view of the in-line dongle adapter module of FIG. 47.

FIG. 49 is a back plan view of the in-line dongle adapter module of FIG. 47.

FIG. 50 is a first side view of the in-line dongle adapter module of FIG. 47, the second side being a mirror image of that shown.

FIG. 51 is a first end view of a connector receptacle of the in-line dongle adapter module of FIG. 47.

FIG. 52 is a second end view of a connector receptacle of the in-line dongle adapter module of FIG 47.

FIG. 53 is a perspective view taken from the first end of the in-line dongle adapter module of FIG. 47, the connectors and cables between which the in-line dongle adapter module is inserted being shown in broken lines for environmental purposes.

FIG. 54 is a perspective view taken from the second end of the in-line dongle adapter module of FIG. 47, the connectors and cables between which the in-line dongle adapter module is inserted being shown in broken lines for environmental purposes.

FIG. 55 is a perspective view of the in-line dongle adapter module of FIG. 47 within a vending machine.

FIG. 56 is a block diagram of an exemplary adapter module.

FIG. 57 is a block diagram of an exemplary mobile device.

FIG. 58 is a block diagram of an exemplary server.

DETAILED DESCRIPTION OF THE INVENTION

Disclosed herein are mobile-device-to-machine payment systems and, more specifically, mobile-device-to-machine payment systems over a non-persistent network connection. The mobile-device-to-machine payment systems disclosed herein focus on the unattended retail space (e.g. a payment accepting unit 120 or machine 120). More specifically, mobile-device-to-machine payment systems disclosed herein allow a user (having a mobile device 150 with a mobile application 140 thereon) to make a cashless purchase from a payment accepting unit 120 (having an adapter module 100 associated therewith).

The mobile-device-to-machine payment systems described herein can be implemented with one or more of the following features: easy installation feature, a non-persistent network connection feature; a manual (swipe to pay) mode feature; a hands-free mode feature; and a multiple vending transactions (multi-vend) feature.

Easy Installation: Installation is very easy, requires no tools, requires no configuration, and takes as little as 30 seconds. This is accomplished by using an adapter module 100 such as an in-line dongle (a hardware device with software thereon) design for in-line insertion within a multi-drop bus (MDB) of a payment accepting unit (e.g. a vending machine). Installation is as simple as "powering down" (turning off) the machine 120, identifying the "wire" that connects with a payment receiving mechanism (e.g. the coin mechanism), disconnecting the wire (so that there are two loose ends, such as a male connection end or adapter of an MDB and a female connection end or adapter of an MDB), plugging (inserting) the adapter module 100 in serial ("in-line") with the wire (for example, connecting the MDB female adapter to a male adapter of the adapter module 100 and connecting the MDB male adapter to a female adapter of the adapter module 100), tucking the wire and the installed adapter module 100 back into position, and "powering up" (turning on) the machine 120. Most vending machines made since 1995 have this industry standard MDB technology that would allow this easy 30-second installation. On machines without MDB technology, the adapter module 100 can be configured or designed to work with other serial

protocols or activate a switch. In essence the adapter module 100 simulates establishing payment on payment accepting unit 120 in much the same manner as other alternative forms of payment (e.g. cash).

Non-persistent Network Connection: Although payment accepting units (or "machines") that accept only cash (e.g. paper currency and coins) may not require a connection (persistent or non-persistent) to a network, traditional payment accepting units that accept cashless payments (e.g. credit cards, debit cards, and alternative mobile device payment methods using, for example, smart phones) require a persistent connection to a network (wired or wireless) to facilitate the cashless payments. In other words, without a persistent (ongoing or accessible on demand) network connection, traditional payment accepting units cannot accept cashless payments. Most traditional payment accepting units that accept cashless payments include the technology to accomplish this persistent network connection that allows them to connect to a remote server. If the network connection to a traditional machine is temporarily interrupted, cashless payments will be temporarily unavailable. If the machine is located in a location where no signal is available, cashless payments will not be possible. The Whigham reference, the Offer reference, and the Belfer reference disclose alternative payment accepting units that accept cashless payments by using the user's cellular phone to allow the user to manually input coding to a remote server and, thereby act as an on-demand bridge network connection. These references, however, require significant user interaction with the cellular telephone to effectuate the transaction. In addition to using a mobile device 150 as an intermediary between the payment accepting units 120 and the server 130, mobile-device-to-machine payment systems described herein minimize (manual mode) or eliminate (hands-free mode) user interaction with the mobile device 150. Further, some mobile-device-to-machine payment systems described herein facilitate the acceptance of cashless payments without requiring any network connection near the payment accepting unit 120. Mobile-device-to-machine payment systems described herein that are located in a remote location where no signal is available, therefore, can accept cashless payments.

Manual (Swipe to Pay) Mode: Using a "swipe to pay" feature (or just "swipe") refers to a user's action implemented on his mobile device 150 in which he quickly brushes his finger (or other pre-determined interaction) on the mobile device's touch screen 152 (or other input device associated with the mobile device 150). From the user's perspective, when the user is within range, a pre-installed mobile application 140 automatically connects to the payment accepting unit 120 (e.g. a vending machine). The mobile application 140 might display (on the touch screen 152) a prepaid balance that the user "swipes" to transfer payment to the payment accepting unit 120. The user could observe the transferred funds on the touch screen 152 of the mobile device 150 and/or on the display 122, 124 of the payment accepting unit 120. The transaction is completed just as if cash was inserted in the machine 120 with the user inputting his selection on the payment accepting unit 120 and the payment accepting unit 120 dispensing the product or service. After the selection is made, the change is returned to the mobile device 150 and this may be shown on the touch screen 152 of the mobile device 150.

Hands-Free Mode: A "hands-free pay" feature (or just "hands-free") would most likely be used with "favorite" payment accepting units 120 (e.g. a vending machine at work or school). From the user's perspective, he would approach the favorite payment accepting unit 120 and notice that the display 122, 124 of the payment accepting unit 120 showed funds available, he would select the product or service using the payment accepting unit's input mechanisms (e.g. buttons 126 or a touch screen display 124 shown in FIG. 19), and he would retrieve his dispensed services or products. It would be that simple. More specifically, when the user is within range, a pre-installed mobile application 140 automatically connects to the payment accepting unit 120 (e.g. a vending machine). The user may leave the mobile device 150 in a pocket, purse, briefcase, backpack, or other carrier. As the user approaches the payment accepting unit 120 and is in approximately "arms-length" distance (e.g. 3 to 5 feet), the user could observe the transferred funds on the display 122, 124 of the payment accepting unit 120. The transaction is completed just as if cash was inserted in the machine 120 with the user inputting his selection on the payment accepting unit

120 and the payment accepting unit 120 dispensing the product or service. After the selection is made, the change is returned to the mobile device 150. FIG. 3 details when the hands-free mode would be available.

Multiple Vending Transactions (Multi-Vend): Both the "swipe to pay" feature and the "hands-free pay" feature could be used multiple times in sequence (implemented, for example, as a loop) so that a user may make multiple purchases. After making his first selection and receiving his product (or service), the user would observe that additional funds were available on the display 122, 124 on the payment accepting unit 120. He could make another selection (or multiple selections) and receive additional product(s) (or service(s)). More specifically, the display 122, 124 may reset as if the transaction is complete, but then, because the user is still standing in range, the mobile application 140 would send another credit to the payment accepting unit 120, allowing for a second purchase. When the walks away, the system clears (e.g. returns unused funds to the mobile application 140 on the mobile device 150.

The features described above, alone or in combination with other features described herein will revolutionize the hundred billion dollar automated retail industry. The exemplary hardware is very low cost and there are no reoccurring fees because no cellular connection is required on the machine 120. Using the mobile-device-to-machine payment systems described herein, operators can increase frequency of visits and items sold with each visit.

Mobile-device-to-machine payment systems described herein may be implemented as an apparatus and/or method for enabling payments to a machine 120 via a mobile device 150. Exemplary mobile-device-to-machine payment systems may be better understood with reference to the drawings, but the shown mobile-device-to-machine payment systems are not intended to be of a limiting nature.

Definitions

Before describing the mobile-device-to-machine payment systems and the figures, some of the terminology should be clarified. Please note that the terms and phrases may have additional definitions and/or examples throughout the specification. Where otherwise not specifically defined, words, phrases, and acronyms are given their ordinary meaning in the art. The following paragraphs provide some of the definitions for terms and phrases used herein.

- Adapter Module 100: As shown in FIGS. 1 and 2, the adapter module 100 is a physical device that is installed in a machine 120 (a payment accepting unit 120). The shown exemplary adapter module 100 is an in-line dongle (a hardware device with software thereon) device that may be inserted in-line within a multi-drop bus (MDB) of a machine 120. The adapter module 100 bridges the communication between the machine 120 and a mobile device 150. Although described as a unique component, it should be noted that the adapter module 100 could be implemented as a plurality of devices or integrated into other devices (e.g. components of a machine 120). In its unique component form, the adapter module 100 can be easily inserted into a machine 120 so that the machine 120 is able to perform new features with the assistance of the adapter module 100. FIG. 56 shows exemplary components associated with the adapter module 100. The shown example may be divided into multiple distinct components that are associated with each other or the example may be incorporated into or drawn from other technology (e.g. a computer or a payment accepting unit) as long as the components are associated with each other.
- Mobile Device 150 and Application 140 (also referred to as a "mobile application," "mobile app," or "app"): In general, a mobile device 150 may be a user's personal mobile device 150. The mobile device 150 (with a mobile application 140 thereon) acts as a communication bridge between the adapter module 100 (associated with a payment

accepting unit 120) and the server 130. The mobile device 150 and application 140, however, are not "trusted" in that the communications (transmissions) it passes are encrypted. Encrypted (secured) communications are undecipherable (unencryptable, unreadable, and/or unuseable) by the mobile device 150. This keeps the passed communications secured and safe from hacking. Exemplary mobile devices include, but are not limited to smart phones, tablet or laptop computers, or personal digital assistants (PDAs), smart cards, or other technology (e.g. a hardware-software combination) known or yet to be discovered that has structure and/or capabilities similar to the mobile devices described herein. The mobile device 150 preferably has an application 140 (app 140) running on it. The term "app" is used broadly to include any software program(s) capable of implementing the features described herein. FIGS. 10A-10D show exemplary mobile devices 150 with associated apps 140 associated therewith. It should be noted that the phrase "mobile device" can be assumed to include the relevant app unless specifically stated otherwise. Similarly, it should be noted that an "app" can be assumed to be running on an associated mobile device unless specifically stated otherwise. FIG. 57 shows exemplary components associated with the mobile device 150. The shown example may be divided into multiple distinct components that are associated with each other or the example may be incorporated into or drawn from other technology (e.g. the cell phone itself) as long as the components are associated with each other.

- Payment Accepting Unit 120 (or Machine 120): A payment accepting unit 120 (or machine 120) is equipment that requires payment for the dispensing of an product and/or service. Payment accepting units 120 may be vending machines, parking meters, toll booths, laundromat washers and dryers, arcade games, kiosks, photo booths, toll booths, transit ticket dispensing machines, and other known or yet to be

discovered payment accepting units 120. Some payment accepting units 120 can accept cashless payments (payments other than cash (paper currency and coins)) by accepting payment from, for example, credit cards, debit cards, and mobile devices.

- Network Connections: For purposes of this discussion, a persistent network connection is a wired or wireless communications connection that is ongoing (e.g. a dedicated connection, a dedicated online connection, and/or a hardwired connection) or accessible on demand (e.g. the ability for the machine to make a temporary connection to a server or the ability for the user to contact a server from his mobile device). Typically the persistent network connection has been conducted over "long-range communication technology" (e.g. hard-wired, telephone network technology, cellular technology, WiFi technology, wide area network (WAN), local area network (LAN), or any wired or wireless communication technology over the internet that is known or yet to be discovered). Traditionally, machines that accept payment other than cash require a persistent (ongoing or accessible on demand) connection to a network to facilitate payment. This is true for machines that accept, for example, credit cards and debit cards. The payment accepting units 120 described herein do not require a traditional persistent network connection. The user's mobile device 150 acts as a communication bridge between the adapter module 100 and the server 130. Communications between user mobile devices 150 and the servers (e.g. a system management server 130 and/or a funding source server 160) take place using long-range communication technology. Communications between user mobile devices 150 and the adapter module 100 of the payment accepting unit 120 take place using "short-range communication technology" (e.g. Bluetooth (e.g. Bluetooth 4.0, Bluetooth Smart, Bluetooth LE (Low Energy), near-field communication, Ultra Wideband (UWB), RFID, infrared wireless,

induction wireless, or any wired or wireless technology that could be used to communicate a small distance (e.g. approximately a hundred feet or closer) that is known or yet to be discovered). Neither the adapter module 100 nor the payment accepting unit 120, therefore require a traditional persistent long-range wireless network connection. The exemplary communications technology shown in the figures may be replaced with alternative like communications technology and, therefore, specific shown communications technologies are not meant to be limiting. For example WiFi technology could be replaced with another long-range communication technology.

- Server: A server is the host processing server that may be operated by the company running the system. For each user, the server 130 preferably maintains at least one "virtual wallet" having at least one "balance" (which can be $0) of designated funds for which the server 130 keeps an accounting. The balance may represent, for example, "cash" or it may be a "promotional value" that represents funds that may be spent under certain circumstances. If these funds begin to be depleted, the user may be notified (e.g. via the application 140 on the mobile device 150) that additional funds need to be designated and/or transferred. Alternatively, funds from other sources (e.g. the funding source server 160) may be automatically transferred to restore a predetermined balance. The balance may also be increased based on a promotion (e.g. points earned or coupons). As shown in FIG. 58, the server includes appropriate processors 950, memory 960 (which would keep an accounting of the user's balance in a manner similar to a gift card), and communication systems 970. As shown, the communications unit 970 of the server 130 includes long-range communication technology (e.g. cellular technology and WiFi mechanisms). The server 130 also includes a security unit 955 for encrypting and decrypting messages. The server 130 receives an

AuthRequest from the adapter module 100 (via a mobile device 150) and, if funds are available, returns the AuthGrant for funds. FIG. 58 shows exemplary components associated with the server 130. The shown example may be divided into multiple distinct components that are associated with each other or the example may be incorporated into or drawn from other technology (e.g. a computer or a main frame) as long as the components are associated with each other.

- Advertise Presence: Each adapter module 100 advertises its presence by broadcasting signals (advertising broadcast signals) to mobile devices in the zones 102, 104, 016. Each adapter module 100 can listen to other adapter modules' advertisements
- Received Signal Strength Indicator (RSSI): The adapter module 100 may have a self-calibrating signal strength to determine zone thresholds (e.g. a payment zone threshold). At the time the user selects an item (product or service) from the payment accepting unit 120, the Received Signal Strength Indicator (RSSI) is logged. At this moment, it is presumed the user is within “arms-length” (which may be a predetermined length approximating the distance of a user standing in front of a machine for the purpose of making a purchase) from the payment accepting unit 120. Mathematical computation (In-Range Heuristics) is conducted to derive the optimal RSSI threshold at which point payment should be triggered by an application 140 on a mobile device 150. The threshold may be payment accepting unit specific and can vary over a period of time. This optimal zone threshold is preferably reported to the mobile device 150 during an initial handshake.
- In-Range Heuristics: Mathematical computation that determines the RSSI threshold to determine when a user is in the authorization zone 104 and/or payment zone 102. This computation can take into consideration numerous historical data points as well as transaction

specific information such as which mobile device 150 is being used, payment accepting unit type, among other factors. Preferably the RSSI is logged while the user is making his selection (this is the one time in the entire process that the user definitely will be "in range" (e.g. they will be arm's length from the machine 120 because they are physically interacting with the machine 120). The type of user mobile device 150, accelerometer data (e.g. is the user moving or stationary), and/or other information may also be logged while the user is making his selection. The adapter module 100 can give a reference RSSI for the payment zone 102 for the machine 120, and the application 140 can make a +/- adjustment based on the specific mobile device 150 on which it is installed. Over a period of time, the system continues to improve itself based on additional data points.

- Authorization Request (AuthRequest): When a user enters the authorization zone 104, the mobile device 150 notifies the adapter module 100 and the adapter module 100 sends the secured authorization request (e.g. the encrypted authorization request) as a "message" (also referred to as a communication or transmissions) to the server 130 via the mobile device 150. Encryption may be performed by a security unit 755 (security technology that may be associated with the processing unit 750 and/or the memory 760). Significantly, the AuthRequest is a request for authorization of funds, not a request for authorization of a transaction. The purpose of the funds is irrelevant to the server 30.
- Authorization Grant Token (AuthGrant): This is a "message" (also referred to as a communication or transmissions) encrypted by the security unit 955 (security technology) of the server 130 with the unique private key for the adapter module 100. The secured authorization grant (e.g. the encrypted authorization grant) is passed from the server 130 (via the mobile device 150) to the adapter module

100 in the form of a message. The mobile device 150, however, is not able to decrypt and read the message. The authorization grant is in response to the authorization request. The amount of the funds granted by the AuthGrant may be determined by factors including, but not limited to, the amount of funds available (or, if funds are not available, a mini-loan could be granted), a pre-authorized amount (e.g. set by the server, set by the user during set-up, set by the funding source, or a standard amount), limited by time (e.g. only a certain amount per hour, or a predetermined amount at specific times of the day), limited to the maximum amount of an item on the machine (or enough for two or three items in the machine), or one or more of these and other factors. Significantly, the AuthGrant makes the funds available, but does not authorize a transaction. The AuthGrant may have an associated expiration period in that it may expire if it is not used in a pre-determined time period. The length of time before the AuthGrant expires may be determined by factors including, but not limited to, the trustworthiness of the user (e.g. the user has a long history with the system or some known provider (e.g. credit card provider, bank, or credit union), the user has a good credit rating, or the user has a large wallet balance), a pre-authorized time period (e.g. set by the server, set by the user during set-up, set by the funding source, or a standard time period), limited by time (e.g. predetermined time periods at specific times of the day such as longer times during breakfast, lunch, and dinner), limited by the machine or the products or services sold in the machine, limited by the number of other users near the machine (e.g. if it is a crowded machine, the AuthGrant may expire faster), or one or more of these and other factors. The AuthGrant remains valid until it expires or some other event occurs to end its validity (e.g. the user cancels it). This means that under normal circumstances the mobile device 150 will hold the AuthGrant

authorizing use of funds for a pre-determined time period that will allow the user sufficient time to make a purchase. The authorized amount may be considered to be the "wallet balance" that is held in a virtual "wallet."

- Synchronization: Time may be synchronized to the adapter module 100 from the server 130. The server 130 sends time information with encrypted messages and the adapter module 100 uses the time encoded in the messages for synchronization.
- The mobile-device-to-machine payment systems and components thereof may have associated hardware, software, and/or firmware (a variation, subset, or hybrid of hardware and/or software). The term "hardware" includes at least one "processing unit," "processor," "computer," "programmable apparatus," and/or other known or yet to be discovered technology capable of executing instructions or steps (shown as processing unit 750 in FIG. 56, processing unit 850 in FIG. 57, and processing unit 950 in FIG. 58). The term "software" includes at least one "program," "subprogram," "series of instructions," or other known or yet to be discovered hardware instructions or hardware-readable program code. Software may be loaded onto hardware (or firmware) to produce a "machine," such that the software executes on the hardware to create structures for implementing the functions described herein. Further, the software may be loaded onto the hardware (or firmware) so as to direct the mobile-device-to-machine payment systems (and components thereof) to function in a particular manner described herein or to perform a series of operational steps as described herein. "Hardware" such as the adapter module 100, mobile device 150, and payment accepting unit 120 may have software (e.g. programs and apps) loaded thereon. The phrase "loaded onto the hardware" also includes being loaded into memory (shown as memory 760 in FIG. 56, memory 860 in FIG. 57, and memory 960 in FIG. 58)

associated with or accessible by the hardware. The term "memory" is defined to include any type of hardware (or other technology) -readable media (also referred to as computer-readable storage medium) including, but not limited to, attached storage media (e.g. hard disk drives, network disk drives, servers), internal storage media (e.g. RAM, ROM, EPROM, FLASH-EPROM, or any other memory chip or cartridge), removable storage media (e.g. CDs, DVDs, flash drives, memory cards, floppy disks, flexible disks), firmware, and/or other known or yet to be discovered storage media. Depending on its purpose, the memory may be transitory and/or non-transitory. Appropriate "messages," "communications," "signals," and/or "transmissions" (that includes various types of information and/or instructions including, but not limited to, data, commands, bits, symbols, voltages, currents, electromagnetic waves, magnetic fields or particles, optical fields or particles, and/or any combination thereof) over appropriate "communication paths," "transmission paths," and other means for signal transmission including any type of connection between two elements on the system (the system including, for example, the adapter module 100, mobile device 150, payment accepting unit 120, hardware systems and subsystems, and memory) would be used as appropriate to facilitate controls and communications.

- It should be noted that the terms "programs" and "subprograms" are defined as a series of instructions that may be implemented as software (i.e. computer program instructions or computer-readable program code) that may be loaded onto a computer to produce a "machine," such that the instructions that execute on the computer create structures for implementing the functions described herein or shown in the figures. Further, these programs and subprograms may be loaded onto a computer so that they can direct the computer to

function in a particular manner, such that the instructions produce an article of manufacture including instruction structures that implement the function specified in the flow chart block or blocks. The programs and subprograms may also be loaded onto a computer to cause a series of operational steps to be performed on or by the computer to produce a computer implemented process such that the instructions that execute on the computer provide steps for implementing the functions specified in the flow chart block or blocks. The phrase "loaded onto a computer" also includes being loaded into the memory of the computer or a memory associated with or accessible by the computer. Separate, albeit interacting, programs and subprograms may be associated with the adapter modules 100, the server 130, and the mobile device 150 (including the mobile application 140) and these programs and subprograms may be divided into smaller subprograms to perform specific functions.

- The terms "messages," "communications," "signals," and/or "transmissions" include various types of information and/or instructions including, but not limited to, data, commands, bits, symbols, voltages, currents, electromagnetic waves, magnetic fields or particles, optical fields or particles, and/or any combination thereof. Appropriate technology may be used to implement the "communications," "signals," and/or "transmissions" including, for example, transmitters, receivers, and transceivers. "Communications," "signals," and/or "transmissions" described herein would use appropriate technology for their intended purpose. For example, hard-wired communications (e.g. wired serial communications) would use technology appropriate for hard-wired communications, short-range communications (e.g. Bluetooth) would use technology appropriate for close communications, and long-range communications (e.g. WiFi or Cellular) would use technology appropriate for remote communications over a distance. Appropriate

security (e.g. SSL or TLS) for each type of communication is included herein. Security units 755 and 955 include technology for securing messages. The security technology may be, for example, encryption/decryption technology (e.g. software or hardware). Although encryption/decryption is discussed primarily as being performed using a unique private key, alternative strategies include, but are not limited to encryption/decryption performed using public/private keys, or other encryption/decryption strategies known or yet to be discovered. Appropriate input mechanisms and/or output mechanisms, even if not specifically described, are considered to be part of the technology described herein. The exemplary communications unit 770 (shown in FIG. 56) of the adapter module 100 is shown as including appropriate input and output mechanisms 772, 774 that may be implemented in association (e.g. directly or indirectly in functional communication) with male and female adapters 720, 730 of the adapter module 100. The exemplary communications unit 870 (shown in FIG. 57) of the mobile device 150 includes mechanisms for both long-range communications (shown as Cellular and/or WiFi mechanisms 872) for communicating with the server 130 and short-range communications (shown as Bluetooth mechanisms 876) for communicating with the adapter module 100.

- When used in relation to "communications," "signals," and/or "transmissions," the terms "provide" and "providing" (and variations thereof) are meant to include standard means of provision including "transmit" and "transmitting," but can also be used for non-traditional provisions as long as the "communications," "signals," and/or "transmissions" are "received" (that can also mean obtained). The terms "transmit" and "transmitting" (and variations thereof) are meant to include standard means of transmission, but can also be used for non-traditional transmissions as long as the "communications,"

"signals," and/or "transmissions" are "sent." The terms "receive" and "receiving" (and variations thereof) are meant to include standard means of reception, but can also be used for non-traditional methods of obtaining as long as the "communications," "signals," and/or "transmissions" are "obtained."

- The term "associated" is defined to mean integral or original, retrofitted, attached, connected (including functionally connected), positioned near, and/or accessible by. For example, if the user interface (e.g. a traditional display 122 (FIG. 19), a touch screen display 124 (FIG. 19), a key pad 126 (FIG. 19), buttons 126 (FIG. 19, shown as part of the key pad 126), a keyboard (not shown), and/or other input or output mechanism) is associated with a payment accepting unit 120, the user interface may be original to the payment accepting unit 120, retrofitted into the payment accepting unit 120, attached to the payment accepting unit 120, and/or a nearby the payment accepting unit 120. Similarly, adapter modules 100 may be associated with payment accepting units 120 in that the adapter modules 100 may be original to the payment accepting unit 120, retrofitted into the payment accepting unit 120, attached to the payment accepting unit 120, and/or a nearby the payment accepting unit 120.
- It should be noted that relative terms are meant to help in the understanding of the technology and are not meant to limit the scope of the invention. Similarly, unless specifically stated otherwise, the terms used for labels (e.g. "first," "second," and "third") are meant solely for purposes of designation and not for order or limitation. The term "short" in the phrase "short-range" (in addition to having technology specific meanings) is relative to the term "long" in the phrase "long-range."

- The terms "may," "might," "can," and "could" are used to indicate alternatives and optional features and only should be construed as a limitation if specifically included in the claims.
- It should be noted that, unless otherwise specified, the term "or" is used in its nonexclusive form (e.g. "A or B" includes A, B, A and B, or any combination thereof, but it would not have to include all of these possibilities). It should be noted that, unless otherwise specified, "and/or" is used similarly (e.g. "A and/or B" includes A, B, A and B, or any combination thereof, but it would not have to include all of these possibilities). It should be noted that, unless otherwise specified, the terms "includes" and "has" mean "comprises" (e.g. a device that includes, has, or comprises A and B contains A and B, but optionally may contain C or additional components other than A and B). It should be noted that, unless otherwise specified, the singular forms "a," "an," and "the" refer to one or more than one, unless the context clearly dictates otherwise.

System Overview

FIGS. 5, 6, and 7 together show exemplary major components of the mobile-device-to-machine payment system and the interactions therebetwen.

As shown, the adapter module 100 functionally connected bi-directionally to the payment accepting unit 120 via a wired serial connection such that no security is necessary. The adapter module 100 is also functionally connected bi-directionally to the mobile device 150 (and its installed mobile application 140) via short-range communication technology (e.g. a Bluetooth connection). Because the mobile device 150 is not a "trusted" link (e.g. it could be hacked by a user), only secured communications (transmissions) are passed between the adapter module 100 and the mobile device 150. This keeps the passed communications secured and safe from hacking. The mobile device 150 (and its installed mobile application 140) is also functionally connected bi-directionally to a system management server 130 and/or a

funding source server 160 via long-range communication technology (e.g. WiFi or Cellular connection) that preferably has appropriate security (e.g. SSL security). Security between the mobile device 150 and the system management server 130 has the advantage of protecting communications from the mobile device 150 to the system management server 130 that may include sensitive data and may not be encrypted. The system management server 130 and the funding source server 160 may be connected via a wired Internet connection with SSL security. The system management server 130 may be connected via a wired Internet connection with SSL security to an operators' server 170. Although not necessary to implement a purchase transaction, for other purposes (e.g. inventory), the operators' server 170 may be connected to the payment accepting unit 120 using a handheld computer sync or a cellular connection.

Also, a unique private key may be used to securely transmit encrypted messages between the adapter module 100 and the system management server 130 (although the encrypted transmissions would most likely be routed through the mobile device 150). The server 130 stores a private key for each adapter module 100, and this key is only known to the adapter module 100 and the server 130. No intermediary is privy to this key (especially not the mobile device 150). When the adapter module 100 and server 130 communicate messages (e.g. AuthRequest and AuthGrant), the security unit 755 of the adapter module 100 encrypts the message with its private key and passes the message to the mobile device 150. The mobile device 150 (which preferably cannot decrypt the message) passes the encrypted message to the server 130. The server 130 is able to decrypt the message using the security unit 955 of the adapter module 100 and the unique private key. The security unit 955 of the server 130 uses this same unique private key to encrypt messages to the adapter module 100 and sends the message to the mobile device 150 to relay to the adapter module 100 that is able to decrypt the message using the security unit 755 of the adapter module 100 and the unique private key.

FIG. 7 shows specific exemplary communications and messaging with an exemplary vending sequence (the numbers to the left of the communications and messaging) between the adapter module 100, the mobile device 150, and the system

management server 130. These communications are discussed in more detail in the discussion pertaining to the timing schematics (FIGS. 8A-8G) and the flow charts (FIGS. 9A-9E).

It should be noted that FIGS. 5, 6, and 7 are meant to be exemplary and to help in the understanding of the mobile-device-to-machine payment system. For example, the shown long-range communications technology may be replaced with alternative long-range communications technology known or yet to be discovered, the shown short-range communication technology may be replaced with alternative short-range communication technology known or yet to be discovered, and the shown security may be replaced with alternative security known or yet to be discovered. The shown connections are meant to be exemplary in that, for example, there may be intermediaries that are not shown. The shown components have been simplified in that, for example, only one mobile device 150 (or machine 120, adapter module 100, or server 130) is shown where many may be included. Finally, the order of the steps may be changed and some steps may be eliminated.

Adapter Module

FIGS. 11-55 show exemplary adapter modules 100a-100e (referred to generally as adapter modules 100). These are relatively low cost hardware that are pre-configured to work with industry standard a multi-drop bus (MDB). On machines without MDB technology, the adapter module 100 can be configured or designed to work with other serial protocols or activate a switch. In essence the adapter module 100 simulates establishing payment on payment accepting unit 120 in much the same manner as other alternative forms of payment (e.g. cash).

The shown exemplary adapter modules 100 are preferably designed to be used as an in-line dongle for in-line insertion within, for example, a MDB of a machine 120. The wire used in MDB technology uses male and female connection ends or adapters to allow the attachment of peripherals. In the case of a vending machine, the wire with the connection ends or adapters would be present to allow the attachment of a payment receiving mechanism (e.g. a coin mechanism). The MDB male and female

adapters 700, 710 may be separated (as shown in FIGS. 17, 18, 26, 27, 35, 36, 44, 45, 53, and 54). The adapter modules 100 have male and female adapters 720, 730. The adapter module may be plugged (inserted) in serial ("in-line") with the wire. For example, the MDB female adapter 710 may be connected to the male adapter 720 of the adapter module 100 and the MDB male adapter 700 may be connected to the female adapter 730 of the adapter module 100. The resulting in-line configuration is shown in FIGS. 19, 28, 37, 46, and 55. It should be noted that the adapter modules 100 are designed to allow pass-through communications so that if the mobile-device-to-machine payment systems is not enabled (e.g. for a particular purchase or simply turned off) the MDB functions as though the adapter module 100 is not there and the machine 120 can function normally.

Hands-Free

Summarily, if it is available, a hands-free mode, from the user's perspective, would allow the user to approach a favorite payment accepting unit 120 and notice that the display (e.g. the displays 122 or 124 shown in FIG. 19) associated with the payment accepting unit 120 shows funds available (e.g. the wallet balance), he would select the product or service using input mechanisms (e.g. buttons 126 or a touch screen display 124 shown in FIG. 19) associated with the payment accepting unit 120, and he would retrieve his dispensed services or products.

During an initial handshake with the mobile device 150 (when the user is within range), the adapter module 100 reports to the mobile device 150 whether or not hands-free mode is available. If it is available, the installed mobile application 140 automatically connects to the payment accepting unit 120 without the user having to interact with the mobile device 150. The user observes that funds are available on the display 122, 124 of the payment accepting unit 120 and completes the purchase transaction as if cash was inserted in the machine 120 by inputting his selection on the payment accepting unit 120. The payment accepting unit 120 dispenses the product or service. After the selection is made, the change is returned to the mobile device 150.

Whether hands-free payment is available is determined by factors including, but not limited to whether if other mobile devices 150 are in range, if other adapter modules 100 are in range, if there are any alerts, if the payment trigger threshold is having wide variances and so deemed unstable, or if the payment accepting unit operator (e.g. a vending machine operator) has opted to disable hands-free mode for the payment accepting unit 120. In the latter instance, operators can disable via a maintenance mobile device 150, as well as through the operators' server 170 and/or the system management server 130.

FIG. 3 is a table that showing exemplary considerations, conditions, or factors that may be used to determine whether the hands-free pay feature is available. Starting at the "Favorite?" column, this indicates whether the payment accepting unit 120 is a favorite machine. Preferably the hands-free pay feature is only available for use with "favorite" payment accepting units 120 (e.g. a vending machine at work or school). The "Alert" column has to do with whether there is some reason (e.g. there are too many users in range) that the hands-free pay feature should not work and, if there is such a reason, the user will be notified (alerted) and may be able to use the manual mode to resolve the alert and/or complete the transaction. FIG. 3 shows situations in which a user is or is not able to make hands-free purchases from a machine 120 using a mobile application 140 on his mobile device 150. It should be noted that the shown interface is meant to be exemplary. For example, some of the features could be automated or pre-selected. (It should be noted that the left hand column, the "Tab" column, relates to whether the selected tab on the mobile application 140 is "all" or "favorite." FIGS. 10A-10D all show these tabs. Unlike the other columns in FIG. 3, this column has more to do with the functionality and view of the application 140 than specifically with the hands-free feature. The tabs would allow a user to select whether he wanted to be alerted when he was in range of all payment accepting units 120 or just "favorite" payment accepting units 120 and the application 140 would show the appropriate view.)

Balance Display: An optional feature of the mobile-device-to-machine payment system that is particularly helpful in the hands-free mode (although it may be

available in the manual mode and/or in a multiple-vend scenarios) is when the user's mobile device 150 sends "credit" to the payment accepting unit 120 (either via hands-free payment or through a manual swipe), the wallet balance is sent to the payment accepting unit 120 that is then displayed to the user on a display 122, 124 of the machine 120. This is particularly beneficial during hands-free mode when the user does not retrieve the mobile device 150 and, therefore, may not know the balance. Also, in a multiple-vend scenario the user would not have to calculate a remaining balance.

An exemplary hands-free and multiple-vend scenario with a balance display might be as follows: The user has $5.00 in his virtual wallet as that is the amount that has been authorized (the AuthGrant being stored on the mobile device 150). He walks up to the payment accepting unit 120 and $5.00 is displayed on the display 122, 124 of the payment accepting unit 120 since hands-free mode was enabled and credit was sent (e.g. via short-range communication technology) to the payment accepting unit 120. The user makes a selection of $1.50 by interacting (e.g. pressing buttons) with the machine 120. The item (product or service) is dispensed and the "change" is "returned" (e.g. via short-range communication technology) to the virtual wallet. But since user is still standing in the payment zone 102, the remaining wallet balance of $3.50 is sent to the payment accepting unit 120 and displayed so that the user can now see he has a $3.50 balance. (It should be noted that the authorized funds may remain on the machine 120 and not be transferred back to the mobile device 150 between transactions.) The user decides to purchase a $1.50 item, and the transaction is completed as usual (e.g. by interacting with the machine 120). Now the user is still standing in the payment zone 102 and he sees the wallet balance of $2.00 on the display 122, 124 of the payment accepting unit 120. Deciding he does not wish to purchase anything else, the user walks away. As he walks out of the payment zone 102, the credit is cleared from the machine 120. But he is left with the knowledge that his wallet balance is $2.00 even though he never touched the mobile device 150. Communications between the payment accepting unit 120 and the adapter module 100 (via the mobile device 150) handle the accounting incidental to the transaction. The

remaining balance ($2.00) is technically stored on the server 130, and may be reflected on the application 140 on the mobile device 150.

Multiple Distinct Zones

As shown in FIGS. 1 and 2, the functions performed by the adapter module 100 can be divided into distinct zones: a first "communication zone" (e.g. "Bluetooth range" 106), a second "authorization zone" 104, and a third "payment zone" 102. The payment zone102 (that can not be zero) is smaller than or equal to (overlapping completely) the authorization zone 104. (Put another way, the payment zone 102 is within or coextensive with the authorization zone 104.) The payment zone 102 is a subset of the authorization zone 104 with a ratio of the payment zone 102 to the authorization zone 104 ranging from 0.01:1 to 1:1. It is not necessarily a fixed ratio and can vary between different payment accepting units 120, different mobile devices 150, different users, and over time. While the zones 102, 104, 106 are depicted as having a uniform shape, the zones may not necessarily be uniform (or constant over time) in that the shape can vary. For example, the shape of the Bluetooth range 106 may vary depending on environmental conditions such as obstacles in the room and payment accepting unit 120 door/wall materials.

Bluetooth Range 106: The outermost range is the Bluetooth range 106. This is the area in which the adapter module 100 is able to broadcast its presence. In most situations, the Bluetooth range 106 is a passive range in that no actual data is exchanged between the mobile device 150 and the adapter module 100. While in the Bluetooth range 106, the mobile device 150 monitors the RSSI (Received Signal Strength Indicator).

Authorization Zone 104: The middle region is the authorization zone 104. This is a computed area based on the RSSI. As mentioned, the mobile device 150 monitors the RSSI while it is in the Bluetooth range 106. When the RSSI reaches a certain predetermined threshold based on In-Range Heuristics, the mobile device 150 can be considered to be in the authorization zone 104. In the authorization zone 104 the mobile device 150 establishes a connection to the adapter module 100 (e.g. a

Bluetooth connection (FIG. 5) with SSL protection (FIG. 6)) and informs the adapter module 100 of its presence. After a successful handshake with the adapter module 100, the mobile device 150 registers the adapter module 100 and the adapter module 100 requests an authorization to the server 130 via the mobile devices' network connection (e.g. a WiFi or cellular connection (FIG. 5) with SSL protection (FIG. 6)). It is important to note the mobile device 150 and the adapter module 100 have a non-exclusive relationship at this point. The adapter module 100 may collect registrations for all mobile devices 150 that are within the authorization zone 104.

An authorization occurs in preparation for when the user enters the payment zone 102. An authorization expires in a set period of time (for example, five minutes), so if the mobile device 150 is still in the authorization zone 104 at the time of expiration, the adapter module 100 submits for and receives another authorization. This will continue for a set number of times (for example, the limit may be three times to limit cases of numerous authorizations for a mobile device that may remain in the authorization zone 104 for an extended period of time without completing a transaction). Should authorization fail (for instance if the limit had been reached) prior to the user entering the payment zone 102, the adapter module 100 will request authorization when the mobile device 150 enters the payment zone 102 (which adds a few seconds to the experience).

Payment Zone 102: As a user enters the payment zone 102, the mobile device 150 establishes exclusive control of the adapter module 100. Once established, any other user in the payment zone 102 is put into a "waiting" status.

In the payment zone 102, the payment can be triggered automatically if the system has and is in hands-free mode. In such instances, the mobile device 150 is running the app 140 in background mode and will send credit to the payment accepting unit 120 without any explicit user interaction. The user completes the transaction on the payment accepting unit 120 in much the same manner as if cash had been inserted into the payment accepting unit 120 to establish credit. After the user completes the transaction (that may include one or more purchases), details of the transaction are preferably returned to the mobile device 150 and server 130 in separate messages.

The message to the server 130 is preferably encrypted with the adapter module's 100 private key (FIG. 6) to ensure data integrity. As shown in FIG. 7, the "private key" coded message (Encrypted VendDetails) is preferably sent via the mobile device 150. The message to the mobile device 150 may be sent solely for the purpose of closing the transaction. The transaction history and balance are updated server-side via the encrypted message sent to the server 130.

The other mode of operation is manual mode. In manual mode, the user launches the mobile device 150 and is able to swipe to send payment to the payment accepting unit 120. The user can also swipe back to cancel the payment. Like in hands-free mode, the purchase transaction is completed on the payment accepting unit 120 in the same manner as if cash were inserted into the payment accepting unit 120. The mobile device 150 is only used to send payment. Selection is made directly on the payment accepting unit 120.

Self-Calibrating Zone Threshold: A key, but optional feature, of the system is a self-calibrating payment zone RSSI threshold. Because RSSI can vary machine to machine, environment to environment, and device to device, having a fixed threshold at which payment is triggered can be problematic. The approach suggested herein is the creation of a self-calibrating threshold. When the user is interacting with the payment accepting unit 120 (such as when he makes his selection on the payment accepting unit 120), the payment accepting unit 120 notifies the adapter module 100 and the adapter module 100 logs the conditions such as RSSI, type of user mobile device 150, accelerometer data, and other information. It is at this point that it can be ascertained safely that the user is within arms-length from the payment accepting unit 120 (by necessity the user is arms-length because he is making some physical interaction with the payment accepting unit 120). This is the only point in the entire transaction in which it can be certain that the user is within arms-length from the payment accepting unit 120.

FIG. 4 shows a simplified set of exemplary steps involved when users enter the payment zone 102. Specifically, FIG. 4 shows that credit is established 200 (this may have been done in the authorization zone 104, but if not it would be handled in

the payment zone 102), that the user makes a selection using the machine 202, that the machine notifies the adapter module of the selection 204, that the adapter module (optionally) logs the RSSI 206, and that the purchase process(es) continues 208. Using the historically logged RSSI data, the adapter module 100 calculates one of several "average" RSSI using various mathematical models. This "average" could be a traditional average, a moving average, a weighted average, a median, or other similar summary function. The adapter module 100 could pre-process the historical data before running the function, such as to eliminate top and bottom data points, suspect data points, etc.

Optionally, during the handshake between the mobile device 150 and the adapter module 100, the information transmitted to the adapter module 100 may include, for example, the model of the mobile device 150. Using the received information pertaining to the mobile device models, the adapter module 100 can create multiple payment thresholds, one for each mobile device model. This allows for variances that may be inherent in different types of Bluetooth radios. An alternative to this method is for the adapter module 100 to broadcast a baseline payment zone threshold, and the mobile device 150 can use an offset from this baseline based on its specific model type. The payment zone thresholds (or baseline offsets) can be unique to specific types of mobile devices (e.g. by manufacturer, operating system, or component parts), models of mobile devices, or individual mobile devices (unique to each user).

In a typical scenario in which the payment zone threshold has been calibrated, the adapter module 100 advertises its presence along with the threshold at which it considers any mobile device 150 to be in the authorization zone 104. This is a one-way communication from adapter module 100 to mobile device 150. Once the mobile device 150 enters the authorization zone 104, there is a handshake that is established between the adapter module 100 and the mobile device 150. During this handshake, the mobile device 150 can share its model information with the adapter module 100, and the adapter module 100 can return the payment zone 102 threshold for that specific model.

Optionally, in addition to calibrating the payment zone threshold, the adapter module 100 can apply the self-calibrating model to the authorization zone 104 to calibrate the authorization zone threshold. As with the payment zone thresholds, the authorization zone thresholds can be unique to specific types of mobile devices, models of mobile devices, or individual mobile devices. In this scenario, the adapter module 100 would broadcast multiple thresholds by device type and the mobile device 150 would determine which threshold to apply (or alternatively broadcast a baseline and the mobile device 150 uses an offset based on its device model). Even in this scenario, the authorization zone 104 is a one-way communication.

Optionally, along with the threshold that is calculated (in the payment and/or the authorization zone(s)), a safety margin can be added to minimize scenarios in which a user is within range, but the mobile-device-to-machine payment systems do not recognize it because the threshold may not have been reached. For example, if the calculated RSSI for an iPhone 5 on machine 4567 is -68db, the mobile-device-to-machine payment systems may add a safety margin of -5db, and establish the threshold at -73db. So when a user's phone is communicating with the adapter module 100 at an RSSI of -73db or better, the mobile-device-to-machine payment systems will allow the mobile device 150 to credit the payment accepting unit 120. The safety margin can be set on the server 130 and downloaded to the adapter module 100, or set on the mobile device 150, or set on the adapter module 100 itself.

Optionally, in the payment zone threshold, the mobile device 150 can use other data to determine when to cancel the exclusive control of the payment accepting unit 120, to identify when the user is moving out of the payment zone 102. External data could include accelerometer data from the mobile device 150. Using that data, the mobile device 150 can determine whether the user is standing relatively still in front of the payment accepting unit 120, or if the user is in motion – effectively walking away from the payment accepting unit 120.

Signal Unavailability Adaptation

The mobile-device-to-machine payment systems described herein use a mobile device's 150 short-range communication technology (shown as Bluetooth mechanisms 876 in FIG. 57) and a mobile device's 150 long-range communications technology (shown as Cellular and/or WiFi mechanisms 872 in FIG. 57). The short-range communication technology 876 communicates with the adapter module's 100 short-range communication technology (shown as Bluetooth mechanisms 776 in FIG. 56). The long-range communications technology 872 communicates with the server's 130 communication technology (not shown). The mobile device 150 (with a mobile application 140 thereon) acts as a communication bridge between the adapter module 100 (associated with a payment accepting unit 120) and the server 130. This process is described herein and works properly if there is cellular or WiFi coverage within the payment zone 102.

One option if there is no cellular or WiFi coverage within the payment zone 102 is to determine whether there is cellular or WiFi coverage within the authorization zone 104 or the Bluetooth range 106. If there is, then the sizes of the zones 102, 104, 106 could be adapted and the timing could be adapted. For example, if the mobile devices 150 detected problems with the cellular or WiFi coverage within the payment zone 102, the user could carry his mobile device 150 into the other zones (or the mobile device 150 could use short-range communication technology to communicate with other mobile devices 150 within the authorization zone 104 or the Bluetooth range 106) to determine whether the zones have cellular or WiFi coverage. If they do have coverage, communication between the mobile device 150 and the server 130 can be advanced (conducted earlier when the mobile device 150 is further from the machine 120) or delayed (conducted later when the mobile device 150 is further from the machine 120). This can be thought of as changing the size or shapes of the zones 102, 104, 106. The timing would also have to be adjusted so that the authorization of funds (AuthGrant) does not expire before the user has a chance to make a purchase. It also means that

balance updates to the server 130 may happen after the user has moved away from the machine 120 and has cellular or WiFi coverage again.

Another option if there is no cellular or WiFi coverage within any of the zones 102, 104, 106 is for the user to obtain authorization while outside of the zones in a place with cellular or WiFi coverage. This may occur, for example, if a user knows that he will be going to a place with a payment accepting unit 120 equipped with an adapter module 100 (perhaps to a favorite payment accepting unit 120) that does not have (or rarely has) cellular or WiFi coverage. A user may also use the mobile application 140 to query payment accepting units 120 in a given range (e.g. within 50 miles) or at a given location (e.g. at a campground or in a particular remote city) to determine whether there is cellular or WiFi coverage within the zones 102, 104, 106. The user can then obtain pre-authorization from the server 130 using the mobile application 140. Again, the timing would also have to be adjusted so that the authorization of funds (AuthGrant) does not expire before the user has a chance to make a purchase. It also means that balance updates to the server 130 may happen after the user has moved away from the machine 120 and has cellular or WiFi coverage again. A mobile-device-to-machine payment system having the ability to implement this option would be able to accept cashless payments without requiring any network connection near the payment accepting unit 120. Mobile-device-to-machine payment systems described herein that are located in a remote location where no signal is available, therefore, can accept cashless payments.

As an example of a situation in which there might be no cellular or WiFi coverage within any of the zones 102, 104, 106 of a particular payment accepting unit 120, the user (a teenager) may be traveling to a remote location to attend summer camp where there is no cellular or WiFi coverage. The camp may have several payment accepting units 120 (e.g. a machine that creates a dedicated "hot spot" that requires payment for use, vending machines, or machines for renting equipment (e.g. bikes, kayaks, or basket balls)). The camp facility might notify parents that the mobile-device-to-machine payment system is available. The parents, while at home, could obtain authorization for a particular amount (that could be doled out a certain amount

per day or limited to type of machine or location) to be authorized and "loaded" into the user's mobile device 150 and specify that the authorization will not expire for a certain period or until a certain date. Thereafter, while at camp, the user could use the mobile application 140 on his mobile device 150 in a manner similar to those discussed elsewhere herein. Short-range communications may be used for communications between the adapter modules 100 (associated with the machines 120) and users' mobile devices 150.

One subtle but powerful component of the systems described herein is that they require internet network connection only in the authorization zone 104 and only for the time period required to send the AuthRequest and receive the AuthGrant. Once a valid AuthGrant is received by the mobile device 150, an internet network connection is not required by either the mobile device 150 or the adapter module 100 in the payment zone 102 as long as the AuthGrant is valid (unexpired). This mechanism allows the system to seamlessly handle authenticated transactions in (temporary) offline mode, with the deferred acknowledgement and transaction messages performing the bookkeeping and cleanup when network connection is regained. The alternatives described above provide a unique way to artificially extend the authorization zone to include any location where the mobile device 150 can communicate with the server 130.

Multiple User Resolution

As shown in FIG. 2, in likely practical scenarios, there will be multiple users in the zones 102, 104, 106. As shown, users 1, 2, and 3 are in the payment zone 102 near the machine 120, users 5 and 6 are shown as positioned between the authorization zone 104 and the Bluetooth range 106, users 4 and 7 are in the Bluetooth range 106, user 10 is positioned on the edge of the Bluetooth range 106, and users 8 and 9 are positioned outside of Bluetooth range 106. The mobile-device-to-machine payment systems provide for managing, and resolving issues pertaining to multiple users.

Users 8 and 9 are positioned outside the Bluetooth range 106 so the their mobile devices 150 are not aware of the adapter module 100.

Users 4 and 7 are within the Bluetooth range 106 and user 10 is either entering or leaving the Bluetooth range 106. Within the Bluetooth range 106 the users' mobile devices 150 are able to see the adapter module's 100 advertisement. In this zone, the mobile device 150 preferably does not initiate a connection. The adapter module 100 is preferably unaware of the users in the Bluetooth range 106. All the adapter module 100 is doing is advertising its presence to any multitude of users that may be in Bluetooth range 106.

The adapter module 100 begins to log users as the users (and their respective mobile devices 150) enter the authorization zone 104 (shown in FIG. 2 as users 5 and 6). At this point, there is a non-exclusive connection initiated by the mobile device 150 to the adapter module 100. It does a handshake (e.g. to exchange information needed to obtain authorization and, optionally, to log information needed for a self-calibrating authorization zone threshold) and the mobile device 150 contacts the server 130 for an authorization (e.g. sending an AuthRequest and receiving an AuthGrant). The adapter module 100 registers all mobile devices 150 that have requested and received AuthGrants. The adapter module 100 continues communicating with any other mobile device 150 that enters the authorization zone 104. After initial contact, the adapter module 100 may provide the mobile device 150 with a deferral delay of when to check back in with the adapter module 100 allowing opportunity for other mobile devices 150 to communicate with the adapter module 100.

If there is only one user in the payment zone 102, a purchase transaction may be performed. If there are multiple users in the payment zone 102, the mobile-device-to-machine payment system must handle the situation.

One optional exemplary solution for handling the situation of the multiple users in the payment zone 102 is queuing users in the payment zone 102. Once any mobile device 150 enters the payment zone 102, it establishes exclusivity to a particular mobile device 150 (first come first serve). Technically, however, the adapter module 100 is not establishing an exclusive connection to the mobile device 150. The adapter module 100 can still perform a round-robin poll and communicate with and advertise to other mobile devices 150. Instead, the adapter module 100 establishes a queue

prioritized by RSSI and time (e.g. who was first and whether the authorization has expired) and it notifies (e.g. alerts) other mobile devices 150 to wait. The earliest valid (unexpired) authorization takes precedence when there is any tie in the RSSI. Otherwise, for example, the strongest average RSSI takes priority. Preferably the queue is not a static measure of the RSSI but an averaged measure over the period of time in the queue. This compensates for a scenario in which a user may be walking around in the queue and then shows up at the payment accepting unit 120 just as the previous user is finishing. If another user was also in the payment zone 102 and stood there the entire time, but may have newer authorization, he could win out.

Anytime that the adapter module 100 cannot determine exactly which user is in the payment zone 102 in front of the payment accepting unit 120, the adapter module 100 will disable hands-free payment. The mobile device 150 will send an alert to the user and he can use swipe to pay (manual mode). All users in payment zone 102 will show "Connected" and the first to swipe payment to the payment accepting unit 120 then locks out other users.

Multiple Module Resolution

In the scenario where there are multiple modules present, determining which payment accepting unit 120 a user is in front of can be a challenge. The mobile-device-to-machine payment systems described herein allow for adapter modules 100 to communicate to other adapter modules 100 in range via Bluetooth. Each user receives authorization grants for specific payment accepting units 120. This means if there are multiple adapter modules 100 within the same authorization zone 104, there will be multiple authorization grants for the user. When the user enters the payment zone 102, it can be difficult to differentiate which payment accepting unit 120 the user is in front of if the payment zones 102 overlap.

To solve this problem, when the user enters the payment zone 102, the adapter modules 100 communicate with each other to determine the RSSI for the particular user (based on the signal from his mobile device 150) to triangulate which adapter module 100 (and the associated payment accepting unit 120) is closer to the

user. Optionally, the inter-module communications can restrict the user to establishing an exclusive connection with only one payment accepting unit 120.

Optionally, when the user connects to a payment accepting unit 120, the mobile device 150 can send a communication to the payment accepting unit 120 for momentary display to the user on the display 122, 124 of the payment accepting unit 120. For example, the mobile device 150 can send a communication (e.g. "connected" or "Fred's Mobile Device Connected") to the payment accepting unit's display 122, 124 for a predetermined period of time (e.g. 1-3 seconds) so when the user is in payment zone 102, it is clear which payment accepting unit 120 the user is connected to prior to making a purchase (either in hands-free or manual mode).

In addition, when the user is in manual mode, the mobile device 150 can display (e.g. on the touch screen 152 as shown in FIGS. 10A-10D) a visual indication of the payment accepting unit 120 (e.g. a picture and/or a payment accepting unit ID of the payment accepting unit 120) for visual confirmation. If the user is in manual mode, the user can manually change the payment accepting unit 120.

Descriptive Scenario

FIG. 7, FIGS. 8A-8G, and 9A-E (as well as other figures) can be used to understand a detailed exemplary scenario of the mobile-device-to-machine payment systems described herein. An exemplary flow of communications and steps are loosely described below with reference to these (and other figures). It should be noted that alternative scenarios could include, for example, a modified order of the steps performed.

Prior to vending transactions, a user downloads a mobile app 140 onto his mobile device 150, creates an account, and configures a funding source via, for example, a funding source server 160. A funding source may be, for example, a debit card, a credit card, campus cards, rewards points, bank accounts, payment services (e.g. PayPal®) or other payment option or combination of payment options known or yet to be discovered. The funding sources may be traditional and/or nontraditional payment sources that are integrated into the ecosystem described herein and then used

indirectly as a source of funds. Funds from the funding source are preferably held on the server 130 such that when an AuthRequest is received by the server 130, the server 130 can send an AuthGrant authorizing funds for a purchase.

The user can specify one or more "favorite" adapter module(s) 100 (that has a one-to-one relationship to the payment accepting unit 120) that he may visit regularly, such as a vending machine at school or work. Favorite adapter modules 100 appear on a pre-filtered list and allow for additional rich features such as hands-free payment.

The payment accepting unit 120 may be equipped with an adapter module 100 that is constantly advertising its availability via Bluetooth (or other "signals," "communications," and/or "transmissions"). This ongoing advertising and scanning for adapter modules is shown in FIG. 8A. As shown, the mobile device 150 is continuously scanning for any adapter module 100 within Bluetooth (or other "signal," "communication," and/or "transmission") range. When the user is within range of that adapter module 100, the mobile device 150 tracks and monitors the signal strength until a predetermined "authorization zone" threshold is achieved.

FIGS. 8B and 9A generally show that when the authorization zone threshold is reached, the mobile device 150 enters the authorization zone (block 302) and registers the adapter module 100. The mobile device 150 connects to the server 130 (block 304). The app 140 on the mobile device 150 creates a request for authorization (AuthRequest) and passes the AuthRequest to the server 130 using appropriate communication technology (e.g. cellular or WiFi) (block 306). The server 130 responds with an authorization grant (AuthGrant) encrypted with the specific adapter module's private key (block 306). This authorization token may minimally include the UserID, ApparatusID (for the adapter module 100), authorization amount, and expiration time. The mobile device 150 receives the AuthGrant from the server 130, and retains it until the mobile device 150 is ready to issue payment to an adapter module 100. The mobile device 150 collects all pending AuthGrants that may be one or more depending on how many adapter modules 100 are in-range. Unused AuthGrants that expire are purged from the mobile device 150 and the server 130. It is important to

note that the mobile device 150 is unable to read the AuthGrant because it is encrypted with the adapter module's unique private key that is only known to server 130 and adapter module 100. This provides a preferred key element of security in the system as the adapter module 100 only trusts AuthGrants that are issued by the server, and the AuthGrants cannot be read or modified by the mobile device 150 or any other party in between the server and the adapter module 100. Additional mobile devices 150 may enter the authorization zone 104 (block 308).

As the user approaches a specific adapter module 100, the user enters the payment zone 102 and an event threshold is triggered based on heuristics performed by the mobile device 150. Blocks 310 and 312 show the loop steps of waiting for a mobile device 150 from the authorization zone 104 to enter the payment zone 102. If the user leaves the authorization zone 104 without entering the payment zone 102, the adapter module 100 returns to advertising its presence (block 300).

FIGS. 8C and 9B generally show the user entering the payment zone. The mobile device 150 verifies that it has an unexpired and valid AuthGrant. If the AuthGrant is not good, it may be requested again, repeating the AuthRequest process (block 315). If the AuthGrant is good, the mobile device 150 sends the valid AuthGrant (including the wallet balance (block 322)) to the adapter module 100 to initiate a transaction. The mobile device 150 may issue the AuthGrant automatically without specific user interaction if the hands-free mode is supported (and the device is a favorite (block 318), there is only one device in the payment zone 102 (block 318), and (optionally) there is only one user in the authorization zone 104 (block 320). If any of these factors are not present, the mobile device 150 will prompt and/or wait for the user to begin the transaction manually (block 324).

FIGS. 8D, 9C, and 9D generally show the transaction process. As shown in FIG. 9C, the adapter module 100 runs through a series of questions to determine if there are any issues that would prevent vending including: has the user canceled in-app? (block 326), has the user walked away? (block 328), is the coin return pressed? (block 330), has more than a predetermined period of time elapsed? (block 332). If the answer to any of these questions is "yes," the transaction does not proceed.

If the answers to all of these questions is "no," the user makes a selection (block 334) on the payment accepting unit 120 in the same or similar manner as compared to if cash or credit were presented to the payment accepting unit 120. If the machine 120 is able to vend (block 336), it attempts to release the product. If the vend fails (block 338) it is reported by the machine (block 340) and a credit is returned to the virtual wallet (block 342). If the vend is successful (block 338) it is reported by the machine (block 344). Put another way, after the transaction is complete, the adapter module 100 returns to the mobile device 150 the details of the transaction as well as an encrypted packet containing the vend details to be sent to the server 130 via the mobile device 150. Optionally, the adapter module 100 can pass additional information not directly related to the transaction such as payment accepting unit health, sales data, error codes, etc.

FIGS. 8D and 9E generally show the multi-vend function. If the machine has enabled multi-vend capabilities (block 350) and the multi-vend limit has not been reached, the process returns to the question of whether the user is in the payment zone (block 310 of FIG. 9A). If the machine does not have enabled multi-vend capabilities (block 350) or the multi-vend limit has been reached, the wallet is decremented by the vend amount(s) and "change" is returned to the virtual wallet (block 354) and the process ends (block 356).

FIG. 8E is a timing schematic showing an exemplary Login process. FIG. 8F is a timing schematic showing an exemplary bootup process. FIG. 8G is a timing schematic showing an exemplary Account Check/Update process.

Several of the figures are flow charts (e.g. FIGS. 9A-9E) illustrating methods and systems. It will be understood that each block of these flow charts, components of all or some of the blocks of these flow charts, and/or combinations of blocks in these flow charts, may be implemented by software (e.g. coding, software, computer program instructions, software programs, subprograms, or other series of computer-executable or processor-executable instructions), by hardware (e.g. processors, memory), by firmware, and/or a combination of these forms. As an

example, in the case of software, computer program instructions (computer-readable program code) may be loaded onto a computer to produce a machine, such that the instructions that execute on the computer create structures for implementing the functions specified in the flow chart block or blocks. These computer program instructions may also be stored in a memory that can direct a computer to function in a particular manner, such that the instructions stored in the memory produce an article of manufacture including instruction structures that implement the function specified in the flow chart block or blocks. The computer program instructions may also be loaded onto a computer to cause a series of operational steps to be performed on or by the computer to produce a computer implemented process such that the instructions that execute on the computer provide steps for implementing the functions specified in the flow chart block or blocks. Accordingly, blocks of the flow charts support combinations of steps, structures, and/or modules for performing the specified functions. It will also be understood that each block of the flow charts, and combinations of blocks in the flow charts, may be divided and/or joined with other blocks of the flow charts without affecting the scope of the invention. This may result, for example, in computer-readable program code being stored in whole on a single memory, or various components of computer-readable program code being stored on more than one memory.

Distinction From Known Systems

Many of the known systems and methods require that the payment accepting unit be persistently (continuously) connected to and/or connectable on demand to some sort of remote server in order to function. As an example, the Carlson reference describes a system and a method for using a portable consumer device. Described embodiments include a consumer using the portable consumer device to dial a number to purchase an item (product or service) in a vending machine, to send an SMS to purchase an item in a vending machine, or to use a mobile wallet to purchase an item in a vending machine. It is mentioned in one embodiment that the consumer may launch an application in the portable consumer device or, alternatively, the portable consumer device may automatically detect the vending machine and prompt the

consumer to enter information associated with the vending machine. It should be noted, however, that even when there is automatic detection, the user is prompted to enter information (e.g. a machine alias, payment information, or a PIN) and it can be inferred that this is entered on the portable consumer device. Once connected to a payment processing network, the authorization process begins using a payment processing network and/or payment server. Significantly, all of the embodiments described in the Carlson reference specify that the payment server sends an authorization response message to the vending machine. This means that, unlike the mobile-device-to-machine payment systems described herein, a persistent network connection is required for the Carlson system to function. Other references that disclose systems that require a persistent network connection include the Khan reference (the MicroAdapter having the persistent connection), the Garibaldi reference, and the Weiner reference.

Many of the known systems and methods require the user to significantly interact with their mobile devices. As an example, the Whigham reference is directed to a system that eliminates the need for currency for a vending machine and also eliminates the need for a dedicated online connection between the vending machine and the issuer of a credit card or a debit card. Instead the Whigham system and method allows a consumer to purchase a product from an automatic vending machine by using the consumer's cellular telephone, personal digital assistant (PDA), or similar wireless communication device as a link between the provider of the products in the vending machine and the vending machine. The Whigham reference, however, sets forth a system and method requires significant interaction between the consumer and his telephone including dialing a telephone number to a server (that, in turn, provides a vend code to the consumer), requesting a specific product (e.g. by dialing additional digits, although this step is optional if a unique number was dialed for a specific product), and transmitting a vend code to the vending machine. (Other references that disclose systems that require user interaction with the phone include the Offer reference, the Khan reference, the Belfer reference, and the Carlson reference.) In addition to other differences, some of the mobile-device-to-machine payment systems described herein do not require the user to interact with his mobile device at all, which

can be contrasted to known systems and methods that require the consumer to, for example, dial a telephone number, enter a machine identification, and/or enter a product identifier using the mobile device to purchase a product.

The known systems and methods that use a cellular telephone to facilitate cashless transactions at a vending machine use the cellular telephone to authorize a particular transaction. For example, once the user knows what he wants from a vending machine, he can dial a server and receive authorization to make a specific purchase. Sometimes this includes dialing additional numbers on the cellular telephone to specify a particular product. The mobile-device-to-machine payment systems described herein take a completely different approach. The mobile-device-to-machine payment systems described herein are not specifically interested in the details of the transaction to authorize the transaction. Instead, the mobile-device-to-machine payment systems function more like a gift card, a credit card, or a debit card in that they allow the user to have funds to make a purchase. When a user is in range, the adapter module 100 (via a mobile device 150) sends an AuthRequest to the server 130 to preemptively obtain authorization to make funds available. The server 130 returns the AuthGrant for funds to the adapter module 100 (via a mobile device 150) so that the user may use the funds to make a purchase. The AuthGrant may remain valid until it expires. This gives the user significantly more flexibility than known systems and methods.

Miscellaneous

It is to be understood that the inventions, examples, and embodiments described herein are not limited to particularly exemplified materials, methods, and/or structures. It is to be understood that the inventions, examples, and embodiments described herein are to be considered preferred inventions, examples, and embodiments whether specifically identified as such or not.

All references (including, but not limited to, foreign and/or domestic publications, patents, and patent applications) cited herein, whether *supra* or *infra*, are hereby incorporated by reference in their entirety.

The terms and expressions that have been employed in the foregoing specification are used as terms of description and not of limitation, and are not intended to exclude equivalents of the features shown and described. While the above is a complete description of selected embodiments of the present invention, it is possible to practice the invention using various alternatives, modifications, adaptations, variations, and/or combinations and their equivalents. It will be appreciated by those of ordinary skill in the art that any arrangement that is calculated to achieve the same purpose may be substituted for the specific embodiment shown. It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention that, as a matter of language, might be said to fall therebetween.

WHAT IS CLAIMED IS:

1. A mobile-device-to-machine payment system for facilitating a cashless transaction for purchase of at least one product or service by a user from a payment accepting unit having input mechanisms, the user having a mobile device having both short-range communication technology and long-range communication technology, the payment accepting unit capable of dispensing at least one product or service, said system comprising:

(a) an adapter module associated with the payment accepting unit, said adapter having short-range communication technology for communicating with the short-range communication technology of the mobile device;

(b) a server having long-range communication technology for communicating with the long-range communication technology of the mobile device;

(c) said adapter module for sending an authorization request for funds to the mobile device using short-range communication technology, the mobile device forwarding said authorization request for funds to said server using long-range communication technology; and

(d) said server for sending an authorization grant for funds to the mobile device using long-range communication technology, the mobile device forwarding said authorization grant for funds to said adapter module using short-range communication technology;

(e) wherein the payment accepting unit dispenses the at least one product or service in response to receiving user input to the payment accepting unit input mechanism if said adapter module has received said authorization grant.

2. The system of claim 1, said adapter module having security technology and said server having security technology, said authorization request being secured by said adapter module security technology to create a secured authorization request, said authorization grant being secured by said server security technology to create a secured authorization grant, and said secured authorization request and said secured authorization grant being undecipherable to the mobile device.

3. The system of claim 1, said adapter module and said server sharing a unique private key, said adapter module having encryption/decryption technology and said server having encryption/decryption technology, said authorization request being encrypted by said adapter module encryption/decryption technology using said unique private key to create an encrypted authorization request, said encrypted authorization request being decrypted by said server encryption/decryption technology using said unique private key, said authorization grant being encrypted by said server encryption/decryption technology using said unique private key to create an encrypted authorization grant, said encrypted authorization grant being decrypted by said adapter module encryption/decryption technology using said unique private key, and said encrypted authorization request and said encrypted authorization grant being undecipherable to the mobile device.

4. The system of claim 1 further comprising:

(a) said adapter module surrounded by two zones, a payment zone and an authorization zone, wherein said payment zone is within said authorization zone;

(b) said adapter module sending said authorization request when the mobile device is within said authorization zone; and

(c) the mobile device forwarding said authorization grant for funds to said adapter module when the mobile device is within said payment zone.

5. The system of claim 1 further comprising:

(a) said adapter module surrounded by three zones, a payment zone, an authorization zone, and a communication zone, wherein said payment zone is within said authorization zone and said authorization zone is within said communication zone;

(b) the mobile device receiving advertising broadcast signals from said adapter module within said communication zone;

(c) said adapter module sending said authorization request when the mobile device is within said authorization zone; and

(d) the mobile device forwarding said authorization grant for funds to said adapter module when the mobile device is within said payment zone.

6. The system of claim 1 having a hands-free mode in which the payment accepting unit dispenses the at least one product or service without the user interacting with the mobile device.

7. The system of claim 1 having a hands-free mode in which the payment accepting unit dispenses the at least one product or service without the user interacting with the mobile device, said system further comprising:

(a) a display of the payment accepting unit for displaying funds available based on information from said authorization grant; and

(b) input mechanisms of the payment accepting unit for receiving user selection input when the user interacts with the input mechanisms to select the at least one product or service to be dispensed.

8. The system of claim 1 wherein said adapter module is an in-line dongle for in-line insertion within a multi-drop bus of the payment accepting unit.

9. The system of claim 1:

(a) the payment accepting unit having a multi-drop bus to a payment receiving mechanism, the multi-drop bus having a male adapter and a female adapter;

(b) said adapter module having a male adapter and a female adapter; and

(c) said adapter module insertable in serial with the multi-drop bus by connecting said male adapter of said adapter module to the female adapter of the multi-drop bus and by connecting said female adapter of said adapter module to the male adapter of the multi-drop bus.

10. A mobile-device-to-machine payment system for facilitating a cashless transaction for purchase of at least one product or service by a user from a payment accepting unit having input mechanisms, the user having a mobile device having both short-range communication technology and long-range communication technology, the payment accepting unit capable of dispensing at least one product or service, said system comprising:

(a) an adapter module associated with the payment accepting unit, said adapter having short-range communication technology for communicating with the short-range communication technology of the mobile device, said adapter module having security technology, and said adapter module surrounded by two zones, a payment zone and an authorization zone, wherein said payment zone is within said authorization zone;

(b) a server having long-range communication technology for communicating with the long-range communication technology of the mobile device, said server having security technology;

(c) said adapter module for sending a secured authorization request for funds secured by said adapter module security technology to

the mobile device using short-range communication technology when the mobile device is within said authorization zone, the mobile device forwarding said secured authorization request for funds to said server using long-range communication technology; and

(d) said server for sending a secured authorization grant for funds secured by said server security technology to the mobile device using long-range communication technology, the mobile device forwarding said secured authorization grant for funds to said adapter module using short-range communication technology when the mobile device is within said payment zone;

(e) wherein the payment accepting unit dispenses the at least one product or service in response to receiving user input to the payment accepting unit input mechanism if said adapter module has received said secured authorization grant.

11. The system of claim 10, said secured authorization grant being undecipherable to the mobile device.

12. The system of claim 10, said adapter module and said server sharing a unique private key, said adapter module security technology being encryption/decryption technology and said server security technology being encryption/decryption technology, said secured authorization request being encrypted by said adapter module encryption/decryption technology using said unique private key to create an encrypted secured authorization request, said encrypted secured authorization request being decrypted by said server encryption/decryption technology using said unique private key, said secured authorization grant being encrypted by said server encryption/decryption technology using said unique private key to create an encrypted secured authorization grant, said encrypted secured authorization grant being decrypted by said adapter module encryption/decryption technology using said unique

private key, and said encrypted secured authorization request and said encrypted secured authorization grant being undecipherable to the mobile device.

13. The system of claim 10 further comprising:

(a) said adapter module being surrounded by three zones, said payment zone, said authorization zone, and a communication zone, wherein said authorization zone is within said communication zone; and

(b) the mobile device receiving advertising broadcast signals from said adapter module within said communication zone.

14. The system of claim 10 having a hands-free mode in which the payment accepting unit dispenses the at least one product or service without the user interacting with the mobile device.

15. The system of claim 10 having a hands-free mode in which the payment accepting unit dispenses the at least one product or service without the user interacting with the mobile device, said system further comprising:

(a) a display of the payment accepting unit for displaying funds available based on information from said secured authorization grant; and

(b) input mechanisms of the payment accepting unit for receiving user selection input when the user interacts with the input mechanisms to select the at least one product or service to be dispensed.

16. The system of claim 10 wherein said adapter module is an in-line dongle for in-line insertion within a multi-drop bus of the payment accepting unit.

17. The system of claim 10:

(a) the payment accepting unit having a multi-drop bus to a payment receiving mechanism, the multi-drop bus having a male adapter and a female adapter;

(b) said adapter module having a male adapter and a female adapter;

(c) said adapter module insertable in serial with the multi-drop bus by connecting said male adapter of said adapter module to the female adapter of the multi-drop bus and by connecting said female adapter of said adapter module to the male adapter of the multi-drop bus.

18. A method for using a mobile-device-to-machine payment system for facilitating a cashless transaction for purchase of at least one product or service by a user from a payment accepting unit having input mechanisms, the user having a mobile device having both short-range communication technology and long-range communication technology, the payment accepting unit capable of dispensing at least one product or service, said method comprising the steps of:

(a) sending an authorization request for funds to the mobile device using short-range communication technology of an adapter module associated with the payment accepting unit;

(b) receiving said authorization request for funds from said short-range communication technology of said adapter module at the short-range communication technology of the mobile device;

(c) forwarding said authorization request for funds to a server using the long-range communication technology of the mobile device;

(d) receiving said authorization request for funds from the long-range communication technology of the mobile device at long-range communication technology of said server;

(e) sending an authorization grant for funds to the mobile device using said long-range communication technology of said server;

(f) receiving said authorization grant for funds from long-range communication technology of said server at the long-range communication technology of the mobile device;

(g) forwarding said authorization grant for funds to said adapter module using the short-range communication technology of the mobile device;

(h) receiving said authorization grant for funds from the short-range communication technology of the mobile device at short-range communication technology of said adapter module; and

(i) dispensing the at least one product or service from the payment accepting unit in response to receiving user input to the payment accepting unit input mechanism if said adapter module has received said authorization grant.

19. The method of claim 18, securing said authorization request using security technology associated with said adapter module to create a secured authorization request, securing said authorization grant using security technology associated with said server to create a secured authorization grant, and said secured authorization request and said secured authorization grant being undecipherable to the mobile device.

20. The method of claim 18, sharing a unique private key between said adapter module and said server, encrypting using said unique private key said authorization request using encryption/decryption technology associated with said adapter module to create an encrypted authorization request, decrypting using said unique private key said encrypted authorization request using encryption/decryption technology associated with said server, encrypting using said unique private key said authorization grant using said encryption/decryption technology associated with said server to create an encrypted authorization grant, decrypting using said unique private key said encrypted authorization grant using encryption/decryption technology

associated with said adapter module, and said encrypted authorization request and said encrypted authorization grant being undecipherable to the mobile device.

21. The method of claim 18 further comprising:

(a) surrounding said adapter module with two zones, a payment zone and an authorization zone, wherein said payment zone is within said authorization zone;

(b) said adapter module sending said authorization request when the mobile device is within said authorization zone; and

(c) the mobile device forwarding said authorization grant for funds to said adapter module when the mobile device is within said payment zone.

22. The method of claim 18 further comprising:

(a) surrounding said adapter module with three zones, a payment zone, an authorization zone, and a communication zone, wherein said payment zone is within said authorization zone and said authorization zone is within said communication zone;

(b) the mobile device receiving advertising broadcast signals from said adapter module within said communication zone;

(c) said adapter module sending said authorization request when the mobile device is within said authorization zone; and

(d) the mobile device forwarding said authorization grant for funds to said adapter module when the mobile device is within said payment zone.

23. The method of claim 18 having a hands-free mode in which the payment accepting unit dispenses the at least one product or service without the user interacting with the mobile device.

24. The method of claim 18 having a hands-free mode in which the payment accepting unit dispenses the at least one product or service without the user interacting with the mobile device, said method further comprising the steps of:

(a) displaying funds available on a display of the payment accepting unit, said funds available being based on information from said authorization grant; and

(b) receiving user selection input when the user interacts with input mechanisms of the payment accepting unit to select the at least one product or service to be dispensed.

25. The method of claim 18 further comprising the step of inserting said adapter module as an in-line dongle for in-line insertion within a multi-drop bus of the payment accepting unit.

26. The method of claim 18, the payment accepting unit having a multi-drop bus to a payment receiving mechanism, the multi-drop bus having a male adapter and a female adapter, and said adapter module having a male adapter and a female adapter, said method further comprising the step of inserting said adapter module in serial with the multi-drop bus by connecting said male adapter of said adapter module to the female adapter of the multi-drop bus and by connecting said female adapter of said adapter module to the male adapter of the multi-drop bus.

MOBILE-DEVICE-TO-MACHINE PAYMENT SYSTEMS

ABSTRACT OF THE DISCLOSURE

Described herein is a mobile-device-to-machine payment system and method for facilitating a cashless transaction for purchase of at least one product or service by a user from a payment accepting unit.

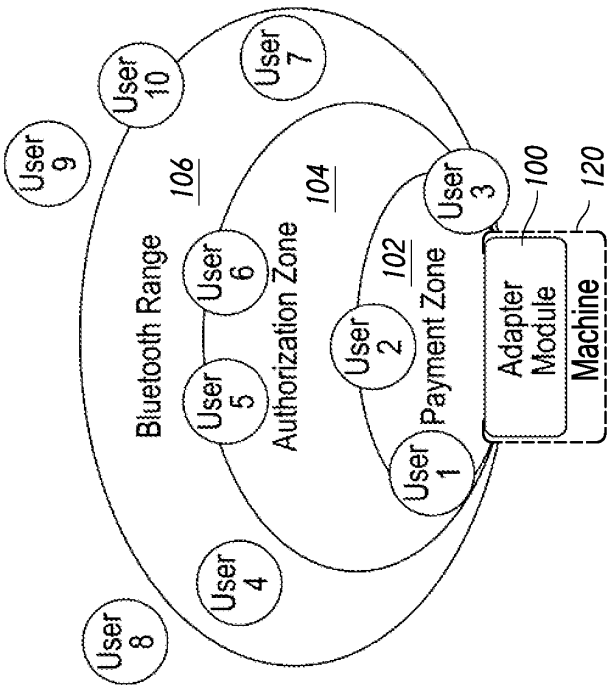

User 9
User 10
User 7
Bluetooth Range
106
User 6
Authorization Zone
104
User 3
100
120
User 5
User 2
102
Payment Zone
Adapter Module
Machine
User 1
User 4
User 8

FIG. 2

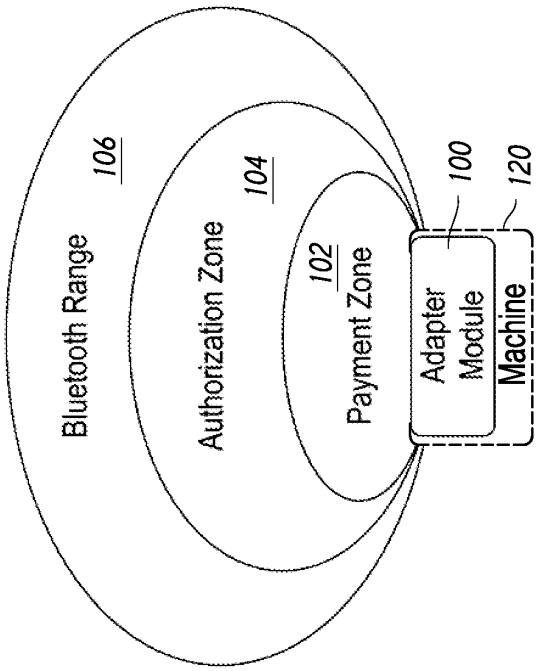

Bluetooth Range
106
Authorization Zone
104
Payment Zone
102
Adapter Module
100
120
Machine

FIG. 1

Tab	Favorite?	Alert	View to User
All	Yes	No	User can make Hands-free Credit with the connected vending machine
All	No	Yes	User needs to launch Mobile Device and then swipe to make transaction manually
Favorite	Yes	No	Hands-free transction will be available to the user via vending machine
Favorite	No	No	User is not alerted for the vending machine which is not a favorite machine. Hands-free mode will not work, manual swipe for transaction required by user.
Either All or Favorite	Yes	Yes	BUT Hands-free Credit is not available (disabled by module, expired AuthGrant, insufficient balance, or other issue), then user will get an alert so that user can swipe credit manually.

FIG. 3

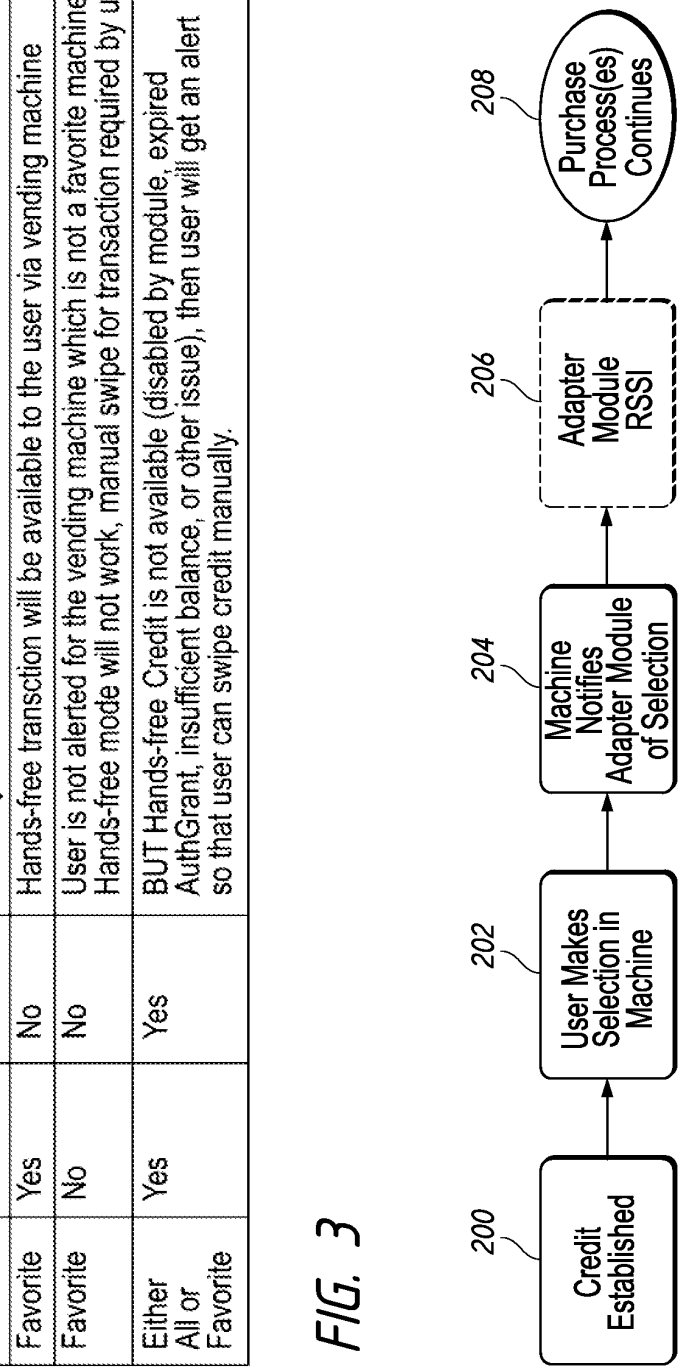


FIG. 4

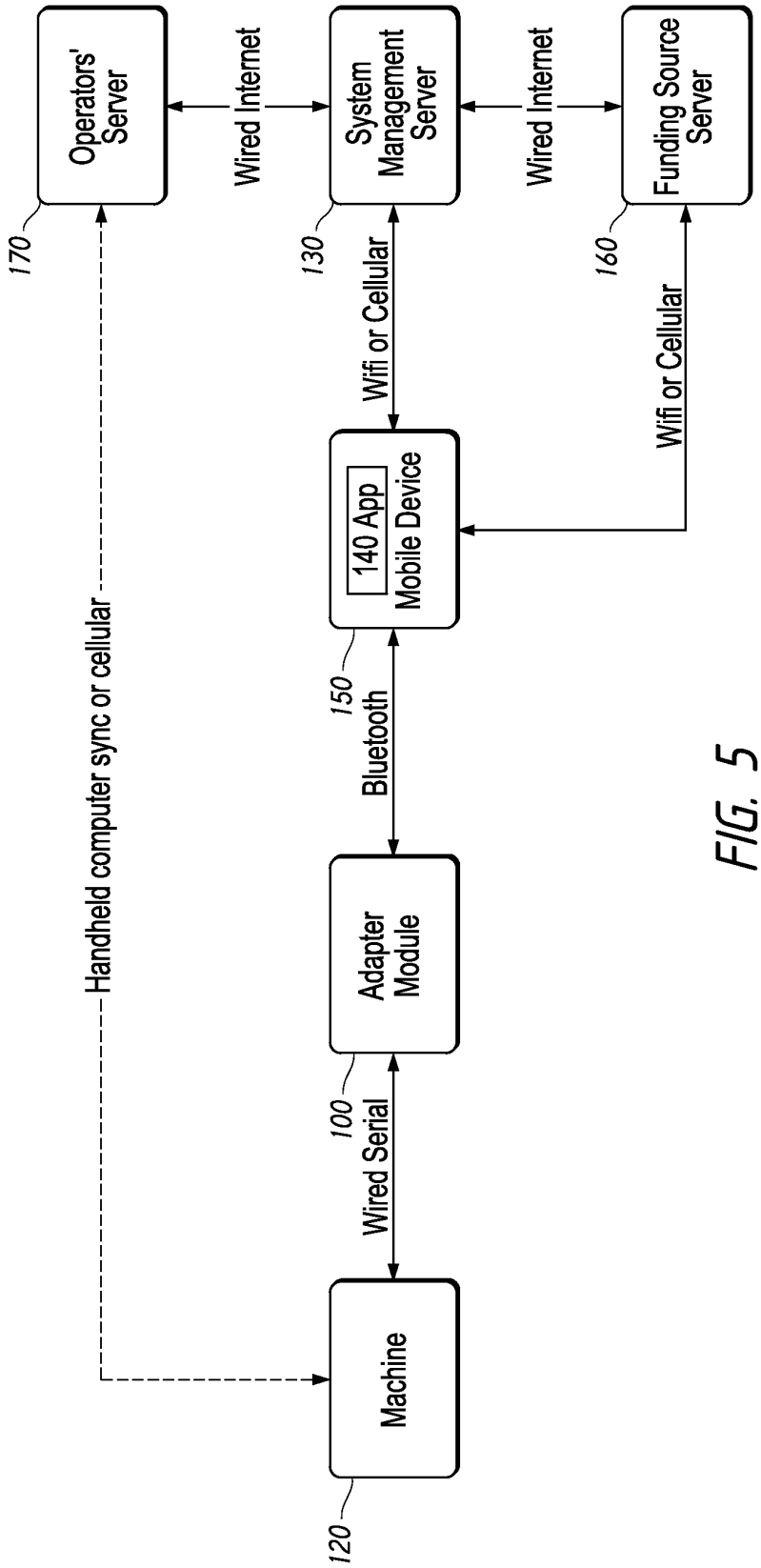

Operators' Server
Wired Internet
System Management Server
Wired Internet
Funding Source Server
170
130
160
Wifi or Cellular
Wifi or Cellular
140 App
Mobile Device
150
Bluetooth
Handheld computer sync or cellular
Adapter Module
100
Wired Serial
Machine
120

FIG. 5

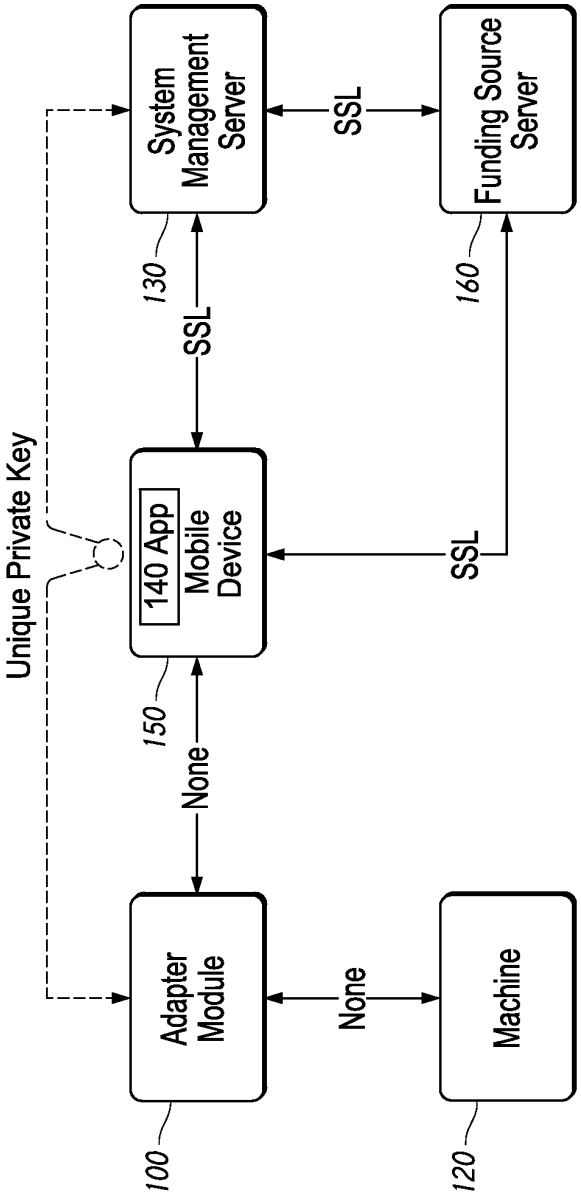

System Management Server
SSL
Funding Source Server
130
SSL
160
Unique Private Key
140 App
Mobile Device
SSL
150
None
Adapter Module
None
Machine
100
120

FIG. 6

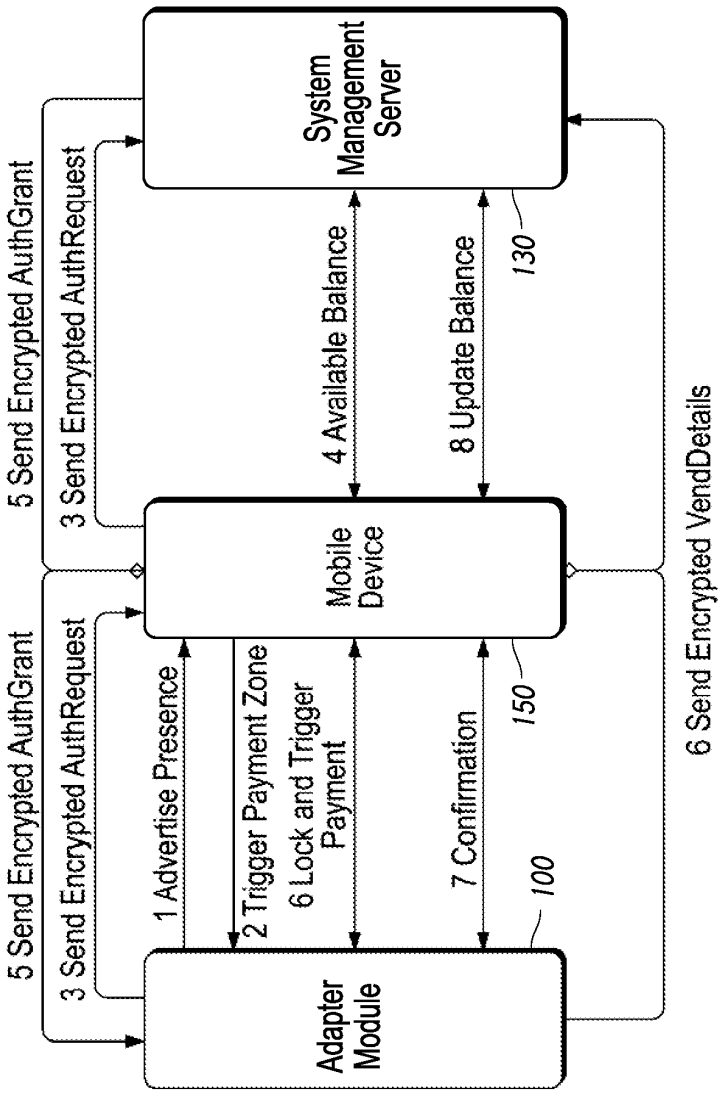

System Management Server
Mobile Device
Adapter Module
5 Send Encrypted AuthGrant
3 Send Encrypted AuthRequest
1 Advertise Presence
2 Trigger Payment Zone
6 Lock and Trigger Payment
7 Confirmation
4 Available Balance
8 Update Balance
130
150
100
6 Send Encrypted VendDetails

FIG. 7

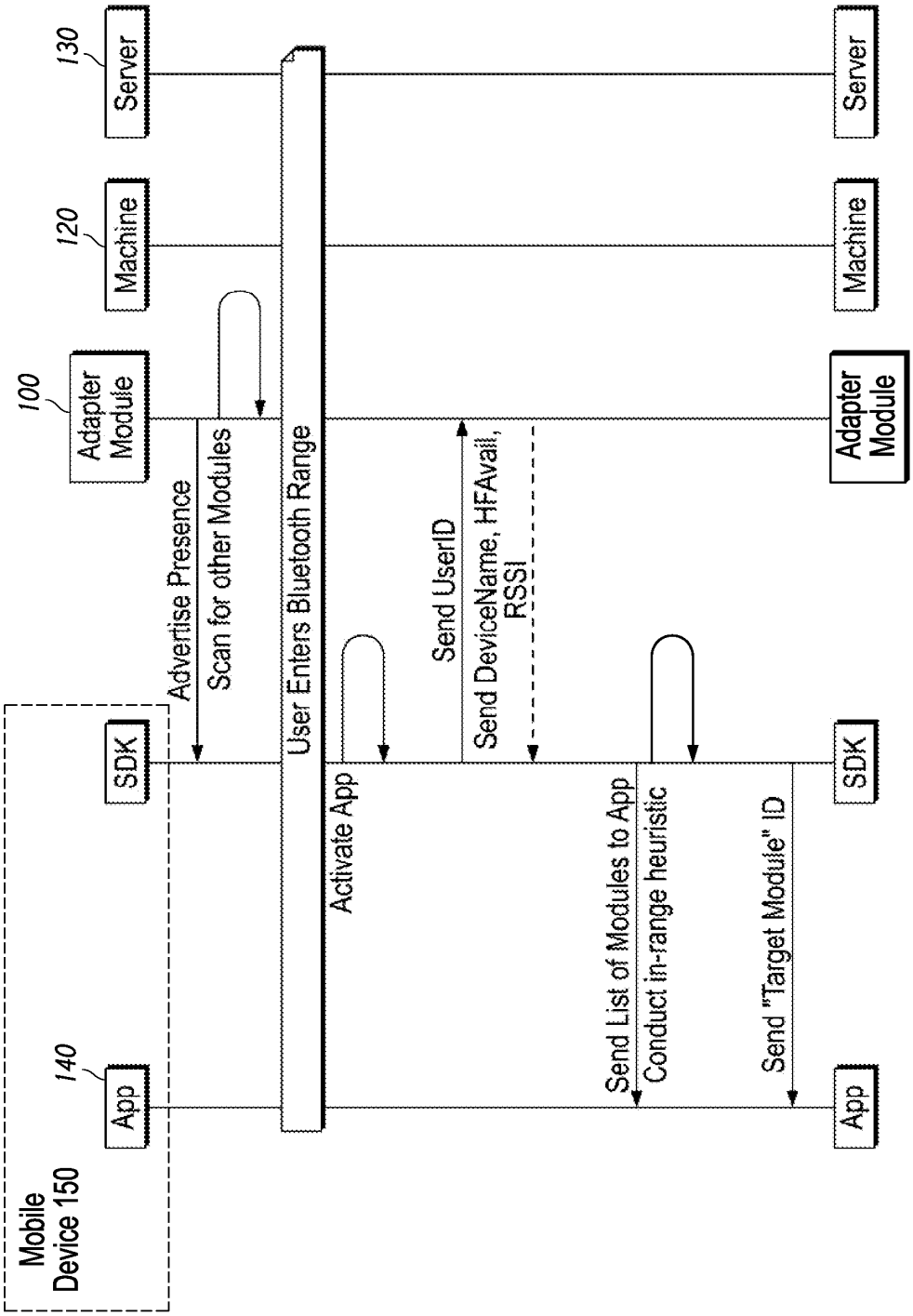

Mobile Device 150
App
140
SDK
Adapter Module
100
Machine
120
Server
130
Advertise Presence
Scan for other Modules
User Enters Bluetooth Range
Activate App
Send UserID
Send DeviceName, HFAvail, RSSI
Send List of Modules to App
Conduct in-range heuristic
Send "Target Module" ID
Server
Machine
Adapter Module
SDK
App

FIG. 8A

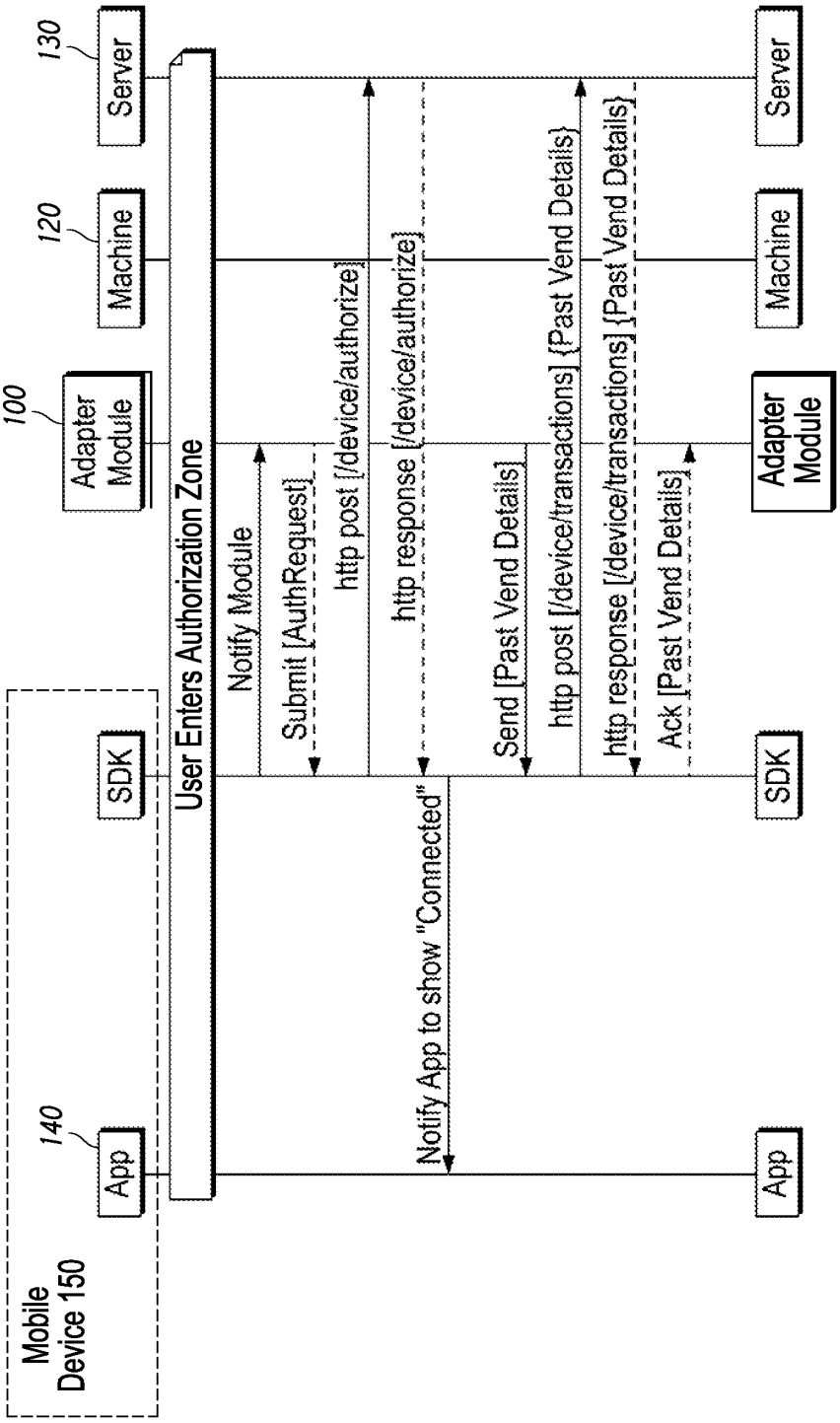

Mobile Device 150
App
140
SDK
User Enters Authorization Zone
Adapter Module
100
Machine
120
Server
130
Notify Module
Submit [AuthRequest]
http post [/device/authorize]
http response [/device/authorize]
Send [Past Vend Details]
http post [/device/transactions] {Past Vend Details}
http response [/device/transactions] {Past Vend Details}
Ack [Past Vend Details]
Notify App to show "Connected"
Server
Machine
Adapter Module
SDK
App

FIG. 8B

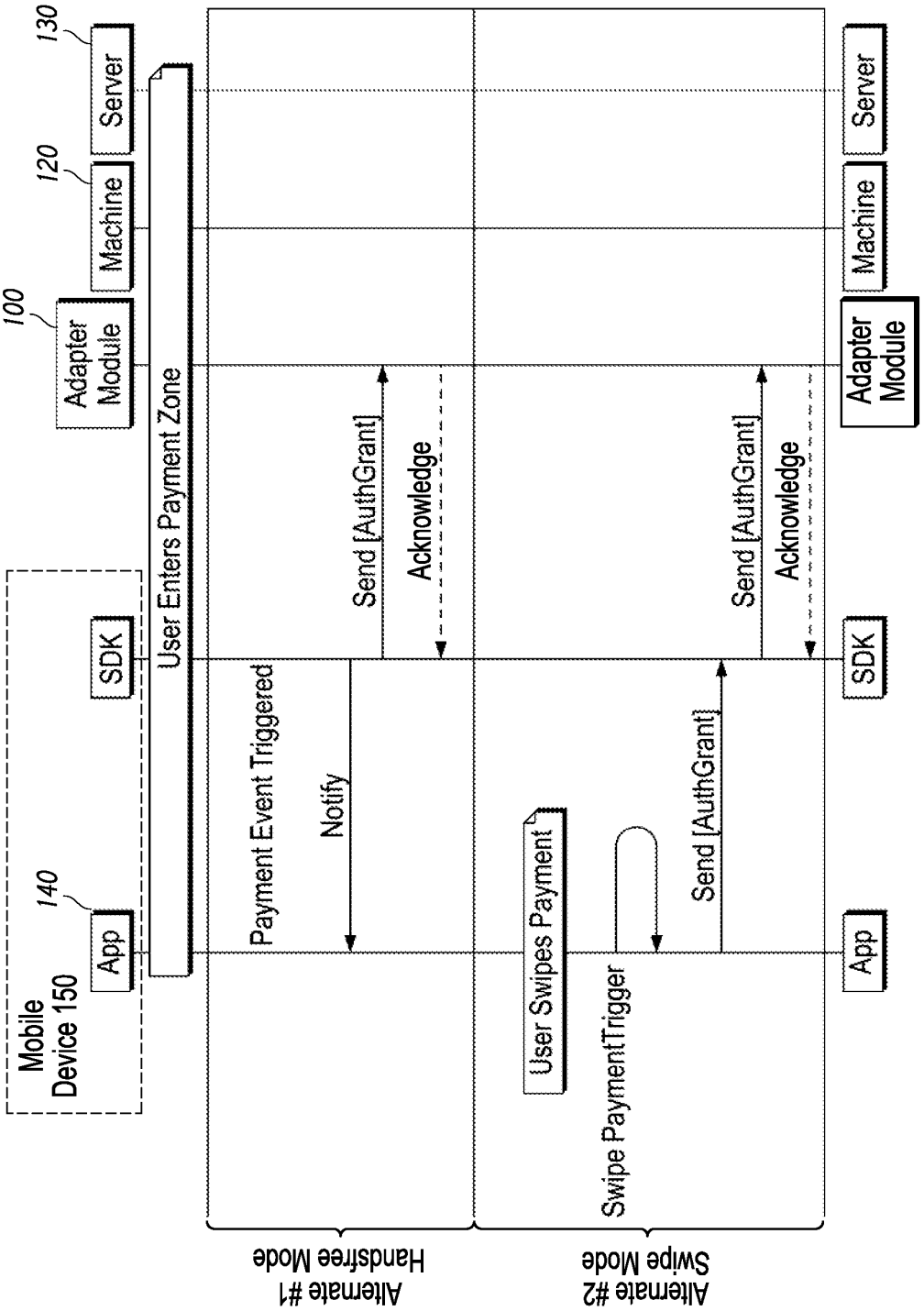

Mobile Device 150
140
App
SDK
100
Adapter Module
120
Machine
130
Server
User Enters Payment Zone
Payment Event Triggered
Notify
Send [AuthGrant]
Acknowledge
Alternate #1 Handsfree Mode
User Swipes Payment
Swipe PaymentTrigger
Send [AuthGrant]
Send [AuthGrant]
Acknowledge
Alternate #2 Swipe Mode
App
SDK
Adapter Module
Machine
Server

FIG. 8C

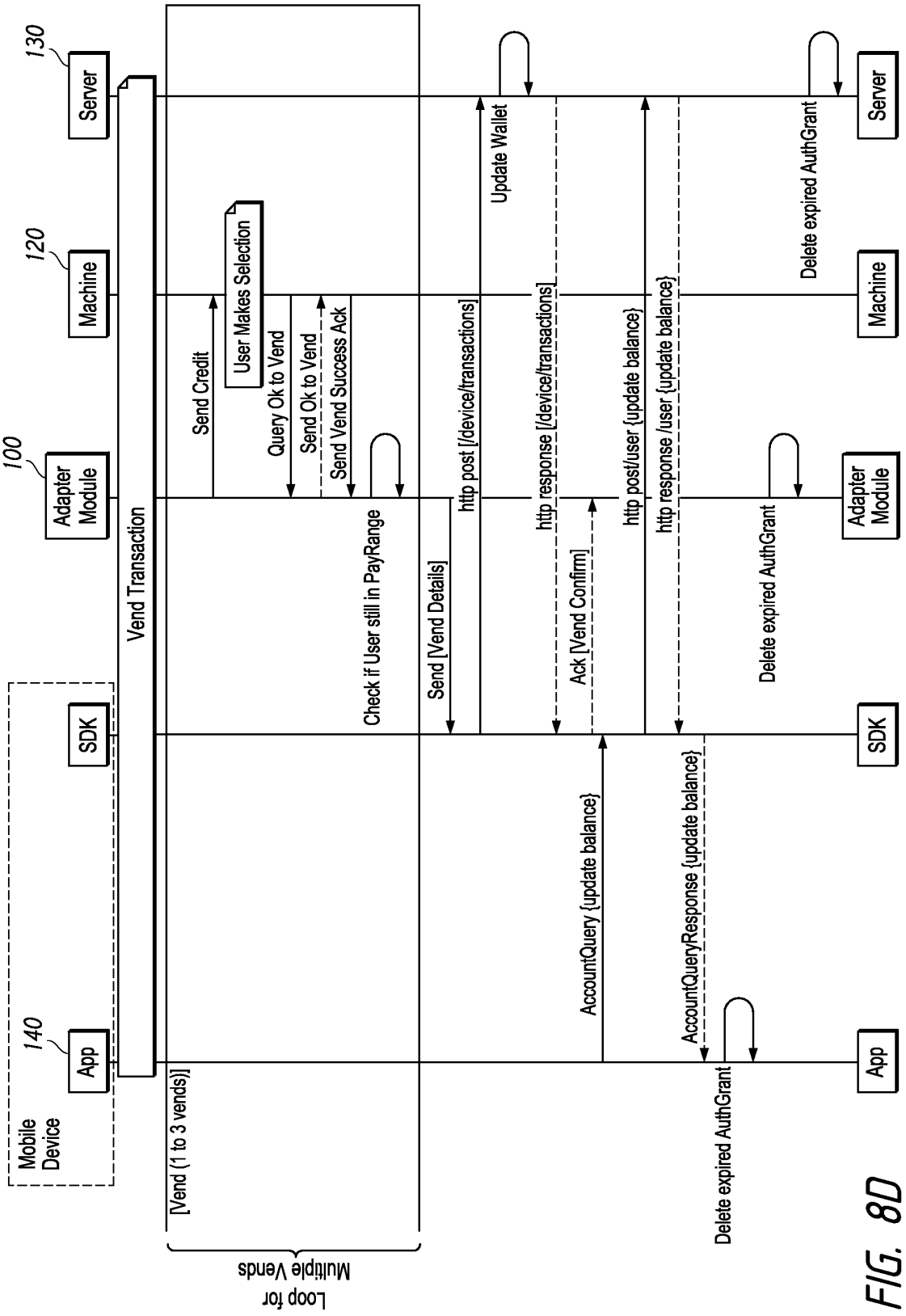

Mobile Device
140
App
SDK
100
Adapter Module
120
Machine
130
Server
Vend Transaction
[Vend (1 to 3 vends)]
Loop for Multiple Vends
Send Credit
User Makes Selection
Query Ok to Vend
Send Ok to Vend
Send Vend Success Ack
Check if User still in PayRange
Send [Vend Details]
http post [/device/transactions]
Update Wallet
http response [/device/transactions]
Ack [Vend Confirm]
AccountQuery {update balance}
http post/user {update balance}
http response /user {update balance}
AccountQueryResponse {update balance}
Delete expired AuthGrant
Delete expired AuthGrant
Delete expired AuthGrant
Server
Machine
Adapter Module
SDK
App

FIG. 8D

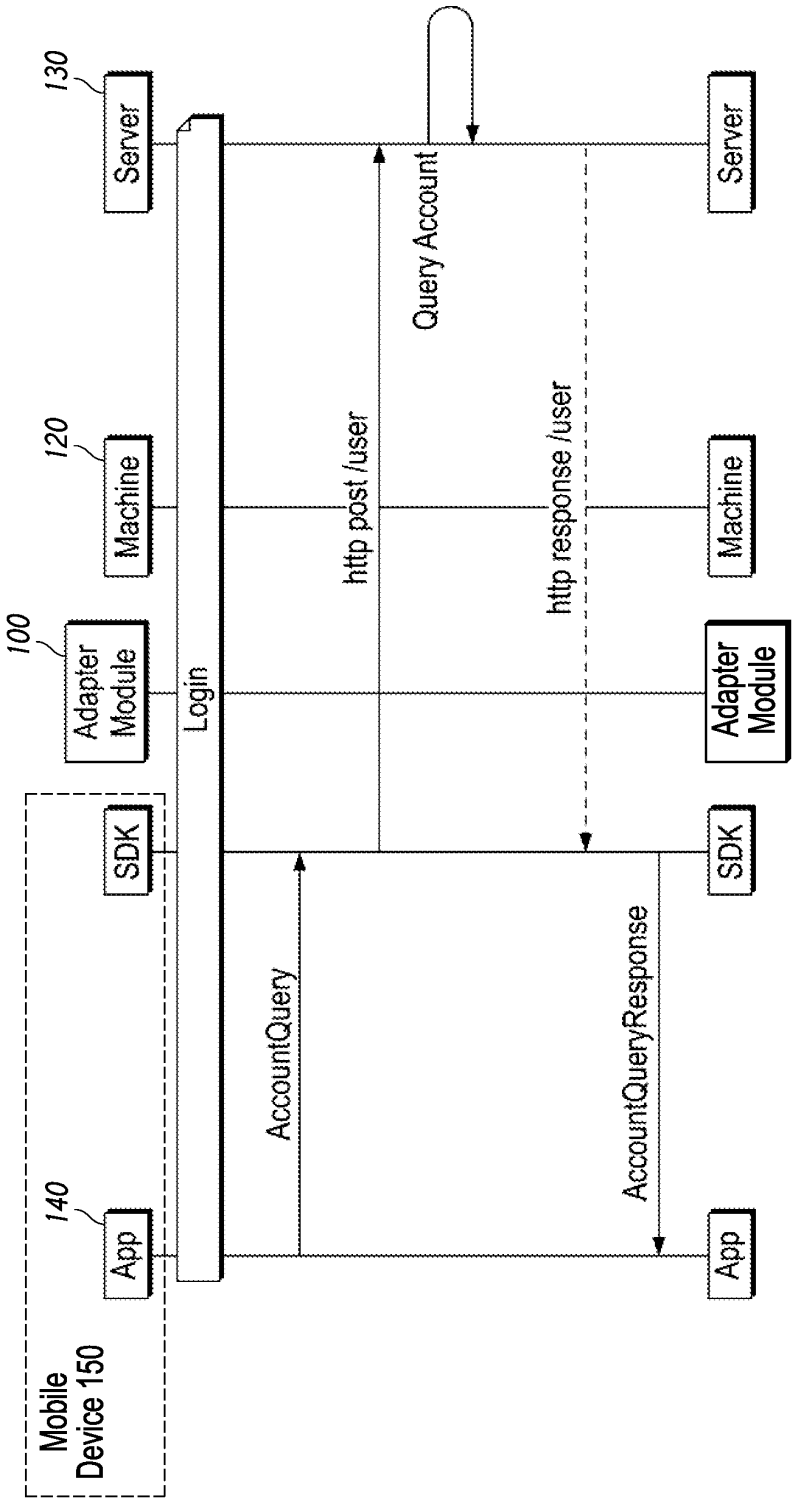

130
Server
120
Machine
100
Adapter Module
SDK
140
App
Mobile Device 150
Login
Query Account
http post /user
http response /user
AccountQuery
AccountQueryResponse
Server
Machine
Adapter Module
SDK
App

FIG. 8E

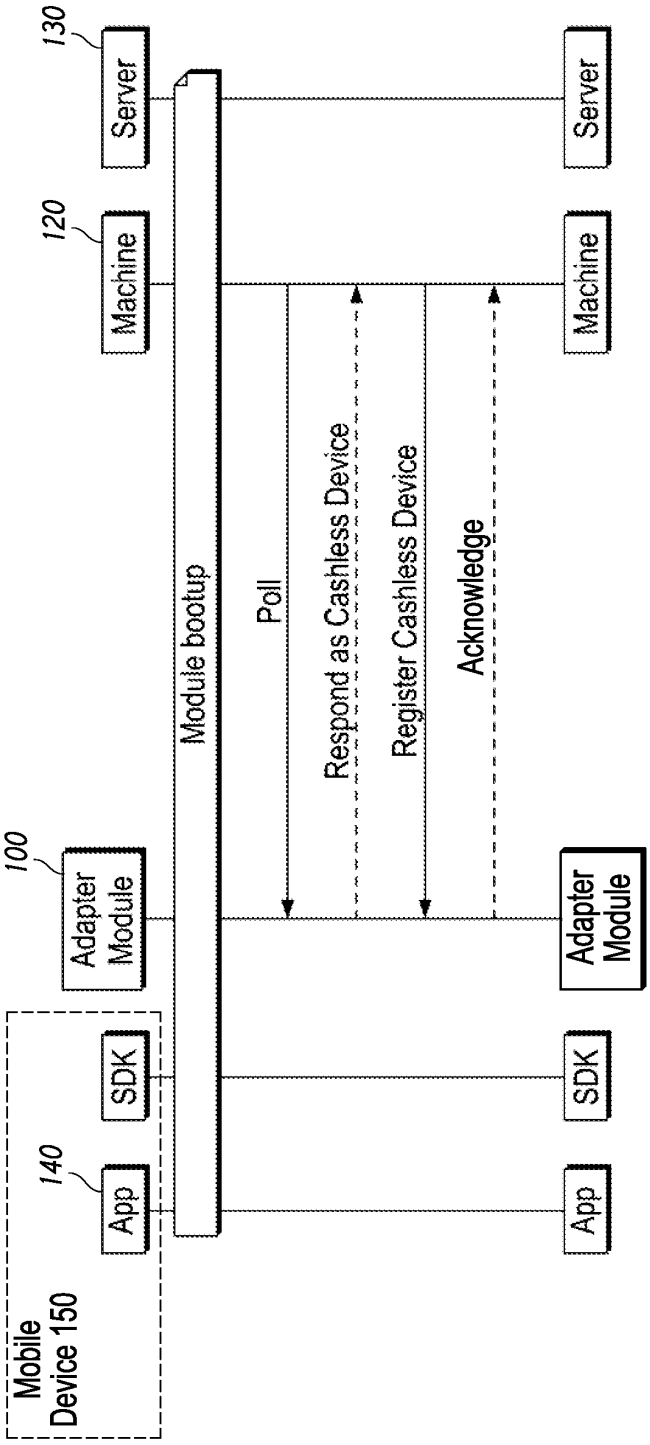

130
Server
120
Machine
100
Adapter Module
SDK
140
App
Mobile Device 150
Module bootup
Poll
Respond as Cashless Device
Register Cashless Device
Acknowledge
Server
Machine
Adapter Module
SDK
App

FIG. 8F

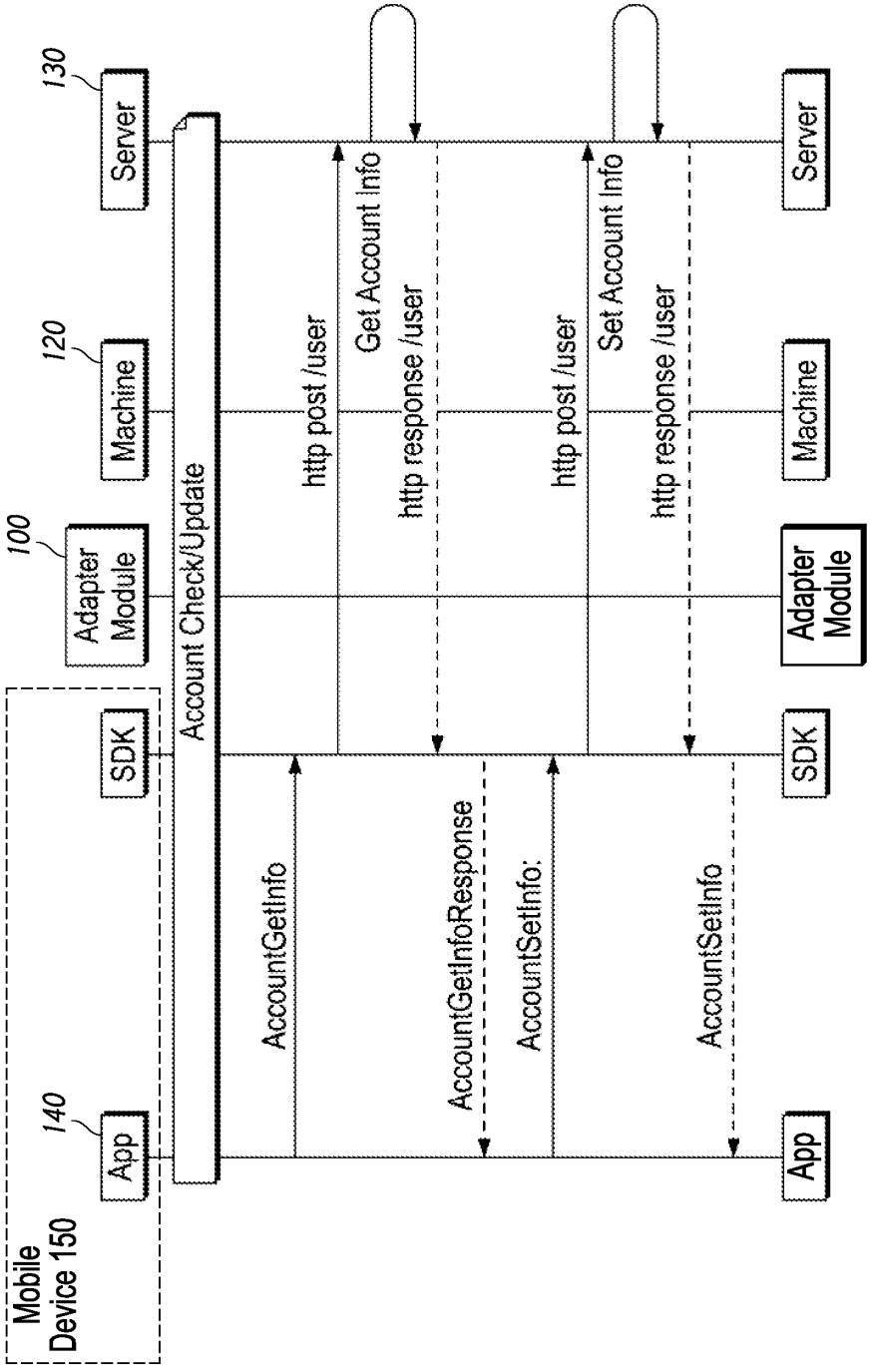

Mobile Device 150
App
140
SDK
Adapter Module
100
Machine
120
Server
130
Account Check/Update
AccountGetInfo
AccountGetInfoResponse
AccountSetInfo:
AccountSetInfo
http post /user
Get Account Info
http response /user
http post /user
Set Account Info
http response /user
SDK
Adapter Module
Machine
Server
App

FIG. 8G

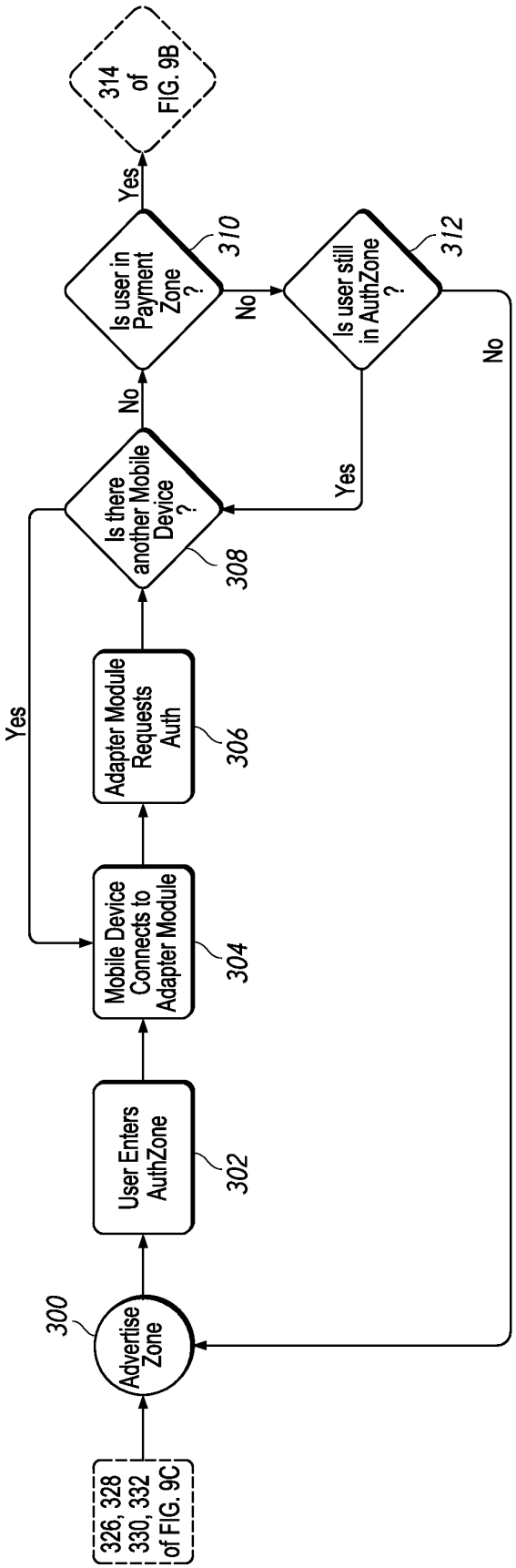

326, 328 330, 332 of FIG. 9C
Advertise Zone
300
User Enters AuthZone
302
Mobile Device Connects to Adapter Module
304
Adapter Module Requests Auth
306
Is there another Mobile Device ?
308
Is user in Payment Zone ?
310
Is user still in AuthZone ?
312
314 of FIG. 9B
Yes
No
Yes
No
Yes
No

FIG. 9A

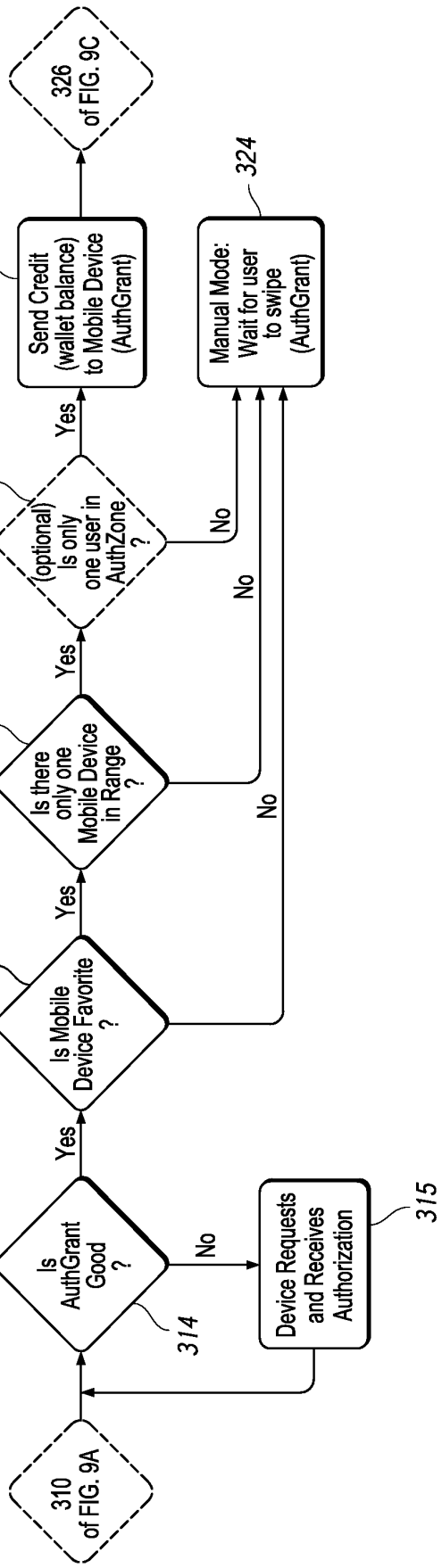
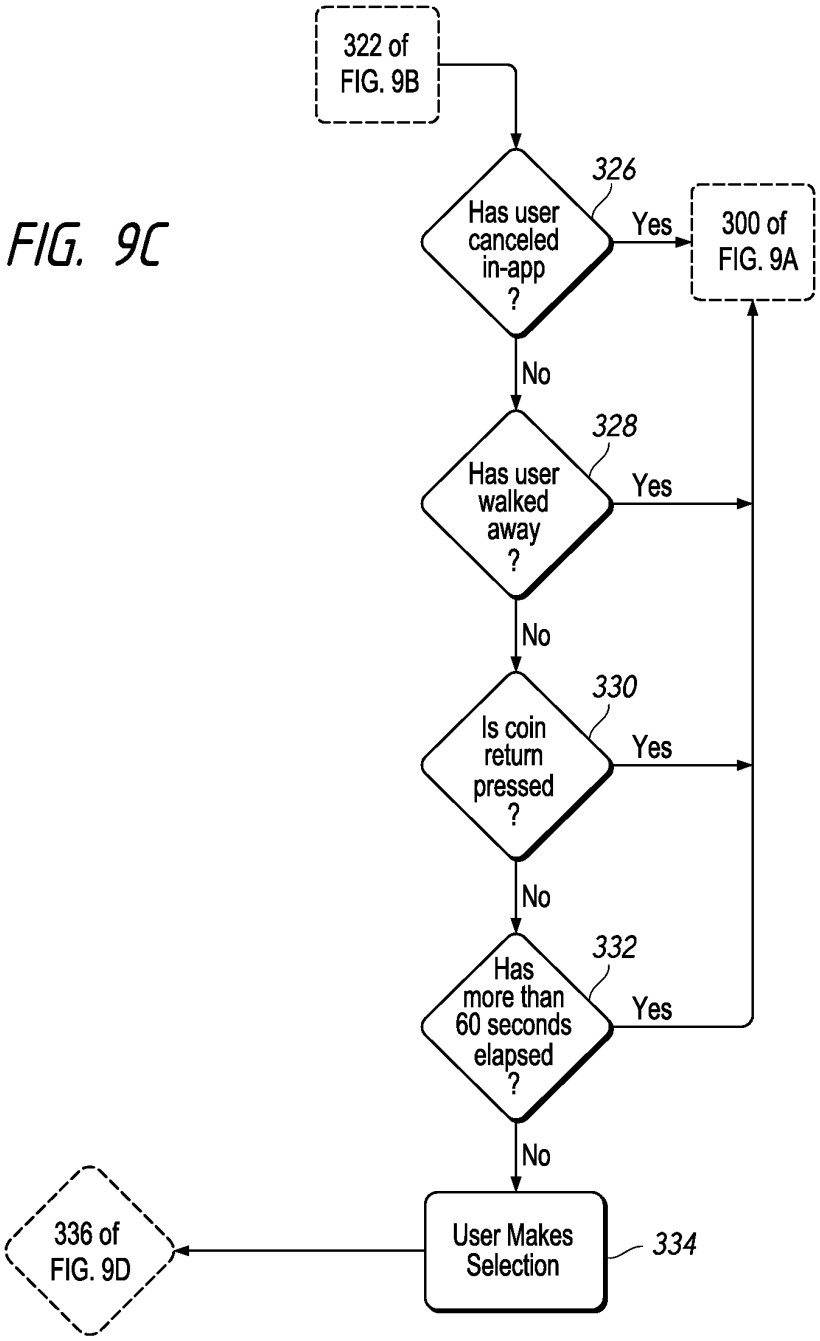

310 of FIG. 9A
Is AuthGrant Good ?
314
No
Device Requests and Receives Authorization
315
Yes
Is Mobile Device Favorite ?
316
Yes
No
Is there only one Mobile Device in Range ?
318
Yes
No
(optional) Is only one user in AuthZone ?
320
Yes
No
Send Credit (wallet balance) to Mobile Device (AuthGrant)
322
Manual Mode: Wait for user to swipe (AuthGrant)
324
326 of FIG. 9C

FIG. 9B

FIG. 9C


322 of FIG. 9B
326
Has user canceled in-app ?
Yes
300 of FIG. 9A
No
328
Has user walked away ?
Yes
No
330
Is coin return pressed ?
Yes
No
332
Has more than 60 seconds elapsed ?
Yes
No
User Makes Selection
334
336 of FIG. 9D

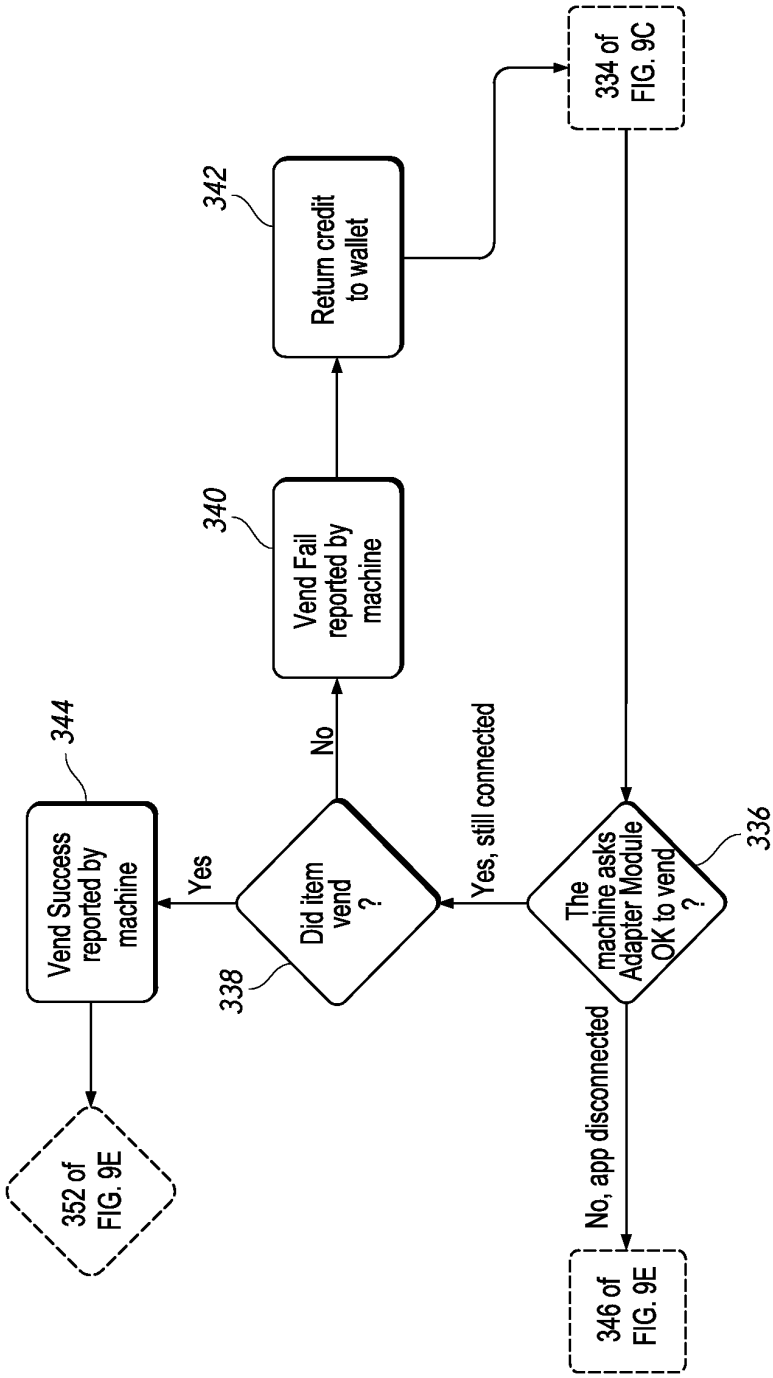

334 of FIG. 9C
342
Return credit to wallet
340
Vend Fail reported by machine
344
Vend Success reported by machine
Yes
No
Did item vend ?
338
Yes, still connected
The machine asks Adapter Module OK to vend ?
336
352 of FIG. 9E
No, app disconnected
346 of FIG. 9E

FIG. 9D

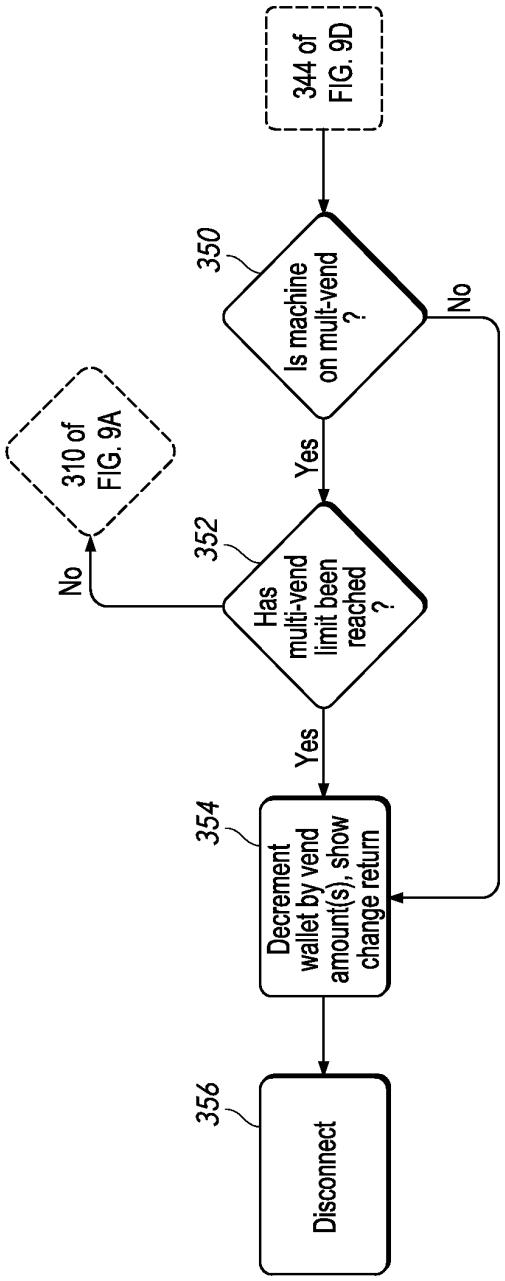

344 of FIG. 9D
350
Is machine on mult-vend ?
No
Yes
310 of FIG. 9A
352
Has multi-vend limit been reached ?
No
Yes
354
Decrement wallet by vend amount(s), show change return
356
Disconnect

FIG. 9E

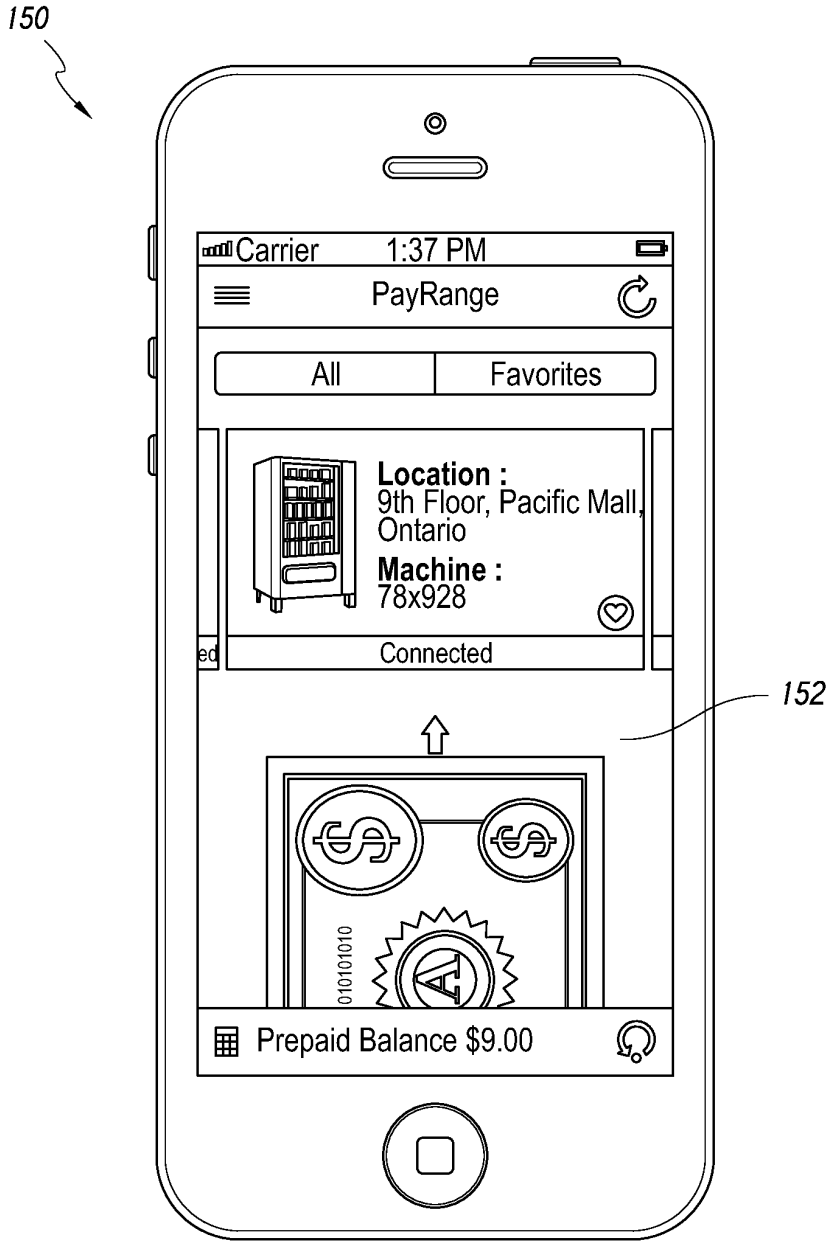

150
Carrier
1:37 PM
PayRange
All
Favorites
Location :
9th Floor, Pacific Mall, Ontario
Machine :
78x928
Connected
152
01010101
Prepaid Balance $9.00

FIG. 10A

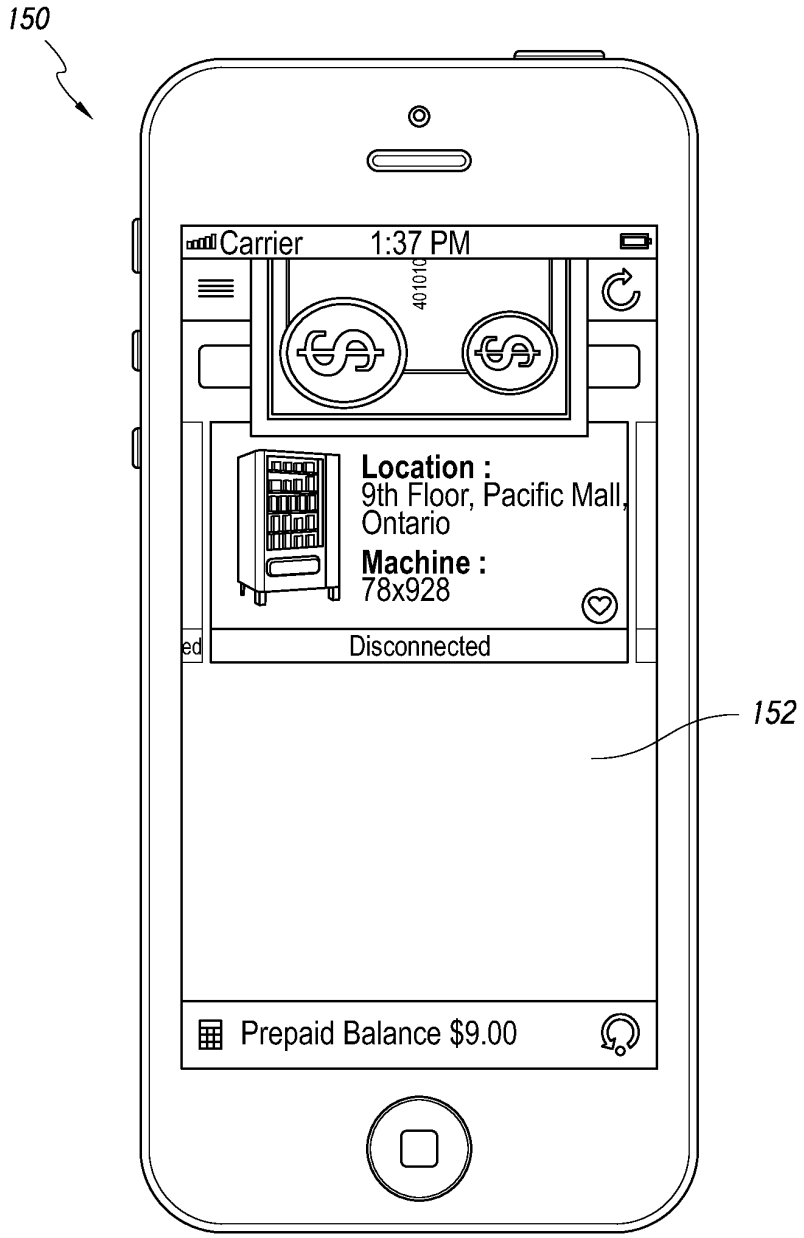

150
Carrier
1:37 PM
Location :
9th Floor, Pacific Mall,
Ontario
Machine :
78x928
Disconnected
152
Prepaid Balance $9.00

FIG. 10B

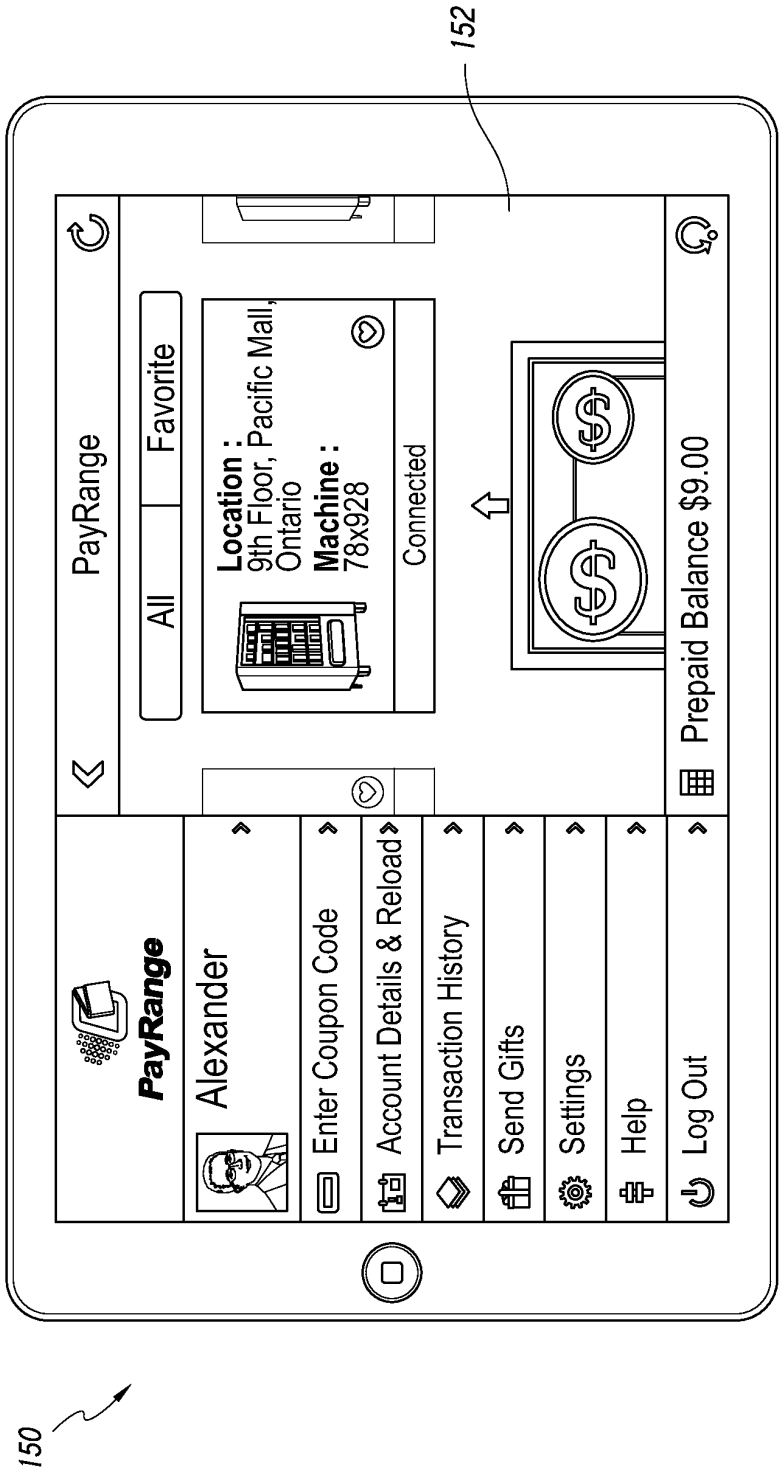

152
150
PayRange
Alexander
Enter Coupon Code
Account Details & Reload
Transaction History
Send Gifts
Settings
Help
Log Out
PayRange
All
Favorite
Location :
9th Floor, Pacific Mall,
Ontario
Machine :
78x928
Connected
Prepaid Balance $9.00

FIG. 10C

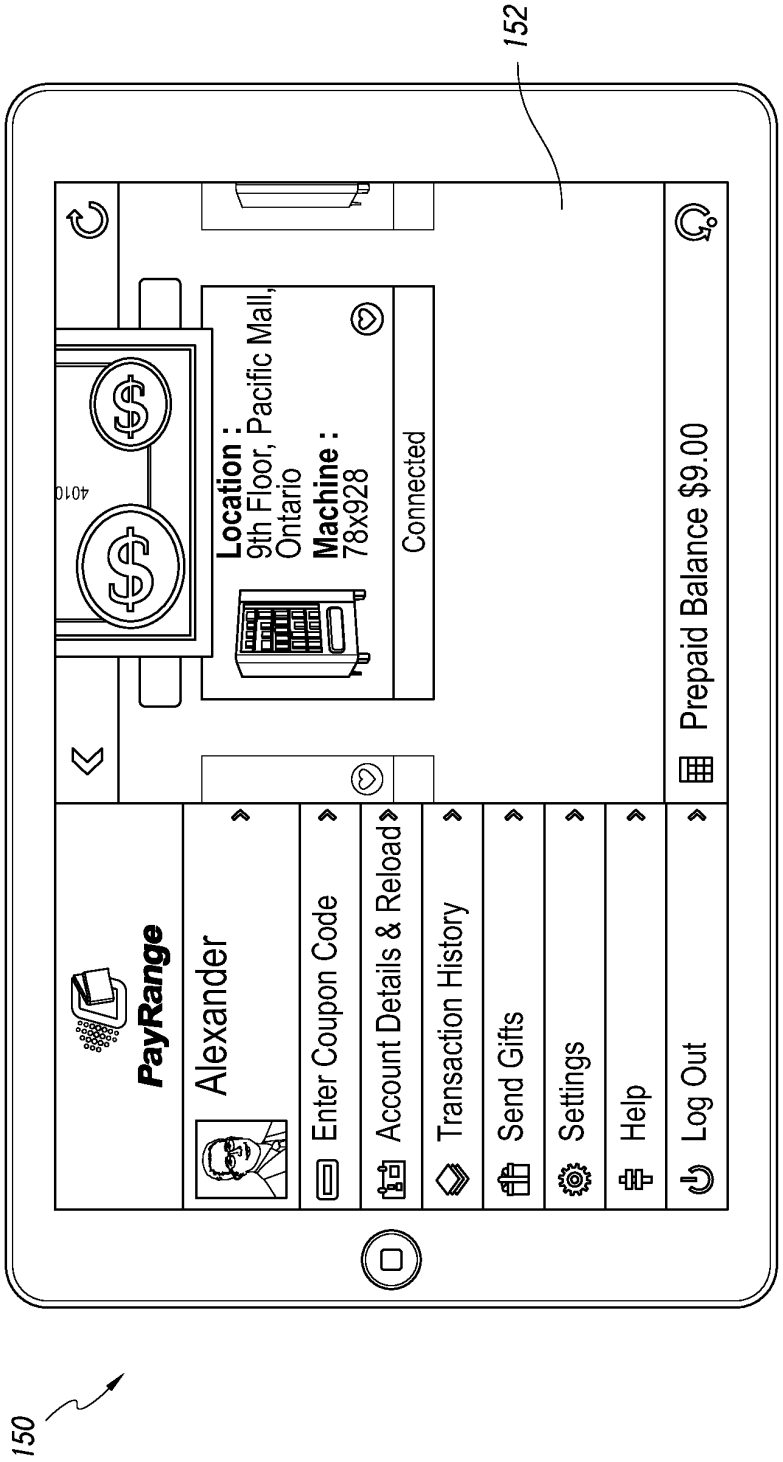

152
150
PayRange
Alexander
Enter Coupon Code
Account Details & Reload
Transaction History
Send Gifts
Settings
Help
Log Out
Location :
9th Floor, Pacific Mall,
Ontario
Machine :
78x928
Connected
Prepaid Balance $9.00

FIG. 10D

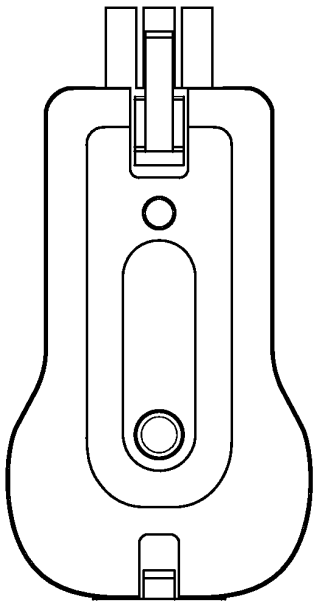


FIG. 12

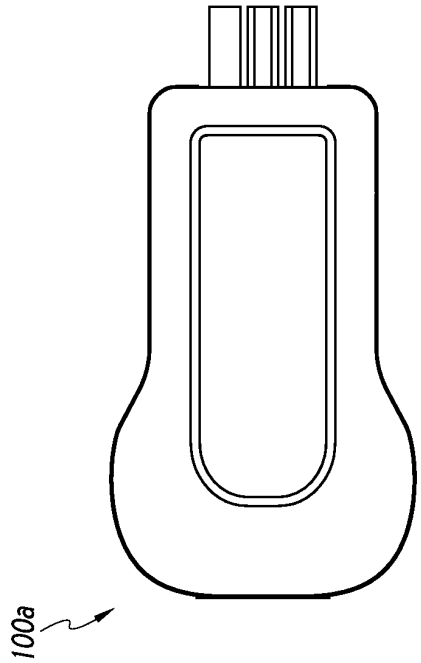


FIG. 13

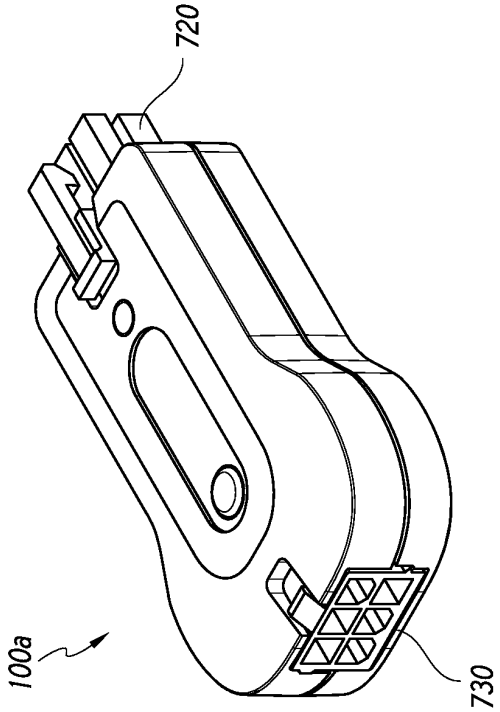


FIG. 11

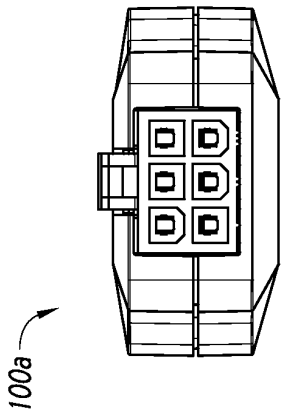


FIG. 16

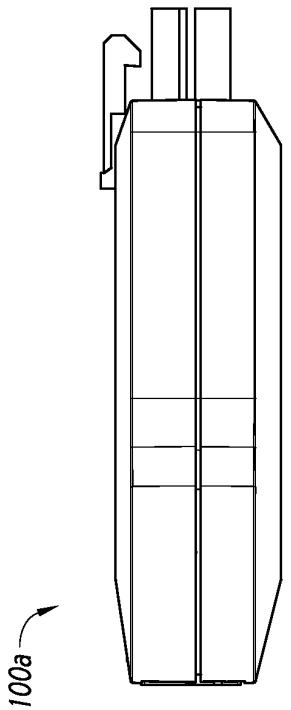


FIG. 14

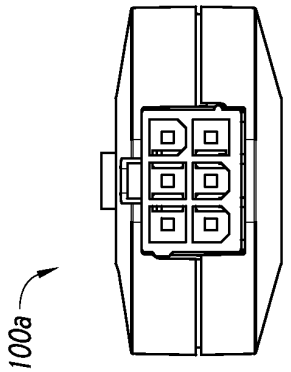


FIG. 15

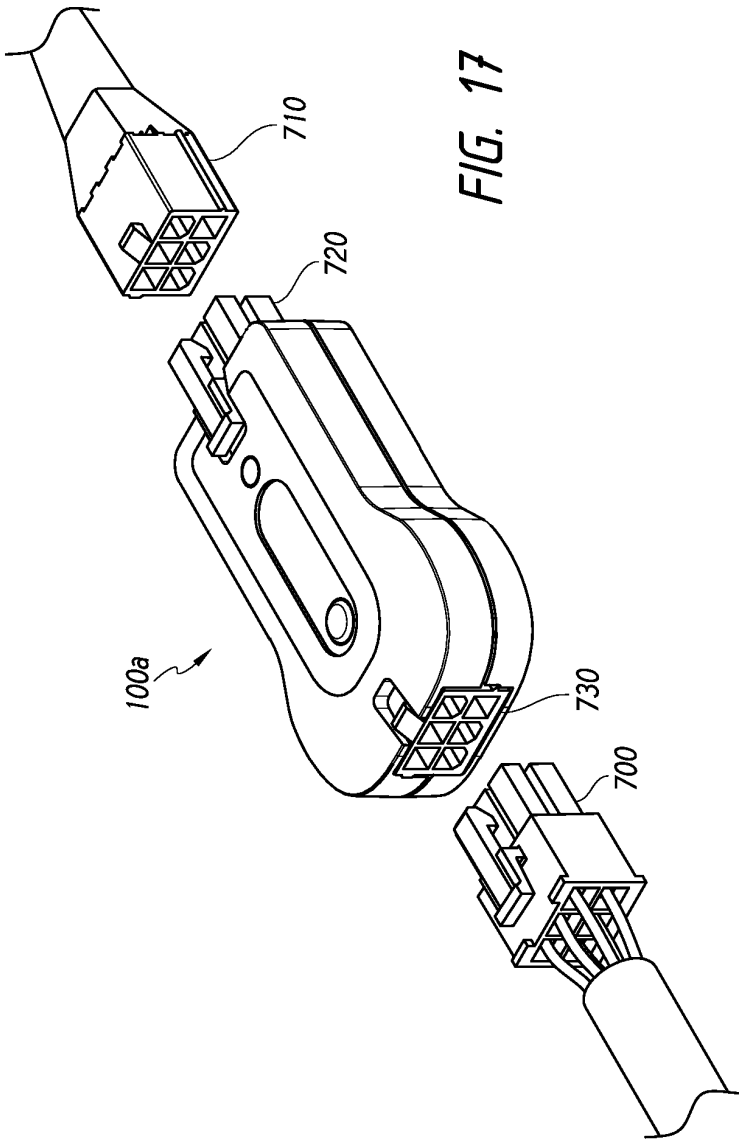


FIG. 17

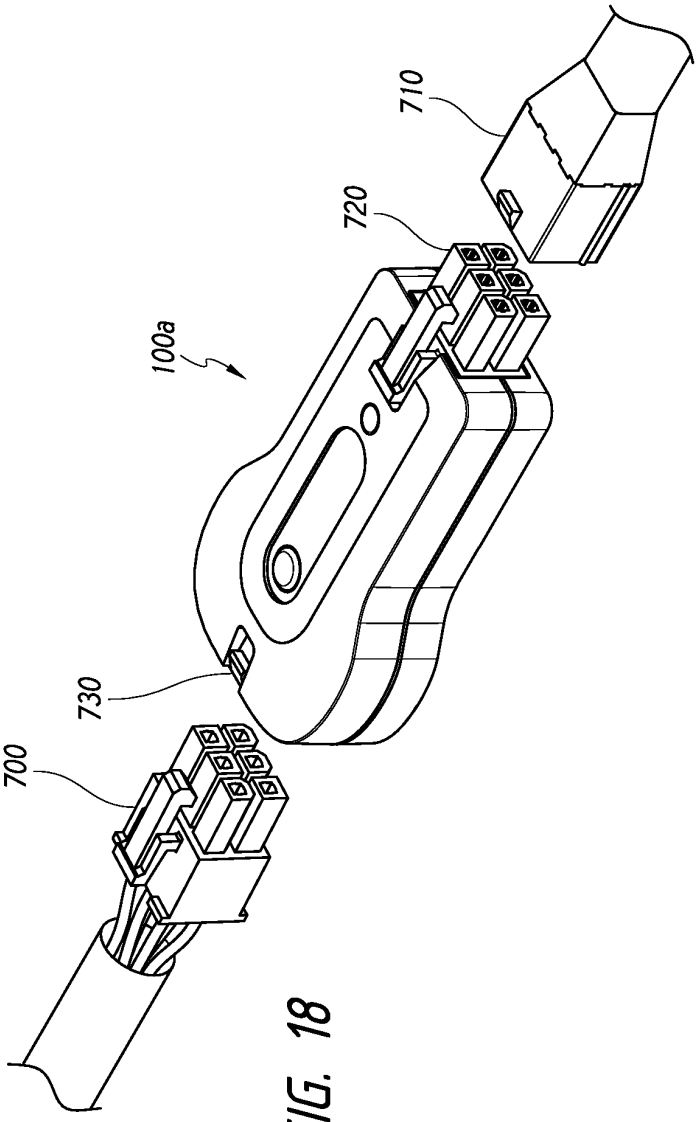


FIG. 18

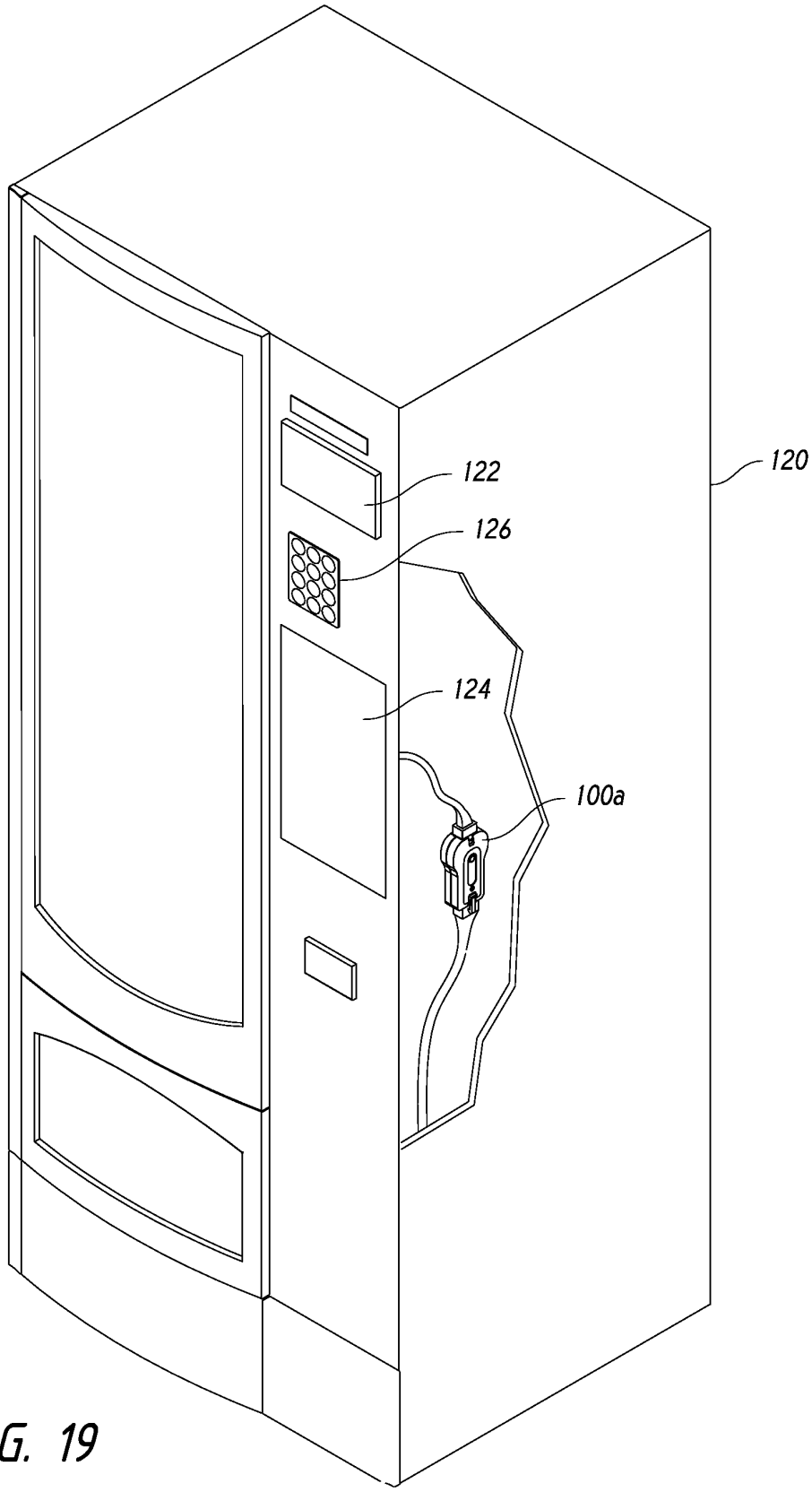


FIG. 19

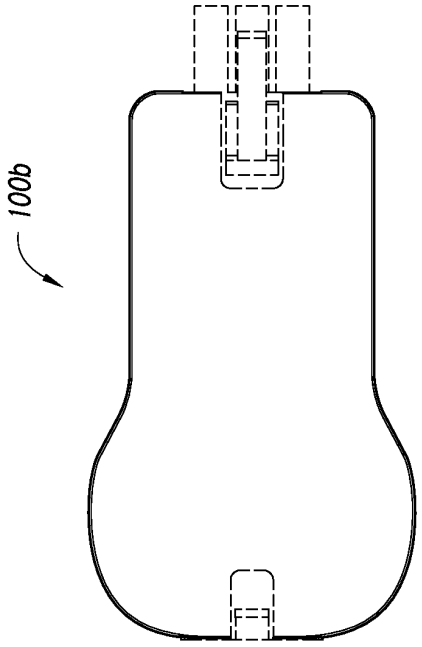


FIG. 21

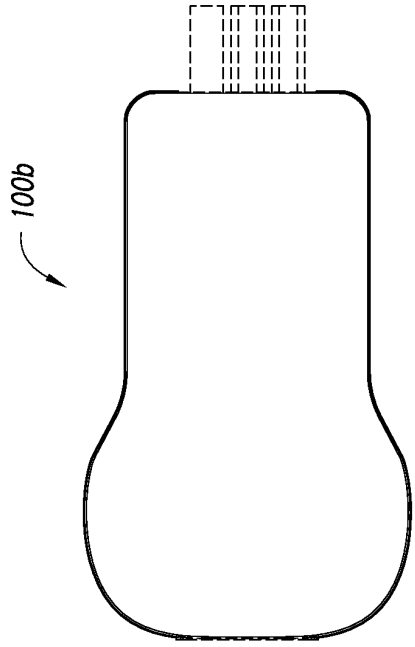


FIG. 22

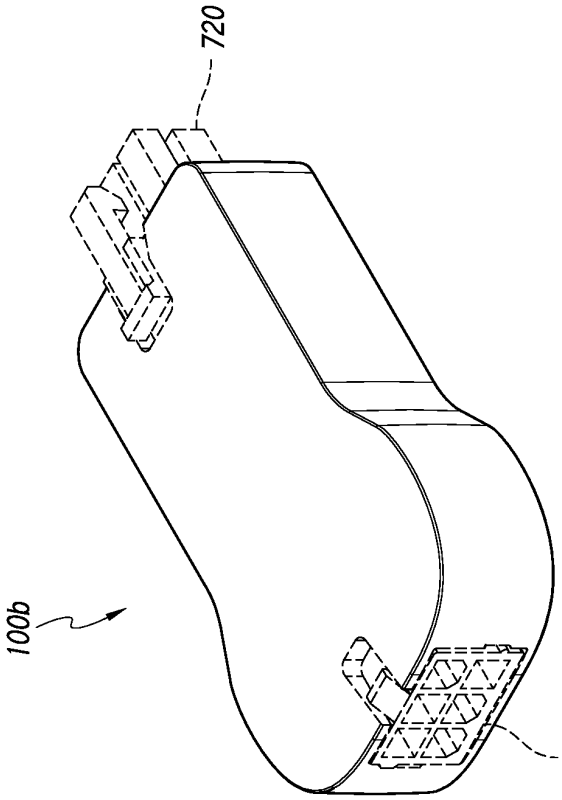


FIG. 20

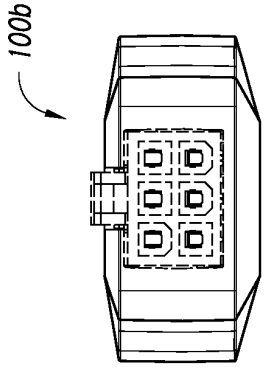


FIG. 25

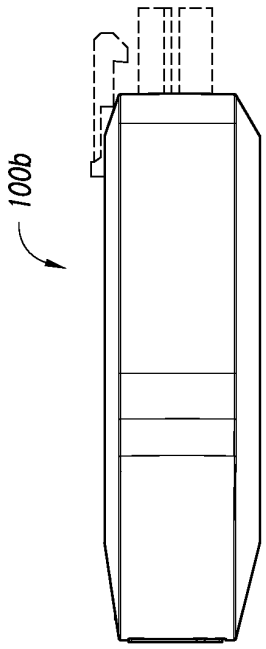


FIG. 23

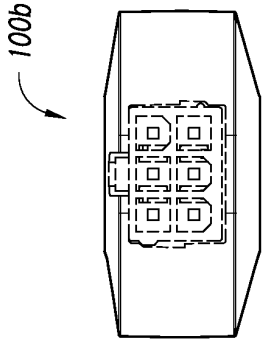


FIG. 24

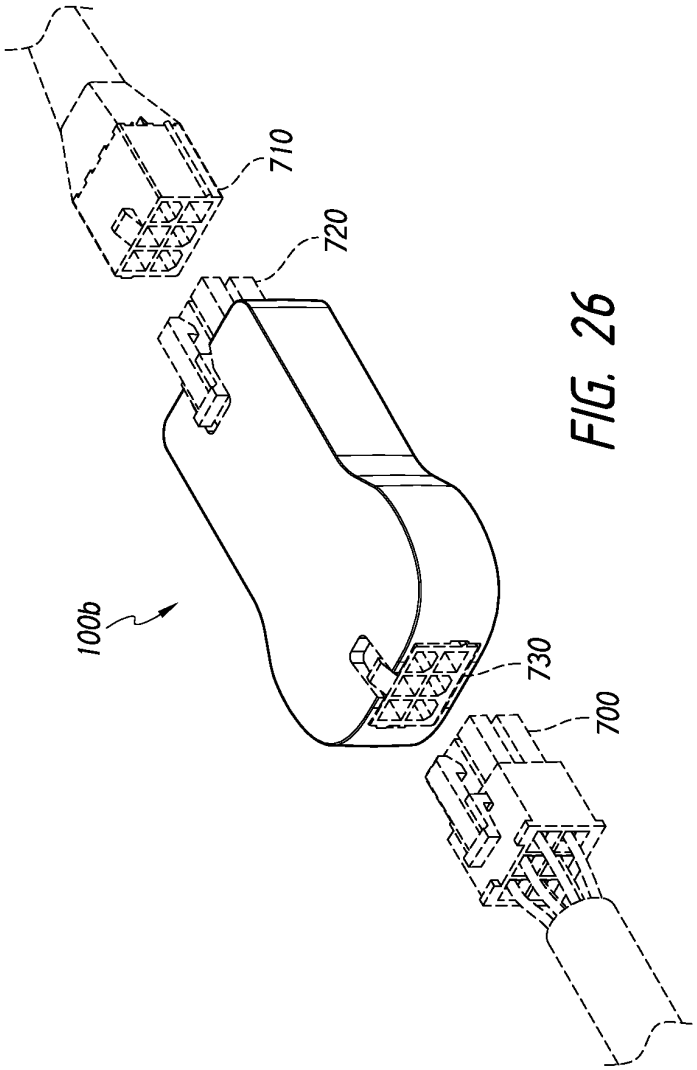


FIG. 26

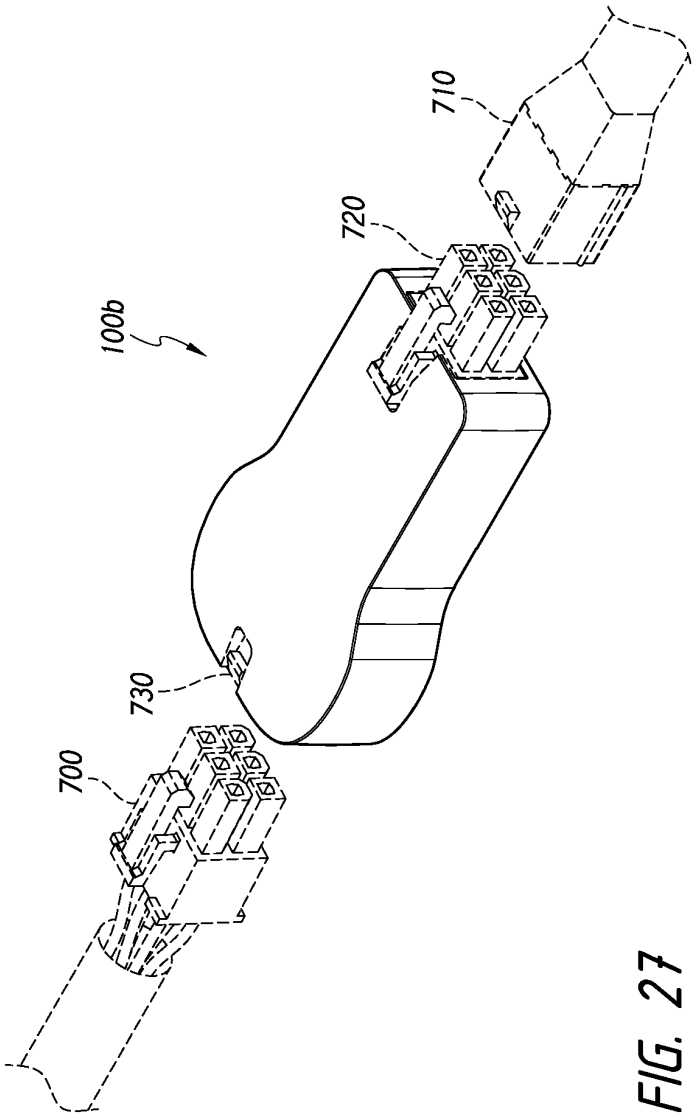


FIG. 27

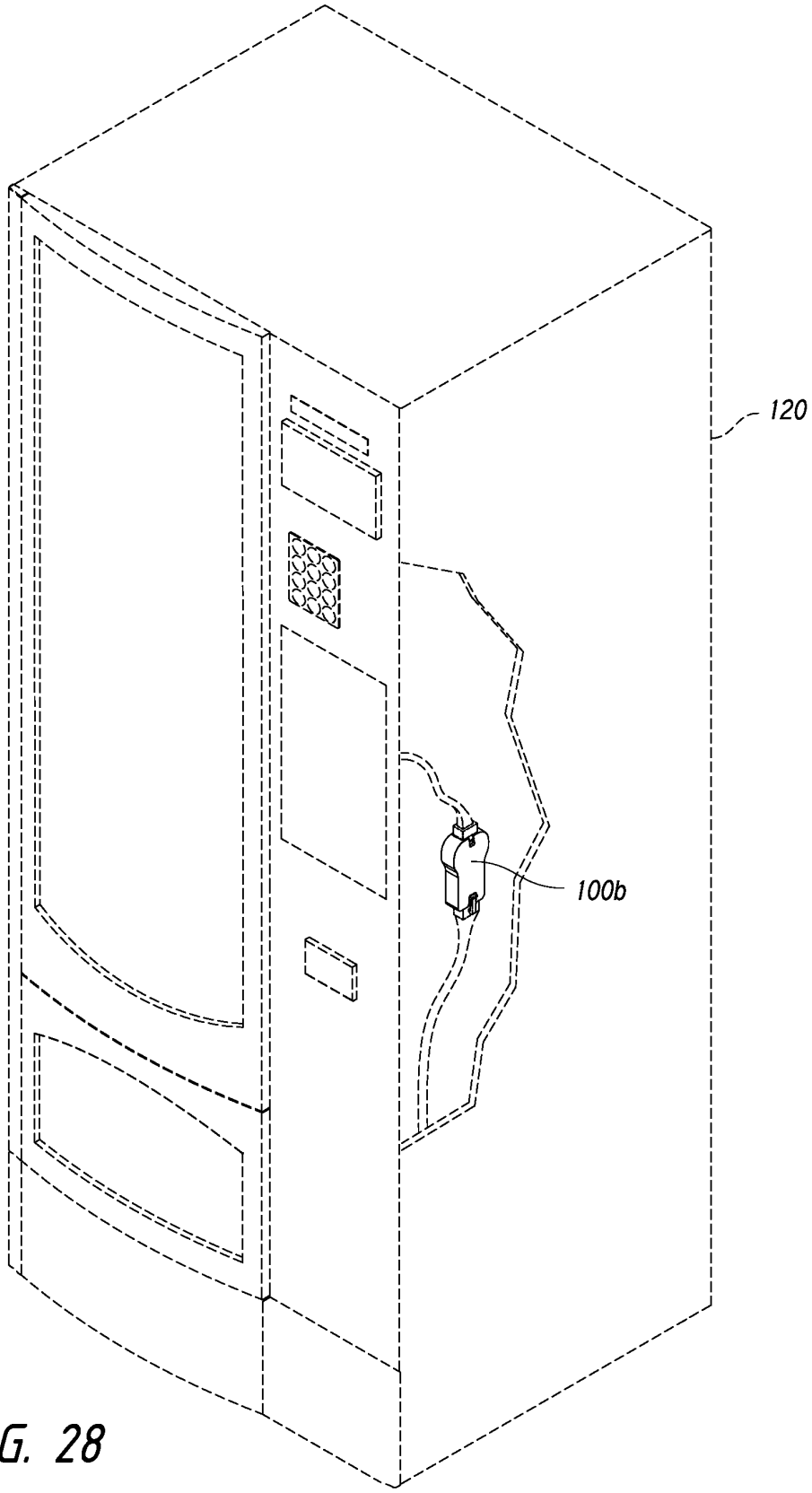


FIG. 28

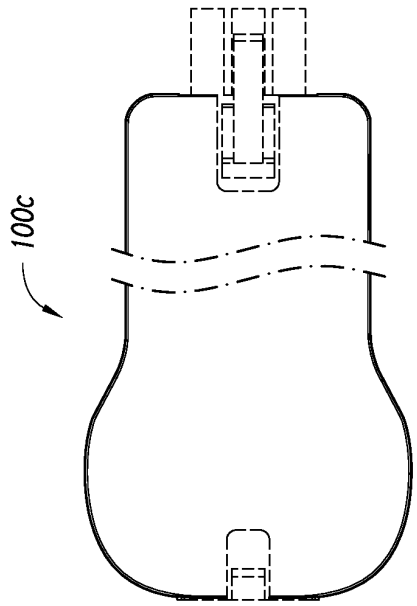


FIG. 30

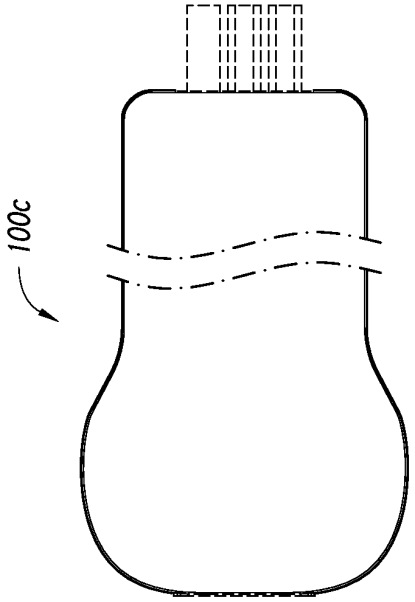


FIG. 31

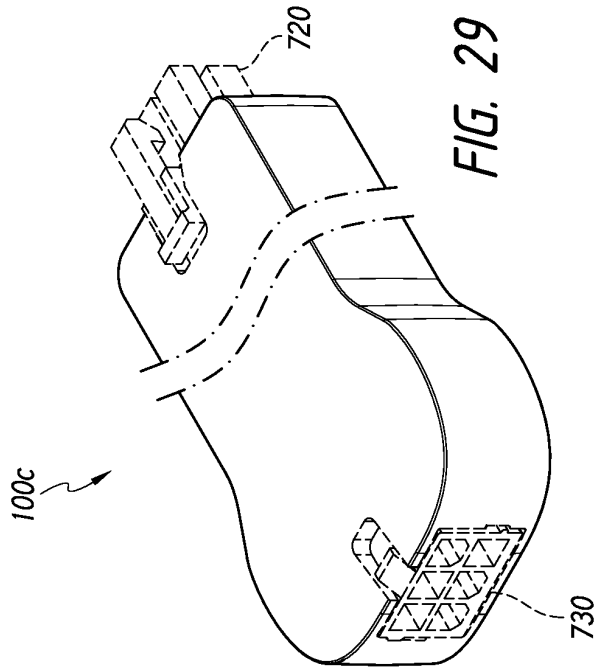


FIG. 29

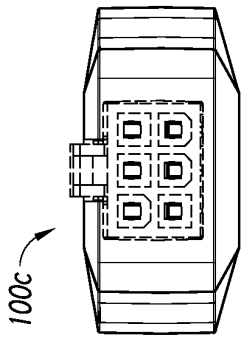


FIG. 34

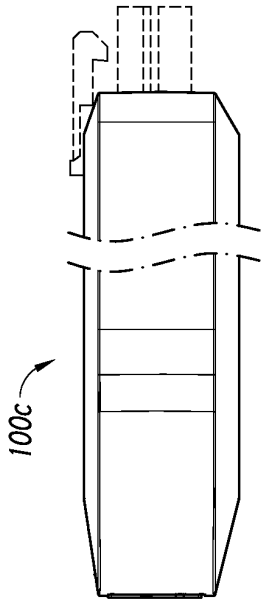


FIG. 32

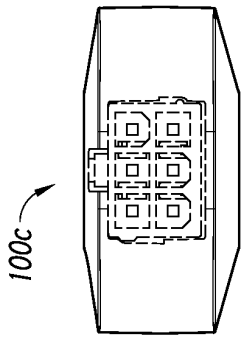


FIG. 33

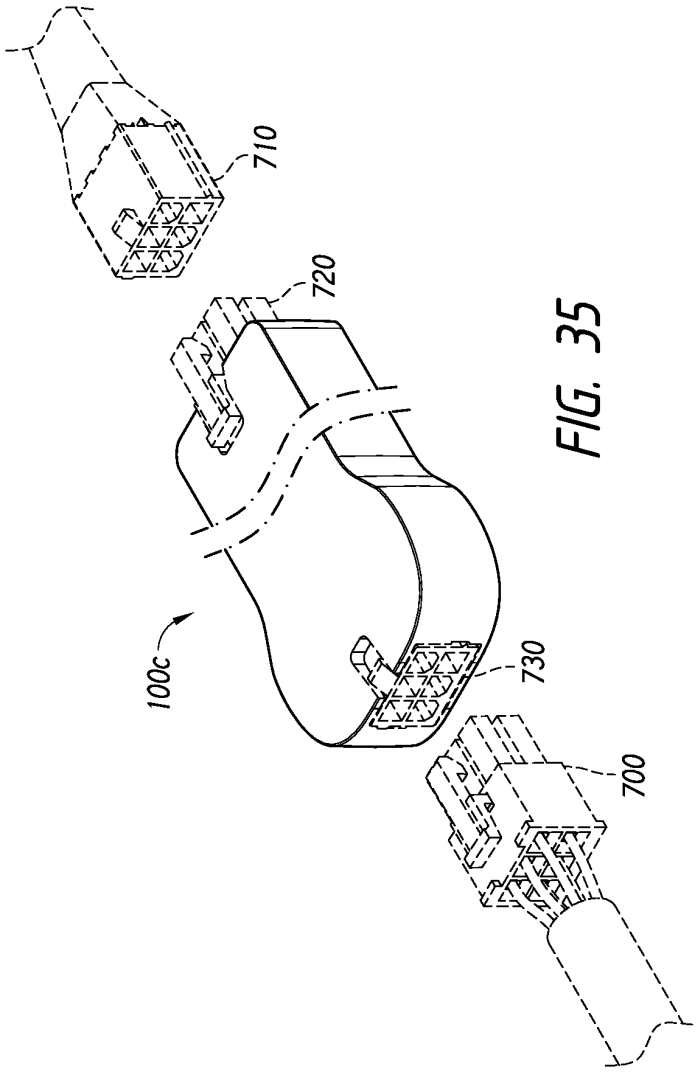


FIG. 35

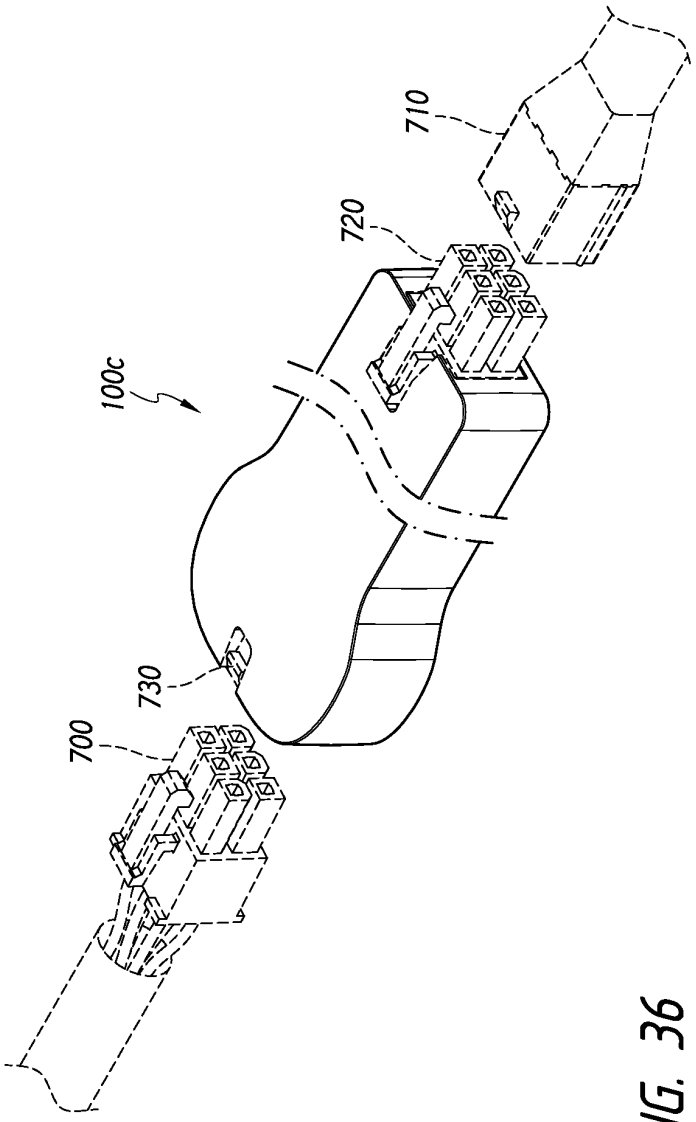


FIG. 36

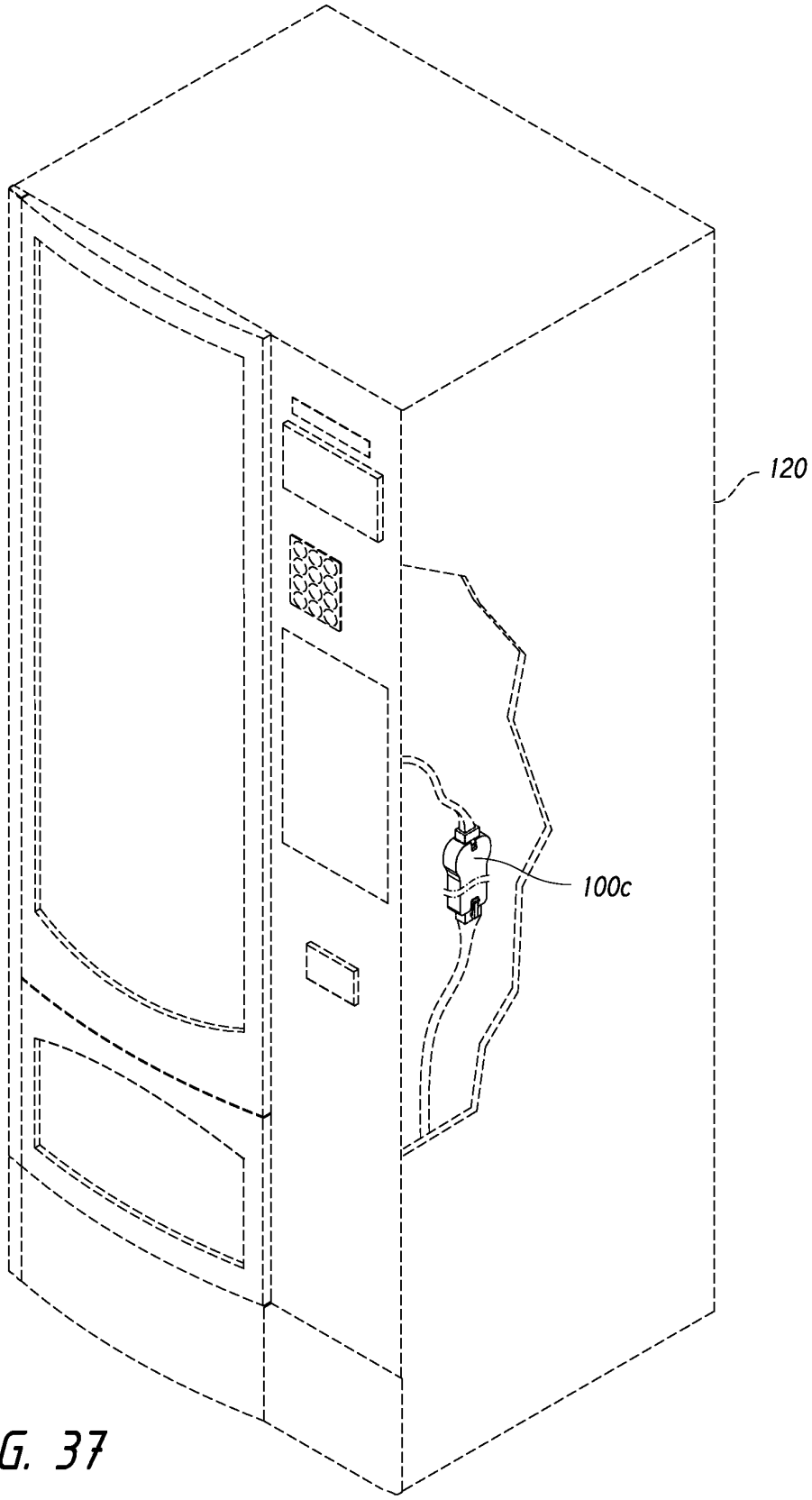


FIG. 37

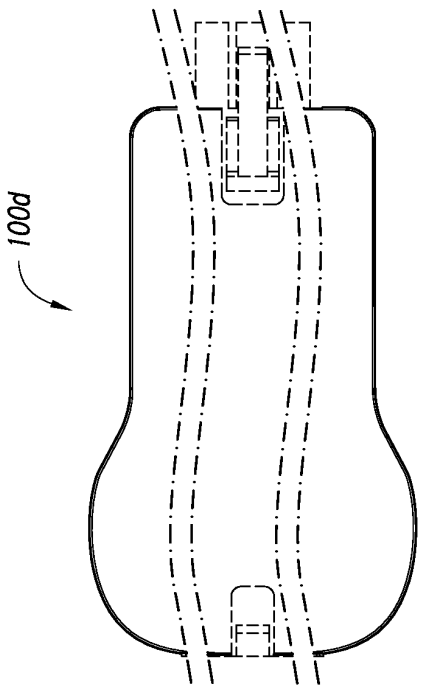


FIG. 39

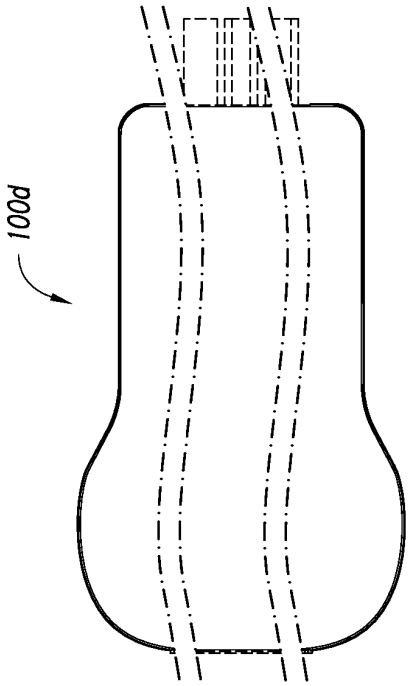


FIG. 40

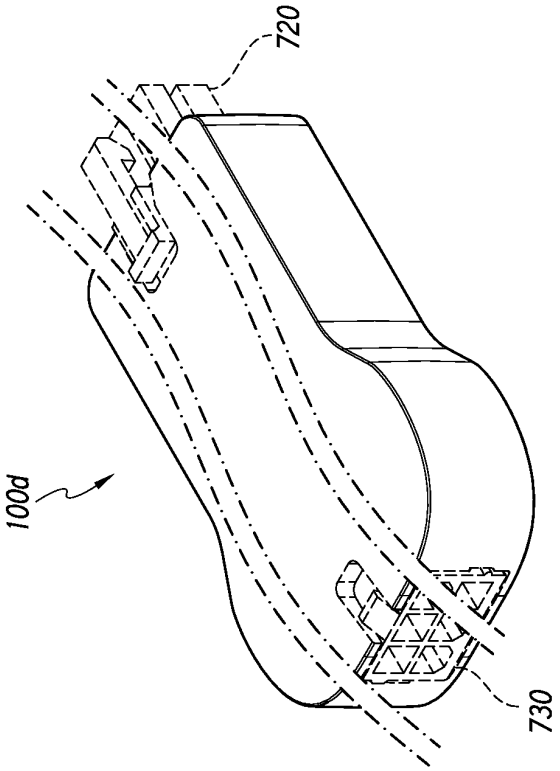


FIG. 38

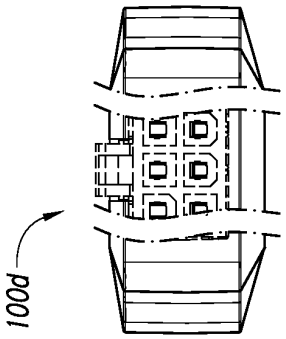


FIG. 43

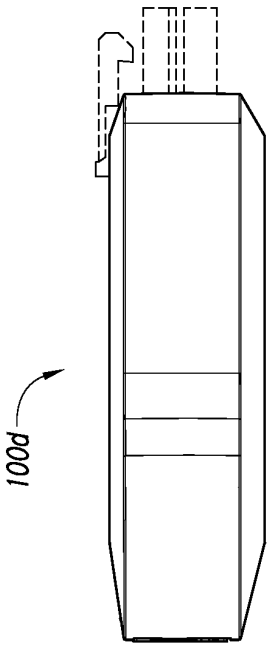


FIG. 41

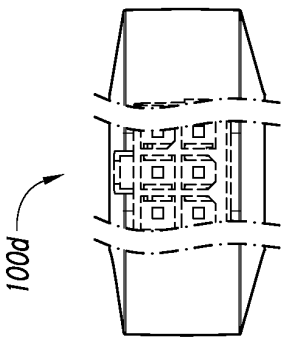


FIG. 42

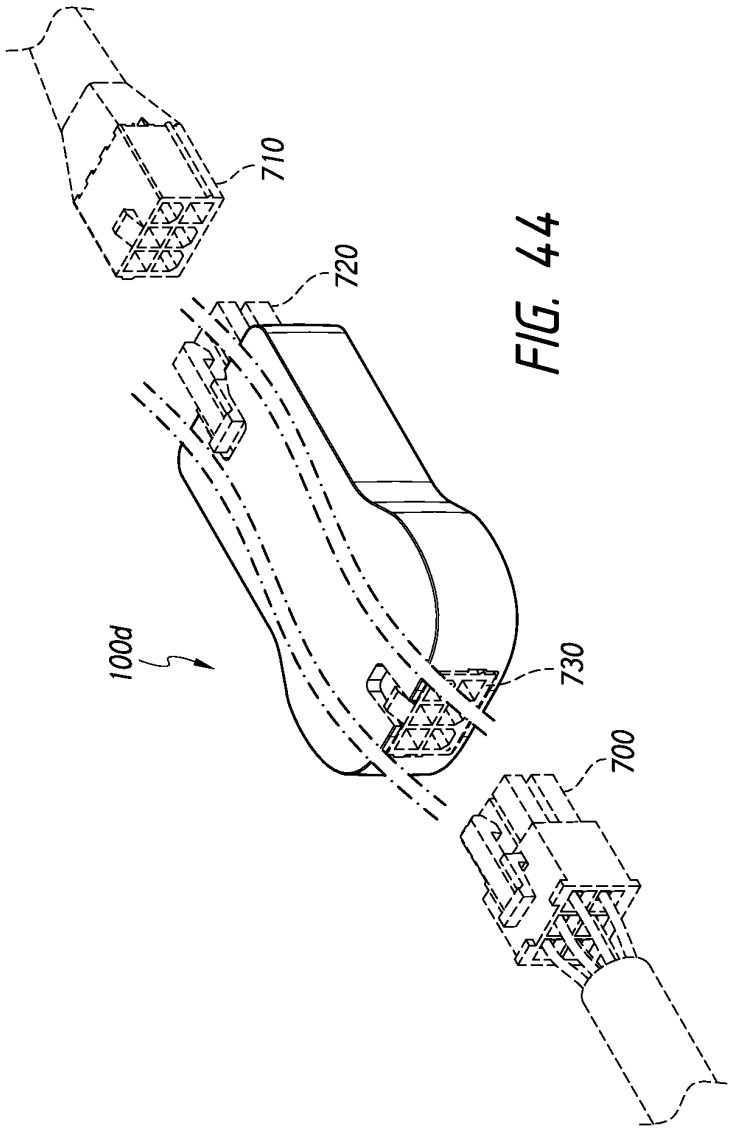


FIG. 44

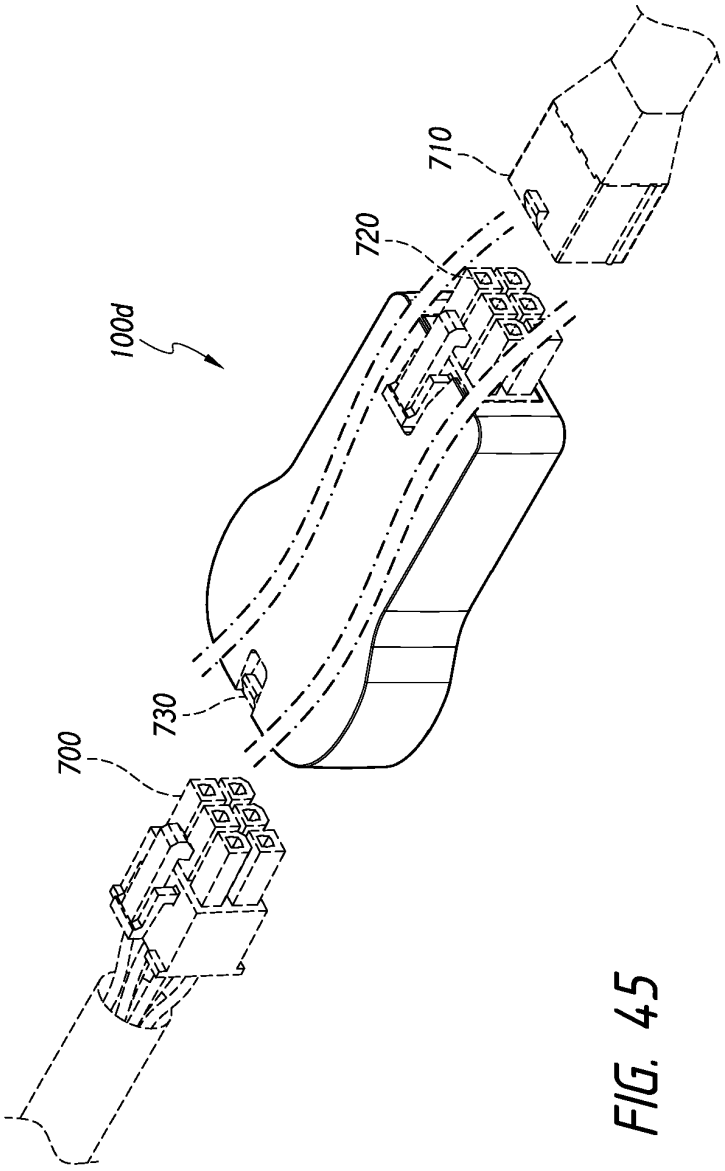


FIG. 45

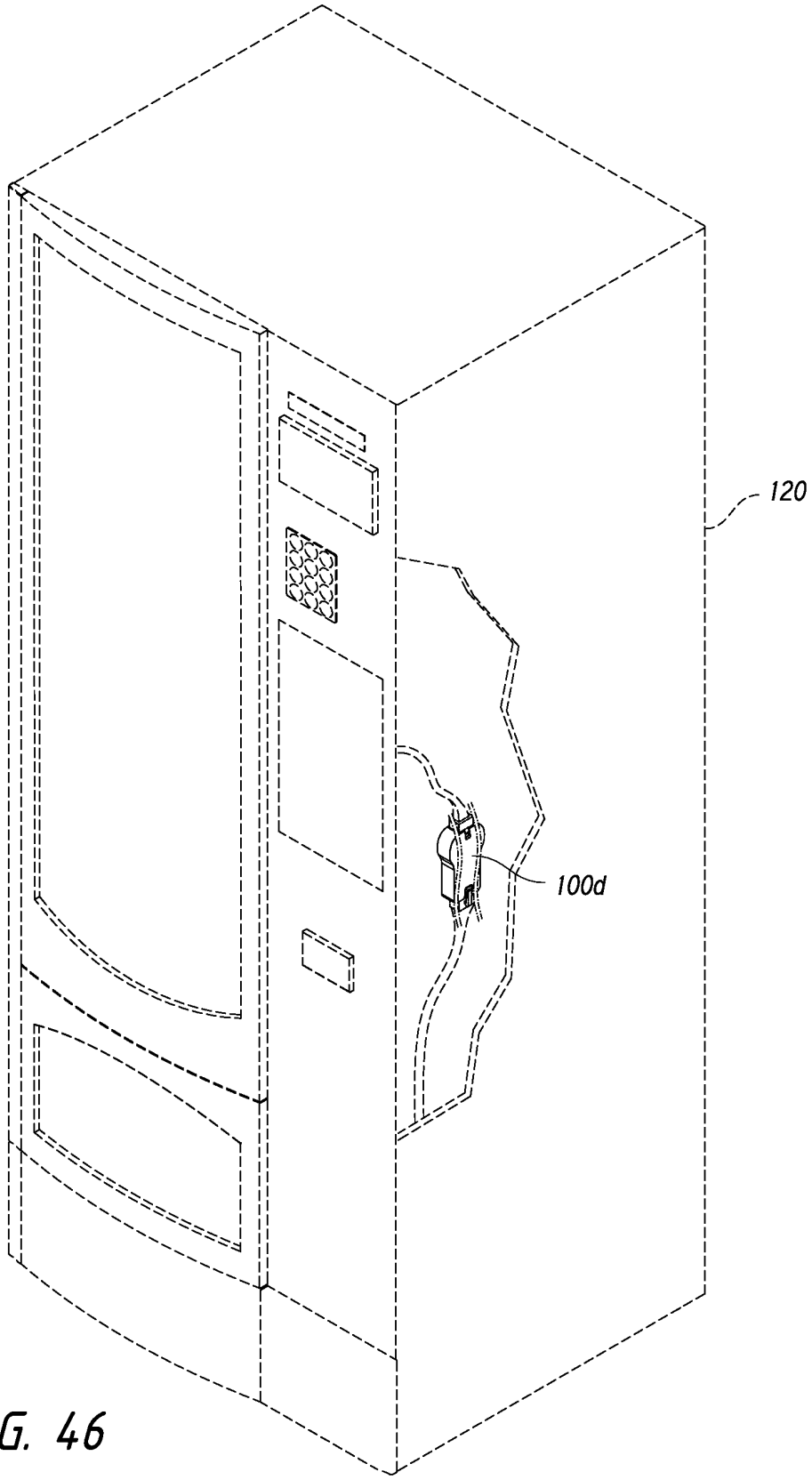


FIG. 46

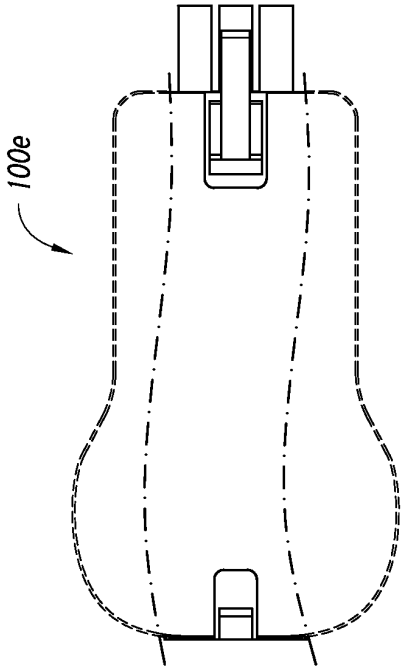


FIG. 48

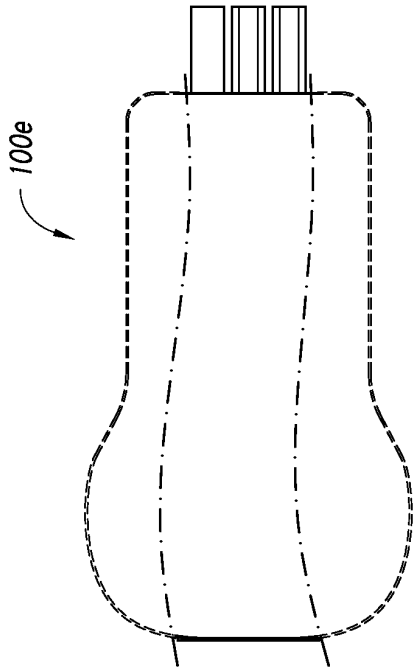


FIG. 49

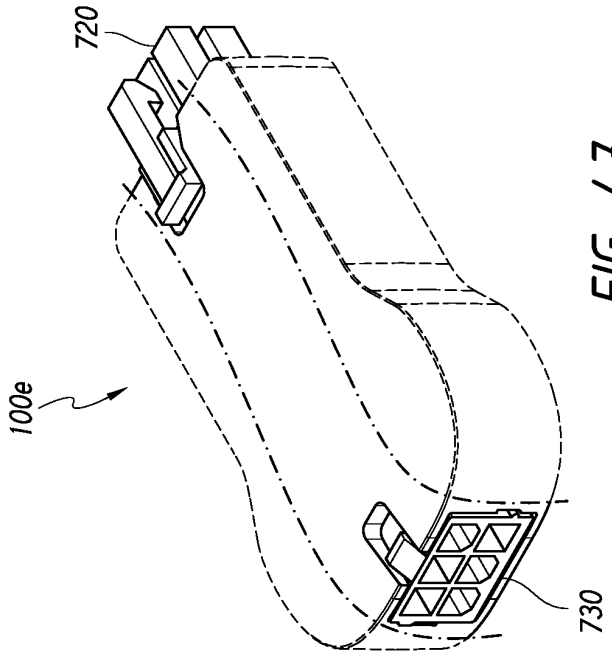


FIG. 47

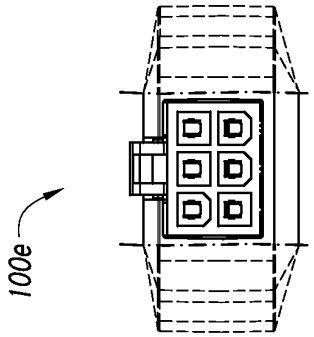


FIG. 52

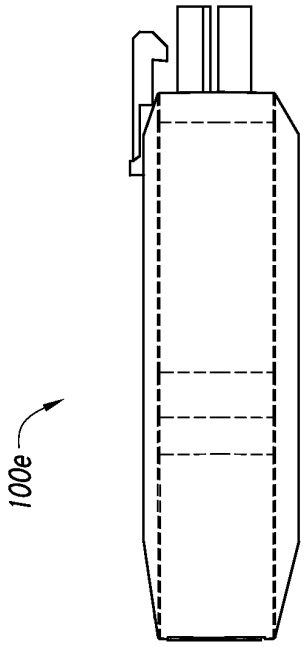


FIG. 50

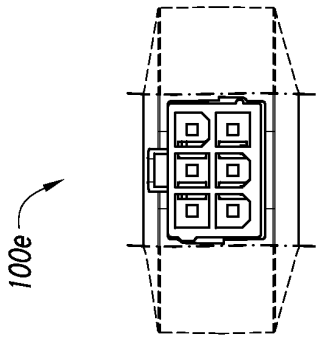


FIG. 51

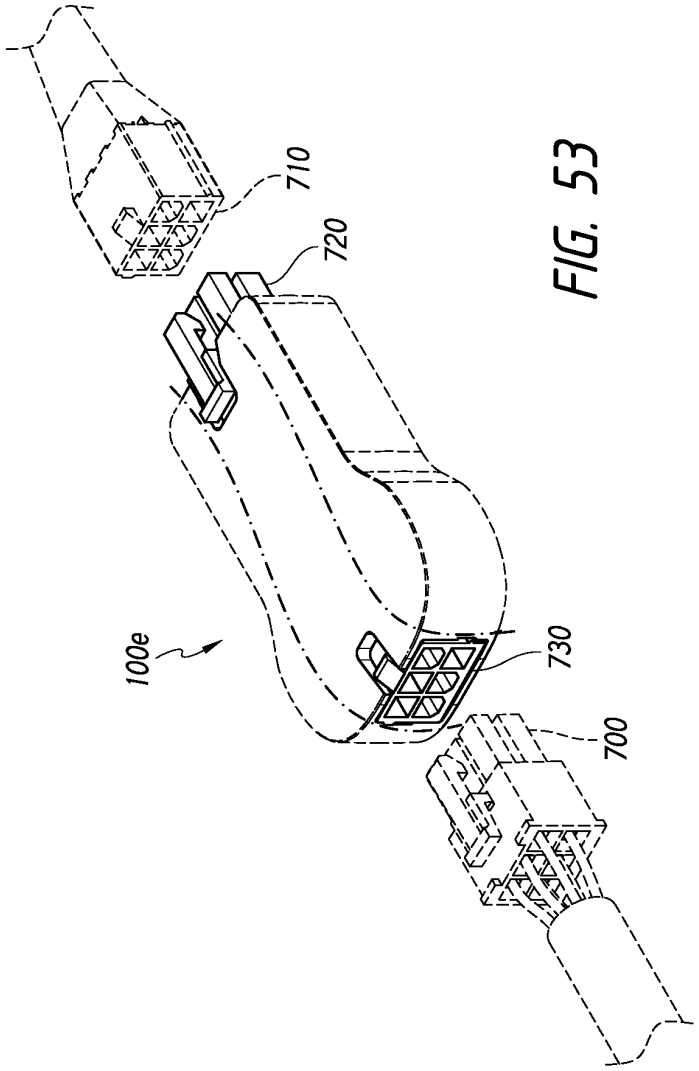


FIG. 53

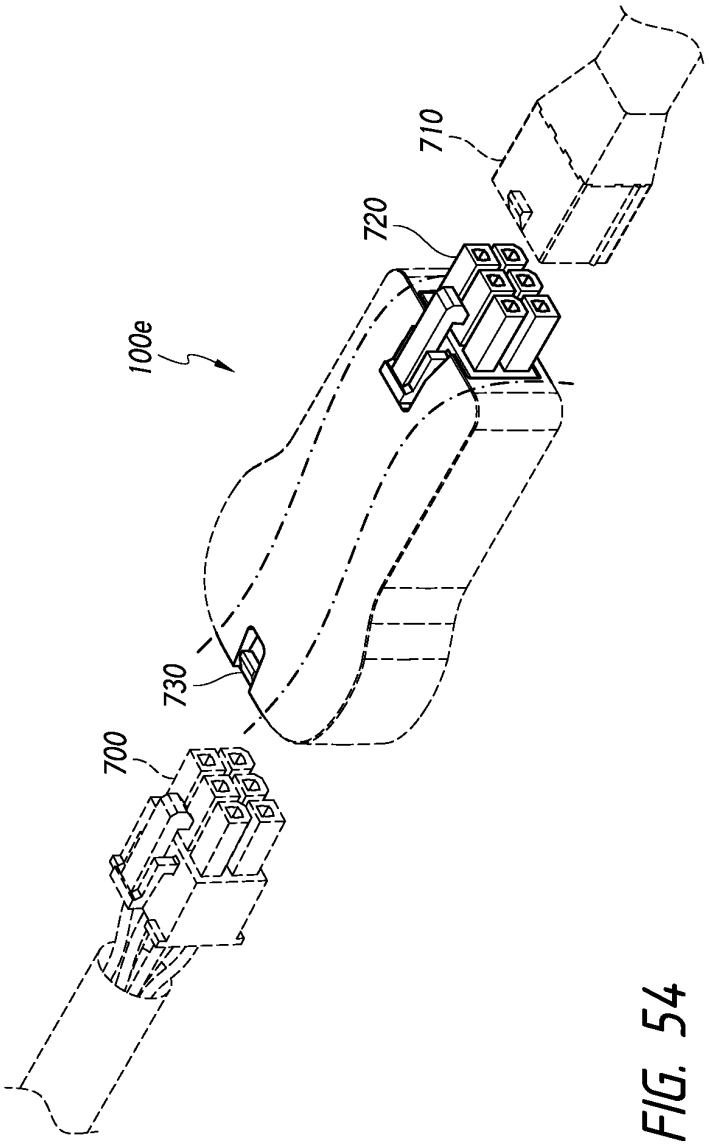


FIG. 54

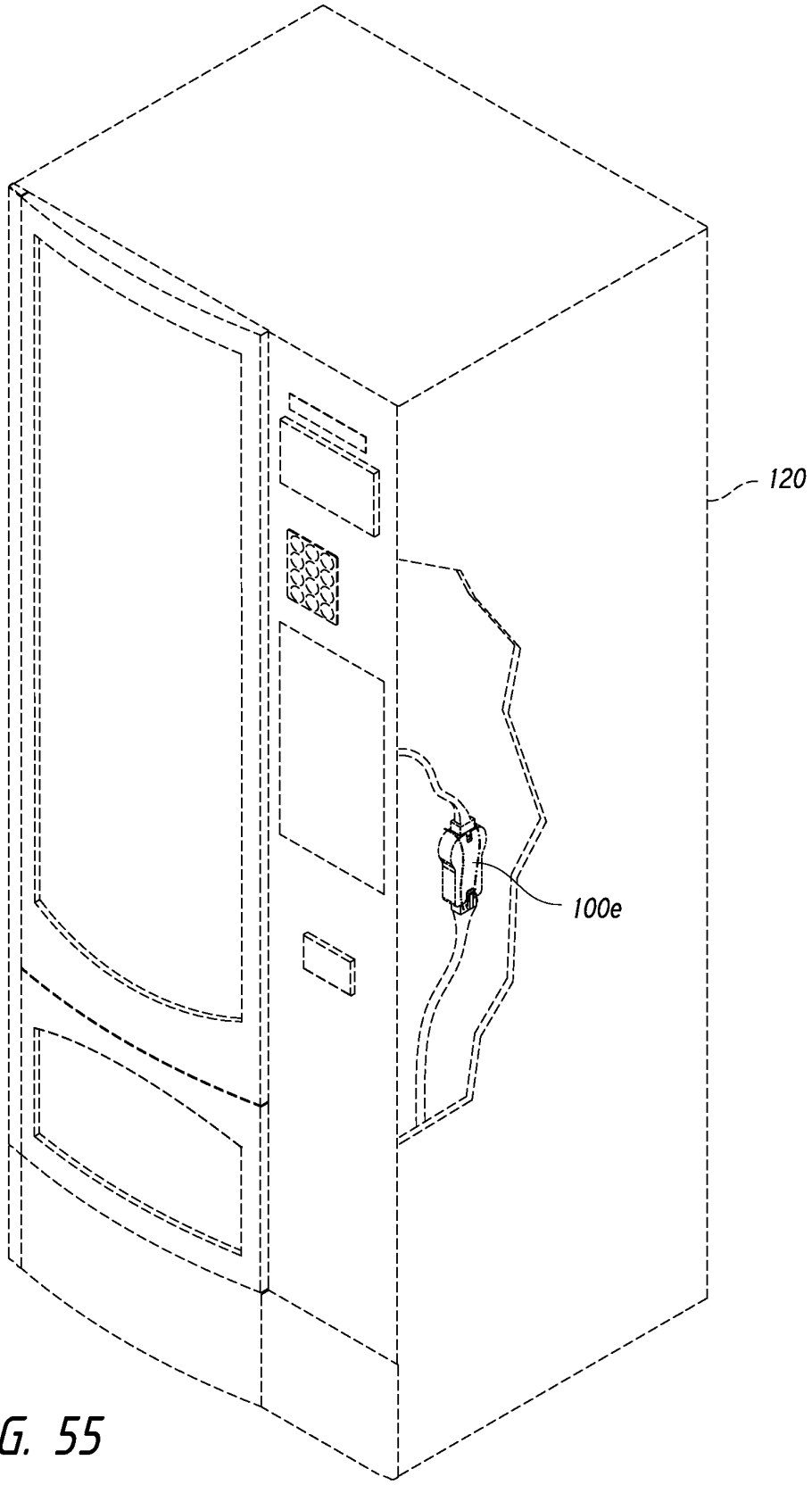


FIG. 55

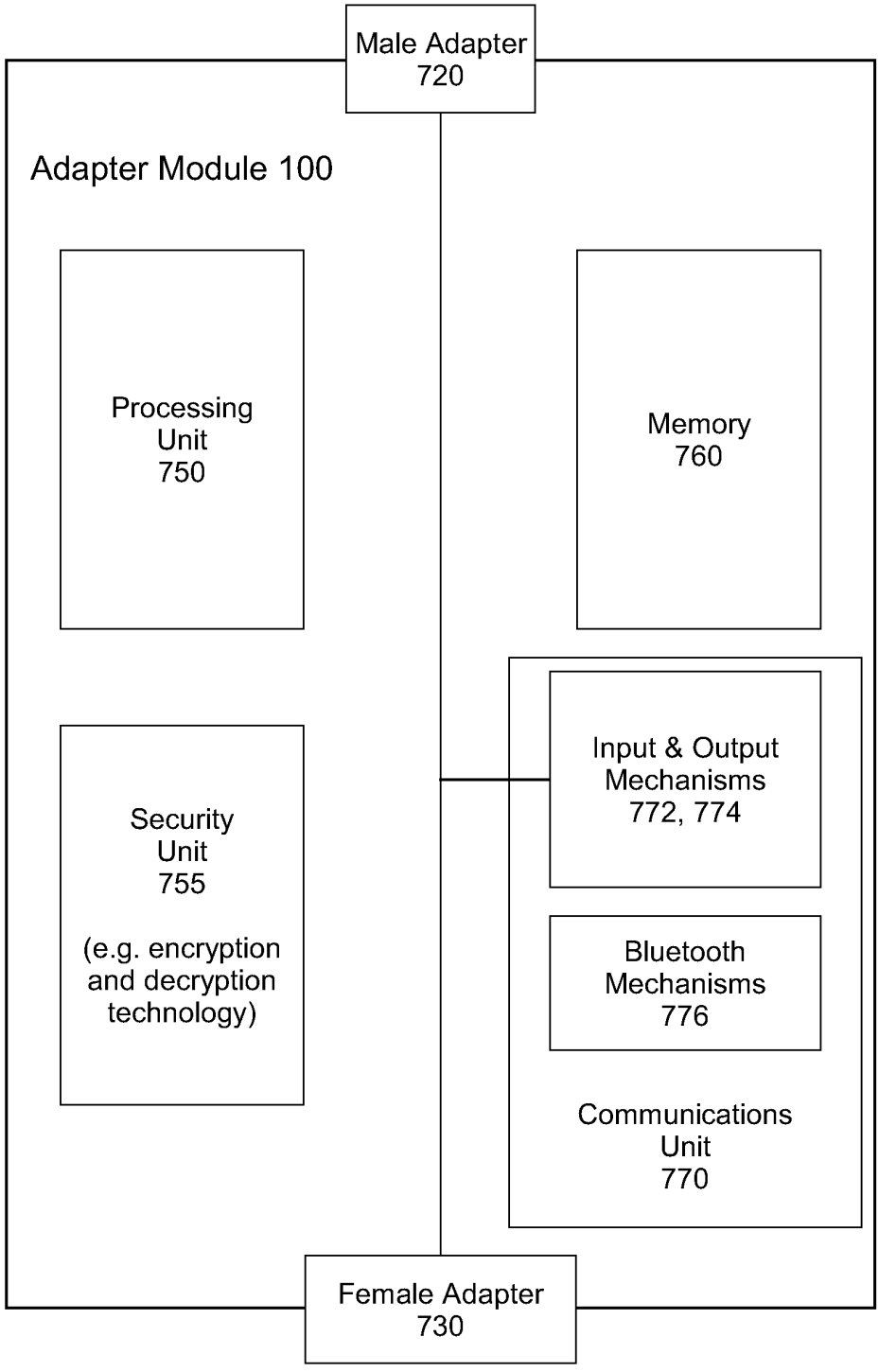

Male Adapter
720
Adapter Module 100
Processing
Unit
750
Memory
760
Input & Output
Mechanisms
772, 774
Security
Unit
755
(e.g. encryption
and decryption
technology)
Bluetooth
Mechanisms
776
Communications
Unit
770
Female Adapter
730

FIG. 56

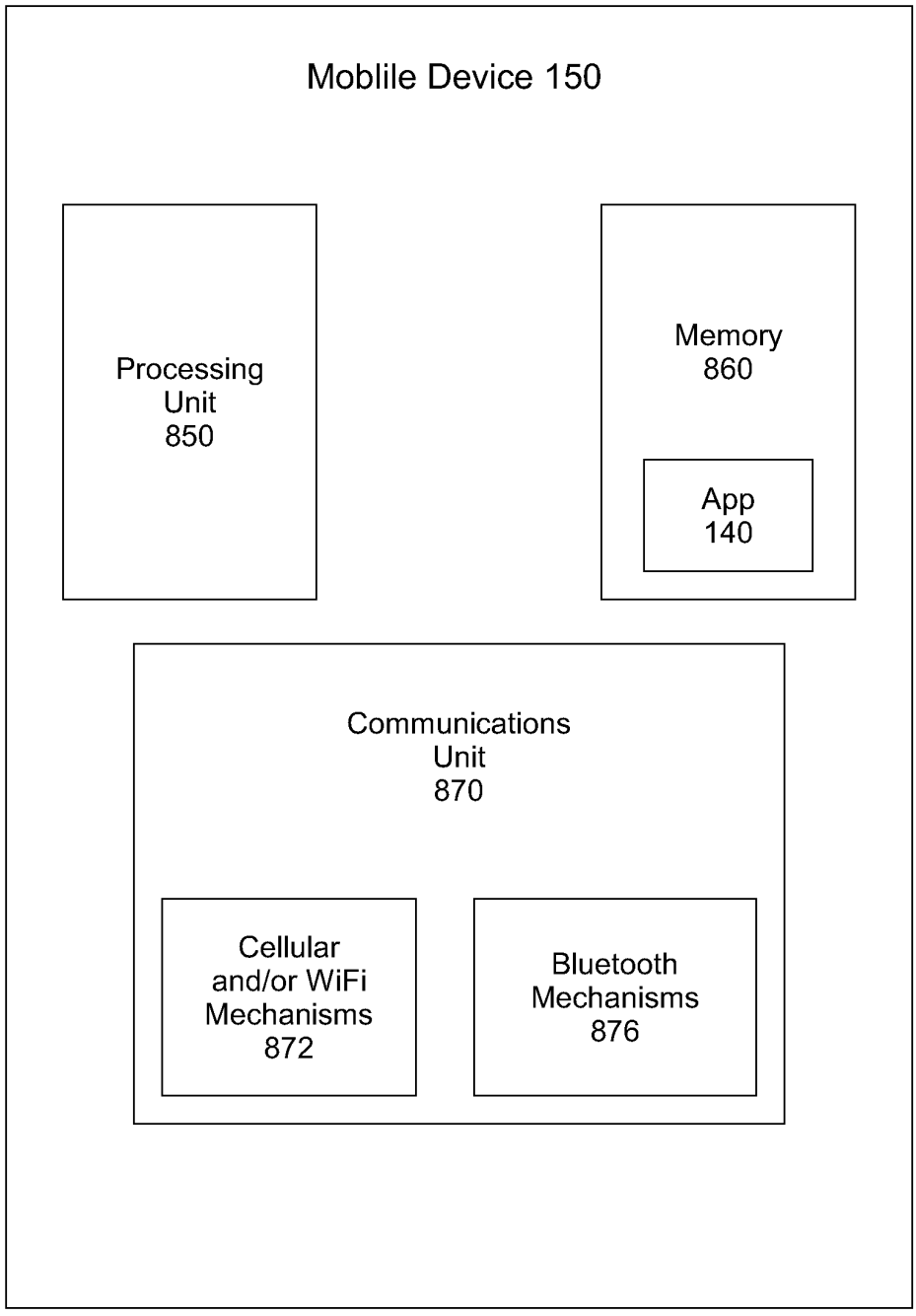

Moblile Device 150
Processing Unit 850
Memory 860
App 140
Communications Unit 870
Cellular and/or WiFi Mechanisms 872
Bluetooth Mechanisms 876

FIG. 57

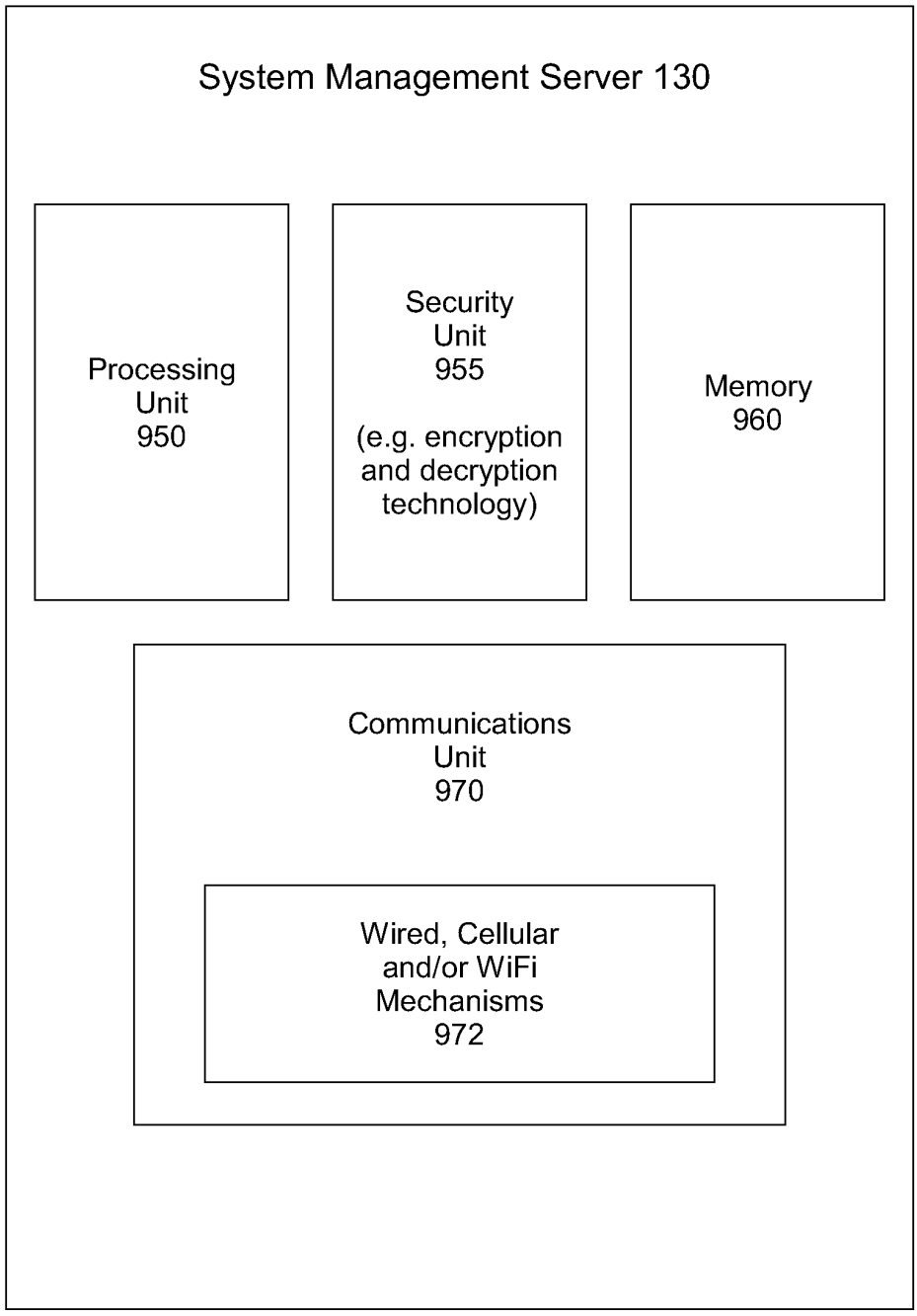

System Management Server 130
Processing Unit 950
Security Unit 955
(e.g. encryption and decryption technology)
Memory 960
Communications Unit 970
Wired, Cellular and/or WiFi Mechanisms 972

FIG. 58

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	Mobile-Device-to-Machine Payment Systems

As the below named inventor, I hereby declare that:

This declaration is directed to:

- [x] The attached application, or
- [ ] United States application or PCT international application number _____

filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I have reviewed and understand the contents of the above-identified application, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT International filing date of the continuation-in-part application.

I hereby acknowledge that any willful false statement made in the declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Paresh K. Patel Date (Optional) March 14, 2014

Signature: _____

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	Mobile-Device-to-Machine Payment Systems

As the below named inventor, I hereby declare that:

This declaration is directed to:

- [x] The attached application, or
- [ ] United States application or PCT international application number _____ filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I have reviewed and understand the contents of the above-identified application, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT International filing date of the continuation-in-part application.

I hereby acknowledge that any willful false statement made in the declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

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LEGAL NAME OF INVENTOR

Inventor: Chau M. Doan Date (Optional): March 14, 2014

Signature: Chau M Doan

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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PR:MDMP1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
PATENT APPLICATION EXAMINING OPERATIONS

Inventors:	Paresh K. Patel et al.	Group Art Unit:	
Application No.:		Examiner:	
Filed:	March 14, 2014	Docket No:	PR:MDMP1
Title:	Mobile-Device-to-Machine Payment Systems		

POWER OF ATTORNEY BY ASSIGNEE AND 373(c)

PayRange, Inc., a corporation of the State of Delaware, is the assignee of the entire right, title, and interest in and to the above-identified patent application by an assignment document filed herewith. The assignee hereby appoints the practitioners at Customer Number **26790** (including Karen Dana Oster (Reg. No. 37,621)) as its attorneys with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith; said appointment to be to the exclusion of the inventors and any attorney representing the inventors in accordance with the provisions of 37 C.F.R. §3.71.

Please direct all correspondence connected with this application to correspondence address associated with Customer Number **26790**.

Pursuant to 37 C.F.R. §3.73(c), documentary evidence (an executed assignment document from the inventors to Assignee) showing establishment of ownership by the assignee was submitted prior to the submission of this document or is being submitted substantially concurrently herewith (although by electronic filing or facsimile) for recordation pursuant to 37 CFR 3.11. A copy of the documentary evidence is attached.

The undersigned, whose title is supplied below, is authorized to sign this Power of Attorney on behalf of the Assignee.

Assignee: PayRange, Inc.

Date: March 14, 2014

By: Dr. Paresh K. Patel, Ph.D
Title: Founder and CEO
12815 NE Marx Street
Portland, OR 97230
855-856-6398

ASSIGNMENT OF PATENT APPLICATION

WHEREAS, I/we, Paresh K. Patel of Portland, Oregon, and Chau M. Doan of Beaverton, Oregon, have invented a Mobile-Device-To-Machine Payment Systems, hereinafter referred to as the "invention," for which on an even date herewith I/we executed the attached provisional patent application.

WHEREAS, PayRange Inc., a Delaware Corporation, herein referred to as "Assignee" whose mailing address is 12815 NE Marx Street, Portland, OR 97230 is desirous of acquiring the entire right, title, and interest in the same.

NOW, THEREFORE, in consideration of the sum of One Dollar ($1.00), the receipt of which is hereby acknowledged, and other good and valuable consideration, I/we, by these presents do hereby sell, assign, and transfer unto the Assignee (1) the full and exclusive right to the invention for the United States and all foreign countries, (2) the entire right, title, and interest in and to any and all Patents which may be granted therefore in the United States or any foreign country, and (3) any provisionals, nonprovisionals, divisions, continuations, continuations in part, improvements, reissues, or extensions that may be made or granted thereon in the United States or any foreign country.

FURTHER, I/we agree to execute further instruments proper for effectuating the premises.

FURTHER, I/we hereby authorize and request the Commissioner of Patent and Trademarks to issue the patent(s) to the Assignee of the entire right, title, and interest in and to the same, for Assignee's sole use and behoof; and for the use and behoof of Assignee's legal representatives, to the full end of the term for which the patent(s) may be granted, as fully and entirely as the same would have been held by me/us had this assignment and sale not been made.

FURTHER, I/we hereby acknowledge and affirm any recorded and/or nonrecorded assignment document(s) (consistent with the intentions of this assignment document) of any related applications including, but not limited to, applications from which this application claims priority directly or indirectly, provisional application(s), nonprovisional application(s), divisional application(s), continuation application(s), continuation-in-part application(s), foreign (or PCT) application(s), improvement(s), reissue(s), and/or extension(s). I/we specifically disaffirm any recorded and/or nonrecorded assignment document(s) inconsistent with the intentions of this assignment document should such a document exist.

I/we represent that I/we (1) have not previously sold, assigned, or transferred, (2) have not previously agreed to sell, assign, or transfer, and (3) are under no obligation to sell, assign, or transfer any of the rights in the Invention (including those set forth above) to any party other than Assignee.

Dated: March 14, 2014

Paresh K. Patel

Dated: March 14, 2014

Chau M. Doan

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Page 124 of 545

ACKNOWLEDGMENT

State of Oregon)
) SS:
County of Multnomah)

Before me personally appeared said Paresh K. Patel and acknowledged the foregoing instrument to be his free act and deed this 14th day of March, 2014.

[SEAL]

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LISA R HUDDLESTON
NOTARY PUBLIC-OREGON
COMMISSION NO. 454924
MY COMMISSION EXPIRES JANUARY 07, 2015

Lisa R Huddleston
Notary Public for State of Oregon
My Commission Expires: January 7, 2015

ACKNOWLEDGMENT

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County of Multnomah)

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My Commission Expires: January 7, 2015

Substitute Form PTO-1449 (Modified)	U.S. Department of Commerce Patent and Trademark Office	Attorney Docket No. PR:MDMP1	Application No.
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		Filing Date March 14, 2014	Group Art Unit

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
		5844808	12/01/1998	Konsmo, et al.			
		6462644	10/08/2002	Howell, et al.			
		6584309	06/24/2003	Whigham			
		7085556	08/01/2006	Offer			
		7127236	10/24/2006	Khan, et al.			
		7721958	05/25/2010	Belfer, et al.			
		7848980	12/07/2010	Carlson			
		8396589	03/12/2013	Katzenstein Garibaldi, et al.			
		8489140	07/16/2013	Weiner, et al.			
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		2013/0267121	10/10/2013	Hsu			

Examiner Signature	Date Considered
EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

Substitute Disclosure Form (PTO-1449)

Substitute Form PTO-1449 (Modified)	U.S. Department of Commerce Patent and Trademark Office	Attorney Docket No. PR:MDMP1	Application No.
Information Disclosure Statement by Applicant (Use several sheets if necessary) (37 CFR §1.98(b))		Applicant PayRange	
		Filing Date March 14, 2014	Group Art Unit

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		WO2008/083022	07/10/2008	PCT				
		WO2008/083025	07/10/2008	PCT				
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		WO2008/083105	07/10/2008	PCT				
		WO2008/083115	07/10/2008	PCT				
		WO2008/083119	07/10/2008	PCT				

Other Documents (include Author, Title, Date, and Place of Publication)		
Examiner Initial	Desig. ID	Document
		Bing, Bing Images Search: "dongle," December 5, 2013, http://www.bing.com/images/search?q=dongle&FORM=HDRSC2, 8 pages.
		Google, Chromecast, http://www.google.com/intl/en/chrome/devices/chromecast/, December 12, 2013, 4 pages.
		Provisional patent application 60/871,898, VALUE BASED OFFERS, inventor Mark Carlson, filed December 26, 2006, US Patent and Trademark Office, 169 pages.

Examiner Signature	Date Considered
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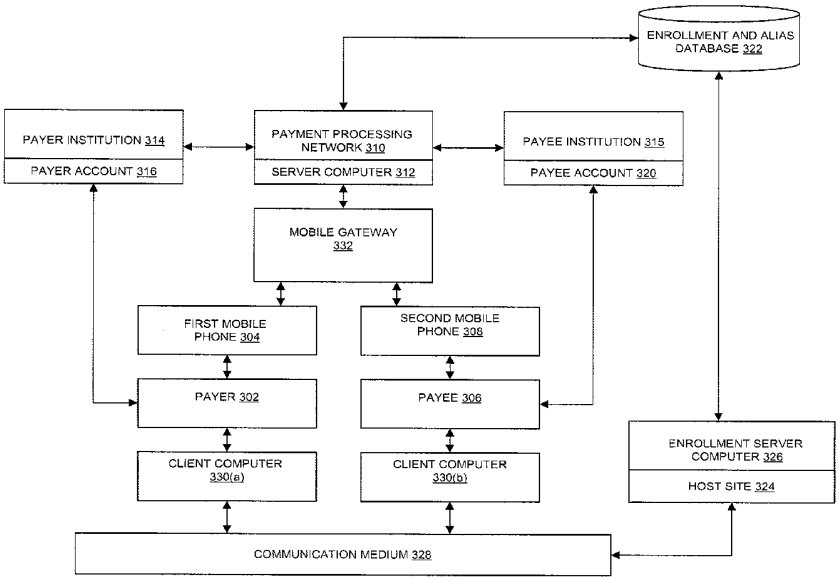
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[Continued on next page]

(54) **Title:** MOBILE PAYMENT SYSTEM AND METHOD USING ALIAS



(57) **Abstract:** Methods and systems are disclosed for allowing financial transactions to be conducted using mobile phones. A payer initiates a transaction by sending a payment request message from a mobile phone which specifies the payee and amount to be paid. Payees are identified by unique aliases, which are maintained in a database. Methods for assembling the enrollment and alias database are included.

WO 2008/083022 A1

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

MOBILE PAYMENT SYSTEM AND METHOD USING ALIAS

CROSS-REFERENCES TO RELATED APPLICATIONS

[0001] This patent application is a non-provisional of and claims priority to U.S. provisional patent application no. 60/871,898, filed on December 26, 2006, which is herein incorporated by reference in its entirety for all purposes.

BACKGROUND

[0002] The use of mobile phones to conduct financial transactions is growing in popularity. Various means of using mobile phones to conduct financial transactions have been tried. The most common involves sending a payment to a payee using the payee's cellular phone number as an identifier. This approach gives rise certain difficulties, however. First, the payee must have a cellular phone which is capable of receiving the payments. Second, the payer must know the payee's phone number. As cellular phone numbers tend to change frequently, a payer must make certain that the phone number being used is current. Otherwise, the payer runs the risk of sending a payment to an unintended third party, who has been assigned the intended payee's old phone number. Further, in some cases, the payee and payee may not wish to reveal personal information such as their cellular phone numbers to each other. Accordingly, there is a need for a new method of conducting financial transactions using phones.

[0003] Embodiments of the invention address these and other problems.

BRIEF SUMMARY

[0004] Embodiments of the invention are directed to methods and systems for allowing payments to be made using mobile phones.

[0005] One embodiment of the invention is directed to a method. The method comprises receiving a payment request message from a mobile phone operated by a payer, wherein the payment request message includes a request to pay a payee a predetermined amount of money, and wherein the payment request message

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comprises a personal alias uniquely associated with the payee and a transaction amount. The payment request message is analyzed to determine if the payer is authorized to pay the payee. A payment notification message is sent to the payee indicating that a payment from the payer to the payee has been made.

[0006] Another embodiment of the invention is directed to a method. The method comprises receiving a payment request message from a payer, the payment request message comprising an amount of money to be paid to a payee and an alias associated with the payee, where the payment request message is sent by the payer via a mobile phone operated by the payer. An authentication request message is sent to the mobile phone in response to the message. An authentication token is received from the payer in response to sending the authentication request message. The authentication token is sent by the payer using the mobile phone, and the authentication token that is associated with the payer is verified. If the authentication token is verified as being associated with the payer, a payment for the amount of money to the payee using the alias is initiated.

[0007] Another embodiment of the invention is directed to a method. The method comprises receiving a registration request from a payee to create an alias uniquely associated with that payee, where the request specifies the alias requested. The payee operates a mobile phone and can receive or make payments using the alias and mobile phone. The alias is compared with other previously registered aliases associated with other payees. If the requested alias has not already been associated with another payee, the alias associated with the payee is registered.

[0008] Other embodiments of the invention are directed to systems, computer readable media, and devices adapted to implement the above methods.

[0009] These and other embodiments of the invention are described in further detail below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] FIG. 1 shows a block diagram of a system according to an embodiment of invention.

[0011] FIG. 2 shows a block diagram of components in a computer.

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[0012] FIG. 3 shows a block diagram of components in a mobile phone.

[0013] FIG. 4 shows a flowchart illustrating an alias registration process.

[0014] FIG. 5 shows information that can be provided when registering aliases.

[0015] FIG. 6 shows a flowchart illustrating a payment method according to an embodiment of the invention.

DETAILED DESCRIPTION

[0016] Embodiments of the invention are directed to making person-to-person (P2P) and/or person-to-business (P2B) payments, using mobile phones. In embodiments of the invention, a payer may send a payment request message to a payment processing network. The payment request message identifies the desired payee using an alias, which is uniquely associated with the payee. The payment processing network may then determine who the payee is using an enrollment and alias database, and may forward the payment request message to a payer institution. The payer institution may be a payer bank and the payer may have a payer account associated with it. The payer institution may thereafter analyze the payment request message and may authorize or not authorize the transaction depending on whether the payer has sufficient credit and/or funds in the payer's account. If the payment request is approved by the payer institution, the payer institution may thereafter transfer funds from the payer's account at the payer institution to a payee account at a payee institution.

[0017] The payment request message may be sent from the payer's mobile phone in any suitable manner. In one example, a payer may send the payment request message to the payment processing network via a Web page accessed by the phone. In another example, the payer may send the payment request message to the payment processing network using an SMS message (i.e., a text message). In yet another example, the payer may send the payment request message to the payment processing network using a software application on the phone.

[0018] The payment transactions according to embodiments of the invention may take place in any suitable context. For example, suitable payment transactions

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may involve purchases of goods and services from merchants or individuals in a person to business or person to person context. However, in some embodiments of the invention, a payer may make payments and the payments can be made without any return consideration (e.g., a good or service purchased). For example, a payment may be a gift to the payee or repayment of a debt to the payee where the payer does not receive immediate consideration for the payment.

[0019] I. Systems

[0020] FIG. 1 shows a system that can be used in an embodiment of the invention. Embodiments of the invention may use some or all of the components shown in FIG. 1.

[0021] The illustrated system includes a payer **302** and a first mobile phone **304** associated with the payer **302**. The payer **302** has a payer account **316** at a payer institution **314**. Similarly, the system includes a payee **306** and a second mobile phone **308** associated with the payee **306**. The payee **306** has a payee account **320** at a payee institution **315**.

[0022] In this example, the payer institution **314** and payee institution **315** are shown as separate entities. The payer **302** and payee **306** could use the same financial institution in other embodiments of the invention.

[0023] The payer institution **314** and payee institution **315** are typically banks that manage financial accounts for individuals or businesses. However, they could also be business entities such as retail stores.

[0024] The payer **302** and payee **306** may be individuals, or organizations such as businesses that are capable of entering into financial transactions (e.g., payment transactions).

[0025] The payment processing network **310** may include data processing subsystems, networks, and operations used to support and deliver authorization services, exception file services, and clearing and settlement services. An exemplary payment processing network may include VisaNet™. Payment processing networks such as VisaNet™ are able to process credit card transactions, debit card transactions, and other types of financial transactions. VisaNet™, in

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particular, includes a VIP system (Visa Integrated Payments system) which processes authorization requests and a Base II system which performs clearing and settlement services.

[0026] The payment processing network **310** may include a payment server computer **312**. A "server computer" is typically a powerful computer or cluster of computers. For example, a server computer can be a large mainframe, a minicomputer cluster, or a group of servers functioning as a unit. In one example, a server computer may be a database server coupled to a Web server. The server computer **312** may form part of any suitable wired or wireless network, including the Internet.

[0027] A mobile gateway **332** may be operatively coupled to the payment processing network **310** and may allow the first and second mobile phones **304**, **306** to communicate with the payment processing network **310**. The mobile gateway **332** may be embodied by any suitable combination of hardware and/or software known to those of ordinary skill in the art.

[0028] The system may also comprise a payer client computer **330(a)** as well as a payee client computer **330(b)**. They can be in communication with an enrollment server computer **326** operating a host site **324** (e.g., a Web site), via a communication medium **328**. The communication medium **328** may comprise any suitable combination of wired and/or wireless networks including the Internet. The enrollment server computer **326** may store aliases in an enrollment and alias database **322**. The payment processing network **310** can subsequently identify the payee **302** and payer **306** using the information stored in the enrollment and alias database **322**. In other embodiments, there can be a separate enrollment database and a separate alias database.

[0029] FIG. 2 shows typical components or subsystems of a computer apparatus. Such components or any subset of such components may be present in various components shown in FIG. 1, including the payment server computer **312**, the enrollment server computer **326**, the client computers **330(a), 330(b)**, etc. The subsystems shown in FIG. 2 are interconnected via a system bus **775**. Additional subsystems such as a printer **774**, keyboard **778**, fixed disk **779**, monitor **776**, which is coupled to display adapter **782**, and others are shown. Peripherals and

input/output (I/O) devices, which couple to I/O controller **771**, can be connected to the computer system by any number of means known in the art, such as serial port **777**. For example, serial port **777** or external interface **781** can be used to connect the computer apparatus to a wide area network such as the Internet, a mouse input device, or a scanner. The interconnection via system bus **775** allows the central processor **773** to communicate with each subsystem and to control the execution of instructions from system memory **772** or the fixed disk **779**, as well as the exchange of information between subsystems. The system memory **772** and/or the fixed disk **779** may embody a computer readable medium.

[0030] FIG. 3 shows a block diagram of some components of the first mobile phone **304**. Some or all of the components in the first mobile phone **304** may also be present in the second mobile phone **308** (illustrated in FIG. 1).

[0031] The phone **304** may comprise a computer readable medium **304(b)** and a body **304(h)** as shown in FIG. 3. The computer readable medium **304(b)** may be present within body **304(h)**, or may be detachable from it. The body **304(h)** may be in the form a plastic substrate, housing, or other structure. The computer readable medium **304(b)** may be a memory that stores data and may be in any suitable form including a magnetic stripe, a memory chip, etc.

[0032] The computer readable medium **304(b)** may comprise code for performing any of the functions described herein. For example, it may comprise code for sending a payment request message using a mobile phone to a payment processing network, where the payment request message comprises an amount of money to be paid and an alias, where the alias is associated with a payee; code for receiving in response to the payment request message an authentication request message, where the authentication request message is received via the mobile phone; and code for sending an authentication token in response to the authentication request message.

[0033] The phone **304** may further include a contactless element **304(g)**, which is typically implemented in the form of a semiconductor chip (or other data storage element) with an associated wireless transfer (e.g., data transmission) element, such as an antenna. Contactless element **304(g)** is associated with (e.g., embedded within) portable consumer device **304** and data or control instructions

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transmitted via a cellular network may be applied to contactless element **304(g)** by means of a contactless element interface (not shown). The contactless element interface functions to permit the exchange of data and/or control instructions between the mobile device circuitry (and hence the cellular network) and an optional contactless element **304(g)**.

[0034] Contactless element **304(g)** is capable of transferring and receiving data using a near field communications ("NFC") capability (or near field communications medium) typically in accordance with a standardized protocol or data transfer mechanism (e.g., ISO 14443/NFC). Near field communications capability is a short-range communications capability, such as RFID, Bluetooth™, infra-red, or other data transfer capability that can be used to exchange data between the phone **304** and a payment processing network **26** or it can be used to exchange data between the phone **304** and an access device (e.g., a POS terminal). Thus, the phone **304** is capable of communicating and transferring data and/or control instructions via both cellular network and near field communications capability.

[0035] The phone **304** may also include a processor **304(c)** (e.g., a microprocessor) for processing the functions of the phone **304** and a display **304(d)** to allow a payee to see phone numbers and other information and messages. The phone **304** may further include input elements **304(e)** to allow a payee to input information into the device, a speaker **304(f)** to allow the payee to hear voice communication, music, etc., and a microphone **304(i)** to allow the payee to transmit her voice through the phone **304**. The phone **304** may also include an antenna **304(a)** for wireless data transfer (e.g., data transmission).

[0036] II. Enrollment methods

[0037] In embodiments of the invention, payers and payees may first enroll in the system. The payee and the payer may enroll in any suitable manner. For example, referring to FIG. 1, the payee and the payer may enroll in the system via the host site **324** using the client computers **330(a)**, **330(b)**. Enrollment information such as name, account number, etc. may be stored by the server computer **326** in the enrollment and alias database **322**. This information can be used in subsequent

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payment processes to identify the payer **302** or the payee **306**.

[0038] In some cases, a financial institution such as the payee institution **315** or the payer institution **314** may "push" pre-enrollment data to the enrollment and alias database **322**. The payer institution **314**, for example, may validate the payer **302** ahead of time. The payer institution **314** may do this ahead of time, because it knows the payer **302** and the payer's credit history and account balance information. After the payer **302** is enrolled in the system, the payer **302** may set up an appropriate alias to use the system. The same may be true for the payee **306**. Thus, in some embodiments, the payer **302** need not do anything to enroll and need only set up her payment alias.

[0039] In embodiments of the invention, a number of aliases may be used. Aliases may include payment processing organization aliases for the payment processing organization that operates the payment processing network, a payee alias associated with the payee and the payee's phone, and a payer alias associated with the payer and the payer's phone. Examples of payer and payee aliases include "worldtraveler" and "beachbum." An example of a service alias may be "myvisa" for a payment processing organization such as Visa.

[0040] Other aliases that can be registered include portable consumer device aliases (payment card aliases). For example, the payer **302** may have first and second credit cards and they may have the aliases CC1 and CC2. Such portable consumer device aliases may or may not be uniquely associated with their holders.

[0041] Referring to FIGS. 1 and 4, in the first step **202**, a payee **306** requests assignment of an alias. In preferred embodiments, the payee **306** may specify a particular alias. However, in other embodiments, a payment processing organization may assign an alias to the payee **306**. To register an alias, the payee **306** may use the client computer **330(b)** to contact the host site **324** on the server computer **326**. The host site **324** may comprise a wizard or other mechanism to allow the payer **302** and the payee **306** to enter information.

[0042] In the next step **204**, the server computer **326** checks the enrollment and alias database **322** to see if the requested alias is already being used by another payee or payer. If the requested alias already exists, then the payee **306** may be asked to provide another alias (step **212**). Alternatively or additionally, the alias

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registration request may reject the proposed alias if it is offensive or is a third party trademark or servicemark.

[0043] If the alias has not been previously registered, then the server computer **326** may register the requested alias for the payee **208**. This information may be stored in the enrollment and alias database **322**. Once the alias has been registered for the payee **306**, the payment processing organization may begin allowing the payee to receive payments made using the alias (step **210**).

[0044] This method and other related embodiments of the invention allow for efficient cross-institution payments to be made, by uniquely identifying an individual, business, etc., via an alias. The aliases may be associated with many accounts or services operated by an individual or entity, if desired. In some embodiments, these various aliases can be registered for a fee, and consumers may be charged a registration and renewal fee for using certain aliases. Other embodiments may provide the enrollment and alias database as a free service, or charge only certain classes of entities (e.g. charge only payees, or for-profit corporations).

[0045] III. Payment Methods

[0046] FIG. 6 shows a flowchart illustrating a payment method according to an embodiment of the invention. In the first step **102** the payer **302** decides to pay the payee **306** using the first mobile phone **304**.

[0047] A payer **302** then uses the first mobile phone **304** and sends a payment request message to the payment processing network **310** and the payment processing network **310** receives the payment request message (step **104**). The payment request message comprises at least a payment amount and a payee alias. The payment request message may also comprise other information, such as an alias or number identifying a specific financial account from which payment is to be made, or a time in the future at which payment is to be initiated.

[0048] As noted above, the payment request message may take a variety of different forms. For example, the payment request message could be in the form of an SMS message. The request could also come in the form of an email, or a voice interaction with an IVR unit. The request could also be made via a software

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application on the phone, which sends one or more network packets containing the request data.

[0049] In the next step **106**, using the enrollment and alias database **322**, the server computer **312** in the payment processing network **310** analyzes the payment request message and uses the payee alias in the payment request message to identify the payee **306**, and also the payer institution **314** and the payer account **316**.

[0050] To provide security to the system, an optional authentication request message is sent from the payment processing network to the first mobile phone **304** operated by the payer **108**. The authentication request message may be initiated by the payer institution **314** or by a payment processing organization affiliated with the payment processing network **310**. It may request entry of a password, or personal information such as an address or social security number to verify the identity of the payer **108**. The authentication request message may take a variety of forms, as described for the payment request message **104** above. In preferred embodiments, the authentication request message will be sent to the payer's mobile phone **304**. It could also be sent to the payer's client computer **330(a)**.

[0051] In the next step **110**, the payer **302** provides an authentication token to the payment processing network **310**. For example, the payer **302** may enter a PIN (personal identification number) into the first mobile phone **304** and may then send the authentication token back to the payment processing network **310**, and the payment processing network **310** may or may not forward it to the payer institution **314**. Other examples of authentication tokens include passwords, birthdates, and other personal information associated with the payer **302**.

[0052] The payment processing network **310** (or the payer institution **314**) then verifies the authentication token **112**. If the authentication token is invalid, the payment request in the payment request message may be rejected. Alternatively, the payment processing network **310** may re-verify the authentication token (step **120**) by sending another authentication request message to the payer **302** via the first mobile phone **304**.

[0053] If the payer **302** and/or the first mobile phone **304** are authenticated, the payment processing network **310** may send the payment request message to the payer institution **314** for approval. The payment request message may be re-formed

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to remove various aliases and may include real information, if desired. The payer institution **314** may then approve of the payment request if there are sufficient funds and/or credit in the payer account **316** or disapprove it if there are insufficient funds or credit. If the payment request is approved, at some point in time (e.g., immediately or at the end of the day if clearing and settling need to take place), actual funds may be transferred from the payer account **316** to the payee account **320** via the payment processing network **310**.

[0054] Once the funds have been transferred from the payer account **316** to the payee account **320**, a payment notification message may sent to the mobile phone **308** and/or the client computer **330(b)** operated by the payee **118** after the payment request in the payment request message has been approved by the payer institution **314**.

[0055] In a specific example, a payer **302** such as Jane and a payee **306** such as John register on the host site **324** run on a remote server computer **326** using their client computers **330(a)**, **330(b)**.

[0056] As shown in FIG. 5, Jane registers personal information **502** including her name, mobile telephone number, first credit card account number, second credit card account number, and a personal alias. John may similarly register his personal information **504**. In this example, Jane creates the personal alias "worldtraveler," while John creates the personal alias "beachbum."

[0057] After registering, a payment processing organization may provide both John and Jane with a phone number for the service that will facilitate further payment processing. In other embodiments, the payment processing organization may provide John and Jane with a service alias instead of or in addition to the service phone number. For example, instead of providing John and Jane with the service phone number 555-555-5555, the payment processing organization may provide the service alias "myvisa" to John and Jane. The service alias may be referred to as a "short-code" in some cases, and may include a string of characters of variable length.

[0058] In an exemplary transaction, Jane may be a payer **302** and wants to pay $15.00 to a payee **306** named John. Payee Jane **302** initiates a payment to John by entering the payment request message "myvisa pay beachbum $15.00" into

her phone **304**, and sending the message via SMS to the server computer **312** in the payment processing network **310** via the mobile gateway **332**. The alias "beachbum" is used instead of John's phone number. The service alias "myvisa" is used instead of the phone number of the service.

[0059] Jane may also use a portable consumer device alias such as "CC2" to indicate the particular credit card that Jane wants to use to pay John. For example, payee Jane **302** may enter the payment request message "myvisa pay beachbum $15.00 CC2" into her phone **304** to indicate that her second credit card is to be used to make the intended payment. Jane may alternatively or additionally designate a default credit card account number.

[0060] After entering the payment request message "myvisa pay beachbum $15.00 CC2" into her mobile phone **304**, the payment request message is sent from her phone **304** to the payment processing network **310** (e.g., as described above), and then (in this example) to an issuer of the credit card (or other portable consumer device). In this example, the issuer of the credit card may be the payer institution **314**.

[0061] The payment processing network **310** may receive the payment request message and may then optionally respond by sending an an authentication request message to the payer **302**. In this example, an authentication request message is sent in the form of a call from an interactive voice response unit (IVR) at a telecom server or the like, which asks payer Jane **302** to enter her mobile PIN (personal identification number) **510**. After payer Jane **302** enters the correct PIN into her phone **304**, the payer institution **314** and/or the server computer **312** in the payment processing network **310** can then analyze the payment request message and can approve or decline the payment request. If the payment request is approved, appropriate funds may be transferred to the payee account **320** at the payee institution **315**. For example, payee John's portable consumer device account (e.g., credit card account) at John's bank (e.g., the payee institution **315**) can be credited with the payment amount. Payer Jane's account **316** can be subsequently debited for the payment amount.

[0062] In some embodiments, a payment notification message in the form of an SMS, e-mail, or some other type of message may be sent to the payee's mobile

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phone **308**, informing the payee John **306** that a payment from the payee John **302** has been made. In preferred embodiments, the payment notification message may be sent to payee John's mobile phone **308**, but it could be sent to the client computer **330(b)** operated by the payee John **306**.

[0063] Embodiments of the invention have a number of advantages. First, the use of an alias allows for a transaction to be completed while keeping the personal information of the transacting parties confidential. This is useful because, for example, a payer may not want to disclose his or her phone number to a payee, or vice versa. Second, the alias allows for payments to be made even if a payee's telephone number or financial account changes. A payer may thus store a list of aliases for payees with whom the payer frequently does business, and may initiate repeated payments without having to verify that the payee's telephone number is the same. Third, aliases tend to be much easier to remember than either phone numbers or financial account numbers. Consequently, embodiments of the invention will be easier to use than other methods. Fourth, embodiments of the invention allow for many accounts to be accessed from a single mobile phone, eliminating the need to carry a large number of portable consumer devices.

[0064] Any of the above-described methods or steps of such methods may be embodied as software code to be executed by a processor of the server computer or any other suitable combination of devices using any suitable computer language such as, for example, Java, C++ or Perl using, for example, conventional or object-oriented techniques. The software code may be stored as a series of instructions or commands on a computer readable medium, such as a random access memory (RAM), a read only memory (ROM), a magnetic medium such as a hard-drive or a floppy disk, or an optical medium such as a CD-ROM.

[0065] It should be understood that the present invention can be implemented in the form of control logic, in a modular or integrated manner, using software, hardware or a combination of both. Based on the disclosure and teachings provided herein, a person of ordinary skill in the art will appreciate other ways and/or methods to implement the present invention.

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[0066] Any of the above-described embodiments and/or any features thereof may be combined with any other embodiment(s) and/or feature(s) without departing from the scope of the invention.

[0067] The above description is illustrative and is not restrictive. Many variations of the invention will become apparent to those skilled in the art upon review of the disclosure. The scope of the invention should, therefore, be determined not with reference to the above description, but instead should be determined with reference to the pending claims along with their full scope or equivalents.

[0068] A recitation of "a", "an" or "the" is intended to mean "one or more" unless specifically indicated to the contrary.

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WHAT IS CLAIMED IS:

1. A method comprising:

receiving a payment request message from a mobile phone operated by a payer, wherein the payment request message includes a request to pay a payee a predetermined amount of money, and wherein the payment request message comprises a personal alias associated with the payee and a transaction amount;

analyzing the payment request message to determine if the payer is authorized to pay the payee; and

sending a payment notification message to the payee indicating that a payment from the payer to the payee has been made.

2. The method of claim 1, further comprising:

sending an authentication request message to the payer, wherein the authentication request message includes a message asking the payer to enter a PIN; and

receiving the PIN.

3. A computer readable medium comprising code for performing the method of claim 1.

4. A server computer comprising the computer readable medium of claim 3.

5. A system comprising the server computer of claim 4 and the mobile phone.

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6. A method comprising :

receiving a payment request message from a payer, the payment request message comprising an amount of money to be paid to a payee and an alias associated with the payee, where the payment request message is sent by the payer via a mobile phone operated by the payer;

sending an authentication request message to the mobile phone in response to the payment request message, where the authentication request message is sent to the mobile phone;

receiving an authentication token from the payer in response to sending the authentication request message, where the authentication token is sent by the payer using the mobile phone;

verifying that the authentication token is associated with the payer; and

if the authentication token is verified as being associated with the payer, then initiating a payment for the amount of money to the payee using the alias.

7 . The method according to claim 6, wherein the mobile phone is a first mobile phone, and wherein the method further comprises:

sending an electronic notification of the payment to a second phone mobile operated by the payee.

8. The method according to claim 6, where the payment request message is in the form of a text message.

9. The method according to claim 6, where the payment request message is in the form of an email.

10. The method according to claim 6, where the payment request message comprise a payment card alias.

11. The method according to claim 6, where the authentication request message comprises a telephone call made by an electronic interactive voice response unit.

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12. The method of claim 6, where the authentication token comprises a password.

13. The method of claim 6, where the authentication token comprises a piece of personal information associated with the payee.

14. A method comprising:

receiving a registration request from a payee to create an alias uniquely associated with that payee, where the request specifies the alias requested, and wherein the payee operates a mobile phone and can receive or make payments using the alias and mobile phone;

comparing the alias with other previously registered aliases associated with other payees; and

if the requested alias has not already been associated with another payee, registering the alias with the payee.

15. A server computer configured to perform the method of claim 14.

16. A method comprising:

sending a payment request message using a mobile phone to a payment processing network, where the payment request message comprises an amount of money to be paid and an alias, where the alias is associated with a payee;

receiving in response to the payment request message an authentication request message, where the authentication request message is received via the mobile phone; and

sending an authentication token in response to the authentication request message.

17 The method according to claim 16, where the payment request message is in the form of a text message.

18. The method according to claim 16, where the payment request message is in the form of an email.

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19. The method according to claim 16, where the payment request message comprises a payment card alias.

20. The method according to claim 16, where the authentication request message comprises a telephone call made by an electronic interactive voice response unit.

21. The method of claim 16, where the authentication token comprises a password.

22. The method of claim 16, where the authentication token comprises a piece of personal information associated with the consumer.

23. A computer readable medium comprising code for performing the method of claim 16.

24. A phone comprising the computer readable medium of claim 23.

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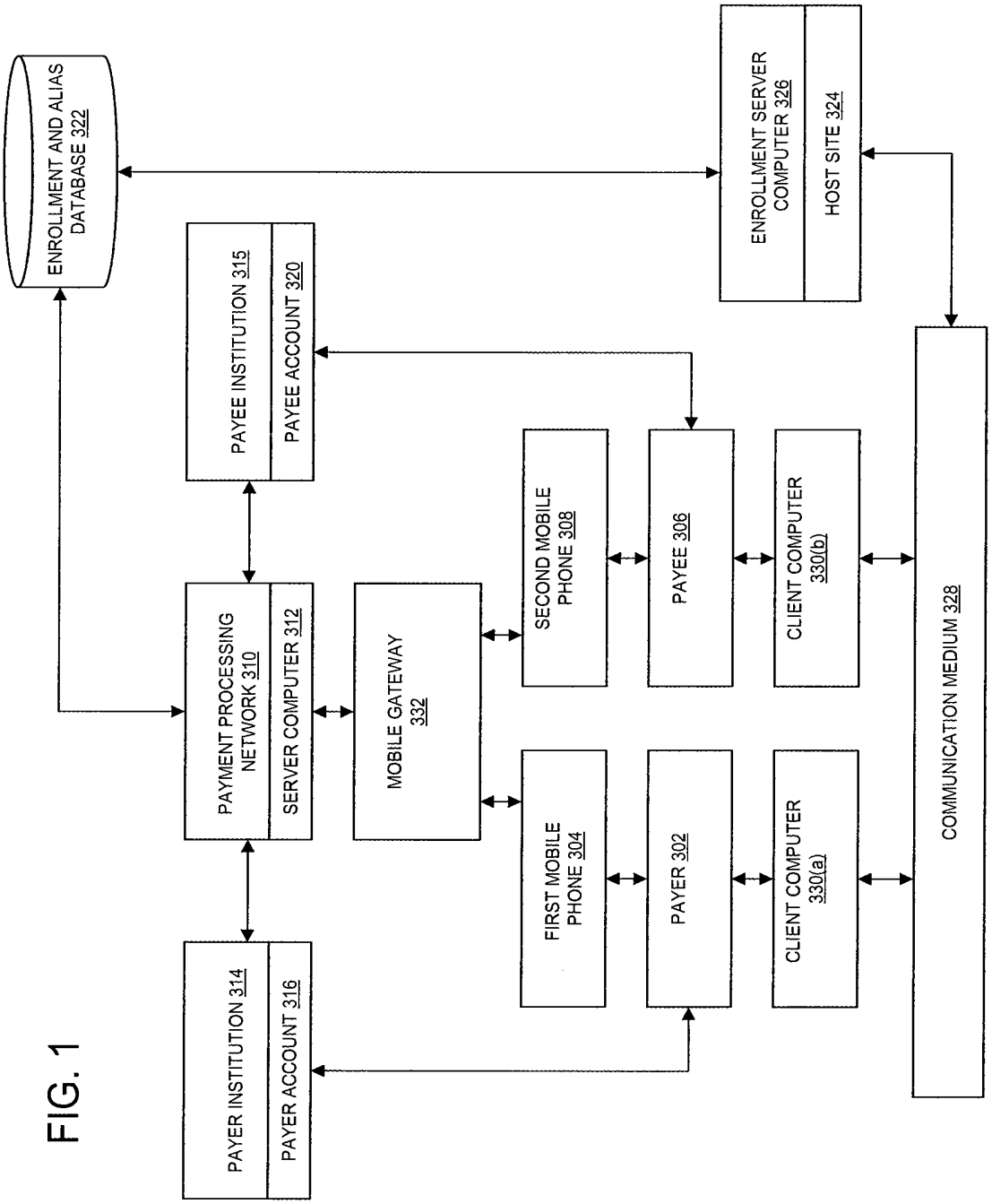

ENROLLMENT AND ALIAS DATABASE 322
ENROLLMENT SERVER COMPUTER 326
HOST SITE 324
PAYEE INSTITUTION 315
PAYEE ACCOUNT 320
PAYMENT PROCESSING NETWORK 310
SERVER COMPUTER 312
MOBILE GATEWAY 332
SECOND MOBILE PHONE 308
PAYEE 306
CLIENT COMPUTER 330(b)
COMMUNICATION MEDIUM 328
FIRST MOBILE PHONE 304
PAYER 302
CLIENT COMPUTER 330(a)
PAYER INSTITUTION 314
PAYER ACCOUNT 316

FIG. 1

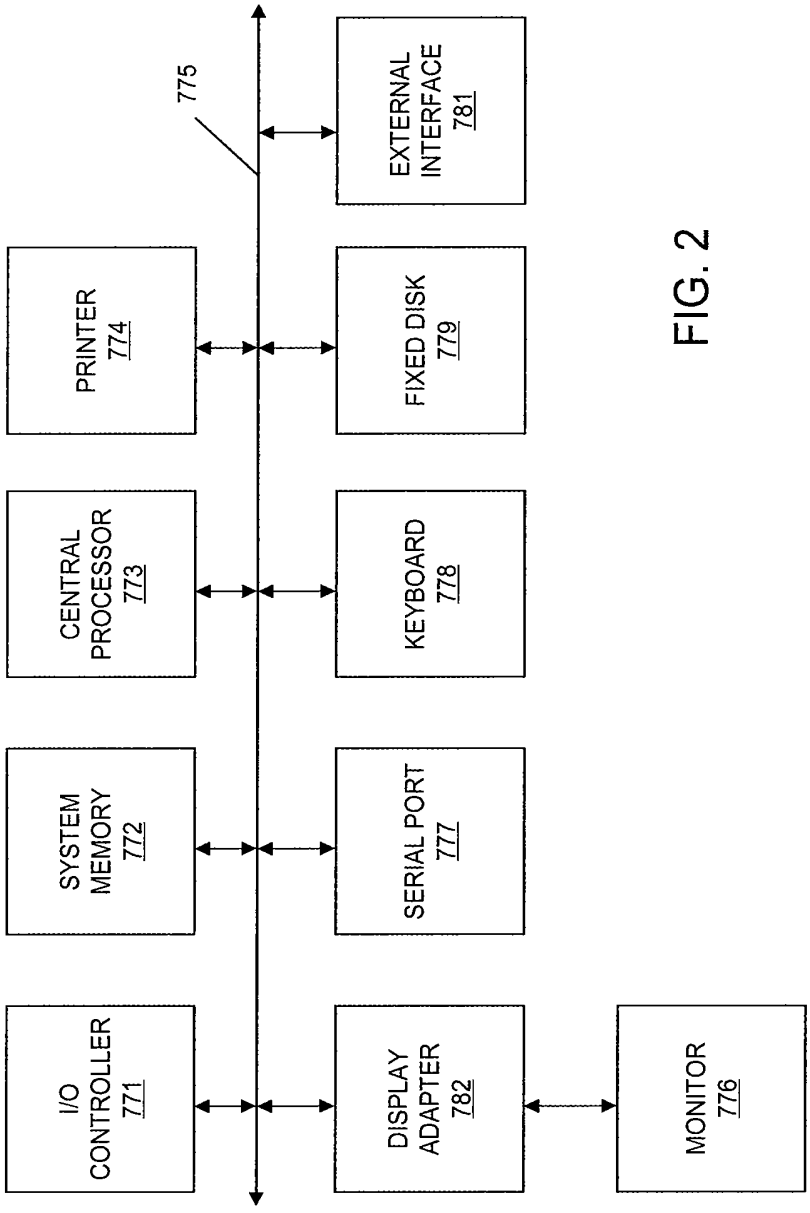

775
EXTERNAL INTERFACE 781
PRINTER 774
FIXED DISK 779
CENTRAL PROCESSOR 773
KEYBOARD 778
SYSTEM MEMORY 772
SERIAL PORT 777
I/O CONTROLLER 771
DISPLAY ADAPTER 782
MONITOR 776

FIG. 2

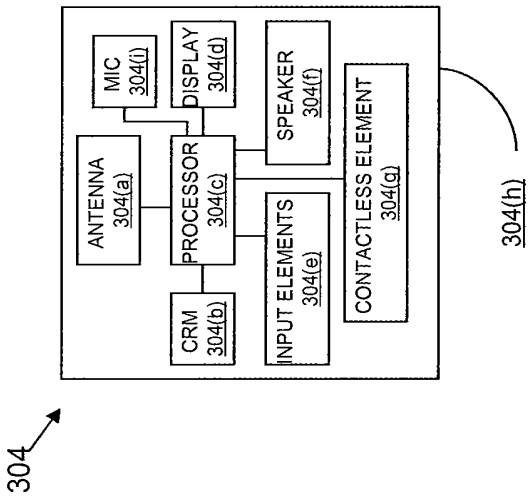
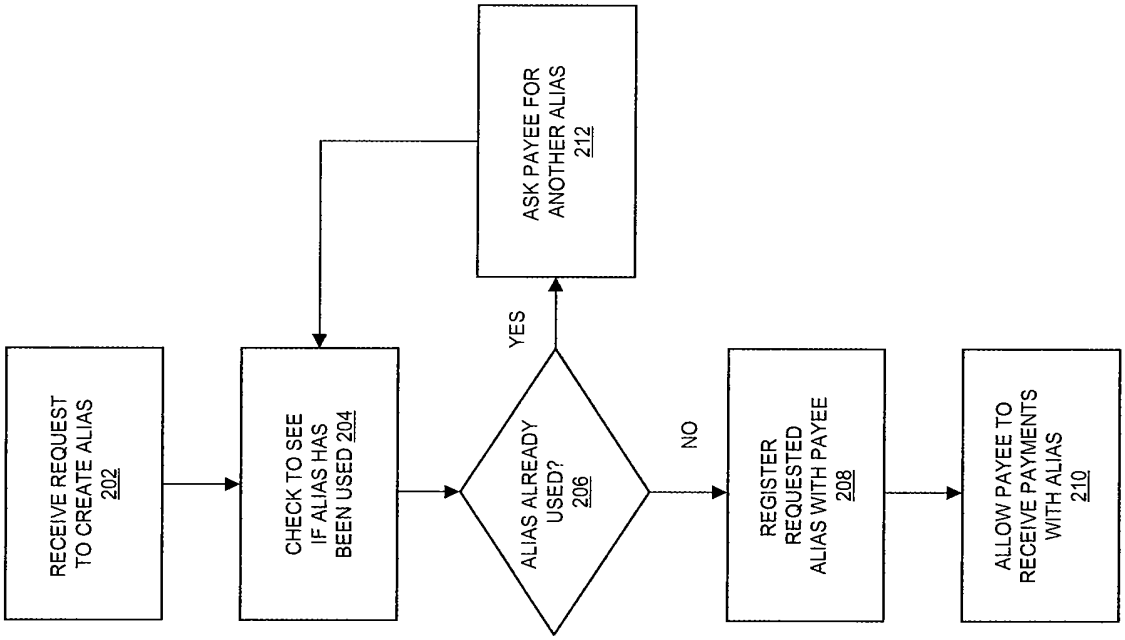

304
ANTENNA 304(a)
PROCESSOR 304(c)
CRM 304(b)
MIC 304(i)
DISPLAY 304(d)
SPEAKER 304(f)
INPUT ELEMENTS 304(e)
CONTACTLESS ELEMENT 304(g)
304(h)

FIG. 3

FIG. 4


RECEIVE REQUEST TO CREATE ALIAS 202
CHECK TO SEE IF ALIAS HAS BEEN USED 204
ALIAS ALREADY USED? 206
YES
ASK PAYEE FOR ANOTHER ALIAS 212
NO
REGISTER REQUESTED ALIAS WITH PAYEE 208
ALLOW PAYEE TO RECEIVE PAYMENTS WITH ALIAS 210

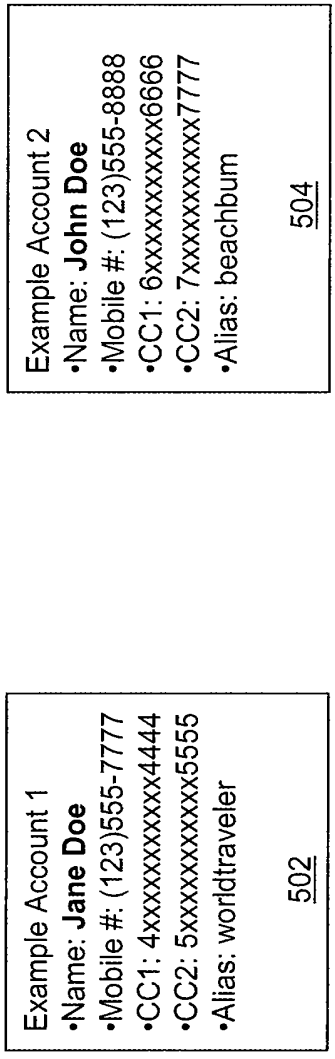

Example Account 1
•Name: **Jane Doe**
•Mobile #: (123)555-7777
•CC1: 4xxxxxxxxxx4444
•CC2: 5xxxxxxxxxx5555
•Alias: worldtraveler
502
Example Account 2
•Name: **John Doe**
•Mobile #: (123)555-8888
•CC1: 6xxxxxxxxxx6666
•CC2: 7xxxxxxxxxx7777
•Alias: beachbum
504

FIG. 5

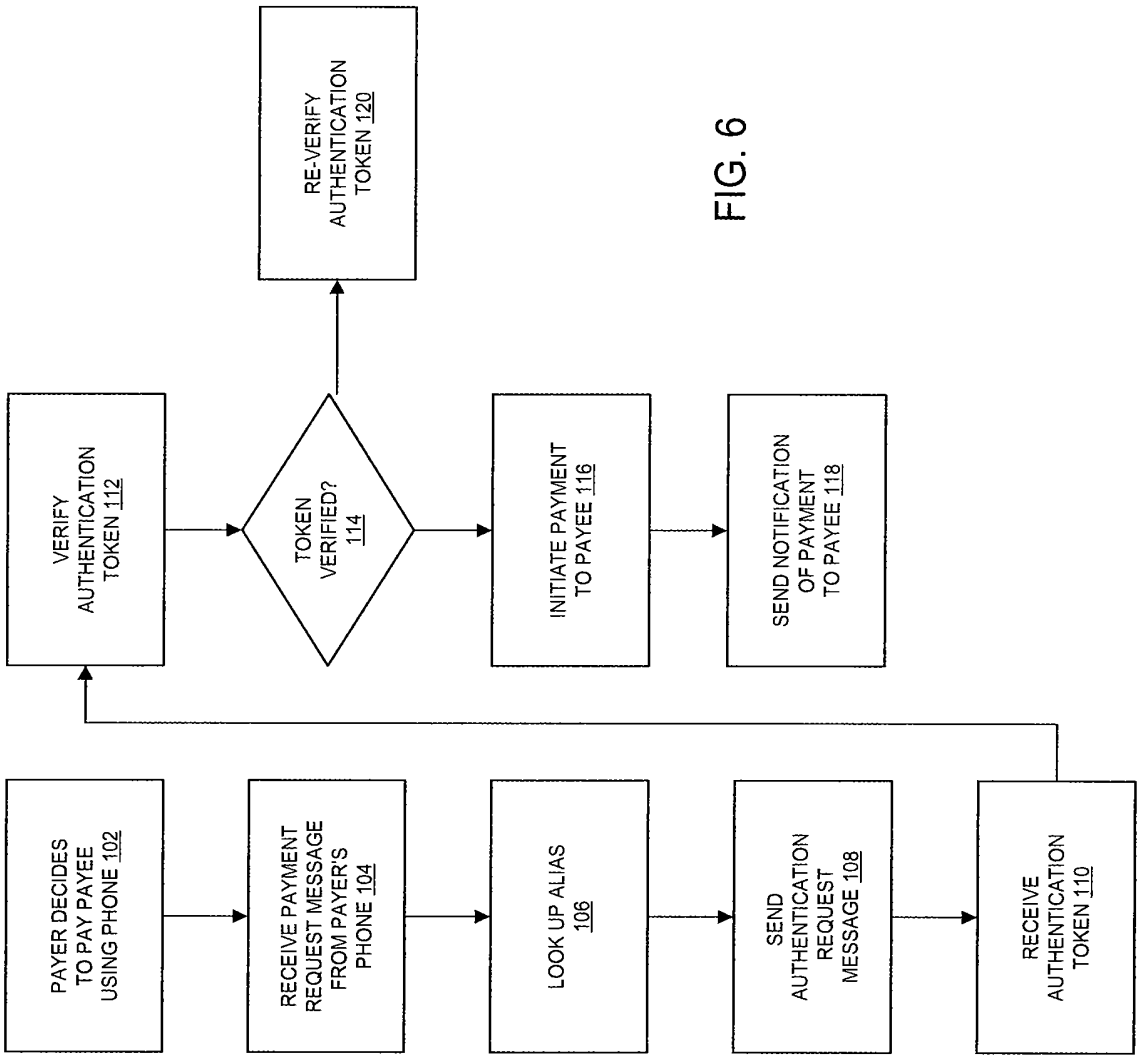

PAYER DECIDES TO PAY PAYEE USING PHONE 102
RECEIVE PAYMENT REQUEST MESSAGE FROM PAYER'S PHONE 104
LOOK UP ALIAS 106
SEND AUTHENTICATION REQUEST MESSAGE 108
RECEIVE AUTHENTICATION TOKEN 110
VERIFY AUTHENTICATION TOKEN 112
TOKEN VERIFIED? 114
INITIATE PAYMENT TO PAYEE 116
SEND NOTIFICATION OF PAYMENT TO PAYEE 118
RE-VERIFY AUTHENTICATION TOKEN 120

FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 07/88289

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G06Q 40/00 (2008.4)
USPC - 705/35
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8): G06Q 40/00 (2008.4)
USPC: 705/35

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 705/64,1, 30, 35, 39

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWEST (USPT, PGPB, EPAB, JPAB); Wiley Interscience; CrossRef; Google; Google Scholar
Search Terms: mobile terminal cellular phone telephone pda wireless device portable text message payment transfer alias user id identifier identification email account credit card sms pin voice

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 2005/0177510 A1 (HILT et al.) 11 August 2005 (11.08.2005) entire document, especially para [0014], [0030], [0032], [0034], [0045], [0058], [0063], [0065]-[0067], [0096]	14, 15 --- 1-13, 16-24
Y	US 2006/0202025 A1 (CALABRESE et al.) 14 September 2006 (14.09.2006) entire document, especially [0017]	1-13, 16-24
Y	WO 2004/077369 A1 (ANDERSON et al.) 10 September 2004 (10.09.2004) entire document, especially pg 23, para 2	13

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
04 April 2008 (04.04.2008)	15 MAY 2008

Name and mailing address of the ISA/US	Authorized officer:
Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

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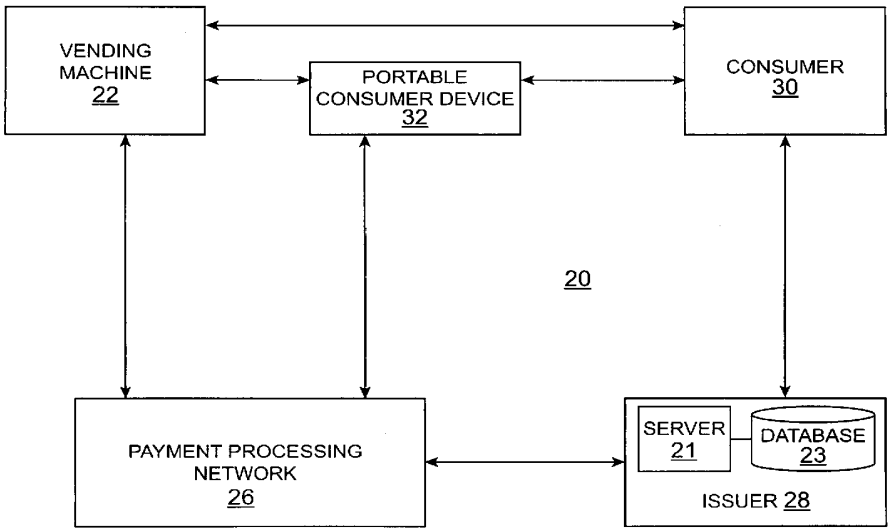
(74) Agents: **JEWIK, Patrick R.** et al.; Townsend and Townsend and Crew LLP, Two Embarcadero Center, 8th Floor, San Francisco, California 94111 (US).

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(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *without international search report and to be republished upon receipt of that report*

(54) **Title:** MOBILE VENDING PURCHASING



(57) **Abstract:** A system and a method for using a portable consumer device such as a mobile phone for payments and the like are disclosed. One embodiment of the invention is directed to a method comprising receiving a payment request message from a portable consumer device operated by a consumer, wherein the payment request message includes a request to pay for a product from a vending machine, sending an authorization response message back to the vending machine wherein the vending machine subsequently prompts the consumer to enter a selection if the authorization response message indicates that the consumer is authorized to make a purchase, and receiving an acknowledgement message from the vending machine that the product was purchased.

WO 2008/083025 A2

MOBILE VENDING PURCHASING

CROSS-REFERENCES TO RELATED APPLICATIONS

[0001] This patent application is a non-provisional of and claims priority to U.S. provisional patent application no. 60/871,898, filed on December 26, 2006, which is herein incorporated by reference in its entirety for all purposes.

BACKGROUND

[0002] Vending machines are common place today in a variety of locations and make available a wide selection of products for purchase. In a typical purchase transaction a consumer walks up to a vending machine, inserts small change or bills into the machine, makes a selection from the machine, and then the vending machine automatically dispenses the selected merchandise to the consumer. The problem is that a consumer either may not have cash on hand or may not have small bills or change to make the purchase. Further, vending machines are offering a more diverse variety of products to purchase than just the inexpensive small snacks, drinks and newspapers that were traditionally offered for sale in vending machines. For example, a consumer can purchase CDs or DVDs, prepaid telephone cards, or electronics from a vending machine. Thus, a simple cash purchase from the vending machine is becoming a less practical option.

[0003] To solve this problem a number of solutions have evolved. For example, many vending machines now have card readers so that a consumer can make purchase via a credit card or a prepaid card. More recently, some solutions have become available to purchase items from a vending machine via a mobile phone. However, these solutions require communication directly between the phone and the vending machine which requires special hardware to interact with different types of phones and a unique way for billing to occur to the consumer depending on the phone service the consumer subscribes to. For example, a consumer may be billed via her mobile phone company or she may have to subscribe to an entirely separate service that supports this type of transaction.

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[0004] A better solution is required to allow a consumer to make a purchase from a vending machine via a mobile phone or other similar device, without the complexities of setting up different billing methods and equipment for each and every vending machine to interact with different types of mobile devices and with different billing companies. Embodiments of the invention address these and other problems individually and collectively.

BRIEF SUMMARY

[0005] Embodiments of the invention are directed to systems and methods using portable consumer devices that can be used for payments and the like.

[0006] One embodiment of the invention is directed to a method comprising receiving a payment request message from a portable consumer device operated by a consumer, wherein the payment request message includes a request to pay for a product from a vending machine, sending an authorization response message back to the vending machine wherein the vending machine subsequently prompts the consumer to enter a selection if the authorization response message indicates that the consumer is authorized to make a purchase, and receiving an acknowledgement message from the vending machine that the product was purchased.

[0007] Another embodiment of the invention is directed to a method comprising reviewing contact information associated with a vending machine, sending a payment request message using the contact information and a portable consumer device wherein the vending machine subsequently receives an authorization response message indicating that payment is authorized and the vending machine thereafter prompts the consumer to make a selection, selecting a product in the vending machine, and receiving the product from the vending machine.

[0008] Another embodiment of the invention is directed to a method comprising receiving an authorization response message indicating that the consumer is authorized to make a purchase, prompting the consumer to enter a selection, and delivering an item corresponding to the selection to the consumer if the consumer makes the selection within a given amount of time.

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[0009] Another embodiment of the invention is directed to a method comprising receiving a phone number associated with a vending machine and dialing the phone number, wherein after dialing, the vending machine subsequently receives authorization to dispense a product to a consumer operating the phone.

[0010] Another embodiment of the invention is directed to a method comprising automatically detecting a vending machine, prompting a consumer to enter information associated with the vending machine, and sending a payment request message wherein the vending machine subsequently receives authorization to dispense a product to the consumer.

[0011] These and other embodiments of the invention are described in further detail below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] FIG. 1 shows a block diagram of a system according to an embodiment of the invention.

[0013] FIG. 2 shows a block diagram of a vending machine according to an embodiment of the invention.

[0014] FIG. 3 shows a block diagram of a portable consumer device according to an embodiment of the invention.

[0015] FIG. 4 shows a block diagram of a payment processing network according to an embodiment of the invention.

[0016] FIG. 5 shows a flowchart illustrating steps in a method according to an embodiment of the invention.

[0017] FIG. 6 shows a flowchart illustrating steps in a method according to an embodiment of the invention.

[0018] FIG. 7 shows a flowchart illustrating steps in a method according to an embodiment of the invention.

[0019] FIG. 8(a) shows the display on an exemplary vending machine and mobile phone according to an embodiment of the invention.

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[0020] FIG. 8(b) shows the display on an exemplary vending machine according to an embodiment of the invention.

[0021] FIG. 9(a) shows the display on an exemplary vending machine and mobile phone according to an embodiment of the invention.

[0022] FIG. 9(b) shows the display on an exemplary vending machine according to an embodiment of the invention.

[0023] FIG. 10(a) shows the display on an exemplary vending machine and mobile phone according to an embodiment of the invention.

[0024] FIG. 10(b) shows the display on an exemplary vending machine according to an embodiment of the invention.

DETAILED DESCRIPTION

[0025] Embodiments of the invention are directed to the use of portable consumer devices, and methods and systems that use them. Preferred portable consumer devices are mobile phones. The mobile phones can be used in payment processing systems like those shown in FIG. 1.

[0026] In some embodiments of the invention, a payment request message is sent from a portable consumer device such as a phone, directly to a payment processing network such as VisaNet. As used herein, a "payment request message" may be an implicit or explicit request to pay for a product or selection. A payment request message may take different forms. For example, a payment request message may simply be in the form of a dialed telephone number. Dialing a dedicated telephone number associated with a vending machine can be an implicit request to pay for a product, as it does not contain an explicit payment message. In other embodiments, the payment request message may be embodied by an SMS message, an e-mail, or some other type of message. Such messages may or may not include an explicit request to pay. For example, sending any text message to a dedicated address may be an implicit payment request. Alternatively, a text message may be sent which says "Pay Vending Machine 346." This is an explicit request to pay.

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[0027] FIG. 1 shows a system **20** that can be used in an embodiment of the invention. For simplicity of illustration, one vending machine, one issuer, one portable consumer device, and one consumer are shown. It is understood, however, that embodiments of the invention may include multiple vending machines, issuers, portable consumer devices, and/or consumers. In addition, some embodiments of the invention may include fewer than all of the components shown in FIG. 1. Also, the components in FIG 1 may communicate via any suitable communication medium (including the Internet), using any suitable communication protocol.

[0028] The system **20** includes a vending machine **22**, a consumer **30**, a payment processing network **26**, a portable consumer device **32**, and an issuer **28** associated with the portable consumer device **32**. The portable consumer device **32** can communicate with the issuer **28** via the payment processing network **26**.

[0029] The issuer **28** may be a bank, but it could also be business entity such as a retail store. The issuer **28** may operate a server computer **21**, which may have a computer readable medium comprising code for performing the functions that the issuer **28** performs. A database **23** comprising account number information and other information may be operatively coupled to the server computer **21**. The database **23** may comprise an account associated with the consumer **30** and the portable consumer device **32**.

[0030] The consumer **30** may be an individual who may use the portable consumer device **32.**

[0031] The vending machine **22** may be owned or leased by an entity such as an organization or business that sells goods using the vending machine **22**. The vending machine **22** is typically a machine that dispenses products after a consumer **30** pays for the products. Examples of suitable products include food items (e.g., candy, gum, soft drinks, etc.), travel items, newspapers, tickets, movies, electronics, etc.

[0032] The vending machine **22** may contain components like those shown in FIG. 2. For example, the vending machine **22** may have a computer readable medium ("CRM") **22(b)** comprising code including instructions for performing the functions that the vending machine **22** performs, and a processor **22(c)** to execute

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those instructions. The vending machine **22** may also have a display **22(a)** to show messages to the consumer **30** and a speaker **22(d)** to provide audio messages for the consumer **30**. The vending machine **22** may also have input elements **22(e)** (e.g., buttons, levers, or other actuators) to allow a consumer **30** to make a selection of one or more items to purchase from the vending machine **22**, as well as a network interface **22(f)** to communicate with a payment processing network **26** so that the vending machine **22** can communicate during the payment authorization process. The vending machine **22** may also have one or more selections **22(g)** of items for a consumer **30** to purchase. Selections **22(g)** may comprise products such as food items (e.g., candy, gum, soft drinks, etc.), travel items, etc.

[0033] The vending machine **22** may also have, or may receive communications from, a reader **22(h)** that can interact with the portable consumer device **32**. The reader **22(h)** may include any suitable contact or contactless mode of operation. For example, exemplary card readers can include RF (radio frequency) antennas, magnetic stripe readers, etc. to interact with the portable consumer device **32**. Contactless readers are commercially available. Suitable equipment for allowing the vending machine **22** to function in embodiments of the invention can be purchased from Bonusdata AG.

[0034] The portable consumer device **32** may be in any suitable form. For example, suitable portable consumer devices can be hand-held and compact so that they can fit into a consumer's wallet and/or pocket (e.g., pocket-sized). They may include smart cards, ordinary credit or debit cards (with a magnetic strip and without a microprocessor), keychain devices (such as the Speedpass™ commercially available from Exxon-Mobil Corp.), etc. Other examples of portable consumer devices include cellular and mobile phones, personal digital assistants (PDAs), pagers, payment cards, security cards, access cards, smart media, transponders, and the like. The portable consumer devices can also be debit devices (*e.g.*, a debit card), credit devices (*e.g.*, a credit card), or stored value devices (*e.g.*, a stored value card).

[0035] The portable consumer device **32** may comprise a computer readable medium **32(b)** and a body **32(h)** as shown in FIG. 3. The computer readable medium **32(b)** present within body **32(h)**, or may be detachable from it. The body

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32(h) may in the form a plastic substrate, housing, or other structure. The computer readable medium **32(b)** may be a memory that stores data and may be in any suitable form including a magnetic stripe, a memory chip, etc.

[0036] If the computer readable medium **32(b)** is in a phone, it may comprise code for receiving a phone number and a payment request message from a consumer, wherein the payment request message includes a request to pay for a product from a vending machine. It may also comprise code for dialing the phone number; and code for sending a payment request message where the vending machine subsequently receives an authorization response message indicating that payment is authorized (or not authorized), where the vending machine thereafter prompts the consumer to make a selection.

[0037] The portable consumer device **32** may further include a contactless element **32(g)**, which is typically implemented in the form of a semiconductor chip (or other data storage element) with an associated wireless transfer (e.g., data transmission) element, such as an antenna. Contactless element **32(g)** is associated with (e.g., embedded within) portable consumer device **32** and data or control instructions transmitted via a cellular network may be applied to contactless element **32(g)** by means of a contactless element interface (not shown). The contactless element interface functions to permit the exchange of data and/or control instructions between the mobile device circuitry (and hence the cellular network) and an optional contactless element **32(g)**.

[0038] Contactless element **32(g)** is capable of transferring and receiving data using a near field communications ("NFC") capability (or near field communications medium) typically in accordance with a standardized protocol or data transfer mechanism (e.g., ISO 14443/NFC). Near field communications capability is a short-range communications capability, such as RFID, Bluetooth™, infra-red, or other data transfer capability that can be used to exchange data between the portable consumer device **32** and a payment processing network **26** or it can be used to exchange data between the portable consumer device **32** and the vending machine **22**. Thus, the portable consumer device **32** is capable of communicating and transferring data and/or control instructions via both cellular network and near field communications capability.

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[0039] The portable consumer device **32** may also include a processor **32(c)** (e.g., a microprocessor) for processing the functions of the portable consumer device **32** and a display **32(d)** to allow a consumer to see phone numbers and other information and messages. The portable consumer device **32** may further include input elements **32(e)** to allow a consumer to input information into the device, a speaker **32(f)** to allow the consumer to hear voice communication, music, etc., and a microphone **32(i)** to allow the consumer to transmit her voice through the portable consumer device **32**. The portable consumer device **32** may also include an antenna **32(a)** for wireless data transfer (e.g., data transmission).

[0040] Referring to FIG. 1 again, the payment processing network **26** may include data processing subsystems, networks, and operations used to support and deliver authorization services, exception file services, and clearing and settlement services. An exemplary payment processing network may include VisaNet™. Payment processing networks such as VisaNet™ are able to process credit card transactions, debit card transactions, and other types of commercial transactions. VisaNet™, in particular, includes a VIP system (Visa Integrated Payments system) which processes authorization requests and a Base II system which performs clearing and settlement services.

[0041] Specifically, the payment processing network **26** may include a server computer **415** as shown in FIG 4. As used herein, a "server computer" is typically a powerful computer or cluster of computers. For example, a server computer can be a large mainframe, a minicomputer cluster, or a group of servers functioning as a unit. In one example, the server computer may be a database server coupled to a Web server. The payment processing network **26** may use the server computer **415**, and the server computer **415** may be present in any suitable wired or wireless network, including the Internet.

[0042] The payment processing network **26** may further include a gateway **405** whereby a dial request, text message or Short Message Service ("SMS") message, for example, from a portable consumer device **32**, can pass through to the payment processing network **26**. (SMS is typically a service available on a portable consumer device that permits the sending of short messages between portable consumer devices via an intermediate server.) The gateway **405** may be embodied

by a computer or a network that allows or controls access to another computer or network. The gateway **405** may also be a software interface between the computer or network and another computer or network.

[0043] In this example, the payment server **415** can validate and augment a payment request message received from the portable consumer device **32**. It can log the payment request message, and transmit the payment request message to the authorization process device **435** where it is formatted and transmitted to the issuer **28** for the portable consumer device **32**. The payment processing network **26** may also include an enrollment database **425** that stores portable consumer device enrollment data for verification and logging purposes.

[0044] An acquirer (which is not shown in FIG. 1) such as a bank may be in electronic communication with the payment processing network **26**, and the issuer **28**. It may also be in electronic communication with the vending machine **22**, and other vending machines, and/or an organization that owns or operates the vending machines. In embodiments of the invention, the vending machine **22** may communicate directly with the payment processing network **26** or through an acquirer.

[0045] Referring to FIGS. 1-3, in one purchase transaction embodiment, a consumer **30** may use a portable consumer device **32** to directly contact the payment processing network **26** to obtain authorization to make a purchase. In this embodiment, the portable consumer device **32** does not directly communicate with the vending machine **22** when the purchase is made. In this example, a payment request message is sent from the portable consumer device **32** to the payment processing network **26**. The payment processing network **26** then forwards the payment request message to the issuer **28** of the portable consumer device **32**.

[0046] After the issuer **28** receives the authorization request message, the issuer **28** sends an authorization response message back to the payment processing network **26** to indicate whether or not the current transaction is authorized. The issuer **28** may require additional information from the consumer **30** such as a PIN before sending the authorization response message to the vending machine **22**

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and/or the portable consumer device **32**. The transaction processing network **26** then forwards the authorization response message to the vending machine **22**.

[0047] After the vending machine **22** receives the authorization response message, the authorization response message may be displayed by the vending machine **22** display **22(a)** or the vending machine **22** may voice the response message via the speaker **22(d)**. Once the vending machine **22** receives approval for the payment, the vending machine **22** may prompt the consumer **30** to make a selection. The consumer **30** may then select a product as she would with a conventional vending machine and the product may thereafter be dispensed to the consumer **30**.

[0048] At the end of the day, a normal clearing and settlement process can be conducted by the transaction processing network **26**. A clearing process is a process of exchanging financial details between the payment processing network **26**, the issuer **28**, and the vending machine **22**, or potentially an acquirer associated with the vending machine **22**. To facilitate posting to a consumer's account and reconciliation of the consumer's settlement position. As noted above, the acquirer (which is not shown in FIG. 1), may be bank that is electronically coupled to the payment processing network **26**, the issuer **28**, and the vending machine **22**.

[0049] Some of the embodiments described below may use a payment processing system like the one described above, or any suitable combination of components in the payment processing system. More specific embodiments of the invention are described below.

[0050] Other embodiments of the invention, which specifically use a mobile phone, are described in further detail below. The embodiments can use dial, interactive voice response ("IVR"), or an entered message which is sent to a payment processing network. These embodiments may further use a payment processing network such as VisaNet to authorize the transaction and tell the vending machine that payment has been accepted. By using a payment processing network such as VisaNet, there is no need to set up a separate billing situation for each mobile phone service organization or set up a separate billing service for a particular vending machine. The payment processing network, such as VisaNet, interacts with

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each different billing organization so that all transactions appear the same to the vending machine.

[0051] Additional details regarding embodiments of the invention are described below.

[0052] FIG. 5 shows a flowchart including a method according to a first embodiment of the invention. The method can be described with reference to FIGS. 1-4, 8(a), and 8(b).

[0053] First, a consumer **30** enters a telephone number associated with the vending machine **22** in using input elements **32(e)** in the portable consumer device **32** to purchase one or more selections **22(g)** from the vending machine **22** (step **500**). As shown in FIG. 8(a), the number may be posted (e.g., through a static medium such as plastic or paper, or through a dynamic medium such as an LCD screen) on the vending machine **22**. Alternatively, it may be provided to the consumer **30** in some other way (e.g., a mailing, an e-mail, an SMS message, etc.).

[0054] Referring to FIG. 4, a payment request message is then sent from the portable consumer device **32** to the payment processing network **26** via a gateway **405**. The gateway **405** passes the payment request message to the payment server **415**. The payment server **415** validates the payment request message against the data in the database containing the enrollment data **425** and augments the payment request message. The payment server **415** then passes the payment request message to the authorization process device **435** where it is formatted and passed to the issuer **28** of the portable consumer device **32**.

[0055] After the issuer **28** receives the payment request message, the issuer **28** analyzes the payment request message and sends an authorization response message back to the payment server **415** to indicate whether or not the current transaction is authorized. The payment server **415** logs the response and sends the authorization response message to the vending machine **22**. If the transaction is not authorized (step **520**), the vending machine **22** notifies the consumer **30** that the transaction is denied (step **525**). If the transaction is authorized (step **520**), the vending machine **22** prompts the consumer **30** to select an item to purchase (step **530**) within an allotted time (e.g., twenty seconds or less). For example, the vending

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machine **22** may display a message that says "Please choose your product," as shown in FIG. 8(b).

[0056] If the consumer **30** does not make the purchase within the allotted time (step **540**) the transaction times-out (step **545**) and the consumer **30** initiates another payment request to purchase an item. If the consumer **30** does make the purchase within the allotted time (step **540**) then the selected item is delivered to the consumer **30** and a purchase acknowledgement is sent to the payment processing network **26** (step **550**). The purchased item will appear on the consumer's next statement.

[0057] FIG. 6 shows a flowchart including a general method according to a second embodiment of the invention. The method can be described with reference to FIGS. 1-4, 9(a), and 9(b).

[0058] First, the consumer **30** sends an SMS to the number associated with the vending machine **22** to purchase an item in the vending machine **22** (step **600**). As shown in FIG. 9(a), the number may be posted on the vending machine **22**. Alternatively, it may be provided to the consumer **30** in some other way (e.g., a mailing, an e-mail, an SMS message, etc.).

[0059] Referring to FIG. 4, a payment request message is then sent from the portable consumer device **32** to the payment processing network **26** via a gateway **405**. The gateway **405** passes the payment request message to the payment server **415**. The payment server **415** validates the payment request message against the data in the database containing the enrollment data **425** and augments the payment request message. The payment server **415** then passes the payment request message to the authorization process device **435** where it is formatted and passed to the issuer **28** of the portable consumer device **32**.

[0060] The issuer **28** may require a PIN from the consumer **30** before sending an authorization response message. If this is the case, then after the issuer **28** receives and analyzes the payment request message, the issuer **28** sends a PIN request back to the payment server **415** and the payment server **415** sends the PIN request to the portable consumer device **32**. The PIN request may be in audio or textual form.

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[0061] Next the consumer **30** is prompted to enter a PIN (step **610**) into the portable consumer device **32**. The PIN is then sent from the portable consumer device **32** to the payment processing network **26** via a gateway **405**. The gateway **405** passes the PIN to the payment server **415**. The payment server **415** then passes the PIN to the issuer **28** of the portable consumer device **32**.

[0062] After the issuer **28** receives the PIN, the issuer **28** verifies that the PIN matches the PIN associated with the consumer **30**. After verifying the PIN (or if the issuer **28** did not require a PIN) the issuer **28** sends an authorization response message back to the payment server **415** to indicate whether or not the current transaction is authorized. The payment server **415** logs the response and sends the authorization response message to the vending machine **22**. If the transaction is not authorized (step **620**), the vending machine **22** notifies the consumer **30** that the transaction is denied (step **625**). If the transaction is authorized (step **620**), the vending machine **22** prompts the consumer **30** to select an item to purchase within an allotted time (e.g., twenty seconds or less) (step **630**). For example, the vending machine **22** may display a message that says "Please choose your product," as shown in FIG. 9(b).

[0063] If the consumer **30** does not make the purchase within the allotted time (step **640**) the transaction times-out (step **645**) and the consumer **30** initiates another payment request to purchase an item. If the consumer **30** does make the purchase within the allotted time (step **640**) then the item selected is delivered to the consumer **30** and a purchase acknowledgement is sent to the payment processing network **26** (step **650**). The purchased item will appear on the consumer's next statement.

[0064] FIG. 7 shows a flowchart including a general method according to a third embodiment of the invention. The method can be described with reference to FIGS. 1-4, 10(a), and 10(b).

[0065] In this embodiment of the invention, a consumer **30** may use a mobile wallet to make a vending purchase (step **700**). A mobile wallet is a payment enabled mobile phone that functions as a payment mechanism similar to a debit card, credit card, or prepaid card. For example a consumer **30** may register her credit card with the issuer **28** of the portable consumer device **32** and then use the mobile phone to

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make purchases or a consumer **30** may set up a prepaid account with the issuer **28** of the portable consumer device **32** or another entity that she can draw against to make purchases.

[0066] First, the consumer **30** may launch an application in the portable consumer device **32** and type in a machine alias associated with the vending machine **22** (e.g., "Pay: coke345") as shown in FIG. 10(a). Alternatively, the portable consumer device **32** may automatically detect the vending machine **22** (via RFID, etc.) and prompt the consumer **30** to enter information (e.g., a machine alias, payment information, etc.) associated with the vending machine **22**, such as a machine alias shown in FIG. 10(a). As shown in FIG. 10(a), the machine alias may be posted on the vending machine **22**. The consumer **30** may also be required to enter a PIN to authenticate the transaction.

[0067] Referring to FIG. 4, a payment request message is then sent from the portable consumer device **32** to the payment processing network **26** via a gateway **405**. The gateway **405** passes the payment request message to the payment server **415**. The payment server **415** validates the payment request message against the data in the database containing the enrollment data **425** and augments the payment request message. The payment server **415** then passes the payment request message to the authorization process device **435** where it is formatted and passed to the issuer **28** of the portable consumer device **32**.

[0068] After the issuer **28** receives the payment request message, the issuer **28** analyzes the payment request message, and sends an authorization response message back to the payment server **415** to indicate whether or not the current transaction is authorized. The payment server **415** logs the response and sends the authorization response message to the vending machine **22**. If the transaction is not authorized (step **720**), the vending machine **22** notifies the consumer **30** that the transaction is denied (step **725**). If the transaction is authorized (step **720**), the vending machine **22** prompts the consumer **30** to select an item to purchase (step **730**) within an allotted time (e.g., twenty seconds or less). For example, the vending machine **22** may display a message that says "Please choose your product," as shown in FIG. 10(b).

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[0069] If the consumer **30** does not make the purchase within the allotted time (step **740**) the transaction times-out (step **745**) and the consumer **30** initiates another payment request to purchase an item. If the consumer **30** does make the purchase within the allotted time (step **740**) then the selected item is delivered to the consumer **30** and a purchase acknowledgement is sent to the payment processing network **26** (step **750**). The purchased item will appear on the consumer's next statement.

[0070] Other alternative embodiments are also possible. For example, although the examples described above request the consumer to make a selection, in other embodiments, the consumer may actually input the selection that the consumer wants into the portable consumer device (e.g., phone) before the purchase is made. For example, the consumer may dial a phone number on a vending machine, and may thereafter get an automatic callback from a payment processing network requesting that the consumer enter the number of the product desired. The consumer may then enter the number "13" into his phone, and the vending machine may automatically dispense the product associated with this number. In this embodiment, the consumer may not directly interact at all with the vending machine during the payment process. In another example, the consumer may simply enter information such as "pay vending machine 345 $2.00, and dispense product 13". This information may be sent to a payment processing and the payment processing network may thereafter automatically dispense the desired product.

[0071] Embodiments of the invention have a number of advantages. First, embodiments of the invention can contact a payment processing network directly, without requiring the consumer to initially interact with the vending machine. Thus, in some cases, it is not necessary that the vending machine have some interface (e.g., a contactless reader) that needs to interact with the consumer's portable consumer device. Since such specialized readers are not required, this makes it more likely that embodiments of the invention can be universally implemented. Also, the communication between the portable consumer device and the payment processing network is more direct in embodiments of the invention than conventional payment processing systems. This can reduce the likelihood of communication errors in the payment process. Also, by contacting the payment processing network directly

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(rather than a phone company first), the payment processing network can log and process the transaction like any other credit or debit card payment transaction.

[0072] It should be understood that the present invention as described above can be implemented in the form of control logic using computer software in a modular or integrated manner. Based on the disclosure and teachings provided herein, a person of ordinary skill in the art will know and appreciate other ways and/or methods to implement the present invention using hardware and a combination of hardware and software.

[0073] Any of the software components or functions described in this application, may be implemented as software code to be executed by a processor using any suitable computer language such as, for example, Java, C++ or Perl using, for example, conventional or object-oriented techniques. The software code may be stored as a series of instructions, or commands on a computer readable medium, such as a random access memory (RAM), a read only memory (ROM), a magnetic medium such as a hard-drive or a floppy disk, or an optical medium such as a CD-ROM. Any such computer readable medium may reside on or within a single computational apparatus, and may be present on or within different computational apparatuses within a system or network.

[0074] The above description is illustrative and is not restrictive. Many variations of the invention will become apparent to those skilled in the art upon review of the disclosure. The scope of the invention should, therefore, be determined not with reference to the above description, but instead should be determined with reference to the pending claims along with their full scope or equivalents.

[0075] One or more features from any embodiment may be combined with one or more features of any other embodiment without departing from the scope of the invention.

[0076] A recitation of "a", "an" or "the" is intended to mean "one or more" unless specifically indicated to the contrary.

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WHAT IS CLAIMED IS:

1. A method comprising:

receiving a payment request message from a portable consumer device operated by a consumer, wherein the payment request message includes a request to pay for a product from a vending machine;

sending an authorization response message back to the vending machine wherein the vending machine subsequently prompts the consumer to enter a selection if the authorization response message indicates that the consumer is authorized to make a purchase; and

receiving an acknowledgement message from the vending machine that the product was purchased.

2. The method of claim 1 further comprising analyzing the payment request message to determine if the consumer is authorized to pay for the product.

3. The method of claim 1 further comprising automatically calling the portable consumer device and requesting that the consumer enter a PIN into the device.

4. The method of claim 1 wherein the payment request message is received by a payment processing network, and wherein the payment request message does not pass directly from the portable consumer device to the vending machine.

5. The method of claim 1 wherein the portable consumer device is a wireless phone.

6. A computer readable medium comprising:

code for receiving a payment request message from a portable consumer device operated by a consumer, wherein the payment request message includes a request to pay for a product from a vending machine;

code for sending an authorization response message back to the vending machine wherein the vending machine subsequently prompts the consumer to enter a selection if the authorization response message indicates that the consumer is authorized to make a purchase; and

code for receiving an acknowledgement message from the vending machine that the product was purchased.

7. A server comprising the computer readable medium of claim 6.

8. A method comprising:

reviewing contact information associated with a vending machine;

sending a payment request message using the contact information and a portable consumer device wherein the vending machine subsequently receives an authorization response message indicating that payment is authorized and the vending machine thereafter prompts the consumer to make a selection;

selecting a product in the vending machine; and

receiving the product from the vending machine.

9. The method of claim 8 wherein the portable consumer device is a wireless phone.

10. A method comprising:

receiving an authorization response message indicating that the consumer is authorized to make a purchase;

prompting the consumer to enter a selection; and

delivering an item corresponding to the selection to the consumer if the consumer makes the selection within a given amount of time.

11. The method of claim 10 wherein the given amount of time is twenty seconds or less.

12. A vending machine adapted to perform the method of claim 10.

13. A method comprising:

receiving a phone number associated with a vending machine; and

dialing the phone number, wherein after dialing, the vending machine subsequently receives authorization to dispense a product to a consumer operating the phone.

14. A computer readable medium comprising:

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code for receiving a phone number associated with a vending machine; and

code for dialing the phone number, wherein after dialing, the vending machine subsequently receives authorization to dispense a product to a consumer operating the phone.

15. A wireless phone comprising the computer readable medium of claim 14.

16. A method comprising:

automatically detecting a vending machine;

prompting a consumer to enter information associated with the vending machine; and

sending a payment request message wherein the vending machine subsequently receives authorization to dispense a product to the consumer.

17. The method of claim 16 further comprising prompting the consumer to enter a PIN.

18. A computer readable medium comprising:

code for automatically detecting a vending machine;

code for prompting a consumer to enter information associated with the vending machine; and

code for sending a payment request message wherein the vending machine subsequently receives authorization to dispense a product to the consumer.

19. A wireless phone comprising the computer readable medium of claim 18.

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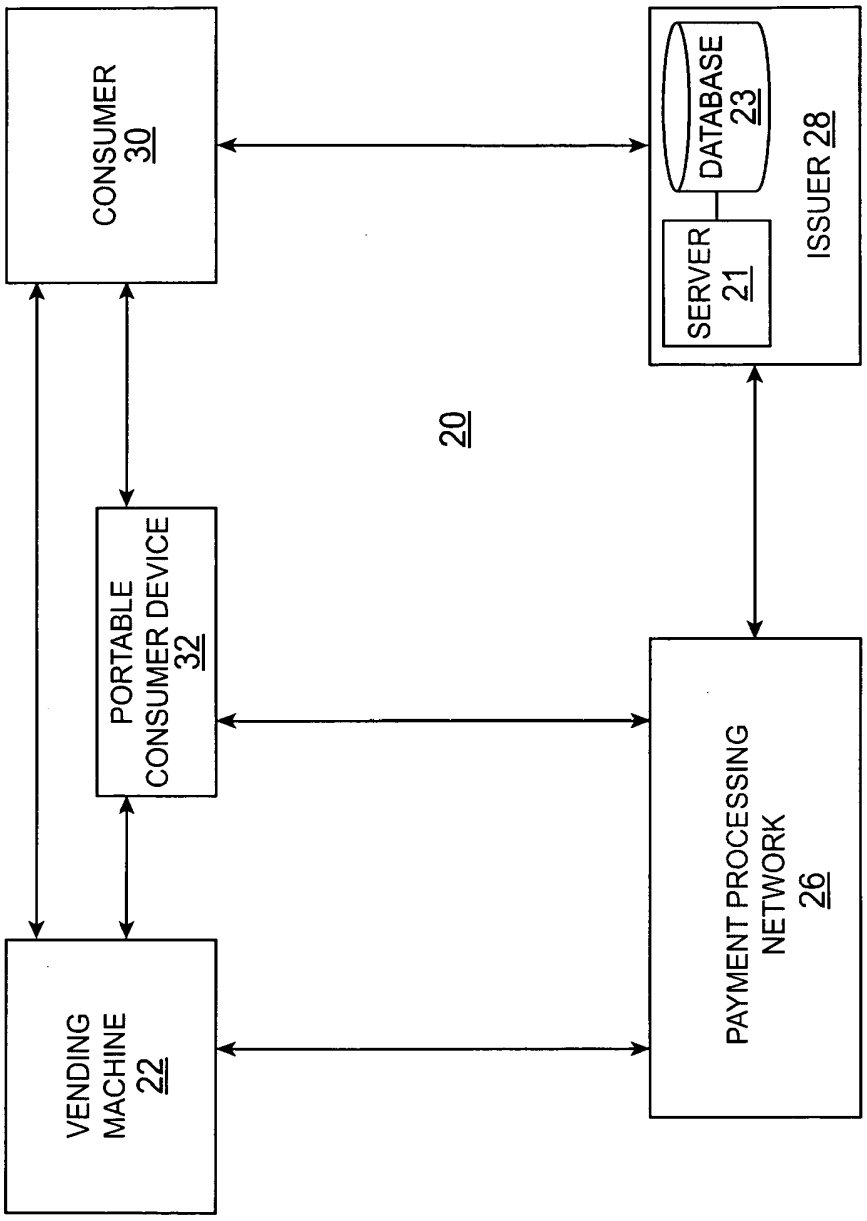


FIG. 1

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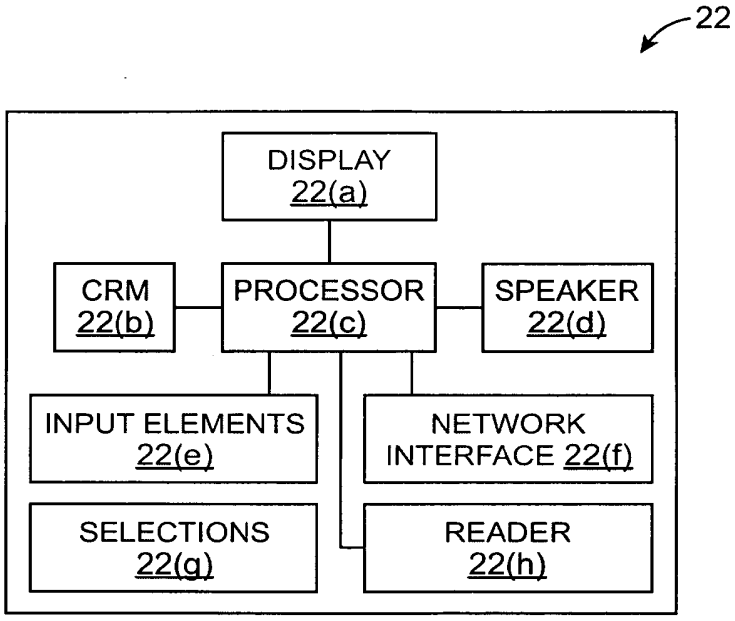


FIG. 2

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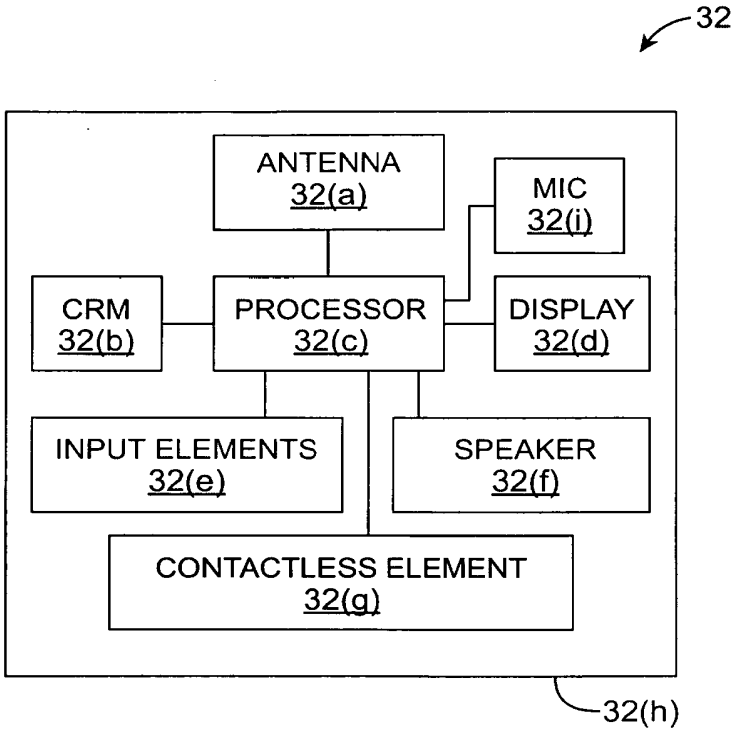


FIG. 3

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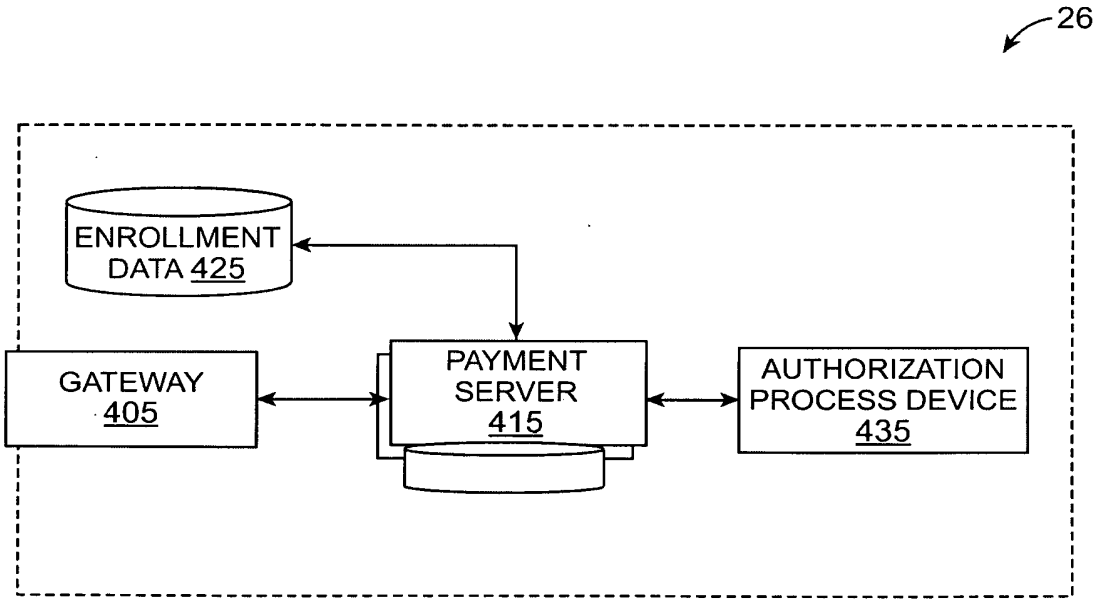


FIG. 4

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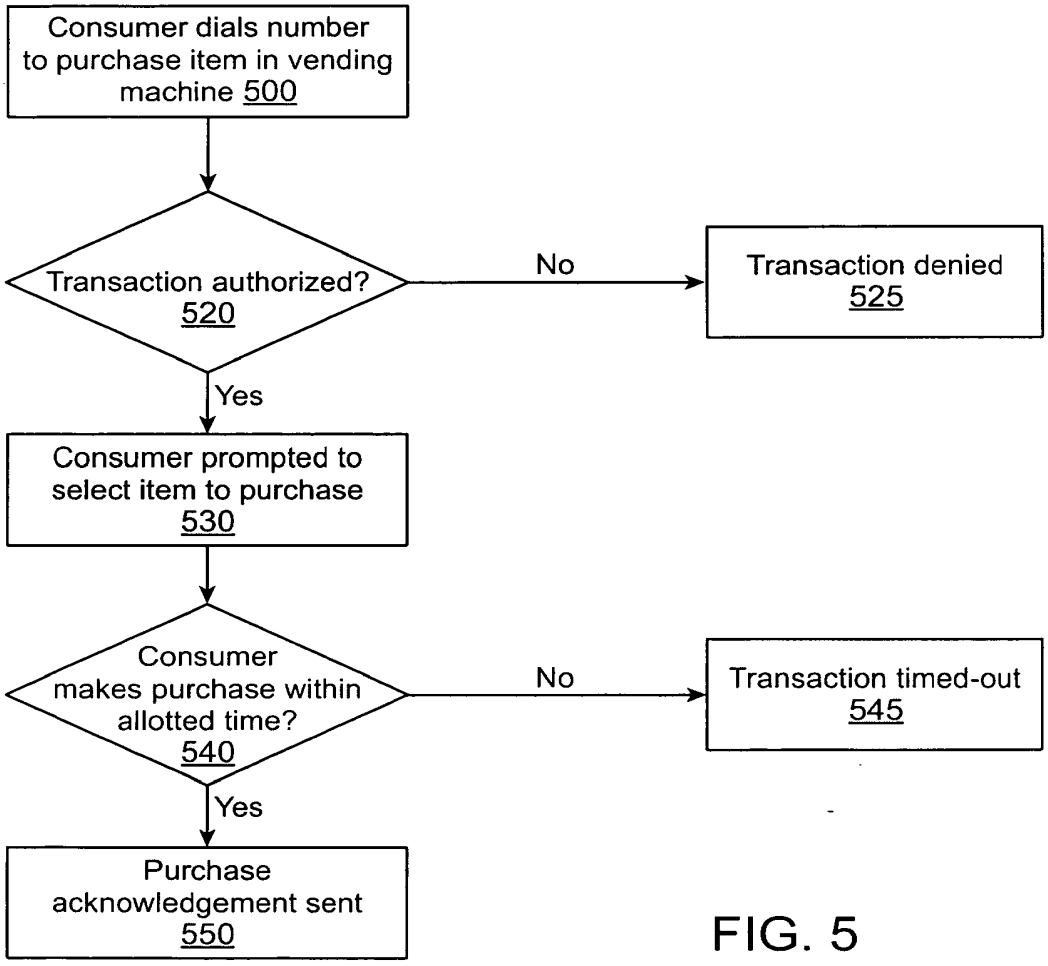


FIG. 5

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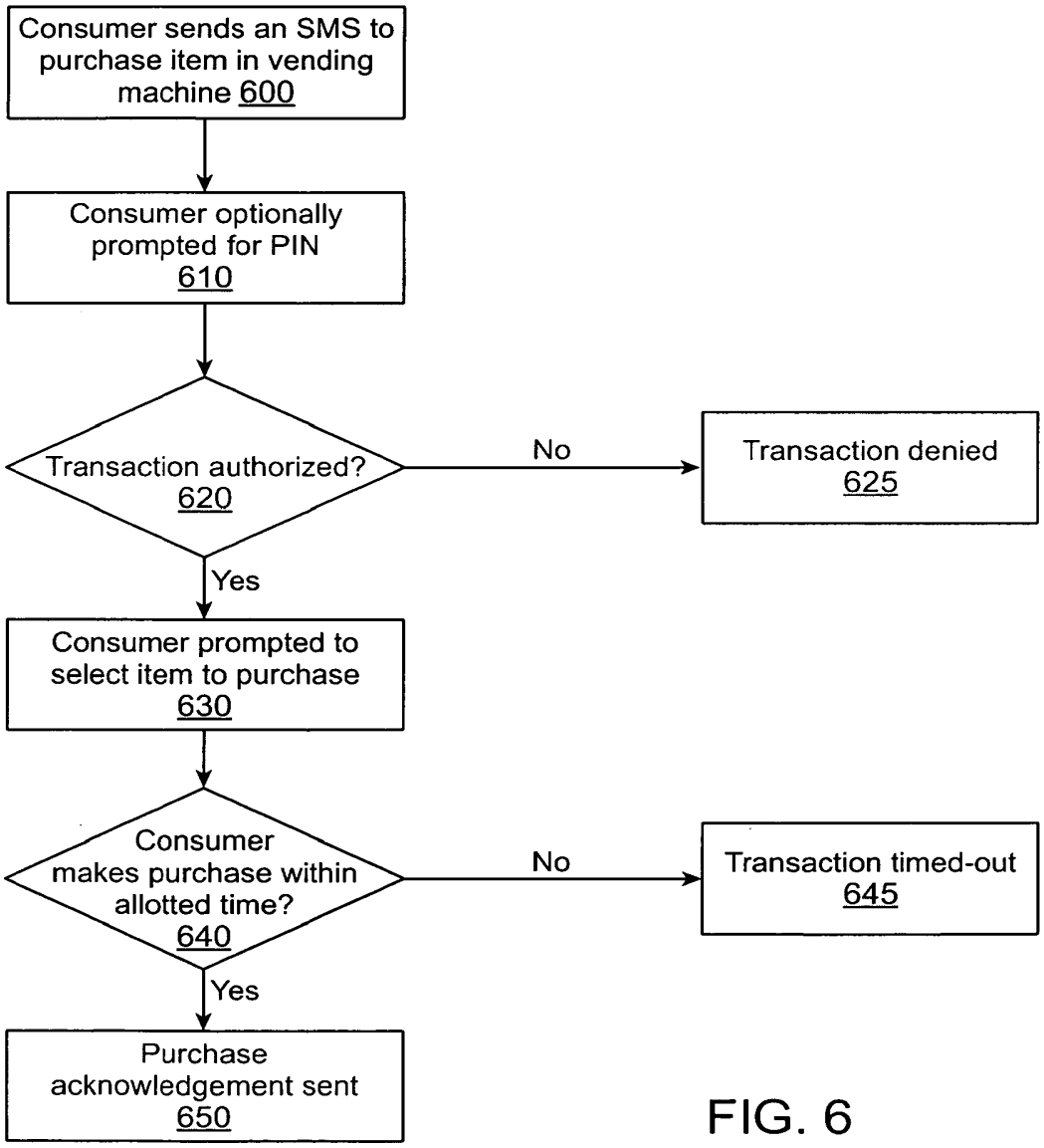

Consumer sends an SMS to purchase item in vending machine 600
Consumer optionally prompted for PIN 610
Transaction authorized? 620
No
Transaction denied 625
Yes
Consumer prompted to select item to purchase 630
Consumer makes purchase within allotted time? 640
No
Transaction timed-out 645
Yes
Purchase acknowledgement sent 650

FIG. 6

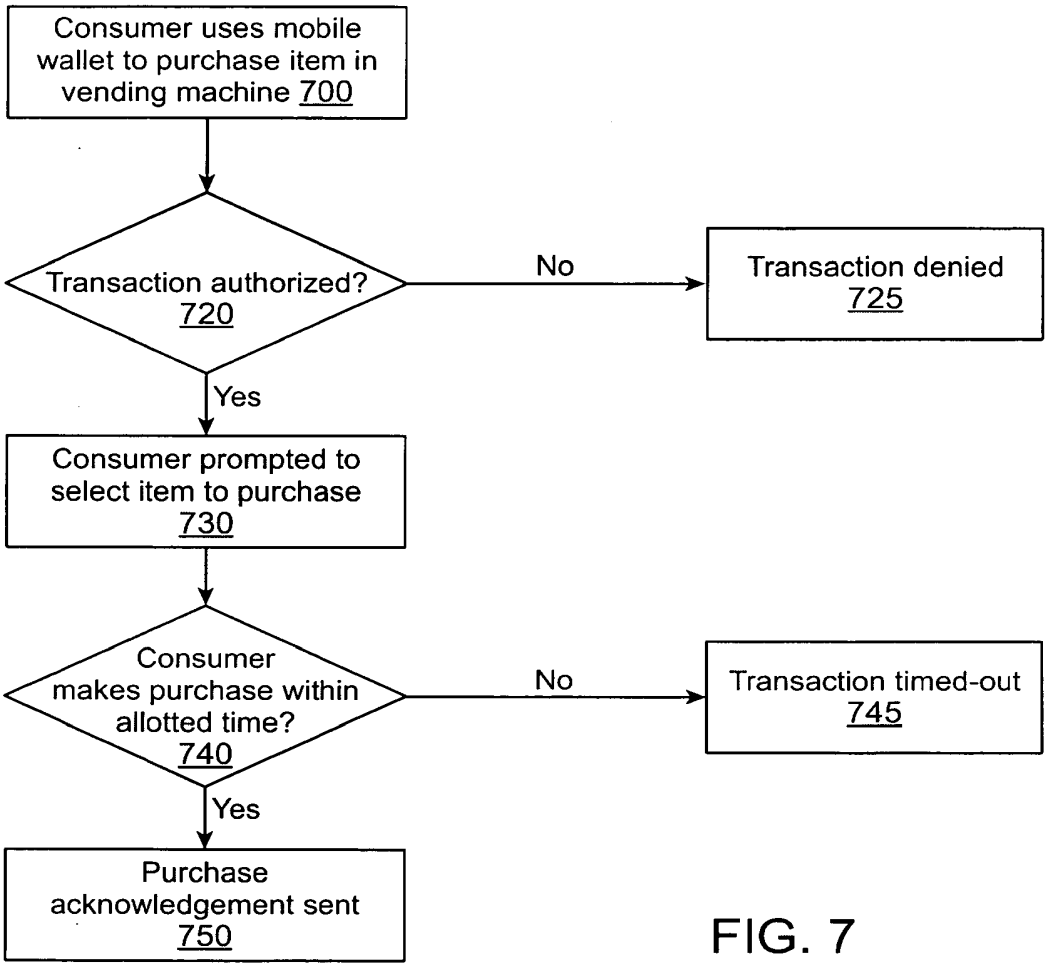


FIG. 7

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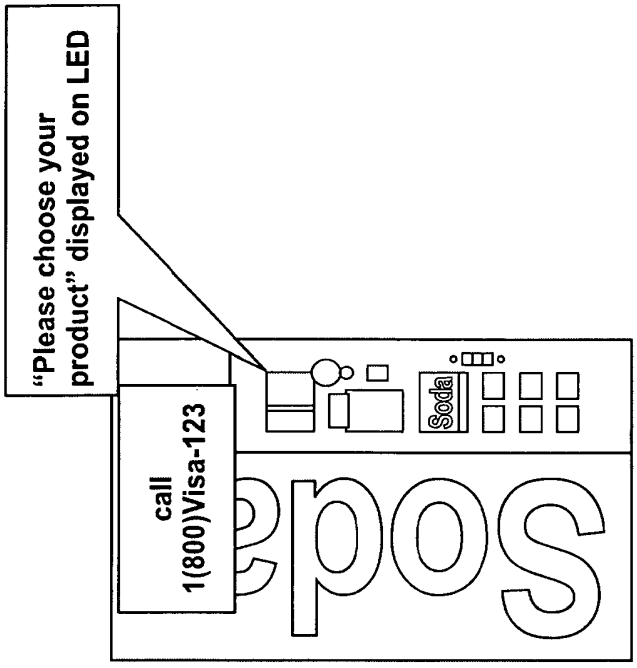

"Please choose your product" displayed on LED
call 1(800)Visa-123
Soda
epos

FIG. 8(b)

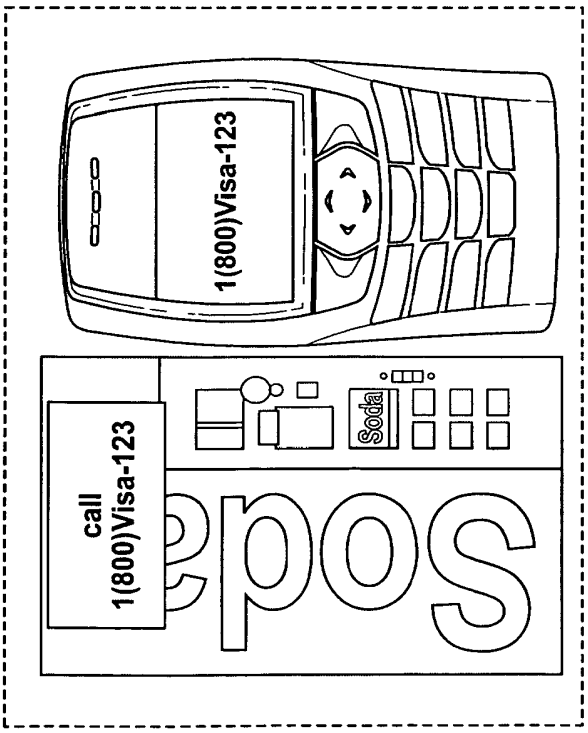

1(800)Visa-123
call 1(800)Visa-123
Soda
epos

FIG. 8(a)

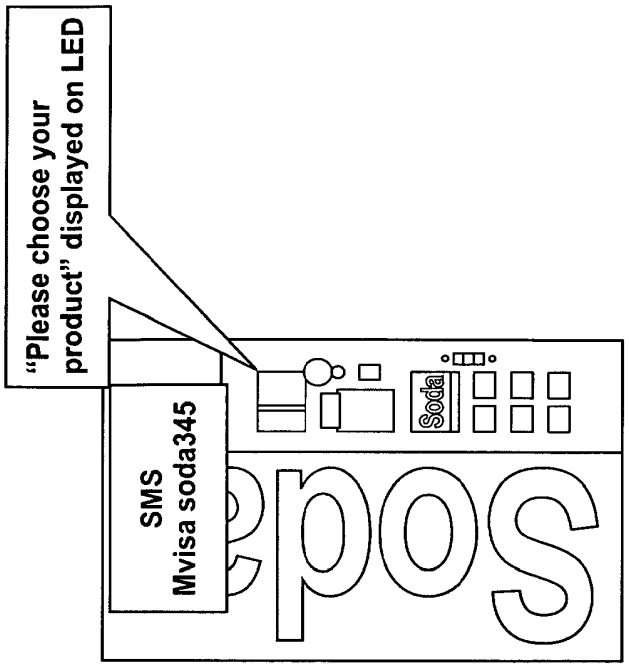

"Please choose your product" displayed on LED
SMS
Mvisa soda345
Soda
epos

FIG. 9(b)

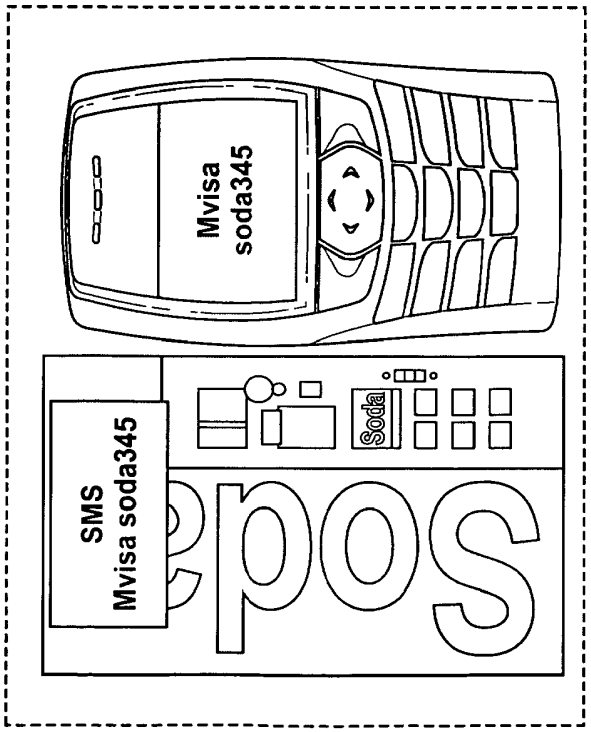

Mvisa
soda345
SMS
Mvisa soda345
Soda
epos

FIG. 9(a)

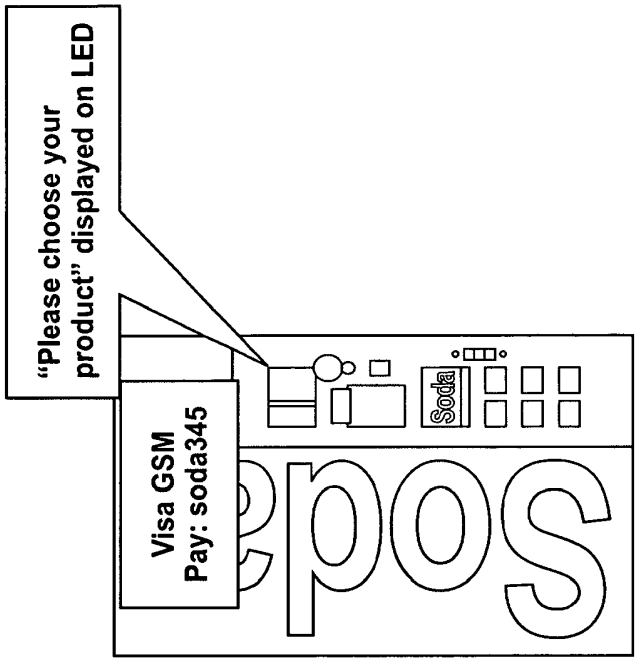


FIG. 10(b)

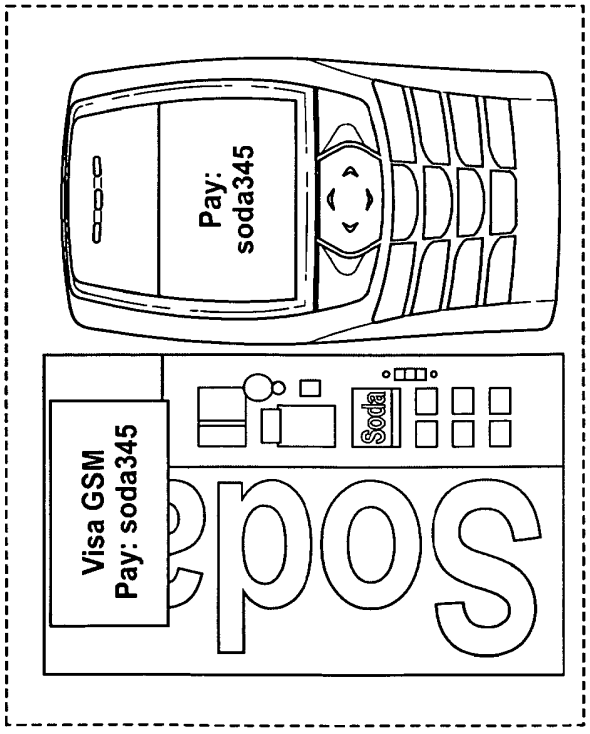


FIG. 10(a)

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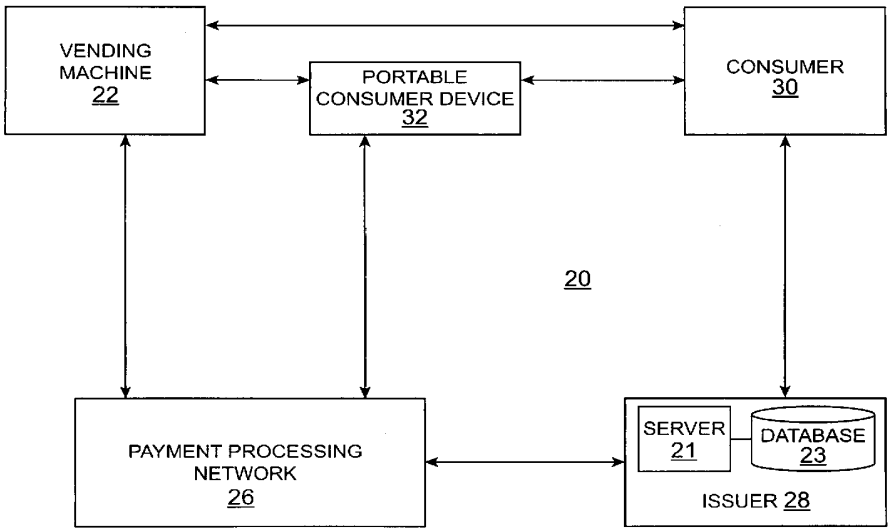
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(54) Title: MOBILE VENDING PURCHASING



(57) Abstract: A system and a method for using a portable consumer device such as a mobile phone for payments and the like are disclosed. One embodiment of the invention is directed to a method comprising receiving a payment request message from a portable consumer device operated by a consumer, wherein the payment request message includes a request to pay for a product from a vending machine, sending an authorization response message back to the vending machine wherein the vending machine subsequently prompts the consumer to enter a selection if the authorization response message indicates that the consumer is authorized to make a purchase, and receiving an acknowledgement message from the vending machine that the product was purchased.

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MOBILE VENDING PURCHASING

CROSS-REFERENCES TO RELATED APPLICATIONS

[0001] This patent application is a non-provisional of and claims priority to U.S. provisional patent application no. 60/871,898, filed on December 26, 2006, which is herein incorporated by reference in its entirety for all purposes.

BACKGROUND

[0002] Vending machines are common place today in a variety of locations and make available a wide selection of products for purchase. In a typical purchase transaction a consumer walks up to a vending machine, inserts small change or bills into the machine, makes a selection from the machine, and then the vending machine automatically dispenses the selected merchandise to the consumer. The problem is that a consumer either may not have cash on hand or may not have small bills or change to make the purchase. Further, vending machines are offering a more diverse variety of products to purchase than just the inexpensive small snacks, drinks and newspapers that were traditionally offered for sale in vending machines. For example, a consumer can purchase CDs or DVDs, prepaid telephone cards, or electronics from a vending machine. Thus, a simple cash purchase from the vending machine is becoming a less practical option.

[0003] To solve this problem a number of solutions have evolved. For example, many vending machines now have card readers so that a consumer can make purchase via a credit card or a prepaid card. More recently, some solutions have become available to purchase items from a vending machine via a mobile phone. However, these solutions require communication directly between the phone and the vending machine which requires special hardware to interact with different types of phones and a unique way for billing to occur to the consumer depending on the phone service the consumer subscribes to. For example, a consumer may be billed via her mobile phone company or she may have to subscribe to an entirely separate service that supports this type of transaction.

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[0004] A better solution is required to allow a consumer to make a purchase from a vending machine via a mobile phone or other similar device, without the complexities of setting up different billing methods and equipment for each and every vending machine to interact with different types of mobile devices and with different billing companies. Embodiments of the invention address these and other problems individually and collectively.

BRIEF SUMMARY

[0005] Embodiments of the invention are directed to systems and methods using portable consumer devices that can be used for payments and the like.

[0006] One embodiment of the invention is directed to a method comprising receiving a payment request message from a portable consumer device operated by a consumer, wherein the payment request message includes a request to pay for a product from a vending machine, sending an authorization response message back to the vending machine wherein the vending machine subsequently prompts the consumer to enter a selection if the authorization response message indicates that the consumer is authorized to make a purchase, and receiving an acknowledgement message from the vending machine that the product was purchased.

[0007] Another embodiment of the invention is directed to a method comprising reviewing contact information associated with a vending machine, sending a payment request message using the contact information and a portable consumer device wherein the vending machine subsequently receives an authorization response message indicating that payment is authorized and the vending machine thereafter prompts the consumer to make a selection, selecting a product in the vending machine, and receiving the product from the vending machine.

[0008] Another embodiment of the invention is directed to a method comprising receiving an authorization response message indicating that the consumer is authorized to make a purchase, prompting the consumer to enter a selection, and delivering an item corresponding to the selection to the consumer if the consumer makes the selection within a given amount of time.

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[0009] Another embodiment of the invention is directed to a method comprising receiving a phone number associated with a vending machine and dialing the phone number, wherein after dialing, the vending machine subsequently receives authorization to dispense a product to a consumer operating the phone.

[0010] Another embodiment of the invention is directed to a method comprising automatically detecting a vending machine, prompting a consumer to enter information associated with the vending machine, and sending a payment request message wherein the vending machine subsequently receives authorization to dispense a product to the consumer.

[0011] These and other embodiments of the invention are described in further detail below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] FIG. 1 shows a block diagram of a system according to an embodiment of the invention.

[0013] FIG. 2 shows a block diagram of a vending machine according to an embodiment of the invention.

[0014] FIG. 3 shows a block diagram of a portable consumer device according to an embodiment of the invention.

[0015] FIG. 4 shows a block diagram of a payment processing network according to an embodiment of the invention.

[0016] FIG. 5 shows a flowchart illustrating steps in a method according to an embodiment of the invention.

[0017] FIG. 6 shows a flowchart illustrating steps in a method according to an embodiment of the invention.

[0018] FIG. 7 shows a flowchart illustrating steps in a method according to an embodiment of the invention.

[0019] FIG. 8(a) shows the display on an exemplary vending machine and mobile phone according to an embodiment of the invention.

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[0020] FIG. 8(b) shows the display on an exemplary vending machine according to an embodiment of the invention.

[0021] FIG. 9(a) shows the display on an exemplary vending machine and mobile phone according to an embodiment of the invention.

[0022] FIG. 9(b) shows the display on an exemplary vending machine according to an embodiment of the invention.

[0023] FIG. 10(a) shows the display on an exemplary vending machine and mobile phone according to an embodiment of the invention.

[0024] FIG. 10(b) shows the display on an exemplary vending machine according to an embodiment of the invention.

DETAILED DESCRIPTION

[0025] Embodiments of the invention are directed to the use of portable consumer devices, and methods and systems that use them. Preferred portable consumer devices are mobile phones. The mobile phones can be used in payment processing systems like those shown in FIG. 1.

[0026] In some embodiments of the invention, a payment request message is sent from a portable consumer device such as a phone, directly to a payment processing network such as VisaNet. As used herein, a "payment request message" may be an implicit or explicit request to pay for a product or selection. A payment request message may take different forms. For example, a payment request message may simply be in the form of a dialed telephone number. Dialing a dedicated telephone number associated with a vending machine can be an implicit request to pay for a product, as it does not contain an explicit payment message. In other embodiments, the payment request message may be embodied by an SMS message, an e-mail, or some other type of message. Such messages may or may not include an explicit request to pay. For example, sending any text message to a dedicated address may be an implicit payment request. Alternatively, a text message may be sent which says "Pay Vending Machine 346." This is an explicit request to pay.

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[0027] FIG. 1 shows a system **20** that can be used in an embodiment of the invention. For simplicity of illustration, one vending machine, one issuer, one portable consumer device, and one consumer are shown. It is understood, however, that embodiments of the invention may include multiple vending machines, issuers, portable consumer devices, and/or consumers. In addition, some embodiments of the invention may include fewer than all of the components shown in FIG. 1. Also, the components in FIG 1 may communicate via any suitable communication medium (including the Internet), using any suitable communication protocol.

[0028] The system **20** includes a vending machine **22**, a consumer **30**, a payment processing network **26**, a portable consumer device **32**, and an issuer **28** associated with the portable consumer device **32**. The portable consumer device **32** can communicate with the issuer **28** via the payment processing network **26**.

[0029] The issuer **28** may be a bank, but it could also be business entity such as a retail store. The issuer **28** may operate a server computer **21**, which may have a computer readable medium comprising code for performing the functions that the issuer **28** performs. A database **23** comprising account number information and other information may be operatively coupled to the server computer **21**. The database **23** may comprise an account associated with the consumer **30** and the portable consumer device **32**.

[0030] The consumer **30** may be an individual who may use the portable consumer device **32.**

[0031] The vending machine **22** may be owned or leased by an entity such as an organization or business that sells goods using the vending machine **22**. The vending machine **22** is typically a machine that dispenses products after a consumer **30** pays for the products. Examples of suitable products include food items (e.g., candy, gum, soft drinks, etc.), travel items, newspapers, tickets, movies, electronics, etc.

[0032] The vending machine **22** may contain components like those shown in FIG. 2. For example, the vending machine **22** may have a computer readable medium ("CRM") **22(b)** comprising code including instructions for performing the functions that the vending machine **22** performs, and a processor **22(c)** to execute

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those instructions. The vending machine **22** may also have a display **22(a)** to show messages to the consumer **30** and a speaker **22(d)** to provide audio messages for the consumer **30**. The vending machine **22** may also have input elements **22(e)** (e.g., buttons, levers, or other actuators) to allow a consumer **30** to make a selection of one or more items to purchase from the vending machine **22**, as well as a network interface **22(f)** to communicate with a payment processing network **26** so that the vending machine **22** can communicate during the payment authorization process. The vending machine **22** may also have one or more selections **22(g)** of items for a consumer **30** to purchase. Selections **22(g)** may comprise products such as food items (e.g., candy, gum, soft drinks, etc.), travel items, etc.

[0033] The vending machine **22** may also have, or may receive communications from, a reader **22(h)** that can interact with the portable consumer device **32**. The reader **22(h)** may include any suitable contact or contactless mode of operation. For example, exemplary card readers can include RF (radio frequency) antennas, magnetic stripe readers, etc. to interact with the portable consumer device **32**. Contactless readers are commercially available. Suitable equipment for allowing the vending machine **22** to function in embodiments of the invention can be purchased from Bonusdata AG.

[0034] The portable consumer device **32** may be in any suitable form. For example, suitable portable consumer devices can be hand-held and compact so that they can fit into a consumer's wallet and/or pocket (e.g., pocket-sized). They may include smart cards, ordinary credit or debit cards (with a magnetic strip and without a microprocessor), keychain devices (such as the Speedpass™ commercially available from Exxon-Mobil Corp.), etc. Other examples of portable consumer devices include cellular and mobile phones, personal digital assistants (PDAs), pagers, payment cards, security cards, access cards, smart media, transponders, and the like. The portable consumer devices can also be debit devices (*e.g.*, a debit card), credit devices (*e.g.*, a credit card), or stored value devices (*e.g.*, a stored value card).

[0035] The portable consumer device **32** may comprise a computer readable medium **32(b)** and a body **32(h)** as shown in FIG. 3. The computer readable medium **32(b)** present within body **32(h)**, or may be detachable from it. The body

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32(h) may in the form a plastic substrate, housing, or other structure. The computer readable medium **32(b)** may be a memory that stores data and may be in any suitable form including a magnetic stripe, a memory chip, etc.

[0036] If the computer readable medium **32(b)** is in a phone, it may comprise code for receiving a phone number and a payment request message from a consumer, wherein the payment request message includes a request to pay for a product from a vending machine. It may also comprise code for dialing the phone number; and code for sending a payment request message where the vending machine subsequently receives an authorization response message indicating that payment is authorized (or not authorized), where the vending machine thereafter prompts the consumer to make a selection.

[0037] The portable consumer device **32** may further include a contactless element **32(g)**, which is typically implemented in the form of a semiconductor chip (or other data storage element) with an associated wireless transfer (e.g., data transmission) element, such as an antenna. Contactless element **32(g)** is associated with (e.g., embedded within) portable consumer device **32** and data or control instructions transmitted via a cellular network may be applied to contactless element **32(g)** by means of a contactless element interface (not shown). The contactless element interface functions to permit the exchange of data and/or control instructions between the mobile device circuitry (and hence the cellular network) and an optional contactless element **32(g)**.

[0038] Contactless element **32(g)** is capable of transferring and receiving data using a near field communications ("NFC") capability (or near field communications medium) typically in accordance with a standardized protocol or data transfer mechanism (e.g., ISO 14443/NFC). Near field communications capability is a short-range communications capability, such as RFID, Bluetooth™, infra-red, or other data transfer capability that can be used to exchange data between the portable consumer device **32** and a payment processing network **26** or it can be used to exchange data between the portable consumer device **32** and the vending machine **22**. Thus, the portable consumer device **32** is capable of communicating and transferring data and/or control instructions via both cellular network and near field communications capability.

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[0039] The portable consumer device **32** may also include a processor **32(c)** (e.g., a microprocessor) for processing the functions of the portable consumer device **32** and a display **32(d)** to allow a consumer to see phone numbers and other information and messages. The portable consumer device **32** may further include input elements **32(e)** to allow a consumer to input information into the device, a speaker **32(f)** to allow the consumer to hear voice communication, music, etc., and a microphone **32(i)** to allow the consumer to transmit her voice through the portable consumer device **32**. The portable consumer device **32** may also include an antenna **32(a)** for wireless data transfer (e.g., data transmission).

[0040] Referring to FIG. 1 again, the payment processing network **26** may include data processing subsystems, networks, and operations used to support and deliver authorization services, exception file services, and clearing and settlement services. An exemplary payment processing network may include VisaNet™. Payment processing networks such as VisaNet™ are able to process credit card transactions, debit card transactions, and other types of commercial transactions. VisaNet™, in particular, includes a VIP system (Visa Integrated Payments system) which processes authorization requests and a Base II system which performs clearing and settlement services.

[0041] Specifically, the payment processing network **26** may include a server computer **415** as shown in FIG 4. As used herein, a "server computer" is typically a powerful computer or cluster of computers. For example, a server computer can be a large mainframe, a minicomputer cluster, or a group of servers functioning as a unit. In one example, the server computer may be a database server coupled to a Web server. The payment processing network **26** may use the server computer **415**, and the server computer **415** may be present in any suitable wired or wireless network, including the Internet.

[0042] The payment processing network **26** may further include a gateway **405** whereby a dial request, text message or Short Message Service ("SMS") message, for example, from a portable consumer device **32**, can pass through to the payment processing network **26**. (SMS is typically a service available on a portable consumer device that permits the sending of short messages between portable consumer devices via an intermediate server.) The gateway **405** may be embodied

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by a computer or a network that allows or controls access to another computer or network. The gateway **405** may also be a software interface between the computer or network and another computer or network.

[0043] In this example, the payment server **415** can validate and augment a payment request message received from the portable consumer device **32**. It can log the payment request message, and transmit the payment request message to the authorization process device **435** where it is formatted and transmitted to the issuer **28** for the portable consumer device **32**. The payment processing network **26** may also include an enrollment database **425** that stores portable consumer device enrollment data for verification and logging purposes.

[0044] An acquirer (which is not shown in FIG. 1) such as a bank may be in electronic communication with the payment processing network **26**, and the issuer **28**. It may also be in electronic communication with the vending machine **22**, and other vending machines, and/or an organization that owns or operates the vending machines. In embodiments of the invention, the vending machine **22** may communicate directly with the payment processing network **26** or through an acquirer.

[0045] Referring to FIGS. 1-3, in one purchase transaction embodiment, a consumer **30** may use a portable consumer device **32** to directly contact the payment processing network **26** to obtain authorization to make a purchase. In this embodiment, the portable consumer device **32** does not directly communicate with the vending machine **22** when the purchase is made. In this example, a payment request message is sent from the portable consumer device **32** to the payment processing network **26**. The payment processing network **26** then forwards the payment request message to the issuer **28** of the portable consumer device **32**.

[0046] After the issuer **28** receives the authorization request message, the issuer **28** sends an authorization response message back to the payment processing network **26** to indicate whether or not the current transaction is authorized. The issuer **28** may require additional information from the consumer **30** such as a PIN before sending the authorization response message to the vending machine **22**

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and/or the portable consumer device **32**. The transaction processing network **26** then forwards the authorization response message to the vending machine **22**.

[0047] After the vending machine **22** receives the authorization response message, the authorization response message may be displayed by the vending machine **22** display **22(a)** or the vending machine **22** may voice the response message via the speaker **22(d)**. Once the vending machine **22** receives approval for the payment, the vending machine **22** may prompt the consumer **30** to make a selection. The consumer **30** may then select a product as she would with a conventional vending machine and the product may thereafter be dispensed to the consumer **30**.

[0048] At the end of the day, a normal clearing and settlement process can be conducted by the transaction processing network **26**. A clearing process is a process of exchanging financial details between the payment processing network **26**, the issuer **28**, and the vending machine **22**, or potentially an acquirer associated with the vending machine **22**. To facilitate posting to a consumer's account and reconciliation of the consumer's settlement position. As noted above, the acquirer (which is not shown in FIG. 1), may be bank that is electronically coupled to the payment processing network **26**, the issuer **28**, and the vending machine **22**.

[0049] Some of the embodiments described below may use a payment processing system like the one described above, or any suitable combination of components in the payment processing system. More specific embodiments of the invention are described below.

[0050] Other embodiments of the invention, which specifically use a mobile phone, are described in further detail below. The embodiments can use dial, interactive voice response ("IVR"), or an entered message which is sent to a payment processing network. These embodiments may further use a payment processing network such as VisaNet to authorize the transaction and tell the vending machine that payment has been accepted. By using a payment processing network such as VisaNet, there is no need to set up a separate billing situation for each mobile phone service organization or set up a separate billing service for a particular vending machine. The payment processing network, such as VisaNet, interacts with

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each different billing organization so that all transactions appear the same to the vending machine.

[0051] Additional details regarding embodiments of the invention are described below.

[0052] FIG. 5 shows a flowchart including a method according to a first embodiment of the invention. The method can be described with reference to FIGS. 1-4, 8(a), and 8(b).

[0053] First, a consumer **30** enters a telephone number associated with the vending machine **22** in using input elements **32(e)** in the portable consumer device **32** to purchase one or more selections **22(g)** from the vending machine **22** (step **500**). As shown in FIG. 8(a), the number may be posted (e.g., through a static medium such as plastic or paper, or through a dynamic medium such as an LCD screen) on the vending machine **22**. Alternatively, it may be provided to the consumer **30** in some other way (e.g., a mailing, an e-mail, an SMS message, etc.).

[0054] Referring to FIG. 4, a payment request message is then sent from the portable consumer device **32** to the payment processing network **26** via a gateway **405**. The gateway **405** passes the payment request message to the payment server **415**. The payment server **415** validates the payment request message against the data in the database containing the enrollment data **425** and augments the payment request message. The payment server **415** then passes the payment request message to the authorization process device **435** where it is formatted and passed to the issuer **28** of the portable consumer device **32**.

[0055] After the issuer **28** receives the payment request message, the issuer **28** analyzes the payment request message and sends an authorization response message back to the payment server **415** to indicate whether or not the current transaction is authorized. The payment server **415** logs the response and sends the authorization response message to the vending machine **22**. If the transaction is not authorized (step **520**), the vending machine **22** notifies the consumer **30** that the transaction is denied (step **525**). If the transaction is authorized (step **520**), the vending machine **22** prompts the consumer **30** to select an item to purchase (step **530**) within an allotted time (e.g., twenty seconds or less). For example, the vending

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machine **22** may display a message that says "Please choose your product," as shown in FIG. 8(b).

[0056] If the consumer **30** does not make the purchase within the allotted time (step **540**) the transaction times-out (step **545**) and the consumer **30** initiates another payment request to purchase an item. If the consumer **30** does make the purchase within the allotted time (step **540**) then the selected item is delivered to the consumer **30** and a purchase acknowledgement is sent to the payment processing network **26** (step **550**). The purchased item will appear on the consumer's next statement.

[0057] FIG. 6 shows a flowchart including a general method according to a second embodiment of the invention. The method can be described with reference to FIGS. 1-4, 9(a), and 9(b).

[0058] First, the consumer **30** sends an SMS to the number associated with the vending machine **22** to purchase an item in the vending machine **22** (step **600**). As shown in FIG. 9(a), the number may be posted on the vending machine **22**. Alternatively, it may be provided to the consumer **30** in some other way (e.g., a mailing, an e-mail, an SMS message, etc.).

[0059] Referring to FIG. 4, a payment request message is then sent from the portable consumer device **32** to the payment processing network **26** via a gateway **405**. The gateway **405** passes the payment request message to the payment server **415**. The payment server **415** validates the payment request message against the data in the database containing the enrollment data **425** and augments the payment request message. The payment server **415** then passes the payment request message to the authorization process device **435** where it is formatted and passed to the issuer **28** of the portable consumer device **32**.

[0060] The issuer **28** may require a PIN from the consumer **30** before sending an authorization response message. If this is the case, then after the issuer **28** receives and analyzes the payment request message, the issuer **28** sends a PIN request back to the payment server **415** and the payment server **415** sends the PIN request to the portable consumer device **32**. The PIN request may be in audio or textual form.

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[0061] Next the consumer **30** is prompted to enter a PIN (step **610**) into the portable consumer device **32**. The PIN is then sent from the portable consumer device **32** to the payment processing network **26** via a gateway **405**. The gateway **405** passes the PIN to the payment server **415**. The payment server **415** then passes the PIN to the issuer **28** of the portable consumer device **32**.

[0062] After the issuer **28** receives the PIN, the issuer **28** verifies that the PIN matches the PIN associated with the consumer **30**. After verifying the PIN (or if the issuer **28** did not require a PIN) the issuer **28** sends an authorization response message back to the payment server **415** to indicate whether or not the current transaction is authorized. The payment server **415** logs the response and sends the authorization response message to the vending machine **22**. If the transaction is not authorized (step **620**), the vending machine **22** notifies the consumer **30** that the transaction is denied (step **625**). If the transaction is authorized (step **620**), the vending machine **22** prompts the consumer **30** to select an item to purchase within an allotted time (e.g., twenty seconds or less) (step **630**). For example, the vending machine **22** may display a message that says "Please choose your product," as shown in FIG. 9(b).

[0063] If the consumer **30** does not make the purchase within the allotted time (step **640**) the transaction times-out (step **645**) and the consumer **30** initiates another payment request to purchase an item. If the consumer **30** does make the purchase within the allotted time (step **640**) then the item selected is delivered to the consumer **30** and a purchase acknowledgement is sent to the payment processing network **26** (step **650**). The purchased item will appear on the consumer's next statement.

[0064] FIG. 7 shows a flowchart including a general method according to a third embodiment of the invention. The method can be described with reference to FIGS. 1-4, 10(a), and 10(b).

[0065] In this embodiment of the invention, a consumer **30** may use a mobile wallet to make a vending purchase (step **700**). A mobile wallet is a payment enabled mobile phone that functions as a payment mechanism similar to a debit card, credit card, or prepaid card. For example a consumer **30** may register her credit card with the issuer **28** of the portable consumer device **32** and then use the mobile phone to

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make purchases or a consumer **30** may set up a prepaid account with the issuer **28** of the portable consumer device **32** or another entity that she can draw against to make purchases.

[0066] First, the consumer **30** may launch an application in the portable consumer device **32** and type in a machine alias associated with the vending machine **22** (e.g., "Pay: coke345") as shown in FIG. 10(a). Alternatively, the portable consumer device **32** may automatically detect the vending machine **22** (via RFID, etc.) and prompt the consumer **30** to enter information (e.g., a machine alias, payment information, etc.) associated with the vending machine **22**, such as a machine alias shown in FIG. 10(a). As shown in FIG. 10(a), the machine alias may be posted on the vending machine **22**. The consumer **30** may also be required to enter a PIN to authenticate the transaction.

[0067] Referring to FIG. 4, a payment request message is then sent from the portable consumer device **32** to the payment processing network **26** via a gateway **405**. The gateway **405** passes the payment request message to the payment server **415**. The payment server **415** validates the payment request message against the data in the database containing the enrollment data **425** and augments the payment request message. The payment server **415** then passes the payment request message to the authorization process device **435** where it is formatted and passed to the issuer **28** of the portable consumer device **32**.

[0068] After the issuer **28** receives the payment request message, the issuer **28** analyzes the payment request message, and sends an authorization response message back to the payment server **415** to indicate whether or not the current transaction is authorized. The payment server **415** logs the response and sends the authorization response message to the vending machine **22**. If the transaction is not authorized (step **720**), the vending machine **22** notifies the consumer **30** that the transaction is denied (step **725**). If the transaction is authorized (step **720**), the vending machine **22** prompts the consumer **30** to select an item to purchase (step **730**) within an allotted time (e.g., twenty seconds or less). For example, the vending machine **22** may display a message that says "Please choose your product," as shown in FIG. 10(b).

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[0069] If the consumer **30** does not make the purchase within the allotted time (step **740**) the transaction times-out (step **745**) and the consumer **30** initiates another payment request to purchase an item. If the consumer **30** does make the purchase within the allotted time (step **740**) then the selected item is delivered to the consumer **30** and a purchase acknowledgement is sent to the payment processing network **26** (step **750**). The purchased item will appear on the consumer's next statement.

[0070] Other alternative embodiments are also possible. For example, although the examples described above request the consumer to make a selection, in other embodiments, the consumer may actually input the selection that the consumer wants into the portable consumer device (e.g., phone) before the purchase is made. For example, the consumer may dial a phone number on a vending machine, and may thereafter get an automatic callback from a payment processing network requesting that the consumer enter the number of the product desired. The consumer may then enter the number "13" into his phone, and the vending machine may automatically dispense the product associated with this number. In this embodiment, the consumer may not directly interact at all with the vending machine during the payment process. In another example, the consumer may simply enter information such as "pay vending machine 345 $2.00, and dispense product 13". This information may be sent to a payment processing and the payment processing network may thereafter automatically dispense the desired product.

[0071] Embodiments of the invention have a number of advantages. First, embodiments of the invention can contact a payment processing network directly, without requiring the consumer to initially interact with the vending machine. Thus, in some cases, it is not necessary that the vending machine have some interface (e.g., a contactless reader) that needs to interact with the consumer's portable consumer device. Since such specialized readers are not required, this makes it more likely that embodiments of the invention can be universally implemented. Also, the communication between the portable consumer device and the payment processing network is more direct in embodiments of the invention than conventional payment processing systems. This can reduce the likelihood of communication errors in the payment process. Also, by contacting the payment processing network directly

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(rather than a phone company first), the payment processing network can log and process the transaction like any other credit or debit card payment transaction.

[0072] It should be understood that the present invention as described above can be implemented in the form of control logic using computer software in a modular or integrated manner. Based on the disclosure and teachings provided herein, a person of ordinary skill in the art will know and appreciate other ways and/or methods to implement the present invention using hardware and a combination of hardware and software.

[0073] Any of the software components or functions described in this application, may be implemented as software code to be executed by a processor using any suitable computer language such as, for example, Java, C++ or Perl using, for example, conventional or object-oriented techniques. The software code may be stored as a series of instructions, or commands on a computer readable medium, such as a random access memory (RAM), a read only memory (ROM), a magnetic medium such as a hard-drive or a floppy disk, or an optical medium such as a CD-ROM. Any such computer readable medium may reside on or within a single computational apparatus, and may be present on or within different computational apparatuses within a system or network.

[0074] The above description is illustrative and is not restrictive. Many variations of the invention will become apparent to those skilled in the art upon review of the disclosure. The scope of the invention should, therefore, be determined not with reference to the above description, but instead should be determined with reference to the pending claims along with their full scope or equivalents.

[0075] One or more features from any embodiment may be combined with one or more features of any other embodiment without departing from the scope of the invention.

[0076] A recitation of "a", "an" or "the" is intended to mean "one or more" unless specifically indicated to the contrary.

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WHAT IS CLAIMED IS:

1. A method comprising:

receiving a payment request message from a portable consumer device operated by a consumer, wherein the payment request message includes a request to pay for a product from a vending machine;

sending an authorization response message back to the vending machine wherein the vending machine subsequently prompts the consumer to enter a selection if the authorization response message indicates that the consumer is authorized to make a purchase; and

receiving an acknowledgement message from the vending machine that the product was purchased.

2. The method of claim 1 further comprising analyzing the payment request message to determine if the consumer is authorized to pay for the product.

3. The method of claim 1 further comprising automatically calling the portable consumer device and requesting that the consumer enter a PIN into the device.

4. The method of claim 1 wherein the payment request message is received by a payment processing network, and wherein the payment request message does not pass directly from the portable consumer device to the vending machine.

5. The method of claim 1 wherein the portable consumer device is a wireless phone.

6. A computer readable medium comprising:

code for receiving a payment request message from a portable consumer device operated by a consumer, wherein the payment request message includes a request to pay for a product from a vending machine;

code for sending an authorization response message back to the vending machine wherein the vending machine subsequently prompts the consumer to enter a selection if the authorization response message indicates that the consumer is authorized to make a purchase; and

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code for receiving an acknowledgement message from the vending machine that the product was purchased.

7. A server comprising the computer readable medium of claim 6.

8. A method comprising:

reviewing contact information associated with a vending machine;

sending a payment request message using the contact information and a portable consumer device wherein the vending machine subsequently receives an authorization response message indicating that payment is authorized and the vending machine thereafter prompts the consumer to make a selection;

selecting a product in the vending machine; and

receiving the product from the vending machine.

9. The method of claim 8 wherein the portable consumer device is a wireless phone.

10. A method comprising:

receiving an authorization response message indicating that the consumer is authorized to make a purchase;

prompting the consumer to enter a selection; and

delivering an item corresponding to the selection to the consumer if the consumer makes the selection within a given amount of time.

11. The method of claim 10 wherein the given amount of time is twenty seconds or less.

12. A vending machine adapted to perform the method of claim 10.

13. A method comprising:

receiving a phone number associated with a vending machine; and

dialing the phone number, wherein after dialing, the vending machine subsequently receives authorization to dispense a product to a consumer operating the phone.

14. A computer readable medium comprising:

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code for receiving a phone number associated with a vending machine; and

code for dialing the phone number, wherein after dialing, the vending machine subsequently receives authorization to dispense a product to a consumer operating the phone.

15. A wireless phone comprising the computer readable medium of claim 14.

16. A method comprising:

automatically detecting a vending machine;

prompting a consumer to enter information associated with the vending machine; and

sending a payment request message wherein the vending machine subsequently receives authorization to dispense a product to the consumer.

17. The method of claim 16 further comprising prompting the consumer to enter a PIN.

18. A computer readable medium comprising:

code for automatically detecting a vending machine;

code for prompting a consumer to enter information associated with the vending machine; and

code for sending a payment request message wherein the vending machine subsequently receives authorization to dispense a product to the consumer.

19. A wireless phone comprising the computer readable medium of claim 18.

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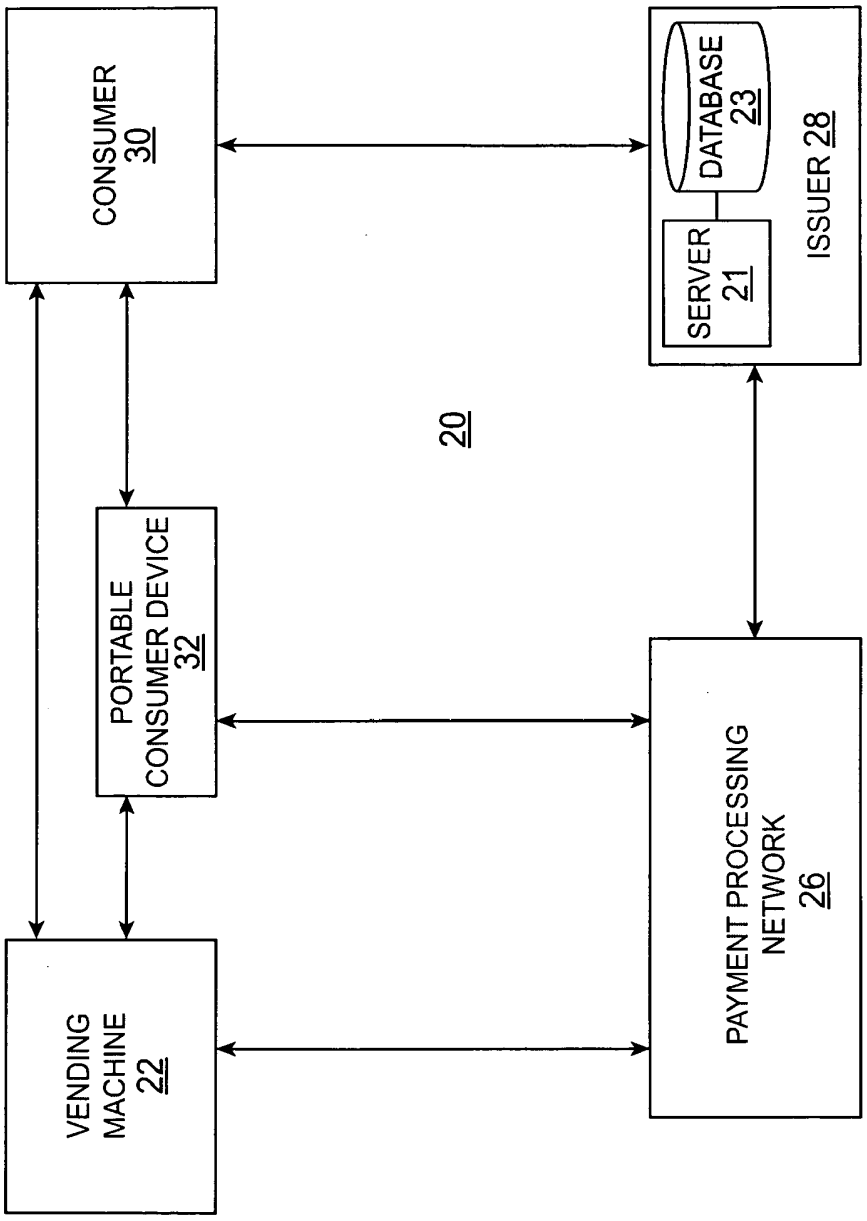


FIG. 1

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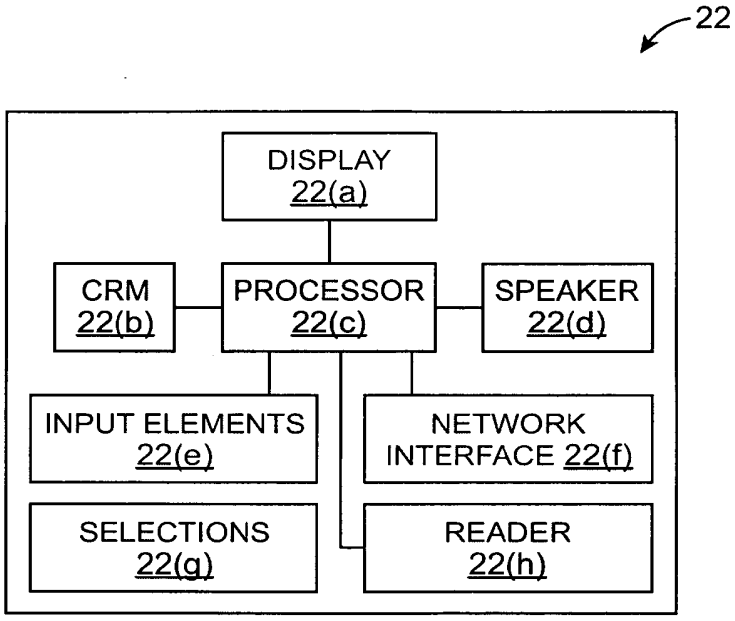

22
DISPLAY
22(a)
CRM
22(b)
PROCESSOR
22(c)
SPEAKER
22(d)
INPUT ELEMENTS
22(e)
NETWORK
INTERFACE 22(f)
SELECTIONS
22(g)
READER
22(h)

FIG. 2

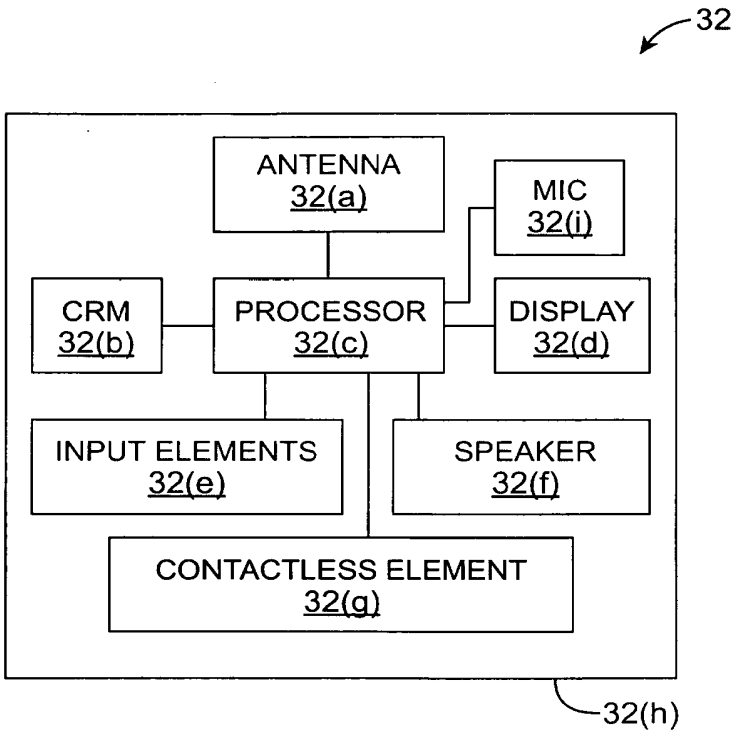


FIG. 3

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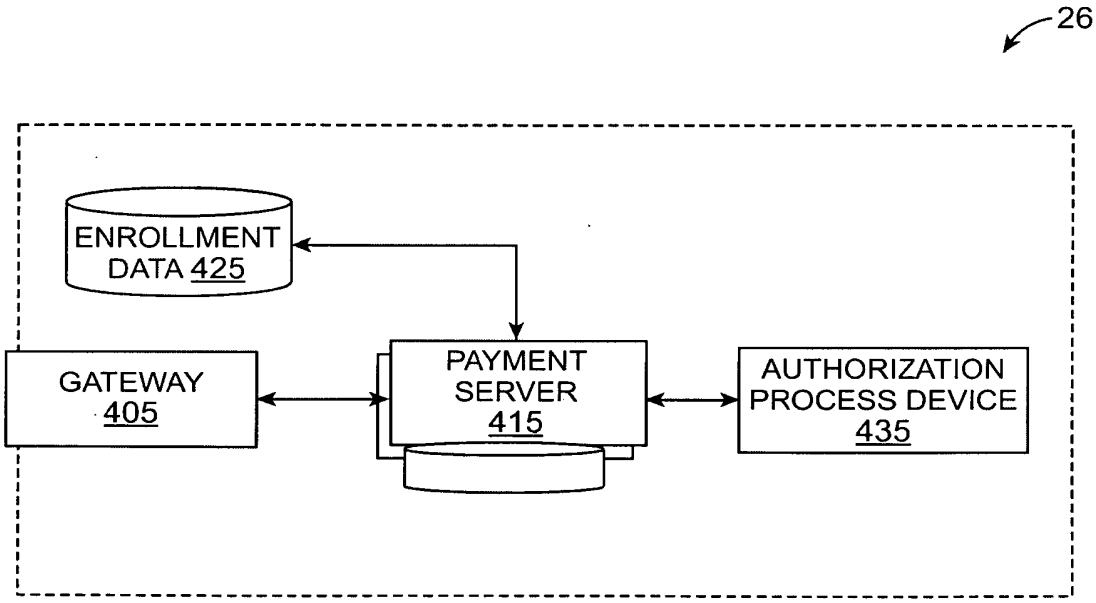


FIG. 4

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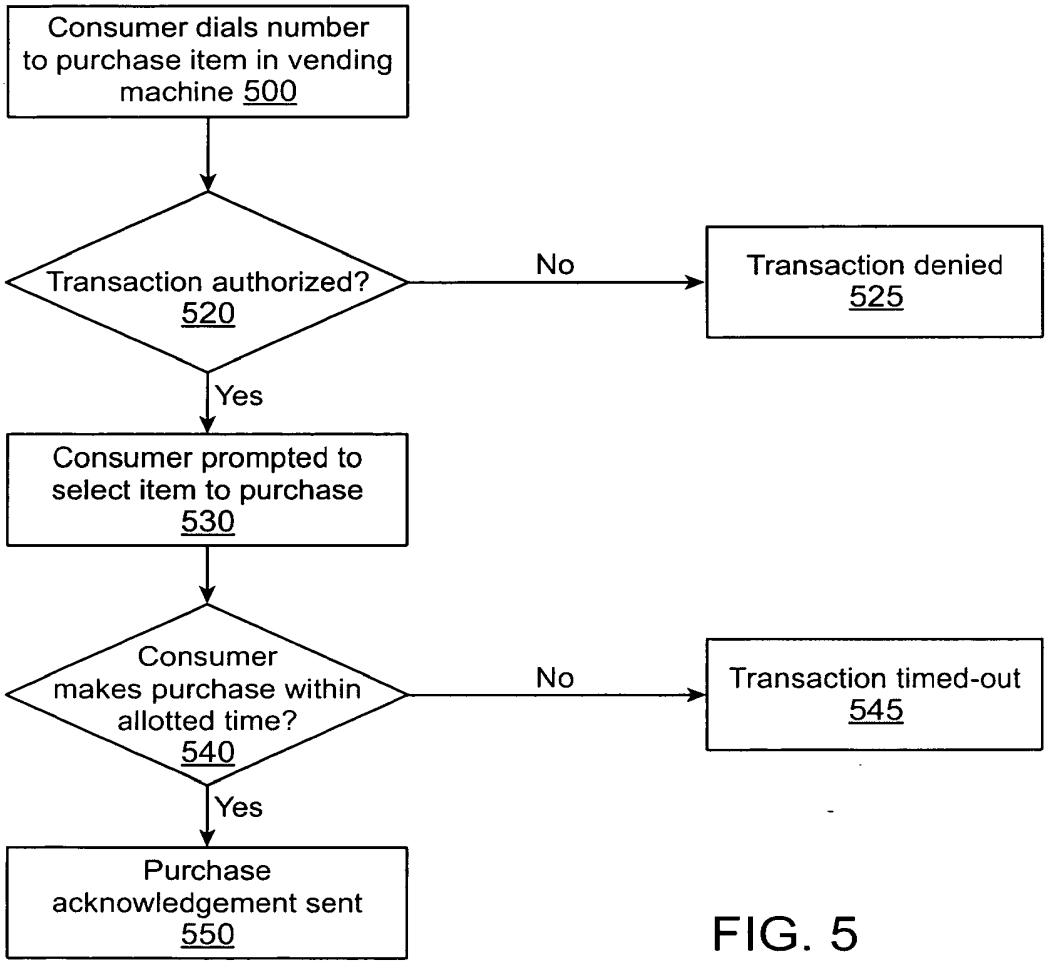


FIG. 5

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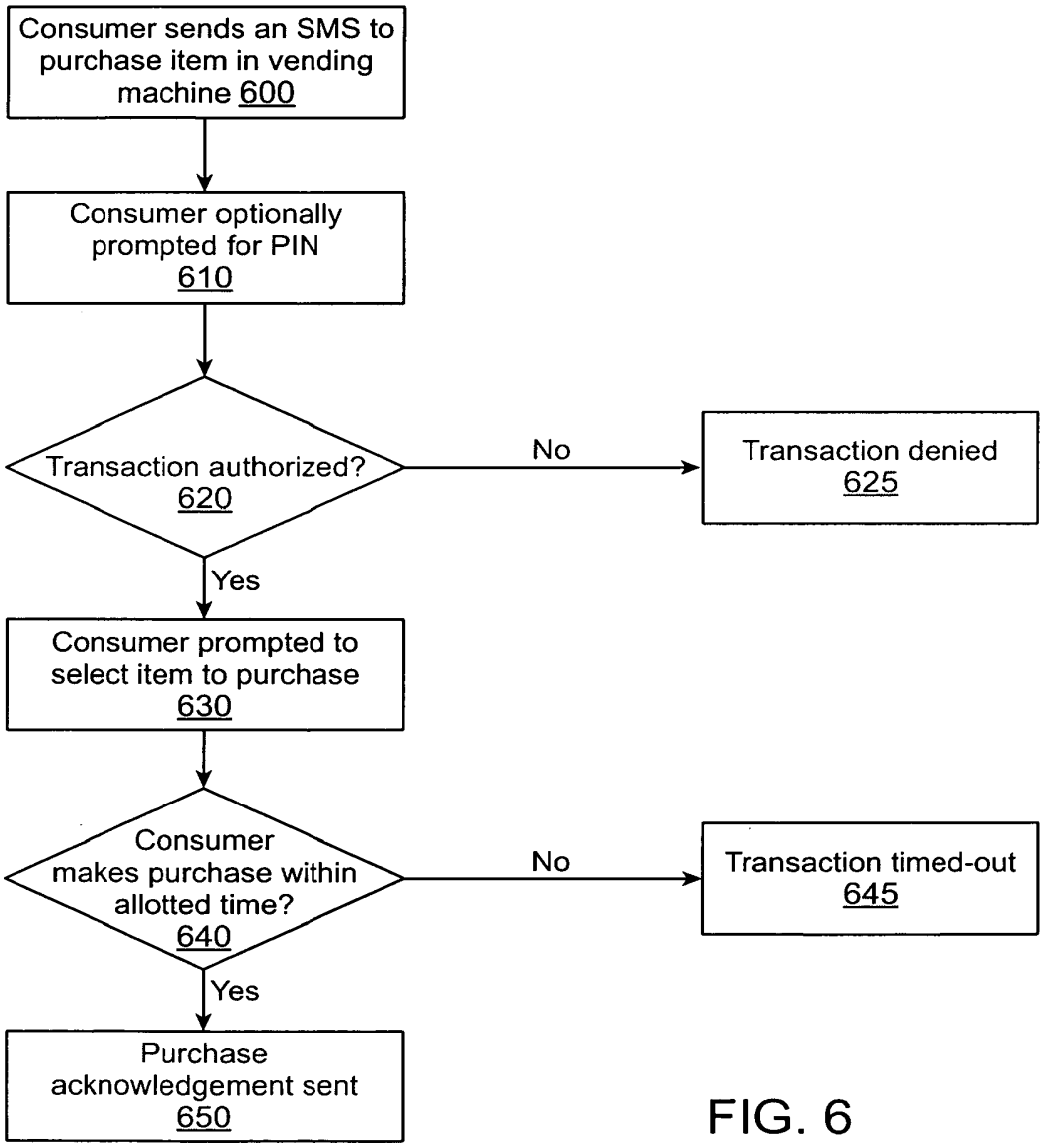

Consumer sends an SMS to purchase item in vending machine 600
Consumer optionally prompted for PIN 610
Transaction authorized? 620
No
Transaction denied 625
Yes
Consumer prompted to select item to purchase 630
Consumer makes purchase within allotted time? 640
No
Transaction timed-out 645
Yes
Purchase acknowledgement sent 650

FIG. 6

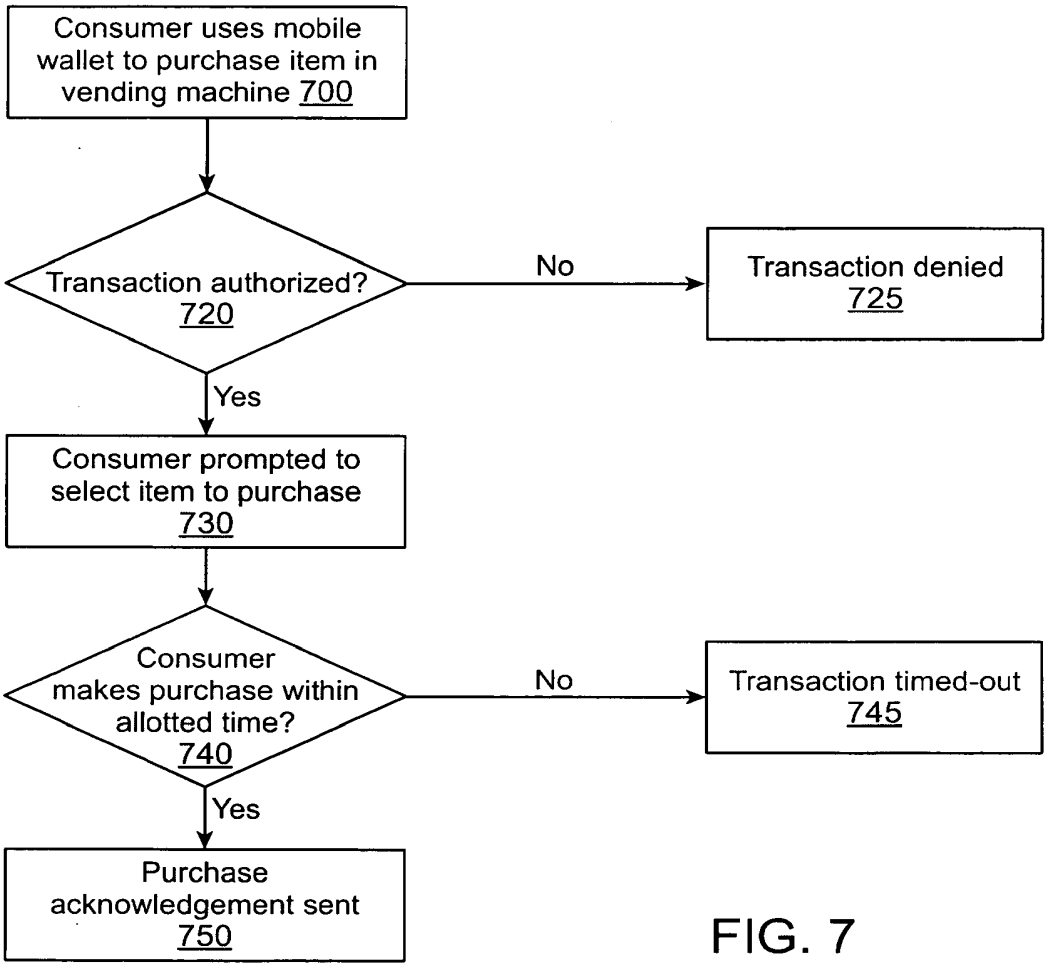


FIG. 7

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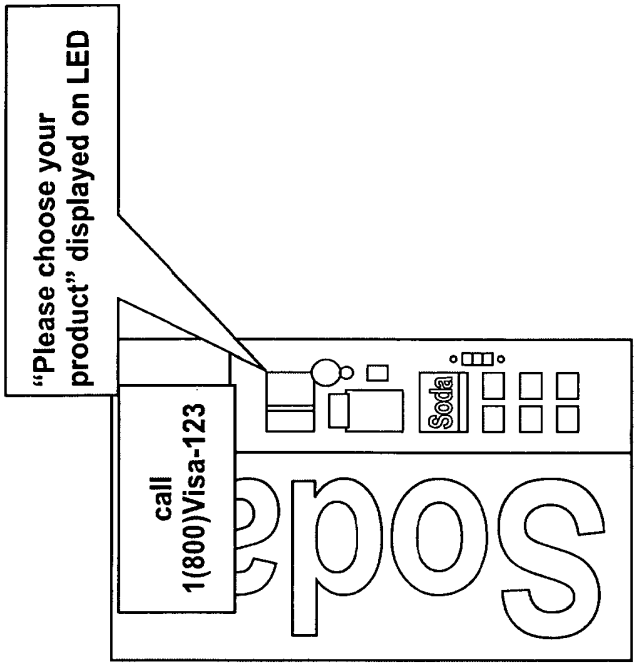

"Please choose your product" displayed on LED
call 1(800)Visa-123
Soda
epos

FIG. 8(b)

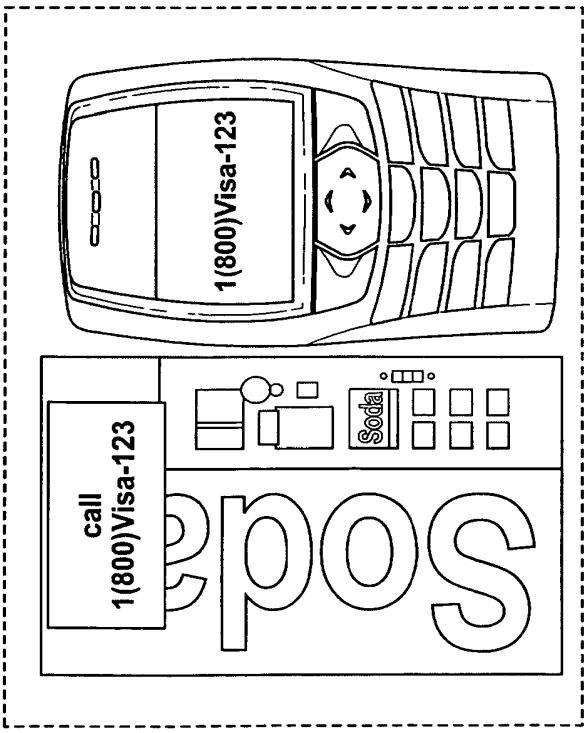

1(800)Visa-123
call 1(800)Visa-123
Soda
epos

FIG. 8(a)

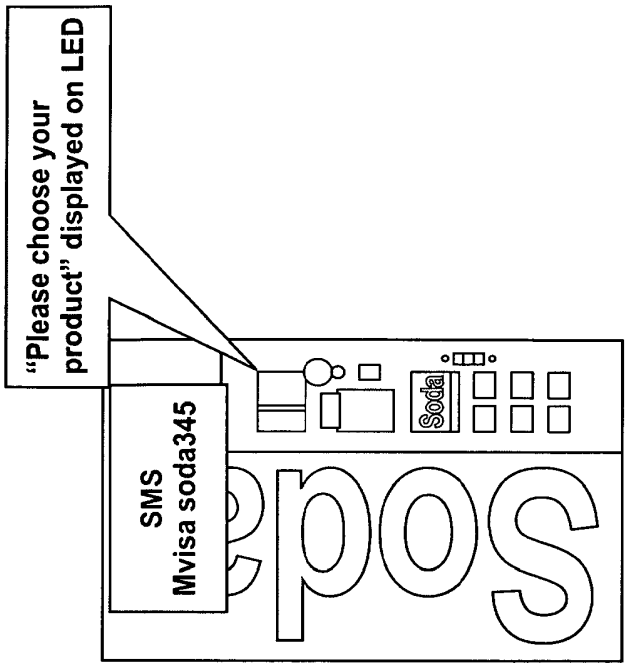

"Please choose your product" displayed on LED
SMS
Mvisa soda345
Soda
epos

FIG. 9(b)

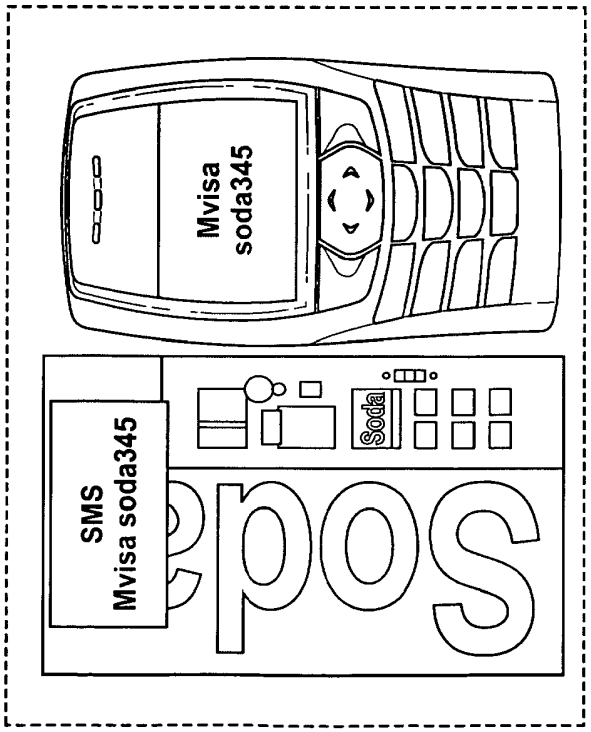

Mvisa
soda345
SMS
Mvisa soda345
Soda
epos

FIG. 9(a)

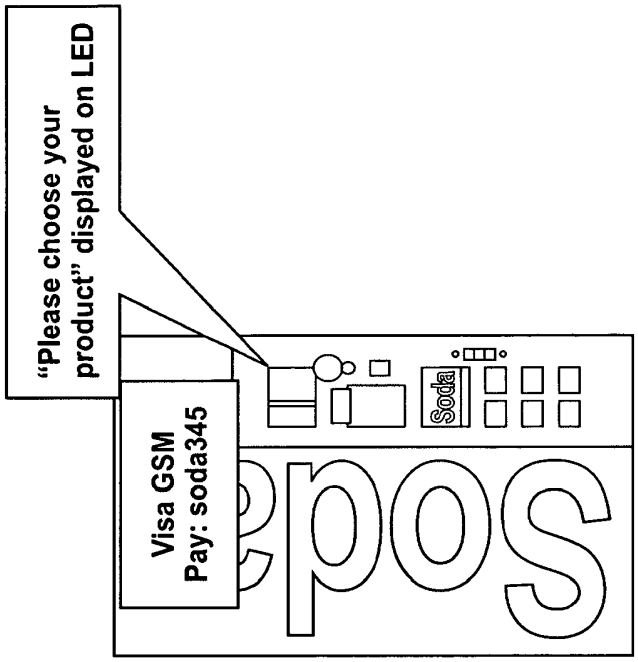


FIG. 10(b)

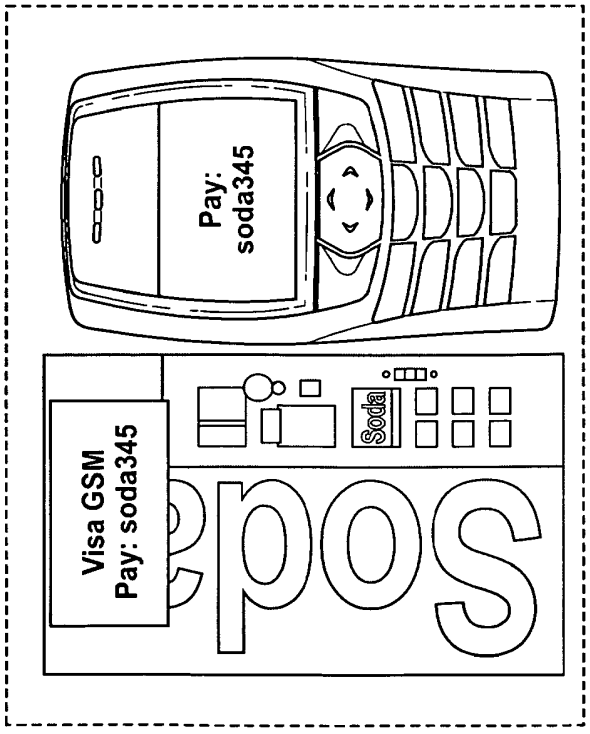


FIG. 10(a)

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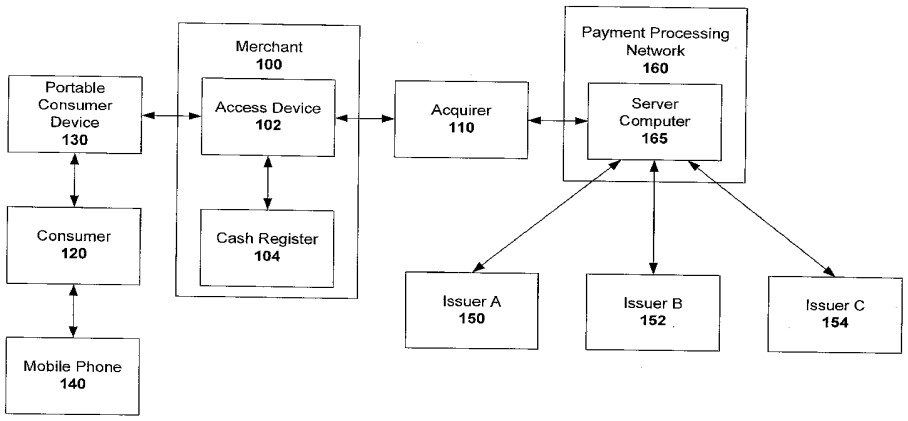
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(57) Abstract: Offers from multiple entities provide an incentive for consumers to behave in a manner that is beneficial to the offer provider. Each offer is associated with rules that establish conditions that must be met for the offer to be valid. For example, a rule may be established to promote the use a specific form of payment, such as a particular credit card. Thus, the offer would only be valid if the consumer paid for the merchandise using the particular credit card. A merchant may generate its own offers or receive offers from a variety of sources (e.g., a payment processing organization, an issuer, or other external sources).

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COUPON OFFERS FROM MULTIPLE ENTITIES

CROSS-REFERENCES TO RELATED APPLICATIONS

[0001] The present application claims priority from U.S. Provisional Patent Application No. 60/871,898, filed December 26, 2006, which is incorporated by reference herein in its entirety.

BACKGROUND

[0002] A coupon is a ticket or a document that can be exchanged for a financial discount or rebate when purchasing a product. Coupons provide a popular method to promote the sale of goods and services. Customarily, coupons are issued by manufacturers of consumer packaged goods or by retailers to be used in retail stores as a part of sales promotions. Coupons are often widely distributed through mail, magazines, newspapers, the Internet, and mobile devices such as cell phones.

[0003] To redeem a coupon, a consumer presents merchandise to be purchased to a cashier at a retail outlet. After the merchandise is scanned for purchase, the consumer provides the coupon to the cashier. The cashier then scans or keys in the coupon at a cash register. Conventional coupons only relay a limited amount of information to the cash register. Examples of data relayed to the cash register include a coupon number, an expiration date, a number of redeemed coupons, and the product for which the coupon is applicable. The cash register uses this information to access a local database and accept or reject the offer provided by the coupon. The coupons corresponding to the accepted offers are applied to the corresponding goods.

[0004] Coupons are generally issued by merchants and manufacturers to promote particular goods. However, other entities may also wish to influence consumer behavior. What is needed is a method to provide different entities such as a merchant, a payment processing organization, and an issuer with a means to provide offers to a consumer.

BRIEF SUMMARY

[0005] Embodiments of the invention are directed to providing coupon offers from multiple entities to consumers. The offers provide an incentive for consumers to behave in a manner that is beneficial to the offer provider. Each offer is associated with rules that establish conditions that must be satisfied for the offer to be valid. For example, a rule may be established to promote the use of a specific form of payment, such as a particular credit card. Thus, the offer would only be valid if the consumer paid for the merchandise using the particular credit card. A merchant may generate its own offers or receive offers from a variety of sources (e.g., a payment processing organization, an issuer, or other external sources). Such offers may be generated in real time or during the transaction in embodiments of the invention.

[0006] Illustratively, a consumer shops for goods in a store. A merchant computer (e.g., a cash register) retrieves a SKU or barcode value associated with the goods to be purchased, or data associated with the goods to be purchased is manually entered into the merchant computer. The consumer provides at least one coupon that may be scanned or manually entered into the merchant computer. A server computer communicates with the merchant computer and a computer associated with the entity which provides the coupon to determine if rules associated with the coupon are satisfied. If the rules are satisfied, the savings provided by the coupon is subtracted from a total of the cost of the goods to be purchased. The new total is then presented to the consumer.

[0007] In an illustrative example, the consumer may have a coupon that provides an incentive to purchase the goods using a particular form of payment. For example, the goods to be purchased may be associated with one total that applies to a cash payment, a lower total if payment is made using a payment processing organization-sponsored card (e.g., a Visa card), and another lower total if payment is completed with a particular issuer's credit card. After the goods are scanned at the cash register, the consumer presents the coupon that provides a discount offer if a particular credit card is used. The consumer may then swipe the particular credit card at a point of sale terminal associated with the cash register. The merchant computer accesses a computer associated with the offer provider to determine

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whether the rules associated with the offer are satisfied. For example, the merchant computer access a rules engine in a computer associated with the particular credit card issuer to determine that the credit card swiped by the consumer at the point of sale corresponds to the particular credit card. After the rules engine determines that the rules associated with the offer are satisfied, the discounted total is presented to the consumer at the point of sale terminal. The point of sale terminal may also prompt the consumer to submit payment. The consumer then selects to pay for the goods such that the discounted total is charged to the particular credit card.

[0008] One embodiment of the invention is directed to a method including receiving a consumer identifier and an offer during a transaction. A validated offer is received from an entity which provides the offer, such as a payment processing organization or an issuer, when rules associated with the offer are satisfied. The offer is validated based on the consumer identifier. A selection of the valid offer is received to complete the transaction.

[0009] Another embodiment of the invention is directed to a method including receiving an offer and a consumer identifier for a consumer during a transaction and receiving a validated offer. The offer is validated by an entity which provides the offer when rules associated with the offer are satisfied. The offer is validated based on the consumer identifier. A selection of the validated offer is received to complete the transaction.

[0010] Another embodiment of the invention is directed to a system including an access device and a server computer in communication with the access device. The access device or the server computer is configured to: receive a consumer identifier and an offer during a transaction conducted with the access device and the server computer; receive a validated offer from an entity which provides the offer, wherein the offer is validated when rules associated with the offer are satisfied, the offer being validated based on the consumer identifier, wherein the entity is a payment processing organization or an issuer; and receive a selection of the valid offer to complete the transaction..

[0011] These and other embodiments of the invention are described in further detail below.

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BRIEF DESCRIPTION OF THE DRAWINGS

[0012] FIG. 1 shows an exemplary block diagram of a system for providing offers from multiple entities to a consumer according to embodiments of the invention.

[0013] FIG. 2 shows an exemplary block diagram of some elements that may be present in a mobile phone according to an embodiment of the invention.

[0014] FIG. 3 shows an exemplary block diagram of some elements that may be present in a server computer according to an embodiment of the invention.

[0015] FIG. 4 shows an exemplary block diagram of some elements that may be present in an access device according to an embodiment of the invention.

[0016] FIG. 5 shows a flow diagram of a method for providing offers to a consumer according to embodiments of the invention.

[0017] FIG. 6 shows a screen shot of an access device displaying different totals based on a particular payment method according to an embodiment of the invention.

DETAILED DESCRIPTION

[0018] Different entities may attempt to influence consumer behavior for different reasons. For example, a first party may include an issuing bank who may only care if a credit card being used is issued from the issuing bank. A second party may include a payment processing organization (e.g., Visa, a third party processor, etc.) who may only care if the payment processing organization's card is used. A third party may be a merchant who may only care if purchases are made at that merchant.

[0019] Embodiments of the invention can be used to introduce different types of coupon offers or other types of offers during a transaction. Such offers may include issuer coupons, payment processing organization coupons (e.g., acquirer coupons), merchant coupons, manufacturer coupons, etc.

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[0020] In accordance with embodiments of the present invention, a point of sale terminal is configured to provide and/or redeem coupons only if appropriate rules are satisfied. For example, a payment processing organization offer may be redeemable by a consumer or provided to a consumer only if a payment processing organization branded credit card is used. In another example, an issuer (e.g., Citibank) may provide or redeem an offer if the consumer uses an issuer-specific credit card. In response to receiving various offers from the merchant, payment processing organization, or issuer, the consumer could then select a particular form a payment based upon the best offer that is provided to the consumer, and/or provide offers to encourage the consumer to buy specific products.

[0021] Some specific examples of coupon offers from different entities are provided below. In some embodiments of the invention, these different types of offers can be processed by a single access device (e.g., point of sale terminal), or could be processed by a server computer (e.g., residing at a payment processing organization or another location). The access device or the server computer could communicate with each of these entities during a payment transaction to determine which offers are valid.

- Partner merchant issued offers: Here, a merchant sets the goals of an offer. Although the merchant may care about the type of payment form that is used (e.g., cash vs. credit card), the merchant is generally not concerned with the brand of payment that is being used by a consumer as long as the consumer accepts that brand of payment. The merchant's goal is to persuade consumers to buy the merchant's products or services, and to potentially purchase specific products or services (e.g., items that are overstocked).
- Payment processing organization (e.g., acquirer) issued offers: The payment processing organization's goal may be to increase brand usage. The payment processing organization may only provide and redeem an offer if the consumer pays with a portable consumer device branded with the payment processing organization's service mark.
- Offers issued by an issuer: The issuer is generally not concerned with the particular payment processing organization that a portable consumer device is affiliated with. For example, an issuer such as Bank of America may issue credit cards using the Visa and Mastercard brands. Typically, the issuer may

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be less concerned with whether the consumer uses a Visa or Mastercard branded credit card, as long as the consumer uses a card that is issued by Bank of America.

[0022] As used herein, a "transaction" may include, but is not limited to, the time when the consumer has selected goods or services to purchase and is ready to pay for them. For example, an exemplary transaction may include a time when a consumer selects products to purchase in a grocery store, and the selected products are scanned at a point of sale terminal such as a cash register. The consumer also provides at least one coupon at the point of sale terminal. The consumer is identified at the point of sale terminal by, for example, scanning a portable consumer device such as a credit or debit card. This scanned information (e.g., a SKU or stock keeping unit, an NLU or coupon identification number, an account number that identifies the consumer, etc.) may then be transmitted to a server computer. The server computer may then communicate with the entity associated with the offer (e.g., the merchant, payment processing organizations, and various issuers) to determine if rules associated with the offer are satisfied. If the rules are satisfied, the offer is applied to the goods to be purchased (e.g., the consumer is presented with a reduced total).

[0023] Illustratively, embodiments of the present invention are directed to offers from a variety of different entities that provide incentives to influence consumer behavior. Each offer is associated with certain rules that establish conditions to be satisfied in order for the offer to be valid. The merchant receives offers from a variety of sources (e.g., an acquirer, an issuer, or other external sources). The merchant may also generate its own offers to provide to consumers.

[0024] After a consumer selects goods in a store, the consumer approaches a point of sale terminal (e.g., a cash register or self-service check out terminal) to scan or otherwise enter the goods into a merchant computer. The consumer also provides a consumer identifier (e.g., a credit card number, alias, e-mail address, etc.) so that the identity of the consumer may be determined. The merchant computer retrieves a SKU or barcode value associated with the scanned goods, and any information associated with the consumer identifier. The consumer also provides at least one offer that may apply to the transaction. A server computer communicates

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with an entity associated with the offer (e.g. the merchant computer, an acquirer computer, and/or various issuer computers) to determine if the rules associated with the offer are satisfied. If the rules associated with the offer are satisfied, the offer is validated and a discounted total is presented to the consumer at the point of sale terminal. The point of sale terminal may also prompt the consumer to submit payment. The consumer then selects to pay for the goods.

[0025] FIG. 1 shows an exemplary block diagram of a system for providing offers from multiple entities to a consumer in accordance with embodiments of the invention. The system includes a merchant **100** and an acquirer **110** associated with the merchant **100**. In a typical payment transaction, a consumer **120** may purchase goods or services at the merchant **100** using a portable consumer device **130** or a mobile phone **140**. FIG. 2 shows an exemplary block diagram of some elements that may be present in the mobile phone **140** according to an embodiment of the invention. The acquirer **130** can communicate with issuers (A, B, and C) **150**, **152**, **154** via a payment processing network **160** having a server computer **165**.

[0026] The acquirer **130** is typically a bank that has a merchant account. The issuers **150**, **152**, **154** may each also be a bank, but could be any business entity such as a retail store. Some entities are both acquirers and issuers, and embodiments of the invention include such entities. Each issuer **150**, **152**, **154** may operate its own server computer (not shown), which may have a computer readable medium comprising code for performing the functions that the issuer **150**, **152**, **154** performs. An issuer database (not shown) comprising account number information and other information may be operatively coupled to the server computer **165**.

[0027] The consumer **120** may be an individual or an organization such as a business that is capable of purchasing goods or services.

[0028] The portable consumer device **130** may be in any suitable form. For example, suitable portable consumer devices can be hand-held and compact so that they can fit into a consumer's wallet and/or pocket. Example portable consumer devices may include smart cards, ordinary credit or debit cards (with a magnetic strip and without a microprocessor), keychain devices (such as the Speedpass™ commercially available from Exxon-Mobil Corp.), etc. Other examples of portable consumer devices include cellular phones, personal digital assistants (PDAs),

pagers, contactless cards (e.g., an RFID card), payment cards, security cards, access cards, smart media, transponders, and the like. The portable consumer devices can also be debit devices (e.g., a debit card), credit devices (e.g., a credit card), or stored value devices (e.g., a stored value card).

[0029] The payment processing network **160** may include data processing subsystems, networks, and operations used to support and deliver authorization services, exception file services, and clearing and settlement services. An exemplary payment processing network may include VisaNet™. Payment processing networks such as VisaNet™ are able to process credit card transactions, debit card transactions, and other types of commercial transactions. VisaNet™, in particular, includes a VIP system (Visa Integrated Payments system) which processes authorization requests and a Base II system which performs clearing and settlement services.

[0030] The server computer **165** of the payment processing network **160** is typically a powerful computer or cluster of computers. For example, the server computer **165** can be a large mainframe, a minicomputer cluster, or a group of servers functioning as a unit. In one example, the server computer **165** may be a database server coupled to a Web server. FIG. 3 shows an exemplary block diagram of some elements that may be present in the server computer **165** according to an embodiment of the invention. The payment processing network **160** may use any suitable wired or wireless network, including the Internet.

[0031] The merchant **100** includes an access device **102** that can interact with the portable consumer device **130** and the mobile phone **140**. FIG. 4 shows an exemplary block diagram of some elements that may be present in the access device **102** according to an embodiment of the invention. The merchant also includes a cash register **104** coupled to the access device **102**.

[0032] In a typical purchase transaction, the consumer **120** purchases goods or services at the merchant **100** using the portable consumer device **130**. The consumer's portable consumer device **130** interacts with the access device **102**. For example, the consumer **120** may swipe a credit card through a reader of the access device **102**. Alternatively, the reader may include a contactless reader, and the

portable consumer device **130** may be a contactless device such as the mobile phone **140**.

[0033] An authorization request message is then forwarded to the acquirer **110**. After receiving the authorization request message, the acquirer **110** sends the authorization request message to the payment processing network **160**. The server computer **165** forwards the authorization request message to the issuer **150**, **152** or **154** of the portable consumer device **130**.

[0034] After the issuer **150**, **152** or **154** receives the authorization request message, the issuer **150**, **152** or **154** sends an authorization response message back to the payment processing network **160** to indicate whether or not the current transaction is authorized. The server computer **165** forwards the authorization response message back to the acquirer **110**. The acquirer **110** sends the response message back to the merchant **100**.

[0035] After the merchant **100** receives the authorization response message, the access device **102** may provide the authorization response message to the consumer **120**. The authorization response message may be displayed on a touch screen, or may be printed out on a receipt.

[0036] At the end of the business day, a clearing and settlement process may be conducted by the payment processing network **160**. The clearing process exchanges financial details between the acquirer **110** and the issuer **150**, **152**, **154** to facilitate posting to a consumer's account and reconciliation of the consumer's settlement position.

[0037] Some of the embodiments described below may use a payment processing system like the one described above, or any suitable combination of components in the payment processing system.

[0038] In accordance with embodiments of the present invention, the system for providing coupon offers from multiple entities to a consumer is described below with reference to FIG. 1. The offers may be provided by the merchant **100**, the acquirer **110**, the issuer **150**, **152**, **154**, or any other entity seeking to influence consumer behavior such as the manufacturer of goods offered for sale by the merchant **100**.

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[0039] Each issuer **150**, **152**, **154** may provide offers. The acquirer **110** may also generate offers. The merchant **100** may receive offers from other external sources such as from a manufacturer of goods offered for sale at the merchant **100**. The merchant **100** may also generate its own offers to provide to the consumer **120**. In one embodiment, the merchant **100** decides which offers to accept and which offers to decline. For example, an acquirer offer may conflict with an issuer offer. Thus, the merchant **100** may decide to provide only the acquirer offer to consumers.

[0040] Each offer is associated with one or more rules. The rules establish conditions to be satisfied for the offer to be valid. For example, an offer may be provided to a consumer that is valid only when the consumer uses a particular credit card. By using the credit card that corresponds to the offer, the consumer may receive a reduced price for the purchased goods or other incentives such as frequent flyer points. In another example, the rules may establish that an offer is only valid for a particular time period. Specifically, to provide an incentive for consumers to shop during off-peak hours, an offer may correspond to a particular time of day (e.g., the first two hours of retail operation). In another embodiment, the offer may correspond to the identity of the consumer combined with a particular day of the week or month (e.g., senior citizen discount on the third Tuesday of the month). Similarly, an offer may be provided for seasonal items after the season has ended. For example, summer merchandise discount offers may be valid during the months of September and October in an attempt to unload overstocked items.

[0041] The consumer **120** initiates a transaction by scanning merchandise that may be purchased at the merchant **100**. For example, after selecting goods to purchase at a retail outlet, the consumer **120** may approach a cashier or self-service check-out terminal to pay for the items. The transaction may be initiated when the consumer **120** or a cashier scans or keys in the items to be purchased using the cash register **104**. Any coupons or other offers may also be submitted using the cash register **104** or the access device **102**. For example, paper coupons may be scanned at the cash register **104** and electronic offers stored on the mobile phone **140** may be provided to the access device **102**.

[0042] A consumer identifier is provided during the transaction to identify the consumer. In one embodiment, the consumer **120** is identified at the access device

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102 by the mobile phone **140**. In another embodiment, the consumer **120** is identified by scanning the portable consumer device **130** (e.g., a credit card, a savings card associated with the merchant, a contactless card, etc.) at the access device **102**. The consumer identifier may correspond to the account number associated with the scanned payment card. In another embodiment, the consumer **120** identifies himself by entering a personal identification code at the access device **102** using a touch screen or some other input/output device.

[0043] After the consumer identifier and the item information are entered into the access device **102**, the offers are validated. The access device **102** identifies the entity associated with an applicable offer, and may then route the appropriate message to the entity associated with the applicable offer. The logic to do this may reside in hardware and/or software in the access device **102** or at a computer (e.g., a backend merchant computer) accessible to the access device **102**. In one embodiment, more than one offer may apply to the same item. If the offer is associated with the merchant **100**, the offer is validated at the merchant **100** to determine whether the rules that apply to the offer are satisfied. If the offer is associated with the acquirer **110**, the offer and the consumer identifier are forwarded to the acquirer **110** and a determination is made whether the offer is valid. Similarly, if the offer is provided by an issuer **150**, **152**, **154**, the offer and the consumer identifier are forwarded to the corresponding issuer **150**, **152**, **154** via the server computer **165** to determine the validity of the offer. In one embodiment, an offer is validated when the terms of the offer are satisfied. This may be done by matching conditions associated with the offer to a rules engine (not shown). The rules engine may be located at the merchant **100**, the acquirer **110,** the server computer **165**, and/or the issuers **150**, **152**, **154**.

[0044] For example, an offer provided by an issuer may only be valid if the consumer **120** purchases a quantity of three or more of a particular item. After the consumer **120** provides an offer indicator (e.g., an electronic coupon code) to the access device **102**, it retrieves the three or more item rule from the rules engine from the issuer which provides the offer via the server computer **165**, and then accesses the cash register **104** to identify whether three or more items have been purchased. The offer will not be validated if less than three of that item have been purchased.

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[0045] In one embodiment, more than one rule may apply to an offer. For example, an offer may only be valid for a specific form of payment when an account balance associated with the specific form of payment is more than a predetermined amount. Thus, if the consumer **120** uses a different form of payment or if an account balance associated with the valid form of payment is less than the predetermined amount, the offer will not be validated.

[0046] Any number of rules may be associated with any offer. Example rules include: the type of payment, the time of day, the day of the week, the day of the month, the month of the year, the total quantity of items to be purchased, the quantity of a particular item to be purchased, consumer characteristics (e.g., age, gender, resident address, income level), etc. As one having ordinary skill in the art would appreciate, the list of example rules is not exhaustive and additional rules could be associated with an offer without departing from the spirit and scope of embodiments of the invention.

[0047] In accordance with one type of offer, the offer may be associated with the type of portable consumer device **130** that the consumer **120** used to identify himself (e.g., a credit card). The offer is validated by determining that the credit card that the consumer swiped at the access device **102** corresponds to the credit card that is associated with the offer. In one embodiment, the access device **102** may display a discounted amount to provide an incentive to pay using the credit card associated with the offer. Thus, the user is prompted to submit payment using the previously swiped credit card. Alternatively, the consumer **120** may be informed that the discount will be applied to the consumer's monthly credit card statement.

[0048] In one embodiment, the access device **102** may display different amounts based on the form of payment used by the consumer 120. Specifically, the access device **102** may display one amount if a particular credit card is used, another amount if a different credit card is used, and still another amount if payment is made by cash, check or a debit card. The consumer **120** then selects a payment method at the access device **102**. If the consumer **120** presents a new form of payment at the access device **102** (e.g., a credit card that had not been previously used at the merchant **100**), information associated with the new form of payment is stored at the merchant **100**. Thus, if the same form of payment is used at a later

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date, the access device **102** will recognize the consumer **120** and may provide offers associated with that form of payment.

[0049] In another example, the offer may provide incentives such as free or discounted items, or reward points based on a particular item that the consumer **120** has selected for purchase. Specifically, the consumer **120** may purchase ground coffee and the access device **102** provides this product information to an issuer that seeks to provide offers to consumers who purchase coffee. The issuer may then provide an offer to the consumer **120** at the access device **102** to receive a free cup of coffee at a nearby coffee retailer. The consumer **120** may accept the offer at the access device **102**. In one embodiment, the number of accepted offers is limited. For example, an offer for a free cup of coffee may be limited to thirty accepted offers on any given day.

[0050] The access device **102** sends the payment information provided by the consumer **120** to the cash register **104** to complete the purchase transaction. The access device **102** may begin reconciling the remittance for the offer. For example, if the offer was provided by an issuer **150**, **152** or **154**, the merchant **100** may request and retrieve the amount corresponding to the offer (e.g., the discounted amount) from that issuer. In one embodiment, offer remittance occurs at the end of the day during the clearing and settlement process.

[0051] FIG. 2 shows a block diagram of some components of the mobile phone **140**. The phone **140** may comprise a computer readable medium **200** and a body **210**. The computer readable medium **200** may be present within the body **210**, or may be detachable from it. The body **210** may be in the form of a plastic substrate, housing, or other structure. The computer readable medium **200** may be a memory that stores data and may be in any suitable form including a magnetic stripe, a memory chip, etc.

[0052] The computer readable medium **200** may comprise code for performing any of the functions described herein. For example, the computer readable medium **200** may comprise code for identifying a consumer at an access device. The computer readable medium **200** may also comprise code for communicating with an access device to identify offers corresponding to items scanned by the phone **140**.

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[0053] The phone **140** may further include a contactless element **220**, which is typically implemented in the form of a semiconductor chip (or other data storage element) with an associated wireless transfer (e.g., data transmission) element, such as an antenna. Data or control instructions transmitted via a cellular network may be applied to the contactless element **220** by a contactless element interface (not shown). The contactless element interface functions to permit the exchange of data and/or control instructions between the mobile device circuitry (and hence the cellular network) and the contactless element **220**.

[0054] The contactless element **220** is capable of transferring and receiving data using a near field communications ("NFC") capability (or near field communications medium) typically in accordance with a standardized protocol or data transfer mechanism (e.g., ISO 14443/NFC). Near field communications capability is a short-range communications capability, such as RFID, Bluetooth™, infra-red, or other data transfer capability that can be used to exchange data between the phone **140** and the payment processing network **160** or it can be used to exchange data between the phone **140** and the access device **102**. Thus, the phone **140** is capable of communicating and transferring data and/or control instructions via both cellular network and near field communications capability.

[0055] The phone **140** may also include a processor **230** (e.g., a microprocessor) for processing the functions of the phone **140** and a display **240** to allow the consumer to view offers associated with items that may be purchased and other information and messages. The phone **140** may further include input elements **250** to allow a user to input information into the phone **140**, a speaker **260** to allow the user to hear voice communication, music, etc., and a microphone **270** to allow the user to transmit her voice through the phone **140**. The phone **140** may also include an antenna **280** for wireless data transfer (e.g., data transmission).

[0056] FIG. 3 shows an exemplary block diagram of some elements that may be present in the computer server **165** according to an embodiment of the invention. The subsystems shown in FIG. 3 are interconnected via a system bus **300**. Additional subsystems such as a printer **310**, a keyboard **320**, a fixed disk **330**, a monitor **340**, which is coupled to a display adapter **350**, and others are shown. Peripherals and input/output (I/O) devices, which couple to an I/O controller **360**, can

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be connected to the computer system by any number of means known in the art, such as a serial port **370**. For example, the serial port **370** or an external interface **380** can be used to connect the computer apparatus to a wide area network such as the Internet, a mouse input device, or a scanner. The interconnection via the system bus **300** allows a central processor **390** to communicate with each subsystem and to control the execution of instructions from a system memory **395** or the fixed disk **330**, as well as the exchange of information between subsystems. The system memory **395** and/or the fixed disk **330** may embody a computer readable medium.

[0057] FIG. 4 shows an exemplary block diagram of some elements that may be present in the access device **102** according to an embodiment of the invention. The access device **102** may comprise a processor **400**, a computer readable medium **410**, a network interface **420**, an output device **430**, a reader **440**, and a keypad **450** operatively coupled to the processor **400**.

[0058] The processor **400** may be embodied by one or more microprocessors, and the computer readable medium **410** may use any suitable electrical, magnetic or optical means of data storage. The computer readable medium **410** may store computer code for performing the functions of the access device **102**. For example, the computer readable medium **410** may store instructions or code for communicating with the issuer of the consumer's portable consumer device, the payment processing organization associated with the consumer's portable consumer device, the merchant selling the item to be purchased, and the manufacturer of the item, during the transaction, or even before the transaction, after it receives a consumer identifier such as a payment card account number.

[0059] The network interface **420** may be any suitable interface that will allow the access device **102** to communicate with external apparatuses. The network interface **420** allows the access device **102** to communicate with the acquirer **110** and the payment processing network **160**.

[0060] The reader **440** may include any suitable contact or contactless mode of operation. For example, exemplary card readers can include RF (radio frequency) antennas, magnetic stripe readers, etc. to interact with the portable consumer device **130** such as a credit card or a debit card. The reader **440** may be used to enter bill information into the access device **102**.

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[0061] The keypad **450** may be an ordinary keypad that is associated with a point of sale terminal. The keypad **450** may be embodied by a number of depressible buttons, or could be embodied on a touch screen on a display. The keypad **450** may be used to enter bill information into the access device **102**.

[0062] FIG. 5 shows a flow diagram of a method for providing offers to a consumer in accordance with embodiments of the invention. The offers may be provided by any entity that seeks to provide an incentive to consumers to purchase a product or service, to shop at a particular time, to use a particular form of payment, or to otherwise influence consumer behavior. Each offer is associated with one or more different rules that establish conditions to be satisfied for the offer to be valid.

[0063] Offers may be associated with an issuer. The acquirer may also generate offers. The merchant may generate offers to provide to the consumer. Offers may also be provided to the merchant from other external sources such as a product manufacturer or a service provider such as a payment processing organization. The provider of the offer determines which rules apply to the offer. In one embodiment, the merchant determines which offers to provide to consumers and which offers to decline. For example, if an external source and the merchant provide an offer for the same item, the merchant may decline to validate the external source offer in order to promote its own offer for that item.

[0064] The consumer shops for goods at a retail outlet. The goods are scanned by the consumer or a cashier at a point of sale terminal (e.g., cash register or self-service checkout terminal) (step **500**). Information corresponding to items to be purchased are entered via a bar code reader or by keying in the item information directly into a cash register.

[0065] The consumer is identified at the point of sale terminal using an access device or a mobile phone (step **510**). For example, the consumer may identify himself using a consumer identifier (e.g., a mobile phone unique identifier or an account number associated with a payment card). The consumer identifier may also be directly entered at the point of sale terminal as, for example, a personal identification number.

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[0066] The consumer may provide offers to the access device (step **520**). The offers may be paper coupons, electronic coupons stored on the mobile device, or any other type of offer that may be provided at the merchant.

[0067] The offers are then validated based on rules associated with the offers (step **530**). The offers are validated by accessing a rules engine associated with the entity which provides the offer to ensure that the conditions established by the rules are satisfied. In accordance with one type of offer, a determination may be made whether the credit card provided to identify the consumer corresponds to the credit card applicable to the offer. If the credit cards do not correspond, the offer is not validated. Thus, the consumer cannot take advantage of the incentive associated with the offer. In another example, a rule may be established to provide an offer for a particular consumer. After the rule is retrieved from the rules engine of the entity which provides the offer, a determination is made whether the consumer corresponds to the target consumer of the offer. Illustratively, an offer may only be valid for a consumer living within a particular geographic location. Thus, the offer cannot be validated until the consumer's current resident address is verified.

[0068] In one embodiment, the consumer identifier such as a payment card account number is used to validate offers associated with the consumer. For example, the access device may receive a consumer identifier such as a payment card account number, and may communicate with the issuer associated with the payment card account number. Information regarding the consumer's identity may then be sent from the issuer to the access device. The access device may identify the consumer as being over the age of sixty-five. Thus, any offers associated with senior citizens would be validated.

[0069] After the offers are validated (or invalidated), the valid offers are presented to the consumer (step **540**). The applicable offers may be provided to the consumer by, for example, the access device or the mobile phone. In accordance with one type of offer, the access device or the mobile phone may display the offers that are applicable to the consumer and the goods selected for purchase. In accordance with another type of offer, as shown in FIG. 6, the output device **430** of the access device **102** displays one amount if a payment card associated with a particular payment processing organization (e.g., Payment Processing Organization

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Z) is used, another amount if a payment card by a particular issuer is used (e.g., Issuer A), another amount if a particular payment card by a particular issuer and by a particular payment processing organization is used, and still another amount if payment is made by cash or check. The consumer may then select a particular form of payment to accept the offer (e.g., pay using a card that is branded with Issuer A and Payment Processing Organization Z) or may select to decline the offer (e.g., pay by cash).

[0070] The consumer selects the valid offers to accept and pays for the goods (step **550**). For example, using a touch screen on the access device, the consumer may select an offer corresponding to the payment card used to identify the consumer to accept the discounted amount that would apply when payment is made using that payment card. In another example, the consumer may select a coupon for a discount on goods or services associated with a purchased item.

[0071] The valid offers are remitted by requesting payment associated with the incentive from the entity which provided the offer (step **560**). For example, if the offer was provided by an issuer, the merchant may request and retrieve the amount corresponding to the offer (e.g., the discounted amount) from that issuer. In one embodiment, offer remittance occurs at the end of the day during the clearing and settlement process.

[0072] As can be seen from the above description, embodiments of the invention have a number of advantages. For example, multiple entities may provide coupon offers to a consumer. The coupon offers provide incentives to influence consumer behavior in such a way that benefits the offer provider. The offers may be established to provide non-traditional incentives. Such offers may be issuer coupons, acquirer coupons, merchant coupons, or coupons from other external sources (e.g., a manufacturer of goods that the merchant offers for sale, other retailers located in the vicinity of the merchant). The provider of the offer associates the offer with certain rules that establish conditions to be fulfilled for the offer to be valid. An access device is configured to provide or redeem the offer coupons only if the rules are satisfied.

[0073] It should be understood that the present invention as described above can be implemented in the form of control logic using computer software in a

modular or integrated manner. Based on the disclosure and teachings provided herein, a person of ordinary skill in the art will know and appreciate other ways and/or methods to implement the present invention using hardware and a combination of hardware and software.

[0074] Any of the software components or functions described in this application, may be implemented as software code to be executed by a processor using any suitable computer language such as, for example, Java, C++ or Perl using, for example, conventional or object-oriented techniques. The software code may be stored as a series of instructions, or commands on a computer readable medium, such as a random access memory (RAM), a read only memory (ROM), a magnetic medium such as a hard-drive or a floppy disk, or an optical medium such as a CD-ROM. Any such computer readable medium may reside on or within a single computational apparatus, and may be present on or within different computational apparatuses within a system or network.

[0075] The above description is illustrative and is not restrictive. Many variations of the invention will become apparent to those skilled in the art upon review of the disclosure. The scope of the invention should, therefore, be determined not with reference to the above description, but instead should be determined with reference to the pending claims along with their full scope or equivalents.

[0076] One or more features from any embodiment may be combined with one or more features of any other embodiment without departing from the scope of the invention.

[0077] A recitation of "a", "an" or "the" is intended to mean "one or more" unless specifically indicated to the contrary.

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WHAT IS CLAIMED IS:

1. A method comprising:

receiving a consumer identifier and an offer during a transaction

receiving a validated offer from an entity which provides the offer, wherein the offer is validated when rules associated with the offer are satisfied, the offer being validated based on the consumer identifier, wherein the entity is a payment processing organization or an issuer; and

receiving a selection of the valid offer to complete the transaction.

2. The method of claim 1, wherein receiving the consumer identifier and receiving the selection of the valid offer are performed by a point of sale terminal, and wherein the transaction is a payment transaction.

3. The method of claim 1, wherein receiving the validated offer is performed by a point of sale terminal or a computer in communication with the point of sale terminal, and wherein the point of sale terminal or computer is configured to communicate with at least two of a merchant, the issuer, and the payment processing organization to determine if offers provided by the merchant, the issuer, and the payment processing organization are valid.

4. The method of claim 1, further comprising receiving a product identifier, wherein the product identifier is associated with a product that a consumer has purchased using a portable consumer device, and wherein the offer relates to the product.

5. The method of claim 1, wherein the offer is associated with a consumer.

6. The method of claim 1, wherein the consumer identifier is an identifier associated with a portable consumer device.

7. The method of claim 6, wherein the portable consumer device is a payment card.

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8. The method of claim 1, wherein the consumer identifier is an account number associated with a portable consumer device associated with a consumer.

9. The method of claim 1, wherein the portable consumer device is a wireless phone.

10. A computer readable medium comprising:

code for receiving a consumer identifier and an offer during a transaction;

code for receiving a validated offer from an entity which provides the offer, wherein the offer is validated when rules associated with the offer are satisfied, the offer being validated based on the consumer identifier, wherein the entiry is a payment processing organization or an issuer; and

code for receiving a selection of the valid offer to complete the transaction.

11. The computer readable medium of claim 10, further comprising code for receiving a product identifier, wherein the product identifier is associated with a product that a consumer has purchased using the portable consumer device, wherein the offer relates to the product.

12. An access device comprising the computer readable medium of claim 10.

13. A server computer comprising the computer readable medium of claim 10.

14. A method comprising:

receiving an offer and a consumer identifier for a consumer during a transaction;

receiving a validated offer, wherein the offer is validated by an entity which provides the offer when rules associated with the offer are satisfied, the offer being validated based on the consumer identifier; and

receiving a selection of the validated offer to complete the transaction.

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15. The method of claim 14, wherein receiving the offer, receiving the validated offer, and receiving the selection are performed by a point of sale terminal, wherein the point of sale terminal or a computer in communication with the point of sale terminal is configured to communicate with at least two of a merchant, an issuer, and a payment processing organization to determine if offers provided by the merchant, the issuer, and the payment processing organization are valid.

16. The method of claim 15 wherein the offer relates to a product identifier of a product to be purchased by the consumer.

17. A computer readable medium comprising:

code for receiving an offer and a consumer identifier for a consumer during a transaction;

code for receiving a validated offer, wherein the offer is validated by an entity which provides the offer when rules associated with the offer are satisfied, the offer being validated based on the consumer identifier; and

code for receiving a selection of the validated offer to complete the transaction.

18. An access device comprising the computer readable medium of claim 17.

19. A system comprising:

an access device;

a server computer in communication with the access device,

wherein the access device or the server computer is configured to:

receive a consumer identifier and an offer during a transaction conducted with the access device and the server computer;

receive a validated offer from an entity which provides the offer, wherein the offer is validated when rules associated with the offer are satisfied, the offer being validated based on the consumer identifier, wherein the entity is a payment processing organization or an issuer; and

receive a selection of the valid offer to complete the transaction.

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20. The system of claim 19 wherein the transaction is a payment transaction.

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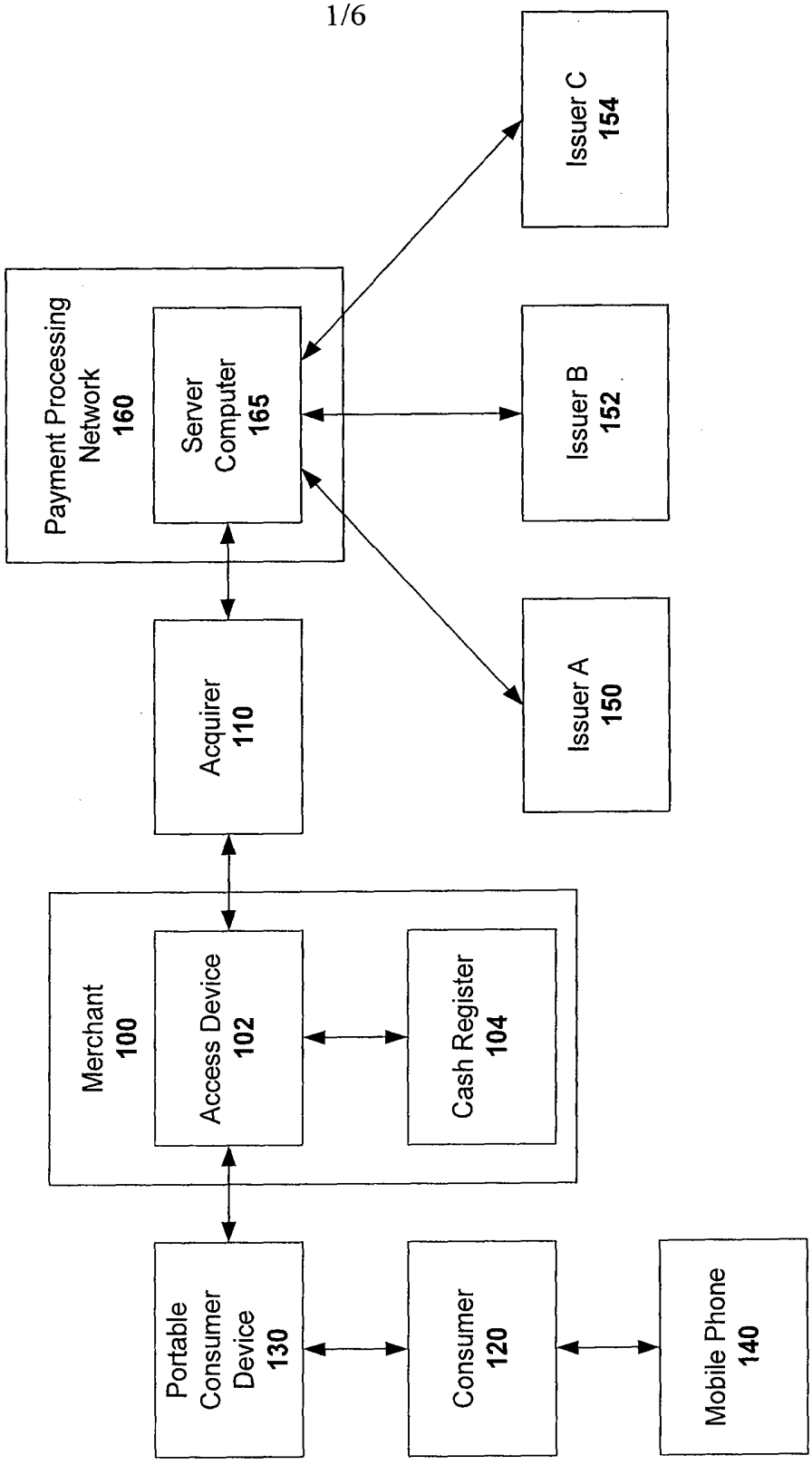

Payment Processing Network 160
Server Computer 165
Issuer C 154
Issuer B 152
Issuer A 150
Acquirer 110
Merchant 100
Access Device 102
Cash Register 104
Portable Consumer Device 130
Consumer 120
Mobile Phone 140

FIG. 1

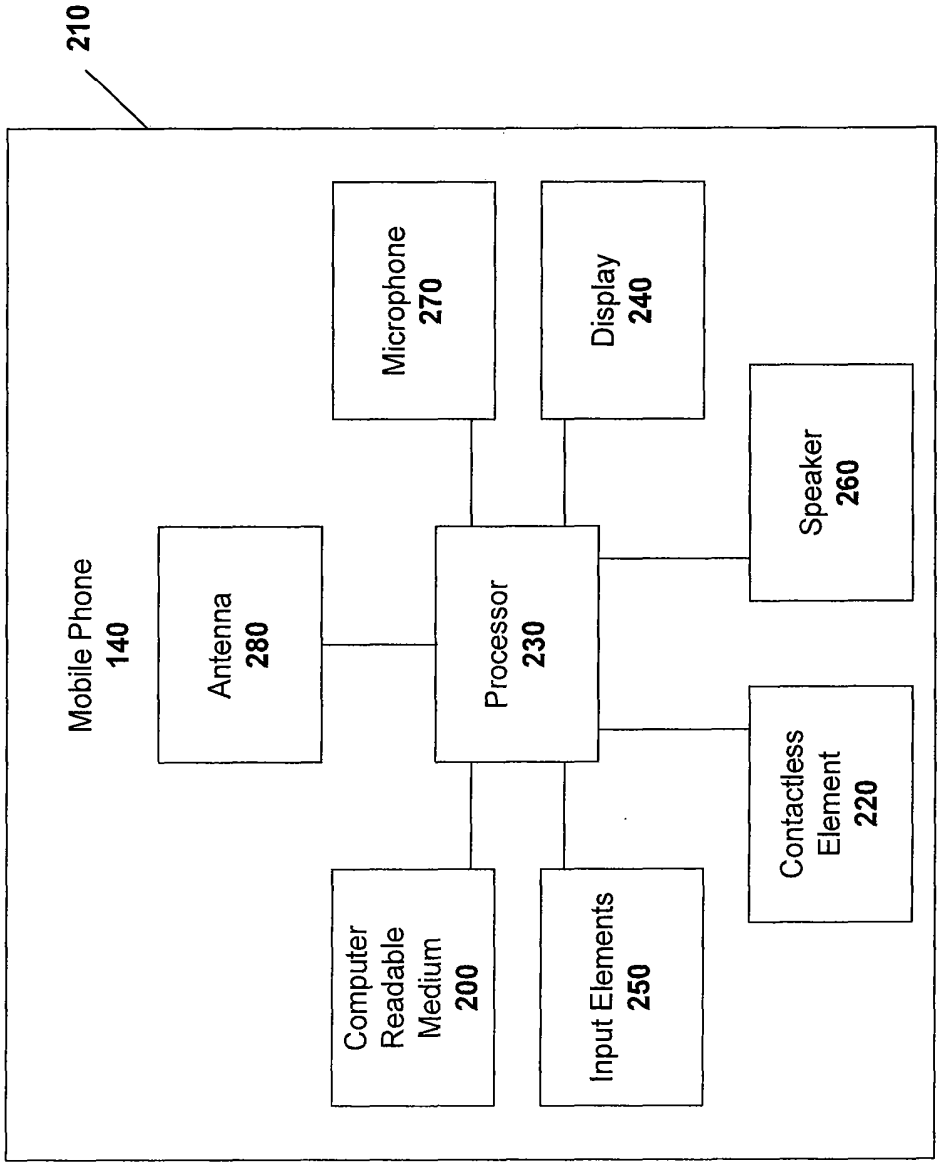

210
Mobile Phone
140
Antenna
280
Processor
230
Microphone
270
Display
240
Speaker
260
Contactless
Element
220
Computer
Readable
Medium
200
Input Elements
250

FIG. 2

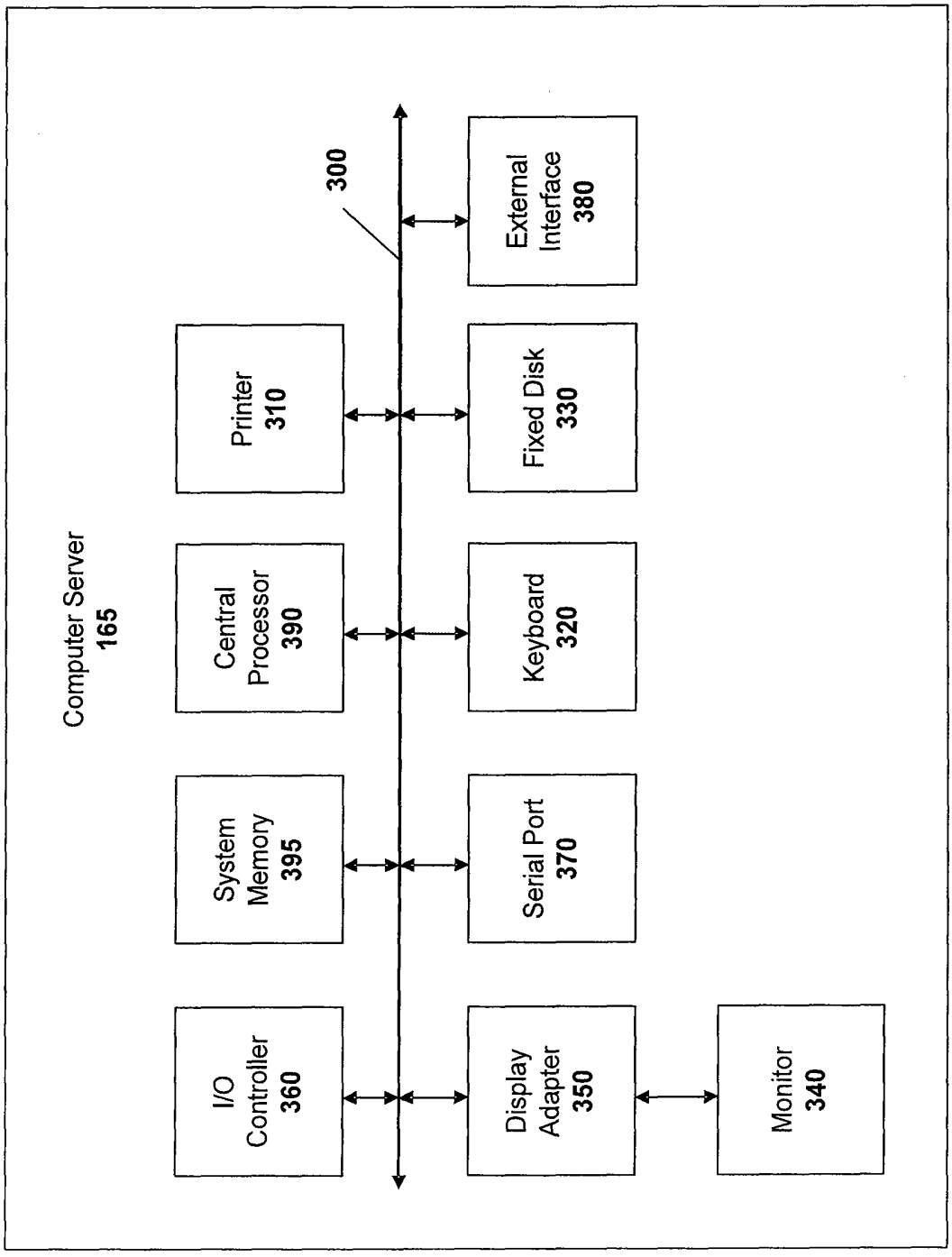

Computer Server
165
300
I/O Controller
360
System Memory
395
Central Processor
390
Printer
310
Display Adapter
350
Serial Port
370
Keyboard
320
Fixed Disk
330
Monitor
340
External Interface
380

FIG. 3

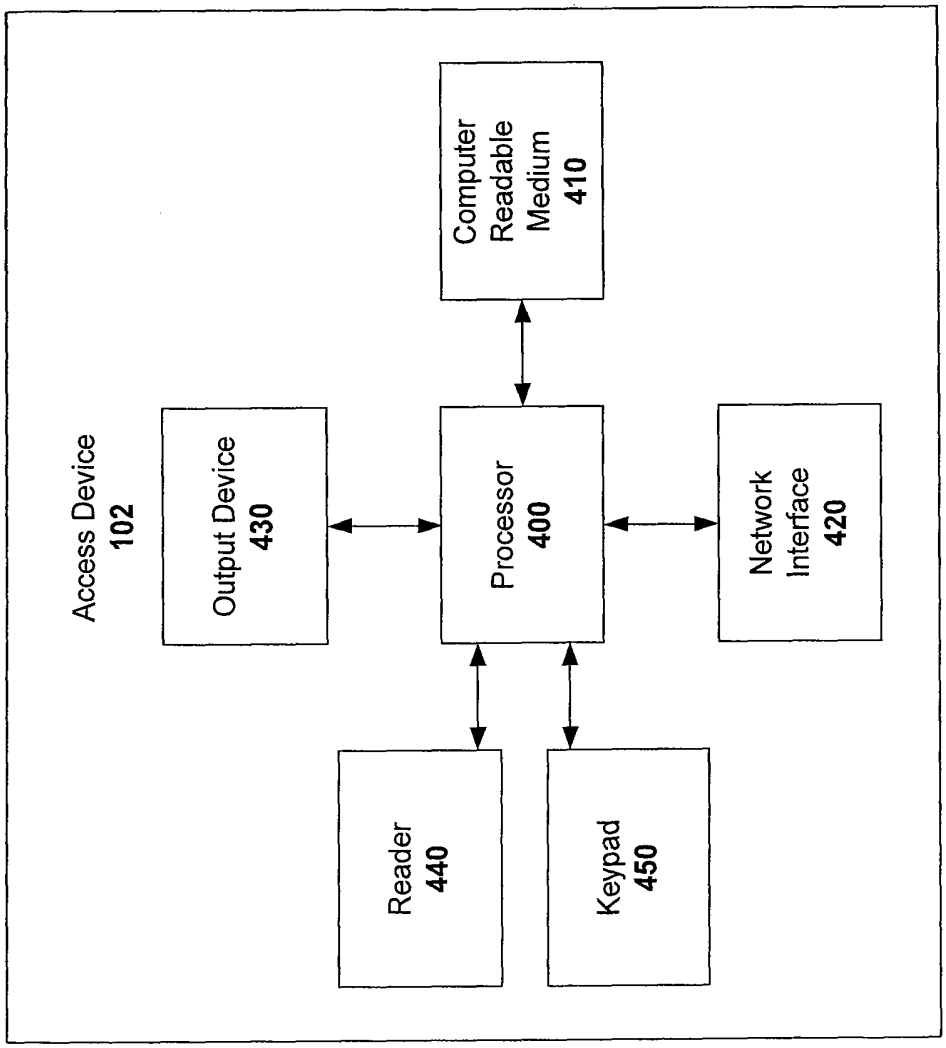

Access Device
102
Output Device
430
Computer
Readable
Medium
410
Processor
400
Network
Interface
420
Reader
440
Keypad
450

FIG. 4

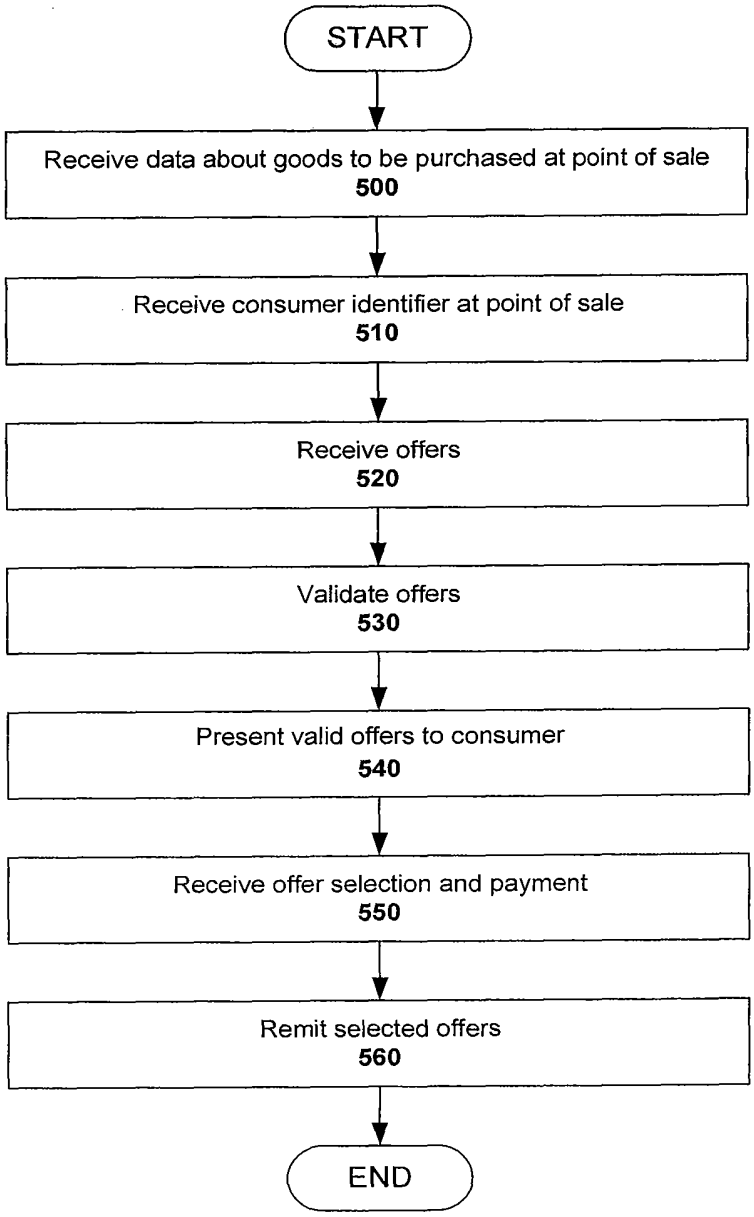

START
Receive data about goods to be purchased at point of sale
500
Receive consumer identifier at point of sale
510
Receive offers
520
Validate offers
530
Present valid offers to consumer
540
Receive offer selection and payment
550
Remit selected offers
560
END

FIG. 5

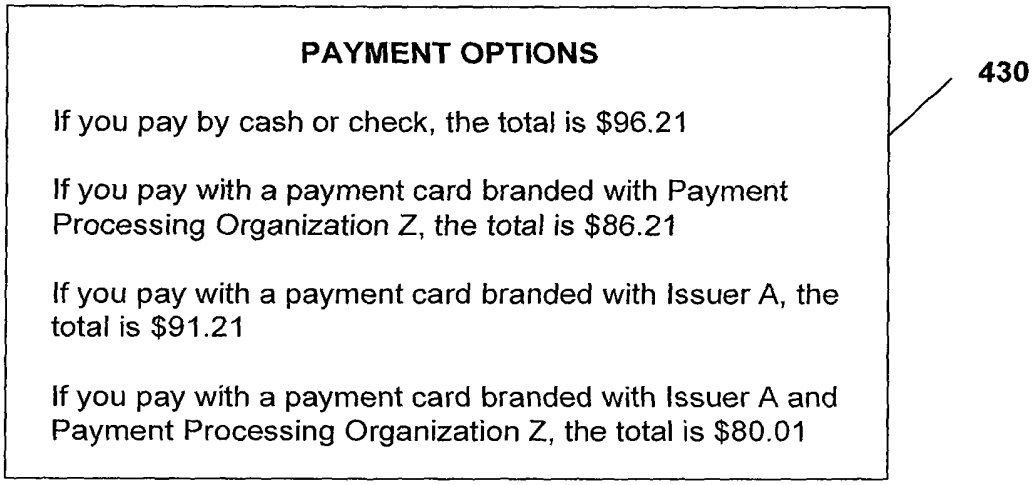

PAYMENT OPTIONS
If you pay by cash or check, the total is $96.21
If you pay with a payment card branded with Payment Processing Organization Z, the total is $86.21
If you pay with a payment card branded with Issuer A, the total is $91.21
If you pay with a payment card branded with Issuer A and Payment Processing Organization Z, the total is $80.01
430

FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/088615

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G06Q 40/00(2006.01)
USPC - 705/41
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8) - G06F 17/60 (2008.04)
USPC - 705/41

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PatBase

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2002/0169719 A1 (DIVELY et al) 14 November 2002 (14.11.2002) entire document	1-20
A	US 2003/208406 A1 (OKAMOTO et al) 06 November 2003 (06.11.2003) entire document	1-20
A	US 6,594,376 B2 (HOFFMAN et al) 15 July 2003 (15.07.2003) entire document	1-20

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
27 May 2008	10 JUN 2008
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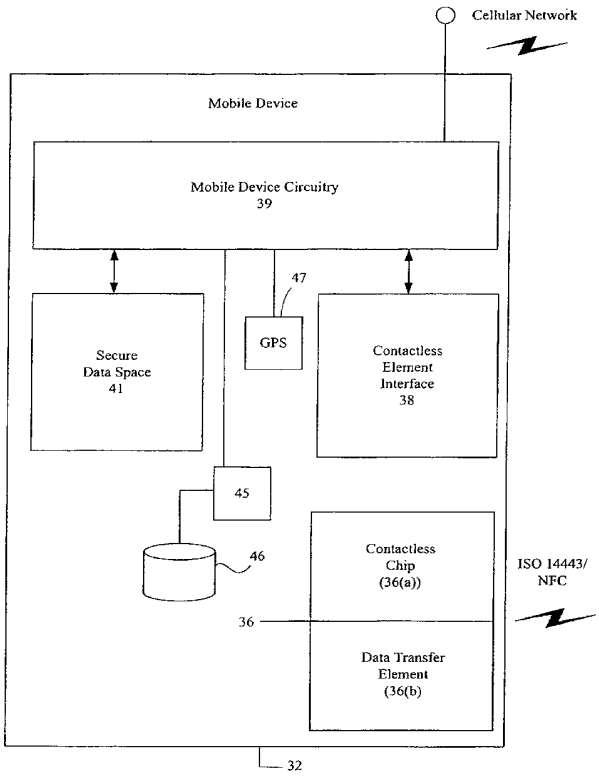
(74) Agents: **TOBIN, Kent J.** et al.; Townsend and Townsend and Crew LLP, Two Embarcadero Center, Eighth Floor, San Francisco, California 94111-3834 (US).

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[Continued on next page]

(54) Title: MOBILE COUPON METHOD AND PORTABLE CONSUMER DEVICE FOR UTILIZING SAME



(57) Abstract: Embodiments of the present invention relate to systems and methods involving mobile coupons. In one embodiment, an indication of a prior purchase transaction over a payment processing network, serves as a trigger to generate and disseminate a mobile coupon for a subsequent transaction. By generating and promulgating the coupon within a limited time of the first transaction, the recipient is disposed to be receptive based upon his or her current shopping status and also possibly geographic location. According to another embodiment, information from a mobile coupon may be presented from the consumer to a merchant in a contactless manner, utilizing an antenna of a portable device operated by a consumer. Coupon information may be communicated to the merchant with the payment information, or prior to or subsequent to transmission of the payment information to the merchant.

WO 2008/083105 A2

European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *without international search report and to be republished upon receipt of that report*

MOBILE COUPON METHOD AND PORTABLE CONSUMER DEVICE FOR UTILIZING SAME

CROSS-REFERENCE TO RELATED APPLICATION

[0001] The instant nonprovisional patent application claims priority to U.S. Provisional Patent Application No. 60/871,898, filed December 26, 2006 and incorporated by reference in its entirety herein for all purposes.

BACKGROUND

[0002] Coupons are a useful marketing tool to enhance brand loyalty and introduce new products. By allowing customization of the effective duration and value of an offer, a coupon provides a flexible incentive for a consumer to purchase a particular product or line of products.

[0003] Conventionally, coupons have been available in printed form from sources such as newspapers. Increased adoption of electronic sources of information such as the world-wide-web, however, has led to the increase in popularity of electronic coupons.

[0004] In addition, most consumers now own and operate a cell phone or other portable electronic device. This renders such consumers accessible to the distribution of electronic coupons as they do their shopping, and moreover allows such distributed electronic coupons to be redeemed directly at the store location.

[0005] Accordingly, there is a need in the art for methods and systems allowing for the distribution and use of electronic coupons by mobile electronic devices.

BRIEF SUMMARY

[0006] Embodiments of the present invention relate to systems and methods involving mobile coupons. In one embodiment, indication of a prior purchase transaction over a payment processing network, may serve as a trigger to generate and disseminate a mobile coupon for a subsequent transaction. By generating and promulgating the coupon within a limited time of the first transaction, the recipient is disposed to be receptive based upon his or her current shopping status and also possibly geographic location. According to another embodiment, information from a

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mobile coupon may be presented to a merchant in a contactless manner, utilizing an antenna of a portable device operated by a consumer. Such mobile coupon information may be communicated to the merchant in a contactless manner with payment information, or may be communicated prior to or subsequent to transmission of payment information to the merchant.

[0007] These and other embodiments of the invention are described in further detail below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1 shows a simplified block diagram of a payment processing system.

[0009] FIG. 1A shows a block diagram of a portable consumer device for use with the payment processing system of FIG. 1.

[0010] FIG. 2 shows a simplified block diagram of an embodiment of a system for implementing a mobile coupon program in accordance with an embodiment of the present invention.

[0011] FIG. 3 shows a simplified flow diagram of a process for enrolling in a mobile coupon program according to an embodiment of the present invention.

[0012] FIG. 4 shows a screen from a POS terminal.

[0013] FIGS. 5(a)-5(c) show different screenshots on a phone. The screenshots include coupons.

[0014] Figure 6 is a schematic illustration of a computer system for use in accordance with embodiments of the present invention.

[0015] Figure 6A is an illustration of basic subsystems the computer system of Figure 6.

[0016] Figure 7 shows a simplified flow of a process of utilizing an embodiment of an electronic coupon according to the present invention.

DETAILED DESCRIPTION

[0017] I. Payment Processing Systems

[0018] Embodiments of the invention are directed to the use of portable consumer devices, and methods and systems employing them. Preferred portable consumer

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devices are mobile phones. The mobile phones can be used in payment processing systems like those shown in FIG. 1.

[0019] FIG. 1 shows a system 20 that can be used in an embodiment of the invention. The system 20 includes a merchant 22 and an acquirer 24 associated with the merchant 22. In a typical payment transaction, a consumer 30 may purchase goods or services at the merchant 22 using a portable consumer device 32. The acquirer 24 can communicate with an issuer 28 via a payment processing system 26.

[0020] The acquirer 24 is typically a bank that has a merchant account. The issuer 28 may also be a bank, but could also be business entity such as a retail store. Some entities are both acquirers and issuers, and embodiments of the invention include such entities. The issuer 28 may operate a server computer 21, which may have a computer readable medium comprising code for performing the functions that the issuer 28 performs. A database 23 comprising account number information and other information may be operatively coupled to the server computer 21.

[0021] The consumer 30 may be an individual, or an organization such as a business that is capable of purchasing goods or services.

[0022] The portable consumer device 32 may be in any suitable form. For example, suitable portable consumer devices can be hand-held and compact so that they can fit into a consumer's wallet and/or pocket (e.g., pocket-sized). They may include smart cards, ordinary credit or debit cards (with a magnetic strip and without a microprocessor), keychain devices (such as the Speedpass™ commercially available from Exxon-Mobil Corp.), etc. Other examples of portable consumer devices include cellular phones, personal digital assistants (PDAs), pagers, payment cards, security cards, access cards, smart media, transponders, and the like. The portable consumer devices can also be debit devices (*e.g.*, a debit card), credit devices (*e.g.*, a credit card), or stored value devices (*e.g.*, a stored value card).

[0023] The portable consumer device 32 may comprise a computer readable medium 32(a) and a body 32(b). The computer readable medium 32(a) may be on the body 32(b). The body 32(b) may in the form a plastic substrate, housing, or other structure. The computer readable medium 32(a) may be a memory that stores data and may be in any suitable form. Exemplary computer readable media 32(a)

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may be in any suitable form including a magnetic stripe, a memory chip, etc. If the portable consumer device 32 is in the form of a card, it may have an embossed region 32(a) which is embossed with a PAN (primary account number).

[0024] Figure 1A shows an enlarged view of the portable (mobile) device. Device 32 further includes a contactless element 36, typically implemented in the form of a semiconductor chip 36(a) (or other data storage element) with an associated wireless data transfer (e.g., data transmission) element 36(b), such as an antenna. Contactless element 36 is associated with (e.g., embedded within) mobile device 32 and data such as a coupon or control instructions transmitted via cellular network may be applied to contactless element 36 by means of contactless element interface 38. Contactless element interface 38 functions to permit the exchange of data and/or control instructions between the mobile device circuitry 39 (and hence the cellular network) and contactless element 36.

[0025] Mobile device 32 may also include a secure data space 41, which may be used by the device to store operating parameters and/or other data utilized in operation of the device. The secure data space 41 may be in the form of a chip that is separate and apart from the chip in the contactless element 36, or alternatively, could be a section of memory in the chip that forms part of the contactless element 36. Note that the chip in the contactless element 36 may include data storage capability in the form of a memory that may be accessed via interface 38 to permit the implementation of read, write, and erase functions, for example.

[0026] In accordance with still other embodiments, the mobile device may further include a processor 45 and computer readable storage medium 46 for storing code and configured to direct the processor to perform various tasks. For example, the computer readable storage medium may comprise a magnetic disk drive or a flash memory chip.

[0027] As discussed below, the computer readable storage medium may contain code that is configured to cause a processor of the portable consumer device to receive and recognize a message including a coupon and code that is delivered to the mobile device. The computer readable storage medium may also include code that is configured to decrypt an encrypted message including the code that is received by the mobile device.

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[0028] Contactless element 36 is capable of transferring and receiving data using a near field communications capability (or near field communications medium) typically in accordance with a standardized protocol or data transfer mechanism (identified as ISO 14443/NFC in the figure). Near field communications capability is a short-range communications capability, such as RFID, Bluetooth™, infra-red, or other data transfer capability that can be used to exchange data between the mobile device 32 and a local apparatus, for example located a point-of-sale of a merchant or another location at which coupons are expected to be redeemed. Thus, mobile device 32 is capable of communicating and transferring data and/or control instructions via both cellular network and near field communications capability.

[0029] In accordance with certain embodiments, the mobile device further includes a Global Positioning System (GPS) element 47. GPS element 47 is configured to allow determination of the location of the user at any time. In particular, GPS element 47 relies upon signals from a plurality of orbiting satellites in order to allow the user's location to be determined. Location information obtained from the GPS element 47 may in turn be communicated through the antenna to allow monitoring of the user's position.

[0030] Returning to Figure 1, the payment processing network 26 may include data processing subsystems, networks, and operations used to support and deliver authorization services, exception file services, and clearing and settlement services. An exemplary payment processing network may include VisaNet™. Payment processing networks such as VisaNet™ are able to process credit card transactions, debit card transactions, and other types of commercial transactions. VisaNet™, in particular, includes a VIP system (Visa Integrated Payments system) which processes authorization requests and a Base II system which performs clearing and settlement services.

[0031] The payment processing network 26 may include a server computer. A server computer is typically a powerful computer or cluster of computers. For example, the server computer can be a large mainframe, a minicomputer cluster, or a group of servers functioning as a unit. In one example, the server computer may be a database server coupled to a Web server. The payment processing network 26 may use any suitable wired or wireless network, including the Internet.

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[0032] The merchant 22 may also have, or may receive communications from, an access device 34 that can interact with the portable consumer device 32. In embodiment of a system of FIG. 1, the access device 34 is located at the merchant 22. However, it could be located at any other suitable location in other embodiments of the invention.

[0033] The access devices according to embodiments of the invention can be in any suitable form. Examples of access devices include point of sale (POS) devices, cellular phones, PDAs, personal computers (PCs), tablet PCs, handheld specialized readers, set-top boxes, electronic cash registers (ECRs), automated teller machines (ATMs), virtual cash registers (VCRs), kiosks, security systems, access systems, and the like.

[0034] If the access device 34 is a point of sale terminal, any suitable point of sale terminal may include a reader 34(a), a processor 34(b) and a computer readable medium 34(c). The reader 34(b) may include any suitable contact or contactless mode of operation. For example, exemplary card readers can include RF (radio frequency) antennas, magnetic stripe readers, etc. to interact with the portable consumer device 32.

[0035] In a typical purchase transaction, the consumer 30 purchases a good or service at the merchant 22 using a portable consumer device 32 such as a credit card. The consumer's portable consumer device 32 can interact with an access device 34 such as a POS (point of sale) terminal at the merchant 22. For example, the consumer 30 may take a credit card and may swipe it through an appropriate slot in the POS terminal.

[0036] Alternatively, the POS terminal may be a contactless reader, and the portable consumer device 32 may be a contactless device such as a contactless card. In certain embodiments, the portable consumer device may be a mobile device such as shown in FIG. 1A above. As described in detail below, the antenna of the mobile device may be utilized to communicate not only payment information to the POS, but also may also communicate information (such as a code) from a mobile coupon to a POS device.

[0037] An authorization request message is then forwarded to the acquirer 24. After receiving the authorization request message, the authorization request

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message is then sent to the payment processing network 26. The payment processing network 26 then forwards the authorization request message to the issuer 28 of the portable consumer device 32.

[0038] After the issuer 28 receives the authorization request message, the issuer 28 sends an authorization response message back to the payment processing network 26 to indicate whether or not the current transaction is authorized (or not authorized). The transaction processing network 26 then forwards the authorization response message back to the acquirer 24. The acquirer 24 then sends the response message back to the merchant 22.

[0039] After the merchant 22 receives the authorization response message, the access device 34 at the merchant 22 may then provide the authorization response message for the consumer 30. The response message may be displayed by the access device 34, or may be printed out on a receipt.

[0040] At the end of the day, a normal clearing and settlement process can be conducted by the transaction processing network 26. A clearing process is a process of exchanging financial details between and acquirer and an issuer to facilitate posting to a consumer's account and reconciliation of the consumer's settlement position.

[0041] Some of the embodiments described below may use a payment processing system like the one described above, or any suitable combination of components in the payment processing system.

[0042] II. Mobile Coupon Method and System

[0043] Particular embodiments in accordance with the present invention relate to methods and apparatuses which allow distribution and/or redemption of electronic coupons at a mobile personal device. Various embodiments of such a system are described in the following figures.

[0044] Figure 2 shows an overall view of an embodiment of a system in accordance with the present invention for administering a mobile coupon program. A first entity 200 (i.e. Visa) is responsible for operating a payment processing network. Under the control of entity 200 are a number of different operational elements.

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[0045] For example, mobile campaign server 202 functions as the interface between entity 200 and the outside world, here represented by the internet "cloud" 204. Mobile campaign server 202 can include at least three components.

[0046] Specifically, mobile enrollment server 206 provides a browser interface for potential users to enroll in the mobile coupon program using an enrollment webpage 208. Mobile enrollment server 206 is configured to receive from potential users certain pieces of information allowing their participation in the program. For example, in an enrollment form supplied electronically to server 206, the prospective participant can provide information such as the telephone number of their portable device, a security password, and preferences regarding the types of mobile coupons that they wish to receive.

[0047] Figure 3 provides a simplified flow chart of the steps for enrolling in a mobile coupon program. In step 302 of enrollment flow 300, a consumer navigates to the website of the enrollment server utilizing his or her browser.

[0048] In the next step 304, the consumer creates a mobile coupon account by inputting identification and validation information. Examples of such identification information include the user's name, the telephone number of the user's mobile electronic device, financial account numbers, and optional aliases. At this stage, the consumer also verifies that they have read appropriate disclaimers and affirmatively indicate that they seek to opt-into the mobile coupon program.

[0049] In step 306 of enrollment flow 300, information entered by the consumer is verified. Examples of such verification include confirming that the consumer identified is actually in possession of the portable device, that the portable device belongs to the consumer, and that any identified account belongs to the consumer.

[0050] Returning to FIG. 2, mobile enrollment server 206 is in turn in electronic communication with user database 210. Database 210 includes data relating to the user of the mobile coupon system, including the specific information provided during enrollment. Access to the contents of database 210 is shared with gateway server 212.

[0051] Gateway server 212 serves as the interface with outside entities responsible for implementing the mobile coupon program. For example, telecommunications

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companies ("telecoms") 214 provide the infrastructure necessary to communicate the coupon to the user's mobile device wherever they happen to be. The telecom entities must provide sufficient capacity to handle a sufficiently high volume of coupon messages outgoing to recipients.

[0052] Where such volume of messages is expected to be small (for example at the inception of the mobile coupon program), another type of company called an aggregator will secure sufficient bandwidth for all of the expected messages from the telecom, and then aggregate the messages from different sources.

[0053] In an exemplary embodiment, a coupon is sent to a user's phone or other portable device. The coupon may be sent in any one of a number of different forms, including but not limited to an short messaging service (SMS) message, a SMS link, a multimedia messaging service (MMS) message, or e-mail message.

[0054] The coupon may be communicated utilizing any one of several types of communications systems. For example, the coupon may be communicated to the cell phone utilizing SMS. Such an embodiment offers a number of possible advantages, including broad access as SMS is available on almost every cell phone. Possible disadvantages to mobile coupon distribution utilizing SMS is a weak mechanism for confirming receipt of the coupon by the designated recipient, and also a high transaction cost as charges are typically incurred for each SMS message transmitted.

[0055] In accordance with alternative embodiments, the mobile coupon could be distributed by a Global System for Mobile Communications (GSM) system. Such GSM communication are cheap and secure, and would support confirmation of receipt of the coupon by a designated user.

[0056] Further alternatively, the coupons could be distributed utilizing a Near Field Communications (NFC) system. Such an embodiment would require the portable consumer device to be equipped with an NFC chip and programmed with a software application. The source of the near field signal providing the electronic coupon could be local kiosks, for example as present in a shopping mall. An alternative source of electronic coupons available utilizing such near field communication is the point of sale itself. Other sources are possible.

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[0057] The coupon may be communicated to the portable consumer device in encrypted form. Such encryption would prevent interception and unauthorized use of a coupon by other than the intended recipient. A processor present in the portable consumer device could in turn decrypt the message upon its receipt.

[0058] FIG. 4 shows a screen 400 from a POS terminal. The screen 400 shows buttons 402 that a cashier might select in order to initiate a pre-arranged discount utilizing an electronic coupon. For example, button 402a allows the cashier to implement a 30% discount for employees etc. Button 402b allows the cashier to manually enter a number for numeric look-up (NLU) from an electronic coupon displayed on a user's portable electronic device.

[0059] FIGS. 5A-5C are examples of three screenshots showing graphical coupons in different forms. These screenshots are configured to be able to be displayed on the small screen of a mobile phone, personal digital assistant (PDA), or other mobile device.

[0060] FIG. 5A shows a screenshot 500 which includes both a bar code 502 (which is an example of a machine readable code) and a seven digit number 504. The bar code 502 can be scanned with a scanner. One type of scanner which may be used to read a bar code on the screen of a cell phone is a charge coupled device (CCD) scanner. However, a laser-type scanner may not be able to read the bar code displayed due to reflection from the screen.

[0061] In order to process the electronic coupon shown in FIG. 5A, the user accesses and displays the coupon on the screen of his or her portable device. The cashier then accesses the discount screen shown in FIG. 4, and either scans the bar code in directly or enters the seven-digit number utilizing a numeric key pad.

[0062] FIG. 5B illustrates a screenshot 520 showing a different embodiment of a mobile electronic coupon in accordance with the present invention, which includes a visual display 522 and a personalized message 523. This visual display may be related to the nature of the coupon, representing for example the purchase of flowers. Alternatively, the display may simply illustrate the nature of the coupon, for example the display of flowers generically representing a gift.

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[0063] Instead of a barcode, a six digit number "024248" is shown by the electronic coupon 520. In processing of coupon 520 by a cashier, this six digit number can be entered into a POS terminal to give the consumer a discount on a purchase. In accordance with one embodiment, the number can be entered by having the cashier type in the individual digits of the code on a numeric keypad. In accordance with an alternative embodiment, the number can be entered by having the cashier activate a predetermined key, or combination thereof, which allows recognition of the coupon and the discount.

[0064] The embodiment of Figure 5B may offer certain advantages over a coupon employing a bar code as shown in Figure 5A. One advantage is ease of operation, as there is no requirement for optical recognition/reading of a code from the screen of the phone. Another possible advantage is reduced cost of implementation, as a bar code scanner device is not required to be purchased or rented by the merchant. In addition, software and hardware upgrades relating to electronic scanning would not be required by this alternative embodiment.

[0065] Lastly, FIG. 5C shows a screenshot 550 showing a "30% off" coupon. This electronic coupon includes a visual display 552 but lacks either a bar code or an identifying number.

[0066] To use this coupon, the user shows the display to the cashier and the cashier selects a button on a POS terminal display (see FIG. 4) to provide the discount to the consumer. According to still further embodiments of the present invention, coupon information such as a code may be communicated to a portable device in a proprietary format.

[0067] Figure 7 shows a simplified flow of a process of utilizing a mobile coupon according to an embodiment of the present invention. In a first step 702 of process flow 700, a purchaser presents items to a cashier. In step 704, the cashier hits the purchase key and enters the items. In step 706, the coupon asks the purchaser whether or not she intends to use coupons. In step 708, the purchaser responds that she intends to use a coupon.

[0068] In step 710 of process flow 700, the cashier hits the coupons key to alert the register to the use of coupons. In step 712, the cashier hits the accept coupon button on the back of the VISA terminal.

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[0069] In step 714, the VISA terminal displays a message requesting the purchaser to wave the phone to enter a coupon. In step 716, the purchaser waves the phone and the terminal receives the scanned code. In step 718 the processor in communication with the terminal looks up the scanned code. In step 720, the processor returns to the terminal, customer and branding information. In step 722, the terminal displays a branding message customized to the particular purchaser. Finally, in step 724, the terminal sends to the register a numeric look up representing the bar code.

[0070] A variation according to embodiments of the present invention may utilize near field communication of the coupon or a code therein, to the cashier. In this variation, a multi-digit numerical code (i.e. six digits) can be transmitted to the POS terminal via a reader using a contactless device such as the mobile device of FIG. 1A including an antenna. The coupon may be communicated in such a contactless manner using a short range communication method, such as a near field communications (NFC) capability. Examples of such NFC technologies include ISO standard 14443, RFID, Bluetooth™ and Infra-red communications methods. In accordance with such embodiments, the six digit code may or may not be shown on the display of the phone. Embodiments in accordance with the present invention are not limited to communicating coupon code information. In accordance with alternative embodiments, coupon information communicated from a mobile device to a POS terminal may include other information, for example a product code limiting applicability of the mobile coupon to a particular product, or an expiration date/time of the mobile coupon.

[0071] In certain embodiments, payment information (such as a credit card number, debit card number, home zip code of the card holder, or a three digit card verification value code) may be communicated from a mobile device in a contactless manner to the POS terminal. In such embodiments, the coupon information from the mobile device may also be communicated to the POS terminal in a contactless manner. In some embodiments, such communication of mobile coupon information may take place as part of the same message communicating payment information to the POS terminal. Alternatively, the coupon information may be communicated prior to, or following, contactless communication of the payment information to the POS terminal.

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[0072] The consumer may receive a text message, a phone call, or e-mail indicating that the consumer has received a coupon. The consumer may then use his or her phone to transmit a code corresponding to the coupon, to a contactless reader coupled to a POS terminal. The near field communication can utilize, for example, infrared or an RF communication mode such as Bluetooth. The system shown in FIG. 1 can be used in conjunction with such an embodiment.

[0073] Returning to Figure 2, apart from the mobile campaign server, a number of other elements are also under the control of entity 200. Notification module 250 is responsible for notifying participants in the program of particular events, for example limited time promotions or even the possibility of fraudulent transactions.

[0074] Mobile targeting module 260 is responsible for generating coupons targeted to a user. According to certain embodiments, the coupons can be targeted based upon a location based services (LBS) approach, utilizing prior purchasing activity by a consumer as detected over a payment processing network.

[0075] Specifically, where a payment transaction is conducted over a payment processing network, certain information is communicated that can be used for targeting of a mobile coupon. One piece of information that is potentially useful for targeting is the timing of the prior payment transaction.

[0076] In particular, the very existence of the prior purchase transaction reveals the consumer to be actively engaged in shopping rather than other activities (i.e. sleeping or working). Based upon this timing information, the consumer is known to likely be receptive to a mobile coupon for a subsequent transaction. Accordingly, embodiments of the present invention may thus generate and disseminate a mobile coupon to the consumer within a predetermined, limited time period from receiving an indication from the payment processing network that a prior payment transaction has occurred. Examples of time periods for dissemination of mobile coupons include, but are not limited to, one minute or less, five minutes, ten minutes, fifteen minutes, one-half hour, forty-five minutes, one hour, one and one half hours, two hours, three hours, four hours, and five hours or longer from the time that a prior purchasing activity is detected from the payment processing network. Such an approach allows for dissemination of a timely, non-intrusive mobile coupons to the consumer.

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[0077] In certain embodiments, the duration of effectiveness of such a mobile coupon can also be limited by time. Such an embodiment would provide an incentive for the recipient to monitor his or her portable device for receipt of a mobile coupon, and use that coupon within the limited period that it is effective. Moreover, in certain embodiments, upon expiration the mobile coupon could be configured to automatically disappear from the consumer's portable device. This would reduce intrusiveness of the mobile coupon, as the consumer is not obligated to delete a backlog of expired coupons from his or her portable device.

[0078] Embodiments of the present invention are not limited to generating and promulgating mobile coupons based upon temporal information gleaned from a prior purchase transaction over a payment processing network. In accordance with alternative embodiments, the mobile coupons can be targeted based upon a geographic location of the user as determined from the payment processing network.

[0079] According to one embodiment, the location of the consumer can be determined from purchasing activity of the user based upon a Location Based Services (LBS) approach. For example, when the user swipes a card at a POS, an authorization message is returned from the payment network which includes a Merchant Identification Number (MID). The user's location at that time of sale can be determined from the MID number.

[0080] According to other embodiments, information regarding the nature of the prior purchase conducted over the payment processing network can be referenced to generate the coupon. Thus, a prior purchase of one product (for example a vacuum cleaner), could lead to generation of a second product (bags for the vacuum cleaner). This coupon generation could be irrespective of the time or physical location of a prior purchasing transaction. Still further alternatively, an LBS approach could be based upon the seller of the second product having an affinity agreement with the seller of the previous product purchased.

[0081] Moreover, a mobile coupon may be generated based upon more than one piece of information gleaned from a prior purchasing transaction conducted over a payment processing network. Specifically, the time, geographic location, and/or nature of the prior purchase transaction could be combined to generate the targeted coupon.

[0082] According to still other embodiments, information from a prior purchase transaction available from a payment processing network, may be combined with other information to generate a targeted coupon. For example, information regarding the location of the consumer can be determined from sources other than the payment processing network.

[0083] According to one approach, the location of a consumer can be determined by analyzing the location of the current base station through which the portable user device is transmitting and receiving information. Such current base station information is available from the telecommunications provider with which the consumer is affiliated, and in other applications is utilized to allow the user to contact the closest medical services provider in the case of a medical emergency. Thus, in certain embodiments, geographic information from this source could be combined with information (time, nature of prior purchases) available from the payment processing network, to generate a targeted coupon.

[0084] According to another approach, the location of a consumer can be determined by the use of Global Positioning System (GPS) technology. In this approach, the location of the portable device of the consumer is monitored utilizing a plurality of orbiting satellites. Thus, in other embodiments, geographic information from this source could be combined with information (time, nature of prior purchase) available from the payment processing network, to generate a targeted coupon.

[0085] Utilizing any of these approaches, or others, alone or in combination, the mobile targeting module 260 may send out a targeted mobile coupon to a consumer. For example, the mobile electronic coupon can be targeted in whole or in part based upon the recipient belonging to a particular group, such as an employee of a business or a member of a club.

[0086] Reward module 270 (such as "Visa Extras") is responsible for coordinating and administering an incentive or reward program that is tied to use of the payment network Thus a targeted mobile coupon may be generated and then electronically distributed to a portable consumer device as part of an incentive program. For example, the accrual of a certain volume of purchases utilizing a Visa card, may render the program participant eligible for a particularly valuable type of electronic coupon not typically available to other participants in the mobile coupon program.

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This targeted electronic coupon is then communicated to the consumer's mobile device for redemption.

[0087] Other elements indicated under the control of entity 200 in FIG. 2, may relate to the function of the payment network to execute purchase and payment transactions. Partners and banks 280 are outside of the control of entity 200 but interact therewith as part of the processing of payment transactions.

[0088] It should be understood that the present invention as described above can be implemented in the form of control logic using computer software in a modular or integrated manner. Based on the disclosure and teachings provided herein, a person of ordinary skill in the art will know and appreciate other ways and/or methods to implement the present invention using hardware and a combination of hardware and software.

[0089] The various components of the mobile coupon system described above may be implemented with a computer system having various features. FIG. 6 shows an example of a generic computer system 610 including display device 620, display screen 630, cabinet 640, keyboard 650, and mouse 670. Mouse 670 and keyboard 650 are representative "user input devices." Mouse 670 includes buttons 680 for selection of buttons on a graphical user interface device. Other examples of user input devices are a touch screen, light pen, track ball, data glove, microphone, and so forth. FIG. 6 is representative of but one type of system for embodying the present invention. It will be readily apparent to one of ordinary skill in the art that many system types and configurations are suitable for use in conjunction with the present invention. In a preferred embodiment, computer system 610 includes a Pentium class based computer, running Windows NT operating system by Microsoft Corporation. However, the apparatus is easily adapted to other operating systems and architectures by those of ordinary skill in the art without departing from the scope of the present invention.

[0090] As noted, mouse 670 can have one or more buttons such as buttons 680. Cabinet 640 houses familiar computer components such as disk drives, a processor, storage device, etc. Storage devices include, but are not limited to, disk drives, magnetic tape, solid state memory, bubble memory, etc. Cabinet 640 can include additional hardware such as input/output (I/O) interface cards for connecting

computer system 610 to external devices external storage, other computers or additional peripherals, further described below.

[0091] FIG. 6A is an illustration of basic subsystems in computer system 610 of FIG. 6. This diagram is merely an illustration and should not limit the scope of the claims herein. One of ordinary skill in the art will recognize other variations, modifications, and alternatives. In certain embodiments, the subsystems are interconnected via a system bus 675. Additional subsystems such as a printer 674, keyboard 678, fixed disk 679, monitor 676, which is coupled to display adapter 682, and others are shown. Peripherals and input/output (I/O) devices, which couple to I/O controller 671, can be connected to the computer system by any number of means known in the art, such as serial port 677. For example, serial port 677 can be used to connect the computer system to a modem 681, which in turn connects to a wide area network such as the Internet, a mouse input device, or a scanner. The interconnection via system bus allows central processor 673 to communicate with each subsystem and to control the execution of instructions from system memory 672 or the fixed disk 679, as well as the exchange of information between subsystems. Other arrangements of subsystems and interconnections are readily achievable by those of ordinary skill in the art. System memory, and the fixed disk are examples of tangible media for storage of computer programs, other types of tangible media include floppy disks, removable hard disks, optical storage media such as CD-ROMS and bar codes, and semiconductor memories such as flash memory, read-only-memories (ROM), and battery backed memory.

[0092] Any of the software components or functions described in this application, may be implemented as software code to be executed by a processor using any suitable computer language such as, for example, Java, C++ or Perl using, for example, conventional or object-oriented techniques. The software code may be stored as a series of instructions, or commands on a computer readable medium, such as a random access memory (RAM), a read only memory (ROM), a magnetic medium such as a hard-drive or a floppy disk, or an optical medium such as a CD-ROM. Any such computer readable medium may reside on or within a single computational apparatus, and may be present on or within different computational apparatuses within a system or network.

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[0093] The above description is illustrative and is not restrictive. Many variations of the invention will become apparent to those skilled in the art upon review of the disclosure. The scope of the invention should, therefore, be determined not with reference to the above description, but instead should be determined with reference to the pending claims along with their full scope or equivalents.

[0094] One or more features from any embodiment may be combined with one or more features of any other embodiment without departing from the scope of the invention.

[0095] A recitation of "a", "an" or "the" is intended to mean "one or more" unless specifically indicated to the contrary.

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WHAT IS CLAIMED IS:

1. A method comprising:

receiving through a payment processing network, an indication of a purchase transaction by a consumer;

generating a mobile coupon based upon information from the purchase transaction; and

disseminating the mobile coupon to the consumer.

2. The method of claim 1 wherein the mobile coupon is generated based upon a time of the purchase transaction, and the mobile coupon is disseminated to the consumer within a predetermined amount of time from the time of the purchase transaction.

3. The method of claim 2 wherein the mobile coupon is effective for a limited time from the first time.

4. The method of claim 1 wherein the coupon is generated based upon a geographic location of the consumer.

5. The method of claim 4 wherein the geographic location of the consumer is determined from the purchase transaction.

6. The method of claim 4 wherein the geographic location of the consumer is determined from a location of the portable device.

7. The method of claim 6 wherein the geographic location of the consumer is determined from a global positioning system (GPS) element of the portable device.

8. The method of claim 1 wherein the information comprises at least one of a time of the purchase transaction, a geographic location of the purchase transaction, or a product purchased in the purchase transaction.

9. A method comprising:

receiving a coupon comprising a code at a portable consumer device comprising an antenna operated by a consumer;

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using the antenna to provide payment information for a purchase transaction to a merchant; and

using the antenna to also provide the code to the merchant.

10. The method of claim 9 wherein the antenna is an RF antenna and the portable consumer device is a mobile phone.

11. The method of claim 9 wherein the payment information comprises a credit card number, a debit card number, a home zip code of the consumer, or a three digit card verification value code.

12. The method of claim 9 wherein the code is provided to the merchant utilizing a near field communication (NFC) channel.

13. The method of claim 9 wherein the portable consumer device includes a global positioning system (GPS), the method further comprising the portable consumer device sending to a remote location a signal indicating its geographic location.

14. A portable consumer device comprising:

a contactless element;

a wireless data transfer element associated with the contactless element;

a processor; and

a computer readable storage medium configured to store a coupon including a code, the contactless element configured to transmit the code to a merchant upon receipt of a command from a user.

15. The portable consumer device of claim 14 wherein the computer readable storage medium is configured to store instructions for the processor to decrypt an encrypted coupon message received by the wireless data transfer element.

16. The portable consumer device of claim 14 wherein the computer readable storage medium is configured to store instructions for the processor to receive and recognize an incoming message including the coupon and the code.

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17. The portable consumer device of claim 16 wherein the coupon is received as a short messaging service (SMS) message, a near field communication (NFC) message, or as a global system for mobile communications (GSM) message.

18. The portable consumer device of claim 14 further comprising a global positioning system (GPS) element.

19. The portable consumer device of claim 18 wherein the computer readable storage medium is configured to store instructions for the processor to communicate a geographic location generated by the GPS element to an entity generating the coupon.

20. The portable consumer device of claim 14 further comprising a screen, wherein the computer readable storage medium is configured to store instructions for the processor to display at least a portion of the coupon on the screen.

21. The portable consumer device of claim 14 wherein the wireless data transfer element comprises an infra-red (IR) transmitter or a radio frequency (RF) transmitter.

22. A method comprising:

receiving a coupon comprising a code at a mobile phone operated by a consumer;

displaying the code on a screen of the mobile phone; and

showing the screen including the code to a merchant, thereby allowing the merchant to thereafter provide a discount to the consumer.

23. The method of claim 22 wherein displaying the code comprises displaying a numeric code.

24. The method of claim 22 further comprising providing a visual display with the code on the screen.

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25. The method of claim 22 wherein receiving the coupon comprises receiving a short messaging service (SMS) message, a near field communication (NFC) message, or a global system for mobile communications (GSM) message.

26. The method of claim 22 further comprising decrypting the incoming message including the coupon.

27. The method of claim 22 wherein the coupon is generated based upon a of the consumer based upon location-based service (LBS) approach or a global positioning system (GPS) approach.

28. A method comprising:

receiving a coupon comprising a code at a portable consumer device comprising an antenna operated by a consumer; and

providing the code to a merchant using an antenna.

29. The method of claim 28 wherein the antenna is an RF antenna and the portable consumer device is a mobile phone.

30. The method of claim 28 wherein the portable consumer device receives the coupon with the antenna.

31. The method of claim 28 wherein the code is provided to the merchant utilizing a near field communication (NFC) channel.

32. The method of claim 28 wherein the portable consumer device includes a global positioning system (GPS), the method further comprising the portable consumer device sending to a remote location a signal indicating its geographic location.

33. The method of claim 28 wherein the coupon is applicable to a merchant proximate to the geographic location of the portable consumer device.

34. The method of claim 33 wherein the coupon is generated based upon a location of the consumer based upon location-based service (LBS) approach or a global positioning system (GPS) approach.

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Page 269 of 545

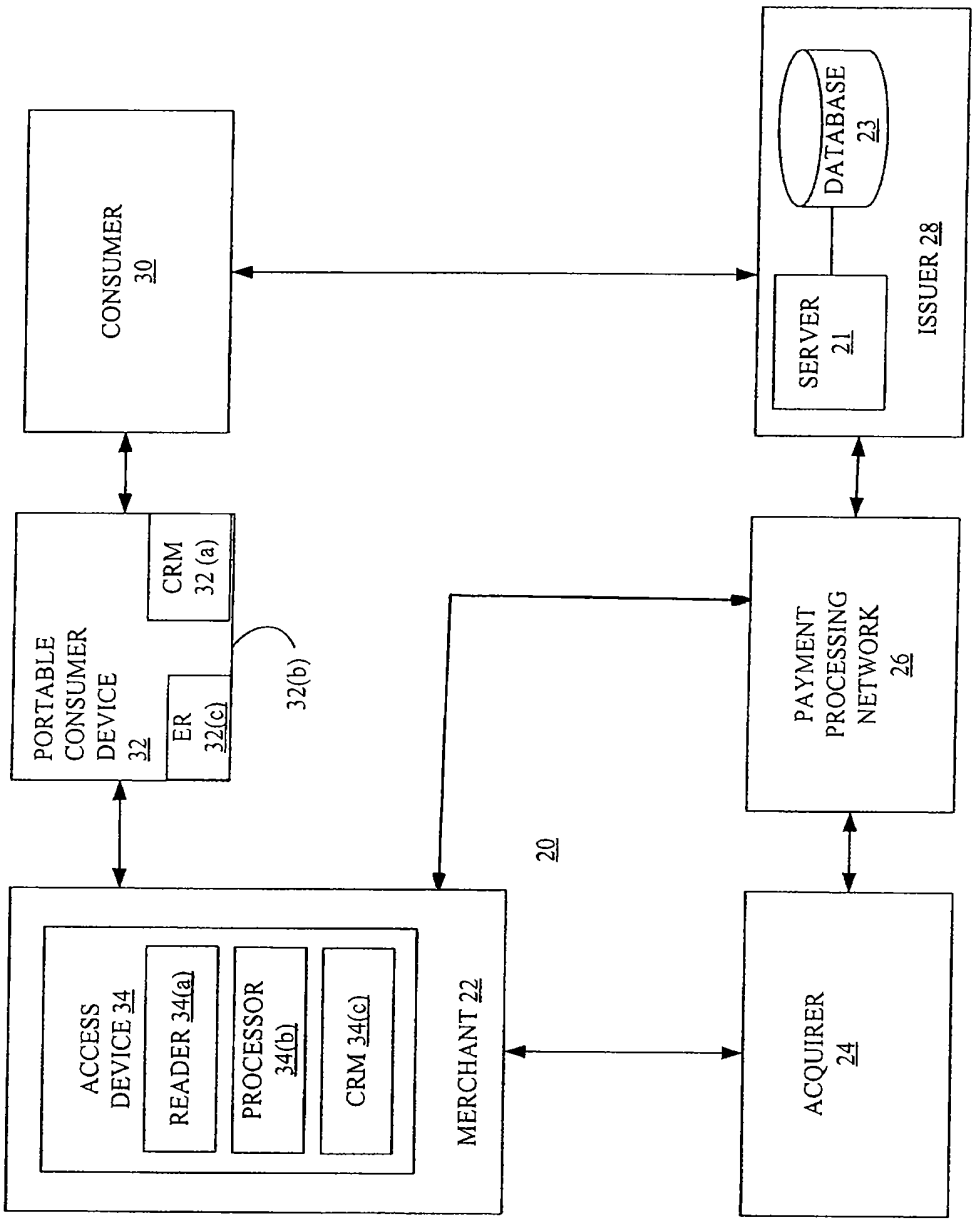

CONSUMER
30
DATABASE
23
SERVER
21
ISSUER 28
PORTABLE
CONSUMER
DEVICE
32
CRM
32 (a)
ER
32(c)
32(b)
PAYMENT
PROCESSING
NETWORK
26
20
ACCESS
DEVICE 34
READER 34(a)
PROCESSOR
34(b)
CRM 34(c)
MERCHANT 22
ACQUIRER
24

FIG. 1

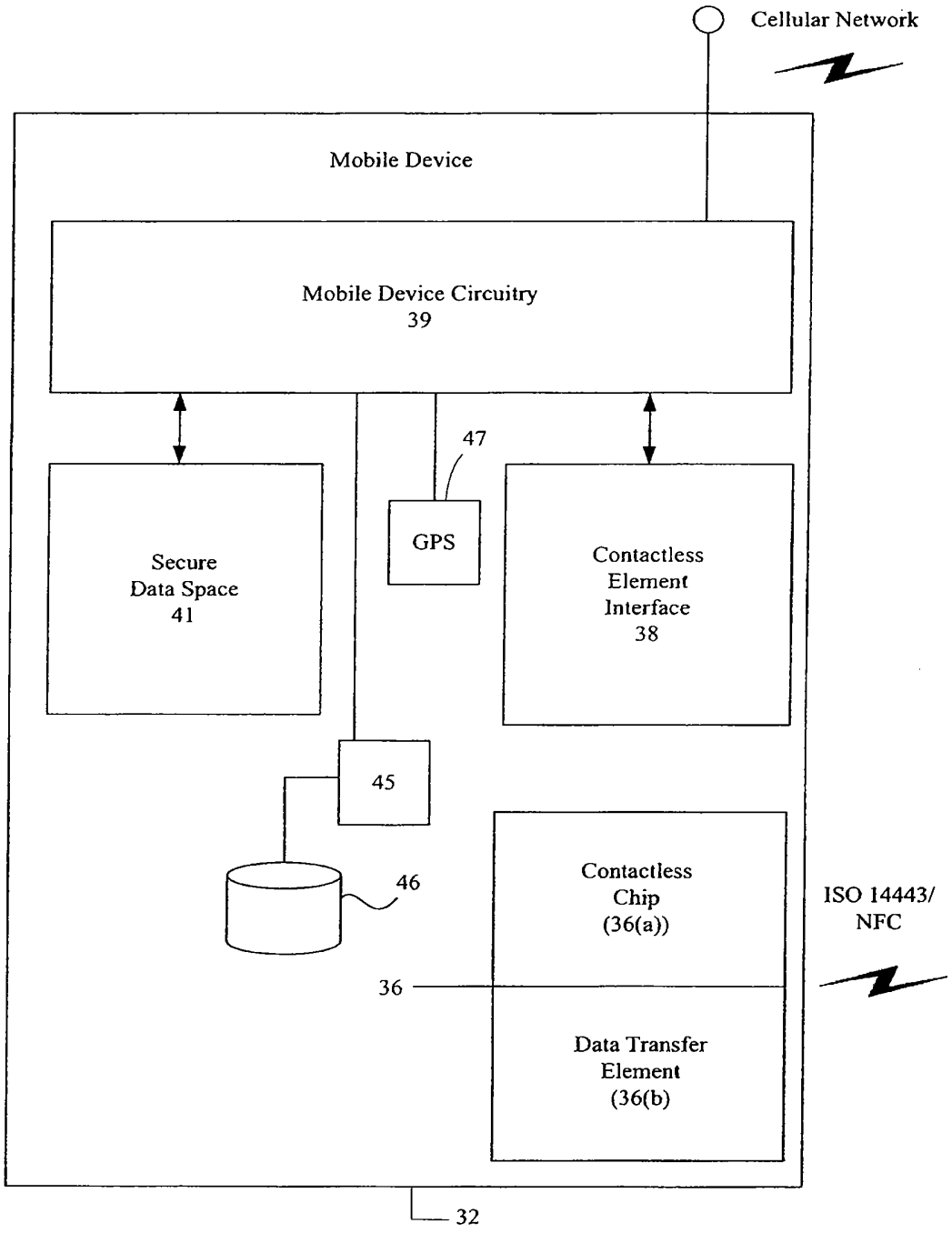

Cellular Network
Mobile Device
Mobile Device Circuitry
39
47
GPS
Secure
Data Space
41
Contactless
Element
Interface
38
45
46
Contactless
Chip
(36(a))
ISO 14443/
NFC
36
Data Transfer
Element
(36(b)
32

FIG. 1A

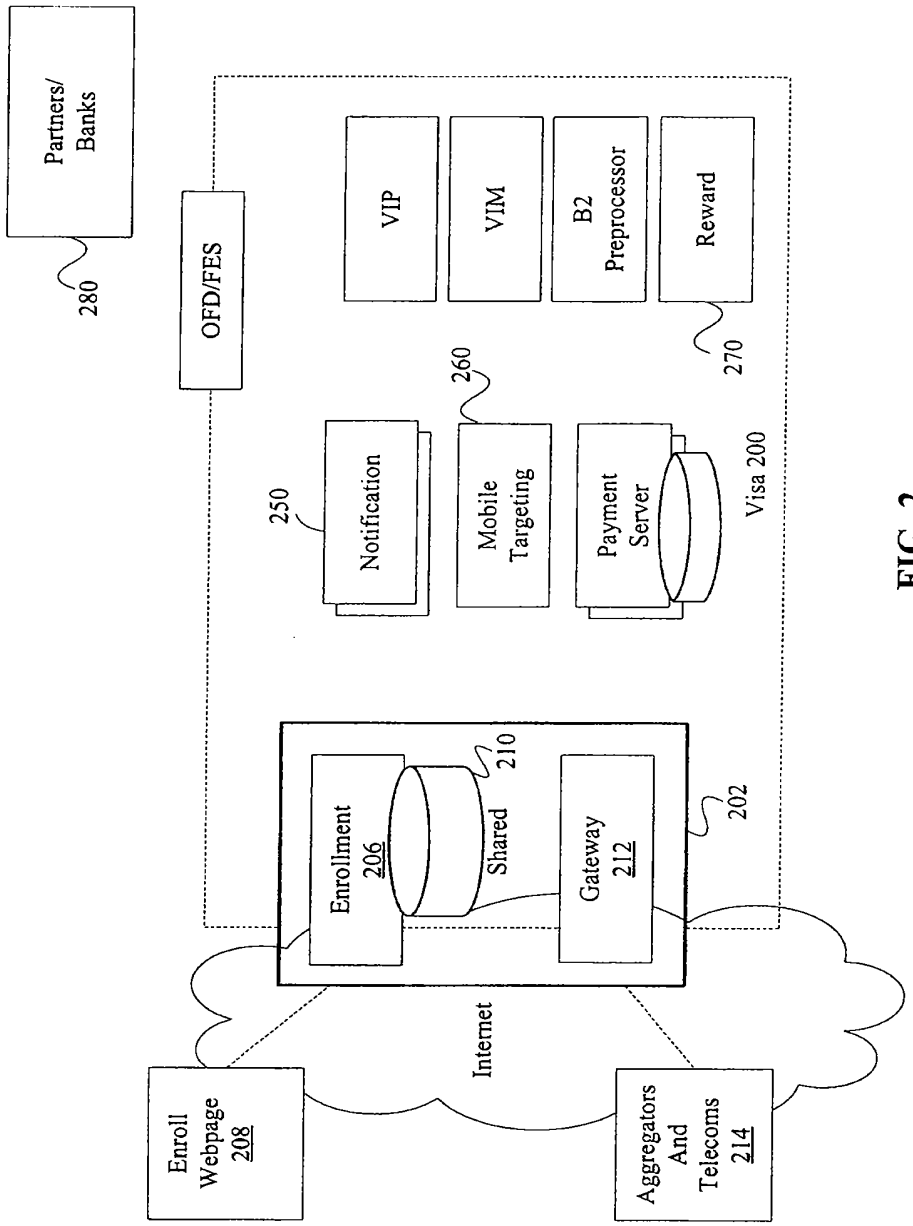

Partners/
Banks
280
OFD/FES
VIP
VIM
B2
Preprocessor
Reward
270
260
250
Notification
Mobile
Targeting
Payment
Server
Visa 200
Enrollment
206
210
Shared
Gateway
212
202
Internet
Enroll
Webpage
208
Aggregators
And
Telecoms
214

FIG. 2

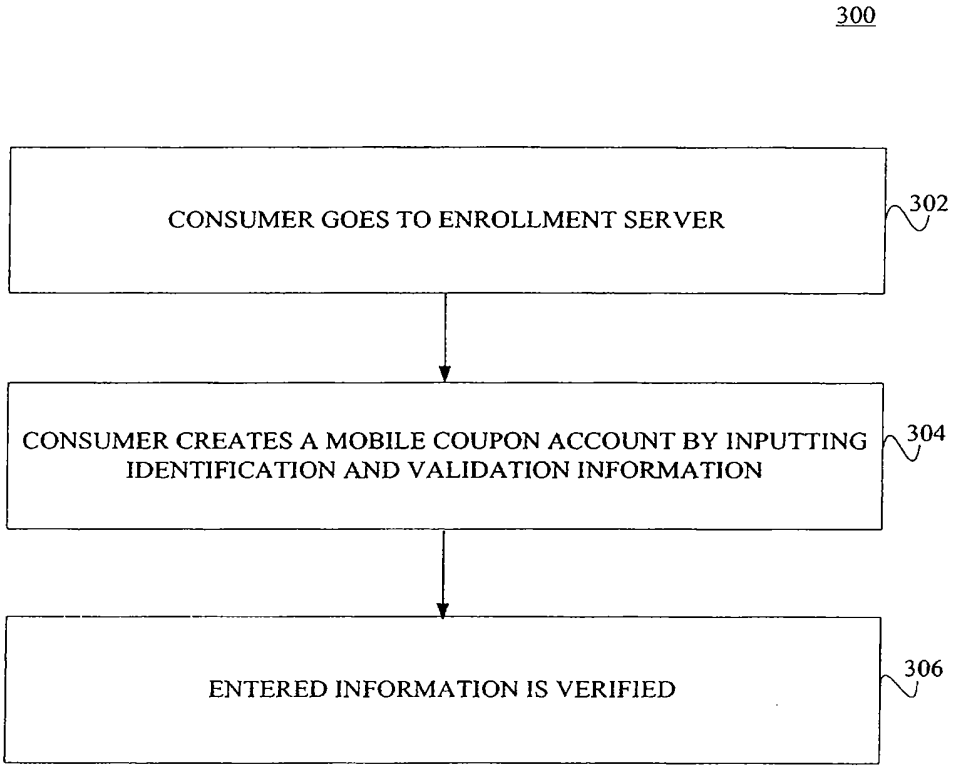

300
CONSUMER GOES TO ENROLLMENT SERVER
302
CONSUMER CREATES A MOBILE COUPON ACCOUNT BY INPUTTING IDENTIFICATION AND VALIDATION INFORMATION
304
ENTERED INFORMATION IS VERIFIED
306

FIG. 3

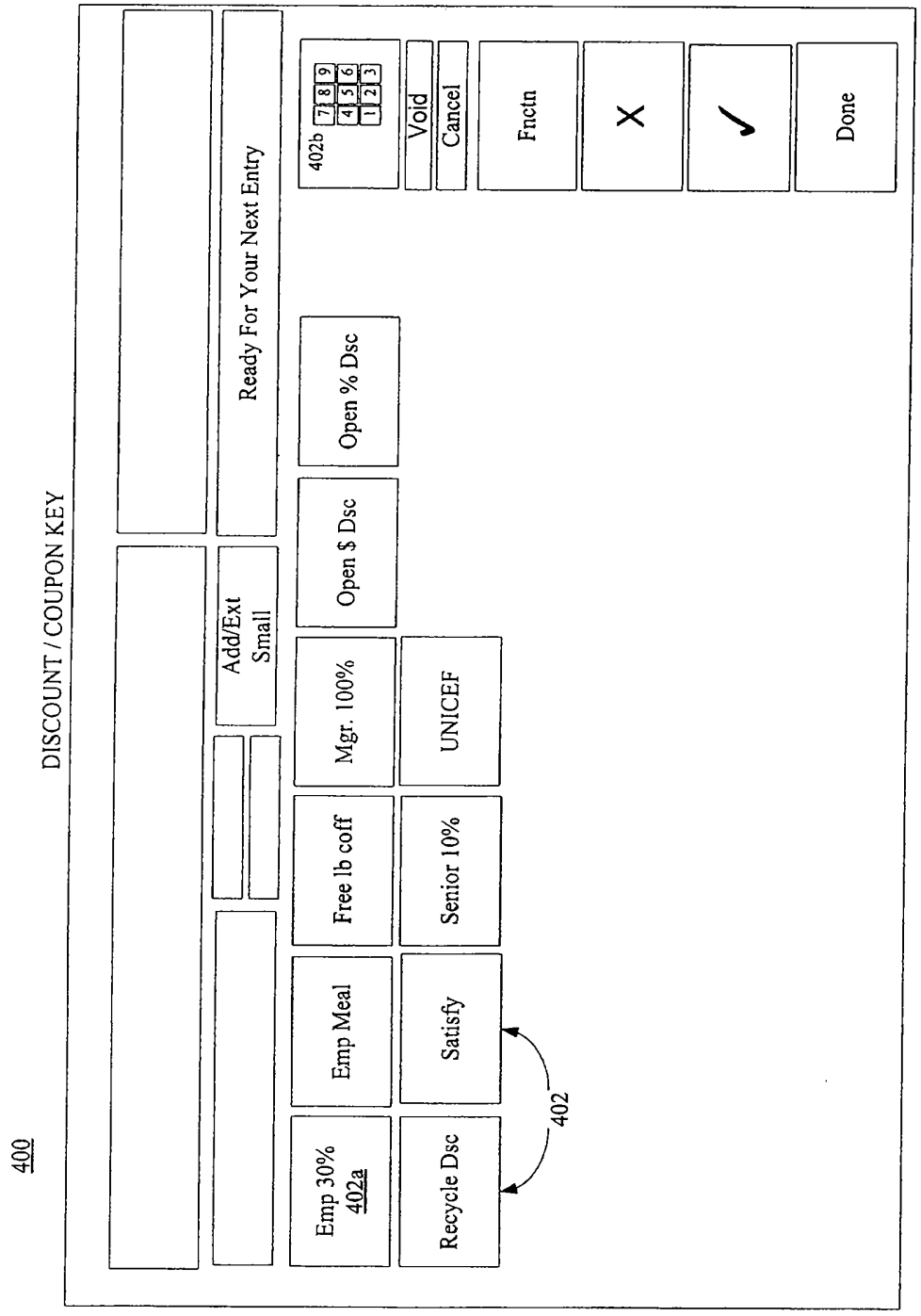

400
DISCOUNT / COUPON KEY
Ready For Your Next Entry
Add/Ext Small
Open % Dsc
Open $ Dsc
Mgr. 100%
UNICEF
Free lb coff
Senior 10%
Emp Meal
Satisfy
Emp 30% 402a
Recycle Dsc
402
402b
7 8 9
4 5 6
1 2 3
Void
Cancel
Fnctn
X
✓
Done

FIG. 4

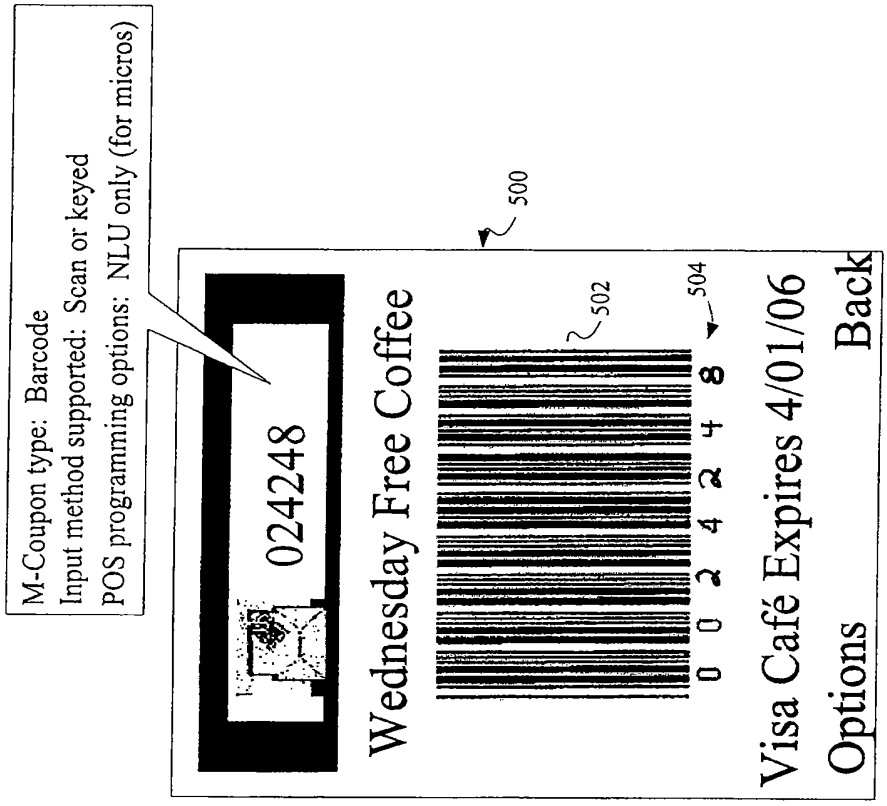

M-Coupon type: Barcode
Input method supported: Scan or keyed
POS programming options: NLU only (for micros)
024248
Wednesday Free Coffee
500
502
504
0 0 2 4 2 4 8
Visa Café Expires 4/01/06
Options
Back

FIG. 5A

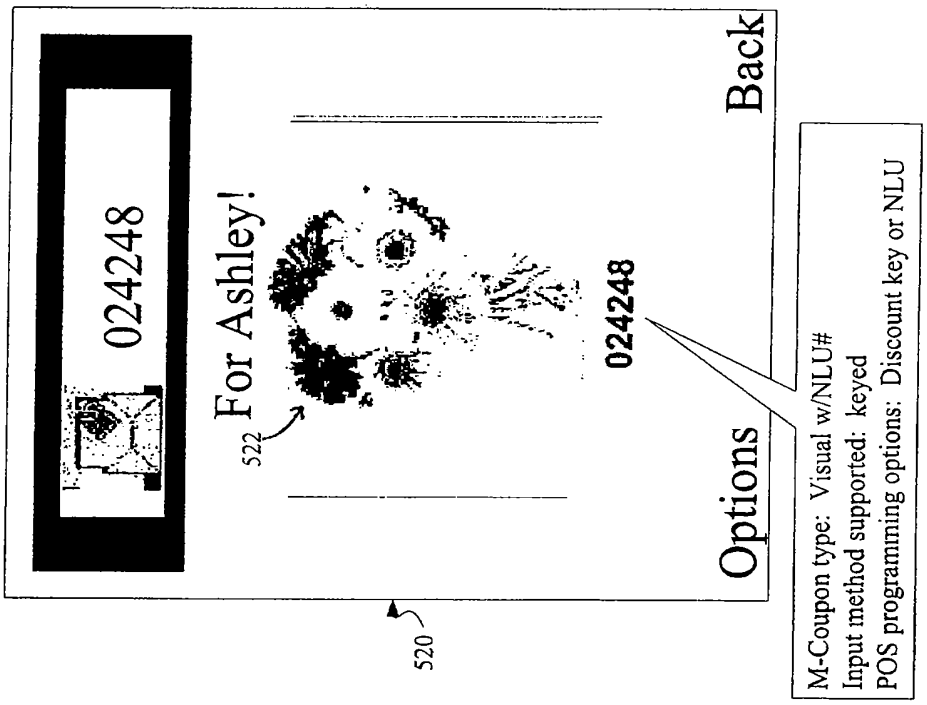

024248
For Ashley!
522
024248
Options
Back
520
M-Coupon type: Visual w/NLU#
Input method supported: keyed
POS programming options: Discount key or NLU

FIG. 5B

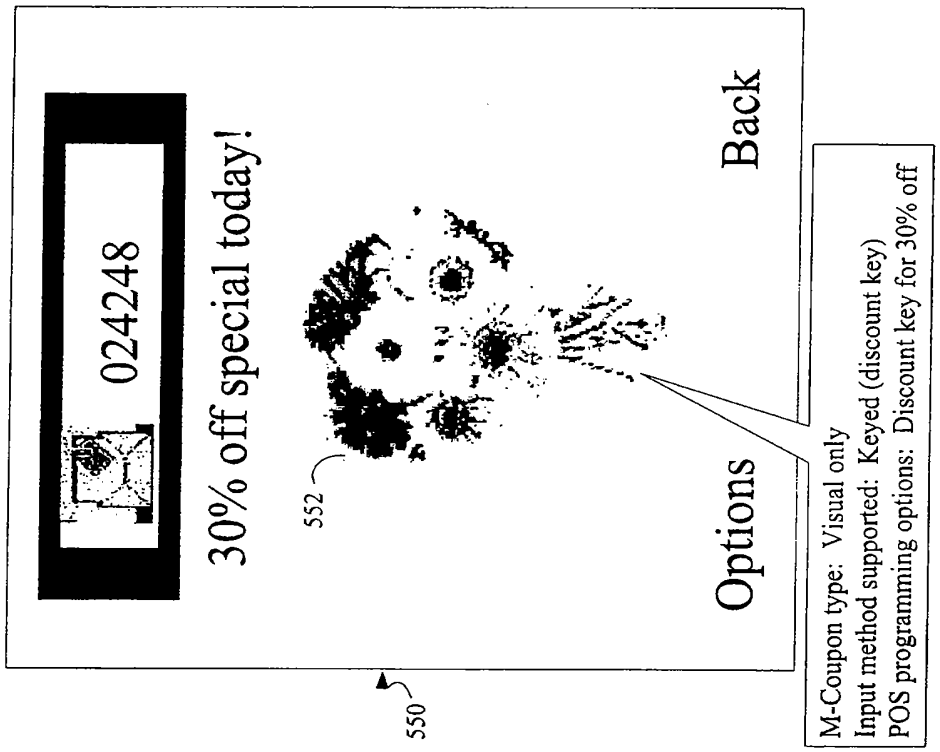

024248
30% off special today!
552
Options
Back
550
M-Coupon type: Visual only
Input method supported: Keyed (discount key)
POS programming options: Discount key for 30% off

FIG. 5C

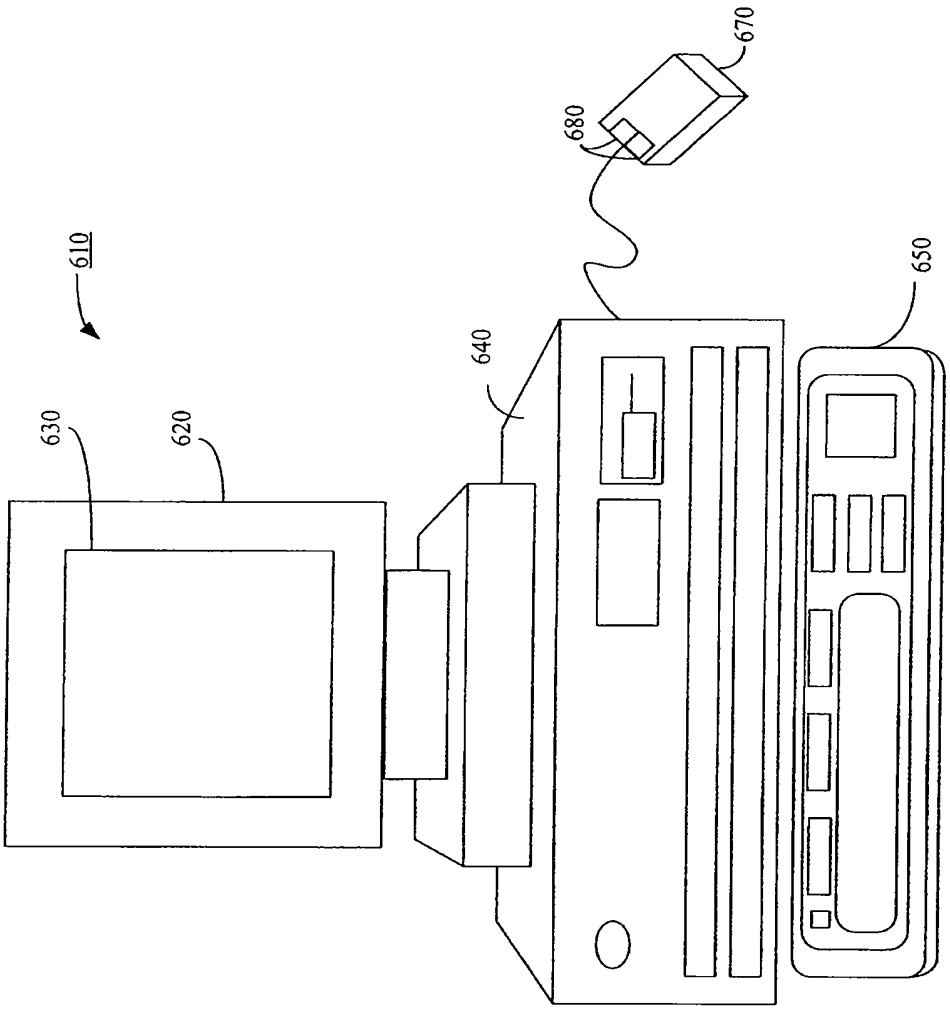


FIG. 6

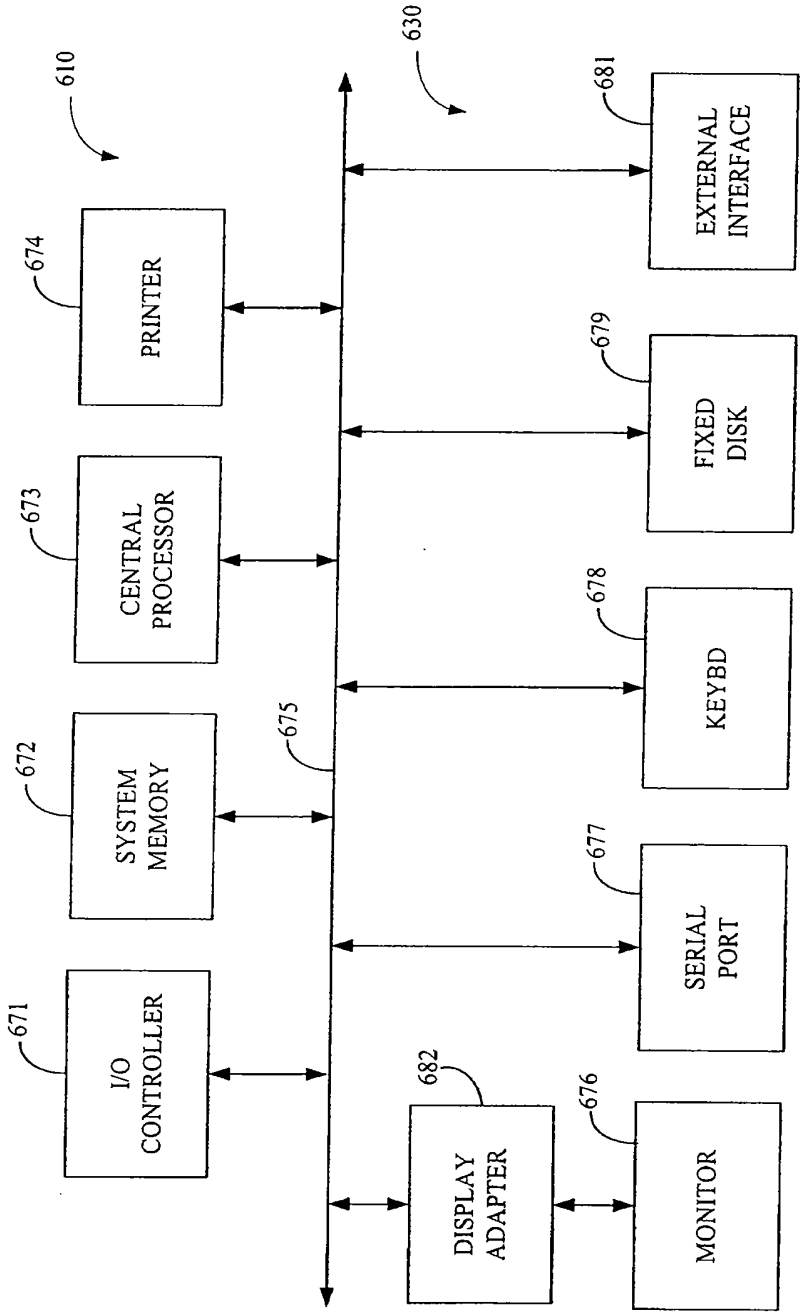

610
630
681
EXTERNAL INTERFACE
674
PRINTER
679
FIXED DISK
673
CENTRAL PROCESSOR
678
KEYBD
672
SYSTEM MEMORY
675
677
SERIAL PORT
671
I/O CONTROLLER
682
DISPLAY ADAPTER
676
MONITOR

FIG. 6A

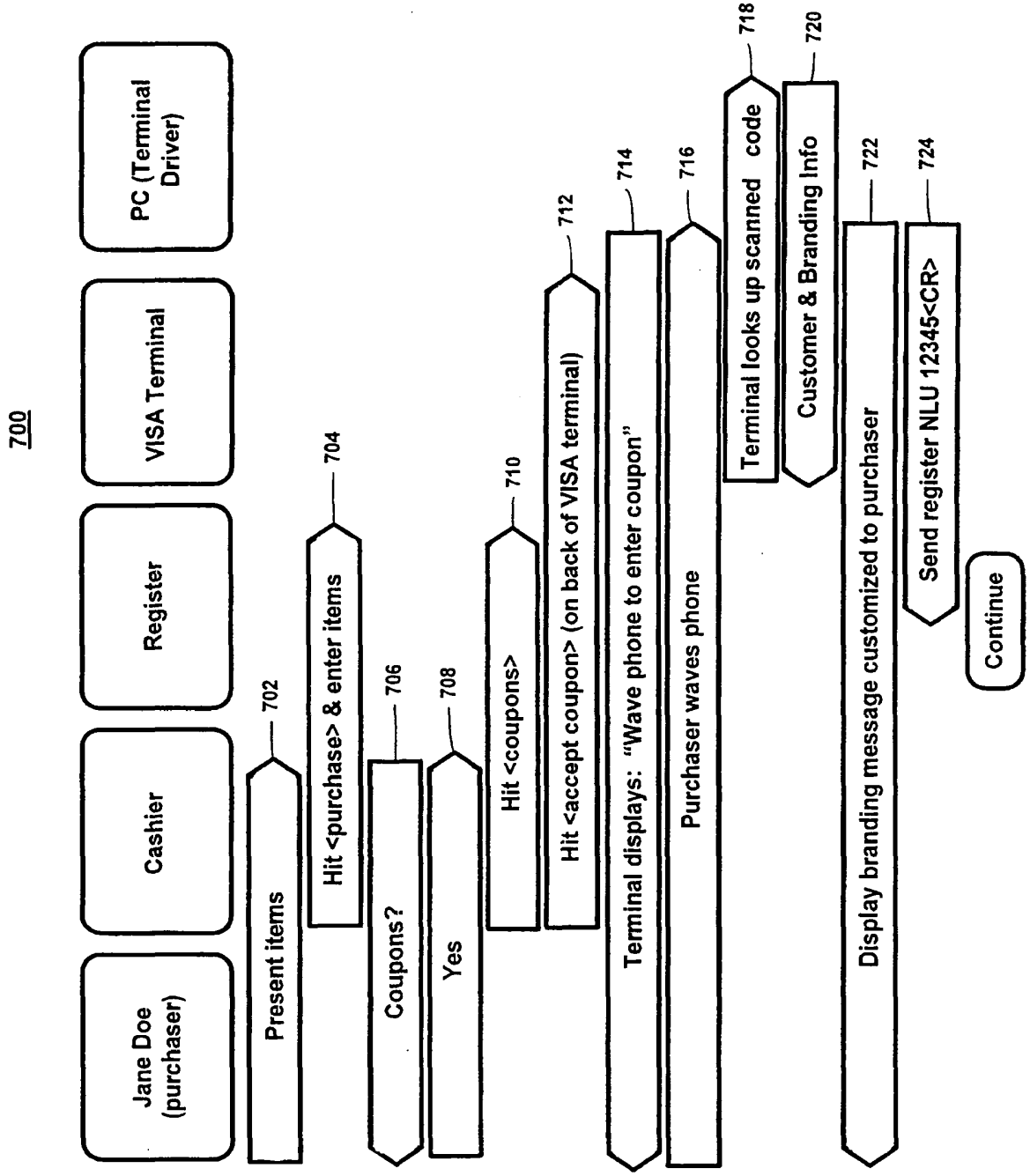


FIG. 7

CSC ServiceWorks – Ex. 1002
Page 280 of 545

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	Mobile-Device-to-Machine Payment Systems
First Named Inventor/Applicant Name:	Paresh K. Patel
Filer:	Karen Dana Oster
Attorney Docket Number:	PR:MDMP1

Filed as Small Entity

Track I Prioritized Examination - Nonprovisional Application under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	70	70
Utility Search Fee	2111	1	300	300
Utility Examination Fee	2311	1	360	360
Request for Prioritized Examination	2817	1	2000	2000
Pages:				
Claims:				
Claims in excess of 20	2202	6	40	240
Miscellaneous-Filing:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Publ. Fee- Early, Voluntary, or Normal	1504	1	0	0
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**2970**

Electronic Acknowledgement Receipt

EFS ID:	18486629
Application Number:	14214644
International Application Number:	
Confirmation Number:	2829
Title of Invention:	Mobile-Device-to-Machine Payment Systems
First Named Inventor/Applicant Name:	Paresh K. Patel
Customer Number:	26790
Filer:	Karen Dana Oster
Filer Authorized By:	
Attorney Docket Number:	PR:MDMP1
Receipt Date:	14-MAR-2014
Filing Date:	
Time Stamp:	23:54:53
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$2970
RAM confirmation Number	10660
Deposit Account	502115
Authorized User	OSTER, KAREN DANA
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal of New Application	tl.pdf	73236 dc116f34e97b2923a99baace3d8ada656eb71a5c	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee.pdf	65239 1744fd26801e678f3ee08ab7ecc7d98c77694f5e	no	1
Warnings:					
Information:					
3	Application Data Sheet	ADS.pdf	1566082 b48bed92ddc450622af56f68249cd8e9d23c74ff	no	7
Warnings:					
Information:					
4	Specification	spec.pdf	243689 d2cb039834622891aefb9a895a1b20077fc0e1fa	no	56
Warnings:					
Information:					
5	Claims	clms.pdf	46459 5098725a0698c14535ccb6494c540842c3b6ce37	no	10
Warnings:					
Information:					
6	Abstract	abst.pdf	13118 272374a6f70ab67b3f075cacecbdc73dfa240db7	no	1
Warnings:					
Information:					
7	Drawings-only black and white line drawings	figs.pdf	2248270 b7609fceef73ac984b6e8dccc489248973b9c68a	no	44
Warnings:					
Information:					
8	Oath or Declaration filed	decl1.pdf	432906 de56f3d291402d44265ea346de1815cdc61c9992	no	1

Warnings:					
Information:					
9	Oath or Declaration filed	decl2.pdf	447600 24e44660f85e7980b55b4446d310b79f2843664e	no	1
Warnings:					
Information:					
10	Assignee showing of ownership per 37 CFR 3.73.	poa.pdf	936779 bdf5f1a714bfb78d13c15145d77a2d8e381001ed	no	3
Warnings:					
Information:					
11	TrackOne Request	CertPE.pdf	36015 adccc51b9599344cafaed9a84904ce40ee6f76b3	no	1
Warnings:					
Information:					
12	Transmittal Letter	IDS.pdf	11776 b047a0b7b1ce9de94c058bbd0f48cd8c3ecd4327	no	1
Warnings:					
Information:					
13	Information Disclosure Statement (IDS) Form (SB08)	1449.pdf	31517 3ea2df2dfd223f840d60922762c3afca13d12e1e	no	2
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Information:					
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14	Non Patent Literature	NPL01.pdf	295911 b537b5a20aca60ffb3d85ef072e5f2dbbec287cde	no	2
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15	Non Patent Literature	NPL02.pdf	942776 d8f4730dfe49ebd378f4eacb0453c6e097b49dcf	no	4
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16	Non Patent Literature	NPL03.pdf	7707137 f280a7e14d7aeabe93da1c25c5d856a6f0b65953	no	169
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17	Foreign Reference	FR01.pdf	1023435 fcb654294a65af91221ca714aefe785d0461842a	no	27
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18	Foreign Reference	FR02.pdf	1157823 3f09023ac9fdb6b4b3ed965676673e160b53c340	no	30
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19	Foreign Reference	FR03.pdf	1160701 3a810892d0a9f488979b5873c36459157ab4f485	no	30
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Information:					
20	Foreign Reference	FR04.pdf	1312805 0652ec9c23b25899f8b08c22e41b3ca459beae1f	no	31
Warnings:					
Information:					
21	Foreign Reference	FR05.pdf	1313145 fe082dd5f93099557b97bea535b6e69f564ff69c	no	35
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22	Fee Worksheet (SB06)	fee-info.pdf	39894 a69b2324e4563dcd98d3bc06c345bdb841fbe595	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	21106313	

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc Code: TRACK1.REQ
Document Description: TrackOne Request

PTO/AIA/424 (03-14)

CERTIFICATION AND REQUEST FOR PRIORITIZED EXAMINATION UNDER 37 CFR 1.102(e) (Page 1 of 1)

First Named Inventor:	Patel	Nonprovisional Application Number (if known):	
Title of Invention:	MOBILE-DEVICE-TO-MACHINE PAYMENT SYSTEMS		

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS PRIORITIZED EXAMINATION FOR THE ABOVE-IDENTIFIED APPLICATION.

1. The processing fee set forth in 37 CFR 1.17(i)(1), the prioritized examination fee set forth in 37 CFR 1.17(c), and if not already paid, the publication fee set forth in 37 CFR 1.18(d) have been filed with the request. The basic filing fee, search fee, and examination fee are filed with the request or have been already been paid. I understand that any required excess claims fees or application size fee must be paid for the application.

2. I understand that the application may not contain, or be amended to contain, more than four independent claims, more than thirty total claims, or any multiple dependent claims.

3. The applicable box is checked below:

I. ☑ Original Application (Track One) - Prioritized Examination under § 1.102(e)(1)

i. (a) The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a). This certification and request is being filed with the utility application via EFS-Web.

---OR---

(b) The application is an original nonprovisional plant application filed under 35 U.S.C. 111(a). This certification and request is being filed with the plant application in paper.

ii. An executed inventor's oath or declaration under 37 CFR 1.63 or 37 CFR 1.64 for each inventor, **or** the application data sheet meeting the conditions specified in 37 CFR 1.53(f)(3)(i) is filed with the application.

II. ☐ Request for Continued Examination - Prioritized Examination under § 1.102(e)(2)

i. A request for continued examination has been filed with, or prior to, this form.
ii. If the application is a utility application, this certification and request is being filed via EFS-Web.
iii. The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a), or is a national stage entry under 35 U.S.C. 371.
iv. This certification and request is being filed prior to the mailing of a first Office action responsive to the request for continued examination.
v. No prior request for continued examination has been granted prioritized examination status under 37 CFR 1.102(e)(2).

Signature / Karen Dana Oster #37,621 /	Date March 14, 2014
Name (Print/Typed) Karen Dana Oster	Practitioner Registration Number 37,621

***Note**: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required.**

☐ *Total of _____ forms are submitted.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
PATENT APPLICATION EXAMINING OPERATIONS

Inventors:	Patel, et al.	Group Art Unit:	
Application No.:		Examiner:	
Filed:	March 14, 2014	Docket No.:	PR:MDMP1
Title:	Mobile-Device-to-Machine Payment Systems		

INFORMATION DISCLOSURE STATEMENT
IN ACCORDANCE WITH 37 CFR §1.98

Law Office of Karen Dana Oster, LLC
PMB 506, 16869 SW 65th Avenue
Lake Oswego, OR 97035
March 14, 2014

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Applicant calls the Examiner's attention to patents and other art of which it desires to have considered by the Patent Office in accordance with 37 CFR §1.97. A list of the references is set forth on the attached Information Disclosure Statement. In accordance with 37 CFR §1.97(b)(1), this Information Disclosure Statement is being submitted together with the filing of the above-identified application.

In accordance with 37 CFR §1.97(h), the filing of this Information Disclosure Statement will not be regarded as an admission that any patent or patents, or other art referred to herein is, or is considered to be, material to patentability under 37 CFR §1.56(b) unless specifically designated as such.

Any publication, public uses, and/or offers to sell that applicant may have had (and applicant is specifically not admitting that there were any such disclosures) occurred less than one year before the filing of this application. Accordingly, these publications, public uses, and/or offers to sell would not be considered prior art for purposes of 35 USC §102 or 35 USC §103. Further, applicant reserves the right to assert that at least the earliest of the public uses or offers to sell that applicant may have had would fall under the experimental use exception.

The person making this statement is the attorney who signs below on the basis of the information supplied by the inventors and the information in the file.

Respectfully submitted,
/Karen Dana Oster/
Karen Dana Oster
Reg. No. 37,621
Of Attorneys of Record
Tel: (503) 810-2560

Document code: WFEE

United States Patent and Trademark Office
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
PATENT APPLICATION EXAMINING OPERATIONS

Inventors:	Patel, et al.	Group Art Unit:	
Application No.:	14/216,644	Examiner:	
Filed:	March 14, 2014	Docket No.:	PR:MDMP1
Title:	Mobile-Device-to-Machine Payment Systems		

AUTHORIZATION TO CHARGE
DEPOSIT ACCOUT 50-2115

Law Office of Karen Dana Oster, LLC
PMB 506, 16869 SW 65th Avenue
Lake Oswego, OR 97035
March 18, 2014

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Please charge Deposit Account No. 50-2115 for any additional fees that may be required including, but not limited to the Filing Fee, the Search Fee, the Exam fee, the Track I Prioritized Examination Fee, the Processing Fee, and the Publication Fee. These fees were authorized at the time of filing in both the Fee Transmittal Form and during the payment stage using EFS, but applicant wanted to specifically indicate that the fees set forth above could be charged to the indicated deposit account so that there would be no delay in the prosecution of this application.

Respectfully submitted,
/Karen Dana Oster/
Karen Dana Oster
Reg. No. 37,621
Of Attorneys of Record
Tel: (503) 810-2560

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
10 July 2008 (10.07.2008)

PCT

(10) International Publication Number
WO 2008/083105 A2

(51) International Patent Classification:
G06Q 30/00 (2006.01) *G01S 5/00* (2006.01)

(21) International Application Number:
PCT/US2007/088659

(22) International Filing Date:
21 December 2007 (21.12.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/871,898 26 December 2006 (26.12.2006) US
11/960,162 19 December 2007 (19.12.2007) US

(71) Applicants *(for all designated States except US)*: **VISA U.S.A. INC.** [US/US]; P.O. Box 8999, M3-2B, San Francisco, California 94128 (US). **VISA INTERNATIONAL SERVICE ASSOCIATION** [US/US]; 900 Metro Center Boulevard, Foster City, California 94404 (US).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **CARLSON, Mark** [US/US]; 153 Miramontes Avenue, Half Moon Bay, California 94109 (US). **CIUREA, Peter** [US/US]; 6352 Greenridge Court, Martinez, California 94553 (US).

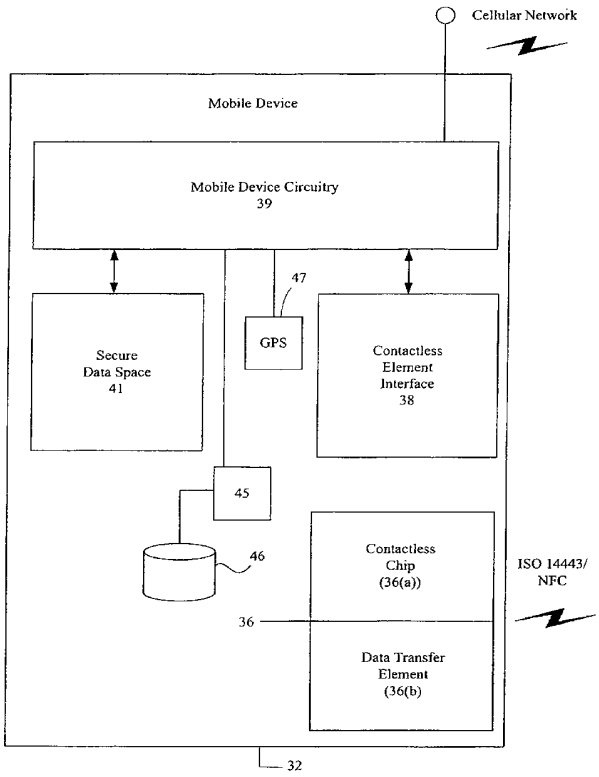
(74) Agents: **TOBIN, Kent J.** et al.; Townsend and Townsend and Crew LLP, Two Embarcadero Center, Eighth Floor, San Francisco, California 94111-3834 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

(54) Title: MOBILE COUPON METHOD AND PORTABLE CONSUMER DEVICE FOR UTILIZING SAME



(57) Abstract: Embodiments of the present invention relate to systems and methods involving mobile coupons. In one embodiment, an indication of a prior purchase transaction over a payment processing network, serves as a trigger to generate and disseminate a mobile coupon for a subsequent transaction. By generating and promulgating the coupon within a limited time of the first transaction, the recipient is disposed to be receptive based upon his or her current shopping status and also possibly geographic location. According to another embodiment, information from a mobile coupon may be presented from the consumer to a merchant in a contactless manner, utilizing an antenna of a portable device operated by a consumer. Coupon information may be communicated to the merchant with the payment information, or prior to or subsequent to transmission of the payment information to the merchant.

WO 2008/083105 A2

European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *without international search report and to be republished upon receipt of that report*

MOBILE COUPON METHOD AND PORTABLE CONSUMER DEVICE FOR UTILIZING SAME

CROSS-REFERENCE TO RELATED APPLICATION

[0001] The instant nonprovisional patent application claims priority to U.S. Provisional Patent Application No. 60/871,898, filed December 26, 2006 and incorporated by reference in its entirety herein for all purposes.

BACKGROUND

[0002] Coupons are a useful marketing tool to enhance brand loyalty and introduce new products. By allowing customization of the effective duration and value of an offer, a coupon provides a flexible incentive for a consumer to purchase a particular product or line of products.

[0003] Conventionally, coupons have been available in printed form from sources such as newspapers. Increased adoption of electronic sources of information such as the world-wide-web, however, has led to the increase in popularity of electronic coupons.

[0004] In addition, most consumers now own and operate a cell phone or other portable electronic device. This renders such consumers accessible to the distribution of electronic coupons as they do their shopping, and moreover allows such distributed electronic coupons to be redeemed directly at the store location.

[0005] Accordingly, there is a need in the art for methods and systems allowing for the distribution and use of electronic coupons by mobile electronic devices.

BRIEF SUMMARY

[0006] Embodiments of the present invention relate to systems and methods involving mobile coupons. In one embodiment, indication of a prior purchase transaction over a payment processing network, may serve as a trigger to generate and disseminate a mobile coupon for a subsequent transaction. By generating and promulgating the coupon within a limited time of the first transaction, the recipient is disposed to be receptive based upon his or her current shopping status and also possibly geographic location. According to another embodiment, information from a

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mobile coupon may be presented to a merchant in a contactless manner, utilizing an antenna of a portable device operated by a consumer. Such mobile coupon information may be communicated to the merchant in a contactless manner with payment information, or may be communicated prior to or subsequent to transmission of payment information to the merchant.

[0007] These and other embodiments of the invention are described in further detail below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1 shows a simplified block diagram of a payment processing system.

[0009] FIG. 1A shows a block diagram of a portable consumer device for use with the payment processing system of FIG. 1.

[0010] FIG. 2 shows a simplified block diagram of an embodiment of a system for implementing a mobile coupon program in accordance with an embodiment of the present invention.

[0011] FIG. 3 shows a simplified flow diagram of a process for enrolling in a mobile coupon program according to an embodiment of the present invention.

[0012] FIG. 4 shows a screen from a POS terminal.

[0013] FIGS. 5(a)-5(c) show different screenshots on a phone. The screenshots include coupons.

[0014] Figure 6 is a schematic illustration of a computer system for use in accordance with embodiments of the present invention.

[0015] Figure 6A is an illustration of basic subsystems the computer system of Figure 6.

[0016] Figure 7 shows a simplified flow of a process of utilizing an embodiment of an electronic coupon according to the present invention.

DETAILED DESCRIPTION

[0017] I. Payment Processing Systems

[0018] Embodiments of the invention are directed to the use of portable consumer devices, and methods and systems employing them. Preferred portable consumer

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devices are mobile phones. The mobile phones can be used in payment processing systems like those shown in FIG. 1.

[0019] FIG. 1 shows a system 20 that can be used in an embodiment of the invention. The system 20 includes a merchant 22 and an acquirer 24 associated with the merchant 22. In a typical payment transaction, a consumer 30 may purchase goods or services at the merchant 22 using a portable consumer device 32. The acquirer 24 can communicate with an issuer 28 via a payment processing system 26.

[0020] The acquirer 24 is typically a bank that has a merchant account. The issuer 28 may also be a bank, but could also be business entity such as a retail store. Some entities are both acquirers and issuers, and embodiments of the invention include such entities. The issuer 28 may operate a server computer 21, which may have a computer readable medium comprising code for performing the functions that the issuer 28 performs. A database 23 comprising account number information and other information may be operatively coupled to the server computer 21.

[0021] The consumer 30 may be an individual, or an organization such as a business that is capable of purchasing goods or services.

[0022] The portable consumer device 32 may be in any suitable form. For example, suitable portable consumer devices can be hand-held and compact so that they can fit into a consumer's wallet and/or pocket (e.g., pocket-sized). They may include smart cards, ordinary credit or debit cards (with a magnetic strip and without a microprocessor), keychain devices (such as the Speedpass™ commercially available from Exxon-Mobil Corp.), etc. Other examples of portable consumer devices include cellular phones, personal digital assistants (PDAs), pagers, payment cards, security cards, access cards, smart media, transponders, and the like. The portable consumer devices can also be debit devices (*e.g.*, a debit card), credit devices (*e.g.*, a credit card), or stored value devices (*e.g.*, a stored value card).

[0023] The portable consumer device 32 may comprise a computer readable medium 32(a) and a body 32(b). The computer readable medium 32(a) may be on the body 32(b). The body 32(b) may in the form a plastic substrate, housing, or other structure. The computer readable medium 32(a) may be a memory that stores data and may be in any suitable form. Exemplary computer readable media 32(a)

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may be in any suitable form including a magnetic stripe, a memory chip, etc. If the portable consumer device 32 is in the form of a card, it may have an embossed region 32(a) which is embossed with a PAN (primary account number).

[0024] Figure 1A shows an enlarged view of the portable (mobile) device. Device 32 further includes a contactless element 36, typically implemented in the form of a semiconductor chip 36(a) (or other data storage element) with an associated wireless data transfer (e.g., data transmission) element 36(b), such as an antenna. Contactless element 36 is associated with (e.g., embedded within) mobile device 32 and data such as a coupon or control instructions transmitted via cellular network may be applied to contactless element 36 by means of contactless element interface 38. Contactless element interface 38 functions to permit the exchange of data and/or control instructions between the mobile device circuitry 39 (and hence the cellular network) and contactless element 36.

[0025] Mobile device 32 may also include a secure data space 41, which may be used by the device to store operating parameters and/or other data utilized in operation of the device. The secure data space 41 may be in the form of a chip that is separate and apart from the chip in the contactless element 36, or alternatively, could be a section of memory in the chip that forms part of the contactless element 36. Note that the chip in the contactless element 36 may include data storage capability in the form of a memory that may be accessed via interface 38 to permit the implementation of read, write, and erase functions, for example.

[0026] In accordance with still other embodiments, the mobile device may further include a processor 45 and computer readable storage medium 46 for storing code and configured to direct the processor to perform various tasks. For example, the computer readable storage medium may comprise a magnetic disk drive or a flash memory chip.

[0027] As discussed below, the computer readable storage medium may contain code that is configured to cause a processor of the portable consumer device to receive and recognize a message including a coupon and code that is delivered to the mobile device. The computer readable storage medium may also include code that is configured to decrypt an encrypted message including the code that is received by the mobile device.

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[0028] Contactless element 36 is capable of transferring and receiving data using a near field communications capability (or near field communications medium) typically in accordance with a standardized protocol or data transfer mechanism (identified as ISO 14443/NFC in the figure). Near field communications capability is a short-range communications capability, such as RFID, Bluetooth™, infra-red, or other data transfer capability that can be used to exchange data between the mobile device 32 and a local apparatus, for example located a point-of-sale of a merchant or another location at which coupons are expected to be redeemed. Thus, mobile device 32 is capable of communicating and transferring data and/or control instructions via both cellular network and near field communications capability.

[0029] In accordance with certain embodiments, the mobile device further includes a Global Positioning System (GPS) element 47. GPS element 47 is configured to allow determination of the location of the user at any time. In particular, GPS element 47 relies upon signals from a plurality of orbiting satellites in order to allow the user's location to be determined. Location information obtained from the GPS element 47 may in turn be communicated through the antenna to allow monitoring of the user's position.

[0030] Returning to Figure 1, the payment processing network 26 may include data processing subsystems, networks, and operations used to support and deliver authorization services, exception file services, and clearing and settlement services. An exemplary payment processing network may include VisaNet™. Payment processing networks such as VisaNet™ are able to process credit card transactions, debit card transactions, and other types of commercial transactions. VisaNet™, in particular, includes a VIP system (Visa Integrated Payments system) which processes authorization requests and a Base II system which performs clearing and settlement services.

[0031] The payment processing network 26 may include a server computer. A server computer is typically a powerful computer or cluster of computers. For example, the server computer can be a large mainframe, a minicomputer cluster, or a group of servers functioning as a unit. In one example, the server computer may be a database server coupled to a Web server. The payment processing network 26 may use any suitable wired or wireless network, including the Internet.

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[0032] The merchant 22 may also have, or may receive communications from, an access device 34 that can interact with the portable consumer device 32. In embodiment of a system of FIG. 1, the access device 34 is located at the merchant 22. However, it could be located at any other suitable location in other embodiments of the invention.

[0033] The access devices according to embodiments of the invention can be in any suitable form. Examples of access devices include point of sale (POS) devices, cellular phones, PDAs, personal computers (PCs), tablet PCs, handheld specialized readers, set-top boxes, electronic cash registers (ECRs), automated teller machines (ATMs), virtual cash registers (VCRs), kiosks, security systems, access systems, and the like.

[0034] If the access device 34 is a point of sale terminal, any suitable point of sale terminal may include a reader 34(a), a processor 34(b) and a computer readable medium 34(c). The reader 34(b) may include any suitable contact or contactless mode of operation. For example, exemplary card readers can include RF (radio frequency) antennas, magnetic stripe readers, etc. to interact with the portable consumer device 32.

[0035] In a typical purchase transaction, the consumer 30 purchases a good or service at the merchant 22 using a portable consumer device 32 such as a credit card. The consumer's portable consumer device 32 can interact with an access device 34 such as a POS (point of sale) terminal at the merchant 22. For example, the consumer 30 may take a credit card and may swipe it through an appropriate slot in the POS terminal.

[0036] Alternatively, the POS terminal may be a contactless reader, and the portable consumer device 32 may be a contactless device such as a contactless card. In certain embodiments, the portable consumer device may be a mobile device such as shown in FIG. 1A above. As described in detail below, the antenna of the mobile device may be utilized to communicate not only payment information to the POS, but also may also communicate information (such as a code) from a mobile coupon to a POS device.

[0037] An authorization request message is then forwarded to the acquirer 24. After receiving the authorization request message, the authorization request

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message is then sent to the payment processing network 26. The payment processing network 26 then forwards the authorization request message to the issuer 28 of the portable consumer device 32.

[0038] After the issuer 28 receives the authorization request message, the issuer 28 sends an authorization response message back to the payment processing network 26 to indicate whether or not the current transaction is authorized (or not authorized). The transaction processing network 26 then forwards the authorization response message back to the acquirer 24. The acquirer 24 then sends the response message back to the merchant 22.

[0039] After the merchant 22 receives the authorization response message, the access device 34 at the merchant 22 may then provide the authorization response message for the consumer 30. The response message may be displayed by the access device 34, or may be printed out on a receipt.

[0040] At the end of the day, a normal clearing and settlement process can be conducted by the transaction processing network 26. A clearing process is a process of exchanging financial details between and acquirer and an issuer to facilitate posting to a consumer's account and reconciliation of the consumer's settlement position.

[0041] Some of the embodiments described below may use a payment processing system like the one described above, or any suitable combination of components in the payment processing system.

[0042] II. Mobile Coupon Method and System

[0043] Particular embodiments in accordance with the present invention relate to methods and apparatuses which allow distribution and/or redemption of electronic coupons at a mobile personal device. Various embodiments of such a system are described in the following figures.

[0044] Figure 2 shows an overall view of an embodiment of a system in accordance with the present invention for administering a mobile coupon program. A first entity 200 (i.e. Visa) is responsible for operating a payment processing network. Under the control of entity 200 are a number of different operational elements.

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[0045] For example, mobile campaign server 202 functions as the interface between entity 200 and the outside world, here represented by the internet "cloud" 204. Mobile campaign server 202 can include at least three components.

[0046] Specifically, mobile enrollment server 206 provides a browser interface for potential users to enroll in the mobile coupon program using an enrollment webpage 208. Mobile enrollment server 206 is configured to receive from potential users certain pieces of information allowing their participation in the program. For example, in an enrollment form supplied electronically to server 206, the prospective participant can provide information such as the telephone number of their portable device, a security password, and preferences regarding the types of mobile coupons that they wish to receive.

[0047] Figure 3 provides a simplified flow chart of the steps for enrolling in a mobile coupon program. In step 302 of enrollment flow 300, a consumer navigates to the website of the enrollment server utilizing his or her browser.

[0048] In the next step 304, the consumer creates a mobile coupon account by inputting identification and validation information. Examples of such identification information include the user's name, the telephone number of the user's mobile electronic device, financial account numbers, and optional aliases. At this stage, the consumer also verifies that they have read appropriate disclaimers and affirmatively indicate that they seek to opt-into the mobile coupon program.

[0049] In step 306 of enrollment flow 300, information entered by the consumer is verified. Examples of such verification include confirming that the consumer identified is actually in possession of the portable device, that the portable device belongs to the consumer, and that any identified account belongs to the consumer.

[0050] Returning to FIG. 2, mobile enrollment server 206 is in turn in electronic communication with user database 210. Database 210 includes data relating to the user of the mobile coupon system, including the specific information provided during enrollment. Access to the contents of database 210 is shared with gateway server 212.

[0051] Gateway server 212 serves as the interface with outside entities responsible for implementing the mobile coupon program. For example, telecommunications

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companies ("telecoms") 214 provide the infrastructure necessary to communicate the coupon to the user's mobile device wherever they happen to be. The telecom entities must provide sufficient capacity to handle a sufficiently high volume of coupon messages outgoing to recipients.

[0052] Where such volume of messages is expected to be small (for example at the inception of the mobile coupon program), another type of company called an aggregator will secure sufficient bandwidth for all of the expected messages from the telecom, and then aggregate the messages from different sources.

[0053] In an exemplary embodiment, a coupon is sent to a user's phone or other portable device. The coupon may be sent in any one of a number of different forms, including but not limited to an short messaging service (SMS) message, a SMS link, a multimedia messaging service (MMS) message, or e-mail message.

[0054] The coupon may be communicated utilizing any one of several types of communications systems. For example, the coupon may be communicated to the cell phone utilizing SMS. Such an embodiment offers a number of possible advantages, including broad access as SMS is available on almost every cell phone. Possible disadvantages to mobile coupon distribution utilizing SMS is a weak mechanism for confirming receipt of the coupon by the designated recipient, and also a high transaction cost as charges are typically incurred for each SMS message transmitted.

[0055] In accordance with alternative embodiments, the mobile coupon could be distributed by a Global System for Mobile Communications (GSM) system. Such GSM communication are cheap and secure, and would support confirmation of receipt of the coupon by a designated user.

[0056] Further alternatively, the coupons could be distributed utilizing a Near Field Communications (NFC) system. Such an embodiment would require the portable consumer device to be equipped with an NFC chip and programmed with a software application. The source of the near field signal providing the electronic coupon could be local kiosks, for example as present in a shopping mall. An alternative source of electronic coupons available utilizing such near field communication is the point of sale itself. Other sources are possible.

[0057] The coupon may be communicated to the portable consumer device in encrypted form. Such encryption would prevent interception and unauthorized use of a coupon by other than the intended recipient. A processor present in the portable consumer device could in turn decrypt the message upon its receipt.

[0058] FIG. 4 shows a screen 400 from a POS terminal. The screen 400 shows buttons 402 that a cashier might select in order to initiate a pre-arranged discount utilizing an electronic coupon. For example, button 402a allows the cashier to implement a 30% discount for employees etc. Button 402b allows the cashier to manually enter a number for numeric look-up (NLU) from an electronic coupon displayed on a user's portable electronic device.

[0059] FIGS. 5A-5C are examples of three screenshots showing graphical coupons in different forms. These screenshots are configured to be able to be displayed on the small screen of a mobile phone, personal digital assistant (PDA), or other mobile device.

[0060] FIG. 5A shows a screenshot 500 which includes both a bar code 502 (which is an example of a machine readable code) and a seven digit number 504. The bar code 502 can be scanned with a scanner. One type of scanner which may be used to read a bar code on the screen of a cell phone is a charge coupled device (CCD) scanner. However, a laser-type scanner may not be able to read the bar code displayed due to reflection from the screen.

[0061] In order to process the electronic coupon shown in FIG. 5A, the user accesses and displays the coupon on the screen of his or her portable device. The cashier then accesses the discount screen shown in FIG. 4, and either scans the bar code in directly or enters the seven-digit number utilizing a numeric key pad.

[0062] FIG. 5B illustrates a screenshot 520 showing a different embodiment of a mobile electronic coupon in accordance with the present invention, which includes a visual display 522 and a personalized message 523. This visual display may be related to the nature of the coupon, representing for example the purchase of flowers. Alternatively, the display may simply illustrate the nature of the coupon, for example the display of flowers generically representing a gift.

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[0063] Instead of a barcode, a six digit number "024248" is shown by the electronic coupon 520. In processing of coupon 520 by a cashier, this six digit number can be entered into a POS terminal to give the consumer a discount on a purchase. In accordance with one embodiment, the number can be entered by having the cashier type in the individual digits of the code on a numeric keypad. In accordance with an alternative embodiment, the number can be entered by having the cashier activate a predetermined key, or combination thereof, which allows recognition of the coupon and the discount.

[0064] The embodiment of Figure 5B may offer certain advantages over a coupon employing a bar code as shown in Figure 5A. One advantage is ease of operation, as there is no requirement for optical recognition/reading of a code from the screen of the phone. Another possible advantage is reduced cost of implementation, as a bar code scanner device is not required to be purchased or rented by the merchant. In addition, software and hardware upgrades relating to electronic scanning would not be required by this alternative embodiment.

[0065] Lastly, FIG. 5C shows a screenshot 550 showing a "30% off" coupon. This electronic coupon includes a visual display 552 but lacks either a bar code or an identifying number.

[0066] To use this coupon, the user shows the display to the cashier and the cashier selects a button on a POS terminal display (see FIG. 4) to provide the discount to the consumer. According to still further embodiments of the present invention, coupon information such as a code may be communicated to a portable device in a proprietary format.

[0067] Figure 7 shows a simplified flow of a process of utilizing a mobile coupon according to an embodiment of the present invention. In a first step 702 of process flow 700, a purchaser presents items to a cashier. In step 704, the cashier hits the purchase key and enters the items. In step 706, the coupon asks the purchaser whether or not she intends to use coupons. In step 708, the purchaser responds that she intends to use a coupon.

[0068] In step 710 of process flow 700, the cashier hits the coupons key to alert the register to the use of coupons. In step 712, the cashier hits the accept coupon button on the back of the VISA terminal.

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[0069] In step 714, the VISA terminal displays a message requesting the purchaser to wave the phone to enter a coupon. In step 716, the purchaser waves the phone and the terminal receives the scanned code. In step 718 the processor in communication with the terminal looks up the scanned code. In step 720, the processor returns to the terminal, customer and branding information. In step 722, the terminal displays a branding message customized to the particular purchaser. Finally, in step 724, the terminal sends to the register a numeric look up representing the bar code.

[0070] A variation according to embodiments of the present invention may utilize near field communication of the coupon or a code therein, to the cashier. In this variation, a multi-digit numerical code (i.e. six digits) can be transmitted to the POS terminal via a reader using a contactless device such as the mobile device of FIG. 1A including an antenna. The coupon may be communicated in such a contactless manner using a short range communication method, such as a near field communications (NFC) capability. Examples of such NFC technologies include ISO standard 14443, RFID, Bluetooth™ and Infra-red communications methods. In accordance with such embodiments, the six digit code may or may not be shown on the display of the phone. Embodiments in accordance with the present invention are not limited to communicating coupon code information. In accordance with alternative embodiments, coupon information communicated from a mobile device to a POS terminal may include other information, for example a product code limiting applicability of the mobile coupon to a particular product, or an expiration date/time of the mobile coupon.

[0071] In certain embodiments, payment information (such as a credit card number, debit card number, home zip code of the card holder, or a three digit card verification value code) may be communicated from a mobile device in a contactless manner to the POS terminal. In such embodiments, the coupon information from the mobile device may also be communicated to the POS terminal in a contactless manner. In some embodiments, such communication of mobile coupon information may take place as part of the same message communicating payment information to the POS terminal. Alternatively, the coupon information may be communicated prior to, or following, contactless communication of the payment information to the POS terminal.

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[0072] The consumer may receive a text message, a phone call, or e-mail indicating that the consumer has received a coupon. The consumer may then use his or her phone to transmit a code corresponding to the coupon, to a contactless reader coupled to a POS terminal. The near field communication can utilize, for example, infrared or an RF communication mode such as Bluetooth. The system shown in FIG. 1 can be used in conjunction with such an embodiment.

[0073] Returning to Figure 2, apart from the mobile campaign server, a number of other elements are also under the control of entity 200. Notification module 250 is responsible for notifying participants in the program of particular events, for example limited time promotions or even the possibility of fraudulent transactions.

[0074] Mobile targeting module 260 is responsible for generating coupons targeted to a user. According to certain embodiments, the coupons can be targeted based upon a location based services (LBS) approach, utilizing prior purchasing activity by a consumer as detected over a payment processing network.

[0075] Specifically, where a payment transaction is conducted over a payment processing network, certain information is communicated that can be used for targeting of a mobile coupon. One piece of information that is potentially useful for targeting is the timing of the prior payment transaction.

[0076] In particular, the very existence of the prior purchase transaction reveals the consumer to be actively engaged in shopping rather than other activities (i.e. sleeping or working). Based upon this timing information, the consumer is known to likely be receptive to a mobile coupon for a subsequent transaction. Accordingly, embodiments of the present invention may thus generate and disseminate a mobile coupon to the consumer within a predetermined, limited time period from receiving an indication from the payment processing network that a prior payment transaction has occurred. Examples of time periods for dissemination of mobile coupons include, but are not limited to, one minute or less, five minutes, ten minutes, fifteen minutes, one-half hour, forty-five minutes, one hour, one and one half hours, two hours, three hours, four hours, and five hours or longer from the time that a prior purchasing activity is detected from the payment processing network. Such an approach allows for dissemination of a timely, non-intrusive mobile coupons to the consumer.

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[0077] In certain embodiments, the duration of effectiveness of such a mobile coupon can also be limited by time. Such an embodiment would provide an incentive for the recipient to monitor his or her portable device for receipt of a mobile coupon, and use that coupon within the limited period that it is effective. Moreover, in certain embodiments, upon expiration the mobile coupon could be configured to automatically disappear from the consumer's portable device. This would reduce intrusiveness of the mobile coupon, as the consumer is not obligated to delete a backlog of expired coupons from his or her portable device.

[0078] Embodiments of the present invention are not limited to generating and promulgating mobile coupons based upon temporal information gleaned from a prior purchase transaction over a payment processing network. In accordance with alternative embodiments, the mobile coupons can be targeted based upon a geographic location of the user as determined from the payment processing network.

[0079] According to one embodiment, the location of the consumer can be determined from purchasing activity of the user based upon a Location Based Services (LBS) approach. For example, when the user swipes a card at a POS, an authorization message is returned from the payment network which includes a Merchant Identification Number (MID). The user's location at that time of sale can be determined from the MID number.

[0080] According to other embodiments, information regarding the nature of the prior purchase conducted over the payment processing network can be referenced to generate the coupon. Thus, a prior purchase of one product (for example a vacuum cleaner), could lead to generation of a second product (bags for the vacuum cleaner). This coupon generation could be irrespective of the time or physical location of a prior purchasing transaction. Still further alternatively, an LBS approach could be based upon the seller of the second product having an affinity agreement with the seller of the previous product purchased.

[0081] Moreover, a mobile coupon may be generated based upon more than one piece of information gleaned from a prior purchasing transaction conducted over a payment processing network. Specifically, the time, geographic location, and/or nature of the prior purchase transaction could be combined to generate the targeted coupon.

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[0082] According to still other embodiments, information from a prior purchase transaction available from a payment processing network, may be combined with other information to generate a targeted coupon. For example, information regarding the location of the consumer can be determined from sources other than the payment processing network.

[0083] According to one approach, the location of a consumer can be determined by analyzing the location of the current base station through which the portable user device is transmitting and receiving information. Such current base station information is available from the telecommunications provider with which the consumer is affiliated, and in other applications is utilized to allow the user to contact the closest medical services provider in the case of a medical emergency. Thus, in certain embodiments, geographic information from this source could be combined with information (time, nature of prior purchases) available from the payment processing network, to generate a targeted coupon.

[0084] According to another approach, the location of a consumer can be determined by the use of Global Positioning System (GPS) technology. In this approach, the location of the portable device of the consumer is monitored utilizing a plurality of orbiting satellites. Thus, in other embodiments, geographic information from this source could be combined with information (time, nature of prior purchase) available from the payment processing network, to generate a targeted coupon.

[0085] Utilizing any of these approaches, or others, alone or in combination, the mobile targeting module 260 may send out a targeted mobile coupon to a consumer. For example, the mobile electronic coupon can be targeted in whole or in part based upon the recipient belonging to a particular group, such as an employee of a business or a member of a club.

[0086] Reward module 270 (such as "Visa Extras") is responsible for coordinating and administering an incentive or reward program that is tied to use of the payment network Thus a targeted mobile coupon may be generated and then electronically distributed to a portable consumer device as part of an incentive program. For example, the accrual of a certain volume of purchases utilizing a Visa card, may render the program participant eligible for a particularly valuable type of electronic coupon not typically available to other participants in the mobile coupon program.

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This targeted electronic coupon is then communicated to the consumer's mobile device for redemption.

[0087] Other elements indicated under the control of entity 200 in FIG. 2, may relate to the function of the payment network to execute purchase and payment transactions. Partners and banks 280 are outside of the control of entity 200 but interact therewith as part of the processing of payment transactions.

[0088] It should be understood that the present invention as described above can be implemented in the form of control logic using computer software in a modular or integrated manner. Based on the disclosure and teachings provided herein, a person of ordinary skill in the art will know and appreciate other ways and/or methods to implement the present invention using hardware and a combination of hardware and software.

[0089] The various components of the mobile coupon system described above may be implemented with a computer system having various features. FIG. 6 shows an example of a generic computer system 610 including display device 620, display screen 630, cabinet 640, keyboard 650, and mouse 670. Mouse 670 and keyboard 650 are representative "user input devices." Mouse 670 includes buttons 680 for selection of buttons on a graphical user interface device. Other examples of user input devices are a touch screen, light pen, track ball, data glove, microphone, and so forth. FIG. 6 is representative of but one type of system for embodying the present invention. It will be readily apparent to one of ordinary skill in the art that many system types and configurations are suitable for use in conjunction with the present invention. In a preferred embodiment, computer system 610 includes a Pentium class based computer, running Windows NT operating system by Microsoft Corporation. However, the apparatus is easily adapted to other operating systems and architectures by those of ordinary skill in the art without departing from the scope of the present invention.

[0090] As noted, mouse 670 can have one or more buttons such as buttons 680. Cabinet 640 houses familiar computer components such as disk drives, a processor, storage device, etc. Storage devices include, but are not limited to, disk drives, magnetic tape, solid state memory, bubble memory, etc. Cabinet 640 can include additional hardware such as input/output (I/O) interface cards for connecting

computer system 610 to external devices external storage, other computers or additional peripherals, further described below.

[0091] FIG. 6A is an illustration of basic subsystems in computer system 610 of FIG. 6. This diagram is merely an illustration and should not limit the scope of the claims herein. One of ordinary skill in the art will recognize other variations, modifications, and alternatives. In certain embodiments, the subsystems are interconnected via a system bus 675. Additional subsystems such as a printer 674, keyboard 678, fixed disk 679, monitor 676, which is coupled to display adapter 682, and others are shown. Peripherals and input/output (I/O) devices, which couple to I/O controller 671, can be connected to the computer system by any number of means known in the art, such as serial port 677. For example, serial port 677 can be used to connect the computer system to a modem 681, which in turn connects to a wide area network such as the Internet, a mouse input device, or a scanner. The interconnection via system bus allows central processor 673 to communicate with each subsystem and to control the execution of instructions from system memory 672 or the fixed disk 679, as well as the exchange of information between subsystems. Other arrangements of subsystems and interconnections are readily achievable by those of ordinary skill in the art. System memory, and the fixed disk are examples of tangible media for storage of computer programs, other types of tangible media include floppy disks, removable hard disks, optical storage media such as CD-ROMS and bar codes, and semiconductor memories such as flash memory, read-only-memories (ROM), and battery backed memory.

[0092] Any of the software components or functions described in this application, may be implemented as software code to be executed by a processor using any suitable computer language such as, for example, Java, C++ or Perl using, for example, conventional or object-oriented techniques. The software code may be stored as a series of instructions, or commands on a computer readable medium, such as a random access memory (RAM), a read only memory (ROM), a magnetic medium such as a hard-drive or a floppy disk, or an optical medium such as a CD-ROM. Any such computer readable medium may reside on or within a single computational apparatus, and may be present on or within different computational apparatuses within a system or network.

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[0093] The above description is illustrative and is not restrictive. Many variations of the invention will become apparent to those skilled in the art upon review of the disclosure. The scope of the invention should, therefore, be determined not with reference to the above description, but instead should be determined with reference to the pending claims along with their full scope or equivalents.

[0094] One or more features from any embodiment may be combined with one or more features of any other embodiment without departing from the scope of the invention.

[0095] A recitation of "a", "an" or "the" is intended to mean "one or more" unless specifically indicated to the contrary.

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WHAT IS CLAIMED IS:

1. A method comprising:

receiving through a payment processing network, an indication of a purchase transaction by a consumer;

generating a mobile coupon based upon information from the purchase transaction; and

disseminating the mobile coupon to the consumer.

2. The method of claim 1 wherein the mobile coupon is generated based upon a time of the purchase transaction, and the mobile coupon is disseminated to the consumer within a predetermined amount of time from the time of the purchase transaction.

3. The method of claim 2 wherein the mobile coupon is effective for a limited time from the first time.

4. The method of claim 1 wherein the coupon is generated based upon a geographic location of the consumer.

5. The method of claim 4 wherein the geographic location of the consumer is determined from the purchase transaction.

6. The method of claim 4 wherein the geographic location of the consumer is determined from a location of the portable device.

7. The method of claim 6 wherein the geographic location of the consumer is determined from a global positioning system (GPS) element of the portable device.

8. The method of claim 1 wherein the information comprises at least one of a time of the purchase transaction, a geographic location of the purchase transaction, or a product purchased in the purchase transaction.

9. A method comprising:

receiving a coupon comprising a code at a portable consumer device comprising an antenna operated by a consumer;

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using the antenna to provide payment information for a purchase transaction to a merchant; and

using the antenna to also provide the code to the merchant.

10. The method of claim 9 wherein the antenna is an RF antenna and the portable consumer device is a mobile phone.

11. The method of claim 9 wherein the payment information comprises a credit card number, a debit card number, a home zip code of the consumer, or a three digit card verification value code.

12. The method of claim 9 wherein the code is provided to the merchant utilizing a near field communication (NFC) channel.

13. The method of claim 9 wherein the portable consumer device includes a global positioning system (GPS), the method further comprising the portable consumer device sending to a remote location a signal indicating its geographic location.

14. A portable consumer device comprising:

a contactless element;

a wireless data transfer element associated with the contactless element;

a processor; and

a computer readable storage medium configured to store a coupon including a code, the contactless element configured to transmit the code to a merchant upon receipt of a command from a user.

15. The portable consumer device of claim 14 wherein the computer readable storage medium is configured to store instructions for the processor to decrypt an encrypted coupon message received by the wireless data transfer element.

16. The portable consumer device of claim 14 wherein the computer readable storage medium is configured to store instructions for the processor to receive and recognize an incoming message including the coupon and the code.

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17. The portable consumer device of claim 16 wherein the coupon is received as a short messaging service (SMS) message, a near field communication (NFC) message, or as a global system for mobile communications (GSM) message.

18. The portable consumer device of claim 14 further comprising a global positioning system (GPS) element.

19. The portable consumer device of claim 18 wherein the computer readable storage medium is configured to store instructions for the processor to communicate a geographic location generated by the GPS element to an entity generating the coupon.

20. The portable consumer device of claim 14 further comprising a screen, wherein the computer readable storage medium is configured to store instructions for the processor to display at least a portion of the coupon on the screen.

21. The portable consumer device of claim 14 wherein the wireless data transfer element comprises an infra-red (IR) transmitter or a radio frequency (RF) transmitter.

22. A method comprising:

receiving a coupon comprising a code at a mobile phone operated by a consumer;

displaying the code on a screen of the mobile phone; and

showing the screen including the code to a merchant, thereby allowing the merchant to thereafter provide a discount to the consumer.

23. The method of claim 22 wherein displaying the code comprises displaying a numeric code.

24. The method of claim 22 further comprising providing a visual display with the code on the screen.

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25. The method of claim 22 wherein receiving the coupon comprises receiving a short messaging service (SMS) message, a near field communication (NFC) message, or a global system for mobile communications (GSM) message.

26. The method of claim 22 further comprising decrypting the incoming message including the coupon.

27. The method of claim 22 wherein the coupon is generated based upon a of the consumer based upon location-based service (LBS) approach or a global positioning system (GPS) approach.

28. A method comprising:

receiving a coupon comprising a code at a portable consumer device comprising an antenna operated by a consumer; and

providing the code to a merchant using an antenna.

29. The method of claim 28 wherein the antenna is an RF antenna and the portable consumer device is a mobile phone.

30. The method of claim 28 wherein the portable consumer device receives the coupon with the antenna.

31. The method of claim 28 wherein the code is provided to the merchant utilizing a near field communication (NFC) channel.

32. The method of claim 28 wherein the portable consumer device includes a global positioning system (GPS), the method further comprising the portable consumer device sending to a remote location a signal indicating its geographic location.

33. The method of claim 28 wherein the coupon is applicable to a merchant proximate to the geographic location of the portable consumer device.

34. The method of claim 33 wherein the coupon is generated based upon a location of the consumer based upon location-based service (LBS) approach or a global positioning system (GPS) approach.

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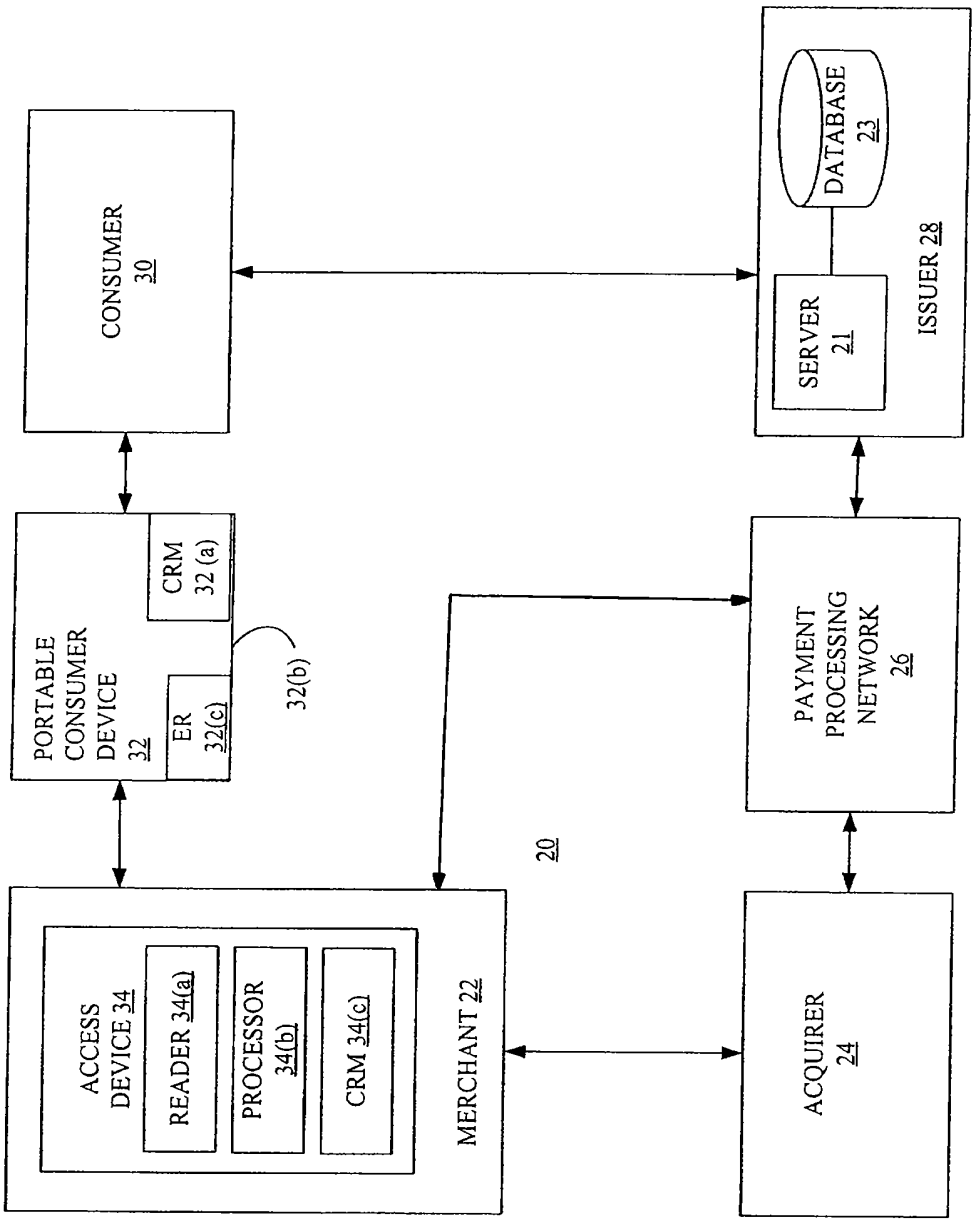

CONSUMER
30
DATABASE
23
SERVER
21
ISSUER 28
PORTABLE
CONSUMER
DEVICE
32
CRM
32 (a)
ER
32(c)
32(b)
PAYMENT
PROCESSING
NETWORK
26
20
ACCESS
DEVICE 34
READER 34(a)
PROCESSOR
34(b)
CRM 34(c)
MERCHANT 22
ACQUIRER
24

FIG. 1

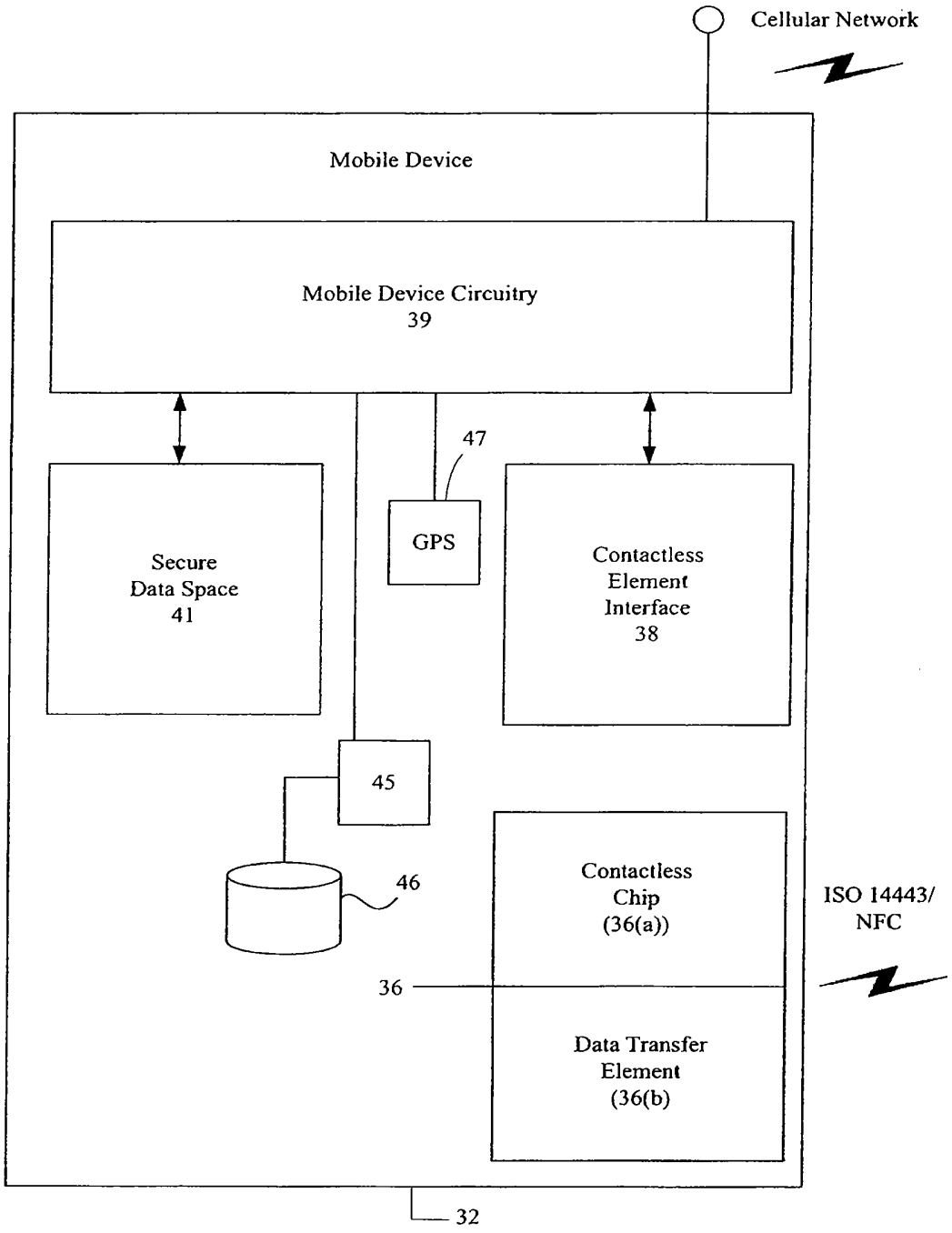

Cellular Network
Mobile Device
Mobile Device Circuitry
39
47
GPS
Secure
Data Space
41
Contactless
Element
Interface
38
45
46
Contactless
Chip
(36(a))
ISO 14443/
NFC
36
Data Transfer
Element
(36(b)
32

FIG. 1A

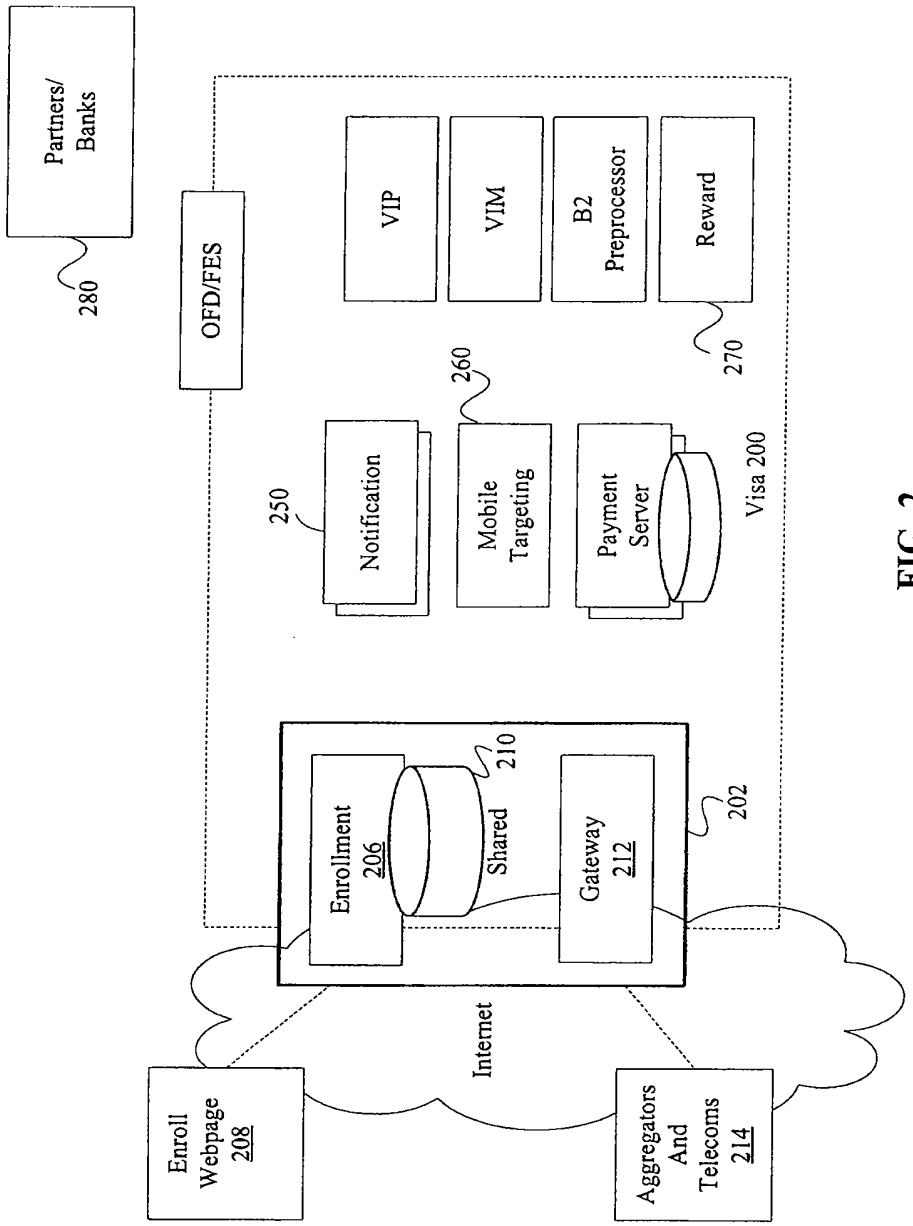

Partners/
Banks
280
OFD/FES
VIP
VIM
B2
Preprocessor
Reward
270
260
250
Notification
Mobile
Targeting
Payment
Server
Visa 200
Enrollment
206
210
Shared
Gateway
212
202
Internet
Enroll
Webpage
208
Aggregators
And
Telecoms
214

FIG. 2

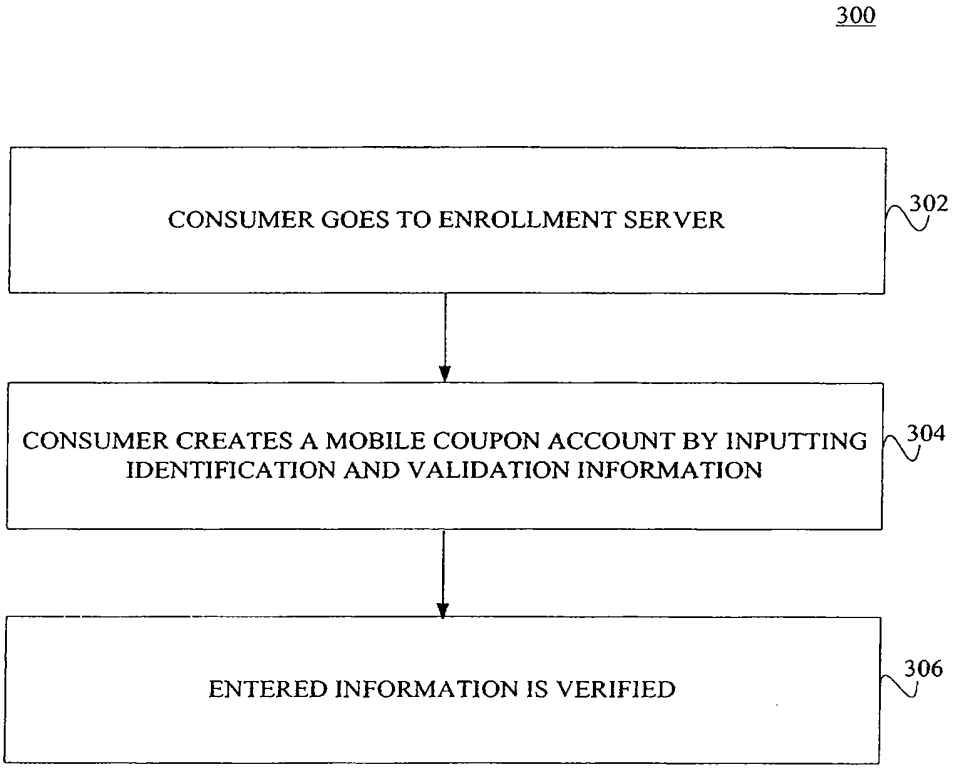

300
CONSUMER GOES TO ENROLLMENT SERVER
302
CONSUMER CREATES A MOBILE COUPON ACCOUNT BY INPUTTING IDENTIFICATION AND VALIDATION INFORMATION
304
ENTERED INFORMATION IS VERIFIED
306

FIG. 3

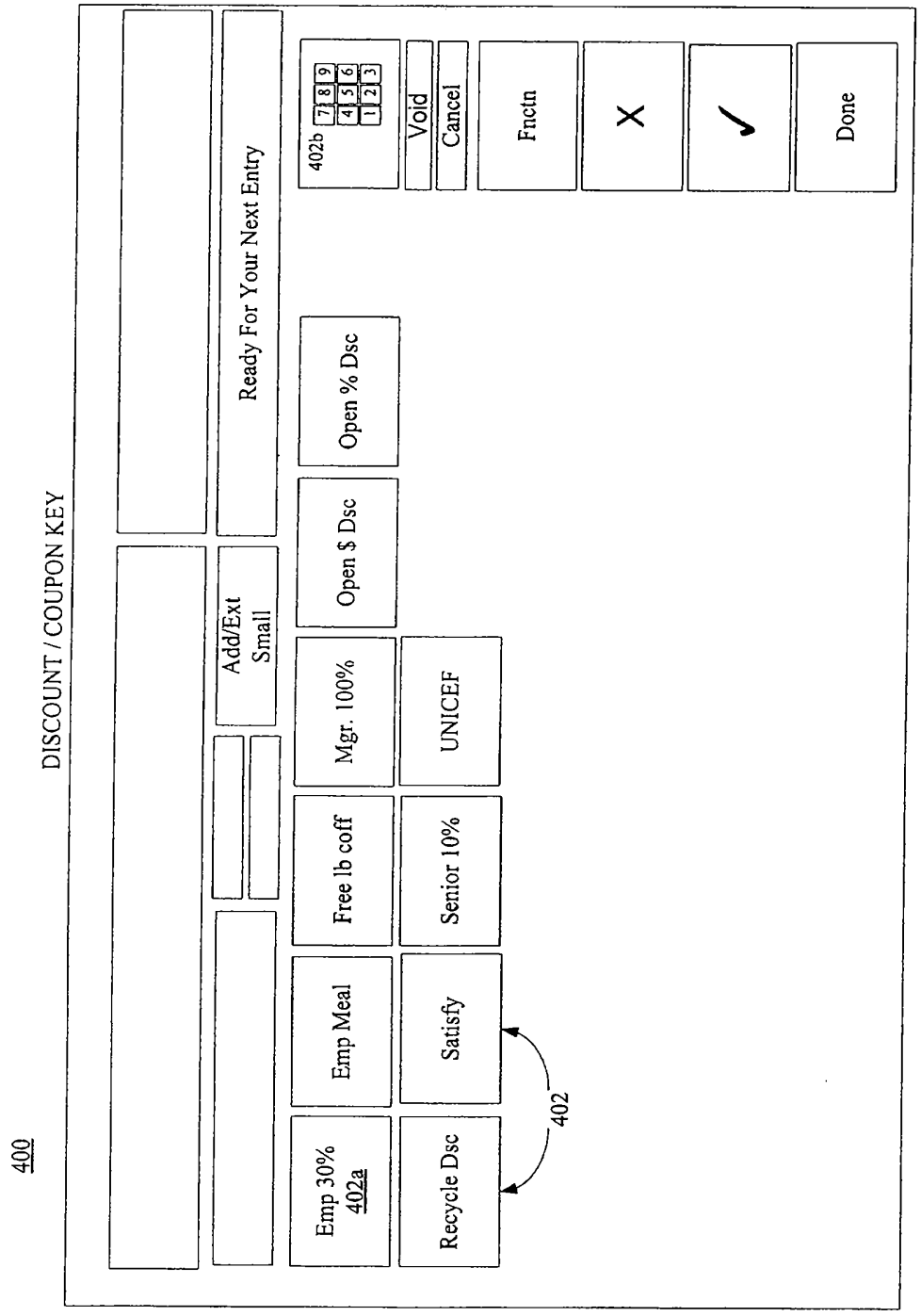

400
DISCOUNT / COUPON KEY
Emp 30% 402a
Recycle Dsc
Emp Meal
Satisfy
Free lb coff
Senior 10%
Mgr. 100%
UNICEF
Open $ Dsc
Open % Dsc
Add/Ext Small
Ready For Your Next Entry
402
402b
7 8 9
4 5 6
1 2 3
Void
Cancel
Fnctn
X
✓
Done

FIG. 4

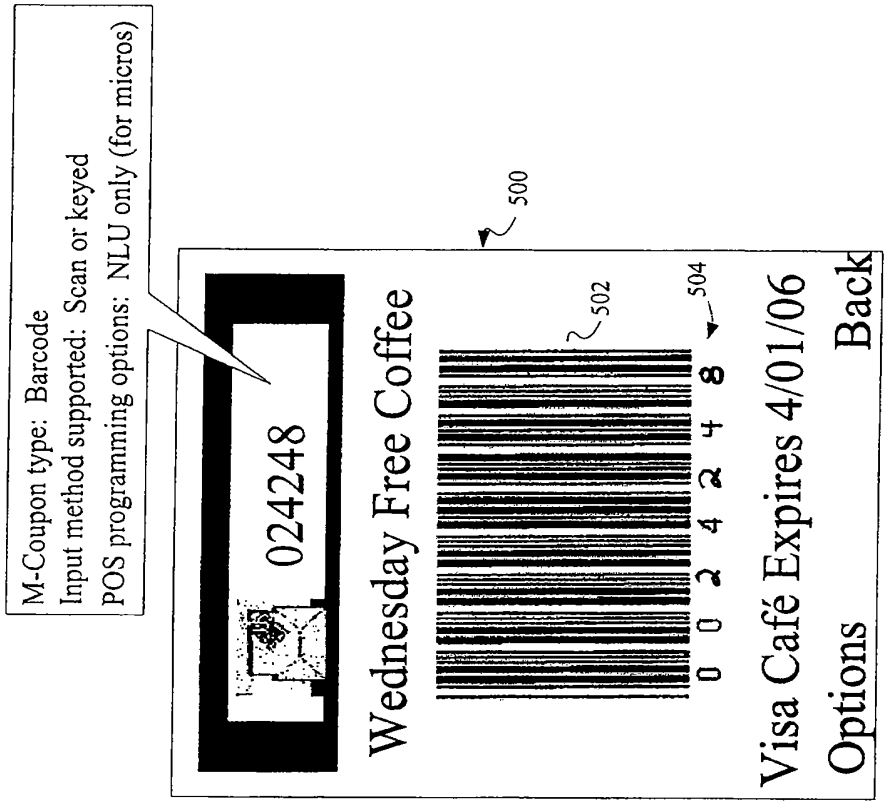

M-Coupon type: Barcode
Input method supported: Scan or keyed
POS programming options: NLU only (for micros)
024248
Wednesday Free Coffee
500
502
504
0 0 2 4 2 4 8
Visa Café Expires 4/01/06
Options
Back

FIG. 5A

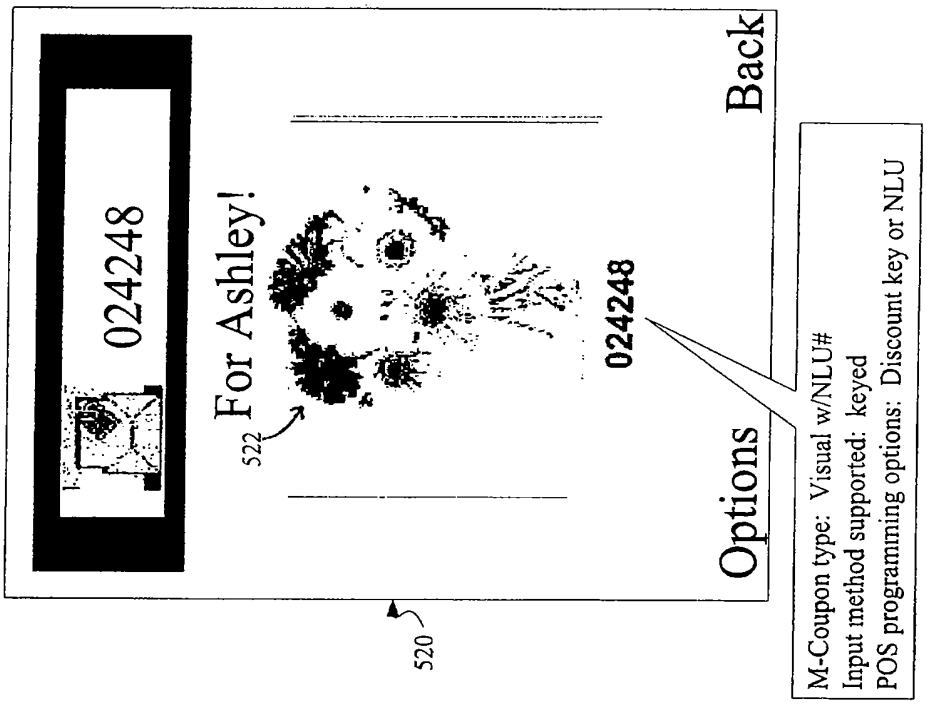

024248
For Ashley!
522
024248
Options
Back
520
M-Coupon type: Visual w/NLU#
Input method supported: keyed
POS programming options: Discount key or NLU

FIG. 5B

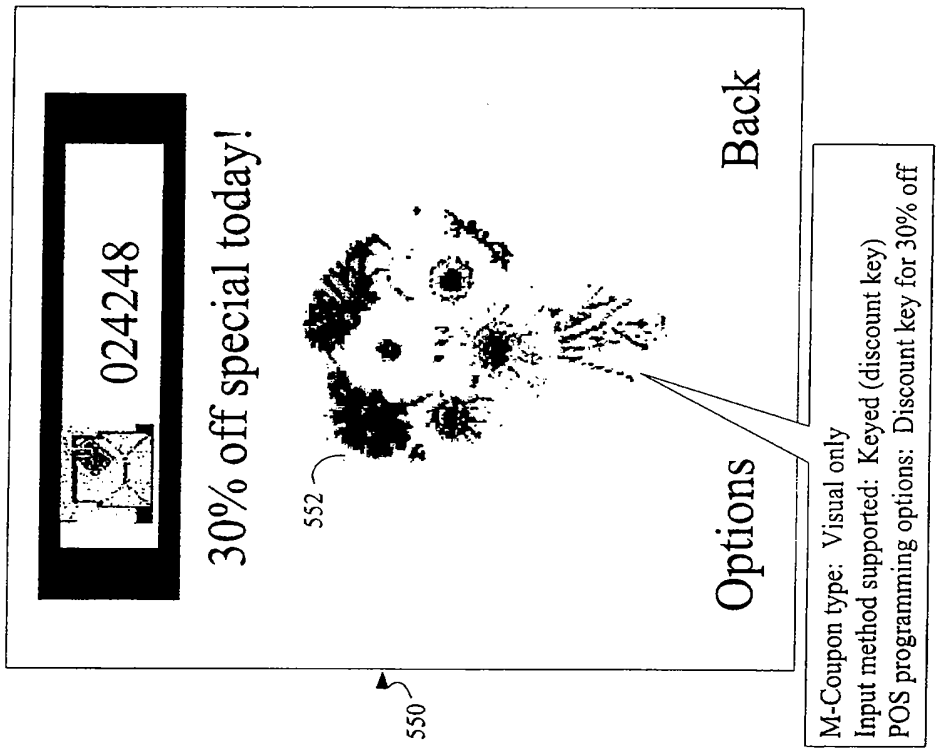

024248
30% off special today!
552
Options
Back
550
M-Coupon type: Visual only
Input method supported: Keyed (discount key)
POS programming options: Discount key for 30% off

FIG. 5C

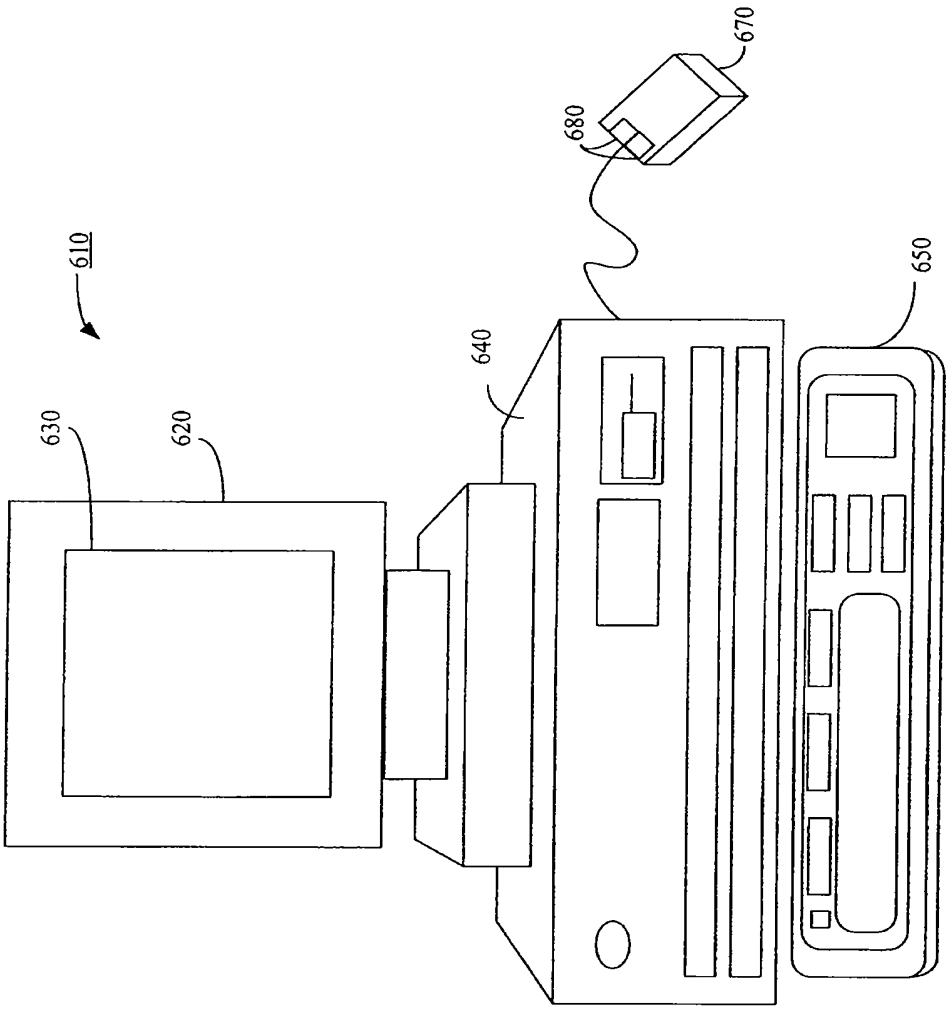


FIG. 6

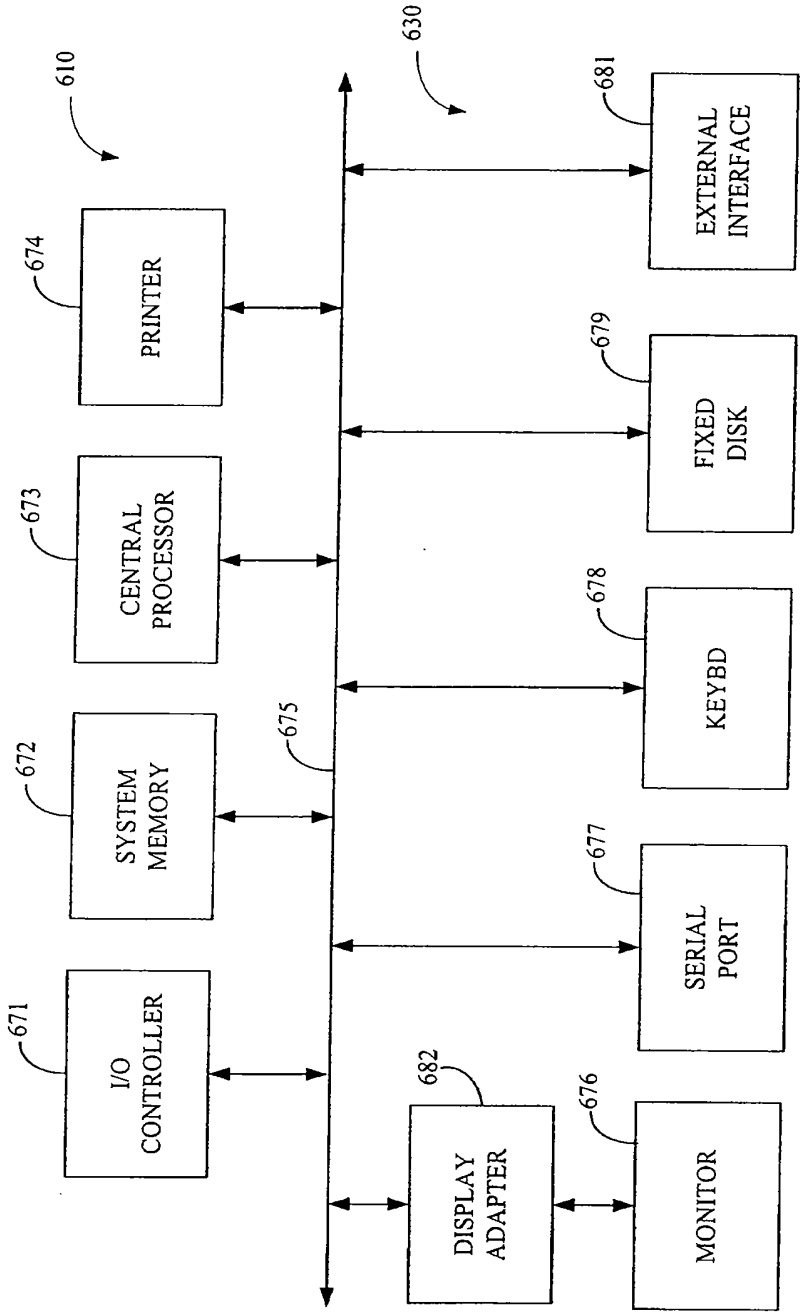

610
630
681
EXTERNAL INTERFACE
674
PRINTER
679
FIXED DISK
673
CENTRAL PROCESSOR
678
KEYBD
672
SYSTEM MEMORY
675
677
SERIAL PORT
671
I/O CONTROLLER
682
DISPLAY ADAPTER
676
MONITOR

FIG. 6A

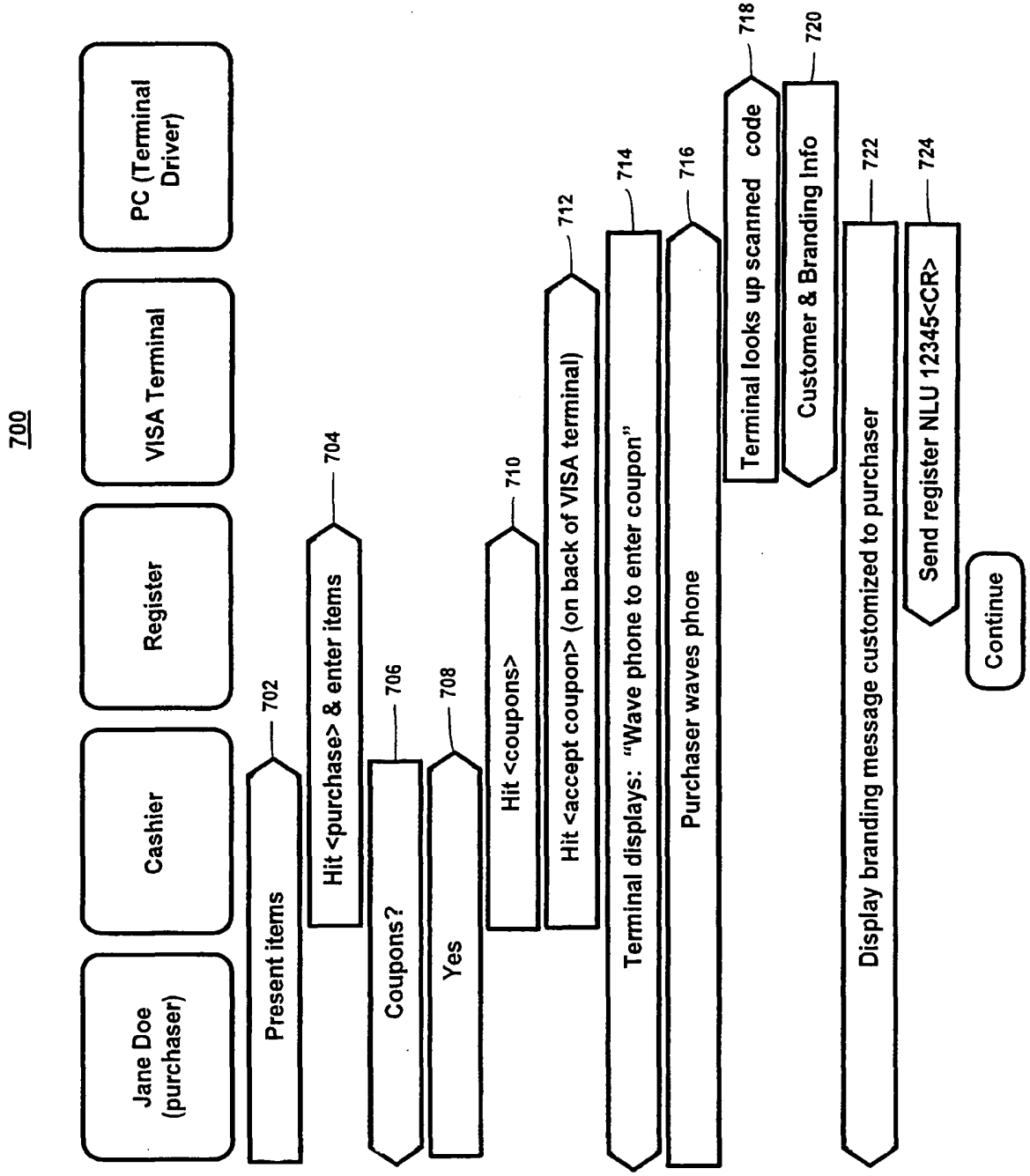


FIG. 7

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Page 326 of 545

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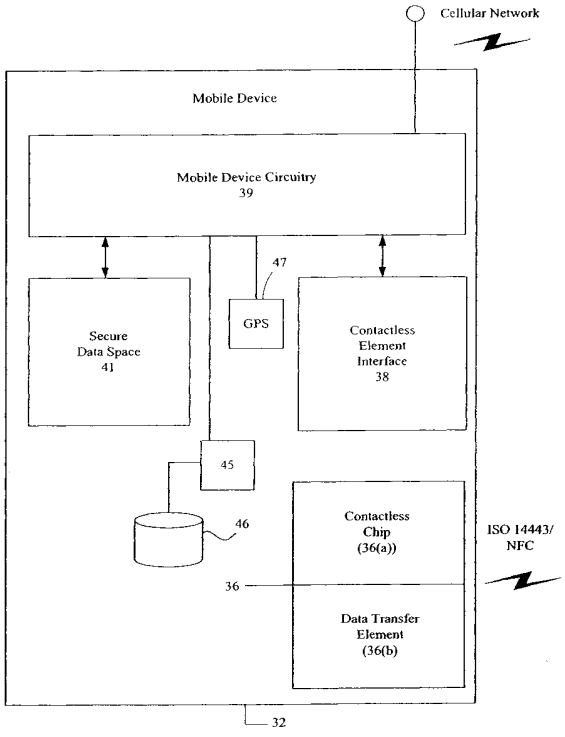
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[Continued on next page]

(54) Title: MOBILE COUPON METHOD AND SYSTEM



(57) Abstract: A system and a method for using a portable consumer device such as a mobile phone are disclosed. In one embodiment, a method according to the present invention comprises referencing data regarding an individual consumer stored as part of a payment processing network to generate an electronic coupon targeted to the individual consumer. The electronic coupon is transmitted to a mobile device of the individual consumer over a communications network, and purchase transaction utilizing the electronic coupon is processed over the payment processing network. In certain embodiments, the electronic coupon may be generated based upon temporal and/or geographic information of a prior purchase transaction conducted using the payment processing network.

WO 2008/083115 A1

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MOBILE COUPON METHOD AND SYSTEM

CROSS-REFERENCE TO RELATED APPLICATION

[0001] The instant nonprovisional patent application claims priority to U.S. Provisional Patent Application No. 60/871,898, filed December 26, 2006 and incorporated by reference in its entirety herein for all purposes.

BACKGROUND

[0002] Coupons are a useful marketing tool to enhance brand loyalty and introduce new products. By allowing customization of the effective duration and value of an offer, a coupon provides a flexible incentive for a consumer to purchase a particular product or line of products.

[0003] Conventionally, coupons have been available in printed form from sources such as newspapers. Increased adoption of electronic sources of information such as the world-wide-web, however, has led to the increase in popularity of electronic coupons.

[0004] In addition, most consumers now own and operate a cell phone or other portable electronic device. This renders such consumers accessible to the distribution of electronic coupons as they do their shopping, and moreover allows such distributed electronic coupons to be redeemed directly at the store location.

[0005] Accordingly, there is a need in the art for methods and systems allowing for the distribution and use of electronic coupons by mobile electronic devices.

BRIEF SUMMARY

[0006] A system and a method for using a portable consumer device such as a mobile phone are disclosed. In one embodiment, a method according to the present invention comprises referencing data regarding an individual consumer stored as part of a payment processing network to generate an electronic coupon targeted to the individual consumer. The electronic coupon is transmitted to a mobile device of the individual consumer over a communications network, and purchase transaction utilizing the electronic coupon is processed over the payment processing network. In

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certain embodiments, the electronic coupon may be generated based upon temporal and/or geographic information of a prior purchase transaction conducted using the payment processing network.

[0007] These and other embodiments of the invention are described in further detail below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1 shows a simplified block diagram of a payment processing system.

[0009] FIG. 1A shows a block diagram of a portable consumer device for use with the payment processing system of FIG. 1.

[0010] FIG. 2 shows a simplified block diagram of an embodiment of a system for implementing a mobile coupon program in accordance with an embodiment of the present invention.

[0011] FIG. 3 shows a simplified flow diagram of a process for enrolling in a mobile coupon program according to an embodiment of the present invention.

[0012] FIG. 4 shows a screen from a POS terminal.

[0013] FIGS. 5(a)-5(c) show different screenshots on a phone. The screenshots include coupons.

[0014] Figure 6 is a schematic illustration of a computer system for use in accordance with embodiments of the present invention.

[0015] Figure 6A is an illustration of basic subsystems the computer system of Figure 6.

[0016] Figure 7 shows a simplified flow of a process of utilizing an embodiment of an electronic coupon according to the present invention.

DETAILED DESCRIPTION

[0017] I. Payment Processing Systems

[0018] Embodiments of the invention are directed to the use of portable consumer devices, and methods and systems employing them. Preferred portable consumer devices are mobile phones. The mobile phones can be used in payment processing systems like those shown in FIG. 1.

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[0019] FIG. 1 shows a system 20 that can be used in an embodiment of the invention. The system 20 includes a merchant 22 and an acquirer 24 associated with the merchant 22. In a typical payment transaction, a consumer 30 may purchase goods or services at the merchant 22 using a portable consumer device 32. The acquirer 24 can communicate with an issuer 28 via a payment processing system 26.

[0020] The acquirer 24 is typically a bank that has a merchant account. The issuer 28 may also be a bank, but could also be business entity such as a retail store. Some entities are both acquirers and issuers, and embodiments of the invention include such entities. The issuer 28 may operate a server computer 21, which may have a computer readable medium comprising code for performing the functions that the issuer 28 performs. A database 23 comprising account number information and other information may be operatively coupled to the server computer 21.

[0021] The consumer 30 may be an individual, or an organization such as a business that is capable of purchasing goods or services.

[0022] The portable consumer device 32 may be in any suitable form. For example, suitable portable consumer devices can be hand-held and compact so that they can fit into a consumer's wallet and/or pocket (e.g., pocket-sized). They may include smart cards, ordinary credit or debit cards (with a magnetic strip and without a microprocessor), keychain devices (such as the Speedpass™ commercially available from Exxon-Mobil Corp.), etc. Other examples of portable consumer devices include cellular phones, personal digital assistants (PDAs), pagers, payment cards, security cards, access cards, smart media, transponders, and the like. The portable consumer devices can also be debit devices (*e.g.*, a debit card), credit devices (*e.g.*, a credit card), or stored value devices (*e.g.*, a stored value card).

[0023] The portable consumer device 32 may comprise a computer readable medium 32(a) and a body 32(b). The computer readable medium 32(a) may be on the body 32(b). The body 32(b) may in the form a plastic substrate, housing, or other structure. The computer readable medium 32(a) may be a memory that stores data and may be in any suitable form. Exemplary computer readable media 32(a) may be in any suitable form including a magnetic stripe, a memory chip, etc. If the

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portable consumer device 32 is in the form of a card, it may have an embossed region 32(a) which is embossed with a PAN (primary account number).

[0024] Figure 1A shows an enlarged view of the portable (mobile) device. Device 32 further includes a contactless element 36, typically implemented in the form of a semiconductor chip 36(a) (or other data storage element) with an associated wireless data transfer (e.g., data transmission) element 36(b), such as an antenna. Contactless element 36 is associated with (e.g., embedded within) mobile device 32 and data such as a coupon or control instructions transmitted via cellular network may be applied to contactless element 36 by means of contactless element interface 38. Contactless element interface 38 functions to permit the exchange of data and/or control instructions between the mobile device circuitry 39 (and hence the cellular network) and contactless element 36.

[0025] Mobile device 32 may also include a secure data space 41, which may be used by the device to store operating parameters and/or other data utilized in operation of the device. The secure data space 41 may be in the form of a chip that is separate and apart from the chip in the contactless element 36, or alternatively, could be a section of memory in the chip that forms part of the contactless element 36. Note that the chip in the contactless element 36 may include data storage capability in the form of a memory that may be accessed via interface 38 to permit the implementation of read, write, and erase functions, for example.

[0026] In accordance with still other embodiments, the mobile device may further include a processor 45 and computer readable storage medium 46 for storing code and configured to direct the processor to perform various tasks. For example, the computer readable storage medium may comprise a magnetic disk drive or a flash memory chip.

[0027] As discussed below, the computer readable storage medium may contain code that is configured to cause a processor of the portable consumer device to receive and recognize a message including a coupon and code that is delivered to the mobile device. The computer readable storage medium may also include code that is configured to decrypt an encrypted message including the code that is received by the mobile device.

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[0028] Contactless element 36 is capable of transferring and receiving data using a near field communications capability (or near field communications medium) typically in accordance with a standardized protocol or data transfer mechanism (identified as ISO 14443/NFC in the figure). Near field communications capability is a short-range communications capability, such as RFID, Bluetooth™, infra-red, or other data transfer capability that can be used to exchange data between the mobile device 32 and a local apparatus, for example located a point-of-sale of a merchant or another location at which coupons are expected to be redeemed. Thus, mobile device 32 is capable of communicating and transferring data and/or control instructions via both cellular network and near field communications capability.

[0029] In accordance with certain embodiments, the mobile device further includes a Global Positioning System (GPS) element 47. GPS element 47 is configured to allow determination of the location of the user at any time. In particular, GPS element 47 relies upon signals from a plurality of orbiting satellites in order to allow the user's location to be determined. Location information obtained from the GPS element 47 may in turn be communicated through the antenna to allow monitoring of the user's position.

[0030] Returning to Figure 1, the payment processing network 26 may include data processing subsystems, networks, and operations used to support and deliver authorization services, exception file services, and clearing and settlement services. An exemplary payment processing network may include VisaNet™. Payment processing networks such as VisaNet™ are able to process credit card transactions, debit card transactions, and other types of commercial transactions. VisaNet™, in particular, includes a VIP system (Visa Integrated Payments system) which processes authorization requests and a Base II system which performs clearing and settlement services.

[0031] The payment processing network 26 may include a server computer. A server computer is typically a powerful computer or cluster of computers. For example, the server computer can be a large mainframe, a minicomputer cluster, or a group of servers functioning as a unit. In one example, the server computer may be a database server coupled to a Web server. The payment processing network 26 may use any suitable wired or wireless network, including the Internet.

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[0032] The merchant 22 may also have, or may receive communications from, an access device 34 that can interact with the portable consumer device 32. In embodiment of a system of FIG. 1, the access device 34 is located at the merchant 22. However, it could be located at any other suitable location in other embodiments of the invention.

[0033] The access devices according to embodiments of the invention can be in any suitable form. Examples of access devices include point of sale (POS) devices, cellular phones, PDAs, personal computers (PCs), tablet PCs, handheld specialized readers, set-top boxes, electronic cash registers (ECRs), automated teller machines (ATMs), virtual cash registers (VCRs), kiosks, security systems, access systems, and the like.

[0034] If the access device 34 is a point of sale terminal, any suitable point of sale terminal may include a reader 34(a), a processor 34(b) and a computer readable medium 34(c). The reader 34(b) may include any suitable contact or contactless mode of operation. For example, exemplary card readers can include RF (radio frequency) antennas, magnetic stripe readers, etc. to interact with the portable consumer device 32.

[0035] In a typical purchase transaction, the consumer 30 purchases a good or service at the merchant 22 using a portable consumer device 32 such as a credit card. The consumer's portable consumer device 32 can interact with an access device 34 such as a POS (point of sale) terminal at the merchant 22. For example, the consumer 30 may take a credit card and may swipe it through an appropriate slot in the POS terminal.

[0036] Alternatively, the POS terminal may be a contactless reader, and the portable consumer device 32 may be a contactless device such as a contactless card. In certain embodiments, the portable consumer device may be a mobile device such as shown in FIG. 1A above. As described in detail below, the antenna of the mobile device may be utilized to communicate not only payment information to the POS, but also may also communicate information (such as a code) from a mobile coupon to a POS device.

[0037] An authorization request message is then forwarded to the acquirer 24. After receiving the authorization request message, the authorization request

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message is then sent to the payment processing network 26. The payment processing network 26 then forwards the authorization request message to the issuer 28 of the portable consumer device 32.

[0038] After the issuer 28 receives the authorization request message, the issuer 28 sends an authorization response message back to the payment processing network 26 to indicate whether or not the current transaction is authorized (or not authorized). The transaction processing network 26 then forwards the authorization response message back to the acquirer 24. The acquirer 24 then sends the response message back to the merchant 22.

[0039] After the merchant 22 receives the authorization response message, the access device 34 at the merchant 22 may then provide the authorization response message for the consumer 30. The response message may be displayed by the access device 34, or may be printed out on a receipt.

[0040] At the end of the day, a normal clearing and settlement process can be conducted by the transaction processing network 26. A clearing process is a process of exchanging financial details between and acquirer and an issuer to facilitate posting to a consumer's account and reconciliation of the consumer's settlement position.

[0041] Some of the embodiments described below may use a payment processing system like the one described above, or any suitable combination of components in the payment processing system.

[0042] II. Mobile Coupon Method and System

[0043] Particular embodiments in accordance with the present invention relate to methods and apparatuses which allow distribution and/or redemption of electronic coupons at a mobile personal device. Various embodiments of such a system are described in the following figures.

[0044] Figure 2 shows an overall view of an embodiment of a system in accordance with the present invention for administering a mobile coupon program. A first entity 200 (i.e. Visa) is responsible for operating a payment processing network. Under the control of entity 200 are a number of different operational elements.

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[0045] For example, mobile campaign server 202 functions as the interface between entity 200 and the outside world, here represented by the internet "cloud" 204. Mobile campaign server 202 can include at least three components.

[0046] Specifically, mobile enrollment server 206 provides a browser interface for potential users to enroll in the mobile coupon program using an enrollment webpage 208. Mobile enrollment server 206 is configured to receive from potential users certain pieces of information allowing their participation in the program. For example, in an enrollment form supplied electronically to server 206, the prospective participant can provide information such as the telephone number of their portable device, a security password, and preferences regarding the types of mobile coupons that they wish to receive.

[0047] Figure 3 provides a simplified flow chart of the steps for enrolling in a mobile coupon program. In step 302 of enrollment flow 300, a consumer navigates to the website of the enrollment server utilizing his or her browser.

[0048] In the next step 304, the consumer creates a mobile coupon account by inputting identification and validation information. Examples of such identification information include the user's name, the telephone number of the user's mobile electronic device, financial account numbers, and optional aliases. At this stage, the consumer also verifies that they have read appropriate disclaimers and affirmatively indicate that they seek to opt-into the mobile coupon program.

[0049] In step 306 of enrollment flow 300, information entered by the consumer is verified. Examples of such verification include confirming that the consumer identified is actually in possession of the portable device, that the portable device belongs to the consumer, and that any identified account belongs to the consumer.

[0050] Returning to FIG. 2, mobile enrollment server 206 is in turn in electronic communication with user database 210. Database 210 includes data relating to the user of the mobile coupon system, including the specific information provided during enrollment. Access to the contents of database 210 is shared with gateway server 212.

[0051] Gateway server 212 serves as the interface with outside entities responsible for implementing the mobile coupon program. For example, telecommunications

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companies ("telecoms") 214 provide the infrastructure necessary to communicate the coupon to the user's mobile device wherever they happen to be. The telecom entities must provide sufficient capacity to handle a sufficiently high volume of coupon messages outgoing to recipients.

[0052] Where such volume of messages is expected to be small (for example at the inception of the mobile coupon program), another type of company called an aggregator will secure sufficient bandwidth for all of the expected messages from the telecom, and then aggregate the messages from different sources.

[0053] In an exemplary embodiment, a coupon is sent to a user's phone or other portable device. The coupon may be sent in any one of a number of different forms, including but not limited to an short messaging service (SMS) message, a SMS link, a multimedia messaging service (MMS) message, or e-mail message.

[0054] The coupon may be communicated utilizing any one of several types of communications systems. For example, the coupon may be communicated to the cell phone utilizing SMS. Such an embodiment offers a number of possible advantages, including broad access as SMS is available on almost every cell phone. Possible disadvantages to mobile coupon distribution utilizing SMS is a weak mechanism for confirming receipt of the coupon by the designated recipient, and also a high transaction cost as charges are typically incurred for each SMS message transmitted.

[0055] In accordance with alternative embodiments, the mobile coupon could be distributed by a Global System for Mobile Communications (GSM) system. Such GSM communication are cheap and secure, and would support confirmation of receipt of the coupon by a designated user.

[0056] Further alternatively, the coupons could be distributed utilizing a Near Field Communications (NFC) system. Such an embodiment would require the portable consumer device to be equipped with an NFC chip and programmed with a software application. The source of the near field signal providing the electronic coupon could be local kiosks, for example as present in a shopping mall. An alternative source of electronic coupons available utilizing such near field communication is the point of sale itself. Other sources are possible.

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[0057] The coupon may be communicated to the portable consumer device in encrypted form. Such encryption would prevent interception and unauthorized use of a coupon by other than the intended recipient. A processor present in the portable consumer device could in turn decrypt the message upon its receipt.

[0058] FIG. 4 shows a screen 400 from a POS terminal. The screen 400 shows buttons 402 that a cashier might select in order to initiate a pre-arranged discount utilizing an electronic coupon. For example, button 402a allows the cashier to implement a 30% discount for employees etc. Button 402b allows the cashier to manually enter a number for numeric look-up (NLU) from an electronic coupon displayed on a user's portable electronic device.

[0059] FIGS. 5A-5C are examples of three screenshots showing graphical coupons in different forms. These screenshots are configured to be able to be displayed on the small screen of a mobile phone, personal digital assistant (PDA), or other mobile device.

[0060] FIG. 5A shows a screenshot 500 which includes both a bar code 502 (which is an example of a machine readable code) and a seven digit number 504. The bar code 502 can be scanned with a scanner. One type of scanner which may be used to read a bar code on the screen of a cell phone is a charge coupled device (CCD) scanner. However, a laser-type scanner may not be able to read the bar code displayed due to reflection from the screen.

[0061] In order to process the electronic coupon shown in FIG. 5A, the user accesses and displays the coupon on the screen of his or her portable device. The cashier then accesses the discount screen shown in FIG. 4, and either scans the bar code in directly or enters the seven-digit number utilizing a numeric key pad.

[0062] FIG. 5B illustrates a screenshot 520 showing a different embodiment of a mobile electronic coupon in accordance with the present invention, which includes a visual display 522 and a personalized message 523. This visual display may be related to the nature of the coupon, representing for example the purchase of flowers. Alternatively, the display may simply illustrate the nature of the coupon, for example the display of flowers generically representing a gift.

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[0063] Instead of a barcode, a six digit number "024248" is shown by the electronic coupon 520. In processing of coupon 520 by a cashier, this six digit number can be entered into a POS terminal to give the consumer a discount on a purchase. In accordance with one embodiment, the number can be entered by having the cashier type in the individual digits of the code on a numeric keypad. In accordance with an alternative embodiment, the number can be entered by having the cashier activate a predetermined key, or combination thereof, which allows recognition of the coupon and the discount.

[0064] The embodiment of Figure 5B may offer certain advantages over a coupon employing a bar code as shown in Figure 5A. One advantage is ease of operation, as there is no requirement for optical recognition/reading of a code from the screen of the phone. Another possible advantage is reduced cost of implementation, as a bar code scanner device is not required to be purchased or rented by the merchant. In addition, software and hardware upgrades relating to electronic scanning would not be required by this alternative embodiment.

[0065] Lastly, FIG. 5C shows a screenshot 550 showing a "30% off" coupon. This electronic coupon includes a visual display 552 but lacks either a bar code or an identifying number.

[0066] To use this coupon, the user shows the display to the cashier and the cashier selects a button on a POS terminal display (see FIG. 4) to provide the discount to the consumer. According to still further embodiments of the present invention, coupon information such as a code may be communicated to a portable device in a proprietary format.

[0067] Figure 7 shows a simplified flow of a process of utilizing a mobile coupon according to an embodiment of the present invention. In a first step 702 of process flow 700, a purchaser presents items to a cashier. In step 704, the cashier hits the purchase key and enters the items. In step 706, the coupon asks the purchaser whether or not she intends to use coupons. In step 708, the purchaser responds that she intends to use a coupon.

[0068] In step 710 of process flow 700, the cashier hits the coupons key to alert the register to the use of coupons. In step 712, the cashier hits the accept coupon button on the back of the VISA terminal.

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[0069] In step 714, the VISA terminal displays a message requesting the purchaser to wave the phone to enter a coupon. In step 716, the purchaser waves the phone and the terminal receives the scanned code. In step 718 the processor in communication with the terminal looks up the scanned code. In step 720, the processor returns to the terminal, customer and branding information. In step 722, the terminal displays a branding message customized to the particular purchaser. Finally, in step 724, the terminal sends to the register a numeric look up representing the bar code.

[0070] A variation according to embodiments of the present invention may utilize near field communication of the coupon or a code therein, to the cashier. In this variation, a multi-digit numerical code (i.e. six digits) can be transmitted to the POS terminal via a reader using a contactless device such as the mobile device of FIG. 1A including an antenna. The coupon may be communicated in such a contactless manner using a short range communication method, such as a near field communications (NFC) capability. Examples of such NFC technologies include ISO standard 14443, RFID, Bluetooth™ and Infra-red communications methods. In accordance with such embodiments, the six digit code may or may not be shown on the display of the phone. Embodiments in accordance with the present invention are not limited to communicating coupon code information. In accordance with alternative embodiments, coupon information communicated from a mobile device to a POS terminal may include other information, for example a product code limiting applicability of the mobile coupon to a particular product, or an expiration date/time of the mobile coupon.

[0071] In certain embodiments, payment information (such as a credit card number, debit card number, home zip code of the card holder, or a three digit card verification value code) may be communicated from a mobile device in a contactless manner to the POS terminal. In such embodiments, the coupon information from the mobile device may also be communicated to the POS terminal in a contactless manner. In some embodiments, such communication of mobile coupon information may take place as part of the same message communicating payment information to the POS terminal. Alternatively, the coupon information may be communicated prior to, or following, contactless communication of the payment information to the POS terminal.

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[0072] The consumer may receive a text message, a phone call, or e-mail indicating that the consumer has received a coupon. The consumer may then use his or her phone to transmit a code corresponding to the coupon, to a contactless reader coupled to a POS terminal. The near field communication can utilize, for example, infrared or an RF communication mode such as Bluetooth. The system shown in FIG. 1 can be used in conjunction with such an embodiment.

[0073] Returning to Figure 2, apart from the mobile campaign server, a number of other elements are also under the control of entity 200. Notification module 250 is responsible for notifying participants in the program of particular events, for example limited time promotions or even the possibility of fraudulent transactions.

[0074] Mobile targeting module 260 is responsible for generating coupons targeted to a user. According to certain embodiments, the coupons can be targeted based upon a location based services (LBS) approach, utilizing prior purchasing activity by a consumer as detected over a payment processing network.

[0075] Specifically, where a payment transaction is conducted over a payment processing network, certain information is communicated that can be used for targeting of a mobile coupon. One piece of information that is potentially useful for targeting is the timing of the prior payment transaction.

[0076] In particular, the very existence of the prior purchase transaction reveals the consumer to be actively engaged in shopping rather than other activities (i.e. sleeping or working). Based upon this timing information, the consumer is known to likely be receptive to a mobile coupon for a subsequent transaction. Accordingly, embodiments of the present invention may thus generate and disseminate a mobile coupon to the consumer within a predetermined, limited time period from receiving an indication from the payment processing network that a prior payment transaction has occurred. Examples of time periods for dissemination of mobile coupons include, but are not limited to, one minute or less, five minutes, ten minutes, fifteen minutes, one-half hour, forty-five minutes, one hour, one and one half hours, two hours, three hours, four hours, and five hours or longer from the time that a prior purchasing activity is detected from the payment processing network. Such an approach allows for dissemination of a timely, non-intrusive mobile coupons to the consumer.

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[0077] In certain embodiments, the duration of effectiveness of such a mobile coupon can also be limited by time. Such an embodiment would provide an incentive for the recipient to monitor his or her portable device for receipt of a mobile coupon, and use that coupon within the limited period that it is effective. Moreover, in certain embodiments, upon expiration the mobile coupon could be configured to automatically disappear from the consumer's portable device. This would reduce intrusiveness of the mobile coupon, as the consumer is not obligated to delete a backlog of expired coupons from his or her portable device.

[0078] Embodiments of the present invention are not limited to generating and promulgating mobile coupons based upon temporal information gleaned from a prior purchase transaction over a payment processing network. In accordance with alternative embodiments, the mobile coupons can be targeted based upon a geographic location of the user as determined from the payment processing network.

[0079] According to one embodiment, the location of the consumer can be determined from purchasing activity of the user based upon a Location Based Services (LBS) approach. For example, when the user swipes a card at a POS, an authorization message is returned from the payment network which includes a Merchant Identification Number (MID). The user's location at that time of sale can be determined from the MID number.

[0080] According to other embodiments, information regarding the nature of the prior purchase conducted over the payment processing network can be referenced to generate the coupon. Thus, a prior purchase of one product (for example a vacuum cleaner), could lead to generation of a second product (bags for the vacuum cleaner). This coupon generation could be irrespective of the time or physical location of a prior purchasing transaction. Still further alternatively, an LBS approach could be based upon the seller of the second product having an affinity agreement with the seller of the previous product purchased.

[0081] Moreover, a mobile coupon may be generated based upon more than one piece of information gleaned from a prior purchasing transaction conducted over a payment processing network. Specifically, the time, geographic location, and/or nature of the prior purchase transaction could be combined to generate the targeted coupon.

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[0082] According to still other embodiments, information from a prior purchase transaction available from a payment processing network, may be combined with other information to generate a targeted coupon. For example, information regarding the location of the consumer can be determined from sources other than the payment processing network.

[0083] According to one approach, the location of a consumer can be determined by analyzing the location of the current base station through which the portable user device is transmitting and receiving information. Such current base station information is available from the telecommunications provider with which the consumer is affiliated, and in other applications is utilized to allow the user to contact the closest medical services provider in the case of a medical emergency. Thus, in certain embodiments, geographic information from this source could be combined with information (time, nature of prior purchases) available from the payment processing network, to generate a targeted coupon.

[0084] According to another approach, the location of a consumer can be determined by the use of Global Positioning System (GPS) technology. In this approach, the location of the portable device of the consumer is monitored utilizing a plurality of orbiting satellites. Thus, in other embodiments, geographic information from this source could be combined with information (time, nature of prior purchase) available from the payment processing network, to generate a targeted coupon.

[0085] Utilizing any of these approaches, or others, alone or in combination, the mobile targeting module 260 may send out a targeted mobile coupon to a consumer. For example, the mobile electronic coupon can be targeted in whole or in part based upon the recipient belonging to a particular group, such as an employee of a business or a member of a club.

[0086] Reward module 270 (such as "Visa Extras") is responsible for coordinating and administering an incentive or reward program that is tied to use of the payment network Thus a targeted mobile coupon may be generated and then electronically distributed to a portable consumer device as part of an incentive program. For example, the accrual of a certain volume of purchases utilizing a Visa card, may render the program participant eligible for a particularly valuable type of electronic coupon not typically available to other participants in the mobile coupon program.

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This targeted electronic coupon is then communicated to the consumer's mobile device for redemption.

[0087] Other elements indicated under the control of entity 200 in FIG. 2, may relate to the function of the payment network to execute purchase and payment transactions. Partners and banks 280 are outside of the control of entity 200 but interact therewith as part of the processing of payment transactions.

[0088] It should be understood that the present invention as described above can be implemented in the form of control logic using computer software in a modular or integrated manner. Based on the disclosure and teachings provided herein, a person of ordinary skill in the art will know and appreciate other ways and/or methods to implement the present invention using hardware and a combination of hardware and software.

[0089] The various components of the mobile coupon system described above may be implemented with a computer system having various features. FIG. 6 shows an example of a generic computer system 610 including display device 620, display screen 630, cabinet 640, keyboard 650, and mouse 670. Mouse 670 and keyboard 650 are representative "user input devices." Mouse 670 includes buttons 680 for selection of buttons on a graphical user interface device. Other examples of user input devices are a touch screen, light pen, track ball, data glove, microphone, and so forth. FIG. 6 is representative of but one type of system for embodying the present invention. It will be readily apparent to one of ordinary skill in the art that many system types and configurations are suitable for use in conjunction with the present invention. In a preferred embodiment, computer system 610 includes a Pentium class based computer, running Windows NT operating system by Microsoft Corporation. However, the apparatus is easily adapted to other operating systems and architectures by those of ordinary skill in the art without departing from the scope of the present invention.

[0090] As noted, mouse 670 can have one or more buttons such as buttons 680. Cabinet 640 houses familiar computer components such as disk drives, a processor, storage device, etc. Storage devices include, but are not limited to, disk drives, magnetic tape, solid state memory, bubble memory, etc. Cabinet 640 can include additional hardware such as input/output (I/O) interface cards for connecting

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computer system 610 to external devices external storage, other computers or additional peripherals, further described below.

[0091] FIG. 6A is an illustration of basic subsystems in computer system 610 of FIG. 6. This diagram is merely an illustration and should not limit the scope of the claims herein. One of ordinary skill in the art will recognize other variations, modifications, and alternatives. In certain embodiments, the subsystems are interconnected via a system bus 675. Additional subsystems such as a printer 674, keyboard 678, fixed disk 679, monitor 676, which is coupled to display adapter 682, and others are shown. Peripherals and input/output (I/O) devices, which couple to I/O controller 671, can be connected to the computer system by any number of means known in the art, such as serial port 677. For example, serial port 677 can be used to connect the computer system to a modem 681, which in turn connects to a wide area network such as the Internet, a mouse input device, or a scanner. The interconnection via system bus allows central processor 673 to communicate with each subsystem and to control the execution of instructions from system memory 672 or the fixed disk 679, as well as the exchange of information between subsystems. Other arrangements of subsystems and interconnections are readily achievable by those of ordinary skill in the art. System memory, and the fixed disk are examples of tangible media for storage of computer programs, other types of tangible media include floppy disks, removable hard disks, optical storage media such as CD-ROMS and bar codes, and semiconductor memories such as flash memory, read-only-memories (ROM), and battery backed memory.

[0092] Any of the software components or functions described in this application, may be implemented as software code to be executed by a processor using any suitable computer language such as, for example, Java, C++ or Perl using, for example, conventional or object-oriented techniques. The software code may be stored as a series of instructions, or commands on a computer readable medium, such as a random access memory (RAM), a read only memory (ROM), a magnetic medium such as a hard-drive or a floppy disk, or an optical medium such as a CD-ROM. Any such computer readable medium may reside on or within a single computational apparatus, and may be present on or within different computational apparatuses within a system or network.

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[0093] The above description is illustrative and is not restrictive. Many variations of the invention will become apparent to those skilled in the art upon review of the disclosure. The scope of the invention should, therefore, be determined not with reference to the above description, but instead should be determined with reference to the pending claims along with their full scope or equivalents.

[0094] One or more features from any embodiment may be combined with one or more features of any other embodiment without departing from the scope of the invention.

[0095] A recitation of "a", "an" or "the" is intended to mean "one or more" unless specifically indicated to the contrary.

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WHAT IS CLAIMED IS:

1. A method comprising:

referencing data regarding an individual consumer stored as part of a payment processing network to generate an electronic coupon targeted to the individual consumer;

transmitting the electronic coupon to a mobile device of the individual consumer over a communications network; and

processing a purchase transaction utilizing the electronic coupon over the payment processing network.

2. The method of claim 1 wherein the electronic coupon is generated based upon a prior transaction conducted over the payment processing network.

3. The method of claim 2 wherein the electronic coupon is generated within a predetermined time from a time of the prior transaction.

4. The method of claim 1 wherein the electronic coupon is targeted based upon a geographic location of the individual consumer.

5. The method of claim 4 wherein the geographic location of the consumer is determined from a location based services (LBS) approach based upon a prior transaction conducted over the payment processing network.

6. The method of claim 5 wherein the geographic location is determined from a merchant identification number in the prior transaction.

7. The method of claim 4 wherein the geographic location of the consumer is determined from a global positioning system (GPS) element in the mobile device.

8. The method of claim 4 wherein the geographic location of the consumer is determined from the mobile device communicating through the communications network.

9. The method of claim 1 wherein the electronic coupon is communicated in encrypted form.

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10. The method of claim 1 wherein the electronic coupon is communicated including a code able to be electronically transmitted from the mobile device to a point of sale.

11. The method of claim 1 wherein the data regarding the individual consumer is obtained based upon an enrollment form submitted by the individual consumer.

12. The method of claim 1 wherein the data regarding the individual consumer is obtained based upon the individual consumer's use of the payment processing network.

13. A server for a mobile coupon program, the server comprising:

a processor; and

a computer readable storage medium in electronic communication with the processor, the computer readable storage medium having stored thereon, code instructing the processor to,

reference data regarding an individual consumer stored as part of a payment processing network to generate an electronic coupon targeted to the individual consumer, and

transmit the electronic coupon to a mobile device of the individual consumer over a communications network.

14. The server of claim 13 wherein the code instructs generation of the electronic coupon based upon a prior transaction conducted over the payment processing network.

15. The server of claim 14 wherein the code instructs generation of the electronic coupon within a predetermined time of a time of the prior transaction.

16. The server of claim 13 wherein code instructs generation of the electronic coupon based upon a geographic location of the individual consumer.

17. The server of claim 16 wherein the geographic location of the consumer is determined from a location based services (LBS) approach based upon a prior transaction conducted over the payment processing network.

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18. The server of claim 16 wherein the geographic location of the consumer is determined from a merchant identification number in the prior transaction.

19. The server of claim 16 wherein the geographic location of the consumer is determined from a global positioning system (GPS) element in the mobile device.

20. The server of claim 16 wherein the geographic location of the consumer is determined from the mobile device communicating through the communications network.

21. A method comprising:

a consumer conducting a first purchasing transaction over a payment processing network;

generating an electronic coupon targeted to the consumer based upon the first purchasing transaction;

transmitting the electronic coupon to a mobile device of the consumer; and

processing a second purchasing transaction over the payment processing network, the second purchasing transaction involving use of the electronic coupon to obtain a discount.

22. The method of claim 21 wherein the coupon is generated within a predetermined time of a time of the first purchasing transaction.

23. The method of claim 21 wherein the coupon is generated based upon a geographic location of the first purchasing transaction.

24. The method of claim 21 wherein the first purchasing transaction or the second purchasing transaction allow the consumer to receive an award.

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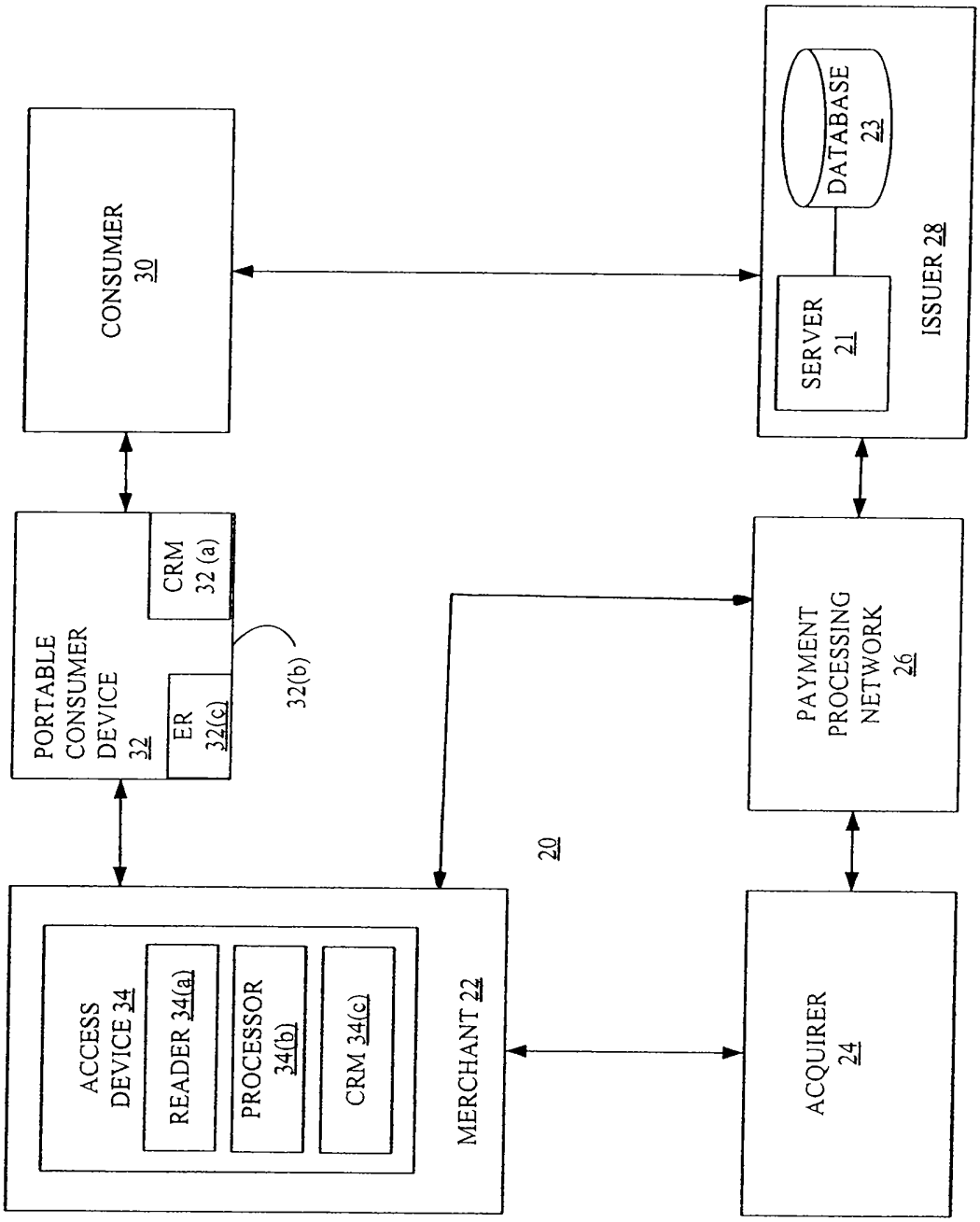

CONSUMER 30
DATABASE 23
SERVER 21
ISSUER 28
PORTABLE CONSUMER DEVICE 32
CRM 32 (a)
ER 32(c)
32(b)
PAYMENT PROCESSING NETWORK 26
20
ACCESS DEVICE 34
READER 34(a)
PROCESSOR 34(b)
CRM 34(c)
MERCHANT 22
ACQUIRER 24

FIG. 1

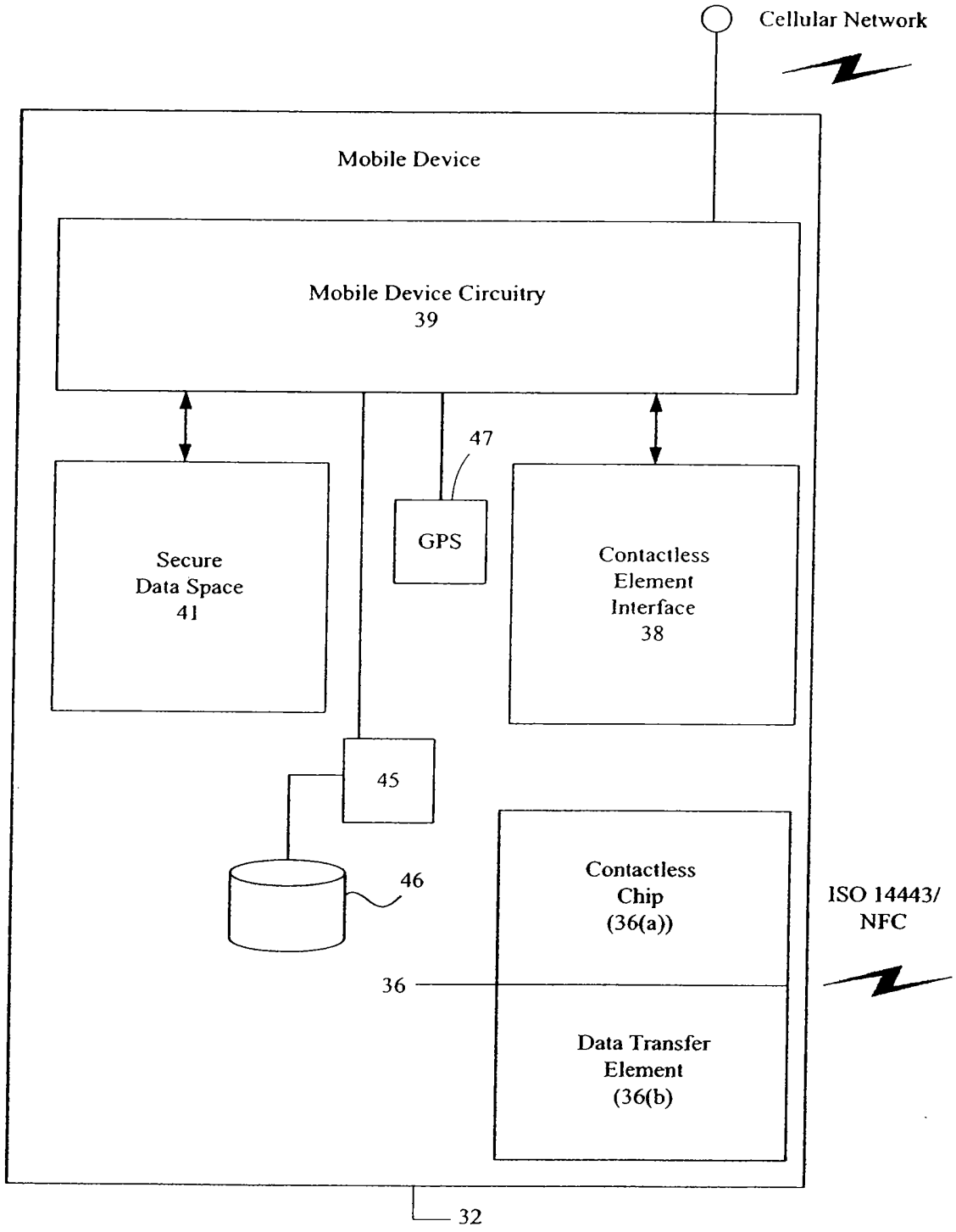

Cellular Network
Mobile Device
Mobile Device Circuitry
39
47
GPS
Secure
Data Space
41
Contactless
Element
Interface
38
45
46
Contactless
Chip
(36(a))
ISO 14443/
NFC
36
Data Transfer
Element
(36(b)
32

FIG. 1A

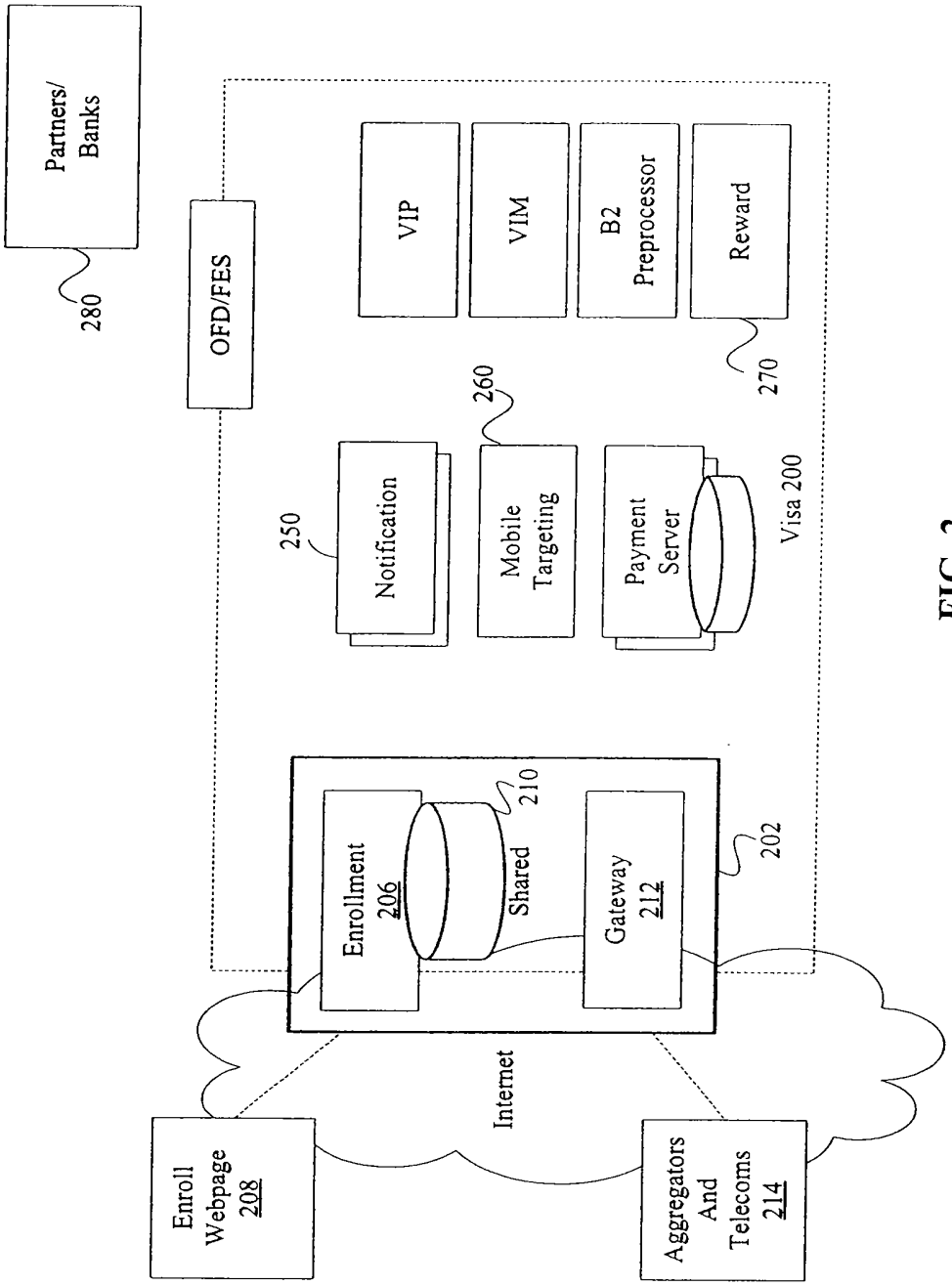

Partners/
Banks
280
OFD/FES
VIP
VIM
B2
Preprocessor
Reward
270
260
250
Notification
Mobile
Targeting
Payment
Server
Visa 200
Enrollment
206
Shared
210
Gateway
212
202
Internet
Enroll
Webpage
208
Aggregators
And
Telecoms
214

FIG. 2

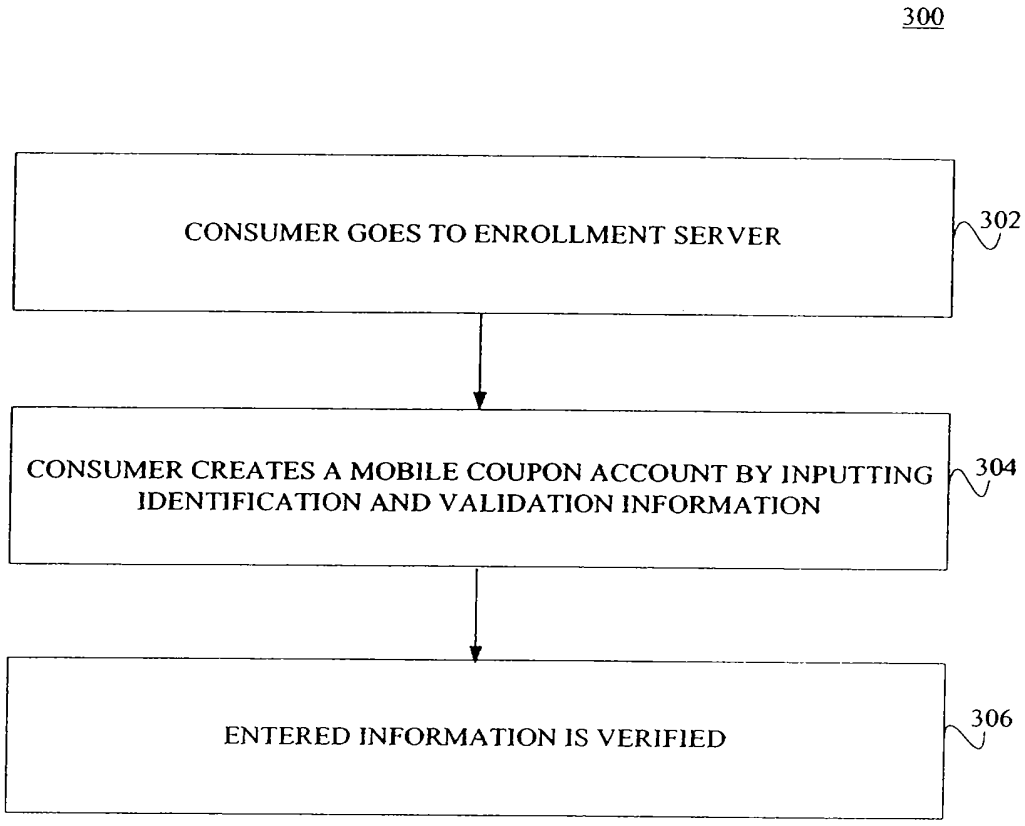

300
CONSUMER GOES TO ENROLLMENT SERVER
302
CONSUMER CREATES A MOBILE COUPON ACCOUNT BY INPUTTING IDENTIFICATION AND VALIDATION INFORMATION
304
ENTERED INFORMATION IS VERIFIED
306

FIG. 3

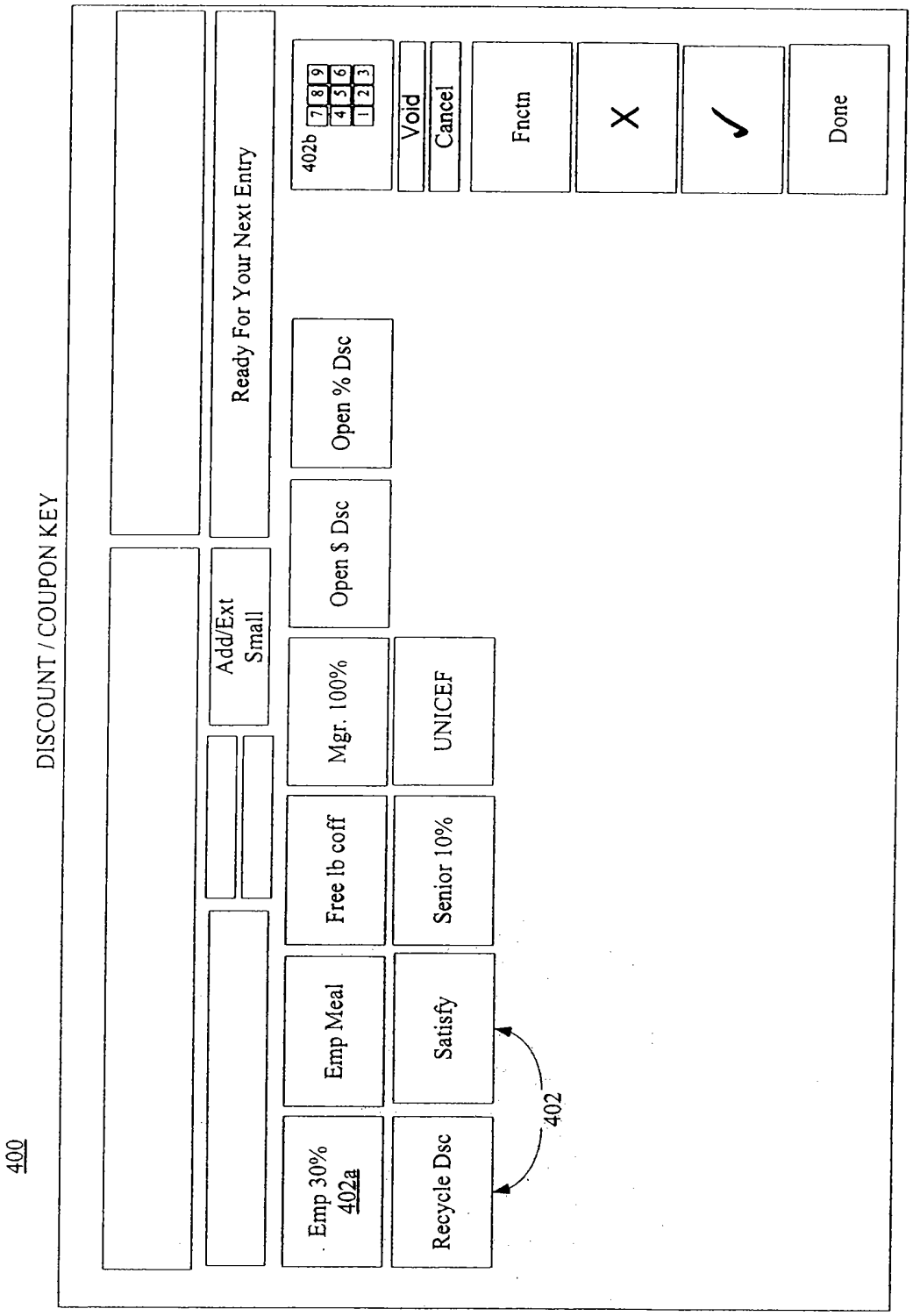

400
DISCOUNT / COUPON KEY
Ready For Your Next Entry
Add/Ext Small
Open % Dsc
Open $ Dsc
Mgr. 100%
UNICEF
Free lb coff
Senior 10%
Emp Meal
Satisfy
Emp 30% 402a
Recycle Dsc
402
402b
7 8 9
4 5 6
1 2 3
Void
Cancel
Fnctn
X
Done

FIG. 4

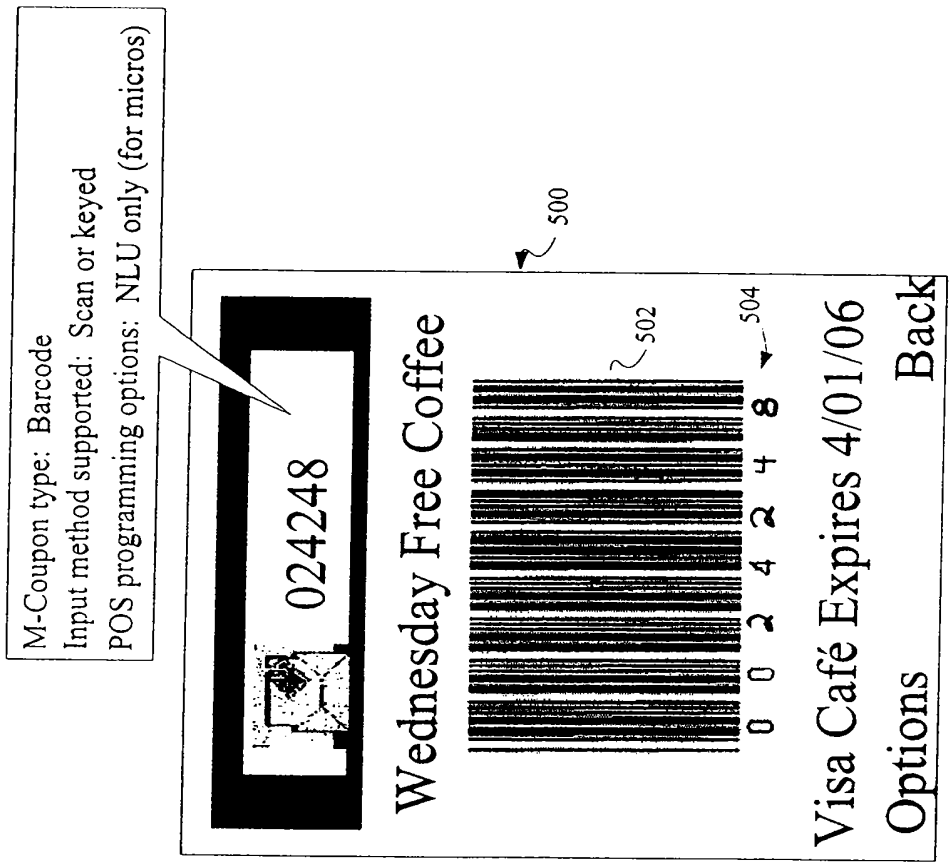

M-Coupon type: Barcode
Input method supported: Scan or keyed
POS programming options: NLU only (for micros)
024248
Wednesday Free Coffee
500
502
504
0 0 2 4 2 4 8
Visa Café Expires 4/01/06
Options
Back

FIG. 5A

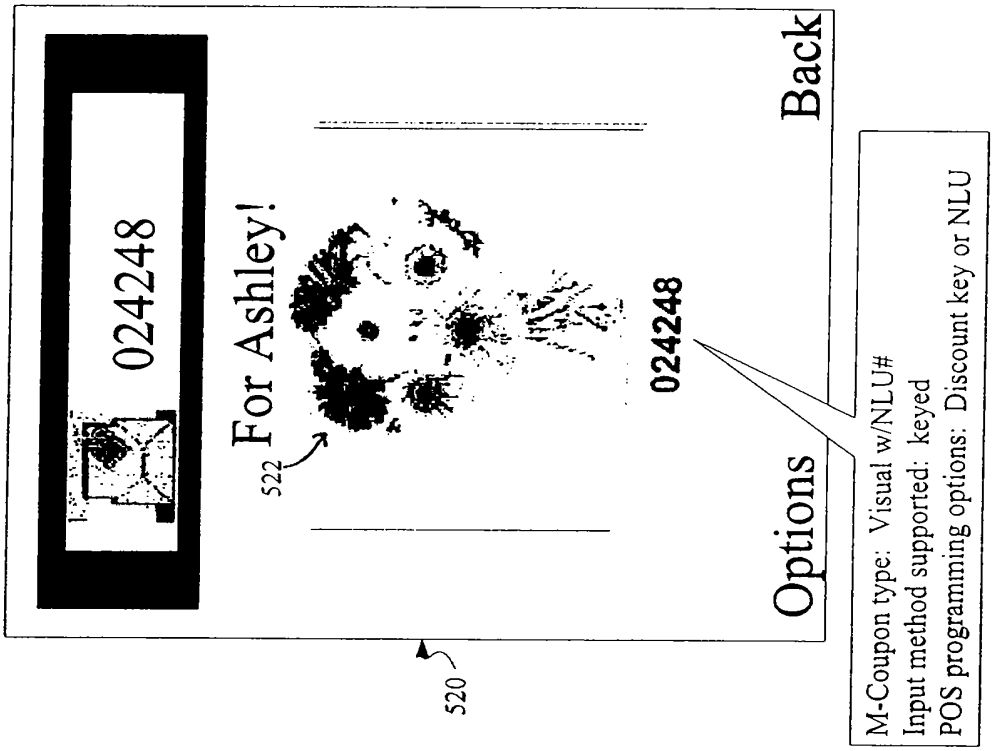

024248
For Ashley!
522
024248
Options
Back
520
M-Coupon type: Visual w/NLU#
Input method supported: keyed
POS programming options: Discount key or NLU

FIG. 5B

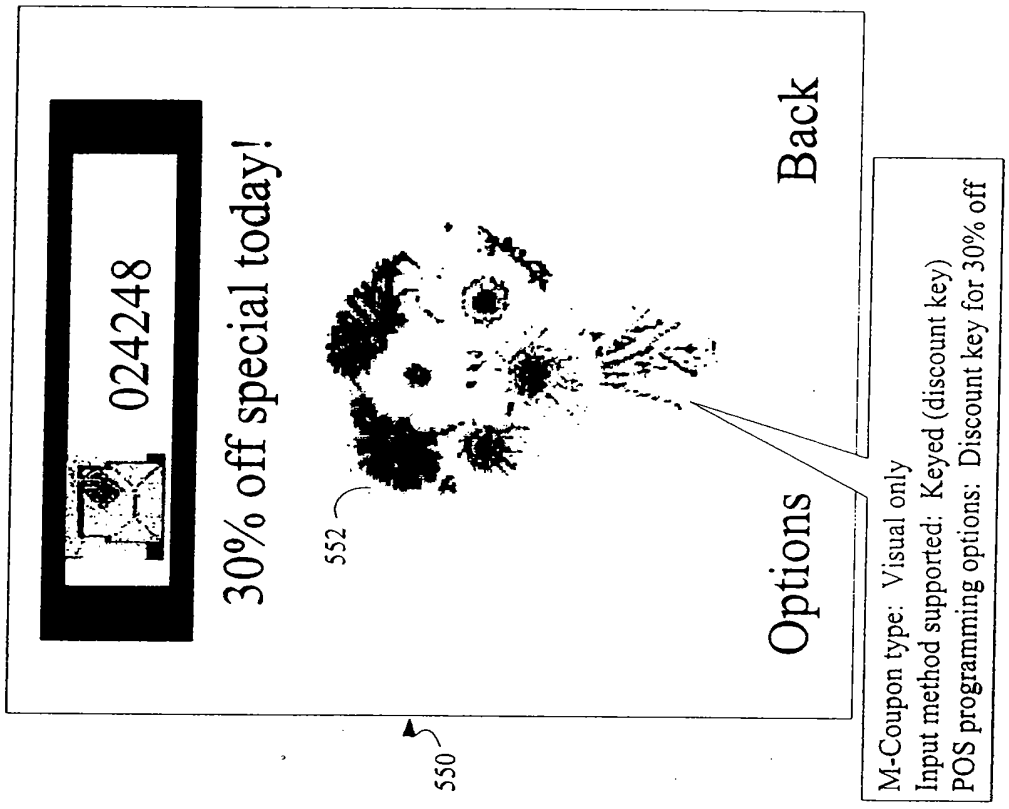

024248
30% off special today!
552
Options
Back
550
M-Coupon type: Visual only
Input method supported: Keyed (discount key)
POS programming options: Discount key for 30% off

FIG. 5C

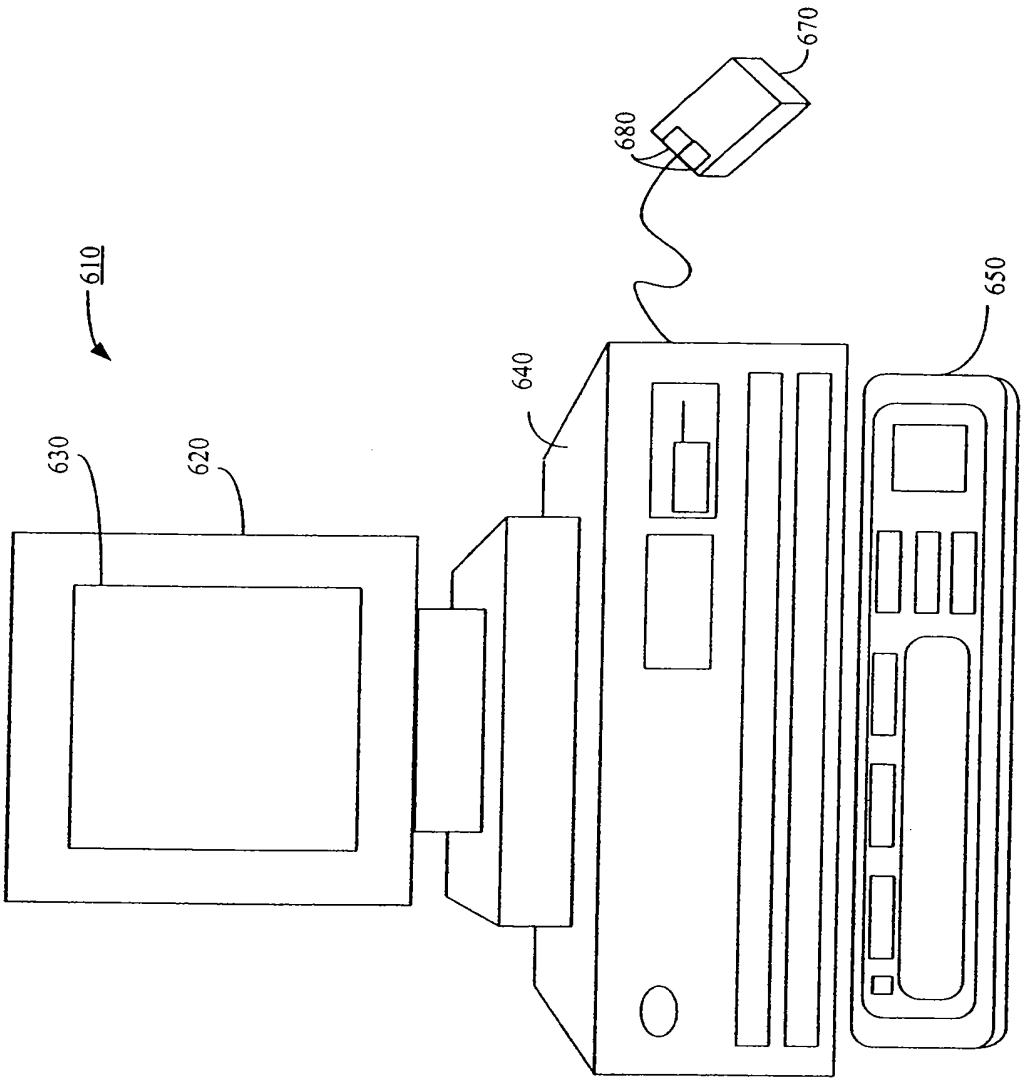


FIG. 6

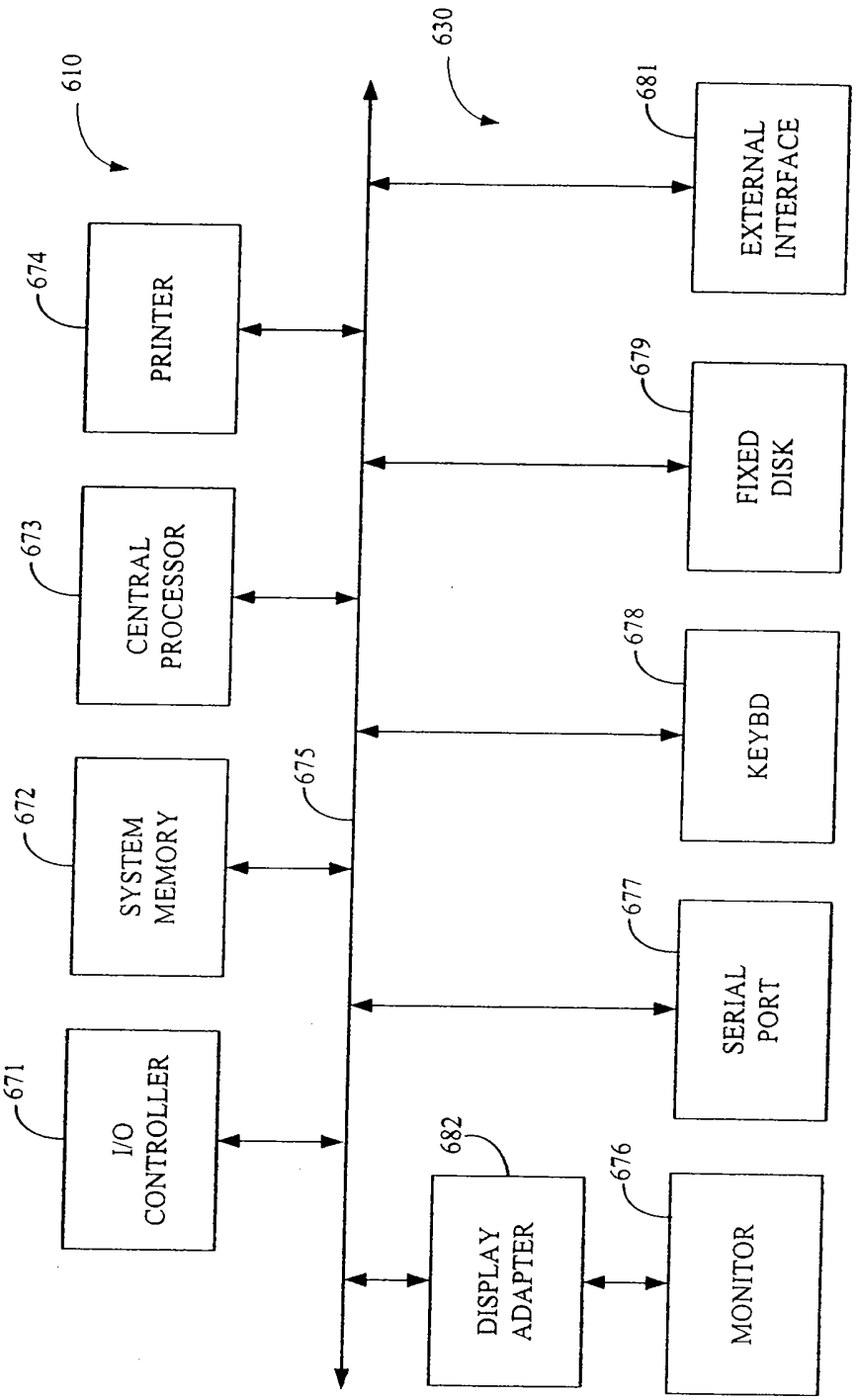

610
630
681
EXTERNAL INTERFACE
674
PRINTER
679
FIXED DISK
673
CENTRAL PROCESSOR
678
KEYBD
672
SYSTEM MEMORY
675
677
SERIAL PORT
671
I/O CONTROLLER
682
676
DISPLAY ADAPTER
MONITOR

FIG. 6A

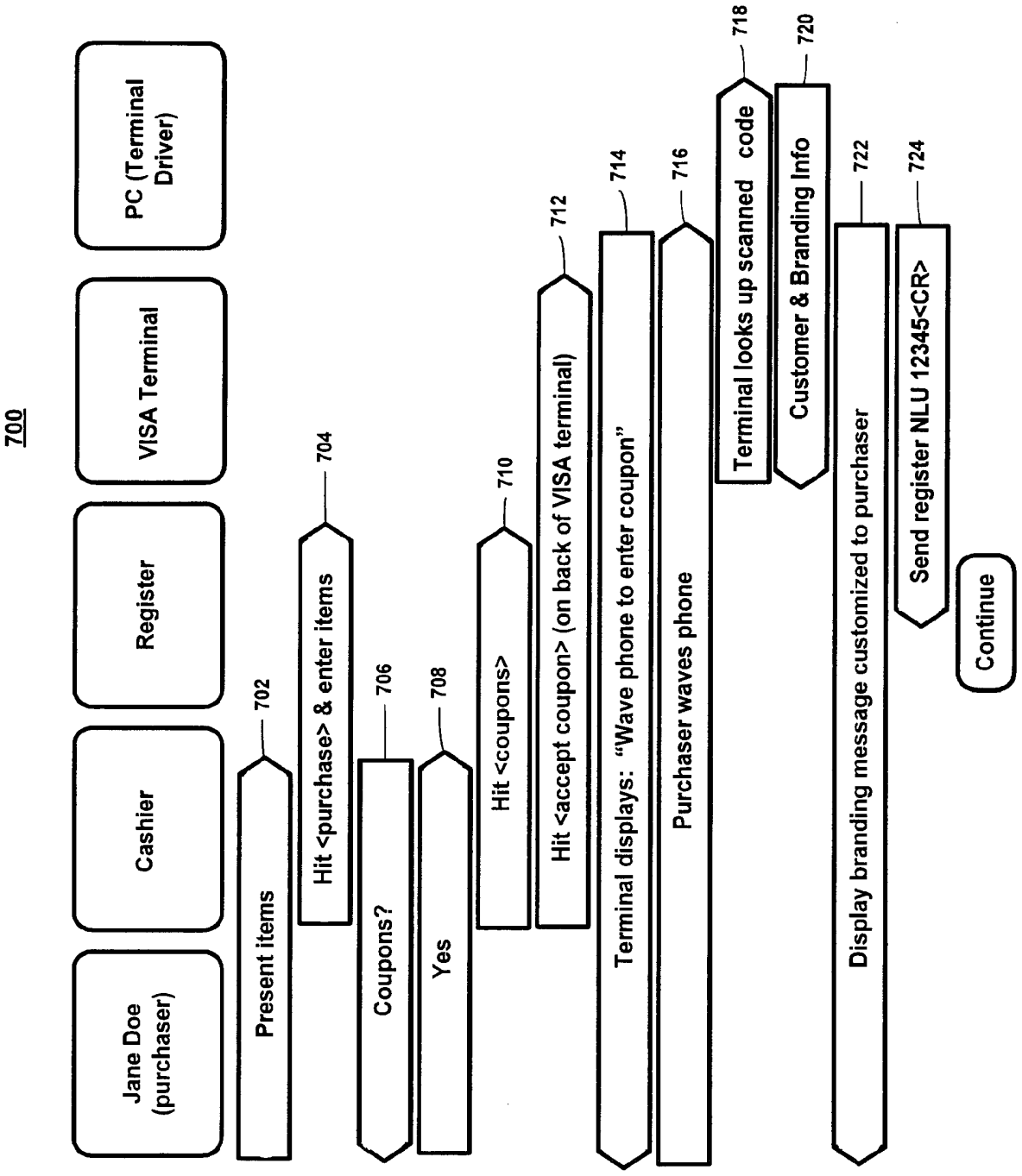


FIG. 7

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Page 360 of 545

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 07/88687

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G06Q 30/00 (2008.04)
USPC - 705/14
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
USPC - 705/14

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC - 705/1; 705/37; 705/50; 707/104.1; 709/217

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
WEST(USPAT, USPUB, EPO, JPO, DERWENT) DialogPRO(Engineering); Google Scholar -
payment and processing and network and generate and electronic and coupon and targeted and individual and consumer

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2004/0030607 A1 (Gibson) 12 February 2004 (12.02.2004), para [0011],[0018],[0006].	1-24
Y	US 2003/0004808 A1 (Elhaoussine et al.) 02 January 2003 (02.01.2003), para [0021],[0022],[0035],[0099].	1-24
A	US 2006/0282382 A1 (Balasubramanian et al.) 14 December 2006 (14.12.2006), entire document.	1-24
A	US 2006/0253390 A1 (McCarthy et al.) 09 November 2006 (09.11.2006), entie document.	1-24
A	US 2006/0224449 A1 (Byerley et al.) 05 October 2006 (05.10.2006), entire document.	1-24
A	US 2006/0149529 A1 (Nguyen et al.) 06 July 2006 (06.07.2006), entire document.	1-24

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
29 March 2008 (29.03.2008)	12 MAY 2008

Name and mailing address of the ISA/US	Authorized officer:
Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

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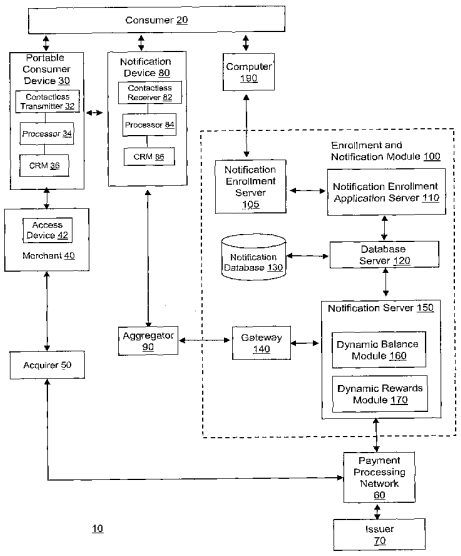
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Published:
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[Continued on next page]

(54) **Title:** REAL-TIME BALANCE UPDATES



(57) **Abstract:** A method and a system that receive retrieve dynamic data when a notification with dynamic data is triggered. The dynamic data is associated with an account that is associated with a portable consumer device associated with a consumer. The method and system automatically send the notification with the dynamic data to a notification device, wherein the notification with the dynamic data is provided to the consumer.

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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

REAL-TIME BALANCE UPDATES

CROSS-REFERENCES TO RELATED APPLICATIONS

[0001] This is a non-provisional patent application of and claims the benefit of the filing date of U.S. Provisional Patent Application No. 60/871,898 filed on December 26, 2006. This application is herein incorporated by reference in its entirety for all purposes.

BACKGROUND

[0002] Some prior systems send consumers notices regarding current transactions. For example, an issuer may notify a consumer when their credit card is being used to make a large purchase. These prior systems often rely on contact information in the account information to notify the consumer. If, for example, only the consumer's home address is on file, the notice may not get to the consumer until well after the transaction has been completed.

[0003] Consumers with prepaid cards may want to know the balance left on their prepaid cards before a transaction or as soon as a transaction is completed. For example, a consumer may want to know whether they can afford to purchase a product with the prepaid card before they check out or even before they go to the store. Typically, a consumer contacts the issuer of their prepaid card such as a bank to determine their current balance on the prepaid card. In some cases, however, a prepaid card e.g. gift card may not be associated with an account with an issuer such as those cards purchased at retail stores. The consumer may not easily be able to get their current balance.

[0004] Embodiments of the present disclosure address these and other problems, individually and collectively.

SUMMARY OF THE INVENTION

[0005] Embodiments of the invention relate to automatic notifications, methods of providing and requesting automatic notifications, and systems that provide automatic notifications.

[0006] Embodiments of the invention address the above-noted problems by providing methods and systems of providing notifications with dynamic data to the

consumer. Dynamic data refers to information that reflects all transactions on a portable consumer device made through the time a notification is triggered. An example of dynamic data is a real-time updated account balance. Examples of dynamic data include real-time updated account balance and a real-time updated rewards information associated with an account on a portable consumer device. When triggered, a notification with dynamic data is sent to the notification device e.g. cellular phone. The notification can be triggered on a periodic basis or when the consumer uses their portable consumer device to make a transaction. The notification can also be triggered when the consumer requests the dynamic data. For example, consumer could request dynamic data by placing their portable consumer device next to their notification device so that a transmitter in the portable consumer device sends a request to a receiver in the notification device. The consumer could also request the dynamic data by selecting a programmed key on their notification device. Dynamic data is then delivered to the notification device and provided to the consumer if the consumer is enrolled to receive the notification.

[0007] An embodiment of the invention is directed to a method that retrieves when a notification with dynamic data is triggered. The dynamic data is associated with an account associated with a portable consumer device associated with a consumer. The method also automatically sends the notification to the notification device, wherein the notification with dynamic data is provided to the consumer.

[0008] Another embodiment of the invention is directed to a method that triggers a notification with dynamic data using a notification device. The dynamic data is associated with an account on a portable consumer device associated with a consumer. The method also receives the notification on the notification device.

[0009] Another embodiment of the invention is directed to a system that includes a payment processing network for generating and storing dynamic data and a notification server coupled to the payment processing network. The notification server is configured to retrieve the dynamic data from the payment processing network when a notification with dynamic data is triggered. The dynamic data is associated with an account associated with a portable consumer device associated with a consumer. The notification server is also configured to automatically send the

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notification with the dynamic data to the notification device, wherein the notification with dynamic data is provided to consumer.

[0010] Another embodiment of the invention is directed to a phone having a processor, a receiver coupled to the processor, an output device coupled to the processor, and a computer readable medium coupled to the processor. The computer readable medium includes code for displaying a notification including dynamic data to the output device after a portable consumer device is used by a consumer.

[0011] These and other embodiments of the invention are described in further detail below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] FIG. 1 is a block diagram illustrating a dynamic data notification system, in accordance with an embodiment of the invention.

[0013] FIG. 2 is a flow chart illustrating a method of providing dynamic data notifications, in accordance with an embodiment of the invention.

[0014] FIG. 3 is a schematic drawing of a cellular phone displaying a real-time balance update, in accordance with an embodiment of the invention.

DETAILED DESCRIPTION

[0015] Embodiments of the invention are directed to a method of providing notifications with dynamic data, a method of requesting notifications with dynamic data, and a dynamic data notification system. More specifically, a notification with dynamic data is triggered when the consumer requests the notification or when the consumer uses the portable consumer device. The consumer can also have notifications automatically sent to the notification device on a periodic basis. Once the notification is triggered, dynamic data is retrieved and delivered to the notification device if the consumer is enrolled to receive the notification.

[0016] Certain embodiments of the invention may provide one or more technical advantages to issuers and consumers. One technical advantage to a consumer may be knowing their current balance or rewards available on their card without having to

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contact the issuer which could save time and could save the consumer money. Another technical advantage to a consumer may be that the consumer can request the current balance left on their card so that they can determine whether they have sufficient funds or credit to make a purchase or complete a transaction. A technical advantage to an issuer may be that automatic notifications are sent to consumers and issuer does not have to provide notifications by other means.

[0017] Certain embodiments of the invention may include none, some, or all of the above technical advantages. One or more other technical advantages may be readily apparent to one skilled in the art from the figures, descriptions, and claims included herein.

[0018] **FIG. 1** is a block diagram illustrating a dynamic data notification system **10**, in accordance with an embodiment of the invention. Dynamic data notification system **10** includes a consumer **20**, a portable consumer device **30**, a merchant **40**, an acquirer **50**, a payment processing network **60**, an issuer **70**, a notification device **80**, an aggregator **90**, an enrollment and notification module **100**, and a computer **190**. Although one consumer **20**, one portable device **30**, one merchant **40**, one acquirer **50**, one issuer **70**, one notification device **80**, and one computer **190** are shown, there may be any suitable number of any of these entities in dynamic data notification system **10**.

[0019] Dynamic data notification system **10** includes a consumer **20** in operative communication with portable consumer device **30**. Dynamic data notification system **10** also includes a merchant **40** having an access device **42** for interacting with portable consumer device **30** and an acquirer **50** associated with merchant **40**. Acquirer **50** is in communication with issuer **70** through payment processing network **60**.

[0020] Dynamic data notification system **10** also includes a notification device **80** in operative communication with consumer **20** for displaying notifications to consumer **20** and for receiving request or instructions for notifications from consumer **20**. Notification device **80** is also in communication with portable consumer device **30** for receiving a request for a notification from consumer **20**.

[0021] Dynamic data notification system **10** also includes an enrollment and notification module **100** for processing notifications and an aggregator **90** for

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collecting and forwarding notifications from enrollment and notification module **100** to notification device **80**. Dynamic data notification system **10** also includes a computer **190** in communication with enrollment notification module **100** and consumer **20**. Consumer can use computer **190** to receive notifications and to enroll in notifications. Dynamic data notification system **10** also includes a payment processing network **60** that is in communication with enrollment and notification module **100**, with acquirer **50**, and with issuer **70**.

[0022] Consumer **20** refers to an individual or organization such as a business that is capable of purchasing goods or services or making any suitable transaction with merchant **40**.

[0023] Portable consumer device **30** refers to any suitable device that allows the transaction to be conducted with merchant **40**. Portable consumer device **30** may be in any suitable form. For example, suitable portable consumer devices **30** can be hand-held and compact so that they can fit into a consumer's wallet and/or pocket (e.g., pocket-sized). They may include smart cards, magnetic stripe cards, keychain devices (such as the Speedpass™ commercially available from Exxon-Mobil Corp.), etc. Other examples of portable consumer devices **30** include cellular phones, personal digital assistants (PDAs), pagers, payment cards, security cards, access cards, smart media, transponders, and the like. In some cases, portable consumer device **30** may be associated with an account of consumer **20** such as a bank account.

[0024] In the illustrated example, portable consumer device **30** includes a contactless transmitter **32** for sending wireless signals, a processor **34**, and a computer readable medium (CRM) **36**. These elements of portable consumer device **30** are in communication with each other. Processor **34** (e.g., a microprocessor) processes the functions of portable consumer device **30**.

[0025] Contactless transmitter **32** refers to any suitable device for sending wireless signals with information stored in memory (e.g. CRM **36**) on portable consumer device **30** to notification device **80**. Contactless transmitter **32** transmits signals using a near field communications (NFC) capability to send information from portable consumer device **30** to the contactless receiver **82** on notification device **82**. Typically, NFC capability is in accordance with a standardized protocol or data

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transfer mechanism (e.g., ISO 14443/NFC). Some examples of NFC capability are radio-frequency identification (RFID), Bluetooth™, infra-red, and other suitable communications capability. In other embodiments, contactless transmitter **32** transmits information via a cellular network by means of an interface (not shown). The interface functions to permit exchange of data between the cellular network (not shown) and contactless transmitter **32**.

[0026] CRM **36** may be on the body of portable consumer device **30**. The body may in the form of a plastic substrate, a housing, or other structure. CRM **36** may be a memory that stores data and may be in any suitable form. Exemplary CRM **36** may be in any suitable form including a magnetic stripe, a memory chip, etc. If portable consumer device **30** is in the form of a card, it may have an embossed region (ER) which is embossed with a PAN (primary account number). CRM **36** may electronically store the PAN as well as other data such as PIN data.

[0027] Merchant **40** refers to any suitable entity or entities that makes a transaction with consumer **20**. Merchant **40** may use any suitable method to make the transaction. For example, merchant **40** may use an e-commerce business to allow the transaction to be conducted by merchant **40** through the Internet. Other examples of merchant **40** include a department store, a gas station, a drug store, a grocery store, or other suitable business.

[0028] Access device **42** may be any suitable device for communicating with merchant **40** and for interacting with portable consumer device **30**. Access device **42** can be in any suitable location such as at the same location as merchant **40**. Access device **42** may be in any suitable form. Some examples of access devices **42** include POS devices, cellular phones, PDAs, personal computers (PCs), tablet PCs, handheld specialized readers, set-top boxes, electronic cash registers (ECRs), automated teller machines (ATMs), virtual cash registers (VCRs), kiosks, security systems, access systems, websites, and the like. Access device **42** may use any suitable contact or contactless mode of operation to send or receive data from portable consumer devices **30**.

[0029] If access device **42** is a POS terminal, any suitable POS terminal may be used and may include a reader, a processor, and a computer readable medium. Reader may include any suitable contact or contactless mode of operation. For

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example, exemplary card readers can include radio frequency (RF) antennas, optical scanners, bar code reader, magnetic stripe readers, etc. to interact with portable consumer device **30**.

[0030] Acquirer **50** refers to any suitable entity that has an account with merchant **40**. In some embodiments, issuer **70** may also be acquirer **50**.

[0031] Issuer **70** refers to any suitable entity that may open and maintain an account associated with portable consumer device **30** for consumer **20**. Some examples of issuers may be a bank, a business entity such as a retail store, or a governmental entity. In many cases, issuer **70** may also issue portable consumer device **30** associated with the account to consumer **20**.

[0032] Payment processing network **60** refers to a network of suitable entities that have information related an account associated with portable consumer device **30**. This information includes data associated with the account on portable consumer device **30** such as profile information, dynamic data, and other suitable information. Dynamic data refers to any suitable information that is updated to reflect the transactions made using portable consumer device **30**.

[0033] Although not shown in the illustrated embodiment, payment processing network **60** may have or operate a server computer and may include a database. The database may include any hardware, software, firmware, or combination of the preceding for storing and facilitating retrieval of information. Also, the database may use any of a variety of data structures, arrangements, and compilations to store and facilitate retrieval of information. The server computer may be coupled to the database and may include any hardware, software, other logic, or combination of the preceding for servicing the requests from one or more client computers. Server computer may use any of a variety of computing structures, arrangements, and compilations for servicing the requests from one or more client computers. In one embodiment, the server computer may be a powerful computer or cluster of computers. For example, the server computer can be a large mainframe, a minicomputer cluster, or a group of servers functioning as a unit. In one example, the server computer may be a database server coupled to a Web server. Server computer services the requests of one or more client computers.

[0034] Payment processing network **60** may include data processing subsystems, networks, and operations used to support and deliver authorization services, exception file services, and clearing and settlement services. An exemplary payment processing network **60** may include VisaNet™. Networks that include VisaNet™ are able to process credit card transactions, debit card transactions, and other types of commercial transactions. VisaNet™, in particular, includes a VIP system (Visa Integrated Payments system) which processes authorization requests and a Base II system which performs clearing and settlement services. Payment processing network **60** may use any suitable wired or wireless network, including the Internet.

[0035] Notification device **80** refers to any suitable device for receiving notifications and for providing the notifications to consumer **20**. Notifications refer to communications of dynamic data to consumer **20** on notification device **80**. Notifications may be in any suitable form and may be delivered by any suitable method. Some examples of notifications includes a phone call, a voice message, a voicemail message, a short message service (SMS) message e.g. a text message, an instant messaging (IM) message, or an email message, or a periodically updated display on a device. An exemplary embodiment of a notification is a real-time balance update. The real-time balance update is a communication to notify consumer **20** of the funds available (balance) on portable consumer device **30** after the last transaction is accounted for. Another embodiment of a notification is real-time rewards information update that is a communication to notify consumer **20** of rewards available for redemption after the last transaction.

[0036] Dynamic data refers to any suitable information that reflects all transactions on a portable consumer device **30** made through the time a notification of the dynamic data is triggered. Dynamic data relates to an account associated with a portable consumer device **30** associated with consumer **20**. For example, dynamic data can be account balances such as credit card account balances, stored value account balances, rewards balances, checking account balances, savings account balances, investment account balances, brokerage account balances, and other suitable account balances.

[0037] Notification device **80** may be in any suitable form. For example, suitable notification devices **80** can be hand-held and compact so that they can fit into a consumer's wallet and/or pocket (e.g., pocket-sized). Some examples of notification device **80** include desktop or laptop computers, cellular phones (e.g., as shown in FIG. 3), personal digital assistants (PDAs), pagers, payment cards, security cards, access cards, smart media, transponders, and the like. In some embodiments, notification device **80** and portable consumer device **30** are embodied in the same device.

[0038] Notification device **80** includes a contactless receiver **82** for receiving wireless signals, a processor **84** coupled to the receiver **82**, and a computer readable medium (CRM) **36** coupled to processor **84**. Although not shown, notification device **80** may also include one or more input devices (e.g., keypads) or output devices (e.g., displays, speakers) coupled to processor **84**. Contactless receiver **82** refers to any suitable device for receiving wireless signals. The signals are received by contactless receiver **82** by any suitable method (e.g., using NFC capability). In one example, contactless receiver **82** receives a wireless signal with a request for a notification from contactless transmitter **32** of portable consumer device **30**. In another example, contactless receiver **82** receives a wireless signal with a notification(s) from aggregator **90** via a cellular network. Processor **84** (e.g., a microprocessor) processes the functions of notification device **80**. CRM **86** comprises code for processing requests for notifications, for receiving notifications, and for providing notifications to consumer **20**. An example of code for providing notifications to consumer **20** includes code for displaying notifications including dynamic data to an output device.

[0039] Consumer **20** uses computer **190** to receive notifications and/or enroll in a program to receive notifications. Computer **190** can be a desktop computer, a laptop computer, a cellular or mobile phone, a personal digital assistant (PDA), or other suitable device.

[0040] Enrollment and notification module **100** comprises a notification enrollment server **105**, a notification enrollment application server **110**, a database server **120**, a notification database **130**, a notification server **150** having a dynamic balance module **160** and a dynamic rewards module **170**, and a gateway **140**. Notification

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enrollment server **105** in communication with a notification enrollment application server **110** which is in communication with database server **120** for storing and retrieving information to and from notification database **130**. Database server **120** is also in communication with notification server **150**. Notification server **150** is also in communication with gateway **140**, dynamic balance module **160**, and dynamic rewards module **170**. Although enrollment and notification module **100** is shown as being separate from issuer **70**, enrollment and notification module **100** can be at issuer **70** in some embodiments. In these embodiments, issuer **70** processes the notifications sent to notification device **80**.

[0041] Notification enrollment server **105** refers to a device that receives enrollment information from consumer **20** via computer **190** and sends the enrollment information to notification enrollment application server **110**. Notification enrollment application server **110** receives the enrollment information from consumer **20** through notification enrollment server **105** or from issuer **70** and may store the enrollment information in notification database **130**. Notification database **130** may receive and store new or updated enrollment information and other account information.

[0042] Enrollment information includes trigger information that describes the occurrences that must take place to trigger notifications and the types of dynamic data that consumer **20** wants to receive in the notifications. Consumer **20** may define the trigger information when enrolling in a program to receive notifications.

[0043] In some cases, notifications are triggered by actions taken by consumer **20** or another suitable entity. For example, a notification may be triggered by using of portable consumer device **30** at access device **42** by consumer **20** or by merchant **40**. In another example, a notification may be triggered by the sending of a request by consumer **20** for a notification using portable consumer device **30**, notification device **80**, computer **190**, or other suitable device. In yet another example, a notification may be triggered by placing portable consumer device **30** near notification device **80** so that a signal with a request for a notification is transmitted from contactless transmitter **32** on portable consumer device **30** to contactless receiver **82** on notification device **80**. In another example, a notification may be triggered by the completion of a transaction on an account associated with portable

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consumer device **30**. In other cases, periodic notifications may be triggered by the termination a time period defined by consumer **20**. Examples of a time period include a week, a day, and an hour. For example, if consumer **20** selects the time period of a day, daily notifications will be sent to notification device **80**. Typically, daily notifications would be sent at approximately the same time every day.

[0044] Notification server **150** includes dynamic balance module **160** for processing notifications with dynamic balances and dynamic rewards module **170** for processing notifications with dynamic rewards information.

[0045] Notification server **150** processes notifications with dynamic data and sends the notifications through gateway **140** to aggregator **90**. If the dynamic data is a dynamic balance, dynamic balance module **160** processes the notification. If the dynamic data is dynamic rewards, dynamic rewards module **170** processes the notification. Gateway **140** is a any suitable device that converts information from the protocol or format used in enrollment and notification module **100** to those used in aggregator **90**. Aggregator **90** refers to any suitable entity or device that receives notifications, collects the notifications, and transmits the notifications to notification device **80** for consumer **20**. In some cases, aggregator **90** may be a wireless telephone company.

[0046] Notification server **150** is triggered to send a notification with dynamic data and processes the notification. Notification server **150** retrieves enrollment information with trigger information from notification database **130** using database server **120**. Notification server **150** confirms that consumer **20** is enrolled to receive the notification triggered based on the trigger information. Notification server **150** retrieves the dynamic data from issuer **70** or other suitable entity and sends the notification with the dynamic data through gateway **140** to aggregator **90**. Aggregator **90** collects notifications according to enrollment information and forwards the notifications to notification device **80**. If the notification triggered is associated with dynamic balance data, dynamic balance module **160** processes the notification. If the notification triggered is associated with dynamic rewards data, dynamic rewards module **170** processes the notification.

[0047] In one example embodiment, consumer **20** enrolls in a program using computer **190** to receive notifications on their notification device **80** (e.g. a cellular

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phone) in the form of text or voice messages. Consumer **20** enrolls to receive notifications with the dynamic balance on the account associated with their portable consumer device **30** (e.g. a prepaid or gift card). Consumer **20** specifies that the notification will be sent every time portable consumer device **30** interacts with access device **42**.

[0048] In a typical payment transaction, consumer **20** uses portable consumer device **30** at access device **42** to purchase goods or services from merchant **40**. For example, a consumer may use a gift card with $50 to buy a $25 game cartridge at a toy store using a POS (point of sale) terminal at the toy store. The consumer may swipe the gift card through a slot in the POS terminal and the POS terminal may read data including an account number from the gift card.

[0049] An authorization request message is then forwarded to acquirer **50** and acquirer **50** forwards the message through payment processing network **60** to issuer **70**. Using portable consumer device **30** at access device **42** triggers notification server **150** to send a notification.

[0050] Issuer **70** determines whether or not to authorize the transaction. The transaction may be authorized if there are sufficient funds, and may be declined if there are insufficient funds. An authorization response message is then sent back through payment processing network **60** to acquirer **50** who forwards it to merchant **40**. At the end of the day, a normal clearing and settlement process can be conducted by payment processing network **60**. A clearing process is a process of exchanging financial details between and acquirer and an issuer to facilitate posting to a consumer's account and reconciliation of the consumer's settlement position.

[0051] In this example, the notification triggered is associated with a dynamic balance and dynamic balance module **160** processes the notification. Dynamic balance module **160** is triggered to send a notification when consumer used portable consumer device **30**. For example, dynamic balance module **160** may receive information that the previously described and registered gift card has been used to purchase a $25 game cartridge.

[0052] Dynamic balance module **160** retrieves enrollment information with trigger information from notification database **130** using database server **120.** Dynamic balance module **160** uses the trigger information to confirm that consumer **20** wants

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to receive the notification that has been triggered. Dynamic balance module **160** also determines from the trigger information that consumer **20** wants to receive the triggered notification in the form of a text message. Dynamic balance module **160** retrieves the dynamic balance on the account associated with portable consumer device **30**. For example, the module **160** may determine that there is the balance on the gift card is $25. The dynamic balance will reflect the last transaction authorized including the transaction associated with the action of using portable consumer device **30** that triggered the notification. Dynamic balance module **160** sends a text message with the dynamic balance to notification device **80**. For example, the text message may indicate that the gift card now has a balance of $25 after buying the $25 game cartridge. Notification device **80** provides the text message to consumer **10**. For example, the consumer's phone may display the balance of $25 plus the account number associated with the gift card. Consumer **20** may thereafter store this information in the notification device **80** for future use in determining how much money is left on the portable consumer device **30**.

[0053] Modifications, additions, or omissions may be made to dynamic data notification system **10** without departing from the scope of the disclosure. The components of dynamic data notification system **10** may be integrated or separated according to particular needs. Moreover, the operations of dynamic data notification system **10** may be performed by more, fewer, or other system modules. Additionally, operations of dynamic data notification system **10** may be performed using any suitable logic comprising software, hardware, other logic, or any suitable combination of the preceding.

[0054] **FIG. 2** is a flow chart illustrating a method of providing dynamic data notifications, in accordance with an embodiment of the invention.

[0055] Consumer **20** enrolls in a program using computer **190** to receive notifications on their portable consumer device **30** (step **200**). Computer **190** sends enrollment information from consumer **20** to notification enrollment server **105**. Notification enrollment server **105** sends the enrollment information to notification enrollment application server **110**. Notification enrollment application server **110** sends the enrollment information to database server **120** to store it in notification database **130**.

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[0056] A notification is triggered (step **210**). Notification server **150** detects that the notification has been triggered. Consumer **20** or other suitable entity triggers the notification.

[0057] In one embodiment, consumer **20** or other suitable entity triggers a notification by using portable consumer device **30** at access device **42**. In some cases, a notification is only triggered if the transaction is authorized and completed. When portable consumer device **30** is used, information indicating that a notification has been triggered is sent from access device **42** to acquirer **50** which forwards it to notification server **150** through payment processing network **60**.

[0058] In another embodiment, consumer **20** triggers a notification by requesting it on notification device **80** or computer **190** which forwards the request for a notification to notification server **150**. For example, consumer **20** may request a notification by selecting a programmed button on their cellular phone. The cellular phone sends the request to notification server **150**.

[0059] In another embodiment, consumer **20** triggers a notification by placing portable consumer device **30** next to notification device **80**. A signal with a request for a notification is emitted from contactless transmitter **32** in portable consumer device **30** and received by contactless receiver **82** on notification device **80**. Notification device **80** forwards the request to notification server **150**.

[0060] In yet another embodiment, a notification is triggered automatically on a periodic basis by notification server **150**. Typically, the notification is triggered at the end of the time period although any time during that time period can be used. Consumer **20** selects the time period such as daily, hourly, or weekly. For example, consumer **20** can select daily notifications sent at 12:00 a.m.

[0061] In one example embodiment, consumer **20** enrolls in a program using computer **190** to receive notifications on their notification device **80** e.g. cellular phone in the form of email messages. Consumer **20** enrolls to receive notifications with the dynamic balance on the account on their portable consumer device **30** e.g. a prepaid card. Consumer **20** specifies that the notification will be sent every time portable consumer device **30** interacts with access device **42**.

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[0062] Notification server **150** retrieves enrollment information (step **220**) retrieved from notification database **130** using database server **120**. The enrollment information is associated with an account on portable consumer device **30**. In embodiments where consumer **20** requested the notification, notification server **150** may skip retrieving the enrollment information and checking enrollment for the notification (steps **220** and **230**) and go to retrieving dynamic data (step **240**).

[0063] Notification server **150** analyzes trigger information in the enrollment information to determine whether consumer **20** is enrolled to receive the notification that has been triggered (step **230**). If consumer **20** is not enrolled for the notification, the method ends (step **270**) and a notification is not sent to consumer **20**.

[0064] If consumer **20** is enrolled to receive the notification, notification server **150** retrieves the dynamic data (step **240**). Notification server **150** generates a notification with the dynamic data and sends it to aggregator **90** through gateway **140**. Aggregator **90** forwards the notification to notification device **160** for delivery to consumer **20** (step **250**). Notification device **80** provides the notification to consumer **20** (step **260**).

[0065] In one embodiment, the notification may be shown to consumer **20** on a screen on notification device **80**. The display of the notification may be a text message displayed on a screen or other suitable display until consumer **20** turns off the display. In other cases, the notification may be displayed for a predetermined period of time.

[0066] In another embodiment, the notification may be sent to consumer in the form of a voice message or voicemail message to consumer **20**. For example, the notification may be an automated voice announcement that is sent to the notification device **20**.

[0067] After providing the notification, the method ends (step **270**). Modifications, additions, or omissions may be made to the method without departing from the scope of the disclosure. The method may include more, fewer, or other steps. Additionally, steps may be performed in any suitable order without departing from the scope of the disclosure.

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[0068] FIG. 3 is a schematic drawing of a cellular phone displaying a real-time balance update, in accordance with an embodiment of the invention. Notification device **80** includes a display **320** for displaying information such as notifications with dynamic data, buttons **330** for inputting information such as requests for notifications, a speaker (not shown) to send aural signals to consumer **20**, and a microphone (not shown) to receive aural signals from consumer **20**.

[0069] Display **320** includes a dynamic data display **322** for displaying the notification of the updated dynamic data consumer **20**. In the illustrated example, dynamic data display **322** is showing the real-time balance update on the account associated with portable consumer device **30**. Dynamic data can be updated at any suitable time. Some examples of when the dynamic data is updated include when consumer requests the dynamic data, when consumer **20** uses portable consumer device **30**, or periodically.

[0070] Buttons **330** include a balance request button **334** for requesting a real-time balance update and a rewards request button **336** for requesting a real-time rewards information update. Display **320** also includes a balance request button indicator **324** indicating that selecting balance request button **334** will request a real-time balance update. Display **320** also includes a rewards request button indicator **326** indicating that selecting rewards request button **336** will request a real-time rewards information update.

[0071] In operation, consumer **20** selects balance request button **334** to display real-time balance update on dynamic data display **322**. The request is forwarded to notification server **150**. Notification server **150** retrieves the real-time balance from issuer **70** or other suitable entity over payment processing network **60**. Notification server **150** sends the real-time balance update to notification device **80** and notification device **80** displays the update to consumer **20**.

[0072] Modifications, additions, or omissions may be made to notification device **80** without departing from the scope of the disclosure. For example, notification device **80** and portable consumer device **30** may be integrated into the same device. Also, the components of notification device **80** may be integrated or separated according to particular needs. Moreover, the operations of notification device **80** may be performed by more, fewer, or other modules. Additionally, operations of notification

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device **80** may be performed using any suitable logic comprising software, hardware, other logic, or any suitable combination of the preceding.

[0073] It should be understood that the present disclosure as described above can be implemented in the form of control logic using computer software in a modular or integrated manner. Based on the disclosure and teachings provided herein, a person of ordinary skill in the art will know and appreciate other ways and/or methods to implement the present disclosure using hardware and a combination of hardware and software.

[0074] Any of the software components or functions described in this application, may be implemented as software code to be executed by a processor using any suitable computer language such as, for example, Java, C++ or Perl using, for example, conventional or object-oriented techniques. The software code may be stored as a series of instructions, or commands on a computer readable medium, such as a random access memory (RAM), a read only memory (ROM), a magnetic medium such as a hard-drive or a floppy disk, or an optical medium such as a CD-ROM. Any such computer readable medium may reside on or within a single computational apparatus, and may be present on or within different computational apparatuses within a system or network.

[0075] A recitation of "a", "an" or "the" is intended to mean "one or more" unless specifically indicated to the contrary.

[0076] The above description is illustrative and is not restrictive. Many variations of the disclosure will become apparent to those skilled in the art upon review of the disclosure. The scope of the disclosure should, therefore, be determined not with reference to the above description, but instead should be determined with reference to the pending claims along with their full scope or equivalents.

[0077] One or more features from any embodiment may be combined with one or more features of any other embodiment without departing from the scope of the disclosure.

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WHAT IS CLAIMED IS:

1. A method comprising:

when a notification with dynamic data is triggered, retrieving the dynamic data associated with an account associated with a portable consumer device associated with a consumer; and

automatically sending the notification with the dynamic data to a notification device, wherein the notification with the dynamic data is provided to the consumer.

2. A method of Claim 1, wherein the dynamic data is a real-time balance update.

3. A method of Claim 1, wherein the dynamic data is a real-time rewards information update.

4. A method of Claim 1, further comprising:

retrieving enrollment information; and

confirming that consumer is enrolled to receive the notification based on the enrollment information.

5. A method of Claim 1,

wherein the notification is triggered by a transaction being conducted using a portable consumer device associated with the consumer, and

wherein the dynamic data is based on an amount of the transaction being conducted.

6. A method of Claim 1,

wherein the notification is triggered based on a time period predefined by the consumer,

wherein automatically sending the notification to the notification device includes periodically sending the notification to the notification device based on the predefined time period.

7. A method of Claim 1, wherein the notification is triggered by a request for the notification with dynamic data sent from the notification device.

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8. A method of Claim 1, wherein the notification is triggered by a signal sent from a contactless transmitter on portable consumer device to a contactless receiver on the notification device.

9. A method of Claim 1, wherein the notification with dynamic data is provided to consumer on a display.

10. A method of Claim 1,

wherein the notification device is a phone, and

wherein the notification sent to the notification device includes at least one of a phone call, voicemail, SMS, IM, or email.

11. A method comprising:

triggering a notification with dynamic data using a notification device, the dynamic data associated with an account associated with a portable consumer device associated with a consumer; and

receiving the notification on the notification device.

12. A system comprising:

a payment processing network for generating and storing dynamic data; and

a notification server coupled to the payment processing network, the notification server configured to:

when a notification with dynamic data is triggered, retrieve the dynamic data from the payment processing network, the dynamic data associated with an account associated with a portable consumer device associated with a consumer;

automatically send the notification with the dynamic data to the notification device, wherein the notification with dynamic data is provided to consumer.

13. The system of Claim 12, wherein the notification server is further configured to:

retrieve enrollment information; and

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confirm that consumer is enrolled to receive the notification based on the enrollment information.

14. The system of Claim 12,

wherein the notification is triggered by a transaction being conducted using a portable consumer device associated with the consumer, and

wherein the dynamic data is based on an amount of the transaction being conducted.

15. The system of Claim 12,

wherein the notification is triggered based on a time period predefined by the consumer, and

wherein automatically sending the notification to the notification device includes periodically sending the notification to the notification device based on the predefined time period.

16. The system of Claim 12, wherein the notification is triggered by a request for the notification with dynamic data sent from the notification device.

17. The system of Claim 12, wherein the notification is triggered by a signal sent from a contactless transmitter on portable consumer device to a contactless receiver on the notification device.

18. A phone, comprising:

a processor;

a receiver coupled to the processor;

an output device coupled to the processor; and

a computer readable medium coupled to the processor, the computer readable medium includes code for displaying a notification including dynamic data to the output device after a portable consumer device is used by a consumer.

19. The phone of Claim 18, wherein the dynamic data is a balance associated with the portable consumer device.

20. The phone of Claim 18, wherein the portable consumer device is a prepaid card.

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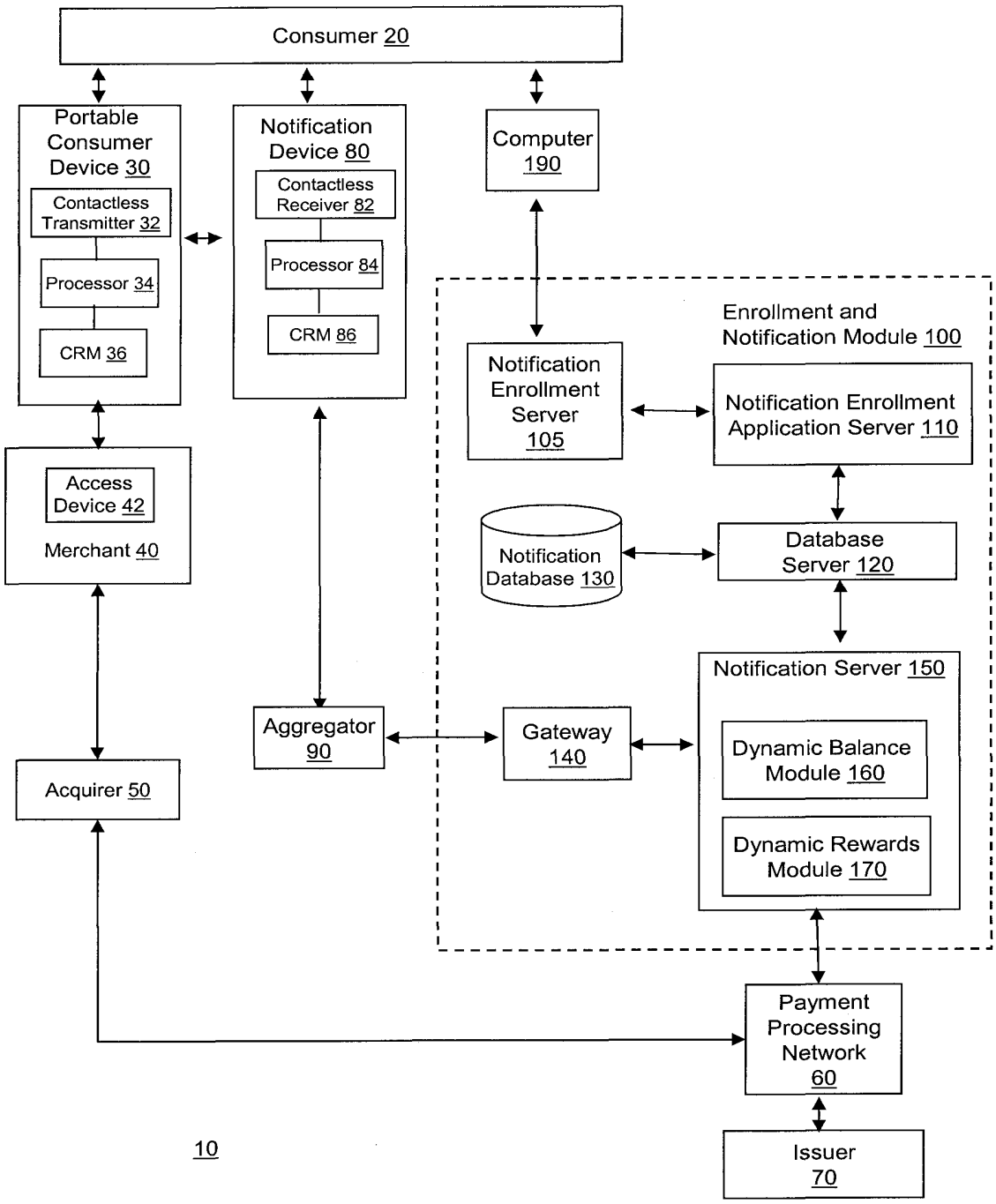

Consumer 20
Portable Consumer Device 30
Contactless Transmitter 32
Processor 34
CRM 36
Notification Device 80
Contactless Receiver 82
Processor 84
CRM 86
Computer 190
Enrollment and Notification Module 100
Notification Enrollment Server 105
Notification Enrollment Application Server 110
Access Device 42
Merchant 40
Notification Database 130
Database Server 120
Notification Server 150
Aggregator 90
Gateway 140
Dynamic Balance Module 160
Dynamic Rewards Module 170
Acquirer 50
Payment Processing Network 60
10
Issuer 70

FIG. 1

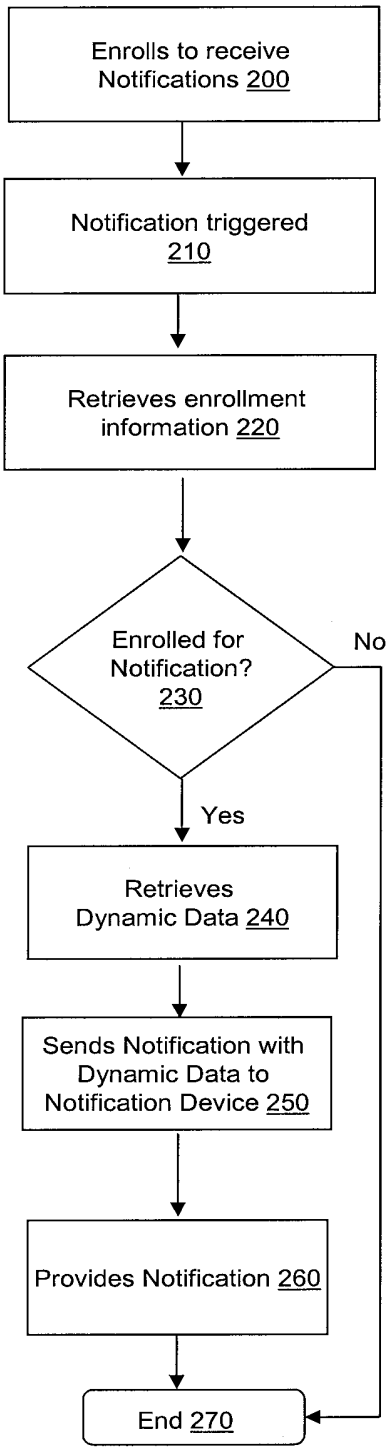

Enrolls to receive Notifications 200
Notification triggered 210
Retrieves enrollment information 220
Enrolled for Notification? 230
No
Yes
Retrieves Dynamic Data 240
Sends Notification with Dynamic Data to Notification Device 250
Provides Notification 260
End 270

FIG. 2

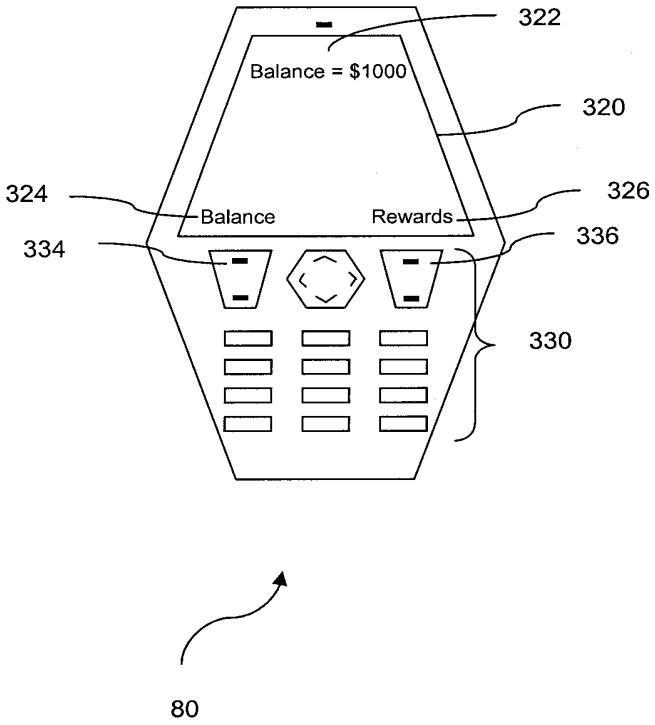


FIG. 3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 07/88704

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G06Q 40/00 (2008.04)
USPC - 705/39
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
USPC: 705/39

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 705/35, 40 (see also text search below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Electronic Databases Searched: pubWEST, USPTO, Google, Answers.com, Google Patents
Search Terms Used: dynamic, data, rewards, information, portable, device, transaction, pay, notification, voicemail, email, SMS, cell phone, telephone, balance, computer, prepaid, card, realtime, transmit, contactless, dynamic, automatic

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 2006/0053056 A1 (ALSPACH-GOSS et al.) 09 March 2006 (09.03.2006) para [0006]-[0007], [0022], [0024]-[0025], [0027]-[0029], [0033], [0036]-[0037], [0050]-[0051], [0056]-[0058], [0069], [0071], [0077], [0091], [0103], [0109]-[0112], [0114], [0123], [0136], [0144], [0148], [0160], [0167], [0170], [0175], [0177] and [0179]	1-3, 5-12 and 14-20 --- 4 and 13
Y	US 2005/0035847 A1 (BONALLE et al.) 17 February 2005 (17.02.2005) para [0057], [0063], [0083], [0085]), [0104] and [0124	4 and 13
A	US 2006/0248007 A1 (HOFER et al.) 02 November 2006 (02.11.2006)	1-20

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
25 May 2008 (25.05.2008)	11 JUN 2008
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (April 2007)

Electronic Acknowledgement Receipt

EFS ID:	18503404
Application Number:	14214644
International Application Number:	
Confirmation Number:	2829
Title of Invention:	MOBILE-DEVICE-TO-MACHINE PAYMENT SYSTEMS
First Named Inventor/Applicant Name:	Paresh K. Patel
Customer Number:	26790
Filer:	Karen Dana Oster
Filer Authorized By:	
Attorney Docket Number:	PR-MDMP1
Receipt Date:	18-MAR-2014
Filing Date:	
Time Stamp:	09:58:44
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Fee Worksheet (SB06)	auth.pdf	14673 f414715314bdf0a71865ba258f437bc75f38d13c	no	1

Warnings:	
Information:	

2	Non Patent Literature	FR05.pdf	1313145 fe082dd5f93099557b97bea535b6e69f564ff69c	no	35
Warnings:					
Information:					
3	Non Patent Literature	FR06.pdf	1256918 7798c17104237179353fb9ef67079f2654dff685	no	35
Warnings:					
Information:					
4	Non Patent Literature	FR07.pdf	1289697 cf2df04b0c77fa889e92ee73cd9aaadce7b0a8df	no	26
Warnings:					
Information:					
			Total Files Size (in bytes):	3874433	

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

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New International Application Filed with the USPTO as a Receiving Office

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
14/214,644	03/14/2014	3653	970	PR-MDMP1	26	3

CONFIRMATION NO. 2829

26790
LAW OFFICE OF KAREN DANA OSTER, LLC
PMB 506
16869 SW 65TH AVENUE
LAKE OSWEGO, OR 97035

FILING RECEIPT



Date Mailed: 04/03/2014

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

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Assignment For Published Patent Application
PAYRANGE, INC., Portland, OR

Power of Attorney: The patent practitioners associated with Customer Number 26790

Domestic Priority data as claimed by applicant
This appln claims benefit of 61/917,936 12/18/2013
and is a CIP of 29/477,025 12/18/2013

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

If Required, Foreign Filing License Granted: 04/01/2014
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/214,644**
Projected Publication Date: Request for Non-Publication Acknowledged
Non-Publication Request: Yes
Early Publication Request: No
** **SMALL ENTITY** **

Title

MOBILE-DEVICE-TO-MACHINE PAYMENT SYSTEMS

Preliminary Class

194

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

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Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

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Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 14/214,644

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	70		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	300		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	360		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	26 minus 20 =	* 6	x 40 =	240	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*	x 210 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	970		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

LAW OFFICE OF KAREN DANA OSTER, LLC
PMB 506
16869 SW 65TH AVENUE
LAKE OSWEGO OR 97035

MAILED
APR 16 2014
OFFICE OF PETITIONS

Doc Code: TRACK1.GRANT

Decision Granting Request for Prioritized Examination (Track I or After RCE)	Application No.: 14/214,644

1. THE REQUEST FILED March 14, 2014 IS **GRANTED.**

The above-identified application has met the requirements for prioritized examination

A. ☒ for an original nonprovisional application (Track I).
B. ☐ for an application undergoing continued examination (RCE).

2. **The above-identified application will undergo prioritized examination.** The application will be accorded special status throughout its entire course of prosecution until one of the following occurs:

A. filing a **petition for extension of time** to extend the time period for filing a reply;
B. filing an **amendment to amend the application to contain more than four independent claims, more than thirty total claims**, or a multiple dependent claim;
C. filing a **request for continued examination**;
D. filing a notice of appeal;
E. filing a request for suspension of action;
F. mailing of a notice of allowance;
G. mailing of a final Office action;
H. completion of examination as defined in 37 CFR 41.102; or
I. abandonment of the application.

Telephone inquiries with regard to this decision should be directed to Brian W. Brown at 571-272-5338.

/Brian W. Brown/
[*Signature*]

Petitions Examiner, Office of Petitions
(Title)

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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NOTICE OF ALLOWANCE AND FEE(S) DUE

26790 7590 06/10/2014

LAW OFFICE OF KAREN DANA OSTER, LLC
PMB 506
16869 SW 65TH AVENUE
LAKE OSWEGO, OR 97035

EXAMINER	
NIGH, JAMES D	
ART UNIT	PAPER NUMBER
3685	

DATE MAILED: 06/10/2014

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/214,644	03/14/2014	Paresh K. Patel	PR-MDMP1	2829

TITLE OF INVENTION: MOBILE-DEVICE-TO-MACHINE PAYMENT SYSTEMS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	09/10/2014

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

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PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

26790 7590 06/10/2014
LAW OFFICE OF KAREN DANA OSTER, LLC
PMB 506
16869 SW 65TH AVENUE
LAKE OSWEGO, OR 97035

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/214,644	03/14/2014	Paresh K. Patel	PR-MDMP1	2829

TITLE OF INVENTION: MOBILE-DEVICE-TO-MACHINE PAYMENT SYSTEMS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	09/10/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
NIGH, JAMES D	3685	705-071000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
  NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ☐ Applicant asserting small entity status. See 37 CFR 1.27
  NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ☐ Applicant changing to regular undiscounted fee status.
  NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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Page 396 of 545

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/214,644	03/14/2014	Paresh K. Patel	PR-MDMP1	2829

26790 7590 06/10/2014

LAW OFFICE OF KAREN DANA OSTER, LLC
PMB 506
16869 SW 65TH AVENUE
LAKE OSWEGO, OR 97035

EXAMINER	
NIGH, JAMES D	

ART UNIT	PAPER NUMBER
3685	

DATE MAILED: 06/10/2014

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

PTOL-85 (Rev. 02/11)

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OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 14/214,644	Applicant(s) PATEL ET AL.	
	Examiner JAMES D. NIGH	Art Unit 3685	AIA (First Inventor to File) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *application filed 14 March 2014*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *1-26*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 14 March 2014
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☒ Other *Detailed Action*.

/JAMES D NIGH/
Primary Examiner, Art Unit 3685

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Priority

2. Applicant's claim for the benefit of U.S. provisional patent application 61/917,936 filed 18 December 2013 and under 35 U.S.C. 119(e) is acknowledged.

Continuation-In-Part

3. This application is a continuation-in-part ("CIP") application of U.S. application no. 29/477,025 filed on 18 December 2013 ("Parent Application"). See MPEP §201.08. In accordance with MPEP §609.02 *A.* 2 and MPEP §2001.06(b) (last paragraph), the Examiner has reviewed and considered the prior art cited in the Parent Application. Also in accordance with MPEP §2001.06(b) (last paragraph), all documents cited or considered 'of record' in the Parent Application are now considered cited or 'of record' in this application. Additionally, Applicant(s) are reminded that a listing of the information cited or 'of record' in the Parent Application need not be resubmitted in this application unless Applicants desire the information to be printed on a patent issuing from this application. See MPEP §609.02 *A.* 2. Finally, Applicants are reminded that the prosecution history of the Parent Application is relevant in this application. See *e.g., Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d 1340, 1350, 69 USPQ2d 1815, 1823 (Fed. Cir. 2004) (holding that statements made in prosecution of one patent are relevant to the scope of all sibling patents).

Information Disclosure Statement

4. The information disclosure statement (IDS) was submitted on 14 March 2014. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Status

5. Claims 1-26 are currently pending.

Allowable Subject Matter

6. Claims 1-26 are allowed.

7. The following is an examiner's statement of reasons for allowance:

8. Examiner has reviewed the prior art both cited in the information disclosure statement and art found in the Examiner's search. Carlson (U.S. Patent PG Publication 2008/0154772, now U.S. Patent 7,848,980) discloses the use of long range communication in obtaining payment authorization and even discloses that the devices of a payer and payee can communicate via near field communications. However Carlson does not explicitly disclose any protocol for such near field communication and certainly does not disclose that the payee originates any authorization requests as these are initiated by the payer in Carlson. Examiner views Realini (U.S. Patent PG Publication 2009/0119190) as a typical type of smart card application where a wallet is stored in a secure element and is capable of authorizing a transaction in an offline mode (1085-1088). In this type of embodiment account balances are kept on the user device and can be used in an offline mode and then later synchronized with a payment server. In such an embodiment there would be no requirement to forward a message from the

merchant through the user device to a payment server as the user's off-line manager is performing the necessary authorizations. Fiebiger et al. (U.S. Patent PG Publication 2008/0033880) discloses a similar system for use in a transit application. Hasson et al. (U.S. Patent 8,346,670) discloses an embodiment of a transit system where a transit terminal can make a determination as to whether or not to conduct the transaction offline and then reference stored lists of both invalid and valid account numbers. Other art which Examiner reviewed requires a persistent network connection at the merchant device. Therefore Examiner does not see where the prior art teaches the combination of a non-networked payment accepting unit and a mobile device without authority to authorize an offline transaction such as is being claimed here in which the mobile device obtains the authorization request from the server and subsequently receives the authorization grant from the server and forwards it to the payment accepting unit. Therefore the claims being directed towards a protocol involving such an architecture must be held as not being taught by the prior art and are therefore allowable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES D. NIGH whose telephone number is (571)270-5486. The examiner can normally be reached on Monday-Friday 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Calvin L. Hewitt II can be reached on 571-272-6709. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JAMES D NIGH/
Primary Examiner, Art Unit 3685

Notice of References Cited	Application/Control No. 14/214,644	Applicant(s)/Patent Under Reexamination PATEL ET AL.	
	Examiner JAMES D. NIGH	Art Unit 3685	Page 1 of 2

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2004/0049454 A1	03-2004	Kanno et al.	705/039
*	B	US-2008/0033880 A1	02-2008	Fiebiger et al.	705/044
*	C	US-2008/0255947 A1	10-2008	Friedman, Brian	705/14
*	D	US-2009/0119190 A1	05-2009	Realini, Carol	705/30
*	E	US-2009/0327089 A1	12-2009	KANNO et al.	705/21
*	F	US-7,848,980 B2	12-2010	Carlson, Mark	705/35
*	G	US-2011/0040686 A1	02-2011	Carlson, Mark	705/44
*	H	US-2011/0251910 A1	10-2011	Dimmick, James	705/17
*	I	US-2012/0078735 A1	03-2012	Bauer et al.	705/16
*	J	US-2012/0231844 A1	09-2012	Coppinger, Paul D.	455/558
*	K	US-2012/0303528 A1	11-2012	Weiner et al.	705/44
*	L	US-8,346,670 B2	01-2013	Hasson et al.	705/75
*	M	US-8,356,754 B2	01-2013	Johnson et al.	235/472.01

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N	WO2013/177416A2	11-2013	WIPO	Bush et al.	G06Q 20/32
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	Madlmayr et al., "Near Field Communication based Mobile Payment System", Austrian Research Funding Agency, Project 811408, 6 March 2008, 13 pages
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Notice of References Cited	Application/Control No. 14/214,644	Applicant(s)/Patent Under Reexamination PATEL ET AL.	
	Examiner JAMES D. NIGH	Art Unit 3685	Page 2 of 2

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-8,376,227 B2	02-2013	Hammad et al.	235/384
*	B	US-8,396,589 B2	03-2013	Katzenstein Garibaldi et al.	700/232
*	C	US-8,596,528 B2	12-2013	Fernandes et al.	235/380
*	D	US-2014/0040028 A1	02-2014	King et al.	705/14.53
*	E	US-2014/0040117 A1	02-2014	Jain, Deepak	705/39
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
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	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14214644	PATEL ET AL.
	Examiner	Art Unit
	JAMES D NIGH	3685

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
705	64, 71, 76, 79	06/03/2014	JDN

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Text Search	06/03/2014	JDN
WIPO Patentscope Search	06/03/2014	JDN
Google Scholar Search	06/03/2014	JDN

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
705	64, 71, 76, 79	06/03/2014	JDN

	/JAMES D NIGH/ Primary Examiner.Art Unit 3685

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CONFIRMATION NO. 2829

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
14/214,644	03/14/2014	705	3685	PR-MDMP1

APPLICANTS
PAYRANGE INC., Portland, OR, Assignee (with 37 CFR 1.172 Interest);

INVENTORS
Paresh K. Patel, Portland, OR;
Chau M. Doan, Beaverton, OR;

**** CONTINUING DATA ***************************
This appln claims benefit of 61/917,936 12/18/2013
and is a CIP of 29/477,025 12/18/2013

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
04/01/2014

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☑ No Verified and Acknowledged /JAMES D NIGH/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		OR	44	26	3

ADDRESS

LAW OFFICE OF KAREN DANA OSTER, LLC
PMB 506
16869 SW 65TH AVENUE
LAKE OSWEGO, OR 97035
UNITED STATES

TITLE

MOBILE-DEVICE-TO-MACHINE PAYMENT SYSTEMS

FILING FEE RECEIVED		
970	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

A study on the success potential of multiple mobile payment technologies
M Mathew, N Balakrishnan... - ... Management for Global ..., 2010 - ieeexplore.ieee.org
... information on a mobile phone or any wireless device 3 NFC **Near Field Communication** is the ... Via mobile phone 7 **Vending machine** Payment are vending machines 8 Mobile recharge Recharging the ... applications that support this SMS payment be kept at the **server** side of ...
Cited by 1 Related articles All 2 versions Cite Save

Private electronic value bank system
T Isogawa, K Kawaguchi, H Takayama - 2001 - Google Patents
... electronic **wallet**, and the electronic values on the first and second electronic **wallets** are associated ... used by the user, which is a POS terminal, an automatic **vending machine**, an automatic ... the service **server** 3, the user's portable terminal 5, and an electronic **wallet server** 6 that ...
Cited by 1 Related articles All 5 versions Cite Save

Communication device and communication system
Y Matsuchita, S Miyawaki, Y Ohashi... - US Patent App. 13/ ..., 2013 - Google Patents
... Also, the network 180 may be configured with NFC (**Near Field Communication**), for example, Bluetooth LE, ANT, or Z-Wave. ... position information of the wireless terminals 120-124 regardless of a physical distance between the network 180 and the management **server** 160. ...
All 2 versions Cite Save

Service for exceeding account thresholds via mobile device
TS Kingston, JF Tuders, RM Feldman... - US Patent App. 13/ ..., 2013 - Google Patents
... of a system for providing a service for exceeding credit thresholds via a mobile phone having a **near field communication** (NFC) interface ... but are not limited to, ATMs, POS devices (eg, merchant terminals, and the like), self-service machines (eg, **vending machine**, self-checkout ...
All 2 versions Cite Save

Universal transaction associating identifier
RK Georgi - US Patent App. 13/959,393, 2013 - Google Patents
... of claim 21 wherein the non-volatile computer readable medium comprises a **near field communication** device (NFC ... A resource provider 110 apparatus may include a **server**, a POS terminal, a card ... may include a kiosk, an ATM, a ticketing machine, a **vending machine**, a mobile ...
Cite Save

Dynamic credit limit increase
ES Ross - US Patent App. 13/088,037, 2011 - Google Patents
... Examples of transaction machines include, but are not limited to, automated teller machines (ATMs), point-of-sale (POS) devices (eg, merchant terminals, etc.), self-service machines (eg, **vending machine**, self-checkout machine, parking meter, etc.), public and/or business ...
Cited by 1 Related articles All 2 versions Cite Save

Triggering offers based on detected location of a mobile point of sale device
DM Grigg, MA Calman, R Bose - US Patent App. 13/214,004, 2011 - Google Patents
... device, etc.), a merchant terminal, a self-service machine (eg, **vending machine**, self-checkout ... in some embodiments, a single apparatus (eg, the authorization **server** 330) is ... account information at the transaction machine by "tapping" a **near field communication** (NFC)-enabled ...
Cited by 1 All 2 versions Cite Save

Electronic transaction systems and methods therefor
J Ding, J Grizzard, Y Wang - 2001 - Google Patents
... The **server** checks the password or pass phrase and, if it is correct sends the decryption key to the portable device, where it is used once and ... carried with the user at all times, eg, as a key chain attachment or a small package that can easily fit inside a purse or a **wallet**. ...
Cite Save

Location-based categorization prompting of transactions
DM Grigg, MA Calman, ES Votaw - US Patent 8,554,647, 2013 - Google Patents
... mobile device and/or one or more other computing devices and/or **servers**, can be ... at the **vending machine**, the user device wirelessly connects to the **vending machine** and associates ... In a further embodiment, the network 450 includes a **near field communication** (NFC) network.

Related articles All 2 versions Cite Save

Overage service subject to condition
K Bugan, PR DeKoster, RM Feldman... - US Patent App. 13/ ..., 2011 - Google Patents
... etc.), automated teller machines (ATMs), self-service machines (eg, **vending machine**, self-checkout **...** In some embodiments, the transaction machine includes one or more **near field communication** (NFC) interfaces **...** phone is configured to operate as a mobile **wallet**, meaning that **...**
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Results **1-10** of **19** for Criteria:**EN_ALLTXT:(("near field communication"~4) AND ("vending machine"~2) AND ("server wallet"~15))** Office(s):**all** Language:**EN** Stemming: **true**

prev 1 2 next Page: 1 / 2 Go >

Refine Search EN_ALLTXT:(("near field communication"~4) AND ("vending machine"~2) AND ("server wallet"~15)) Search RSS

Analysis

Sort by: Relevance View: All List Length: 10

No	Ctr	Title	PubDate	Int.Class	Appl.No	Applicant	Inventor
1.	WO	WO/2014/027287 - ISSUANCE, OBTAINING AND UTILIZATION OF PERSONALIZED DIGITAL END USER CREDENTIALS FOR USE IN ELECTRONIC TRANSACTIONS PERFORMED WITH A MOBILE DEVICE	20.02.2014	G06Q 20/02	PCT/IB2013/056518	CARDPLUS OY	KHAKUREL, Jayden

The invention allows a digital version of a traditional plastic card. Personalized digital credentials for an end user are generated at an issuer unit. These credentials are for use in electronic transactions to be performed with a mobile device of the end user. An activation code and a trigger code associated with the generated personalized digital end user credentials are sent from the issuer unit to the mobile de- vice via a secured communications connection. An activation code entered by the end user and a unique device identifier associated with the mobile device and generated at the mobile device in response to the received trigger code are received from the mobile device. The received activation code and unique de- vice identifier are checked. The generated personalized digital end user credentials are sent from the issuer unit to the mobile device in response to a successful check.

2.	US	08577810 - Secure mobile payment authorization	05.11.2013	G06Q 10/00	13248984	Dalit Christian Gregory	Dalit Christian Gregory

A method to authorize a mobile payment for a transaction. The method includes receiving a facial image of a consumer who requests the mobile payment for the transaction using account information stored in a mobile device of the consumer, wherein the facial image is provided by a point-of-sale (POS) device while initiating the transaction on behalf of the consumer, receiving a verified facial image of an account holder, comparing the facial image of the consumer and the verified facial image of the account holder based on a pre-determined criterion to verify the consumer as the account holder, generating, in response to verifying the consumer as the account holder, an authorization of the mobile payment based on the account information, and sending the authorization to the POS device to complete the transaction.

3.	US	20080046366 - Method and system for providing biometric authentication at a point-of-sale via a mobile device	21.02.2008	H04K 1/00	11566987	YT Acquisition Corporation	Bemmel Vincent

A system and method is provided for authorizing a payment for a point of sale transaction by authenticating the user of a mobile device, such as a mobile phone. The present invention authenticates the consumer and verifies that he is authorized to conduct a transaction at the point of sale by means of the consumer's mobile device.

4.	US	20090138366 - METHOD AND SYSTEM FOR PROVIDING BIOMETRIC AUTHENTICATION AT A POINT-OF-SALE VIA A MOBLE DEVICE	28.05.2009	H04L 9/32	12360649	YT ACQUISITION CORPORATION	Bemmel Vincent

A system and method is provided for authorizing a payment for a point of sale transaction by authenticating the user of a mobile device, such as a mobile phone. The present invention authenticates the consumer and verifies that he is authorized to conduct a transaction at the point of sale by means of the consumer's mobile device.

5.	WO	WO/2008/002979 - METHOD AND SYSTEM FOR PROVIDING BIOMETRIC AUTHENTICATION AT A POINT-OF-SALE VIA A MOBILE DEVICE	03.01.2008	H04L 9/00	PCT/US2007/072244	SOLIDUS NETWORKS, INC.	BEMMEL, Vincent

A system and method is provided for authorizing a payment for a point of sale transaction by authenticating the user of a mobile device, such as a mobile phone. The presnet invention authenticates the consumer and verifies that he is authorized to conduct a transaction at the point of sale by means of the consumer's mobile device.

6.	US	20130191789 - CONTROLLING A TRANSACTION WITH COMMAND GESTURES	25.07.2013	G06F 3/033	13355919	CALMAN MATTHEW A.	CALMAN MATTHEW A.

Embodiments of the invention include systems, methods, and computer-program products that provide for a unique system for controlling transactions based on command gestures. In one embodiment of the invention, a computer-implemented method determines that a user is conducting a transaction with a mobile device. The mobile device senses a gesture performed by the user with the mobile device and alters at least one aspect of the transaction based on the gesture. The gestures can control a wide variety of aspects of the transaction. For example, the user may flag an item for review during the transaction, silence the transaction, receive a subtotal for the transaction, select a payment method, or complete the transaction. In an embodiment, the user is able to customize the gestures to control the transaction according to the user's preferences.

7.	US	20130138518 - Wireless Transactions for Enhancing Customer Experience	30.05.2013	G06Q 20/20	13308180	White Spencer Neil	White Spencer Neil

Devices, systems, and methods are disclosed for facilitating a wireless transaction by coupling or associating an identifier to a location. The identifier is read, retrieved, or received by a customer's wireless communication device to connect to a POS terminal. Once connected, the wireless communication device sends a location identifier to the POS terminal, so that the POS terminal can associate the wireless communication device with the location. Once an association is established, the POS terminal then presents options. The POS terminal receives selections, and alerts a staff member of selections and the location. In many instances, the POS terminal also adds the selection to a bill or an invoice.

8.	US	20140074605 - SYSTEMS AND METHODS FOR FACILITATING PURCHASES AT A GAS STATION VIA MOBILE COMMERCE	13.03.2014	G06Q 30/02	14024361	FIRST DATA CORPORATION	Sanchez J. Scott

Systems and methods are provided for facilitating purchases at a gas station via mobile commerce. A merchant system can receive an indication that a consumer is at or near the merchant location and can check the consumer into the location. A mobile application can launch and provide the merchant system with consumer identification information. While a consumer makes a purchase at a location, the merchant system can select advertising to provide to the consumer on the consumer mobile device to convince the consumer to make additional purchases at the merchant location. In addition, the consumer can make additional purchases from the merchant system while, for example, pumping gas and can be provided with a code or other identify to provide the consumer with access to those additional products once they have completed the gas purchase.

9.	US	20130275307 - SYSTEMS, METHODS, AND COMPUTER READABLE MEDIA FOR CONDUCTING A TRANSACTION USING CLOUD BASED CREDENTIALS	17.10.2013	G06Q 20/40	13862968	MasterCard International Incorporated	Khan Mohammad

A method for conducting an electronic transaction that includes initiating an electronic transaction between a mobile device and a POS reader device and applying at least a user identifier that is associated with a user of the mobile device and shared secret data as inputs to a cryptographic function in the mobile device. The method further includes inserting the output of the cryptographic function into legacy transaction formatted data, wirelessly providing the legacy transaction formatted data to the POS reader device via the electronic transaction, forwarding the legacy transaction formatted data to the issuer server, and processing, at the issuer server, the legacy transaction formatted data to verify the user identifier and request authorization for the electronic transaction. The method also includes sending a notification message to the POS reader device that indicates that the electronic transaction is authorized and conducting the electronic transaction upon receipt of the notification message.

10.	WO	WO/2013/155536 - SYSTEMS, METHODS, AND COMPUTER READABLE MEDIA FOR CONDUCTING A TRANSACTION USING CLOUD BASED CREDENTIALS	17.10.2013	G06Q 20/40	PCT/US2013/036665	MASTERCARD INTERNATIONAL INCORPORATED	KHAN, Mohammad

A method for conducting an electronic transaction that includes initiating an electronic transaction between a mobile device and a POS reader device and applying at least a user identifier that is associated with a user of the mobile device and shared secret data as inputs to a cryptographic function in the mobile device. The method further includes inserting the output of the cryptographic function into legacy transaction formatted data, wirelessly providing the legacy transaction formatted data to the POS reader device via the electronic transaction, forwarding the legacy transaction formatted data to the issuer server, and processing, at the issuer server, the legacy transaction formatted data to verify the user identifier and request authorization for the electronic transaction. The method also includes sending a notification message to the POS reader device that indicates that the electronic transaction is authorized and conducting the electronic transaction upon receipt of the notification message.

Results **1-10** of **19** for Criteria:**EN_ALLTXT:(("near field communication"~4) AND ("vending machine"~2) AND ("server wallet"~15))** Office(s):**all** Language:**EN** Stemming: **true**

prev 1 2 next

Refine Search EN_ALLTXT:(("near field communication"~4) AND ("vending machine"~2) AND ("server wallet"~15)) Search

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14214644	PATEL ET AL.
	Examiner	Art Unit
	JAMES D NIGH	3685

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	06/03/2014								
1	1	=								
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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14214644	PATEL ET AL.
	Examiner	**Art Unit**
	JAMES D NIGH	3685

CPC						
Symbol					**Type**	**Version**
G06Q		20	/	40	F	2013-01-01
G06Q		20	/	327	I	2013-01-01
G06Q		20	/	3829	I	2013-01-01
G06Q		20	/	3823	A	2013-01-01
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CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
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NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 26	
/JAMES D NIGH/ Primary Examiner.Art Unit 3685 (Primary Examiner)	06/03/2014 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 5

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14214644	PATEL ET AL.
	Examiner	**Art Unit**
	JAMES D NIGH	3685

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION										
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED					
705	71	G	0	6	Q	99 / 00 (2006.01.01)						

CROSS REFERENCE(S)					
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
705	64	76	79		

NONE		Total Claims Allowed: 26	
(Assistant Examiner)	(Date)		
/JAMES D NIGH/ Primary Examiner.Art Unit 3685	06/03/2014	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	5

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14214644	PATEL ET AL.
	Examiner	**Art Unit**
	JAMES D NIGH	3685

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	17	17												
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NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 26	
/JAMES D NIGH/ Primary Examiner.Art Unit 3685 (Primary Examiner)	06/03/2014 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 5

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	19	("20080154727" | "20080154735" | "20080167991" | "20080183480" | "20080201226" | "20110040686" | "20130267121" | "5844808" | "6462644" | "6584309" | "7085556" | "7127236" | "7721958" | "7848980" | "8396589" | "8489140" | "8517766" | "8645971" | "D669899").PN.	US-PGPUB; USPAT	AND	ON	2014/05/30 14:18
S2	3260	(bluetooth) (vending adj machine)	US-PGPUB; USPAT	AND	ON	2014/05/31 11:43
S3	2284	(bluetooth) (vending adj machine) ((cell$4 adj phone) OR (mobile adj device) OR smartphone OR (smart adj phone))	US-PGPUB; USPAT	AND	ON	2014/05/31 11:44
S4	519	(bluetooth) (vending adj machine) ((cell$4 adj phone) OR (mobile adj device) OR smartphone OR (smart adj phone)) (accept$6 near20 payment)	US-PGPUB; USPAT	AND	ON	2014/05/31 11:44
S5	1486	(bluetooth) (vending adj machine) ((cell$4 adj phone) OR (mobile adj device) OR smartphone OR (smart adj phone)) ((accept$6 near20 payment) OR purchase)	US-PGPUB; USPAT	AND	ON	2014/05/31 11:44
S6	526	(bluetooth) (vending adj machine) ((cell$4 adj phone) OR (mobile adj device) OR smartphone OR (smart adj phone)) ((accept$6 near20 payment) OR purchase) (authorization) (cellular near5 network)	US-PGPUB; USPAT	AND	ON	2014/05/31 11:45
S7	1358	(bluetooth) ((vending adj machine) OR transit OR toll) ((cell$4 adj phone) OR (mobile adj device) OR smartphone OR (smart adj phone)) ((accept$6 near20 payment) OR purchase) (authorization) (cellular near5 network)	US-PGPUB; USPAT	AND	ON	2014/05/31 11:46
S8	647	(bluetooth) ((vending adj machine) OR transit OR toll) ((cell$4 adj phone) OR (mobile adj device) OR smartphone OR (smart adj phone)) ((accept$6 near20 payment) OR purchase) (authorization near5 (grant or request)) (cellular near5 network)	US-PGPUB; USPAT	AND	ON	2014/05/31 11:47
S9	349	(bluetooth) ((vending adj machine) OR transit OR toll) ((cell$4 adj phone) OR (mobile adj device) OR smartphone OR (smart adj phone)) (accept$6 near20 (payment OR purchase)) (authorization near5 (grant or request)) (cellular near5 network)	US-PGPUB; USPAT	AND	ON	2014/05/31 11:49
S10	75	(bluetooth) AND DEX AND MDB	US-PGPUB; USPAT	AND	ON	2014/06/02 12:38
S11	5251	(bluetooth) ((vending adj machine) OR transit	US-	AND	ON	2014/06/03

		OR toll) ((cell$4 adj phone) OR (mobile adj device) OR smartphone OR (smart adj phone)) (accept$6 near20 (payment OR purchase)) (authorization near5 (grant or request) near5 funds) OR (payment near5 (request or authorization)) (cellular near5 network)	PGPUB; USPAT			11:20
S12	5245	(bluetooth) ((vending adj machine) OR transit OR toll) (((cell$4 adj phone) OR (mobile adj device) OR smartphone OR (smart adj phone)) near5 (authorization or grant or request)) (accept$6 near20 (payment OR purchase)) (authorization near5 (grant or request) near5 funds) OR (payment near5 (request or authorization)) (cellular near5 network)	US-PGPUB; USPAT	AND	ON	2014/06/03 11:21
S13	5244	(bluetooth) ((vending adj machine) OR transit OR toll) (((cell$4 adj phone) OR (mobile adj device) OR smartphone OR (smart adj phone)) near5 (authorization or grant or request)) (accept$6 near10 (payment OR purchase)) (authorization near5 (grant or request) near5 funds) OR (payment near5 (request or authorization)) (cellular near5 network)	US-PGPUB; USPAT	AND	ON	2014/06/03 11:22
S14	5244	(bluetooth) ((vending adj machine) OR transit OR toll) (((cell$4 adj phone) OR (mobile adj device) OR smartphone OR (smart adj phone)) near5 (authorization or grant or request)) (accept$6 near5 (payment OR purchase)) (authorization near5 (grant or request) near5 funds) OR (payment near5 (request or authorization)) (cellular near5 network)	US-PGPUB; USPAT	AND	ON	2014/06/03 11:22
S15	166	(bluetooth) ((vending adj machine) OR transit OR toll) (((cell$4 adj phone) OR (mobile adj device) OR smartphone OR (smart adj phone)) near5 (authorization or grant or request)) (accept$6 near5 (payment OR purchase)) ((authorization near5 (grant or request) near5 funds) OR (payment near5 (request or authorization))) (cellular near5 network)	US-PGPUB; USPAT	AND	ON	2014/06/03 11:23
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S17	113	(bluetooth) (vending adj machine) (server near15 wallet)	US-PGPUB; USPAT	AND	ON	2014/06/03 12:08
S18	2	(bluetooth) (vending adj machine) (server near15 wallet) 705/71	US-PGPUB; USPAT	AND	ON	2014/06/03 12:15
S19	2	(bluetooth) (vending adj machine) (server near15 wallet) 705/71.ccls.	US-PGPUB; USPAT	AND	ON	2014/06/03 12:15

S20	4	(bluetooth) (vending adj machine) (server near15 wallet) 705/64.ccls.	US-PGPUB; USPAT	AND	ON	2014/06/03 12:16
S21	1	(bluetooth) (vending adj machine) (server near15 wallet) 705/76.ccls.	US-PGPUB; USPAT	AND	ON	2014/06/03 12:17
S22	1	(("near field communication") OR NFC) (vending adj machine) (server near15 wallet) 705/76.ccls.	US-PGPUB; USPAT	AND	ON	2014/06/03 12:17
S23	0	(("near field communication") OR NFC) (vending adj machine) (server near15 wallet) 705/79.ccls.	US-PGPUB; USPAT	AND	ON	2014/06/03 12:18
S24	2	(("near field communication") OR NFC) (vending adj machine) (server near15 wallet) 705/64.ccls.	US-PGPUB; USPAT	AND	ON	2014/06/03 12:18
S25	0	(("near field communication") OR NFC) (vending adj machine) (server near15 wallet) 705/71.ccls.	US-PGPUB; USPAT	AND	ON	2014/06/03 12:21
S35	1	("20140074605").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/06/03 13:54
S36	9	"891866".ap.	US-PGPUB; USPAT	AND	ON	2014/06/03 14:01
S37	8	"300044".ap.	US-PGPUB; USPAT	AND	ON	2014/06/03 14:32
S38	11	"074905".ap.	US-PGPUB; USPAT	AND	ON	2014/06/03 14:35
S39	1	("8356754").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/06/03 14:41
S40	1	("8346670").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/06/03 15:24
S41	106	(smart adj card) (top adj off)	US-PGPUB; USPAT	AND	ON	2014/06/03 16:57
S42	1	(smart adj card) (top adj off) (contactless near5 payment)	US-PGPUB; USPAT	AND	ON	2014/06/03 16:57
S43	3	(smart adj card) (top adj off) (contactless near15 payment)	US-PGPUB; USPAT	AND	ON	2014/06/03 16:57
S44	16	(smart adj card) (top adj off) (field adj communication$4)	US-PGPUB; USPAT	AND	ON	2014/06/03 16:59
S45	13	(smart adj card) (top adj off) (offline)	US-PGPUB; USPAT	AND	ON	2014/06/03 17:00
S46	11	(smart adj card) (top adj off) (offline) bluetooth	US-PGPUB; USPAT	AND	ON	2014/06/03 17:01

S47	1	("20080033880").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/06/03 17:14

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S26	166	(bluetooth) ((vending adj machine) OR transit OR toll) (((cell$4 adj phone) OR (mobile adj device) OR smartphone OR (smart adj phone)) near5 (authorization or grant or request)) (accept$6 near5 (payment OR purchase)) ((authorization near5 (grant or request) near5 funds) OR (payment near5 (request or authorization))) (cellular near5 network)	US-PGPUB; USPAT; UPAD	AND	ON	2014/06/03 11:51
S27	114	(bluetooth) (vending adj machine) (server near15 wallet)	US-PGPUB; USPAT; UPAD	AND	ON	2014/06/03 12:15
S28	2	(bluetooth) (vending adj machine) (server near15 wallet) 705/71.ccls.	US-PGPUB; USPAT; UPAD	AND	ON	2014/06/03 12:16
S29	4	(bluetooth) (vending adj machine) (server near15 wallet) 705/64.ccls.	US-PGPUB; USPAT; UPAD	AND	ON	2014/06/03 12:16
S30	1	(bluetooth) (vending adj machine) (server near15 wallet) 705/76.ccls.	US-PGPUB; USPAT; UPAD	AND	ON	2014/06/03 12:17
S31	0	(("near field communication") OR NFC) (vending adj machine) (server near15 wallet) 705/79.ccls.	US-PGPUB; USPAT; UPAD	AND	ON	2014/06/03 12:18
S32	2	(("near field communication") OR NFC) (vending adj machine) (server near15 wallet) 705/64.ccls.	US-PGPUB; USPAT; UPAD	AND	ON	2014/06/03 12:18
S33	2	(("near field communication") OR NFC) (vending adj machine) (server near15 wallet) 705/64.ccls.	US-PGPUB; USPAT; UPAD	AND	ON	2014/06/03 12:20
S34	0	(("near field communication") OR NFC) (vending adj machine) (server near15 wallet) 705/71.ccls.	US-PGPUB; USPAT; UPAD	AND	ON	2014/06/03 12:21

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Substitute Form PTO-1449 (Modified)	U.S. Department of Commerce Patent and Trademark Office	Attorney Docket No. PR:MDMP1	Application No.
Information Disclosure Statement by Applicant (Use several sheets if necessary) (37 CFR §1.98(b))		Applicant PayRange	
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U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
		5844808	12/01/1998	Konsmo, et al.			
		6462644	10/08/2002	Howell, et al.			
		6584309	06/24/2003	Whigham			
		7085556	08/01/2006	Offer			
		7127236	10/24/2006	Khan, et al.			
		7721958	05/25/2010	Belfer, et al.			
		7848980	12/07/2010	Carlson			
		8396589	03/12/2013	Katzenstein Garibaldi, et al.			
		8489140	07/16/2013	Weiner, et al.			
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		2013/0267121	10/10/2013	Hsu			

Examiner Signature	/James Nigh/	Date Considered	06/03/2014

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Substitute Disclosure Form (PTO-1449)

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Substitute Form PTO-1449 (Modified)	U.S. Department of Commerce Patent and Trademark Office	Attorney Docket No. PR:MDMP1	Application No.
Information Disclosure Statement by Applicant (Use several sheets if necessary) (37 CFR §1.98(b))		Applicant PayRange	
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Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
		WO2008/083022	07/10/2008	PCT				
		WO2008/083025	07/10/2008	PCT				
		WO2008/083078	07/10/2008	PCT				
		WO2008/083089	07/10/2008	PCT				
		WO2008/083105	07/10/2008	PCT				
		WO2008/083115	07/10/2008	PCT				
		WO2008/083119	07/10/2008	PCT				

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
		Bing, Bing Images Search: "dongle," December 5, 2013, http://www.bing.com/images/search?q=dongle&FORM=HDRSC2, 8 pages.
		Google, Chromecast, http://www.google.com/intl/en/chrome/devices/chromecast/, December 12, 2013, 4 pages.
		Provisional patent application 60/871,898, VALUE BASED OFFERS, inventor Mark Carlson, filed December 26, 2006, US Patent and Trademark Office, 169 pages.

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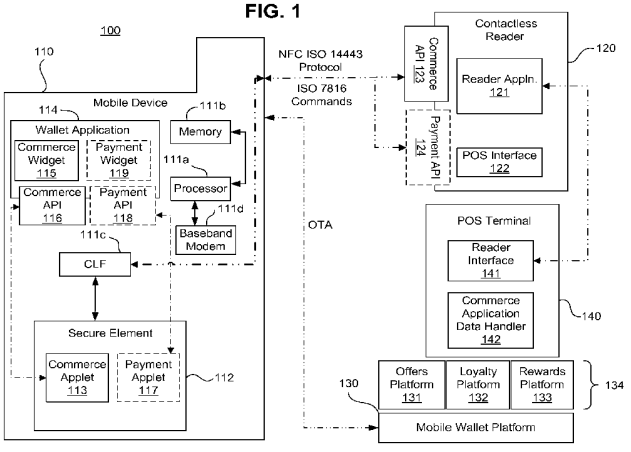
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(54) **Title**: SYSTEMS, METHODS, AND COMPUTER PROGRAM PRODUCTS FOR PROVIDING A CONTACTLESS PROTOCOL

FIG. 1



(57) **Abstract**: Systems, methods and computer program products are provided for managing contactless transactions. A first tap is performed when a system is placed within a predetermined proximity to a payment terminal. A first select command including an AID corresponding to a first application is received from the payment terminal. A first response based on the first select command is transmitted to the payment terminal. A data request including information indicating supported data types is received from the payment terminal. A second response based on the data request and including transaction data is transmitted to the payment terminal. The transaction data includes at least a portion of commerce data stored in the at least one memory.

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SYSTEMS, METHODS, AND COMPUTER PROGRAM PRODUCTS FOR PROVIDING A CONTACTLESS PROTOCOL

BACKGROUND

Field

[0001] Example aspects described herein relate generally to contactless protocols and more particularly to systems, methods, and computer program products for providing a contactless protocol allowing interoperation between mobile devices, near field communication (NFC) readers, and point of sale (POS) systems.

Related Art

[0002] NFC technology is a standards-based wireless communication technology that allows data to be exchanged between devices that are positioned within a certain proximity, generally less than ten centimeters apart. One use of such NFC technology is for making contactless transactions, including those for payment,

access and ticketing. For example, an NFC-enabled mobile device can be provisioned with a payment application and payment account information (*i.e.*, credentials associated with a financial instrument such as credit or debit card) issued by a consumer's financial institution. Each payment application can store and manage multiple sets of commerce data associated with multiple merchants, manufacturers or brands on a secure element. The application and payment account information are typically encrypted and stored in a secure area in the mobile device. The mobile device can, in turn, use the NFC technology to communicate with NFC-enabled point of sale (POS) systems at attended locations such as stores and unattended locations such as vending machines. To pay, the consumer simply brings the mobile device to within approximately ten centimeters of a contactless payment-capable POS system and the transaction occurs. The process is typically the same as that used by the contactless credit and debit cards.

[0003] Placing the mobile device or contactless credit or debit card near an NFC-enabled reader so that they can be communicatively coupled is sometimes referred to as a "wave" or "tap". An application for a mobile device that allows consumers to "tap to pay" at a NFC-enabled POS systems is generally referred to as a "wallet application" or "mobile wallet client application." An application related to payments is generally referred to as a "payment" application. Common contactless payment applications are facilitated using any of the following technologies: American Express® "ExpressPay," Discover® "ZIP," Mastercard® "PayPass" or Visa® "PayWave".

[0004] NFC can also be used to read information about products or receive special offers, loyalty or rewards information from, for example, NFC tags, smart posters or smart billboards. An application related to offers, loyalty and rewards is generally referred to herein as a "commerce" application.

[0005] One technical challenge associated with utilizing payment and commerce technologies cooperatively involves the ability to allow the same tap event that sends payment information to include additional information associated with merchant loyalty cards, offers, rewards, and the like. To this end, messaging technologies in existing NFC readers or NFC-enabled payment POS terminals

stand to be upgraded to effectively support a messaging technology that retrieves and/or receives both payment credentials (using the aforementioned payment protocols) and additional commerce data (loyalty, offers, rewards, etc.) from mobile devices used to perform the transactions. Yet another technical challenge involves publishing commerce elements (*e.g.*, offers, loyalty card credentials, rewards, and the like) into a mobile device such that those commerce elements may, in turn, be presented as part of a typical POS transaction (*e.g.*, a purchase).

BRIEF DESCRIPTION

[0006] The example embodiments presented herein meet the above-identified needs by providing systems, methods and computer program products for providing a contactless protocol.

[0007] In one embodiment, a system for managing contactless transactions includes at least one memory operable to store commerce data and financial instrument data, and at least one processor coupled to the at least one memory. A first tap is performed, the first tap occurring when the system is placed within a predetermined proximity to a payment terminal. A first select command including an AID corresponding to a first application is received from the payment terminal. A first response based on the first select command is transmitted to the payment terminal. A data request including information indicating supported data types is received from the payment terminal. A second response based on the data request and including transaction data is transmitted to the payment terminal. The transaction data includes at least a portion of the commerce data stored in the at least one memory.

[0008] In another embodiment, a method for managing contactless transactions includes: performing a first tap, the first tap occurring when a mobile device is placed within a predetermined proximity to a payment terminal; receiving from the payment terminal a first select command including an AID corresponding to a first application; transmitting to the payment terminal a first response based on the first select command; receiving from the payment terminal a data request including information indicating supported data types; and transmitting to the payment terminal a second response based on the data request, the second

response including transaction data. The transaction data includes at least a portion of commerce data stored in at least one memory.

[0009] In another embodiment, a non-transitory computer-readable medium has sequences of instructions stored thereon for causing one or more processors to: perform a first tap, the first tap occurring when a mobile device is placed within a predetermined proximity to a payment terminal; receive from the payment terminal a first select command including an AID corresponding to a first application; transmit to the payment terminal a first response based on the first select command; receive from the payment terminal a data request including information indicating supported data types; and transmit to the payment terminal a second response based on the data request, the second response including transaction data. The transaction data includes at least a portion of commerce data stored in at least one memory.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] The features and advantages of the example embodiments of the invention presented herein will become more apparent from the detailed description set forth below when taken in conjunction with the following drawings.

[0011] FIG. 1 is a graphical representation of a platform architecture in accordance with an exemplary embodiment.

[0012] FIG. 2 illustrates a single tap timing diagram according to an exemplary embodiment.

[0013] FIG. 3 shows a timing diagram illustrating a commerce process flow including a double tap and post transaction data transmission according to an exemplary embodiment.

[0014] FIG. 4 shows a timing diagram illustrating a commerce process flow including a double tap, and post transaction data and payment transmissions according to an exemplary embodiment.

[0015] FIG. 5 illustrates an exemplary multi-block data flow according to an example embodiment.

[0016] FIG. 6 illustrates windows or screen shots generated by the graphical user interface for a wallet application in accordance with an example embodiment of the present invention.

[0017] FIG. 7 illustrates a flow diagram illustrating an exemplary instant offer implementation according to an embodiment of the present invention.

[0018] FIG. 8 is a collaboration diagram of functional modules deployed on a computer system in accordance with an example embodiment of the present invention.

DETAILED DESCRIPTION

[0019] The example embodiments presented herein are directed to systems, methods and computer program products for providing a contactless protocol, which are now described herein in terms of an example merchant transaction. This description is not intended to limit the application of the example embodiments presented herein. In fact, after reading the following description, it will be apparent to one skilled in the relevant art(s) how to implement the following example embodiments in alternative embodiments (*e.g.*, involving mass transit transactions requiring a wireless communications connection between a mass transit terminal and a mobile device).

[0020] The terms "application," "applet," "widget," and/or the plural form of these terms are used interchangeably herein to refer to an application (functioning independently or in conjunction with other applications) or set or subset of instructions or code, which when executed by one or more processors (*e.g.*, in a mobile device, card reader, terminal, point of sale (POS) system, or server) causes the processor(s) to perform specific tasks. For example, a wallet application can be used to conduct transaction- or interface-related functions such as storing, processing, accessing or transmitting financial, loyalty, offer, membership, or account data. A wallet application may also incorporate or interact with one or more payment applications, such as ExpressPay from American Express®, Discover® Network Zip^{SM}, MasterCard® PayPass™ and Visa payWave™ payment applets.

[0021] Generally, commerce-related services are made available through a suite of applications available on several different platforms. The first application (or suite of applications) exists onboard a server within a mobile commerce (MoCom) platform. The MoCom platform is responsible for the management of consumer data, including loyalty accounts and offers. In addition, the MoCom platform serves as a campaign manager for offers, providing a remote data store for offers made available to the consumer via the available merchant portals within a wallet application.

[0022] A second application exist onboard a mobile device in the form of a wallet application. The wallet application provides the consumer's primary user interface (UI) and additional commerce application services through which the wallet application may access additional resources onboard a secure element (SE) of a mobile device.

[0023] A third application exists onboard a secure element of a mobile device in the form of JavaCard applet. This applet stores commerce-related data such as loyalty and offer data and provides an interface through which the data may be managed. The applet is accessible through the use of Application Protocol Data Unit (APDU) commands as defined in International Standards Organization (ISO) 7816-4.

[0024] The fourth application exists onboard an NFC-enabled reader (referred to herein simply as a "reader"). The reader can be either a stand-alone device or attached to (and managed by) a point of sale (POS) terminal. This application facilitates or provides access to the interface with a secure element on a mobile device, performing specific tasks that optimize the APDU command/data exchange tasks. For example, it includes the reading of loyalty or offer information following the placement of a mobile device in proximity of a reader (*i.e.*, a "tap").

[0025] A fifth application (or suite of applications) exists onboard a merchant POS system, including a POS terminal and any additional merchant-specific hardware/software. These applications manage the data related to payment/loyalty/offers/rewards received from a secure element on a mobile

device via a reader. In most cases, this data will then be forwarded to a corresponding MoCom or merchant specific platform(s).

[0026] FIG. 1 is a graphical representation of a platform architecture in accordance with an exemplary embodiment. As shown in FIG. 1, system 100 includes a mobile device 110 communicatively coupled to a contactless (*e.g.*, proximity or NFC) reader 120 and a mobile wallet platform 130. Reader 120 also is communicatively coupled to a POS terminal 140. POS terminal 140 may be within the same housing as reader 120. Alternatively, POS terminal 140 and reader 120 are communicatively coupled with each other but each of these components is housed separately.

[0027] Mobile device 110 may be, for example, a cellular phone or the like, and includes a processor 111a, memory 111b, a contactless frontend (CLF) 111c, a baseband modem 111d, and a user interface such as a display (not shown). Baseband modem 111d is a digital modem that is used for mobile network communications. CLF 111c is circuitry which handles the analog aspect of contactless or NFC communications and the communication protocol layers of a contactless transmission link. CLF 111c also is used to exchange data between reader 120 and a secure element (or SE) 112 contained in mobile device 110, for example, to execute contactless transactions.

[0028] Secure element 112 may be implemented as a Universal Integrated Circuit Card (UICC), embedded SE card, secure micro secure digital (microSD) card, and the like. Secure element 112 is generally considered secure because it is a self-contained system, including dedicated memory, and is protected by hardware and software hardening techniques that are verified by independent testing.

[0029] Secure element 112 includes (*e.g.*, stored thereon) one or more commerce applets 113. Each commerce applet 113 is associated with a commerce service and an account issued by a commerce service provider (SP). A service provider is a company, organization, entity, or the like, that provides services to customers or consumers. Examples of service providers include account-issuing entities such as banks, merchants, card associations, marketing companies, and transit authorities. A service may be an activity, capability, functionality, work, or use

that is permitted or provided by a service provider, such as a payment service, credit, debit, checking, gift, offer or loyalty service, transit pass service, and the like.

[0030] A commerce service provider can provision (or have provisioned) onto secure element 112 one or more separate commerce applets 113. In addition, other independent service providers can provision (or have provisioned) onto secure element 112 their own commerce applet(s) 113. Generally, a commerce applet 113 stores both loyalty and offers related data, providing an APDU interface through which this data can be managed. Commerce applet 113 operates as a generic storage container, allowing multiple loyalty/offers services to share mechanisms (*e.g.*, secure element, mobile device) for loyalty/offer data management. If memory restrictions and performance requirements limit the amount of loyalty/offers data that can be stored on secure element 112, additional data can be stored in mobile device memory 111b and managed by the consumer via commerce widget 115. For example, any graphic images related to an offer can be stored in memory 111b in order to optimize secure element memory allocation. Loyalty/offers data management can be handled by the corresponding offer platform 131, loyalty platform 132, or rewards platform 133.

[0031] Commerce applet 113 includes a cached merchant data table enabling the storage/management of all data related to a given merchant. This allows the commerce data for a given merchant to be pre-loaded in secure element 112 or mobile device 110 by a wallet application. Exemplary commerce elements (and their corresponding tag values used during Tag Length Value (TLV) encoding) that are included in the cached merchant data table are defined below. This data is stored in a record oriented data buffer. In an exemplary embodiment, a merchant identifier (Merchant Identifier) is used as the key field for search/retrieval tasks. Optionally, an index (or hash table) may be created to improve performance.

[0032] One or more commerce applets 113 can be loaded onto the secure element 112, for example, during manufacture and/or configuration of the secure element 112 and may be personalized to enable its use to conduct commerce transactions. A commerce applet 113 interfaces with reader 120 via a commerce

application programming interface (API) 123. In an exemplary embodiment, a commerce applet 113 is in the form of a JavaCard applet and is accessible through the use of APDU commands as defined in ISO 7816-4. Particularly, commerce applet 113 communicates commerce elements to reader 120 via secure element 112 using ISO 7816 commands over the NFC ISO 14443 protocol.

[0033] Secure element 112 can also include one or more payment applets 117 where each payment applet 117 is associated with a payment service and an account issued by a payment service provider. One or more payment applets 117 also can be loaded onto the secure element 112, for example, during manufacture and/or configuration of the secure element 112 and may be personalized to enable its use to conduct payment transactions. A payment applet 117 interfaces with reader 120 via API 124. In an exemplary embodiment, payment applet 117 is in the form of a JavaCard applet and is accessible through the use of APDU commands as defined in ISO 7816-4. Payment applet 113 also communicates payment elements to reader 120 via secure element 112 using ISO 7816 commands over the NFC ISO 14443 protocol.

[0034] It should be understood that other communications between the aforementioned devices may include communications with or through other intervening systems, hardware, and/or software, and such communications may include receiving, transferring, and/or managing data.

[0035] A wallet application 114 stored on mobile device 110 includes instructions which, when executed by the processor of the mobile device 110, cause the mobile device 110 to act as an instrument, for example, for processing transactions such as contactless commerce and/or payment transactions. Wallet application 114 communicates, through the use of APDU commands as defined in ISO 7816-4, with the commerce applet 113 via commerce API 116 and to payment applet 117 via payment API 118.

[0036] Commerce widget 115 is a component of the wallet application 114 that provides an interface for consumers to manage commerce elements (*e.g.*, loyalty card credentials, offers and rewards), for example, through interactions with the display or user interface of a mobile device. Commerce widget 115 maintains, for example, a master list of commerce elements present on the handset in a

memory of the mobile device (*e.g.*, 111b). A subset of offers that have been identified as ready to be used are, in turn, moved to secure element 112 to be communicated to contactless reader 120 and POS terminal 140. Sensitive information, such as loyalty account identifiers can be stored on secure element 112.

[0037] Payment widget 119 is a component of the wallet application 114 that provides an interface for consumers to manage payment elements (*e.g.*, credit or debit card credentials), for example, through interactions with the display or user interface of a mobile device.

[0038] Reader 120 includes a reader commerce application 121 (referred to herein simply as a "reader application") and a POS interface 122. Reader 120 manages two interfaces: one interface is with the secure element 112 in the mobile device 110 and the other interface is with POS terminal 140 which includes a reader interface 141 and a commerce application data handler 142. The functionality of reader 120 is the same whether reader 120 is standalone and connected to a payments terminal or merchant POS, or is integrated therein. Contactless payment functionality is also contained in reader 120 but is not shown.

[0039] Mobile device 110 is further communicatively coupled to a mobile wallet platform 130, which in turn is communicatively coupled to offers platform 131, loyalty platform 132 and rewards platform 133. Collectively, offers platform 131, loyalty platform 132 and rewards platform 133 can be referred to as a mobile commerce (MoCom) platform 134 and are implemented on one or more servers, referred to herein individually and collectively as a MoCom server (now shown).

[0040] In one embodiment, a customer may use mobile device 110 to conduct a contactless transaction at a POS equipped with reader 120. The customer places the mobile device 110 within a predetermined required proximity of the contactless reader 120 (*i.e.*, taps) causing CLF 111c of the mobile device 110 to communicate with reader 120 using, for example, NFC ISO 14443 protocols. Reader 120 also communicates with wallet application 114, commerce applet

113, and/or payment applications on the mobile device 110 to execute contactless transactions.

[0041] A secure element employs a Proximity Payment System Environment (PPSE) that serves as a directory of available credentials currently stored in secure element 112. Each credential is assigned a corresponding application identifier (AID) associated with a payment application and stored in the PPSE. When an NFC enabled-mobile device containing secure element 112 is placed in the vicinity of an NFC-enabled contactless reader, the contactless reader reads the credential and completes the transaction. Before doing so, however, the reader is initialized.

[0042] On mobile device 110, PPSE is an application used to maintain a list of payment applications stored on secure element 112, and provides accessibility to each payment application stored on the mobile device 112 by making them visible or not visible (*i.e.*, accessible) to systems or devices.

Reader Initialization

[0043] Initialization of the reader 120 will now be described in more detail. In one embodiment, reader 120 implements a function referred to as an Entry Point Manager (EPM) to control which application in a mobile device is selected. In this embodiment, EPM controls whether reader 120 sends a command to mobile device 110 to select an application that performs a commerce transaction or a command that performs a payment transaction. A command to select a commerce application is referred to herein as "Select Commerce." A command to select a payment application is referred to herein as "PPSE Select."

[0044] EPM also controls the start mode for the reader 120 and subsequent application switching during a checkout process. EPM thus facilitates switching (at reader 120) between the Select Commerce command for a commerce transaction and the PPSE Select command for payment transactions.

Commencing a Commerce Transaction on a Reader

[0045] A reader can be configured to initiate a commerce transaction on a reader according to several modes, which are described below in further detail. In one mode, referred to as "auto start", reader application 121 is the default application

on the reader 120. Being the default application allows reader application 121 to be available to the consumer as a first tap option (*i.e.*, upon an initial coupling communication between the mobile device 110 and contactless reader 120).

[0046] Another mode, referred to as "manual start," allows manual intervention to be used to initiate reader commerce application 121. Manual intervention can be in the form of a command from POS terminal 130 (*e.g.*, initiated by using a POS terminal interface) or from a consumer selecting a commerce application on a mobile device by using commerce widget 115.

[0047] Another mode, referred to as "payment with post transaction data," involves controlling how payments are handled in an activity stream. If a merchant supports the provisioning of post transaction data, for example, then payment and receipt of merchant data can be accomplished by the same tap event, such as after the final total for a transaction has been calculated.

[0048] Another mode is referred to as "payment first," The payment first option works in conjunction with the auto start mode and/or the manual start mode to initiate a PPSE Select command for payment and then a Select Commerce command to obtain commerce data (*e.g.*, loyalty data, offer data, reward data, and the like). Commerce data is interchangeably referred to herein as "commerce elements."

Auto Start Mode

[0049] Referring to FIG. 1, auto start mode provides commerce functionality on reader 120 at the beginning of a POS checkout process. When mobile device 110 taps reader 120, reader application 121 causes reader 120 to send a "Select Commerce" message to mobile device 110 including the AID corresponding to the commerce application to be used to execute a contactless transaction. If the message is accepted by mobile device 110 it sends a positive response message in return. Next, reader 120 sends mobile device 110 a "Get Commerce Data" command. The Get Commerce Data command contains merchant specific data that secure element 112 uses to perform a commerce transaction. Also, control passes to the mobile device 110 upon successful completion of the Get Commerce Data transaction. If reader 120 receives a negative response to "Select Commerce" message it passes control back to the EPM.

Manual Start Mode

[0050] Referring still to FIG. 1, in manual startup mode, reader 120 starts reader application 121 in response to a request from either the consumer or the POS terminal 140. In this manual start mode, at the beginning of a checkout process, reader 120 is in a PPSE select state. For a consumer initiated commerce transaction, the consumer selects the commerce application at the customer facing device (*e.g.*, commerce widget 115). The customer facing device then sends a command to reader 120 to start the reader application 121 via the EPM. For a POS terminal initiated commerce transaction, POS terminal 140 commands reader 120 to initialize the reader application 121. In one embodiment, this is initiated by a cashier via an interface on the POS terminal 140.

[0051] Once reader commerce application 121 has been started on reader 120, the commerce application will function as described in the auto start mode above.

Payment with Post Transaction Data

[0052] In payment with post transaction data mode, a payment transaction can be made such that post transaction data is communicated between POS terminal 140, reader 120, and secure element 112. This option allows the commerce protocol to start at the beginning of the consumer checkout, but payment is not requested by the reader 120 until the final transaction total has been calculated.

[0053] POS terminal 140 sends a "Post Transaction" command to reader 120 with, for example, a transaction identifier (ID) and redeemed coupon IDs. Reader 120 then transmits a request for a tap for payment. The tap allows reader 120 to first request payment credentials from secure element 112 and then cause the reader application 121 to send commerce data (*e.g.*, coupon data) to secure element 112. Both functions are performed in a single tap by the mobile device 110 at reader 120.

Payment First

[0054] In payment first mode, a payment can be made first, prior to a commerce transaction. This option accommodates a situation where the payment/PPSE process must precede any commerce processing. Payment first mode works in

conjunction with both auto and the manual start modes discussed above. Payment and commerce processing is accomplished in a single tap.

EXEMPLARY COMMERCE PROCESS FLOWS

Normal Commerce Process Flow (Single Tap)

[0055] FIG. 2 illustrates a single tap timing diagram 200 according to an exemplary embodiment. The following process flow can commence as items being purchased are being scanned at a POS. For convenience, reader 120 (FIG. 1) and POS terminal 140 (FIG. 1) are illustrated as a single component and collectively referred to as payment terminal 201. Each component (*i.e.*, reader 120 or POS terminal 140) is referred to individually when applicable.

[0056] A merchant POS system 202 can be a merchant server operated by a merchant which controls the operation of payment terminal 201. In an exemplary embodiment, merchant POS system 202 commands payment terminal 201 to activate the reader ("Activate Reader") before items are being scanned, as items are being scanned, or after the items are scanned. In each case, reader 120 requests a user (or consumer) to place a mobile device 110 in proximity of reader 120, as shown in step 250 ("Request 'tap'"). In response to a request for the user to place a mobile device 110 in proximity of reader 120 (step 250), a consumer taps mobile device 110 onto reader 120, as shown in step 251.

[0057] Once a NFC connection has been established between mobile device 110 and reader 120, the following command exchanges are initiated for service initialization and processing of both a payment transaction and a commerce transaction. Payment transaction initialization and processing exchanges between secure element 112 and reader 120 include steps 260 and commerce transaction initialization and processing exchanges between secure element 112 and reader 120 include steps 262. Steps 260 may be performed before steps 262, afterward, or substantially simultaneously.

[0058] Referring first to steps 262, after a mobile device has tapped reader 120, reader 120 sends to secure element 112 a Select Commerce command along with a particular commerce AID ("Select Commerce AID") indicating which commerce applet within secure element 112 it seeks to cooperate with (*e.g.*,

commerce applet 113). In response, secure element 112 sends a positive or negative response. A negative response (not shown) results in reader 120 terminating reader application 121 (FIG. 1) and passing control to the EPM (not shown). If the response is positive ("Positive Response"), then reader 120 sends a command ("Get Commerce Data") to secure element 112 specifying identifying information, such as a merchant/store identifier, and any additional loyalty, offer or reward schemes supported by that location, date and time information, the version of reader commerce application 121 supported by reader 120, and any merchant capability data.

[0059] Secure element 112 returns corresponding commerce elements (*e.g.*, loyalty data, offer data, reward data) to reader 120 ("Loyalty & Offers Data") based on the fields in the Get Commerce Data command received from reader 120. In one embodiment, commerce applet 113 builds a package containing the commerce data (*e.g.*, a buffer or set of buffers including loyalty data, offer data, or rewards data). In another embodiment, the buffer is pre-built using memory space in the secure element 112.

[0060] Referring to steps 260, in one embodiment, reader 120 begins payment processing by sending a PPSE request ("PPSE Select") to secure element 112.

[0061] If the Select Commerce AID and PPSE Select requests are successful, as shown in step 264 ("Read Success Indication"), payment terminal 201 forwards the commerce application data and payment credentials it has received to the merchant POS system 202 for processing ("Payment & Commerce Data"). Merchant POS system 202, in turn, records the loyalty identifier and offers (not shown) and applies any applicable discounts as product scanning continues as shown in step 266. This concludes the commerce application process and the payment processing proceeds.

[0062] Once scanning has completed and a transaction amount has been approved for payment, a payment authorization request to a payment platform 203 is made ("Payment Auth Request"). In turn, payment platform 203 returns an authorization result ("Authorization Result") indicating whether or not the payment has been authorized.

[0063] Referring again to steps 260, in one embodiment, a PPSE Select request by reader 120 to secure element 112 causes secure element 112 to return a PPSE payment AID indicating which payment applet (and hence which corresponding payment network) should be used to perform the payment transaction ("PPSE Payment AID"). In response, reader 120 sends a Select AID indicating that it supports the particular applet ("Select AID"). File control information (FCI) associated with the payment applet (*e.g.*, FIG 1, 117) is sent by secure element 112 to reader 120. Similarly, other payment and card information is sent by secure element 112 to reader 120 ("Payment/Card Data").

[0064] FIG. 3 shows a timing diagram 300 illustrating a commerce process flow including a double tap and post transaction data transmission according to an exemplary embodiment. This embodiment can be used when a merchant has data to communicate back to a mobile device. For convenience, reader 120 (FIG. 1) and POS terminal 140 (FIG. 1) are illustrated as a single component and collectively referred to as payment terminal 301. Each component (*i.e.*, reader 120 or POS terminal 140) is referred to individually when applicable. Generally, POS terminal 140 (FIG. 1) initiates a request for a second tap by sending a command, "Post Transaction Command", to reader 120. Reader 120, in turn requests a second tap from the consumer.

[0065] A merchant POS system 302 can be a merchant server operated by a merchant which controls the operation of payment terminal 301. In an exemplary embodiment, merchant POS system 302 commands payment terminal 301 to activate reader 120 ("Activate Reader") before items are being scanned, as items are being scanned, or after the items are scanned. In each case, reader 120 requests a user to place a mobile device 110 in proximity of reader 120, as shown in step 350 ("Request 'tap'"). In response to a request for the user to place a mobile device 110 in proximity of reader 120 (step 350), a consumer taps mobile device 110 onto reader 120, as shown in step 351.

[0066] Once a NFC connection has been established between mobile device 110 and reader 120, the following command exchanges are initiated for service initialization and processing of both a payment transaction and a commerce transaction. Payment transaction initialization and processing exchanges between

secure element 112 and reader 120 include steps 360 and commerce transaction initialization and processing exchanges between secure element 112 and reader 120 include steps 362. Steps 360 may be performed before steps 362, afterward, or substantially simultaneously.

[0067] Referring first to steps 362, after mobile device 110 has tapped reader 120, reader 120 sends to secure element 112 a Select Commerce command along with a particular commerce AID ("Select Commerce AID") indicating which commerce applet within secure element 112 it seeks to cooperate with (*e.g.*, commerce applet 113). In response, secure element 112 sends a positive or negative response. A negative response (not shown) results in reader 120 terminating reader application 121 (FIG. 1) and passing control to the EPM (not shown). If the response is positive ("Positive Response"), then reader 120 sends a command to the secure element 112 specifying identifying information, such as a merchant/store identifier, and any additional loyalty and offer schemes supported by that location, date and time information, the version of reader commerce application 121 supported by reader 120 and any merchant capability data ("Get Commerce Data"). Secure element 112 returns corresponding commerce elements (*e.g.*, loyalty and offers data) to reader 120 ("Loyalty & Offers Data") based on the fields in the Get Commerce Data command received from reader 120. In one embodiment, this is accomplished by commerce applet 113, which builds a package of data (essentially a buffer or set of buffers including offers and loyalty data). In another embodiment, the buffer can be pre-built using memory space in the secure element 112.

[0068] Referring next to steps 360, in one embodiment, a PPSE Select request by reader 120 to secure element 112 causes secure element 112 to return a PPSE payment AID indicating which payment applet (and hence payment network) should be used to perform the payment transaction ("PPSE Payment AID"). In response, reader 120 sends a Select AID indicating that it supports the particular applet ("Select AID"). FCI associated with the payment applet (*e.g.*, 117) is sent by secure element 112 to reader 120. Similarly, other payment and card information is sent by secure element 112 to reader 120 ("Payment/Card Data").If the Select Commerce AID and PPSE Select requests are successful, as

shown in step 364, payment terminal 301 forwards the commerce application data and payment credentials it has received to the merchant POS system 302 for processing ("Payment & Commerce Data"). Merchant POS system 302, in turn, records the loyalty identifier and offers (not shown) and applies any applicable discounts as product scanning continues as shown in step 366.

[0069] Once scanning has completed and a transaction amount has been approved for payment, a payment authorization request to a payment platform 303 is made ("Payment Auth Request"). In turn, payment platform 303 returns an authorization result ("Authorization Result") indicating whether or not the payment has been made.

[0070]

[0071] If there is data to send back to payment terminal 301, merchant POS system creates a command, "Post Transaction Data", with correctly formatted TLVs and forwards the data to reader 120. Upon receipt of a Post Transaction command payment terminal 301 will request a second tap from the consumer, as shown in step 368 ("Request 2nd 'tap'").

[0072] Referring to step 369 and steps 370, when the mobile device 110 is placed within proximity of reader 120 for the second time as shown in step 369, reader 120 sends a secure element 112 a Select Commerce command along with a particular commerce AID ("Select Commerce AID") indicating which commerce applet within secure element 112 it seeks to cooperate with (*e.g.*, commerce applet 113).

[0073] If a negative response is received reader 120 terminates the reader commerce application 121. If a positive response is received, then reader 120 forwards to secure element 112 the data received in the Post Transaction Data command from the POS terminal 140 ("Post Transaction Data"). This concludes commerce processing for this transaction.

[0074] FIG. 4 shows a timing diagram 400 illustrating a commerce process flow including a double tap, and post transaction data and payment transmissions according to an exemplary embodiment. In this scenario the payment and post transaction data are processed after a basket has been totaled and all discounts

have been applied. Usage of this flow is controlled by a reader start mode data element with a particular bit (*e.g.*, "Payment with Post Transaction") set on.

[0075] For convenience, reader 120 (FIG. 1) and POS terminal 140 (FIG. 1) are illustrated as a single component and collectively referred to as payment terminal 401. Each component (*i.e.*, reader 120 or POS terminal 140) is referred to individually when applicable. Generally, merchant POS system 402 initiates a request for a second tap by sending a post transaction data command to reader 120. Reader 120, in turn requests a second tap from the consumer.

[0076] A merchant POS system 402 can be a merchant server operated by a merchant which controls the operation of payment terminal 401. In an exemplary embodiment, merchant POS system 402 commands payment terminal 401 to activate the reader ("Activate Reader") before items are being scanned, as items are being scanned, or after the items are scanned. In each case, reader 120 requests a user to place a mobile device 110 in proximity of reader 120, as shown in step 450 ("Request 'tap'"). In response to a request for the user to place a mobile device 110 in proximity of reader 120 (step 450), a consumer taps mobile device 110 onto reader 120, as shown in step 451.

[0077] Once a NFC connection has been established between mobile device 110 and reader 120, the following command exchanges are initiated. The command exchanges are performed for service initialization and processing of both a payment transaction and a commerce transaction. Payment transaction initialization and processing exchanges between secure element 112 and reader 120 include steps 472, and commerce transaction initialization and processing exchanges between secure element 112 and reader 120 include steps 462 and 474.

[0078] Referring first to steps 462, after a mobile device has tapped reader 120, reader 120 sends to secure element 112 a Select Commerce command along with a particular commerce AID ("Select Commerce AID") indicating which commerce applet within secure element 112 to cooperate with (*e.g.*, commerce applet 113). In response, secure element 112 sends a positive or negative response. A negative response (not shown) results in reader 120 terminating reader application 121 (FIG. 1) and passing control to the EPM (not shown). If the response is positive ("Positive Response"), then reader 120 sends a command

to the secure element 112 specifying identifying information, such as a merchant/store identifier, and any additional loyalty and offer schemes supported by that location, date and time information, the version of reader commerce application 121 supported by reader 120 and any merchant capability data ("Get Commerce Data"). Secure element 112 returns corresponding commerce elements (*e.g.*, loyalty and offers data) to reader 120 ("Loyalty & Offers Data") based on the fields in the Get Commerce Data command received from reader 120. In one embodiment, this is accomplished by commerce applet 113, which builds a package of data (*e.g.*, a buffer or set of buffers including offers and loyalty data). In another embodiment, the buffer can be pre-built using memory space in the secure element 112.

[0079] At step 464, reader 120 indicates to the consumer that the transaction is complete and that the handset can be removed from payment terminal 401, which causes reader 120 to forward the commerce application data to the POS terminal 140 and, in turn, merchant POS system for processing ("Loyalty & Offers Data"). A clerk may continue to process the shopping basket.

[0080] Merchant POS system 402, records the loyalty identifier and offers (not shown) and applies any applicable discounts as product scanning continues as shown in step 466. After the basket total has been calculated, merchant POS system 402 sends a request for payment to payment terminal 401 and sends post transaction data to payment terminal 401 (if data is available to send) ("Send Post Transaction Data and Payment Req").

[0081] At step 468, payment terminal 140 requests a tap for payment. Reader 120, in turn, activates the reader field. When mobile device 110 is detected in the field of reader 120, payment processing is performed as shown in steps 472. Particularly, a PPSE Select request is made by reader 120 to secure element 112 to cause secure element 112 to return a PPSE payment AID indicating which payment applet (and hence payment network) should be used to perform the payment transaction ("PPSE Payment AID"). In response, reader 120 sends a Select AID command indicating that it supports the particular applet ("Select AID"). FCI associated with the payment applet (*e.g.*, FIG. 1, 117) is sent by

secure element 112 to reader 120. Similarly, other payment and card information is sent by secure element 112 to reader 120 ("Payment/Card Data").

[0082] Referring to steps 474, if payment terminal 401 has received post transaction data from merchant POS system 402, reader 120 starts the commerce application 121 (FIG. 1) and sends secure element 112 the Select Commerce command along with a particular commerce AID ("Select Commerce AID") after a mobile device has tapped reader 120 a second time. The Select Commerce AID identifies which commerce applet within secure element 112 should be used to cooperate with reader 120. In response, secure element 112 sends a positive or negative response. A negative response (not shown) results in reader 120 terminating reader application 121 (FIG. 1) and passing control to the EPM (not shown). If the response is positive ("Positive Response"), then reader 120 sends post transaction data to the secure element 112 ("Post Transaction Data"), with correctly formatted TLVs. This concludes commerce processing for this transaction.

[0083] If the Select Commerce AID and PPSE Select requests are successful, payment terminal 401 forwards the payment application data and payment credentials it has received to the merchant POS system 402 for processing ("Payment/Card Data"). In turn, merchant POS system sends a payment authorization request to a payment platform 403 ("Payment Auth Request"). In turn, payment platform 403 returns an authorization result (Authorization Result) indicating whether or not the payment has been authorized.

[0084] If the commerce and payment credentials and information have been successfully read, reader 120 can provide a notification either through an interface on payment terminal 140, commerce widget 115 (FIG. 1) or payment widget 119 (FIG. 1), as shown in step 478 ("Read Success Indication").

Commerce Message Specifications

Data Encoding

[0085] In one embodiment, all command/response data is encoded using BER-TLV (ISO 7816-4 Annex D) format. In some cases, the TLV (Tag, Length,Value) may be nested (embedded TLV). Due to the flexible nature of the

TLV encoding format, the tagged data may be placed in any order. This is true when formatting the data for both incoming and outgoing payloads. In addition, this data is stored in record oriented tables. The order of the TLV encoded data elements stored therein is not critical; however, some data may be placed at the beginning of the record to enhance index/search performance. Thus, the record data tables provided in this document are supplied as samples for reference purposes.

[0086] A tag is encoded using a "private" tag class and a tag type representing a primitive data object encoded on one or more subsequent bytes. Therefore, the first byte (tag class) is set to 0xDF. In all cases, the data element tag is defined on a single byte. Therefore, the second tag byte has the most significant bit (b8) set to 0. This allows up to 128 valid tag values (0x00 – 0x7F).

[0087] Length encoding supports both the short or long forms. When the length is less that (<) 128 bytes, the most significant bit (b8) is set to 0 and the actual length is specified in the remaining bits (b7 – b1). When the length is greater than (>) 128 bytes, the most significant bit (b8) is set to 1 (length mask = 0x80) and the remaining bits (b7-b1) define the number of subsequent bytes in the length field. Those subsequent bytes encode an integer equal to the number of bytes in the value field.

BER-TLV Example

[0088] Assuming the incoming data uses a tag value of 0x21 (Consumer ID) with a length of 8 bytes and a value of (0x1122334455667788), the data is encoded as shown in Table 1:

TABLE 1

Tag	Length	Value
DF 21	08	11 22 33 44 55 66 77 88
DF 21	81 08	11 22 33 44 55 66 77 88
DF 21	82 00 08	11 22 33 44 55 66 77 88

[0089] TLV encoding allows for the length indicator to be expressed in multiple bytes. Preferably multi-byte length is supported. In short form, the length field consists of a single byte where bit 8 is set to 0 and bits 7 to 1 encode the number

of bytes in the value field. One byte can thus encode any number from zero to 127. Any number from one to 127 is encoded in the same way in BER-TLV length field as in Lc and Le fields. The encoding differs for zero, 128 and more. See, for example, the coding of data objects in the Get Commerce Data command described below.

[0090] In long form, the length field consists of two or more bytes. Bit 8 of the first byte is set to 1 and bits 7 to 1 are not all equal, thus encoding the number of subsequent bytes in the length field. Those subsequent bytes encode the number of bytes in the value field. ISO/IEC 7816 does not use the "indefinite length" specified by the basic encoding rules of ASNI ISO/IEC 7816, which supports length fields of one, two, … up to five bytes (Table 2). In ISO/IEC 7816, the values '80' and '85' to 'FF' are invalid for the first byte of length fields.

TABLE 2 – BER-TLV length fields in ISO/IEC 7816

	1st byte	2nd byte	3rd byte	4th byte	5th byte	N
1 byte	'00' to '7F'	-	-	-	-	0 to 127
2 bytes	'81'	'00' to 'FF'	-	-	-	0 to 255
3 bytes	'82'	'0000' to 'FFFF'		-	-	0 to 65 535
4 bytes	'83'	'000000' to 'FFFFFF'			-	0 to 16 777 215
5 bytes	'84'	'00000000' to 'FFFFFFFF'				0 to 4 294 967 295

Select Commerce Applet

[0091] In one embodiment, the processing starts when reader 120 detects a mobile device 110 in the field of reader 120 and NFC communications have commenced. At that time, reader 120 sends a command to secure element 112 to select a commerce applet, particularly a "Select Commerce" command. The Select Commerce command (also referred to as a "Select Commerce Applet" command) is standardized as defined in the ISO 78016-3 specification. An example Select Commerce command structure is shown in Table 3:

TABLE 3 – Select Commerce Applet

CLA	INS	P1	P2	Lc	Data	Le
00	A4	04	00	09	A00000048510010101	00

[0092] Secure element 112 in mobile device 110 validates the "Select Commerce" command and sends back an appropriate response. Example responses (also referred to as "Status Codes") are shown in Table 4:

TABLE 4 – Status Codes

SW1	SW2	Description
90	00	Successful execution of command
67	00	Wrong data length
69	01	Application ID not supported
69	99	Application not available
6A	82	Application not installed

[0093] All responses other than '90 00' ("Successful execution of command") cause commerce application 121 (FIG. 1) to terminate in reader 120 and pass control to the EPM.

Get Commerce Data

[0094] Upon commencement of the reader application 121 and communications between reader 120 and secure element 112 initiating, reader 120 sends a command to mobile device 110 to obtain commerce data, "Get Commerce Data." An exemplary Get Commerce Data command is defined below in Tables 5 and 6. In this example, specific loyalty and offers data is being requested. The "Merchant Capability" field is utilized by reader 120 to determine which fields need to be present in the request and response data.

[0095] Date and time stamp information are optional. In one embodiment, the date time is in synchronization with the POS. In the event that this information is not available from the POS, the date/time from the POS terminal 140 can be used. If date and time is not available, reader 120 will not send the date time stamp data element.

[0096] In an exemplary embodiment, the data elements contained in the Get Commerce Data request are preconfigured in the reader 120 or POS terminal 140 at setup time. The data may be modified after the reader 120 has been installed and configured.

TABLE 5 – Get Commerce Data

CLA	INS	P1	P2	Lc	Data	Le
90	50	00	00	xx	Merchant ID/ Store ID [+ Loyalty IDs +Coupon Types + Date/Time-Stamp +Application Version + Merchant Capability]	00

TABLE 6 – Command Data

Data Element	Byte Size	Value	Req
Merchant Identifier Tag	2	0xDF 31	Y
Identifier Length	1	xx	
Merchant Identifier	xx	[MerchantID]	
MerchantStore_ID Tag	2	0xDF 32	Y
Merchant_Store_ID Length	1	xx	
Merchant_Store_ID	xx	(StoreID/Location)	
Loyalty_ID Tag #1 For Secondary loyalty	2	0xDF 41	Opt
Identifier Length #1	1	xx	
LoyaltyID #1	xx	[Loyalty ID] (Hex)	
…….			
Loyalty_IDr Tag #X For Secondary loyalty	2	0xDF 41	Opt
Loyalty Identifier Length #X	1	xx	
LoyaltyID #X	xx	Loyalty ID (Hex)	
Date_Time_Stamp Tag	2	0xDF 11	Opt
Date_Time_Stamp Length	1	0x07	
Date_Time_Stamp	7	BCD (yyyymmddhhmmss)	
Commerce_App_Version Tag	2	0xDF 12	Y
Commerce_App_Version Length	1	0x02	
Commerce_App_Version Data	2	[Major + Minor] Hex	
Merchant_Capability Tag	2	0xDF 33	Y
Merchant_Capability Length	1	0x02	
Merchant_Capability Data	2	2 Bytes Hex	
Terminal_Startup_Mode Tag	2	0xDF 34	Opt
Terminal_Startup_Mode Length	1	0x02	
Terminal_Startup_Mode Data	1	1 Bytes Hex	
Total:	<var>		

[0097] Table 7 defines the possible Status Word values that may be returned by the Get Commerce Data command.

TABLE 7 – Status Codes

SW1	SW2	Description
90	00	Successful Execution of Command
61	xx	More data to follow
67	00	Wrong Data Length
69	09	Internal Error

[0098] Any response other than'61 xx' or '90 00' will result in reader 120 terminating commerce application 121 and passing control to the EPM, after recording the error and storing the data for forwarding to commerce widget 115.

[0100] If the Get Commerce Data request is correctly formatted, commerce applet 113 on secure element 112 filters the data based on the merchant identifier ("Merchant_ID"), loyalty identifier ("Loyalty_ID") and offer type code ("Offer_Type_Code") to format a response data for reader 120 based on the version number in the request. Commerce applet 113 may return more than one Loyalty ID and multiple Offers messages based on the configuration in the wallet. Table 8 lists exemplary response data:

TABLE 8 – Example Response Data

Data Element	Byte Size	Value
Consumer_ID Tag	2	0XDF21
Consumer_ID Length	1	0x10
Consumer_ID Data	16	[Consumer ID]
Loyalty_ID Tag #1	2	0xDF41
Loyalty_ID Length #1	1	xx
Loyalty Identifier #1	xx	[Loyalty ID]
Loyalty_Account_Code Tag #1	2	0xDF43
Loyalty_Account_Code Length #1	1	xx
Loyalty_Account_Code #1	xx	[Acct Code]
Loyalty_ID Tag #2	2	0xDF 41
Loyalty_ID Length #2	1	xx
Loyalty_ID Data #2	xx	[Loyalty ID]
Loyalty_Account_Code Tag #2	2	0xDF43
Loyalty_Account_Code Length #2	1	xx
Loyalty_Account_Code Code #2	xx	[Acct Code]
…….		
Offer_ID Tag #1	2	0xDF51
Offer_ID #1 ID Length	2	X'81 xx'

Data Element	Byte Size	Value
Offer_ID #1 ID Value	xx	[Coupon ID]
Offer_Code #1 Code Tag	2	0xDF53
Offer_Code #1 Code Length	2	0x'81xx'
Offer_Code #1 Code Value	xx	[Coupon Code]
Offer_ID Tag #2	2	0xDF51
Offer_ID #2 ID Length	2	0x'81xx'
Offer_ID #2 ID Value	xx	[Coupon ID]
Offer_Code #2 Code Tag	2	0xDF53
Offer_Code #2 Code Length	2	0x'81xx'
Offer_Code #2 Code Value	xx	[Coupon Code]
…….		
Total:	<var>	

[0101] The following is an exemplary response data parsing sample. The NFC reader (or POS terminal) delivers this commerce data to a POS system in a string of data that may contain consumer, loyalty and/or offer data. The merchant POS system can then parse the data to obtain the loyalty and offer data, and process the data per the merchant's specifications.

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DF 21 10 00 11 22 33 44 55 66 77 88 99 AA BB CC DD EE FF DF 41 06
18 DB 6E 23 F4 0B DF 43 0D 02 31 38 44 42 36 45 32 33 46 34 30 42
DF 51 08 88 77 66 55 44 33 22 05 DF 53 09 02 42 41 31 38 37 36 35
34 DF 51 08 88 77 66 55 44 33 22 06 DF 53 0C 02 41 39 39 39 39 31
33 33 35 37 38 DF 51 08 88 77 66 55 44 33 22 07 DF 53 10 02 5A 58
31 37 39 35 36 37 35 34 38 33 31 43 46 DF 51 08 88 77 66 55 44 33
22 08 DF 53 0C 02 31 38 30 30 38 37 32 30 30 30 31 DF 51 08 88 77
66 55 44 33 22 09 DF 53 33 02 57 4B 52 50 31 32 33 34 35 36 37 38
39 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 50 57 50 57 50
57 50 57 50 57 50 57 50 57 50 57 50 57 50 57 50 40 A1

Data parsing example

DF 21 10 00 11 22 33 44 55 66 77 88 99 AA BB CC DD EE FF
(Consumer ID)

DF 41 06 18 DB 6E 23 F4 0B            (MoCom Loyalty ID)

DF 43 0D 02 31 38 44 42 36 45 32 33 46 34 30 42
(Consumer Loyalty Code)

DF 51 08 88 77 66 55 44 33 22 05      (MoCom Offer ID)  #1

DF 53 09 02 42 41 31 38 37 36 35 34   (Merchant Offer Code)  #1

DF 51 08 88 77 66 55 44 33 22
```

Post Transaction Data

[0102] As explained above, a Post Transaction Data command provides a mechanism to receive data back from a merchant POS system (MPOS). This command is initiated by the merchant POS terminal 140 and preferably is supported in the merchant capability field. In an exemplary embodiment, this command consists of a single frame of data with a maximum data size of 255 bytes. The contents of the data use standard TLV formatting but may also be variable. This command enables dynamic reconciliation or post transaction data consolidation. Additional data tags may be defined for the transmission of additional data from the POS terminal/MPOS to the secure element 112 in mobile device 110. An exemplary post transaction data command ("Post Transaction Data") is illustrated in tables 9 and 10:

TABLE 9 – Post Transaction Data Command

CLA	INS	P1	P2	Lc	Data	Le
90	52	00	00	xx	<TLV Encoded Post Transaction Data>	00

TABLE 10 – Command Data

Data Element	Byte Size	Value	Req
Transaction ID	2	0x DF 61	Opt
Transaction ID Length	1	xx	
Transaction ID Data	xx	Merchant generated Transaction ID	
Offer_ID Code #1	2	0XDF 51	Opt
Offer_ID Length #1	1	xx	
Offer_ID Data #1	xx	Coupon ID	
…….			
Offer_ID Code #X	2	0xDF 51	Opt
Offer_ID Length #X	1	xx	
Offer_ID Data #X	xx	Coupon ID	
Total:	<var>		

Multi-block data handling

[0103] FIG. 5 illustrates an exemplary multi-block data flow according to an example embodiment. When secure element 112 has more than 255 bytes of data to send, a Get Response command (C0) is used to retrieve the remaining response

data. Particularly, this command is used to obtain the remaining data when the commerce applet 113 must send more than, for example, 255 bytes of response data.

[0104] Referring to FIG. 5, after a user taps a commerce-enabled mobile device 110 to reader 120, reader 120 sends a Select Commerce command to the secure element 112 of the mobile device 110. A positive response ('90 00') causes reader 120 to send a Get Commerce Data command. In response, secure element 112 returns loyalty and offers data. As shown in FIG. 5, the Get Commerce Data response status SW1 flag is set to '61' and the SW2 flag is set to '00'.

[0105] A Get Response command is triggered when the SW1 flag in the Get Commerce Data response is set to '61'. In this example, the SW2 flag is set to '00' because commerce applet 113 on mobile device 110 may not know how much data is left to send. The subsequent response to the Get Response command also contains an SW1 flag set to '61', causing a second Get Response command to be sent by reader 120 to mobile device 110.

[0106] This sequence will terminate when the SW1 flag of the Get Commerce Data response is set to any value other than '61'. For example, an SW1 value of '90' in response to a Get Response command as shown in FIG. 5 will indicate normal completion. Any other SW1 value can be logged as an error.

[0107] Table 11 defines exemplary settings for the Get Response Data APDU command:

TABLE 11 – Get Response Data

CLA	INS	P1	P2	Lc	Data	Le
90	C0	00	00	00	<none>	00

[0108] The actual length of the remaining data is variable. Therefore, the Le data length can be 0x00; allowing the commerce applet 113 to manage a variable length response.

[0109] Table 12 defines possible status word values ("Status Codes") that may be returned by the Get Response Data APDU command.

TABLE 12 – Status Codes

SW1	SW2	Description
90	00	Successful execution of command
61	xx	More data to follow
67	00	Wrong data length
69	09	Internal error

Reader Configuration Data

[0110] In one embodiment, during the installation and configuration of reader 120 certain merchant and commerce specific data are loaded and saved in reader 120. This data is used by reader 120 to fill in the Get Commerce Data command from reader 120. These data elements can be updated as new features and functions become available.

Commerce AID

[0111] As explained above, a commerce AID is sent in the Select Commerce command. If the command is accepted by mobile device 110, commerce applet 113 is started and APDU command / response flows will start between reader 120 and secure element 112. In an exemplary embodiment, the commerce AID value is A00000048510010101. This value can be hardcoded on reader 120. In one embodiment, reader 120 is not required to support partial selection.

Merchant_ID

[0112] A merchant identifier (Merchant_ID (DF31)) can be loaded onto reader 120. Merchant ID is a value assigned by a service provider. In one embodiment, this value is assigned by the MoCom platform operator. This is required to allow commerce applet 113 to filter the loyalty and coupon data, and send the appropriate items to the reader 120.

Merchant_Store_ID

[0113] A merchant store identifier value (Merchant_store_ID (DF32)) is loaded to the reader 120 and is a value assigned by a service provider. This value can be used, for example, for reporting purposes.

Loyalty_ID

[0114] A loyalty identifier value (Loyalty_ID (DF41)) is used when multiple Loyalty IDs are being requested during a tap. This is accomplished by setting the Secondary Loyalty in Merchant Capabilities (DF33). This allows commerce applet 113 to return additional loyalty numbers in the response to a Get Commerce Data command. Multiple (*e.g.*, 5) additional Loyalty_IDs may be coded in the Get Commerce Data request.

Offer_Type_Codes

[0115] Offer type codes (Offer Type Codes (DF54)) are loaded onto reader 120. Values assigned to Offer Type Codes are assigned by a service provider. This value is used by the commerce applet 113 to filter offers and send only the appropriate items to reader 120. Multiple Offer_Type_Codes can be defined and sent to the secure element 112 in the Get Commerce Data command.

Commerce_Application_Version

[0116] A commerce application version number (Commerce_Application_Version) can be loaded onto reader 120 to represent the version of the commerce reader specification that the application on reader 120 is coded to and certified for.

Merchant_Capabilities

[0117] The Merchant Capabilities value represents the Commerce features supported by a particular merchant. This data element can also be used by reader 120 to format the Get Commerce Data command.

Terminal_Startup_Mode

[0118] A terminal start mode command (Terminal Start Mode (DF34)) commands reader 120 to provide the mechanism used to start commerce application 121. This data element is not sent to the secure element 112. This data element will also be used to define processing flows between reader 120 and secure element 112 on the handset.

Get Commerce Data Fields

[0119] Table 13 provides an exemplary definition of data required by reader 120 to format the Select Commerce and Get Commerce Services commands:

TABLE 13

Data Element	Tag	Max Size Bytes	Data Format
Commerce AID		09	Hex
Merchant ID	DF 31	8	Hex
Merchant Store ID	DF 32	32	ASCCI
Loyalty Identifier #1 thru X	DF 41	8	BCD
Date and Time Stamp	DF 11	7	BCD
Specification Version (Major/Minor)	DF 12	2	Hex
Merchant Capabilities	DF 33	2	Binary
Commerce Start Mode	DF 34	2	Binary

Commerce Applet Version Format

[0120] A Commerce Applet Version value is a two-byte hex field the first byte containing the major version (xx) and the second byte contains the minor version (xx). These fields are updated in accordance to the specific version of the reader commerce technical specification that is implemented on reader 120. In an exemplary embodiment, the first official release of the commerce application 121 is 0x0100.

Merchant Capabilities

[0121] A merchant capabilities field (Merchant Capabilities Field (DF 33)) determines which commerce functions are being implemented by the merchant. Reader 120 can pass this field to mobile device 110, and mobile device 110 uses the information to build a response frame, referred to as Commerce Data Response frame. Table 14 illustrates exemplary merchant capabilities:

TABLE 14 – Merchant Capability Data

Commerce Start Mode Format

Byte	Bit	Value	NFC reader function
1	8 MSB	1=Merchant Loyalty Support	If Bit 8 is on the reader will send the required Merchant ID and optionally a

		0=No	Loyalty ID for the merchant
1	7	1=Secondary Loyalty 0=No	Bit 8 must be on. Additional Loyalty ID's is included in the Get Commerce Data request
1	6	1=Offers Support 0=No	Offer Type fields is included in Get Commerce Data request
1	5	1=Additional Offer support 0=No	The merchant can request additional offers in the Get Commerce request
1	4	1=Contactless Payment support 0=No	Some merchants may choose to only accept Commerce but not contactless payments. This bit setting is information only. It will not stop the PPSE process from happening.
1	3	1=Enterprise Merch ID 0=No	
1	2	1=Cloud Based Offer 0=No	Indicates that the merchant can support cloud based offers (Future)
1	2	0	Reserved for Future Use
1	1	1=Post Transaction Data support 0=No	The reader will receive redemption data from the POS and forward it to the handset
2	8-1	0	Reserved for Future Use

Commerce Start Mode Format

[0122] A commerce start mode format value (Commerce Start Mode (DF34)) indicates to reader 120 what mechanism is to be used to start commerce application 121 on reader 120. In one embodiment, this data element is not sent to the mobile device 110 in the Get Commerce Data command. In another embodiment, this data element is optional. Table 15 illustrates exemplary start modes can be used to commence commerce application 121. In an exemplary embodiment, bits 7 and 8 are exclusive and only one bit is turned on at a time:

TABLE 15 – Commerce Start Mode

Byte	Bit	Value	Reader function
1	8 MSB	1=Auto Start 0=No	At the start of the check the reader will quest Commerce AID at the first TAP
1	7	1=Manual Start 0=No	The reader will only select Commerce AID after some user intervention.
1	6	1=Payment with	Payment and Post Transaction Data will

		Post Transaction Data 0=No	occur on TAP 2
1	5	Payment First	Payment PPSE will precede in Auto or Manual start modes
1	4-1	0	Reserved for Future Use
2	8-1	0	Reserved for Future Use

Reader Message Forwarding

[0123] While reading commerce application data from the mobile device 110, reader 120 forwards the data to a merchant POS system or POS application resident on a POS terminal 140. Reader 120 strips off the APDU headers and un-blocks the data from the mobile device 110. The Tagged TLV frames are then wrapped in the appropriate protocol and forwarded to the merchant POS system or POS application running on the POS terminal for processing.

Commerce Response Data Description

[0124] During a successful interaction with a reader 120, data will be returned to the POS merchant system (or POS terminal). This information will typically be composed of a consumer loyalty number and/or some number of offers that the merchant defined and loaded to the consumer's wallet.

Consumer ID

[0125] A consumer identifier (Consumer ID) is a unique identifier that is assigned to a consumer during the wallet activation process. Typically, Consumer ID will stay with a consumer even if the consumer moves her wallet to a new mobile device or different mobile network. In a preferred embodiment, Consumer ID is sent from the mobile device to the reader on every commerce-related interaction, even if the handset has no loyalty or offers data to send. The presentation of Consumer ID can be used by the merchant POS system to trigger specific actions related to a payment-only tap.

Loyalty ID

[0126] A loyalty identifier (Loyalty ID) is sent along with each consumer loyalty number requested during a tap event. Loyalty ID is a unique value assigned to

each merchant loyalty program assigned by the MoCom platform. In most cases the Loyalty ID received by the reader will match the Merchant ID that was configured by the Get Commerce data command. Use of this information by a merchant system is optional.

Consumer Loyalty Code

[0127] A consumer loyalty code (Consumer Loyalty Code) matches the loyalty number assigned to the consumer for a specific merchant loyalty program. Wallet application 114 allows for multiple loyalty numbers to be presented at the tap. If the system is set up for multiple consumer loyalty codes, each consumer loyalty code will be preceded by its unique loyalty ID.

Offer ID

[0128] A mobile commerce offer identifier (Offer ID) is sent along with each consumer offer number sent during a commerce-related session. The Offer ID is a unique value assigned to each offer delivered to a consumer wallet. In one embodiment, no two Offer IDs generated by the MoCom platform will have the same value.

Merchant Offer Code

[0129] A merchant offer code ("Merchant Offer Code" or "Offer Number") is generated by the merchant and loaded to the consumer's wallet application through various means. This number matches the same offer that is defined on the merchant POS system for processing. There can be multiple merchant offers (*e.g.*, 10) presented during a single commerce transaction. The merchant system parses the incoming data to extract the individual merchant offers.

Commerce Response Data Fields

[0130] Table 16 defines exemplary data elements that may be returned to the merchant POS system after a successful commerce transaction:

TABLE 16

Data Element	Tag	Max Size Bytes	Data Format
Consumer ID	DF 21	16	BCD
Loyalty ID	DF 41	8	Hex
Consumer Loyalty Code	DF 43	32	ASCII, Hex, BCD
Offer ID	DF 51	8	BCD
Merchant Offer Code	DF 53	48	ASCII, Hex, BCD

[0131] In one embodiment, a data element "Terminal Start Mode" is passed to reader 120 but will not be passed to the secure element 112. Reader 120 uses this information to control when Select Commerce and Select PPSE commands are sent to the secure element 112.

Reader Commerce Application Functionality

[0132] The following section provides a list of functions that the Commerce application within reader 120 performs. Some of these functions are automated, while others are triggered via an API call from the POS terminal or merchant POS.

Select Commerce AID Command

[0133] After the Commerce application is started on reader 120 and a device is detected in the field of reader 120, the first command sent is Select Commerce AID. The command will contain the RID value assigned by ISO and a PIX value generated by a commerce service provider. The Commerce AID value is A00000048510010101. This value should be hard coded on reader 120.

Get Commerce Data Command

[0134] The Get Commerce Services Data command is a general data request to the secure element 112. The Get Commerce Data has a number of required and optional fields that communicate information to commerce applet 113. Commerce applet 113 uses this information to build the data elements that need to be sent to reader 120. Reader 120 uses the fields in the Merchant Capability records to determine which optional fields need to be included in the request to the handset.

Post Transaction Data

[0135] The Post Transaction Data command was created to provide a mechanism to receive data back from the MPOS. This command consists of a single frame of data with a maximum data size of 255 bytes. The contents of the data use standard TLV formatting, but the contents may be variable. Additional data tags may be defined for the transmission of additional data from the POS Terminal/MPOS to secure element 112 in mobile device 110.

NFC Error recovery

[0136] In a preferred embodiment, reader 120 is able to recover from a reader error generated when the handset is prematurely removed from the NFC field. Reader 120 signals the read error to the consumer via a failure interface such as a speaker that outputs a "beep" or display that provides an optical indication such as via lights. The consumer is asked to tap again and the transaction that was in progress during the error is restarted. In the case where multiple transactions are being processed, such as a commerce transaction and a PPSE transaction, reader 120 will try to recover the last process being executed.

Large Data block support

[0137] In an exemplary embodiment, reader 120 reads and writes multiple 255-byte blocks of data to and from mobile device 112 in a single tap process.

Date and time stamp support

[0138] When reader 120 has connectivity to the merchant POS system, the date and time can be retrieved from the POS terminal at the start of the transaction.

TLV Master Tag List

[0139] Table 17 defines the data elements and corresponding tag values and target/max byte sizes used by commerce based applications. Additional values have been provided for those elements with a limited/fixed value range.

TABLE 17 – APDU Commands

Commerce Services			
Shared Data Elements			
Data Element	Tag	Max	Description

		Size	
DATE_TIME_STAMP	0xDF11	7	Date/Time stamp (yyyymmddhhmmss)
COMMERCE_APP_VERSION	0xDF12	2	Supported Commerce application Version Number
Consumer Data Elements			
Data Element	Tag	Max Size	Description
CONSUMER_ID	0XDF21	16	MoCom Platform specific consumer identifier
CONSUMER_KEY	0xDF22	16	MoCom Platform generated consumer specific 3DES key
CONSUMER_CERT	0xDF23	8	MoCom Platform generated consumer signature/ certificate
Merchant Data Elements			
Data Element	Tag	Max Size	Description
MERCHANT_ID	0xDF31	8	MoCom Platform specific merchant identifier
MERCHANT_STORE_ID	0xDF32	32	MoCom Platform specific merchant store identifier ASCII character data
MERCHANT_CAPABILITY	0xDF33	2	Supported Commerce application Services
NFC READER_START_MODE	0xDF34	2	NFC enabled payment terminal startup mode (provided by Merchant POS System during initialization)
Merchant Capabilities			
Data Element	Value	Max Size	Description
MERCAP_MERCHANT_ LOYALTY	0x80	1	The Get Commerce Data request includes a valid merchant identifier used to determine the Loyalty data received by the applet.
MERCAP_ADDITIONAL_ LOYALTY	0x40	1	The Get Commerce Data request includes additional Loyalty Identifiers. Additional Loyalty data is determined by the specified Loyalty ID(s).
MERCAP_MERCHANT_ OFFERS	0x20	1	Offer type fields are included in Get Commerce Data request

MERCAP_ADDITIONAL_ OFFERS	0x10	1	The Get Commerce Data request includes a valid merchant identifier used to determine the offers data received by the applet.
MERCAP_PAYMENT	0x08	1	Indicates merchant supports contactless payment.
MERCAP_ENTERPRISE	0x04	1	Indicates support for Enterprise Merchant ID
MERCAP_CLOUD	0x02	1	Indicates support for cloud based offers and Loyalty
MERCAP_REDEMPTION	0x01	1	The NFC reader supports the transmission of offer redemption data (from the POS) to the applet via the Redeem Offer command.
Service Provider Platform Data Elements			
PLATFORM_SIGNATURE	0x71	8	MoCom Platform generated MAC/Signature appended to command/data originating from the platform for remote verification purposes (data integrity/ authenticity).
PLATFORM_KEY	0x72	16	MoCom Platform Key
PLATFORM_CERT	0x73	8	MoCom Platform Certificate

Loyalty			
Loyalty Data Elements			
Data Element	Tag	Max Size	Description
EMBEDDED_TLV_ LOYALTY_DATA	0xDF40	xx	Embedded TLV loyalty data tag
LOYALTY_ID	0xDF41	8	MoCom Platform specific loyalty identifier
LOYALTY_STATUS	0xDF42	1	Loyalty card/account status (see below)
LOYALTY_ACCOUNT_ CODE	0xDF43	32	Loyalty account (barcode data)
LOYALTY_MAC_ SIGNATURE	0xDF44	8	MoCom Platform specific MAC/Signature for integrity/ authenticity verification

Transaction Log			
Transaction Data Elements			
Data Element	Tag	Max	Description

		Size	
EMBEDDED_TLV_ TRANSACTION_LOG	0xDF60	xx	Transaction log record data tag
TRANSACTION_ID	0xDF61	16	Transaction ID (assigned by POS)
TRANSACTION_STATUS	0xDF62	3	Transaction log record data tag

Offers			
Offer Data Elements			
Data Element	Tag	Max Size	Description
EMBEDDED_TLV_ OFFER_DATA	0xDF50	xx	Embedded TLV offer data tag
OFFER_ID	0xDF51	8	MoCom Platform specific offer identifier
OFFER_STATUS	0xDF52	1	Offer status (see below)
OFFER_CODE	0xDF53	130	Offer (UPC/EPC/GS1 Databar) barcode data
OFFER_TYPE_CODE	0xDF54	9	Offer Type (see below)
OFFER_MAC_ SIGNATURE	0xDF55	8	MoCom Platform specific data security signature
OFFER_UPDATE_FLAG	0xDF56	1	Update flag (synchronization status)

[0140] Table 18 provides a master list of exemplary APDU commands supported by the Commerce Applet 113.

TABLE 18

Command	CLA	INS	P1	P2	Lc	Data	Le
Get Commerce Data	90	50	00	00	xx	Date/Time Stamp + Merchant ID + Store ID [+ Commerce application Version + Merchant Capabilities + Transaction ID + Loyalty IDs + Offer Codes]	00
Post Transaction Data	90	52	00	00	xx	<TLV-Encoded Transaction Data>	00
Get Remaining Data	90	C0	00	00	xx	None	

Specially Formatted Data Elements

[0141] Data elements included in the commerce data payload may include a format byte that identifies the data encoding used for that element. The data encoding is specified by the merchant to ensure compatibility at the point of sale. The formatted data value is supplied by the commerce platform to the wallet application 114. Thus, no additional interpreting/formatting is necessary between the platform 130, wallet 114, secure element 112, and reader 120/POS terminal 140 (collectively referred to as "payment terminal"). It is the role of the payment terminal (or merchant POS system) to properly interpret the data and supply it to the merchant system for processing.

[0142] In an exemplary embodiment, the following data elements include the following format value:

- Loyalty Account Code (DF 43)
- Offer Code (DF 53)

[0143] Table 19 defines possible format byte values and their corresponding encoding rule:

TABLE 19

Format Byte	Encoding Rule	Description
0x00	Hexadecimal	Each byte of data is encoded in (raw) hexadecimal format.
0x01	Binary Coded Decimal (BCD)	Each nibble represents a single digit. Thus, only decimal values are specified. A data stream containing an odd number (length) of digits includes the hex value 'F' in the first nibble of the data stream.
0x02	ASCII	Each byte represents an ACII value that is interpreted as such and handled as its corresponding CHAR value. In most cases, these data streams are converted into a String before being passed to the merchant POS system for processing.

[0144] A BCD encoded data value that includes the hexadecimal value 'F' in the first nibble shall identify a data stream containing an odd number of digits. Thus, the BCD data stream *12345* is encoded in 3 byte buffer as follows: *0xF12345*.

Exemplary Implementations

[0145] FIG. 6 illustrates windows or screen shots generated by the graphical user interface for a wallet application in accordance with an example embodiment of the present invention. For purposes of this exemplary implementation, the mobile device 110 has some redeemable offers and loyalty cards stored in memory 111b.

[0146] The wallet home screen 601 features a strip of merchant tiles 604. A tile is present for every merchant that has a redeemable object (*e.g.*, a redeemable offer or loyalty card) present in the mobile wallet. The user may, for example, swipe through the tiles, left and right, to find a particular merchant. Once the particular merchant is found, the tile is selected to open a merchant offer view 602. This can be done prior to making a transaction or immediately prior to making the transaction, such as while waiting in line, or earlier (*e.g.*, while browsing through a store.).

[0147] The merchant offer view 602 presents a list of redeemable offers 603 available in the wallet. Non-redeemable promotions may be presented as well. If present, a loyalty card 605 is also presented and made accessible from the merchant offer view 602.

[0148] If the selected merchant is not a commerce-enabled merchant, there is no option presented to load offers for a commerce transaction. If the merchant is a commerce-enabled merchant, however, one or more buttons or icons 606a, 606b are presented allowing offers to be loaded for a commerce transaction.

[0149] The user may select an offer (*e.g.*, 606a), and then select the "Done" bar at the bottom of the screen.

[0150] In an exemplary embodiment, a limit as to the number of offers can be enforced by secure element 112 (*e.g.*, 10 offers), and the user interface of commerce widget 115 enforces this limit while the user is activating offers. The "Done" bar is the trigger to load the selected offers into secure element 112. If there are offers from another merchant in the secure element 112, they can be removed at the same time as the new offers are loaded – this ensures that there are only offers from one merchant present in the 112 at any given time.

[0151] When the secure element load is complete, the user taps the mobile device 110 to reader 120. What happens next depends on a few factors. If the reader that is tapped is not capable of processing commerce elements, the selected payment card is sent, but no commerce elements (*e.g.*, offers or loyalty credentials) are sent. A post-tap message is presented through the reader interface indicating that payment credentials were sent, with no other information.

[0152] If the reader that is tapped is capable of processing commerce elements, but the merchant-ID does not match the selected merchant, offers will not be sent. Commerce applet 113 in secure element 112 can search for a loyalty card for this merchant-ID and transmit loyalty credentials, if present. A post-tap message is presented through an interface indicating that an event took place, identifying the merchant and reporting that loyalty credentials were sent (if they were available) as well as the payment credentials.

[0153] If the reader that is tapped is a commerce-enabled reader and the merchant-ID matches the selected merchant, selected offers and (if present) the loyalty card credentials for the merchant are sent. Mobile device 110 can present a post-tap message through the commerce widget 115 user interface confirming that offers and loyalty (if present) were sent, along with payments.

[0154] Following the tap, offers that were loaded into the secure element 112 are left in secure element 112 until the user removes them or selects offers from another merchant. Alternatively, if the offers expire, it is removed from the secure element 112 when wallet maintenance is performed. In an exemplary embodiment, the selected merchant will remain the "active" merchant on the wallet home page until the user selects a different merchant.

Instant Offer Implementation

[0155] FIG. 7 illustrates a flow diagram illustrating an exemplary instant offer implementation according to an embodiment of the present invention. In this embodiment, a mobile commerce (MoCom) platform can be integrated with merchant POS system to implement a mechanism for users to select offers by using a wallet application and/or instant offers merchants make available to consumers.

[0156] A wallet application running on a mobile device can be used to allow consumers to pay for purchases and present loyalty and offers via a payment terminal. One way a consumer can redeem an offer is by selecting the offer via the wallet application to be presented at checkout.

[0157] Consumers can also be provided with offers that can be instantly redeemed through the wallet application. Such offers are referred to herein as "instant offers". This feature allows merchants to reward consumers who use a mobile device running the wallet application to make purchases. Consumers benefit from the instant offer because, among other reasons, they do not need to specifically select an offer via the wallet application. Depending on the implementation, an instant offer can be used along with an offer explicitly selected by the consumer from the wallet application. Whether an offer is selected by the consumer or provided "instantly," a consumer identifier ("Consumer ID") value retrieved from the mobile device (*e.g.,* from secure element 112) is used as the key for retrieving and redeeming an instant offer.

[0158] Referring to FIG. 7, in one embodiment, a consumer selects offers from the wallet application to be presented at the checkout. At block 702, a payment is requested at a POS. If at block 704, it is determined that the payment is not a contactless payment, then at block 706 the payment process is completed via alternative means (*e.g.*, by using cash) and the checkout process is completed. If it is determined at block 704 that the payment will be a contactless payment, then the mobile device user is asked to tap his or her mobile device to the reader (*e.g.*, reader 120 described above).

[0159] In response, the mobile device is tapped to the reader. During the tap event, a number of data elements can be passed between the reader and a secure element on the mobile device as described above. In one embodiment, the payment card data, Consumer ID, loyalty number, and offer codes are passed to the reader during the tap of the reader. In this embodiment, Consumer ID is sent to the reader even if the tap is for a payment only transaction with no offers selected.

[0160] If at block 708 it is determined that a MoCom Consumer ID is not present, then at block 706 the payment process is completed and the checkout process is completed by processing the payment.

[0161] If it is determined at block 708 that a MoCom Consumer ID is present, then at block 710 a determination is made as to whether a MoCom offer is present (*e.g.*, an offer selected by the user via a wallet application). If at block 710 a determination is made that a MoCom offer is present, then a determination is made at block 712 as to whether a MoCom instant offer has been defined as well. If at block 712 it is determined that a MoCom instant offer has been defined, both the MoCom offer (*i.e.*, an offer selected by a user via a wallet application interface) and MoCom instant offer are processed, as shown in block 714. Once the MoCom offer and/or MoCom instant offer are processed, the payment associated with those offers is processed as shown at step 706.

[0162] If at block 710 a determination is made that a MoCom Offer is not present, then at block 716 a determination is made as to whether a MoCom instant offer has been defined. If not, the payment is completed as shown at step 706. If a determination is made at block 716 that the MoCom instant offer is present, the MoCom instant offer is processed as shown at block 718 and the payment associated with the MoCom instant offer processed as shown at block 706.

[0163] If a determination is made at block 712 that a MoCom instant offer has not been defined, then a standard MoCom offer is processed, as shown at block 720 and at block 706 the payment processed is completed.

[0164] The merchant POS system can use the presence of the ConsumerID to trigger the use of an instant offer. The offer could be, for example, a cents off or percentage off type offer that a merchant using the MoCom system defines. This can be, for example, applied for the purchase of a specific item. In an exemplary implementation, the merchant is provided an option of turning instant offer functionality off or on when a wallet offer is presented during the tap.

[0165] The instant offer can be defined by a merchant and then distributed to its retail locations. The offer can also have an associated specific start and end date.

The ability to distribute instant offers to different geographical areas can be taken into account as well.

Commerce Applet Package/Applet/Instance Management

[0166] The following section defines the AID values and application specific parameters used during download/installation of commerce applet 113 (FIG. 1). Table 20 defines AIDs.

TABLE 20 – AIDs

Description	AID
Package AID	A0 00 00 04 85 10 01 01
Applet AID	A0 00 00 04 85 10 01 01 00
Instance AID	A0 00 00 04 85 10 01 01 01

Applet-Specific Installation Parameters

[0167] The commerce applet's initial commerce services data characteristics may be provisioned via applet-specific installation parameters. This data follows the standard JavaCard AID and installation parameters.

These parameters must be coded as shown in Table 21:

TABLE 21 – Applet Installation Parameters

Provisioning Data	Byte Size	Default Value
Maximum Number of Loyalty Records	2	20
Maximum Number of Pre-Load Merchant Records	2	1
Maximum Number of Transaction Records	2	3
Total:	6	

Memory Requirements

[0168] Exemplary memory specifications are listed in Table 22 below. The first memory specification, "Package Download," indicates the approximate amount of non-volatile (EEPROM) memory space required to download the commerce applet package. The second memory specification, "Instantiation," indicates the amount of memory required to instantiate a new instance of the commerce applet.

The final memory requirement, "Transient Data Space," indicates the amount of volatile (RAM) memory that is used by each instance of the commerce applet.

TABLE 22 – Applet Memory Requirements

Memory	Byte Size
Package Download	9396
Instantiation	6260
Transient Data Space	518

Data Management

[0169] The available commerce (*e.g.*, loyalty, offers, rewards, etc.) data is stored within the commerce applet 113 onboard the secure element 112. All of the relevant commerce data is stored in three separate data tables. These data tables are managed by the commerce applet 113. Additional commerce data may be stored/managed within a corresponding commerce widget 115 onboard the handset.

[0170] In one embodiment, the data elements defined herein have a variable length. Therefore, all elements (included those with a fixed length) will be assigned a maximum length. As a result, all lengths and byte size references should be interpreted as maximum values.

Commerce Data

[0171] Commerce applet 113 manages a few data fields that are shared by all commerce service applications. These data fields are stored in persistent data variables. An exemplary data element, Consumer ID, is defined in Table 23. Additional elements may be stored as well, such as consumer/platform keys and certificates.

TABLE 23

Variable	Type	Description
ConsumerID	byte[]	Unique consumer ID assigned to a specific MoCom consumer/user.

Loyalty Data Table

[0172] Commerce applet 113 also includes loyalty data tables enabling the storage/management of all consumer loyalty data.

[0173] Table 24 defines the data elements (and their corresponding tag values used during TLV encoding) that are included in the loyalty data table.

TABLE 24 – Loyalty Data

Data Element	Tag Value	Byte Size	TLV Encoding Overhead
LOYALTY_PROGRAM_ID	0xDF41	8	3
LOYALTY_ACCOUNT_CODE	0xDF43	32	3
Total:		40	6
Minimum TLV Encoded Record Size:		46	

[0174] The data is stored in a record oriented data buffer, where the loyalty identifier ("Loyalty ID") is utilized as the key field for search/retrieval tasks.

[0175] In an exemplary embodiment, TLV Data Overhead includes a (maximum) of five bytes per element data overhead (2-byte tag and 3-byte length) as required by the BER-TLV encoding format.

[0176] In an alternative embodiment, an index (or hash table) may be created internally to speed up the Loyalty ID search task.

Cached Merchant Data Table

[0177] Commerce applet 113 also includes a merchant cached data table enabling the storage/management of all data related to a given merchant. This feature allows the commerce data for a given merchant to be pre-loaded by the wallet application 114 in order to improve performance.

[0178] Table 25 defines the data elements (and their corresponding tag values used during TLV encoding) that are included in the cached merchant data table.

TABLE 25 – Cached Merchant Data

Data Element	Tag Value	Byte Size	TLV Encoding Overhead
MERCHANT_ID	0xDF31	8	3
LOYALTY_PROGRAM_ID	0xDF41	8	3
LOYALTY_ACCOUNT_CODE	0xDF43	32	3

OFFER_ID	0xDF51	8	3
OFFER_CODE	0xDF53	130	3
.....			
Maximum		104	6
Minimum TLV Encoded Record Size:		110	

[0179] The data is stored in a record oriented data buffer, where the merchant identifier ("Merchant ID") is utilized as the key field for search/retrieval tasks. An index (or hash table) may be created internally to speed up the Merchant ID search task.

[0180] In an exemplary embodiment, TLV Data Overhead includes a (maximum) of five bytes per element data overhead (2-byte tag and 3-byte length) as required by the BER-TLV encoding format.

Transaction Log

[0181] Commerce applet 113 includes a transaction log that is used to track usage within the MoCom platform at the merchant point-of-sale. During commerce widget 115 and secure element 112 synchronization tasks, this transaction log is transmitted up to the commerce widget 115 for later over-the-air ("OTA") synchronization with the MoCom platform.

[0182] The actual content of the transaction log depends upon the Get Commerce Data command data/parameters provided by reader 120 during the transaction process at the merchant point-of-sale. An exact copy of the data payload sent to the commerce applet 113 by reader 120 via the Get Commerce Data APDU command is stored within that commerce transaction's record.

[0183] The transaction status is determined based on the logical result of the commerce data processing. If a data/processing error is detected within the commerce applet 113, the corresponding internal error code can be appended to the transaction log.

[0184] The following table defines the data elements (and their corresponding tag values used during TLV encoding) that are included in the transaction log.

TABLE 26 – Transaction Log Data

Data Element	Tag Value	Byte Size	TLV Encoding Overhead

Get Commerce Data command parameter(s)/data	xx	255	4
TRANSACTION_STATUS	0xDF62	3	3
Total:		266	7
Maximum TLV Encoded Record Size:		273	

[0185] The data is stored in a record oriented data buffer. A variable Get Commerce Data command data size is supported.

[0186] TLV Data Overhead includes a (maximum) of five bytes per element data overhead (2-byte tag and 3-byte length) as required by the BER-TLV encoding format.

Error Management

[0187] In an exemplary embodiment, error detection and management is handled at two levels. First, the response of the APDU command includes a two-byte Status Word result value. These responses are standardized and dictated by ISO 7816-4. However, a second level of error handling is managed internally by the Commerce Services applet. The second level of management includes the issuance of a standard 0x6909 status word in the response to the APDU command. Following this response, the client may issue a second command ("Get Internal Error Code") to obtain a two-byte internal error code. This code may be cross-referenced to Table 27. Table 27 provides details on where and why the error occurred within the applet.

[0188] Particularly, Table 27 provides a master list of all possible internal error codes returned by the Get Internal Error Code APDU command supported by the commerce applet.

TABLE 27 – Internal Error Codes

Error Code	Error Description
0x0101	SSE_INTERNAL_ERROR_APPLET_NOT_PROVISION
0x0102	SSE_INTERNAL_ERROR_COMMAND_NOT_ALLOWED_VIA_CONTACTLESS_INTERFACE
0x0103	SSE_INTERNAL_ERROR_COMMAND_NOT_ALLOWED_INVALID_CONTEXT
0x0201	SSE_INSTALL_INVALID_INSTALLATION_PARAMETER_LENGTH
0x0301	SSE_PARSE_COMMAND_DATA_INVALID_COMMERCE_TAG
0x0302	SSE_PARSE_COMMAND_DATA_INVALID_CONSUMER_ID_LENGTH

0x0302	SSE_PARSE_COMMAND_DATA_INVALID_MERCHANT_ID_LENGTH
0x0302	SSE_PARSE_COMMAND_DATA_INVALID_MERCHANT_LOCATION_LENGTH
0x0303	SSE_PARSE_COMMAND_DATA_INVALID_DATE_TIME_STAMP_LENGTH
0x0304	SSE_PARSE_COMMAND_DATA_INVALID_MERCHANT_COMMERCE_APP_ VERSION_LENGTH
0x0305	SSE_PARSE_COMMAND_DATA_INVALID_MERCHANT_CAPABILITIES_ LENGTH
0x0306	SSE_PARSE_COMMAND_DATA_INVALID_LOYALTY_ID_LENGTH
0x0307	SSE_PARSE_COMMAND_DATA_INVALID_LOYALTY_ACCOUNT_CODE_ LENGTH
0x0308	SSE_PARSE_COMMAND_DATA_INVALID_OFFER_ID_LENGTH
0x0309	SSE_PARSE_COMMAND_DATA_INVALID_OFFER_TYPE_CODE_LENGTH
0x030A	SSE_PARSE_COMMAND_DATA_INVALID_TRANSACTION_ID_LENGTH
0x030B	SSE_PARSE_COMMAND_DATA_INVALID_CACHED_MERCHANT_DATA_ OFFER_COUNT_LENGTH
0x030C	SSE_PARSE_COMMAND_DATA_INVALID_CACHED_MERCHANT_DATA_ LENGTH
0x030D	SSE_PARSE_COMMAND_DATA_INVALID_COMMERCE_TAG
0x0A01	SSE_GET_RESPONSE_REMAINING_DATA_INVALID_RESUME_STATE
0x0B01	SSE_VERIFY_REQUIRED_PARAMETERS_INVALID_PARAMETER_TAG
0x0B02	SSE_VERIFY_REQUIRED_PARAMETERS_DATE_TIME_STAMP_NOT_ PRESENT
0x0B03	SSE_VERIFY_REQUIRED_PARAMETERS_MERCHANT_ID_NOT_PRESENT
0x0B04	SSE_VERIFY_REQUIRED_PARAMETERS_MERCHANT_STORE_ID_NOT_ PRESENT
0x0B05	SSE_VERIFY_REQUIRED_PARAMETERS_MERCHANT_COMMERCE_APP_ VERSION_NOT_PRESENT
0x0B06	SSE_VERIFY_REQUIRED_PARAMETERS_MERCHANT_CAPABILITIES_NOT_ PRESENT
0x0B07	SSE_VERIFY_REQUIRED_PARAMETERS_LOYALTY_ID_NOT_PRESENT
0x0B08	SSE_VERIFY_REQUIRED_PARAMETERS_LOYALTY_ACCOUNT_CODE_NOT_ PRESENT
0x0B0A	SSE_VERIFY_REQUIRED_PARAMETERS_CONSUMER_ID_NOT_PRESENT
0x0B0B	SSE_VERIFY_REQUIRED_PARAMETERS_CACHED_MERCHANT_DATA_ OFFER_COUNT_NOT_PRESENT
0x0B0C	SSE_VERIFY_REQUIRED_PARAMETERS_EMBEDDED_TLV_CACHED_ MERCHANT_DATA_NOT_PRESENT
0x0C01	SSE_GET_COMMERCE_DATA_INVALID_WALLET_STATE
0x0E01	SSE_UPDATE_CACHED_MERCHANT_DATA_FAILED_CMD_BUFFER_ LENGTH_EXCEEDED
0x1101	LME_INVALID_LOYALTY_TAG
0x1102	LME_INVALID_LOYALTY_ID_LENGTH
0x1103	LME_INVALID_LOYALTY_ACCOUNT_CODE_LENGTH
0x1201	LME_GET_LOYALTY_DATA_RECORD_NOT_FOUND
0x1202	LME_GET_LOYALTY_DATA_INSUFFICIENT_BUFFER_LENGTH
0x1301	LME_UPDATE_LOYALTY_ID_NOT_SPECIFIED
0x1401	LME_DELETE_LOYALTY_ID_NOT_SPECIFIED
0x1402	LME_DELETE_LOYALTY_DATA_RECORD_NOT_FOUND

0x1501	LME_GET_LOYALTY_RECORD_INSUFFICIENT_BUFFER_LENGTH
0x3101	TLVME_MAX_DATA_LENGTH_EXCEEDED
0x3201	TLVME_APPEND_FAILED_INVALID_LENGTH
0x3301	TLVME_GET_NEXT_TAG_FAILED_INVALID_CONTEXT_NO_CURRENT_TAG
0x3401	TLVME_GET_TLV_OBJECT_FAILED_INVALID_TAG_CLASS
0x3402	TLVME_GET_TLV_OBJECT_FAILED_INVALID_LENGTH
0x3403	TLVME_GET_TLV_OBJECT_FAILED_TLV_LENGTH_NOT_SUPPORTED
0x3501	TLVME_GET_NEXT_ELEMENT_FAILED_INVALID_TAG_CLASS
0x3502	TLVME_GET_NEXT_ELEMENT_FAILED_TLV_LENGTH_NOT_SUPPORTED
0x3503	TLVME_GET_NEXT_ELEMENT_FAILED_INVALID_LENGTH
0x3504	TLVME_GET_NEXT_ELEMENT_FAILED_BUFFER_LENGTH_EXCEEDED
0x4101	DME_DATAMANAGER_INVALID_RECORD_NUMBER
0x4102	DME_DATAMANAGER_INVALID_RECORD_LENGTH
0x4103	DME_DATAMANAGER_RECORD_NOT_INITIALIZED
0x4104	DME_DATAMANAGER_RECORD_STORE_FULL
0x4105	DME_DATAMANAGER_INVALID_DATA_LENGTH
0x4106	DME_DATAMANAGER_INSUFFICIENT_BUFFER_SIZE
0x4201	DME_DATAMANAGER_PRIMARY_INDEX_NOT_ACTIVE
0x4202	DME_DATAMANAGER_PRIMARY_INDEX_KEY_NOT_SPECIFIED
0x4203	DME_DATAMANAGER_INVALID_PRIMARY_INDEX_KEY_LENGTH
0xA201	SUE_NO_INSTALL_PARAMETERS_FOUND
0xA202	SUE_INSUFFICIENT_APPLICATION_PARAMETER_BUFFER_LENGTH
0xA203	SUE_NO_APPLICATION_SPECIFIC_INSTALL_PARAMETERS_FOUND
0xD101	SSE_SECURITY_AUTHENTICATION_FAILED
0xD102	SSE_SECURITY_INVALID_CIPHER_DATA_LENGTH
0xD103	SSE_SECURITY_INVALID_KEY_DATA_LENGTH
0xD104	SSE_SECURITY_INVALID_DIVERSIFICATION_DATA_LENGTH
0xDC00	SSE_SECURITY_CRYPTO_EXCEPTION_UNDEFINED_REASON
0xDC01	SSE_SECURITY_CRYPTO_EXCEPTION_ILLEGAL_VALUE
0xDC02	SSE_SECURITY_CRYPTO_EXCEPTION_UNINITIALIZED_KEY
0xDC03	SSE_SECURITY_CRYPTO_EXCEPTION_NO_SUCH_ALGORITHM
0xDC04	SSE_SECURITY_CRYPTO_EXCEPTION_INVALID_INIT
0xDC05	SSE_SECURITY_CRYPTO_EXCEPTION_ILLEGAL_USE

Commerce Services

[0189] The following section provides a detailed description of the APDU commands available via the commerce applet 113.

APDU Commands

[0190] All communications/data exchanges with the commerce applet 113 will be performed via APDU commands as defined in the ISO 7816 standards. Additional restrictions and data handling are described below.

Command Usage Restrictions

[0191] For security reasons, a subset of the available commerce service commands can be restricted to specific connection modes. In one embodiment, referred to as "contact (wallet) mode," all of the APDU commands defined in Table 18 above are available. However, in contactless mode, the following commands are allowed:

- Get Version
- Get Internal Error Code
- Get Response (Remaining Data)
- Get Commerce Data

[0192] If any other APDU command is sent in contactless mode, an exception is thrown and the Internal Error Code is set to the corresponding invalid command mode value (0x0102).

[0193] In one embodiment, the Get Commerce Data command may only be successfully executed when wallet application 114 is open. When the wallet application 114 is either started or terminated by the consumer, it is the responsibility of the wallet application 114 to notify a wallet companion applet (WCAp) so that it can perform monitoring, management and/or security functions. The WCAp applet, in turn, notifies the commerce applet of the wallet application state via a shared interface. WCAp applets are discussed in U.S. Pat. Appln. No. 13/857,400 entitled "Systems, Methods, and Computer Program Products For Securing And Managing Applications On Secure Elements," which is hereby incorporated by reference in its entirety.

Data Payload Management

[0194] Commerce applet 113 validates that all required parameters have been included in the data payload. However, in most cases all non-relevant data elements can be ignored and a command will still process normally. In one

embodiment, the length expected (Le) value is not verified by the commerce applet 113. It can be assumed to be the value zero, allowing the commerce applet 113 to send all available data via the response.

Get Version

[0195] The Get Version command is used to obtain the version information of the currently loaded commerce applet 113. The version will be stored in three bytes (xx.yy.zz), where xx = release version, yy = major version (Wave) number, and zz = minor version number. This information is assigned by, for example, a MoCom platform system, specified during applet development or packaging, or stored as a static value within the code, and cannot be changed.

[0196] Table 28 defines the settings for the Get Version APDU command:

TABLE 28 – Internal Get Version

CLA	INS	P1	P2	Lc	Data	Le
90	10	00	00	00	*<none>*	3

[0197] In one embodiment, no data is sent to the commerce applet. The Lc data length is 0x00.

[0198] The version information is contained within a three-byte response. The Le data length is 0x03. A length of 0x00 is also allowed. Exemplary response data elements are defined in Table 29:

TABLE 29 – Response Data

Data Element	Byte Size	Value
Commerce Specification Version Tag	1	0xDF12
Commerce Specification Version Length	1	3
Commerce Specification Version Value	3	[Version (xx.yy.zz)]
Total:	5	

[0199] Table 30 defines the possible Status Word values that may be returned by this command.

TABLE 30 – Status Codes

SW1	SW2	Description

90	00	Successful Execution of Command
67	00	Wrong Data Length
69	09	Internal Error

Provision Applet

[0200] An applet provisional command, "Provision Applet," allows the provisioning (or update) of the consumer related data, including the consumer ID and optionally related security data (key value and certificates). The new/updated data values are specified via the command data. In an exemplary embodiment, the Provision Applet command may only be used to update the Consumer ID.

[0201] Tables 31 and 32 define the settings for the Provision Applet APDU command:

TABLE 31 – Provision Applet

CLA	INS	P1	P2	Lc	Data	Le
90	12	00	00	XX	TLV-Encoded Provisioning Data	00

[0202] The incoming data, illustrated in table 31, consists of the TLV encoded provisioning data. Therefore, the Lc data length is variable.

[0203] In one embodiment, no data is returned by the commerce applet 113. The Le data length is 0x00.

TABLE 32 – Command Data

Data Element	Byte Size*	Value
Provisioning Data Element Tag	1	[Element Tag]
Element Data Length	1	xx
Element Data Value	xx	[Data]
…….		
Total:	<var>	

[0204] Table 33 defines the possible Status Word values that may be returned by Provision Applet command

TABLE 33 – Status Codes

SW1	SW2	Description
90	00	Successful Execution of Command
67	00	Wrong Data Length

69	09	Internal Error

Get Consumer Info

[0205] The Get Consumer Info command is used to obtain a subset of static data related to the token owner (*i.e.*, consumer). This data includes the following:

Consumer Identifier

[0206] Table 34 defines the settings for the Get Consumer Info APDU command:

TABLE 34 – Get Consumer Info

CLA	INS	P1	P2	Lc	Data	Le
90	14	00	00	00	*<none>*	00

[0207] No data is sent to the commerce applet 113. The Lc data length is, for example, 0x00. The actual length of the requested consumer information returned by the applet is variable, specific to the available consumer data. Therefore, the Le data length is 0x00, allowing the applet to manage a variable length response.

[0208] The response data is returned as a TLV formatted data steam. The Consumer ID may also be returned.

TABLE 35 – Response Data

Data Element	Byte Size	Value
Consumer ID Tag	1	0XDF21
Consumer ID Length	1	16
Consumer ID	16	[Consumer ID]
Total:	<var>	

[0209] Table 36 defines the possible Status Word values that may be returned by this command.

TABLE 36 – Status Codes

SW1	SW2	Description
90	00	Successful Execution of Command
67	00	Wrong Data Length
69	09	Internal Error

Get Commerce Data

[0210] The Get Commerce Data command provides commerce information (*e.g.*, loyalty, offers and rewards) for a specified merchant (or set of merchants), based on the specified merchant/loyalty identifiers and supported offer types. This command provides a single point of contact for reader 120 attached to the merchant POS system (*e.g.*, POS terminal).

[0211] A date/time stamp, merchant ID, store ID, commerce protocol version, and merchant capabilities byte can be sent as part of the incoming data. Additional loyalty identifiers may also be sent in order to specify (filter) the loyalty information requested. The applet shall search a loyalty data table (Table 5), for the specified merchant/loyalty program ID(s) and retrieve the corresponding loyalty data. Additional offer type codes may be also sent as part of the incoming data in order to specify the type of offer information requested. The commerce applet 113 searches the cached merchant data table (Table 25) for the specified merchant identifier/offer code(s) and retrieves the corresponding offer data.

Required Parameters include:

- Date/Time Stamp
- Merchant ID
- Store ID
- App Version

[0212] Once transmission has been successfully completed, the applet shall create an entry in its transaction log recording the commerce data request.

[0213] Tables 37 and 38 define the settings for the Get Commerce Data APDU command:

TABLE 37 – Get Commerce Data

CLA	INS	P1	P2	Lc	Data	Le
90	50	00	00	xx		00

[0214] The incoming data consists of a date/time stamp (used for transaction logging), merchant identifier, store identifier, merchant capabilities byte, and an optional set of additional data elements, including one or more additional loyalty identifiers (indicating loyalty programs supported by the merchant location), and additional offer codes (indicating the type of offers supported by the merchant location). In one embodiment, if a merchant does not specify a Merchant Capability parameter, a default mode supporting only merchant based loyalty and offers is used.

[0215] The actual length of the requested commerce data returned by the applet is variable specific to the available loyalty/offers related data. Therefore, the Le data length is 0x00, allowing the applet to manage a variable length response.

TABLE 38 – Command Data

Data Element	Byte Size	Value
Date/Time Stamp Tag	1	0xDF11
Date/Time Stamp Length	1	7
Date/Time Stamp	7	[Date/Time Stamp]
Merchant ID Tag	1	0xDF31
Merchant ID Length	1	8
Merchant ID	8	[Merchant ID]
Store ID Tag	1	0x32
Store ID Length	1	32
Store ID	32	[Store ID]
Commerce Version Tag	1	0xDF12
Commerce Version Length	1	3
Commerce Version Data	2	[Commerce App Version]
Merchant Capability Tag	1	0xDF33
Merchant Capability Length	1	2
Merchant Capability Data	1	[Merchant Capability Code]
Transaction ID Tag	1	0xDF61
Transaction ID Length	1	16
Transaction ID	16	[Transaction ID]
Additional Loyalty ID Tag	1	0xDF41
Additional Loyalty ID Length	1	8
Additional Loyalty ID	8	[Loyalty ID]
…….		
Additional Offer Type Tag	1	0xDF54
Additional Offer Type Length	1	9
Additional Offer Type Code	9	[Offer Type Code]

…….		
Total:	<var>	

[0216] The response data is returned as a TLV formatted data steam. The MoCom platform-specific consumer identifier and all relevant loyalty/offers data are returned in a single data payload.

Consumer ID

[0217] The Consumer ID is sent in TLV format, where the data is sent using the tag CONSUMER_ID (0XDF21). In one embodiment, unless an error is detected, the consumer ID shall always be returned.

Loyalty

[0218] In one embodiment, each instance of loyalty data shall consist of the following TLV encoded data elements:

- Loyalty Identifier
- Loyalty Account Code

[0219] Within this data stream, the first tag shall contain the Loyalty Identifier tag (*T*) byte (0xDF41). The length (*L*) byte shall specify the length of the Loyalty Identifier. The value (*V*) shall contain the actual Loyalty Identifier of *L* length for the corresponding Loyalty Data that will immediately follow.

[0220] The second tag should contain the Loyalty Account Code tag (*T*) byte (0xDF43). The length (*L*) byte shall specify the total length of the account code data linked to the previous Loyalty Identifier. The value (*V*) shall contain the actual loyalty data of *L* length.

[0221] Any additional loyalty identifiers found within the loyalty data table are appended to the TLV encoded data payload using this same format.

Offers

[0222] Each instance of offer data shall consist of the following TLV encoded data elements:

- Offer ID
- Offer Code

[0223] Within this data stream, the first tag contains the Offer ID tag (*T*) byte (0xDF51). The length (*L*) byte specifies the length of the Offer ID. The value (*V*) contains the Offer ID for the corresponding offer data that will immediately follow.

[0224] The second tag preferably contains the Offer Code tag (*T*) byte value (0xDF53). The length (*L*) byte specifies the length of the Offer Type Code. The value (*V*) contains the Offer Code data for the corresponding Offer ID.

[0225] Any additional offer identifiers found within the offer data table are appended to the TLV encoded data payload using this same format. Exemplary response data is defined in Table 39.

TABLE 39 – Response Data

Data Element	Byte Size	Value
Consumer Identifier Tag	1	0XDF21
Consumer Identifier Length	1	16
Consumer Identifier	16	[Consumer ID]
Loyalty Identifier Tag	1	0xDF41
Identifier Length	1	8
Loyalty Identifier	8	[Loyalty ID]
Loyalty Account Code Tag	1	0xDF43
Account Code Length	1	32
Loyalty Account Code	32	[Acct Code]
…….		
Offer ID Tag	1	0xDF51
Offer ID Length	1	8
Offer ID Value	8	[Offer ID]
Offer Code Tag	1	0xDF53
Offer Code Length	1	130
Offer Code Value	130	[Offer Code]
…….		
Total:	<var>	

[0226] Commerce applet 113 manages the transmission of multiple response packets (using the Get Response command) when the total data length exceeds 256 bytes. Table 40 defines the possible Status Word values that may be returned by the Get Response command.

TABLE 40 – Status Codes

SW1	SW2	Description

90	00	Successful Execution of Command
61	00	Successful Execution of Command w/ Additional data available via Get Response
67	00	Wrong Data Length
69	09	Internal Error

Post Transaction Data

[0227] The Post Transaction Data command provides a method through which the Merchant PoS system or payment terminal may return post-transaction data, including redeemed coupons, new offers, e-receipts, or other enhanced commerce data.

[0228] Tables 41 and 42 define the settings for the Post Transaction Data APDU command:

TABLE 41 – Post Transaction Data

CLA	INS	P1	P2	Lc	Data	Le
90	52	00	00	xx	<TLV-Encoded Transaction Data>	00

[0229] The incoming data consists of the TLV encoded provisioning data and a platform signature for authenticity purposes. Therefore, the Lc data length is variable.

[0230] Data need not be returned by commerce applet 113. The Le data length is 0x00.

TABLE 42 – Command Data

Data Element	Byte Size	Value
Post Transaction Data Element Tag	1	[Element Tag]
Element Data Length	1	xx
Element Data Value	xx	[Data]
…….		
Total:	<var>	

[0231] Table 43 defines the possible Status Word values that may be returned by the Post Transaction Data command.

TABLE 43 – Status Codes

SW1	SW2	Description

90	00	Successful Execution of Command
67	00	Wrong Data Length
69	09	Internal Error

Get Transaction Log

[0232] The Get Transaction Log is used to obtain all data stored in the transaction log. This command is typically used by the commerce widget for the purpose of widget and secure element data synchronization tasks.

[0233] Table 44 defines the settings for the Get Transaction Log APDU command:

TABLE 44 – Get Transaction Log

CLA	INS	P1	P2	Lc	Data	Le
90	54	00	0x	00	*<none>*	

P2 Value	Applet Behavior
0x00	Normal processing.
0x01	Clear transaction log. No data transmitted.
0x02	Get Transaction Log Status

[0234] In one embodiment, no data is sent to the commerce applet. The Lc data length is 0x00. The actual length of the transaction data returned by the applet is variable, depending on the number of transaction records and the variable length of the corresponding transaction log data. Therefore, the Le data length can be 0x00, allowing commerce applet 113 to manage variable length response.

[0235] Preferably, response data is returned as a TLV formatted data steam.

Transaction Log Response Data

[0236] Each transaction log record shall consist of an Embedded-TLV Transaction Log tag followed by all related data elements. The data elements included in the transaction record are a mirror of those provided during the corresponding Get Commerce Data command requested by the Commerce-enabled payment terminal (NFC reader) at the merchant point-of-sale. Additional transaction log records are appended to the data using the same format. Table 45 illustrates exemplary response data.

TABLE 45 – Response Data

Data Element	Byte Size	Value
Embedded TLV Transaction Record Tag	1	0xDF60
Embedded TLV Transaction Record Length	3	xx
TLV-encoded transaction data	xx	xx
…….		
Total:	<var>	

[0237] In one embodiment, commerce applet 113 manages the transmission of multiple response packets using the Get Response command when the total data length exceeds 256 bytes.

Transaction Log Status Response Data

[0238] When the transaction log status is requested, the commerce applet responds with status information within an embedded TLV data payload. This data includes the number of available transaction log records, loyalty and offer records sent during the last transaction. This is the same data payload provided to WCAp via the shared interface. Table 46 illustrates exemplary response data.

TABLE 46 – Response Data

Data Element	Byte Size	Value
Embedded TLV Transaction Status Tag	1	0xE4
Embedded TLV Transaction Record Length	1	0x0C
Transaction Record Count Tag	1	0xDB
Transaction Record Count Length	1	0x02
Transaction Record Count Value	2	xx
Last Transaction Loyalty Count Tag	1	0xDC
Last Transaction Loyalty Count Length	1	0x02
Last Transaction Loyalty Count Value	2	xx
Last Transaction Offer Count Tag	1	0xDD
Last Transaction Offer Count Length	1	0x02
Last Transaction Offer Count Value	2	xx
Total:	14	

[0239] Table 47 defines possible Status Word values that may be returned by the Get Transaction Log command.

TABLE 47 – Status Codes

SW1	SW2	Description
90	00	Successful Execution of Command

61	00	Successful Execution of Command w/ Additional data available via Get Response
67	00	Wrong Data Length
6B	00	Wrong P1/P2 Parameter
69	09	Internal Error

Get Internal Error Code

[0240] The Get Internal Error Code command is used to retrieve the last internal error code generated by the Commerce Services applet. This code provides a value that can be cross-referenced with the Internal Error Codes table (Table 26), providing a more specific description of the error. This command is used for more detailed diagnostic and error resolution.

[0241] Table 48 defines the settings for the Get Internal Error Code APDU command:

TABLE 48 – Get Internal Error Code

CLA	INS	P1	P2	Lc	Data	Le
90	70	00	00	00	*<none>*	02

[0242] In one embodiment, no data is sent to the applet. The Lc data length is 0x00. The error code is contained within a two-byte response. Therefore, the Le data length is 0x02.

[0243] The following table defines the possible Status Word values that may be returned by this command.

TABLE 49 – Status Codes

SW1	SW2	Description
90	00	Successful Execution of Command
67	00	Wrong Data Length
69	09	Internal Error

Loyalty Services

Get Loyalty Data

[0244] The Get Loyalty Data command defined in Tables 50 and 51 is used to obtain the stored loyalty information based on a specified loyalty identifier. The

two-byte loyalty identifier may be sent as part of the incoming data in order to specify the loyalty information requested. Commerce applet 113 searches a table of loyalty data for the specified merchant/loyalty ID and retrieves all of the corresponding loyalty data.

TABLE 50 – Get Loyalty Data

CLA	INS	P1	P2	Lc	Data	Le
90	30	00	00	xx	[TLV-Encoded Loyalty ID]	00

[0245] The (optional) incoming data shall consist of a TLV encoded loyalty identifier indicating the loyalty information requested. If Lc is set to 0x00 (no data incoming data is specified), all available loyalty identifiers are returned.

[0246] The actual length of the requested loyalty data returned by the applet is variable specific to the requested/available loyalty data. Therefore, the Le data length is 0x00, allowing the applet to manage a variable length response.

TABLE 51 - Command Data

Data Element	Byte Size	Value
Loyalty Identifier Tag	1	0xDF41
Loyalty Identifier Length	1	8
Loyalty Identifier	8	[Loyalty ID]
Total:	<var>	

[0247] The response data (Table 51) is returned as a TLV formatted data stream. All of the relevant loyalty data is returned in a single data payload.

[0248] In one embodiment, if a loyalty data dump is requested (Lc = 0x00), a list of all Loyalty Identifiers is returned in LV (no tag) format. Thus, only the Loyalty Identifier for each entry is included in the data payload.

[0249] Each instance of loyalty data includes the following data elements:

- Loyalty Identifier
- Loyalty Account Code

TABLE 52 – Response Data

Data Element	Byte Size	Value
Loyalty Identifier Tag	1	0xDF41

Identifier Length	1	8
Loyalty Identifier	8	[Loyalty ID]
Loyalty Account Code Tag	1	0xDF43
Account Code Length	1	xx
Loyalty Account Code	xx	[Acct Code]
Total (Max):	<var>	

[0250] Table 53 defines the possible Status Word values that may be returned by this command.

TABLE 53 – Status Codes

SW1	SW2	Description
90	00	Successful Execution of Command
61	00	Successful Execution of Command w/ Additional data available via Get Response
67	00	Wrong Data Length
69	09	Internal Error

Update Loyalty Data

[0251] The Update Loyalty Data command is used to add or update the specified merchant loyalty data. The data is sent as TLV formatted data stream. If the specified loyalty identifier exists, the corresponding loyalty data elements are updated. If the loyalty identifier does not exist, a new data record is created in the loyalty data table. Tables 54 and 55 define the settings for the Update Loyalty Data APDU command:

TABLE 54 – Update Loyalty Data

CLA	INS	P1	P2	Lc	Data	Le
90	32	00	00	xx	TLV-Encoded Loyalty Data	00

[0252] The incoming data shall consist of TLV encoded loyalty data. Therefore, the Lc data length is variable. In one embodiment, no data is returned by the applet. The Le data length is be 0x00.

TABLE 55 – Command Data

Data Element	Byte Size	Value
Loyalty Identifier Tag	1	0xDF41
Identifier Length	1	8

Loyalty Identifier	8	[Loyalty ID]
Loyalty Account Code Tag	1	0xDF43
Account Code Length	1	xx
Loyalty Account Code	Xx	[Acct Code]
Total:	<var>	

[0253] Table 56 defines the possible Status Word values that may be returned by this command.

TABLE 56 – Status Codes

SW1	SW2	Description
90	00	Successful Execution of Command
67	00	Wrong Data Length
69	09	Internal Error

Delete Loyalty Data

[0254] The Delete Loyalty Data command is used to delete the specified merchant loyalty data. The one-byte merchant code is specified via the command data. Alternatively, the P2 byte may be used to purge all existing offers. If P2 is set to 0xFF, the entire offer data store is deleted.

[0255] Tables 57 and 58 define the settings for the Delete Loyalty Data APDU command:

TABLE 57 – Delete Loyalty Data

CLA	INS	P1	P2	Lc	Data	Le
90	34	00	xx	xx	TLV-Encoded Loyalty ID	00

[0256] The incoming data consists of a TLV-encoded loyalty identifier. Therefore, the Lc data length is variable.

[0257] In one embodiment, no data is returned by commerce applet 113. The Le data length is 0x00.

TABLE 58 – Command Data

Data Element	Byte Size	Value
Loyalty Identifier Tag	1	0xDF41
Loyalty Identifier Length	1	xx
Loyalty Identifier	Xx	[Loyalty ID]
Total:	<var>	

P2 Value	Applet Behavior
0x00	Normal processing.
0xFF	Purge loyalty table (delete all records)

[0258] Table 59 defines the possible Status Word values that may be returned by the Delete Loyalty Data command.

TABLE 59 – Status Codes

SW1	SW2	Description
90	00	Successful Execution of Command
67	00	Wrong Data Length
69	09	Internal Error

Merchant Cached Data Services

Get Cached Merchant Data

[0259] The Get Cached Merchant Data command is used to obtain all previously loaded data pertaining to a specific merchant. The merchant identifier may be sent as part of the incoming data in order to specify the pre-loaded data requested. If provided, the commerce applet searches a table of cached merchant data for the specified merchant ID and retrieves all of the corresponding data. This command may also be used to obtain information on all cached merchants stored within the Commerce Services applet.

[0260] Table 60 defines the settings for the Get Cached Merchant Data APDU command:

TABLE 60 – Get Cached Merchant Data

CLA	INS	P1	P2	Lc	Data	Le
90	56	00	00	xx	<none>	00

[0261] In one embodiment, no data is sent to the applet. The Lc data length is 0x00. The actual length of the requested cached merchant data returned by the applet is variable, specific to the requested/available cached merchant data. Therefore, the Le data length is 0x00; allowing the applet to manage a variable length response.

[0262] The response data (Table 61) may be returned as a TLV formatted data stream. All of the cached data is returned in a single data payload. Each instance of cached merchant data includes the following corresponding cached merchant data elements (if available):

- Merchant Identifier
- Loyalty Identifier
- Loyalty Account Code
- Offer Identifier(s)
- Offer Code(s)

TABLE 61 – Response Data

Data Element	Byte Size	Value
Merchant ID Tag	1	0xDF31
Merchant ID Length	1	8
Merchant ID	8	[Merchant ID]
Loyalty ID Tag	1	0xDF41
Loyalty ID Length	1	8
Loyalty ID Value	8	[Loyalty ID]
Loyalty Account Code Tag	1	0xDF43
Loyalty Account Code Length	1	32
Loyalty Account Code Value	32	[Loyalty Account Code]
…….		
Offer ID Tag	1	0xDF51
Offer ID Length	1	xx
Offer ID Value	Xx	[Offer ID]
Offer Code Tag	1	0xDF53
Offer Code Length	1	xx
Offer Code Value	Xx	[Offer Code]
…….		
Total:	<var>	

[0263] In an exemplary embodiment, the cached merchant data will be loaded/managed by the wallet application and may include multiple offer IDs/codes pertaining to that specific merchant. However, the applet shall prefix the consumer identifier to the response data and append any additional loyalty/offer data requested by the Get Commerce Data command.

[0264] Table 62 defines the possible Status Word values that may be returned by this command.

TABLE 62 – Status Codes

SW1	SW2	Description
90	00	Successful Execution of Command
67	00	Wrong Data Length
69	09	Internal Error

Update Cached Merchant Data

[0265] The Update Cached Merchant Data command is used to update the cached (quick-response) data for a specified merchant. The data is sent as TLV formatted data stream, similar to the response data returned by the Get Commerce Data command. This command is used to pre-load a given merchant's Get Commerce Data response.

[0266] Tables 63 and 64 define the settings for the Update Cached Merchant Data APDU command:

TABLE 63 – Update Cached Merchant Data

CLA	INS	P1	P2	Lc	Data	Le
90	58	00	0x	xx	TLV-Encoded Cached Merchant Data]	02

P2 Value	Applet Behavior
0x00	Normal processing.
0x01	APDU Chain (data will be appended to CMD buffer)
0Xff	Delete cached merchant data [Lc = 0]

[0267] The incoming data consists of embedded TLV encoded cached merchant data. Therefore, the Lc data length is variable.

[0268] Commerce applet returns a two byte response containing the number of available bytes remaining in the cached merchant data buffer. Therefore, the Le data length is 0x02 (or 0x00).

TABLE 64 – Command Data

Data Element	Byte Size	Value
Merchant ID Tag	1	0xDF31
Merchant ID Length	1	8
Merchant ID Value	8	[Merchant ID]
Cached Merchant Data Offer Count Tag	1	0x57
Cached Merchant Data Offer Count Length	1	1
Cached Merchant Data Offer Count Value	1	[CMD Offer Count]
Embedded TLV Cached Merchant Data Tag	1	0x58
Embedded TLV Cached Merchant Data Length	Xx	xx
Offer ID Tag	1	0xDF51
Offer ID Length	1	xx
Offer ID Value	Xx	[Offer ID]
Offer Code Tag	1	0xDF53
Offer Code Length	1	xx
Offer Code Value	Xx	[Offer Code]
…….		
Total:	<var>	

[0269] The response data (Table 65) returned by the command consists of a 2-byte (short) value representing the number of remaining bytes available in the cached merchant data buffer. This allows the wallet application 114 to manage how many cached offers can "fit" into the Commerce Services applet.

TABLE 65 – Response Data

Data Element	Byte Size	Value
Available Cached Merchant Data Buffer (bytes) Size	2	xx
Total:	2	

[0270] Table 66 defines the possible Status Word values that may be returned by this command.

TABLE 66 – Status Codes

SW1	SW2	Description
90	00	Successful Execution of Command
67	00	Wrong Data Length
69	09	Internal Error

[0271] Table 67 defines the data elements and corresponding tag values and target/max byte sizes used by commerce based applications according to the example aspects described herein. Additional values have been provided for those elements with a limited/fixed value range.

TABLE 67

Commerce Services			
Shared Data Elements			
Data Element	Tag	Max Size	Description
DATE_TIME_STAMP	0x11	7	Date/Time stamp
COMMERCE_APP_VERSION	0x12	3	Supported Commerce App Version Number
Consumer Data Elements			
Data Element	Tag	Max Size	Description
CONSUMER_ID	0x21	16	MoCom Platform specific consumer identifier
CONSUMER_KEY	0x22	16	MoCom Platform generated consumer specific 3DES key
CONSUMER_CERT	0x23	8	MoCom Platform generated consumer signature/ certificate
Merchant Data Elements			
Data Element	Tag	Max Size	Description
MERCHANT_ID	0x31	8	MoCom Platform specific merchant identifier
MERCHANT_STORE_ID	0x32	32	MoCom Platform specific merchant store identifier
MERCHANT_CAPABILITY	0x33	2	Supported Commerce App Services
READER_START_MODE	0x34	2	NFC enabled payment terminal startup mode (provided by Merchant POS System during init)
Merchant Capabilities			
Data Element	Value	Max Size	Description
MERCAP_MERCHANT_LOYALTY	0x80	1	The Get Commerce Data includes a valid merchant identifier used to determine the Loyalty data received by the applet.
MERCAP_ADDITIONAL_	0x40	1	The Get Commerce Data request

LOYALTY			includes additional Loyalty Identifiers. Additional Loyalty data is determined by the specified Loyalty ID(s).
MERCAP_MERCHANT_ OFFERS	0x20	1	Offer type fields aincluded in Get Commerce Data request
MERCAP_ADDITIONAL_ OFFERS	0x10	1	The Get Commerce Data includes a valid merchant identifier used to determine the offers data received by the applet.
MERCAP_PAYMENT	0x08	1	Merchant supports contactless payment.
MERCAP_CLOUD	0x02	1	The merchant supports cloud redemption. Only the Consumer ID will be returned by the applet for resolution in the cloud.
MERCAP_REDEMPTION	0x01	1	The Merchant & Payment Terminal support the transmission of offer redemption data (from the ECR) to the applet via the Post Transaction command.
MoCom Platform Data Elements			
PLATFORM_SIGNATURE	0x71	8	MoCom Platform generated MAC/Signature appended to command/data originating from the platform for remote verification purposes (data integrity/ authenticity).
PLATFORM_KEY	0x72	16	MoCom Platform Key
PLATFORM_CERT	0x73	8	MoCom Platform Certificate

Loyalty			
Loyalty Data Elements			
Data Element	Tag	Max Size	Description
EMBEDDED_TLV_ LOYALTY_DATA	0x40	xx	Embedded TLV loyalty data tag
LOYALTY_ID	0x41	8	MoCom Platform specific loyalty identifier
LOYALTY_STATUS	0x42	1	Loyalty card/account status (see below)
LOYALTY_ACCOUNT_ CODE	0x43	32	Loyalty account (barcode data)
LOYALTY_MAC_ SIGNATURE	0x44	8	MoCom Platform specific MAC/Signature for integrity/

			authenticity verification
Loyalty Status			
Data Element	Value	Max Size	Description
LOYALTY_STATUS_ DEACTIVATED	0x00	1	Loyalty account inactive. Not available.
LOYALTY_STATUS_ ACTIVE	0x01	1	Loyalty account active. Available for use.

Transaction Log			
Transaction Data Elements			
Data Element	Tag	Max Size	Description
EMBEDDED_TLV_ TRANSACTION_LOG	0x60	xx	Transaction log record data tag
TRANSACTION_ID	0x61	16	Transaction ID (assigned by ECR)
TRANSACTION_STATUS	0x62	11	Transaction status; including status byte (see below), 2-byte status word, 2-byte internal error code, 2-byte number of available transaction records, 2-byte last transaction loyalty count, 2-byte last transaction offer count
Transaction Status			
Data Element	Value	Max Size	Description
TRANSACTION_STATUS_SU CCESSFUL	0x00	1	Commerce data received. Result pending.
TRANSACTION_STATUS_FA ILED	0x01	1	Error detected. Internal error code appended.

Offers			
Offer Data Elements			
Data Element	Tag	Max Size	Description
EMBEDDED_TLV_ OFFER_DATA	0x50	xx	Embedded TLV offer data tag
OFFER_ID	0x51	8	MoCom Platform specific offer identifier
OFFER_STATUS	0x52	1	Offer status (see below)
OFFER_CODE	0x53	48	Offer (UPC/EPC/GS1 Databar) barcode data
OFFER_TYPE_CODE	0x54	9	Offer Type (see below)
OFFER_MAC_ SIGNATURE	0x55	8	MoCom Platform specific data security signature

OFFER_UPDATE_FLAG	0x56	1	Update flag (synchronization status)
CACHED_MERCHANT_ DATA_OFFER_COUNT	0x57	1	Offer Count within Cached Merchant Data
EMBEDDED_TLV_ CACHED_MERCHANT_ DATA	0x58	xx	Embedded TLV Cached Merchant (Offer) Data
Offer Status			
Data Element	Value	Max Size	Description
OFFER_STATUS_ DEACTIVATED	0x00	1	Offer present in data store, but not available for redemption.
OFFER_STATUS_ ACTIVE	0x01	1	Offer present in data store. Available for redemption.
OFFER_STATUS_ EXPIRED	0x10	1	Expired Offer
OFFER_STATUS_ SUBMITTED	0x20	1	Offer has been presented for redemption. Result pending.
OFFER_STATUS_ REDEEMED	0x40	1	Offer has been redeemed.

Offer Type			
Data Element	Value	Max Size	Description
OFFER_TYPE_CLASS_01	0x01	1	Offer Class: Merchant Specific (merchant ID appended)
OFFER_TYPE_CLASS_02	0x02	1	Offer Class: CPG
OFFER_TYPE_CLASS_03	0x03	1	Offer Class: Misc

Specially Formatted Data Elements

[0272] A few of the data elements included in the commerce data payload include a format byte that identifies the data encoding used for that element. The data encoding is specified by the merchant to ensure compatibility at the point of sale. The formatted data value is supplied by the MoCom platform to the wallet application. Thus, no additional interpreting/formatting is necessary between the platform, wallet, secure element, and payment terminal. It is the role of the payment terminal (or merchant POS system) to properly interpret the data and supply it to the merchant system for processing.

[0273] The following data elements shall include the format byte:

- Loyalty Account Code
- Offer Code

[0274] Table 68 defines the possible format byte values and their corresponding encoding rule:

TABLE 68

Format Byte	Encoding Rule	Description
0x00	Hexadecimal	Each byte of data is encoded in (raw) hexadecimal format.
0x01	Binary Coded Decimal (BCD)	Each nibble represents a single digit. Thus, only decimal values are specified. A data stream containing an odd number (length) of digits includes the hex value 'F' in the first nibble of the data stream.
0x02	ASCII	Each byte represents an ACII value that is interpreted as such and handled as its corresponding CHAR value. In most cases, these data streams will be converted into a String before being passed to the merchant POS system for processing.

[0275] A BCD encoded data value that includes the hexadecimal value 'F' in the first nibble shall identify a data stream containing an odd number of digits. Thus, the BCD data stream *12345* is encoded in 3 byte buffer as follows: *0xF12345*.

Computer Readable Medium Implementation

[0276] The example embodiments described above such as, for example, the systems and procedures depicted in or discussed in connection with FIGs. 1- 7 or any part or function thereof, may be implemented by using hardware, software or a combination of the two. The implementation may be in one or more computers or other processing systems. While manipulations performed by these example embodiments may have been referred to in terms commonly associated with mental operations performed by a human operator, no human operator is needed to perform any of the operations described herein. In other words, the operations may be completely implemented with machine operations. Useful machines for performing the operation of the example embodiments presented herein include general purpose digital computers or similar devices.

[0277] FIG. 8 is a block diagram of a general and/or special purpose computer 800, in accordance with some of the example embodiments of the invention. The computer 800 may be, for example, a user device, a user computer, a client computer and/or a server computer, among other things.

[0278] The computer 800 may include without limitation a processor device 810, a main memory 825, and an interconnect bus 805. The processor device 810 may include without limitation a single microprocessor, or may include a plurality of microprocessors for configuring the computer 800 as a multi-processor system. The main memory 825 stores, among other things, instructions and/or data for execution by the processor device 810. The main memory 625 may include banks of dynamic random access memory (DRAM), as well as cache memory.

[0279] The computer 800 may further include a mass storage device 830, peripheral device(s) 840, portable storage medium device(s) 850, input control device(s) 880, a graphics subsystem 860, and/or an output display 870. For explanatory purposes, all components in the computer 800 are shown in FIG. 8 as being coupled via the bus 805. However, the computer 800 is not so limited. Devices of the computer 800 may be coupled via one or more data transport means. For example, the processor device 810 and/or the main memory 825 may be coupled via a local microprocessor bus. The mass storage device 830, peripheral device(s) 840, portable storage medium device(s) 850, and/or graphics subsystem 860 may be coupled via one or more input/output (I/O) buses. The mass storage device 830 may be a nonvolatile storage device for storing data and/or instructions for use by the processor device 810. The mass storage device 830 may be implemented, for example, with a magnetic disk drive or an optical disk drive. In a software embodiment, the mass storage device 830 is configured for loading contents of the mass storage device 830 into the main memory 825.

[0280] The portable storage medium device 850 operates in conjunction with a nonvolatile portable storage medium, such as, for example, a compact disc read only memory (CD-ROM), to input and output data and code to and from the computer 800. In some embodiments, the software for storing an internal identifier in metadata may be stored on a portable storage medium, and may be inputted into the computer 800 via the portable storage medium device 850. The

peripheral device(s) 840 may include any type of computer support device, such as, for example, an input/output (I/O) interface configured to add additional functionality to the computer 800. For example, the peripheral device(s) 840 may include a network interface card for interfacing the computer 800 with a network 820.

[0281] The input control device(s) 880 provide a portion of the user interface for a user of the computer 800. The input control device(s) 880 may include a keypad and/or a cursor control device. The keypad may be configured for inputting alphanumeric characters and/or other key information. The cursor control device may include, for example, a mouse, a trackball, a stylus, and/or cursor direction keys. In order to display textual and graphical information, the computer 800 may include the graphics subsystem 860 and the output display 870. The output display 870 may include a cathode ray tube (CRT) display and/or a liquid crystal display (LCD). The graphics subsystem 860 receives textual and graphical information, and processes the information for output to the output display 870.

[0282] Each component of the computer 800 may represent a broad category of a computer component of a general and/or special purpose computer. Components of the computer 800 are not limited to the specific implementations provided here.

[0283] Portions of the example embodiments of the invention may be conveniently implemented by using a conventional general purpose computer, a specialized digital computer and/or a microprocessor programmed according to the teachings of the present disclosure, as is apparent to those skilled in the computer art. Appropriate software coding may readily be prepared by skilled programmers based on the teachings of the present disclosure.

[0284] Some embodiments may also be implemented by the preparation of application-specific integrated circuits, field programmable gate arrays, or by interconnecting an appropriate network of conventional component circuits.

[0285] Some embodiments include a computer program product. The computer program product may be a storage medium or media having instructions stored thereon or therein which can be used to control, or cause, a computer to perform

any of the procedures of the example embodiments of the invention. The storage medium may include without limitation a floppy disk, a mini disk, an optical disc, a Blu-Ray Disc, a DVD, a CD-ROM, a micro-drive, a magneto-optical disk, a ROM, a RAM, an EPROM, an EEPROM, a DRAM, a VRAM, a flash memory, a flash card, a magnetic card, an optical card, nanosystems, a molecular memory integrated circuit, a RAID, remote data storage/archive/warehousing, and/or any other type of device suitable for storing instructions and/or data.

[0286] Stored on any one of the computer readable medium or media, some implementations include software for controlling both the hardware of the general and/or special computer or microprocessor, and for enabling the computer or microprocessor to interact with a human user or other mechanism utilizing the results of the example embodiments of the invention. Such software may include without limitation device drivers, operating systems, and user applications. Ultimately, such computer readable media further includes software for performing example aspects of the invention, as described above.

[0287] Included in the programming and/or software of the general and/or special purpose computer or microprocessor are software modules for implementing the procedures described above.

[0288] While various example embodiments of the invention have been described above, it should be understood that they have been presented by way of example, and not limitation. It is apparent to persons skilled in the relevant art(s) that various changes in form and detail can be made therein. Thus, the invention should not be limited by any of the above described example embodiments, but should be defined only in accordance with the following claims and their equivalents.

[0289] In addition, it should be understood that the figures are presented for example purposes only. The architecture of the example embodiments presented herein is sufficiently flexible and configurable, such that it may be utilized and navigated in ways other than that shown in the accompanying figures.

[0290] Further, the purpose of the Abstract is to enable the U.S. Patent and Trademark Office and the public generally, and especially the scientists, engineers and practitioners in the art who are not familiar with patent or legal

terms or phraseology, to determine quickly from a cursory inspection the nature and essence of the technical disclosure of the application. The Abstract is not intended to be limiting as to the scope of the example embodiments presented herein in any way. It is also to be understood that the procedures recited in the claims need not be performed in the order presented.

WHAT IS CLAIMED IS

1. A system for managing contactless transactions, comprising:

at least one memory operable to store commerce data and financial instrument data;

at least one processor coupled to the at least one memory, the one or more processors being operable to:

perform a first tap, the first tap occurring when the system is placed within a predetermined proximity to a payment terminal;

receive from the payment terminal a first select command including an application identifier (AID) corresponding to a first application;

transmit to the payment terminal a first response based on the first select command;

receive from the payment terminal a data request including information indicating supported data types; and

transmit to the payment terminal a second response based on the data request, the second response including transaction data;

wherein the transaction data includes at least a portion of the commerce data stored in the at least one memory.

2. The system of Claim 1, the at least one processor being further operable to:

receive from the payment terminal a payment AID request;

transmit to the payment terminal the AID corresponding to a second application;

receive from the payment terminal a second select command including the AID corresponding to the second application;

transmit to the payment terminal file control information (FCI) corresponding to the second application; and

transmit payment data to the payment terminal;

wherein the payment data includes at least a portion of the financial instrument data stored in the at least one memory.

3. The system of Claim 1 or Claim 2, the at least one processor being further operable to perform a second tap, the second tap occurring when the system is placed within a predetermined proximity to the payment terminal.

4. The system of Claim 1 or Claim 2, the at least one processor being further operable to perform a second tap, the second tap occurring when the system is placed within a predetermined proximity to the payment terminal,

wherein the first tap and the second tap occur in response to a first tap request and a second tap request, respectively, received from the payment terminal.

5. The system of Claim 1, the at least one processor being further operable to:

perform a second tap, the second tap occurring when the system is placed within a predetermined proximity to the payment terminal,

receive from the payment terminal a payment AID request;

transmit to the payment terminal the AID corresponding to a second application;

receive from the payment terminal a second select command including the AID corresponding to the second application;

transmit to the payment terminal file control information (FCI) corresponding to the second application;

transmit payment data to the payment terminal, the payment data including at least a portion of the financial instrument data stored in the at least one memory;

receive from the payment terminal a third select command including an AID corresponding to the first application;

transmit to the payment terminal a third response based on the third select command;

receive from the payment terminal post-transaction data; and

transmit to the payment terminal a fourth response based on the post-transaction data.

6. The system of Claim 1, wherein the payment terminal comprises a contactless reader and/or a point of sale terminal.

7. A method for managing contactless transactions, the method comprising steps of:

performing a first tap, the first tap occurring when a mobile device is placed within a predetermined proximity to a payment terminal;

receiving from the payment terminal a first select command including an application identifier (AID) corresponding to a first application;

transmitting to the payment terminal a first response based on the first select command;

receiving from the payment terminal a data request including information indicating supported data types; and

transmitting to the payment terminal a second response based on the data request, the second response including transaction data;

wherein the transaction data includes at least a portion of commerce data stored in at least one memory.

8. The method of Claim 7, further comprising steps of:

receiving from the payment terminal a payment AID request;

transmitting to the payment terminal the AID corresponding to a second application;

receiving from the payment terminal a second select command including the AID corresponding to the second application;

transmitting to the payment terminal file control information (FCI) corresponding to the second application; and

transmitting payment data to the payment terminal;

wherein the payment data includes at least a portion of the financial instrument data stored in the at least one memory.

9. The method of Claim 7 or Claim 8, further comprising a step of performing a second tap, the second tap occurring when the mobile device is placed within a predetermined proximity to the payment terminal.

10. The method of Claim 7 or Claim 8, further comprising a step of performing a second tap, the second tap occurring when the mobile device is placed within a predetermined proximity to the payment terminal,

wherein the first tap and the second tap occur in response to a first tap request and a second tap request, respectively, received from the payment terminal.

11. The method of Claim 7, further comprising steps of:

performing a second tap, the second tap occurring when the mobile device is placed within a predetermined proximity to the payment terminal,

receiving from the payment terminal a payment AID request;

transmitting to the payment terminal the AID corresponding to a second application;

receiving from the payment terminal a second select command including the AID corresponding to the second application;

transmitting to the payment terminal file control information (FCI) corresponding to the second application;

transmitting payment data to the payment terminal, the payment data including at least a portion of the financial instrument data stored in the at least one memory;

receiving from the payment terminal a third select command including an AID corresponding to the first application;

transmitting to the payment terminal a third response based on the third select command;

receiving from the payment terminal post-transaction data; and

transmitting to the payment terminal a fourth response based on the post-transaction data.

12. The method of Claim 7, wherein the payment terminal comprises a contactless reader and/or a point of sale terminal.

13. A non-transitory computer-readable medium having stored thereon sequences of instructions for causing one or more processors to:

perform a first tap, the first tap occurring when a mobile device is placed within a predetermined proximity to a payment terminal;

receive from the payment terminal a first select command including an application identifier (AID) corresponding to a first application;

transmit to the payment terminal a first response based on the first select command;

receive from the payment terminal a data request including information indicating supported data types; and

transmit to the payment terminal a second response based on the data request, the second response including transaction data;

wherein the transaction data includes at least a portion of commerce data stored in at least one memory.

14. The computer-readable medium of Claim 13, having stored thereon sequences of instructions for further causing the one or more processors to:

receive from the payment terminal a payment AID request;

transmit to the payment terminal the AID corresponding to a second application;

receive from the payment terminal a second select command including the AID corresponding to the second application;

transmit to the payment terminal file control information (FCI) corresponding to the second application; and

transmit payment data to the payment terminal;

wherein the payment data includes at least a portion of the financial instrument data stored in the at least one memory.

15. The computer-readable medium of Claim 13 or Claim 14, the one or more processors being further operable to perform a second tap, the second tap occurring when the mobile device is placed within a predetermined proximity to the payment terminal.

16. The computer-readable medium of Claim 13, the one or more processors being further operable to perform a second tap, the second tap occurring when the mobile device is placed within a predetermined proximity to the payment terminal,

wherein the first tap and the second tap occur in response to a first tap request and a second tap request, respectively, received from the payment terminal.

17. The computer-readable medium of Claim 13, having stored thereon sequences of instructions for further causing the one or more processors to:

perform a second tap, the second tap occurring when the mobile device is placed within a predetermined proximity to the payment terminal,

receive from the payment terminal a payment AID request;

transmit to the payment terminal the AID corresponding to a second application;

receive from the payment terminal a second select command including the AID corresponding to the second application;

transmit to the payment terminal file control information (FCI) corresponding to the second application;

transmit payment data to the payment terminal, the payment data including at least a portion of the financial instrument data stored in the at least one memory;

receive from the payment terminal a third select command including an AID corresponding to the first application;

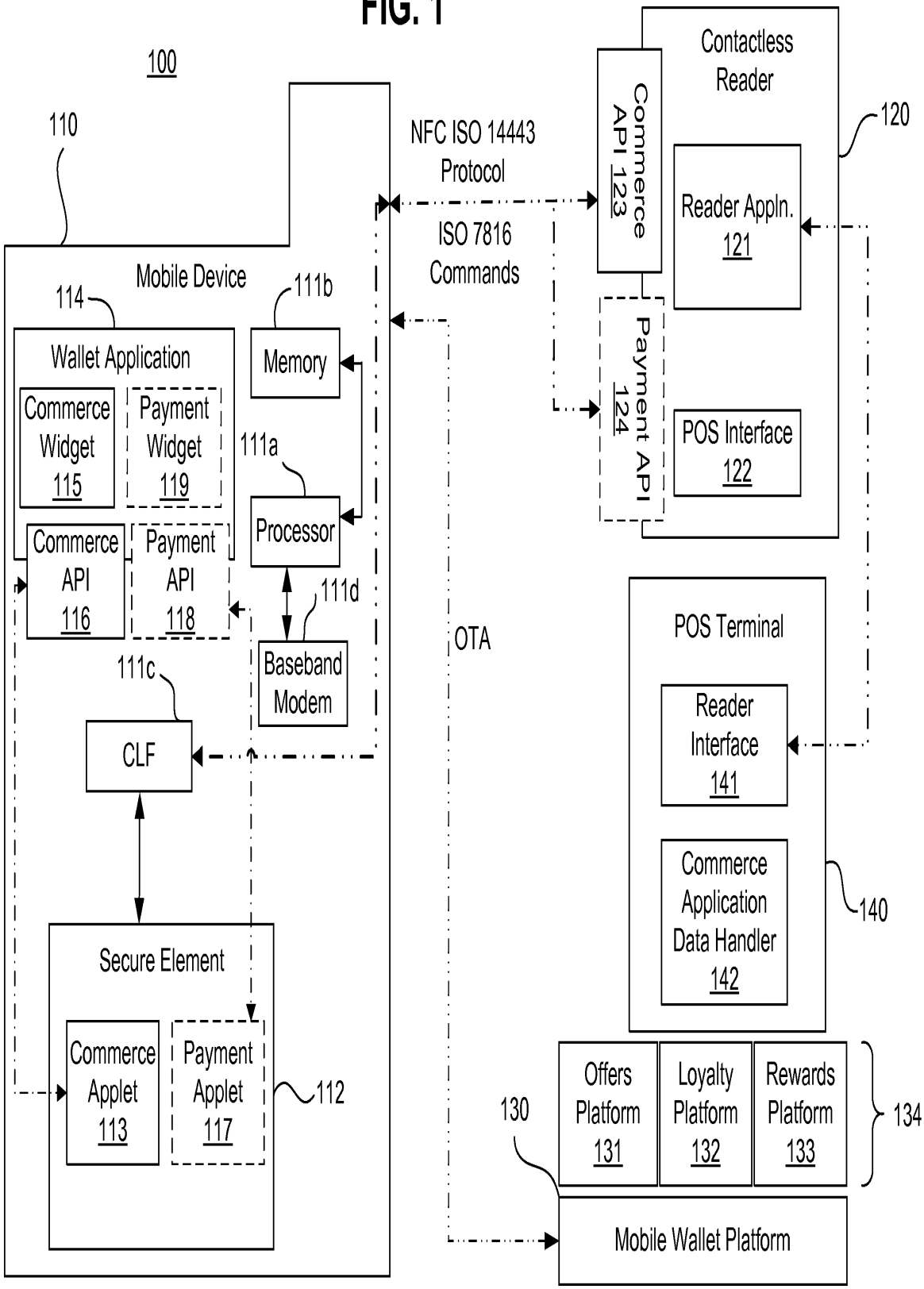
transmit to the payment terminal a third response based on the third select command;

receive from the payment terminal post-transaction data; and

transmit to the payment terminal a fourth response based on the post-transaction data.

18. The computer-readable medium of Claim 13, wherein the payment terminal comprises a contactless reader and/or a point of sale terminal.

FIG. 1


100
110
Mobile Device
114
Wallet Application
Commerce Widget 115
Payment Widget 119
Commerce API 116
Payment API 118
111a
Processor
111b
Memory
111c
CLF
111d
Baseband Modem
Secure Element
Commerce Applet 113
Payment Applet 117
112
NFC ISO 14443 Protocol
ISO 7816 Commands
OTA
Contactless Reader
120
Commerce API 123
Reader Appln. 121
Payment API 124
POS Interface 122
POS Terminal
Reader Interface 141
Commerce Application Data Handler 142
140
130
Offers Platform 131
Loyalty Platform 132
Rewards Platform 133
134
Mobile Wallet Platform

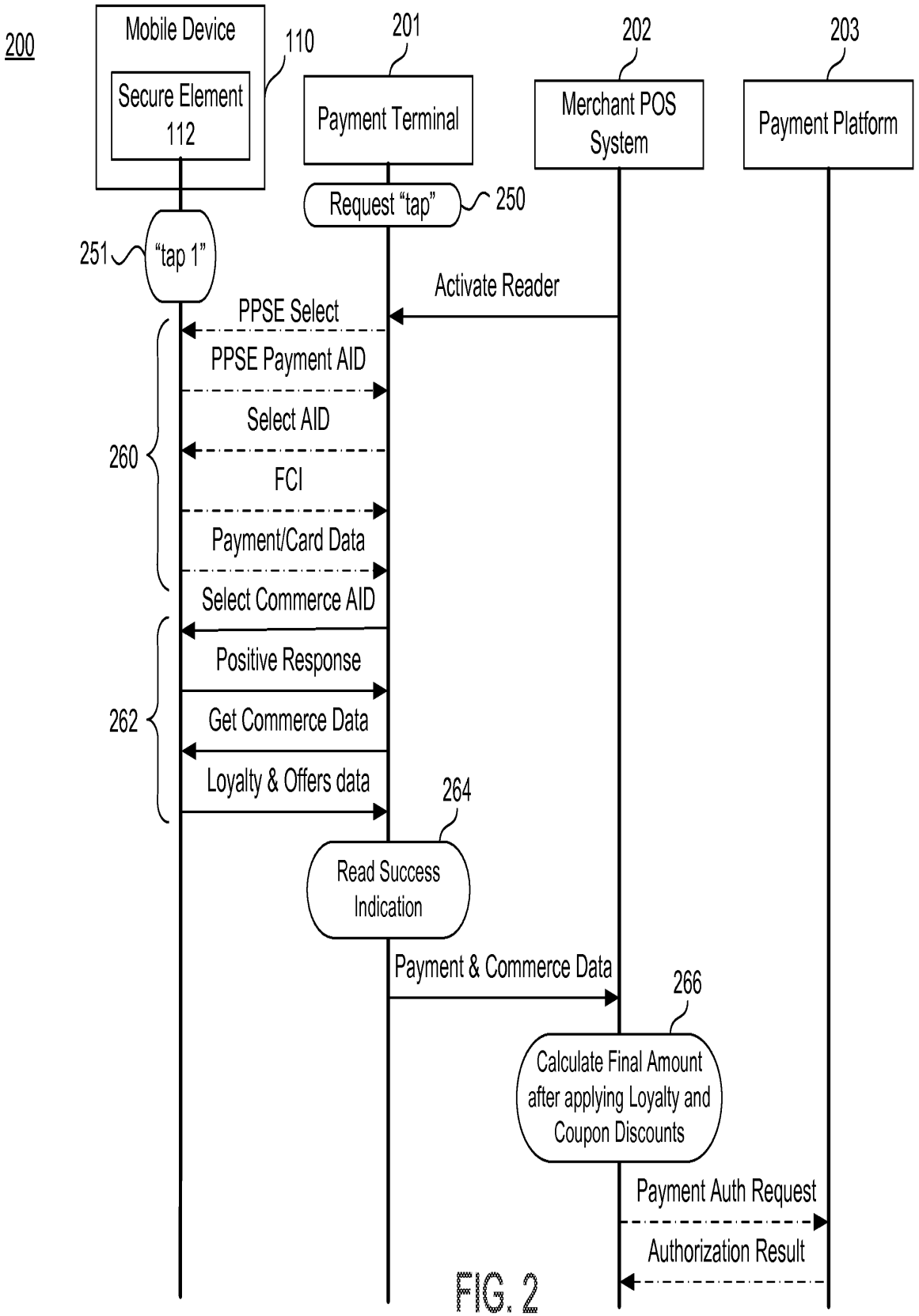

200
Mobile Device
Secure Element
112
110
201
Payment Terminal
202
Merchant POS System
203
Payment Platform
Request "tap"
250
251
"tap 1"
Activate Reader
PPSE Select
PPSE Payment AID
Select AID
260
FCI
Payment/Card Data
Select Commerce AID
Positive Response
262
Get Commerce Data
Loyalty & Offers data
264
Read Success Indication
Payment & Commerce Data
266
Calculate Final Amount after applying Loyalty and Coupon Discounts
Payment Auth Request
Authorization Result

FIG. 2

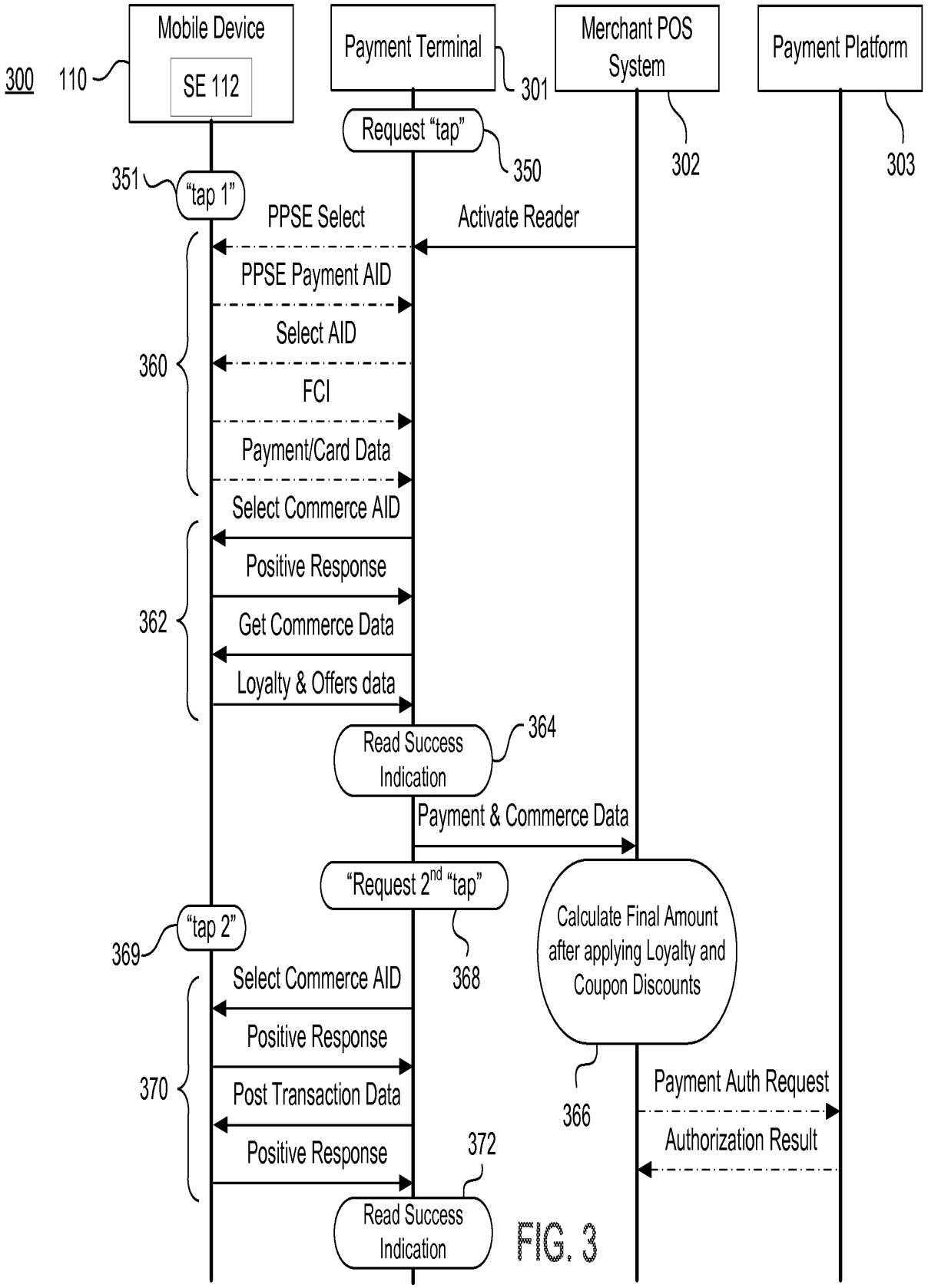

300
110
Mobile Device
SE 112
Payment Terminal
301
Merchant POS System
302
Payment Platform
303
Request "tap"
350
351
"tap 1"
PPSE Select
Activate Reader
PPSE Payment AID
Select AID
360
FCI
Payment/Card Data
Select Commerce AID
Positive Response
362
Get Commerce Data
Loyalty & Offers data
Read Success Indication
364
Payment & Commerce Data
"Request 2nd "tap"
368
Calculate Final Amount after applying Loyalty and Coupon Discounts
"tap 2"
369
Select Commerce AID
Positive Response
370
Post Transaction Data
Positive Response
366
Payment Auth Request
Authorization Result
372
Read Success Indication

FIG. 3

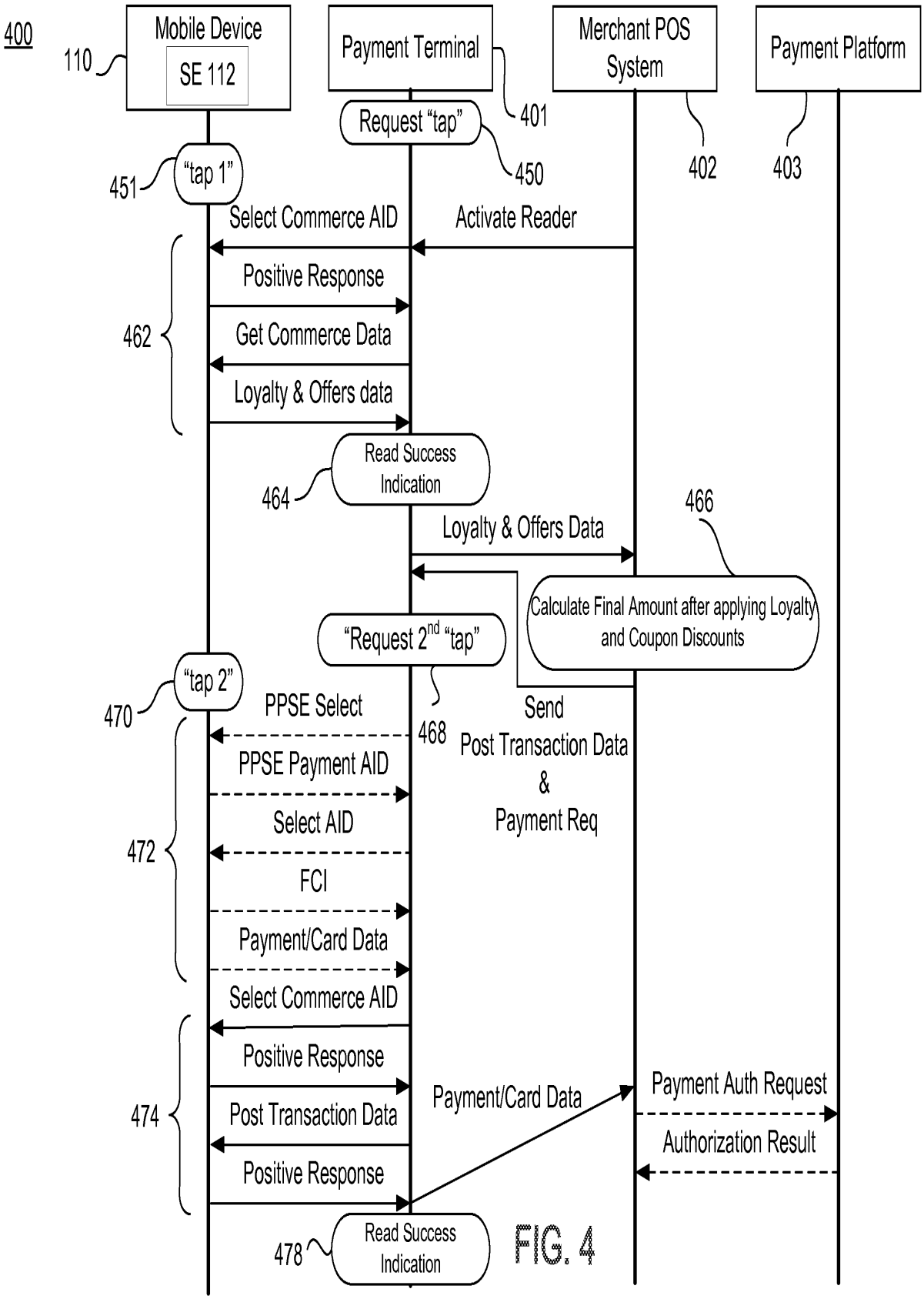

400
Mobile Device
SE 112
110
Payment Terminal
401
Merchant POS System
402
Payment Platform
403
Request "tap"
450
"tap 1"
451
Select Commerce AID
Activate Reader
Positive Response
Get Commerce Data
Loyalty & Offers data
462
Read Success Indication
464
Loyalty & Offers Data
466
Calculate Final Amount after applying Loyalty and Coupon Discounts
"Request 2nd "tap"
"tap 2"
470
PPSE Select
468
Send Post Transaction Data & Payment Req
PPSE Payment AID
Select AID
FCI
Payment/Card Data
472
Select Commerce AID
Positive Response
Post Transaction Data
Positive Response
474
Payment/Card Data
Payment Auth Request
Authorization Result
Read Success Indication
478

FIG. 4

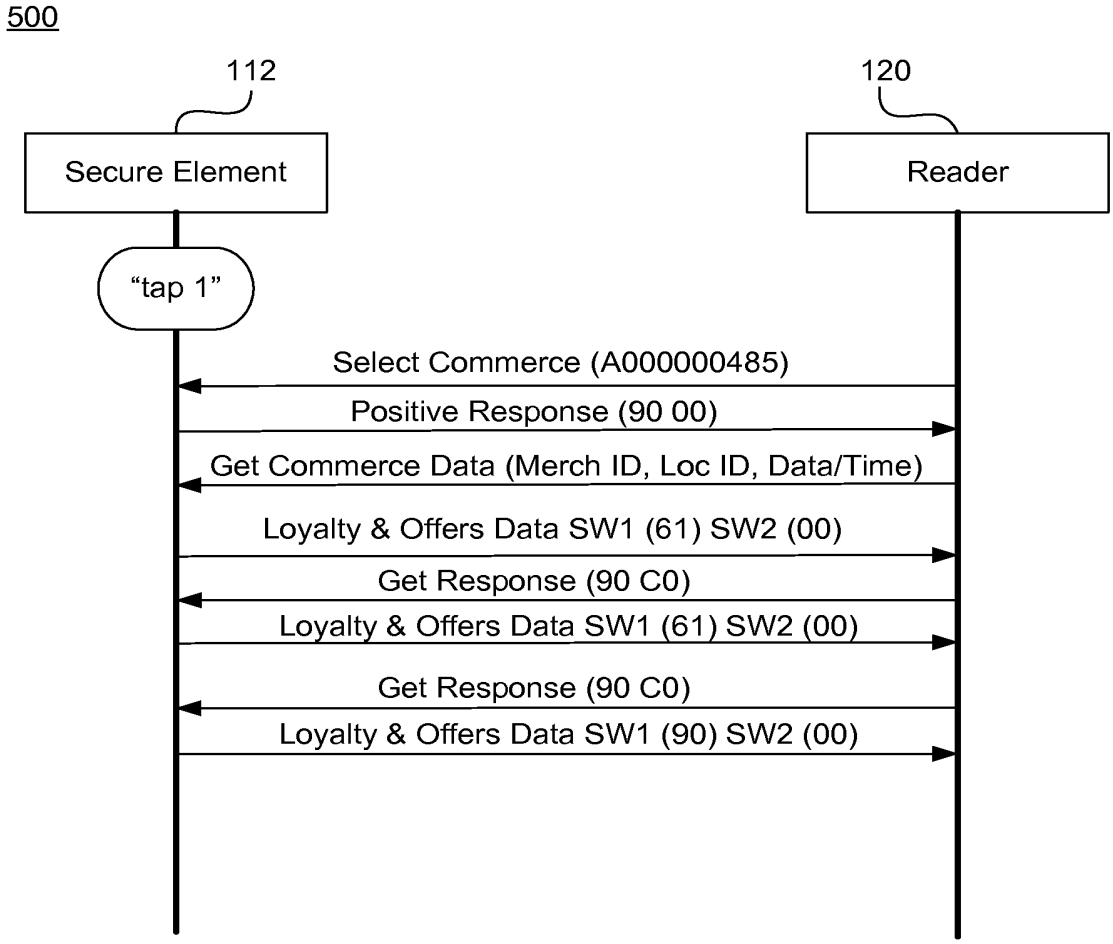

500
112
120
Secure Element
Reader
"tap 1"
Select Commerce (A000000485)
Positive Response (90 00)
Get Commerce Data (Merch ID, Loc ID, Data/Time)
Loyalty & Offers Data SW1 (61) SW2 (00)
Get Response (90 C0)
Loyalty & Offers Data SW1 (61) SW2 (00)
Get Response (90 C0)
Loyalty & Offers Data SW1 (90) SW2 (00)

FIG. 5

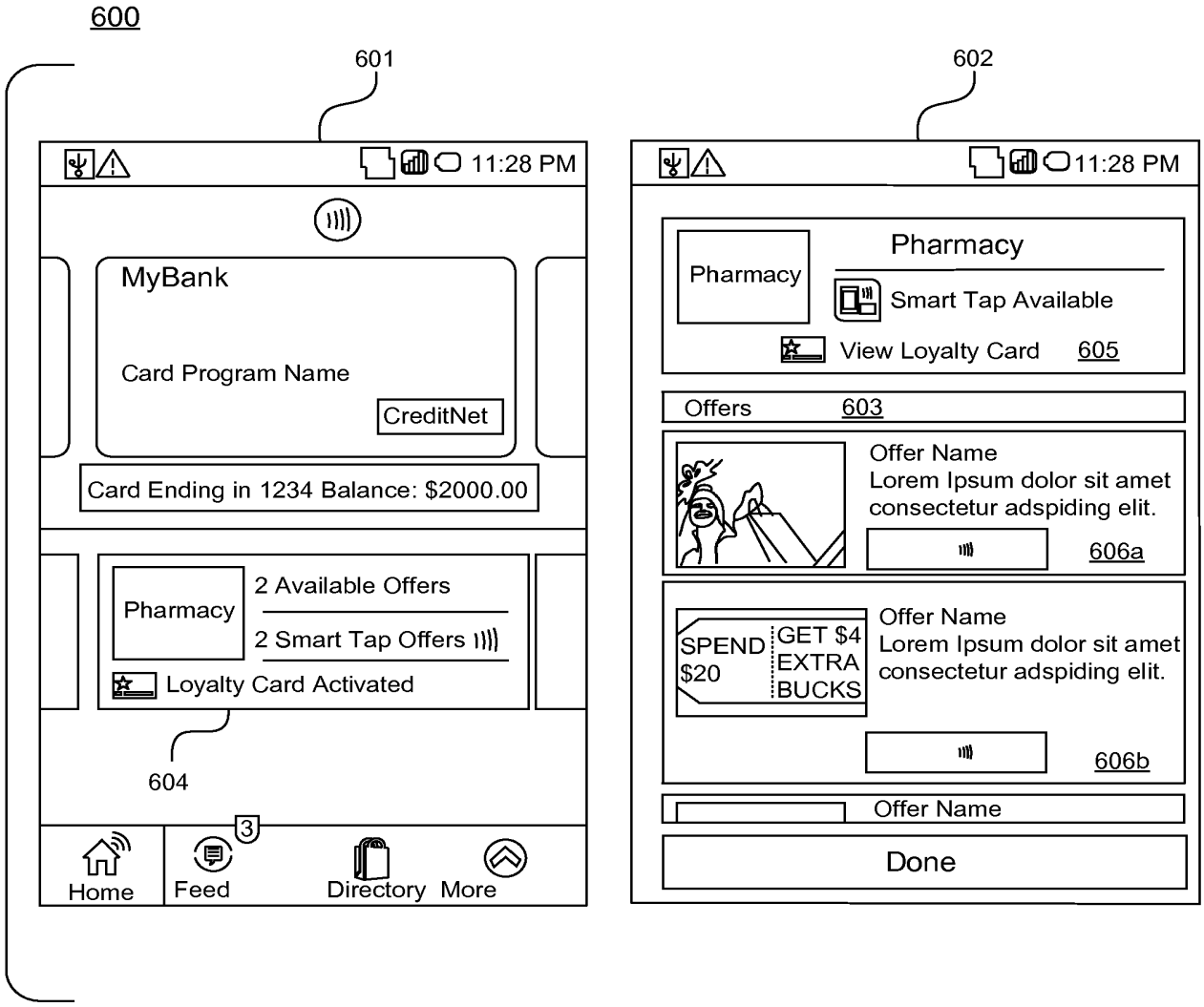

600
601
602
11:28 PM
MyBank
Card Program Name
CreditNet
Card Ending in 1234 Balance: $2000.00
Pharmacy
2 Available Offers
2 Smart Tap Offers
Loyalty Card Activated
604
3
Home
Feed
Directory
More
11:28 PM
Pharmacy
Pharmacy
Smart Tap Available
View Loyalty Card
605
Offers
603
Offer Name
Lorem Ipsum dolor sit amet consectetur adspiding elit.
606a
SPEND $20
GET $4 EXTRA BUCKS
Offer Name
Lorem Ipsum dolor sit amet consectetur adspiding elit.
606b
Offer Name
Done

FIG. 6

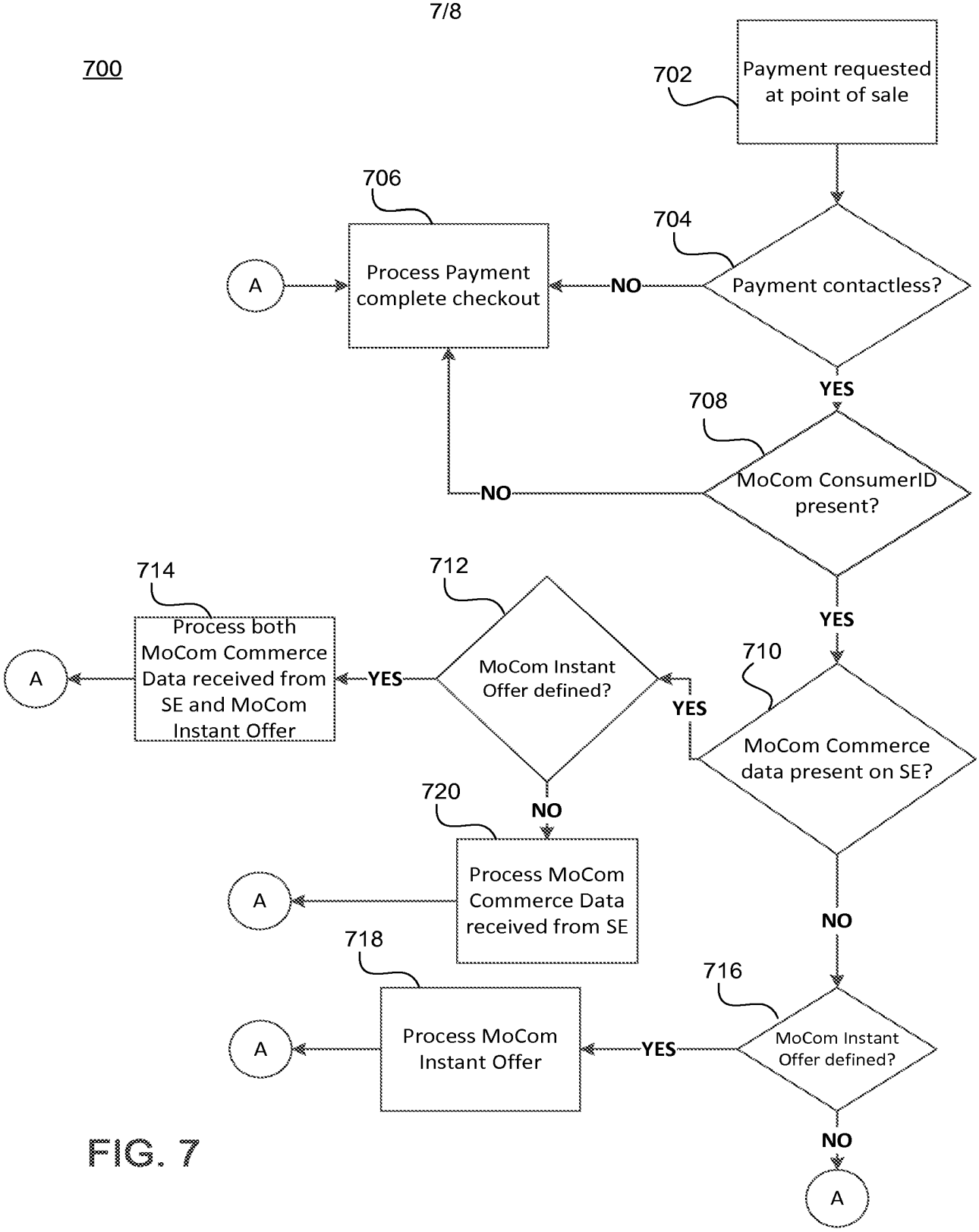

700
702
Payment requested at point of sale
704
Payment contactless?
NO
706
Process Payment complete checkout
A
YES
708
MoCom ConsumerID present?
NO
YES
710
MoCom Commerce data present on SE?
YES
712
MoCom Instant Offer defined?
YES
714
Process both MoCom Commerce Data received from SE and MoCom Instant Offer
A
NO
720
Process MoCom Commerce Data received from SE
A
NO
716
MoCom Instant Offer defined?
YES
718
Process MoCom Instant Offer
A
NO
A

FIG. 7

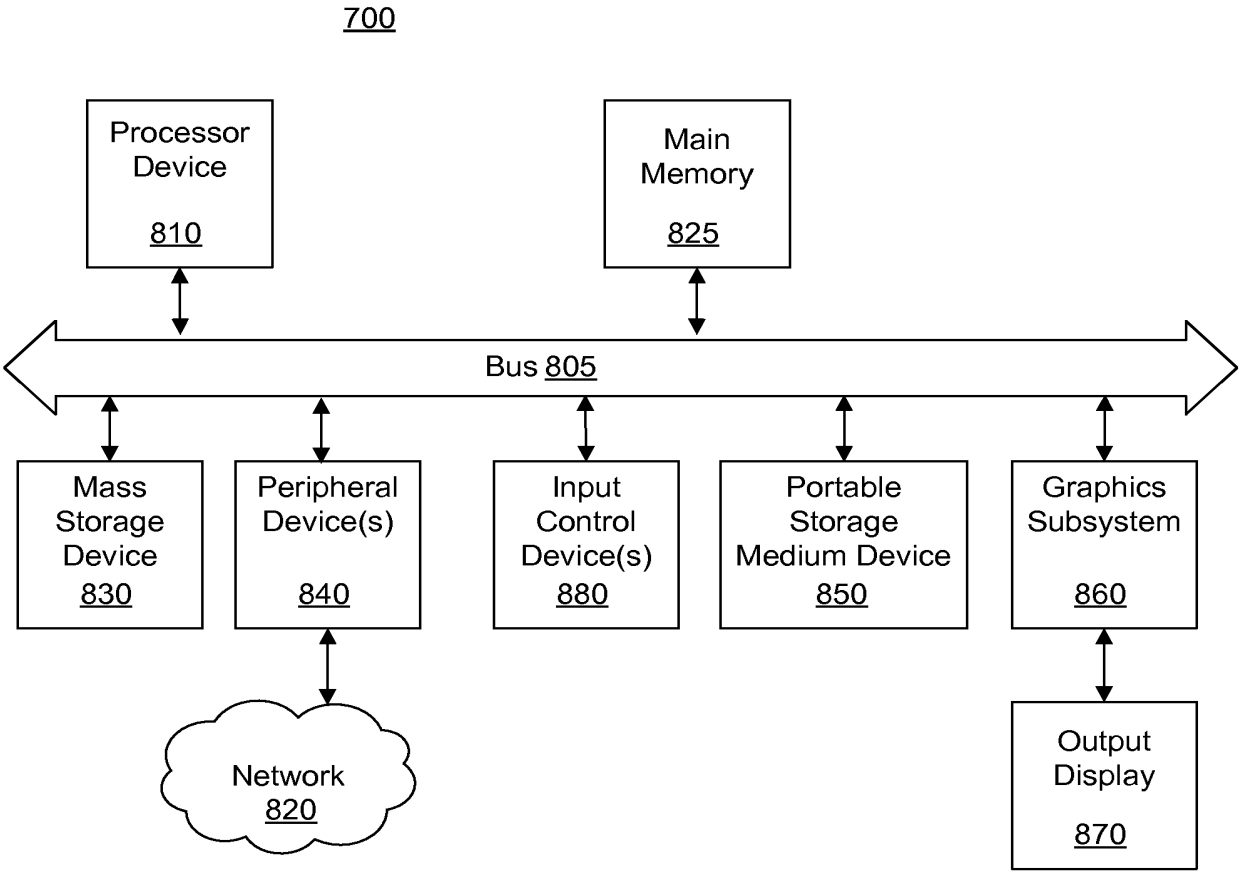

700
Processor Device 810
Main Memory 825
Bus 805
Mass Storage Device 830
Peripheral Device(s) 840
Input Control Device(s) 880
Portable Storage Medium Device 850
Graphics Subsystem 860
Network 820
Output Display 870

FIG. 8

Substitute Form PTO-1449 (Modified)	U.S. Department of Commerce Patent and Trademark Office	Attorney Docket No. PR:MDMP1	Application No. 14/214,644
Information Disclosure Statement by Applicant (Use several sheets if necessary) (37 CFR §1.98(b))		Applicant PayRange	
		Filing Date March 14, 2014	Group Art Unit 3653

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
		2011/0153442	06/23/2011	Krampe			
		2011/0153436	06/23/2011	Krampe			

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document

Examiner Signature	Date Considered

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

Electronic Acknowledgement Receipt

EFS ID:	19387856
Application Number:	14214644
International Application Number:	
Confirmation Number:	2829
Title of Invention:	MOBILE-DEVICE-TO-MACHINE PAYMENT SYSTEMS
First Named Inventor/Applicant Name:	Paresh K. Patel
Customer Number:	26790
Filer:	Karen Dana Oster
Filer Authorized By:	
Attorney Docket Number:	PR-MDMP1
Receipt Date:	23-JUN-2014
Filing Date:	14-MAR-2014
Time Stamp:	23:31:31
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	tl.pdf	44011 d15ba328992220c636a759a855f8d7668b5532ae	no	1

Warnings:	
Information:	

2	Fee Worksheet (SB06)	fee.pdf	65977 c5eba7b3d531b7ac8d8ee15f9dd4a5b8126d7375	no	1
Warnings:					
Information:					
3	Transmittal Letter	IDS.pdf	12996 504a11a9d333da43ca3cdcb2af8c283323d5d014	no	2
Warnings:					
Information:					
4	Information Disclosure Statement (IDS) Form (SB08)	1449.pdf	18695 8252bd08caee60479cc9849d101b93f078678b12	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
			Total Files Size (in bytes):	141679	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

Application Number	14/214,644
Filing Date	March 14, 2014
First Named Inventor	Paresh K. Patel et al.
Art Unit	3653
Examiner Name	Nigh, James D.
Attorney Docket Number	PR:MDMP1

ENCLOSURES *(Check all that apply)*

- [X] Fee Transmittal Form
  - [ ] Fee Attached
- [ ] Amendment/Reply
  - [ ] After Final
  - [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [X] Information Disclosure Statement (IDS and 1449)
- [ ] Certified Copy of Priority Document(s)
- [ ] Reply to Missing Parts/ Incomplete Application
  - [ ] Reply to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s) _____
  - [ ] Landscape Table on CD
- [ ] After Allowance Communication to TC
- [ ] Appeal Communication to Board of Appeals and Interferences
- [ ] Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- [ ] Proprietary Information
- [ ] Status Letter
- [ ] Other Enclosure(s) (please Identify below):

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Law Office of Karen Dana Oster, LLC		
Signature	/Karen Dana Oster, Reg. No. 37,621/		
Printed name	Karen Dana Oster		
Date	June 23, 2014	Reg. No.	37,621

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being submitted by EFS on the date (based on Eastern Standard Time) shown below.

Signature	/Karen Dana Oster, Reg. No. 37,621/		
Typed or printed name	Karen Dana Oster	Date	June 23, 2014

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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FEE TRANSMITTAL

Complete if known	
Application Number	14/214,644
Filing Date	March 14, 2014
First Named Inventor	Paresh K. Patel et al.
Examiner Name	Nigh, James D.
Art Unit	3653
Practitioner Docket No.	PR:MDMP1

☑ Applicant asserts small entity status. See 37 CFR 1.27.

☐ Applicant certifies micro entity status. See 37 CFR 1.29. Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

TOTAL AMOUNT OF PAYMENT ($) 90

METHOD OF PAYMENT (check all that apply)

☐ Check ☑ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

☑ Deposit Account Deposit Account Number: 50-2115 Deposit Account Name: _____

For the above-identified deposit account, the Director is hereby authorized to (check all that apply):

☑ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, **except for the filing fee**

☑ Charge any additional fee(s) or underpayment of fee(s) under 37 CFR 1.16 and 1.17 ☑ Credit any overpayment of fee(s)

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES (U = undiscounted fee; S = small entity fee; M = micro entity fee)

	FILING FEES			SEARCH FEES			EXAMINATION FEES			
Application Type	**U ($)**	**S ($)**	**M ($)**	**U ($)**	**S ($)**	**M ($)**	**U ($)**	**S ($)**	**M ($)**	**Fees Paid ($)**
Utility	280	140*	70	600	300	150	720	360	180	
Design	180	90	45	120	60	30	460	230	115	
Plant	180	90	45	380	190	95	580	290	145	
Reissue	280	140	70	600	300	150	2,160	1,080	540	
Provisional	260	130	65	0	0	0	0	0	0	

* The $140 small entity status filing fee for a utility application is further reduced to $70 for a small entity status applicant who files the application via EFS-Web.

2. EXCESS CLAIM FEES

Fee Description	**Undiscounted Fee ($)**	**Small Entity Fee ($)**	**Micro Entity Fee ($)**
Each claim over 20 (including Reissues)	80	40	20
Each independent claim over 3 (including Reissues)	420	210	105
Multiple dependent claims	780	390	195

Total Claims		**Extra Claims**		**Fee ($)**		**Fee Paid ($)**
_____	-20 or HP =	0	x	$40	=	$0

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims		**Extra Claims**		**Fee ($)**		**Fee Paid ($)**
_____	-3 or HP =	0	x	$210	=	$0

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims	**Fee ($)**	**Fee Paid ($)**
	_____	_____

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $400 ($200 for small entity) ($100 for micro entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets		**Extra Sheets**		**Number of each additional 50 or fraction thereof**		**Fee ($)**		**Fee Paid ($)**
_____	- 100 =	_____	/ 50 =	_____ (round **up** to a whole number)	x	$200	=	$0

4. OTHER FEE(S)

	Fees Paid ($)
Extension for response within first month (1.17(a)(1))	_____
Submission of an Information Disclosure Statement (1.17(p))	$90
Other (e.g., late filing surcharge): _____	_____

SUBMITTED BY

Signature	/Karen Dana Oster, Reg. No. 37,621/	Registration No. (Attorney/Agent) 37,621	Telephone (503) 810-2560
Name (Print/Type)	Karen Dana Oster		Date June 23, 2014

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
PATENT APPLICATION EXAMINING OPERATIONS

Inventor(s):	Paresh K. Patel et al.	Group Art Unit:	3653
Application No.:	14/214,644	Examiner:	Nigh, James D.
Filed:	March 14, 2014	Docket No.:	PR:MDMP1
Title:	Mobile-Device-to-Machine Payment Systems		

INFORMATION DISCLOSURE STATEMENT
IN ACCORDANCE WITH 37 CFR §1.98

Law Office of Karen Dana Oster, LLC
PMB 506, 16869 SW 65th Avenue
Lake Oswego, OR 97035
June 23, 2014

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Applicant submits herewith patents and other art of which it (as well as the inventors) are aware and which it desires to have considered by the Patent Office in accordance with 37 CFR §1.97. A list of the references is set forth on the attached Information Disclosure Statement. In accordance with 37 CFR §1.97(c), this Information Disclosure Statement is being submitted after the mailing date of any of a final action under §1.1113, a notice of allowance under §1.311, but before payment of the issue fee. This Information Disclosure Statement is accompanied by both a statement specified in 37 CFR §1.97(e) and the fee set forth in §1.17(p).

No item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in this Information Disclosure Statement was known to any individual designated in §1.56(c) more than three months

prior to the filing of the Information Disclosure Statement. Applicant received a letter on April 7, 2014 from a third party informing applicant of the existence of the two documents being provided herewith. While it is believed that these references are not relevant to the claims of this application, these references are being submitted in an abundance of caution.

In accordance with 37 CFR §1.97(h), the filing of this Information Disclosure Statement will not be regarded as an admission that any patent or patents, or other art referred to herein is, or is considered to be, material to patentability under 37 CFR §1.56(b) unless specifically designated as such.

The person making this statement is the attorney who signs below on the basis of the information supplied by the inventor and the information in the file.

Respectfully submitted,

/Karen Dana Oster/

Karen Dana Oster
Reg. No. 37,621
Of Attorneys of Record
Tel: (503) 810-2560

Document code: WFEE

United States Patent and Trademark Office
Sales Receipt for Accounting Date: 08/22/2014

BDEBNAM SALE #00000001 Mailroom Dt: 06/23/2014 502115 14214644
01 FC : 1806 180.00 DA

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

26790 7590 06/10/2014
LAW OFFICE OF KAREN DANA OSTER, LLC
PMB 506
16869 SW 65TH AVENUE
LAKE OSWEGO, OR 97035

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

Karen Dana Oster	(Depositor's name)
	(Signature)
7-18-14	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/214,644	03/14/2014	Paresh K. Patel	PR-MDMP1	2829

TITLE OF INVENTION: MOBILE-DEVICE-TO-MACHINE PAYMENT SYSTEMS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	09/10/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
NIGH, JAMES D	3685	705-071000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Law Office of Karen Dana Oster, LLC

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: PAYRANGE INC.

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Portland, OR

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
☒ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☒ Advance Order - # of Copies 1

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
☐ A check is enclosed.
☒ Payment by credit card. ~~Form PTO-2038 is attached~~.
☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number 50-2115 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
☐ Applicant certifying micro entity status. See 37 CFR 1.29
NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
☒ Applicant asserting small entity status. See 37 CFR 1.27
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
☐ Applicant changing to regular undiscounted fee status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature [signature] Date 7-18-14

Typed or printed name Karen Dana Oster Registration No. 37,621

PTOL-85 Part B (10-13) Approved for use through 10/31/2013 OMB 0651-0033 U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

CSC ServiceWorks – Ex. 1002
Page 526 of 545

Electronic Patent Application Fee Transmittal

Application Number:	14214644
Filing Date:	14-Mar-2014
Title of Invention:	MOBILE-DEVICE-TO-MACHINE PAYMENT SYSTEMS
First Named Inventor/Applicant Name:	Paresh K. Patel
Filer:	Karen Dana Oster
Attorney Docket Number:	PR-MDMP1

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	2501	1	480	480
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Printed Copy of Patent - No Color	8001	1	3	3
		Total in USD ($)		**483**

Electronic Acknowledgement Receipt

EFS ID:	19626208
Application Number:	14214644
International Application Number:	
Confirmation Number:	2829
Title of Invention:	MOBILE-DEVICE-TO-MACHINE PAYMENT SYSTEMS
First Named Inventor/Applicant Name:	Paresh K. Patel
Customer Number:	26790
Filer:	Karen Dana Oster
Filer Authorized By:	
Attorney Docket Number:	PR-MDMP1
Receipt Date:	18-JUL-2014
Filing Date:	14-MAR-2014
Time Stamp:	22:11:55
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$483
RAM confirmation Number	5931
Deposit Account	502115
Authorized User	OSTER, KAREN DANA
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	ifee.pdf	230308 08f2fd55c89f4103f710405948084301cb2c677d	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	31629 ce5a6b103280a36b2818361a80f5858d497bf7e1	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	261937		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

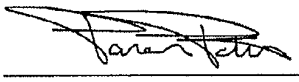
I hereby appoint the practitioners of Morgan, Lewis & Bockius LLP, Customer Number **24341** as attorneys or agents to represent the undersigned and to transact all business before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications and patents assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 C.F.R. § 3.73(c), said appointment to be to the exclusion of the inventor(s) and their attorney(s) in accordance with the provisions of 37 C.F.R. § 3.71, provided that, if any one of these attorneys ceases being affiliated with the law firm of Morgan, Lewis & Bockius LLP as partner, counsel, or employee, then the appointment of that attorney and all powers derived therefrom shall terminate on the date such attorney ceases being so affiliated.

Assignee Name and Address:

PayRange Inc.
12815 NE Marx Street
Portland, Oregon 97230

SIGNATURE of Assignee of Record

The undersigned whose signature and title is supplied below is authorized to act on behalf of the assignee.

Signature			
Name	Paresh K. Patel, PhD, MBA	Date	June 24, 2014
Title	CEO	Telephone	855-856-6398

A copy of this form, together with a statement under 37 C.F.R. § 3.73(c) (Form PTO/SB96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 C.F.R. § 3.73(c) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee and must identify the application in which this Power of Attorney is to be filed.

DB2/ 25169366.1

Electronic Acknowledgement Receipt

EFS ID:	19645730
Application Number:	14214644
International Application Number:	
Confirmation Number:	2829
Title of Invention:	MOBILE-DEVICE-TO-MACHINE PAYMENT SYSTEMS
First Named Inventor/Applicant Name:	Paresh K. Patel
Customer Number:	26790
Filer:	Douglas James Crisman/Sherri Ballbach
Filer Authorized By:	Douglas James Crisman
Attorney Docket Number:	PR-MDMP1
Receipt Date:	22-JUL-2014
Filing Date:	14-MAR-2014
Time Stamp:	13:43:07
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		104402-5001-US_StatementUnder3_73WithPOA.pdf	83302 2ca3258112a8ae1cb7e1596c0205d1619f3aa101	yes	2

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Assignee showing of ownership per 37 CFR 3.73.	1	1
	Power of Attorney	2	2
Warnings:			
Information:			
	Total Files Size (in bytes):	83302	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Electronically filed July 22, 2014

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of:	Paresh K. Patel et al.	Confirmation No.:	2829
Serial No.:	14/214,644	Art Unit	3685
Filed:	March 14, 2014	Examiner:	Nigh, James D.
For:	Mobile Device to Machine Payment Systems	Attorney Docket No.:	104402-5001-US (Previous Docket No.: PR-MDMP1)

STATEMENT UNDER 37 C.F.R. § 3.73(c)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

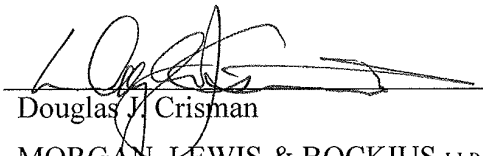
Sir:

PayRange Inc., a Corporation, states that it is the assignee of the entire right, title and interest in the patent application/patent identified above by virtue of an assignment from the inventor(s) of the patent application/patent identified above.

The assignment was recorded in the United States Patent and Trademark Office on March 17, 2014 at Reel 032456, Frame 0770, or for which a copy thereof is attached.

The undersigned is authorized to act on behalf of the assignee.

Date: July 22, 2014



39,951
Douglas J. Crisman (Reg. No.)

MORGAN, LEWIS & BOCKIUS LLP
2 Palo Alto Square
3000 El Camino Real, Suite 700
Palo Alto, CA 94306
(650) 843-4000

CSC ServiceWorks – Ex. 1002
Page 534 of 545

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/214,644	03/14/2014	Paresh K. Patel	104402-5001-US

CONFIRMATION NO. 2829

24341
MORGAN, LEWIS & BOCKIUS LLP (PA)
2 PALO ALTO SQUARE
3000 EL CAMINO REAL, SUITE 700
PALO ALTO, CA 94306

POA ACCEPTANCE LETTER

OC000000069773637

Date Mailed: 07/25/2014

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/22/2014.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/tnguyen/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/214,644	03/14/2014	Paresh K. Patel	PR-MDMP1

CONFIRMATION NO. 2829

POWER OF ATTORNEY NOTICE

26790
LAW OFFICE OF KAREN DANA OSTER, LLC
PMB 506
16869 SW 65TH AVENUE
LAKE OSWEGO, OR 97035

OC000000069773609

Date Mailed: 07/25/2014

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/22/2014.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/tnguyen/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Substitute Form PTO-1449 (Modified)	U.S. Department of Commerce Patent and Trademark Office	Attorney Docket No.	Application No.
Information Disclosure Statement by Applicant (Use several sheets if necessary)		PR:MDMP1	14/214,644
		Applicant: PayRange	
(37 CFR §1.98(b))		Filing Date: March 14, 2014	Group Art Unit: 3653

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
		2011/0153442	06/23/2011	Krampe			
		2011/0153436	06/23/2011	Krampe			

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document

Examiner Signature	Date Considered
/James Nigh/	08/27/2014

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /J.N./

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/214,644	03/14/2014	Paresh K. Patel	104402-5001-US	2829

24341 7590 09/04/2014

MORGAN, LEWIS & BOCKIUS LLP (PA)
2 PALO ALTO SQUARE
3000 EL CAMINO REAL, SUITE 700
PALO ALTO, CA 94306

EXAMINER	
NIGH, JAMES D	
ART UNIT	**PAPER NUMBER**
3685	

NOTIFICATION DATE	DELIVERY MODE
09/04/2014	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

padocketingdepartment@morganlewis.com
vskliba@morganlewis.com

UNITED STATES DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office
Address : COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450

APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
14/214,644	14 March, 2014	PATEL ET AL.	104402-5001-US

MORGAN, LEWIS & BOCKIUS LLP (PA)
2 PALO ALTO SQUARE
3000 EL CAMINO REAL, SUITE 700
PALO ALTO, CA 94306

EXAMINER	
JAMES D. NIGH	
ART UNIT	PAPER
3685	20140827

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner for Patents

The IDS submitted 23 June 2014 has been considered.

/JAMES D NIGH/
Primary Examiner, Art Unit 3685

PTO-90C (Rev.04-03)

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/214,644	10/07/2014	8856045	104402-5001-US	2829

24341 7590 09/17/2014

MORGAN, LEWIS & BOCKIUS LLP (PA)
2 PALO ALTO SQUARE
3000 EL CAMINO REAL, SUITE 700
PALO ALTO, CA 94306

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

PAYRANGE INC., Portland, OR, Assignee (with 37 CFR 1.172 Interest);
Paresh K. Patel, Portland, OR;
Chau M. Doan, Beaverton, OR;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

Law Office of Karen Dana Oster, LLC

telephone (503) 810-2560, fax (503) 638-0367
PMB 506, 16869 SW 65th Avenue
Lake Oswego, OR 97035
karen@kdopatent.com

Transmitted by Facsimile to 571-273-6500

January 21, 2015

Attention: Refunds
Director of the US Patent and Trademark Office
PO Box 1450
Alexandria, VA 22313-1450

Re: Refund for Deposit Account #50-2115

Dear Sir or Madam:

We are requesting that $90 (the overpayment between the fee charged and the fee authorized) be credited to Deposit Account #50-2115.

Please see the attached deposit account statement showing a charge of $180 on August 22, 2014 for U.S. Patent Application No. 14/214,644. This charge was for fee code 1806 which is for submission of an Information Disclosure Statement (IDS) for a large entity.

Applicant is a small entity and has always been a small entity. In fact, on the fee transmittal form (attached) requesting that funds be transferred from the deposit account, the box was checked next to "Applicant asserts small entity status."

Your prompt attention to this would be greatly appreciated. In the meantime, if you have any questions, please feel free to contact me.

Sincerely,

Karen Dana Oster

Document code: WFEE

United States Patent and Trademark Office
Sales Receipt for Accounting Date: 08/22/2014

BDEBNAM SALE #00000001 Mailroom Dt: 06/23/2014 502115 14214644
01 FC : 1806 180.00 DA

Adjustment date: 01/27/2015 EEKUBAY1
08/22/2014 BDEBNAM 00000001 502115 14214644
01 FC:1806 180.00 CR

01/27/2015 EEKUBAY1 00000007 502115 14214644
01 FC:2806 90.00 DA

AO 120 (Rev. 08/10)

TO:	**Mail Stop 8** **Director of the U.S. Patent and Trademark Office** **P.O. Box 1450** **Alexandria, VA 22313-1450**	**REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK**

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court District of Delaware on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
	4/19/2022	District of Delaware
PLAINTIFF PAYRANGE INC.		DEFENDANT CSC SERVICEWORKS, INC., and CSC SERVICEWORKS HOLDINGS, INC.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	8,856,045	10/7/2014	PAYRANGE INC.
2	10,438,208	10/8/2019	PAYRANGE INC.
3	10,891,608	1/21/2021	PAYRANGE INC.
4			
5			

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director **Copy 3—Upon termination of action, mail this copy to Director**
Copy 2—Upon filing document adding patent(s), mail this copy to Director **Copy 4—Case file copy**

AO 120 (Rev. 08/10)

TO:	Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court District of Delaware on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
22-502-VAC	4/19/2022	District of Delaware

PLAINTIFF	DEFENDANT
PAYRANGE INC.	CSC SERVICEWORKS, INC., and CSC SERVICEWORKS HOLDINGS, INC.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	8,856,045	10/7/2014	PAYRANGE INC.
2	10,438,208	10/8/2019	PAYRANGE INC.
3	10,891,608	1/21/2021	PAYRANGE INC.
4			
5			

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading		
	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1			
2			
3			
4			
5			

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT
See attached

CLERK	(BY) DEPUTY CLERK	DATE
John A. Cerino		8-23-2022

Copy 1—Upon initiation of action, mail this copy to Director **Copy 3—Upon termination of action, mail this copy to Director**
Copy 2—Upon filing document adding patent(s), mail this copy to Director **Copy 4—Case file copy**

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

PAYRANGE INC.,	)	
Plaintiff	)	
v.	)	C.A. No. 22-502 (VAC)
CSC SERVICEWORKS, INC., and CSC SERVICEWORKS HOLDINGS, INC.,	)	
Defendant.	)	

NOTICE OF VOLUNTARY DISMISSAL WITHOUT PREJUDICE

Pursuant to Fed. R. Civ. P. 41(a)(1)(A)(i), Plaintiff PayRange Inc. hereby dismisses this action without prejudice, with each party bearing their own costs and fees. Defendants CSC ServiceWorks, Inc. and CSC ServiceWorks Holdings, Inc. have not served an answer or a motion for summary judgment.

WILSON SONSINI GOODRICH & ROSATI, P.C.

/s/ Ian R. Liston
Ian R. Liston (#5507)
Jennifer A. Ward (#6476)
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