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Application Number: 16854829 Document Date: 04/21/2020

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	WYAT-0002.USC1C1C1C
	Application Number	
Title of Invention	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM	

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
	David		WYATT	

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

City	State/Province	Country of Residence
San Jose	CA	US

Mailing Address of Inventor:

Address 1	1314 Vanna Ct
Address 2	

City	State/Province	Postal Code	Country
San Jose	CA	95131	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).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	136197		
Email Address	officeaction@mhbpatents.com	Add Email	Remove Email

Application Information:

Title of the Invention	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM		
Attorney Docket Number	WYAT-0002.USC1C1C1C	**Small Entity Status Claimed**	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	13	**Suggested Figure for Publication (if any)**	

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Title of Invention	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM	

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).
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Please Select One:	● Customer Number	US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	136197		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim 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" field blank.

Prior Application Status: Patented — Remove

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
	Continuation of	16025829	2018-07-02	10628820	2020-04-21

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Title of Invention	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM	

Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
16025829	Continuation of	15250698	2016-08-29	10013693	2018-07-03
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
15250698	Continuation of	14680946	2015-04-07	9430765	2016-08-30
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14680946	Continuation of	14217261	2014-03-17	9022286	2015-05-05
Prior Application Status	Expired				Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
14217261	Claims benefit of provisional	61794891	2013-03-15		

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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. 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(i)(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).

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

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

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	WYAT-0002.USC1C1C1C
	Application Number	
Title of Invention	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM	

☐ 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.

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	Application Number	
Title of Invention	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is 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 State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

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	Application Number	
Title of Invention	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM	

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.

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. ☒

Organization Name	Virtual Electric Inc.		
Mailing Address Information For Applicant:			
Address 1	1314 Vanna Ct		
Address 2			
City	San Jose	**State/Province**	CA
Country	US	Postal Code	95131
Phone Number		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:

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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. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

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Signature:

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NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Anthony C. Murabito/			Date (YYYY-MM-DD)	2020-04-21
First Name	Anthony	Last Name	Murabito	Registration Number	35295

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

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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.**

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

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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 CooperationTreaty.

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.

MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM

RELATED APPLICATIONS

[0001] This is a Continuation application of co-pending, commonly-owned U.S. Patent Application Serial No. 16/025,829, now U.S. Patent 10,628,820, filed July 2, 2018, which in turn was a Continuation application of co-pending, commonly-owned U.S. Patent Application Serial No. 15/250,698, now U.S. Patent 10,013,693, filed August 29, 2016, which in turn was a continuation of U.S. patent application Ser. No. 14/680,946, now U.S. Patent 9,430,765 (Attorney Docket No. WYAT-0002.USC1) entitled "MULTI-FUNCTIONAL CREDIT CARD TYPE PORTABLE ELECTRONIC DEVICE," filed April 7, 2015 to inventor David Wyatt, which is itself a continuation of U.S. patent application Ser. No. 14/217,261, now U.S. Patent 9,022,286 (Attorney Docket No. WYAT-0002.US), similarly entitled "MULTI-FUNCTIONAL CREDIT CARD TYPE PORTABLE ELECTRONIC DEVICE," filed March 17, 2014 by the same inventor David Wyatt, and claims the benefit of U.S. Provisional Patent No. 61/794,891 (Attorney Docket No. WYAT-0002.A) entitled "Multi-Functional Credit Card Device," filed March 15, 2013 to inventor David Wyatt. The benefit of the earlier filing dates is hereby claimed and the contents of the earlier filed related applications are further incorporated by reference in their entirety.

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FIELD OF THE INVENTION

[0002] Embodiments according to the present disclosure generally relate to electronic or smart multi-function electronic devices and, more specifically, to more secure, smart multi-function electronic payment card and device systems and transaction processing thereof.

BACKGROUND OF THE INVENTION

[0003] There are several different types of credit cards available in the marketplace at present. A first type of credit card is a conventional, standard piece of plastic with a magnetic strip, which is readily available and in wide commercial use. The advantage of this first type of credit card is that a large portion of the infrastructure for credit card transactions is built around this type of card, and consequently such a card works in a wide array of vendors' credit card machines, automated teller machines (ATMs), and other devices that support the present credit card and banking infrastructure.

[0004] Another type of credit card device employs the use of a smart integrated circuit chip. These types of credit cards have a built in microprocessor with cryptographic capabilities. These microprocessors operate in a similar manner to a cell phone having a chip comprising a cryptographic processor. Such a smart card device requires contact with a reader in order to be read and to perform a transaction. The reader provides the manner in which a facility interacts with the built-in processor on the card, e.g., for purposes of performing verification on the authenticity of the card or for making a direct

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deposit on the card. These credit card devices also comprise a magnetic strip such that they are compatible with standard plastic credit card readers in wide use.

[0005] A different type of credit card device in circulation employs radio frequency identification ("RFID"). These cards essentially have a low-power RF antenna built into the card, and when the cardholder passes the antenna in front of a reader comprising an RF field, enough power is generated to enable the processor to interact wirelessly with the receiving device.

[0006] A concern with each of these types of credit cards presently available in the marketplace is that they can all be, in various ways, susceptible to theft and/or compromise. Therefore, these types of credit cards have security limitations. Further, cards employing smart integrated circuit chips and RF technology are not in wide use at present because they are incompatible with existing credit card infrastructure, which still predominantly supports conventional plastic credit cards.

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SUMMARY OF THE INVENTION

[0007] This Summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description. This Summary is not intended to identify key features or essential features of the claimed subject matter, nor is it intended to be used to limit the scope of the claimed subject matter.

[0008] An embodiment includes a multi-function electronic device capable of generating a programmed magnetic field of alternating polarity based on a speed of a card swipe, and methods for constructing the device for the purpose of emulating a standard credit card. An apparatus is described to allow said device to emulate behavior of a credit card when used in electronic credit card readers. Additionally methods are described to allow user control of said device for the purpose of authorizing or controlling use of said device in the application of credit, debit and cash transactions, including cryptocurrency and card-to-card transactions. Methods are also described for generating a limited-duration credit card number when performing a transaction for the purpose of creating a limited-use credit card number, which is limited in scope of use to a predetermined number of authorized transactions. Furthermore said device may interact with other similar devices in proximity for the purpose of funds or credit/debit transfers.

[0009] More specifically, an aspect of the present disclosure provides an apparatus comprising: a thin card shaped sized body; a memory operative to store a plurality of identification data; a processor coupled to the memory; a user interface for selecting a

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select identification data of said plurality of identification data; a magnetic card reader detection unit for determining if the body is adjacent to a standard magnetic card reader; and an inductor assembly coupled to the processor and integrated into the body, the inductor assembly under processor control for generating a magnetic field of alternating polarity responsive to the body being detected as adjacent to a standard magnetic card reader, the magnetic field generated in a region substantially encompassing the standard magnetic card reader, wherein the magnetic field encodes said select identification data, and wherein the magnetic field is operable to be read by a magnetic read head of the standard magnetic card reader.

[0010] According to another aspect of the present disclosure, a multi-function electronic device comprises: a near-field communication (NFC) unit; a touch sensor array; a display; a motion rate detection array; a memory, storing a user data and a currency amount; and a processor operatively coupled to the NFC unit, the touch sensor array, the display, the motion rate detection array, and the memory; and wherein the processor initiates a card-to-card transaction between two multi-function electronic devices by a detected proximity of a first multi-function electronic device and a second multi-function electronic device and an input of information by a first user via said touch sensor array, and wherein the card-to-card transaction comprises an exchange of stored currency and said user data between the first multi-function electronic device and the second multi-function electronic device via the NFC unit.

[0011] According to yet another aspect of the present disclosure, a method of performing a transaction comprises: receiving an input signal at a multi-function

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electronic device from a user enabling operation of a near-field communication (NFC) unit of the multi-function electronic device; receiving an indication of an amount of currency for a transaction; generating at said multi-function electronic device a limited-duration credit card number; and transmitting said limited-duration credit card number from said multi-function electronic device to a recipient of the transaction.

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BRIEF DESCRIPTION OF THE DRAWINGS

[0012] Embodiments of the present disclosure are illustrated by way of example, and not by way of limitation, in the figures of the accompanying drawings and in which like reference numerals refer to similar elements.

[0013] Figure 1 is an illustration depicting an exemplary interaction between a multi-function electronic device and a standard magnetic card reader, according to an embodiment of the present disclosure.

[0014] Figures 2A-2B are block diagrams illustrating data flow between the magnetic coils on the multi-function electronic device and the microprocessor on the multi-function electronic device according to an embodiment of the present disclosure.

[0015] Figure 2C depicts an exemplary process of selecting an account from a plurality of stored accounts according to an embodiment of the present disclosure.

[0016] Figure 3 is a flowchart illustrating an exemplary process of generating a magnetic field with an alternating polarity according to an embodiment of the present disclosure.

[0017] Figures 4A-4B illustrate a user interacting with a touch sensor of the multi-function electronic device, according to an embodiment of the present disclosure.

[0018] Figure 5 is an illustration of a multi-function electronic device connected with a computing system and operating according to an embodiment of the present disclosure.

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[0019] Figure 6 is an illustration of two multi-function electronic devices performing a transaction according to an embodiment of the present disclosure.

[0020] Figure 7 depicts an exemplary process according to an embodiment of the present disclosure.

[0021] Figure 8A illustrates an exemplary multifunction electronic device, in accordance with embodiments of the present invention.

[0022] Figure 8B illustrates exemplary displayed characteristics of multifunction electronic device, in accordance with embodiments of the present invention.

[0023] Figure 9 illustrates an exemplary process of performing a financial transaction with a portable electronic device in conjunction with a payment reader, in accordance with embodiments of the present invention.

[0024] Figure 10 illustrates an exemplary process for performing a financial transaction with a portable electronic device in conjunction with a personal computer, in accordance with embodiments of the present invention.

[0025] Figure 11 illustrate an exemplary electronic credit-card-like multi-function electronic device that has no fixed payment information, in accordance with embodiments of the present invention.

[0026] Figure 12 illustrates an exemplary process for user selection of a preferred payment account for an electronic credit card-like device, in accordance with embodiments of the present invention.

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DETAILED DESCRIPTION OF THE INVENTION

[0027] Reference will now be made in detail to the various embodiments of the present disclosure, examples of which are illustrated in the accompanying drawings. While described in conjunction with these embodiments, it will be understood that they are not intended to limit the disclosure to these embodiments. On the contrary, the disclosure is intended to cover alternatives, modifications and equivalents, which may be included within the spirit and scope of the disclosure as defined by the appended claims. Furthermore, in the following detailed description of the present disclosure, numerous specific details are set forth in order to provide a thorough understanding of the present disclosure. However, it will be understood that the present disclosure may be practiced without these specific details. In other instances, well-known methods, procedures, components, and circuits have not been described in detail so as not to unnecessarily obscure aspects of the present disclosure.

[0028] Some portions of the detailed descriptions which follow are presented in terms of procedures, steps, logic blocks, processing, and other symbolic representations of operations on data bits that can be performed on computer memory. These descriptions and representations are the means used by those skilled in the data processing arts to most effectively convey the substance of their work to others skilled in the art. A procedure, computer generated step, logic block, process, etc., is here, and generally, conceived to be a self-consistent sequence of steps or instructions leading to a desired result. The steps are those requiring physical manipulations of physical quantities. Usually, though not necessarily, these quantities take the form of electrical or magnetic

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signals capable of being stored, transferred, combined, compared, and otherwise manipulated in a computer system. It has proven convenient at times, principally for reasons of common usage, to refer to these signals as bits, values, elements, symbols, characters, terms, numbers, or the like.

[0029] It should be borne in mind, however, that all of these and similar terms are to be associated with the appropriate physical quantities and are merely convenient labels applied to these quantities. Unless specifically stated otherwise as apparent from the following discussions, it is appreciated that throughout the present claimed subject matter, discussions utilizing terms such as "storing," "creating," "protecting," "receiving," "encrypting," "decrypting," "destroying," or the like, refer to the action and processes of a computer system or integrated circuit, or similar electronic computing device, including an embedded system, that manipulates and transforms data represented as physical (electronic) quantities within the computer system's registers and memories into other data similarly represented as physical quantities within the computer system memories or registers or other such information storage, transmission or display devices.

ENCODING VIA AN ALTERNATING POLARITY OF A MAGNETIC FIELD

[0030] In one embodiment of the present disclosure, a smart multi-function electronic device comprises a dynamic magnetic region (strip) incorporating a main inductor assembly from which programmed magnetic field data symbols are dynamically generated. In one embodiment the inductor assembly may be a planar coil formed within the material that embodies the multi-function electronic device. An advantage of using a planar coil is that it can dynamically produce a magnetic field in such a manner

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as to emulate the interaction between a traditional magnetic strip and a conventional credit card reader. As the magnetic strip of a conventional credit card is passed through a magnetic reader head, stripes of alternating magnetic polarity embedded in the strip induce a magnetic field of alternating polarity at the reader head. The pattern formed by the alternating polarity of the magnetic field encodes information, which when transformed by a transducer to a current signal in the magnetic reader head, provides user information for a transaction.

[0031] Embodiments of the present disclosure provide a multi-function electronic device able to generate a programmed magnetic field, wherein data is encoded and represented by an alternating polarity of the generated magnetic field. In a similar manner to a conventional plastic credit card, the magnetic field produced by the planar coil is able to be read by a pickup (or "transducer") and to thereby transmit information to the magnetic card reader. Figure 1 illustrates a credit card transaction 100 performed between a multi-function electronic device 101 and a conventional magnetic reader 150. The multi-function electronic device 101 generates a magnetic field of alternating polarity 120 to be read by the conventional magnetic card reader 150, according to an embodiment of the present disclosure. The multi-function electronic device 101 is moved at a rate 130 relative to a magnetic reader head 155 of conventional magnetic card reader 150. The magnetic field 120 extends with sufficient distance and intensity from 101 so as to be read by magnetic head reader 155. The magnetic head reader 155 responds to the magnetic field 120 by producing a current in the conventional fashion, which is then interpreted as encoded information by the magnetic reader 150. Therefore the magnetic field of alternating polarity 120 produced by the multi-function

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electronic device 101 has a substantially identical encoding effect as a traditional magnetic strip.

[0032] A characteristic of encoding information in a conventional magnetic card strip is that binary information is encoded by the pattern of alternating magnetic polarity formed by ferromagnetic stripes embedded on the magnetic strip. As the conventional magnetic card strip has a standardized format, the encoding of information is provided at a specified data density (bits per inch), according to which conventional magnetic readers are designed for interpretation of encoded data. In order to most ably emulate a conventional credit card interaction with a conventional magnetic reader the multi-function electronic device 101 of the present disclosure is provided with a means of determining a substantially optimal rate for alternating the polarity of the generated magnetic field 120 in order to produce data at a rate which is able to be readily received and correctly interpreted by the conventional magnetic reader 150. Embodiments of the present disclosure provide several means of determining the relative movement rate 130 between the multi-function electronic device 101 and the magnetic reader head 155. These features, as well as other characteristics of the multi-function electronic device of the present disclosure, can be better appreciated by a description of the internal components and functions of multi-function electronic device 101.

[0033] Figures 2A and 2B depict exemplary embodiments of a smart multi-function electronic device, in a block diagram view. The components of the block diagram are illustrated according to functional connections, and their locations should not be construed as being limited to the respective locations as depicted in Figures 2A-2B. In

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Figure 2A, multi-function electronic device 201a is shown in a block diagram view. Multi-function electronic device 201a comprises a processor 205 and a memory unit 207, the processor 205 operatively coupled to the components of multi-function electronic device 201a. The memory 207 comprises a plurality of accounts 209, which may be credit card accounts, banking accounts, merchant accounts, online accounts, cryptocurrency accounts, and combinations thereof. A motion detection module 210 is coupled to the processor unit 205 and to a set of motion detection units, which comprise a rate detection assembly 225, an optical sensor array 230, and a set of accelerometers 235. The magnetic field is generated via a planar coil 220, which is controlled by the processor unit 205 via a coil interface 215. The rate at which the magnetic field changes polarity to encode the user data depends on the rate of relative movement detected by the rate detector. The multi-function electronic device 201a further comprises a real-time clock 240, a touch-sensor array 245, and a display 250, each operatively coupled to the processor unit 205. A user input may be made via the touch sensor array 245, which may comprise a touch screen panel, a keypad, or a combination thereof. The display 250 is able to display an alphanumeric sequence, as well as graphical icons (such as a logo for a bank, or other images). See, for example, Figures 8A and 11. Further, an optional backup power source 255 is depicted.

[0034] In one embodiment, the processor unit 205 is connected to the planar coil 220 and the motion detection units, via the motion detection module 210. The processor unit 205 is responsible for determining the appropriate rate with which to output data from the planar coil 220, wherein output data is encoded using alternating polarity of a generated magnetic field. The rate of the alternating polarity of the magnetic field is

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generated in accordance with the detected movement speed with which the card is swiped through the reader, in order for the reader to receive the encoded data at the appropriate rate. Magnetic card readers, which are designed to read conventional credit cards, are constructed to read data at specified input rates that correspond with the data density present in conventional magnetic card strips. The magnetic data symbols generated by the planar coil 220 are produced to align with the rate at which data is being read by the magnetic card reader. Accordingly, it is irrelevant if the multi-function electronic device 201a of the present disclosure is being swiped quickly or slowly, the planar coil 220 is controlled by the processor unit 205 to produce data at a substantially optimized rate, where the rate of data production is dependent on the rate at which the multi-function electronic device 201a is detected to be passing across the magnetic reader head.

[0035] Figure 2B depicts a multi-function electronic device 201b according to an embodiment of the present disclosure. Device 201b comprises a processor 205 and a memory unit 207, the processor 205 operatively coupled to the components of multi-function electronic device 201b. The memory 207 comprises a plurality of accounts 209, which may be credit card accounts, banking accounts, merchant accounts, online accounts, cryptocurrency accounts, and combinations thereof. A motion detection module 210 is coupled to the processor unit 205 and to a set of motion detection units, which comprise a rate detection assembly 225, an optical sensor array 230, and a set of accelerometers 235. Additionally, a galvanic sensor 275 is coupled to processor unit 205. The magnetic field is generated via a planar coil 220, which is controlled by the processor unit 205 via a coil interface 215. The rate at which the magnetic field changes

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polarity to encode the user data depends on the rate of relative movement detected by the rate detector. The multi-function electronic device 201b further comprises a real-time clock 240, a touch-sensor array 245, and a display 250, each operatively coupled to the processor unit 205. A user input may be made via the touch sensor array 245, which may comprise a touch screen panel, a keypad, or a combination thereof. See also, for example, Figures 8 and 9. The display 250 is able to display an alphanumeric sequence, as well as graphical icons (such as a logo for a bank, or other images). Further, an optional backup power source 255 is depicted. Multi-function electronic device 201b further comprises a near-field communication (NFC) unit 260, as well as a radio frequency identification (RFID) unit 265, both of which are operatively coupled to the processor unit 205. In one embodiment the NFC and RFID may share the planar coil for use as a RF antennae, through the coil interface 215. In one embodiment one or both the NFC and the RFID may have antennae dedicated to that individual sub-system. A universal serial bus (USB) connector 270 is coupled to the processor unit 205. The functionality of the components with regard to exemplary uses of multi-function electronic devices 201a and 201b is described in greater detail in the following description.

[0036] A further aspect of the present disclosure provides a single multi-function electronic device that can be used for multiple banks or financial institutions. For example, instead of carrying a separate credit card for each account of a variety of credit card companies, a customer need only to carry a single card according to embodiments of the present disclosure. The capability of the multi-function electronic device to generate a multitude of credit card numbers provides the ability of the multi-function electronic

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device to be associated with multiple accounts. Furthermore, inputs at the touch sensor array on the multi-function electronic device can be used to select the appropriate bank or credit provider account stored in the memory unit of the multi-function electronic device.

[0037] Figure 2C depicts a process of selecting an account from a plurality of stored accounts in order to perform a transaction with the selected account, according to an embodiment of the present disclosure. The process 280 begins at step 282, where a plurality of accounts stored by the multi-function electronic device memory is displayed. The plurality of accounts 209 are stored by memory 207, and are displayed using display 250. A user indicates an account selected from the plurality of accounts at step 284. The selection is able to be made by keypad or touch sensor array 245, and an indication of the selected account can be displayed via display 250. At step 286 the multi-function electronic device is configured according to account information associated with the selected account, which may include an account number, an expiration date, and other user information associated with the account (e.g. a username, PIN, password, email address, etc.). At step 288 the planar coil of the multi-function electronic device is encoded with a limited-duration credit card number that is associated with the selected account. The limited-duration credit card number is able to be generated according to the selected account, a timestamp, a transaction amount, an indicated merchant, user key or secrets, on-card unique hardware secrets, credit card authority key or secrets, user input from the card interface, and other information associated with the transaction.

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MOVEMENT RATE FEEDBACK

[0038] The relative movement rate of multi-function electronic device 201a is detected by one or more of the set of motion detection units, comprising the rate detection assembly 225, the optical sensor array 230, and the set of accelerometers 235. Each of the motion detection units detects the motion of the credit card 201a in a distinct manner. The rate detection assembly 225, which is positioned alongside (but independent of) the planar coil 220, is able to detect the location of a magnetic head reader as the rate detection assembly 220 is being passed through the credit card reader. The reader module of a conventional credit card reader comprises a metal head having a small gap at the tip of the head. A pickup armature resides in this gap, such that as the metal head passes over a credit card strip, an electric field is induced in the head reader pickup circuit. In one embodiment the rate detection assembly 225 is constructed of an array of auxiliary inductor coils and magnetic pickup coils. As the metal head of the card reader assembly passes over the arrangement of auxiliary inductor coils and magnetic pickup coils of the rate detection assembly 225, a disturbance in the magnetic field flowing between the two is induced, generating a change in current and producing a detected movement signal. The change in current is detected by the motion detection module 210, and is used to determine the rate of motion of the card reader head passing across the surface of the multi-function electronic device 201a (and therefore along the planar coil 220).

[0039] The optical sensor array 230 is also operable to detect a movement rate of the multi-function electronic device 201a with respect to a conventional magnetic card reader. The optical sensor array 230 is disposed nearby the planar coil 220, in order to

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accurately detect a movement rate in the region of the planar coil 220. In an embodiment, the optical sensor array 230 is a thin strip parallel to, and extending along, the length of the planar coil 220. The optical sensor array 230 determines a location of a minimum of received light, which corresponds to the region of a surface in nearest proximity to the optical sensor array 230. The magnetic reader head of a conventional magnetic card reader extends furthest from the surface of the card reader, and therefore the detected minimum in received light at the optical sensor array 230 corresponds with the location of the reader head. By tracking over time the position of this minimum received light along the optical sensor array, a detected movement rate may be found.

[0040] The set of accelerometers 235 are also operable to detect a movement rate of the multi-function electronic device 201a. The set of accelerometers 235 are positioned in the multi-function electronic device 201a in order to effectively measure the position and acceleration of the multi-function electronic device 201a. In an embodiment, the set of accelerometers comprises groups of accelerometers, each group having one or more accelerometers disposed at orthogonal planes to each other, and each group capable of generating signals that allow for determination of the orientation, motion and acceleration of the multi-function electronic device 201a.

[0041] The detected movement signal is received by the motion detection module 210. The detected movement signal is generated by any one of the set of motion detection units, or any combination of motion detection units of the set. For example, the movement detection signal is able to be generated by the combination of the rate detection assembly 225 and the optical sensor array 230. In an embodiment, the

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movement detection module 210 is able to determine the movement rate of the multi-function electronic device 201a from the detected movement signals, and transmits the determined movement rate, and orientation to the processor unit 205. In an embodiment, the motion detection module 210 sends the detected movement signal to the processor unit 205, and the processor unit 205 determines the relative movement rate.

[0042] In one embodiment, the generation of the magnetic field by the planar coil 220 at a specified rate of alternating polarity is accomplished according to the following description. One or more of the motion detection units in the set of motion detection units (rate detection assembly 225, optical sensor array 230, and set of accelerometers 235) detect a movement rate of the multi-function electronic device 201a with respect to a magnetic card reader, and signal the motion detection module 210. The movement rate is provided to the processor unit 205, which determines the appropriate rate for alternating the polarity of the magnetic field generated by the planar coil 220. The processor unit 205 outputs instructions or data to the coil interface 215 at the determined rate, which in an embodiment is a digital-to-analog converter (a DAC) and acts to translate the signal from digital to analog in order to drive the planar coil 220 and produce the magnetic field. The instructions from the processor unit 205 are comprise binary code, which are output through a shift register to the coil interface 215. The shift register outputs data at a rate proportional to the determined movement rate of the multi-function electronic device 201a – thus, a higher determined multi-function electronic device 201a movement rate has a corresponding higher output rate at the shift register, leading to a higher rate of alternating polarity at the generated magnetic

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field (i.e., encoded data symbols output more quickly). Conversely, a lower movement rate of multi-function electronic device 201a leads the processor unit 205 to control the shift register to output data at a lower rate, and consequently the rate of alternating polarity in the generated magnetic field is lower.

[0043] Figure 3 illustrates an exemplary process 300 for determining the rate to alternate the polarity of the generated magnetic field of the multi-function electronic device, according to an embodiment of the present disclosure. At step 301 the process determines if a standard magnetic card reader is detected to be in proximity with the multi-function electronic device. If NO, the step repeats. If YES, the process moves to step 303. At step 303 a detection of a movement rate at which the body of the multi-function electronic device is moving relative to the standard magnetic card reader is made. The process continues at step 305, wherein a magnetic field is generated by an inductor assembly comprised by the multi-function electronic device, the magnetic field having a target rate of alternating polarity that is based on the detected movement rate from step 303. The process then repeats at step 301, determining if a standard magnetic card reader is (or remains) in proximity to the multi-function electronic device. In this manner, while a standard magnetic card reader is detected to be in proximity to the multi-function electronic device, the movement rate of the multi-function electronic device is determined and the polarity and orientation of the generated magnetic field is alternated at the appropriate rate, to recreate the data as described above, at the correct rate, in order to clock out the data to be conveyed to the magnetic strip reader, at a rate matching the action of an ordinary magnetic strip card through same the magnetic card reader.

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SECURITY

[0044] Security is an area of concern for credit card holders, as the small form factor makes theft quite easy, and additionally there are many ways for a malicious third-party to record the account number of a credit card in order to later make fraudulent transactions on the account. Embodiments of the present disclosure address security concerns of a credit card owner on several fronts.

[0045] In one aspect, security of the multi-function electronic device is enhanced by providing a means of locking the multi-function electronic device in order to prevent use, until such time that a valid user input is entered. Embodiments of the present disclosure provide a multi-function electronic device having a region for receiving human input, e.g., touch sensors which are able to be formed by contacts that a user can press (e.g., the touch sensor array 245 of Figures 2A-2B). Figures 4A-4B illustrate a user interacting with a multi-function electronic device 401 via a keypad or touch sensor array 445. In Figure 4A, the multi-function electronic device 401 is in a locked state. A display 450 is able to display a message to the user, for instance, the message "device locked" or "enter password," or question prompts which guide the user to respond with answers through the key-pad or the touch sensor, to certain preset questions, that confirm personal knowledge known only to the associated user. The touch sensor array 445 enables user interaction with the multi-function electronic device 401. An exemplary use of the touch sensor array 445 is an input of a currency amount to be used in a transaction. The touch sensor array 445 is able to include buttons, or a touch-sensitive pad, or a combination of the two. Other embodiments of the touch sensor array

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445 allowing a user to input data to the multi-function electronic device 401 are consistent with the spirit and scope of the present disclosure.

[0046] In order to unlock the multi-function electronic device 401 and enable a transaction or other usage, the user inputs data via the touch sensor array 445. Figure 4B illustrates the user inputting a password via a gesture 470, which operates to unlock the multi-function electronic device 401. The display 450b is able to display a message indicating the multi-function electronic device 401 is unlocked and ready for use, for instance, display 450b may display the message "unlocked," or it may display an account number associated with the multi-function electronic device 401.

[0047] Embodiments of the present disclosure provide additional functionality for the touch sensor array 445. For example, there may be touch contact terminals that a user can press to wake up the multi-function electronic device 401, to cause the battery to supply power, or to place the multi-function electronic device 401 in a power reduction mode when it is not being used. In an embodiment, if any number other than the correct password is entered multiple times, or if there is an attempted usage of the multi-function electronic device 401 without entering in a password, an automatic phone call may be triggered to the appropriate fraud protection authorities.

[0048] In one embodiment of the present disclosure, the display 450 is a thin-film liquid crystal display ("LCD"). The display 450 is able to have multiple uses. In one embodiment, the display 450 can be used to cue the user for a security question upon input of an improper password. Or if fraud protection services need to contact a customer, they can verify the customer's identity by transmitting a security question to

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the display 450 of user's multi-function electronic device 401, to which the user would need to respond correctly using the input buttons of touch sensor 445 on the card. See also, for example, Figures 8 and 9.

LIMITED-DURATION CREDIT CARD NUMBER

[0049] A further security feature of the multi-function electronic device provided in the present disclosure is the capability of producing a limited-duration credit card number for performing transactions using accounts of the card. The multi-function electronic device comprises a real-time clock that is able to produce a cryptographically protected timestamp for each interaction. The power source is able to activate the processor unit such that a unique number may be generated by the multi-function electronic device and verified by the credit authority according to the timestamp and the transmitted user information. The limited-duration credit card number is able to be produced at the time the multi-function electronic device is performing a transaction, and is able to be generated according to the user's private information, a bank information, information regarding the facility performing the transaction, and the time of day. The limited-duration credit card number is able to be limited to only one transaction, a finite number of transactions, or may be limited to a specified period of time – e.g., 2 minutes, 10 minutes, 3 hours – after which time that particular limited-duration number would become invalid. As detailed above, if an expired limited-duration credit card is attempted to be used for a transaction, the transaction is denied and an automatic notification is able to be made to a credit authority in order to notify the user and to prevent transactions on the account. The transaction count is able to be

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determined through the action of passing the card through magnetic reader, and the process of transmitting the card number to the card reader.

[0050] In one embodiment, the number on the front of the card is able to be a full or partial number. In an embodiment, the number displayed on the multi-function electronic device is a static number, but the number transmitted during a transaction is a limited-duration credit card number as described above. The number displayed on the multi-function electronic device may not necessarily be a static number. For example, the first four and last four digits of the credit card number are able to be fixed, while the remaining eight digits can be dynamically generated. As the credit card is read by the machine, part or all of the number may be dynamically produced at the time the card is read. As described above, the dynamic part of the limited-duration credit card number generated may be based on the user's private information, the user's bank information, the time of day, or the facility that is reading the card. Further, the expiration date of the multi-function electronic device can also be dynamically generated. See also, for example, Figures 8, 9 and 11.

[0051] Effectively, embodiments of the present disclosure provide a multi-function electronic device that has no fixed number, as illustrated in Figure 11, and therefore the account cannot be compromised. Only the number generated at the instant of the credit card transaction matters. Accordingly, unauthorized use of the multi-function electronic device is highly unlikely, because a transaction cannot be conducted with an expired limited-duration credit card number, or only the static portion of the credit card number. In one embodiment of the present disclosure, sufficient dynamically generated numbers

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are provided for on the credit card such that a unique credit card number can be generated for each transaction. In this embodiment, the credit card of the present disclosure effectively acts as a unique per-transaction credit card.

[0052] With reference to Figure 2A, 2B, in one embodiment, the process steps enabling a card transaction are as follows. A multi-function electronic device (e.g., multi-function electronic device 201b) is connected to a computer system (e.g. computer system 590, Figure 5), via any of the connection means available to the multi-function electronic device (USB 270, NFC 260, and RFID 265). User data and other essential information, such as account information, are downloaded to the multi-function electronic device. For example, for an account designed for online transactions, user account information will likely include an account email and an account password. The account may be for example a bank account, a credit account, a merchant account, an online transaction account, or a cryptocurrency. In one embodiment a currency amount is also downloaded, which is made accessible to the multi-function electronic device 201b for transactions. In an alternative embodiment, rather than a currency amount being downloaded to the multi-function electronic device 201b, the user account information (e.g., username and password) is stored such that a subsequent authorized multi-function electronic device 201b transaction is automatically pre-authorized to deduct (or credit) the entered transaction amount at a stored account. In an embodiment, a user uses the touch sensor array 245 of the multi-function electronic device 201b in order to input the user information, including the amount of currency to be stored. The information entered by the user is able to include an account source of a transaction (e.g., bank account, credit account, merchant account, ATM, online payment service, or a

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cryptocurrency), as well as a type of transaction to be made (e.g., as a debit card, as a credit card, or as a user account). In another embodiment, the information is entered using the computing system to which the multi-function electronic device 201b is connected.

[0053] Transactions may be authenticated on the specified account by entry of the username and password for the account during the transaction, using the touch sensor array 245. In an embodiment, a password for an account is represented by a user input (such as a gesture, a swipe, and/or an unlock keycode) which is entered on multi-function electronic device 201b during a transaction for account authentication. See also, for example, Figure 9. According to an embodiment of the present disclosure, a user that has "primed" the multi-function electronic device 201b for a transaction has already performed a security authentication on the card, and therefore a subsequent card transaction is able to be pre-authorized to perform the transaction without further user authentication steps. The priming action can be a tap of the multi-function electronic device 201b detected by accelerometers 235, or a gesture, swipe, or a key input received by touch sensor array 245. See also, for example, Figure 9.

[0054] A transaction is able to be communicated using the planar coil 220. In one embodiment, when the transaction is a credit card transaction, a limited-duration credit card number is generated. A user inputs an amount for the transaction using the touch sensor array 245, and the limited-duration credit card number is generated to correspond with the entered amount. The binary data corresponding to this limited-duration credit card number is sent from the processor unit 205 to the coil interface 215,

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where it is converted to an analog signal in order to drive the planar coil 220 to generate a magnetic field having an alternating polarity corresponding to the encoded data of the limited-duration credit card number.

ONLINE TRANSACTIONS

[0055] Figure 5 displays the multi-function electronic device 501 in connection with a computing device 590. In one embodiment, the multi-function electronic device 501 is able to be used to make online purchases. In one embodiment, the multi-function electronic device 501 is equipped with a means 570 for communicating with the USB port on a computer or other device in order to make online purchases. In one embodiment the multi-function electronic device 501 may have an area cut-out, such that contact terminals corresponding to a USB cable connector are contained within, enabling connection of a USB cable (e.g., a micro-USB connection). When performing online transactions, the multi-function electronic device 501 can uniquely generate a limited-duration credit card number (as described above) for online purchases. The multi-function electronic device 501 receives a user input indicating that a transaction is imminent, and an authorization. The user input is able to comprise a gesture, a swipe, a key input sequence, and combinations thereof. The limited-duration credit card number is able to be displayed on the front display of the multi-function electronic device 501. In one embodiment, the multi-function electronic device 501 is able to use RFID 265 or near field communication NFC 260 technology in order to connect to a personal computer 590. This enables a per-transaction, limited-use credit card number, enhancing the security of the credit account by substantially negating the possibility of a

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theft of the credit card number used to perform the transaction leading to account compromise. See also, for example, Figure 10.

[0056] According to an embodiment, the transaction is able to include information regarding a user account, such as an email address of the user, and upon reconnection of multi-function electronic device 201b to a computer system (for instance, computer system 590), the transaction information stored on multi-function electronic device 201b could be "replayed" by the computer system in order to finalize the transaction.

[0057] In one embodiment, a means of limiting an available credit amount are provided. According to the download process described above, the multi-function electronic device is able to have a total credit available. The multi-function electronic device is able to reference the total credit available in subsequent transactions, and will provide limited-duration credit card numbers corresponding to amounts up to, but not exceeding, the remaining credit available to the multi-function electronic device. An attempt to perform a transaction having an amount exceeding the remaining credit available will not result in a valid limited-duration credit card number, and therefore an authenticated transaction cannot proceed. In general, the multi-function electronic device will only successfully generate a limited-duration credit card number if the proper conditions for a transaction are determined to be present. The proper conditions for a transaction comprise a correct identification having been made by the user (via a gesture, swipe, and/or key input) and an amount for the transaction indicated to be less than the total credit available to the account indicated for the transaction.

[0058] In addition to transactions performed using conventional magnetic card readers (such as at point-of-sale locations, banks, and automated teller machines (ATMs)) and via cable connection with a computing device, transactions performed wirelessly between a card and a device (e.g., card-to-card, card-to-computer device having a reader dongle, card-to-ATM) are provided according to embodiments of the present disclosure. See, for example, Figures 8 and 10. For simplicity, the following describes a card-to-card transaction, but it will be understood that card-to-device transactions are similarly provided.

[0059] Figure 6 illustrates a card-to-card transaction according to one embodiment. A first multi-function electronic device 601a comprises a display 650a, and is in contact with a second multi-function electronic device 601b. A contact interaction between the cards is indicated by interaction 680. In one embodiment, the contact interaction is a tapping of multi-function electronic device 601a against multi-function electronic device 601b. In another embodiment, an optical sensor array at one or both of the cards detects interaction 680. In another embodiment, interaction 680 indicates a swipe of multi-function electronic device 601a across multi-function electronic device 601b. In one embodiment a user input through the key-pad initiates and enables a transaction from first card to second card. In one embodiment the presence of second card in preparation for card to card transaction is confirmed through "polling," the process of which involves transmission of data between cards, and confirmed receipt of transmitted data by response received from second card received at first card, including information confirming receipt of the information, by second card.

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[0060] The planar coil comprised by each of multi-function electronic device 601a and multi-function electronic device 601b is able to be a means of transferring information for a transaction, e.g., such as an antenna. Once either, or both, of multi-function electronic device 601a and multi-function electronic device 601b detect interaction 680, a transaction is able to be completed via generation of a magnetic field at one card and reception of the magnetic field (i.e., reading) at the other card. In this manner, the card (e.g., multi-function electronic device 601a) receiving the transaction information operates its planar coil in an antenna mode. This enables multi-function electronic device 601a and multi-function electronic device 601b to authentically perform a transaction, and to transfer a currency between multi-function electronic device 601a and multi-function electronic device 601b. As described above, in an embodiment the transaction is able to use a limited-duration card number to encode the transaction.

[0061] In an embodiment, a set of accelerometers is used to detect the beginning of the transaction, for instance, a transaction performed by a swipe of multi-function electronic device 601a across multi-function electronic device 601b. Further, the set of accelerometers can detect a "priming" action for a multi-function electronic device, i.e., an indication for a multi-function electronic device that a transaction is imminent. The priming action can be a tap of the multi-function electronic device 601a, or tapping the multi-function electronic device 601a against the multi-function electronic device 601b. In one embodiment, a touch sensor array is able to be used for the priming action.

[0062] In an embodiment of a card-to-card transaction, one card (e.g. 601a, the card of the user having a currency debit) generates the limited-duration credit card number,

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which is transmitted via the card's planar coil. The multi-function electronic device of the recipient (e.g., 601b, the card of the user receiving a currency credit) receives the encoded data via the planar coil, acting as an antenna, and the coil interface is able to convert the received signal into a digital signal understood by the processor to be the limited-duration credit card number, identifying both the correct account and the amount of the transaction.

[0063] In one embodiment, the multi-function electronic device 201b stores cryptocurrency information in processor unit 205. The cryptocurrency information stored is able to include a plurality of cryptocurrency addresses, a plurality of private keys, and a plurality of public keys. The multi-function electronic device 201b is able to perform a transaction, as described above, using a cryptocurrency as the specified account. In one embodiment, the multi-function electronic device 201b is able to hash a portion of the transaction, using the processor unit 205 and the real-time clock 240 along with user information pertinent to the cryptocurrency account and the transaction. A subsequent connection of the credit card 201b to a computing device provides a means of connecting to the cryptocurrency servers and finalizing the transaction. Further, the multi-function electronic device 201b is able to sign a cryptocurrency transaction by, for instance, receiving a prompt at the display 250 to input a dynamic PIN specific to the transaction, which is able to be entered by touch sensor array 245.

[0064] In a card-to-card cryptocurrency exchange, a record of the transaction can be made according to the following. A first card (e.g. 601a) making a deduction with an amount indicated via touch sensor array 245 is able to generate a record of the

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transaction and store the record in the card memory, while a second card (e.g. 601b) receiving the cryptocurrency is able to generate a confirmation of the received transaction amount. In one embodiment, the amount indicated is provided by the receiving card 601b. The hashed record of the transaction contains the unique information of each user, along with the transaction amount. The success or failure of the transaction is able to be displayed on the respective displays of credit cards 601a and 601b.

ACCOUNT THEFT AND UNINTENDED USE PREVENTION

[0065] A security concern for conventional credit cards utilizing wireless communication means is the ability of a thief to access and/or copy user information through un-detected interaction with the wireless communication means. Sensitive and confidential information can be gleaned via, for example, "listening-in" on an RFID interaction between a credit card and a contactless reader, recording the characteristics of the interaction, and replicating certain characteristics to fake an authorized transaction. While to a great extent security concerns are addressed by the usage of limited-duration credit card numbers and other security features provided for by the credit card of the present disclosure and previously described, a further security feature regarding the wireless communication means of the multi-function electronic device is described herein.

[0066] In one embodiment, wireless communication means of the multi-function electronic device 201b are in a powered-down, or disabled, state prior to receiving an authenticated activation signal from a user. Upon receiving the activation signal, the

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communication means (e.g., NFC 260, RFID 265, and planar coil 220) are activated, enabling the multi-function electronic device 201b to conduct a transaction. The activation signal can originate from one (or a combination) of the set of motion detection units (rate detection 225, optical sensor array 230, and accelerometers 235), the touch sensor array 245, and the galvanic sensor 275. The galvanic sensor 275 is operable to detect a contact of human skin, via a current produced at the sensor 275 upon such contact. See also, for example, Figure 8. In an embodiment the galvanic sensor 275 is comprised of metallic contacts disposed on opposite sides of, and isolated by, the body of multi-function electronic device 201b. In one embodiment, the current produced by user contact with the galvanic sensor 275 contacts is sufficient to provide small amounts of energy in order to power components of the card. For example, energy produced is able to power the processor unit 205 and the RFID 265. In one embodiment the galvanic sensor 275 further comprises two conducting surfaces separated by a junction, and the galvanic sensor 275 is configured as a thermoelectric generator (e.g., via the Peltier effect, the Seebeck effect, or a combination). For example, heat applied at one surface of the multi-function electronic device 201b may lead to differential heating between the opposing, separated conducting surfaces of the galvanic sensor 275, generating an electric current and powering a subset of, or all of, the components of multi-function electronic device 201b (e.g., the processor unit 205, the NFC 260, and the RFID 265).

[0067] In an embodiment, the communication means are activated only so long as the activation signal continues to be detected. In another embodiment, the communication means are activated for a specified amount of time following detection of the activation signal. For example, if using the multi-function electronic device 201b in an ATM (or

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other device) preventing continuous human contact, the activation signal is able to be a swipe, gesture, or key input sequence entered via the touch sensor array 245, which activates the card for a specified duration (for instance, one minute). In an embodiment the detection of motion through accelerometer input indicates activation by a valid user. In one embodiment the specific motion detected through accelerometer input corresponding with a specific user action, such as a "flick", "swipe", "spin", "wave", "tap," may be used to initiate activation, wherein the motion is not normally generated at idle and during periods of inactivity. For example the motion not being generated accidentally while the card is stored in a user's wallet, carried while the user is actively moving, or is being handed from user to a clerk at a point of transaction. In one embodiment the specific motion, or sequence of motions, may be associated with a user, and stored on the card memory, such that performing the correct sequence when prompted can confirm the possession of the card by the known owner, thus initiating activation and enabling usage.

[0068] Figure 7 depicts a process of selectively enabling the communication capability of the multi-function electronic device according to an embodiment of the present disclosure. The process 700 begins at step 701, where an input signal is received at the multi-function electronic device from a user. The input signal is able to be generated by any one, or combination, of a plurality of input means, where the input means comprise: a swipe gesture received at a touch sensor array; a key press sequence; an accelerometer sensor indication of multi-function electronic device motion; and a galvanic sensor indication that the credit card is in a user grasp. The input received from the user enables operation of a near-field communication (NFC) unit of the multi-function

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electronic device. In one embodiment, the NFC unit is disabled prior to receiving the input signal. In one embodiment, an RFID communication unit is disabled prior to receiving the input signal, and is activated by the input signal. In one embodiment, the planar coil is disabled prior to receiving the input signal, and is activated by the input signal.

[0069] The multi-function electronic device, following enablement of the NFC unit, receives an indication of an amount of currency for a transaction at step 703. At step 705, the multi-function electronic device generates a limited-duration credit card number, which at step 707 is transmitted to a recipient of the transaction. In one embodiment, the limited-duration credit card number has a limited recurrence, and is limited in scope of use to a predetermined number of authorized transactions.

[0070] In the foregoing description of process 700, the ordering of the process steps is exemplary and should not be construed as limiting. Alternative ordering of the process steps is consistent with the present disclosure, as conceived by one skilled in the relevant art.

[0071] In one embodiment of the present invention, a credit card comprises a dynamic magnetic strip incorporating a main inductor assembly from which magnetic field data symbols are dynamically generated. In one embodiment the inductor assembly may be a planar coil formed within the plastic that the credit card is composed with. The advantage of using a planar coil is that it can produce the same magnetic field interaction that a traditional magnetic strip on a conventional credit card can produce when it is passed through a reader. Similar to a traditional plastic credit card, the

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planar coil can also produce a magnetic field that can be read by a pickup (or "transducer"). The pickup produces electric current in the coil that, in turn, produces a magnetic field that is read by the pickup. Accordingly, the planar coil can be read in the same way as the magnetic strip on a traditional plastic credit card. The magnetic field produced by the planar coil would behave identically to a traditional magnetic strip.

[0072] In one embodiment, alongside the main planar coil, auxiliary rate detection assembly independent of the main inductor assembly would be provided to assist with the alignment of the production of data from the loop as it is being passed over the head of the credit card reader. The reader module of a traditional credit card reader comprises a metal head with a small gap on the tip of the head. This gap is where the pickup armature resides, so that when the metal head passes over the credit card strip, an electric field is induced in the head reader pickup circuit. In one embodiment the auxiliary rate detection assembly is constructed of an array of auxiliary inductor coils and magnetic pickup coils, alongside the main coil. As the metal head of the card reader assembly passes over the arrangement of auxiliary coils and pickup circuits, a disturbance in the magnetic field flowing between the two generates a electrical current change that is detected by a rate detection circuit so as to detect the rate of motion of the card reader head passing across the surface of the card and therefore along the main induction assembly. The purpose of this is to allow the determination of the rate or production of magnetic data symbols in the main inductor assembly to align with the rate at which data is being read by the reader, according to the data density of standard card magnetic strips. Accordingly, it is irrelevant if the credit card of the present invention is being swiped fast or slow, the main inductor assembly produces data at just

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the right rate depending on the rate at which the card is detected it is being passed over the reader's head.

[0073] In one embodiment, a microprocessor is connected to the main coil and the alignment pickups. The microprocessor is responsible for producing the data from the coil at the appropriate rate in accordance with the speed with which the card is swiped through the reader. As shown in Figure 1, the auxiliary coil detects the rate at which the credit card is being swiped. The microprocessor then uses this information to produce the data from the main planar coil at the appropriate rate for the credit card reader.

[0074] In addition, the credit card of the present invention comprises a real time clock that can produce a cryptographically worthy timestamp for each interaction and a battery back up that can be used to power up the microprocessor. Further, the card can comprise additional human inputs, e.g., touch sensors which can be formed by contacts that a user can press. For example, there can be contacts that a user can press to wake up the card, to cause the battery to supply power, or to put the card to sleep when it is not being used. There can also be additional inputs to key in customer specific information. For example, there can be inputs to key in a password or any other kind of unique identifier. If any other number besides the password is entered multiple times, or if there is attempted usage of the card without entering in a password, an automatic phone call may be triggered to the appropriate fraud protection authorities.

[0075] In one embodiment, the number on the front of the card can be a full or partial number. The number may not have to necessarily be a static number. For example, the

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first four and last four digits of the card number can be fixed while the remaining eight can be dynamically generated. As the credit card is read by the machine, part or all of the number may be dynamically produced at the time the card is read. The dynamic part of the number generated may be based on the user's private information, the user's bank information, the time of day or the facility that is reading the card. Further, the expiration date of the card can also be dynamically generated. Effectively, a credit card can be created that has no fixed number and therefore cannot be stolen. Only the number generated at the instant the card is being used matters. Accordingly, unauthorized use of the card is nearly impossible because no transaction can be conducted with only the partial static part of the credit card number. In one embodiment of the present invention, enough dynamically generated numbers are provided for on the credit card such that a unique credit card number can be generated for each transaction. In this embodiment, the credit card of the present invention effectively acts as a unique per transaction credit card.

[0076] In embodiments of the present invention comprising dynamically created credit card numbers, a single credit card can be used for multiple banks. For example, instead of carrying a separate credit card for all the different credit card companies, a customer would only need to carry a single card and one of the inputs on the front of the card can be used to select the appropriate bank or credit provider.

[0077] In one embodiment of the present invention, a thin film liquid crystal display ("LCD") can be fitted on the card so the credit card can have a display screen. The display can have multiple uses. In one embodiment, the display can be used to ask the

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user a security question if an improper password is entered. Or if the fraud protection services need to contact a customer, they can verify the customer's identity by transmitting a security question to the user's credit card screen to which the user would then need to respond correctly using the input buttons on the card.

[0078] In one embodiment, the credit card of the present invention could also be used to make online purchases. In this embodiment, the card could use RFID or near field technology so that it can connect to a personal computer and be used to uniquely generate a credit card number for online purchases. The number could also, in one embodiment, be displayed on the front LCD of the card. In one embodiment, the card may also be equipped with a means for communicating with the USB port on the computer in connection with making the online purchases.

TABLE 1

What is claimed is: 1. An apparatus for conducting credit transactions comprising: a device with the similar dimensions and thickness to a standard credit card an inductor assembly integrated into said device capable of generating a programmed magnetic field at a location on the device where it will come into proximity to a standard credit card magnetic-strip reader the inductor assembly being operable to be read by a magnetic pickup of an electronic credit card reader;

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at least one auxiliary rate detection units adjacent to said inductor assembly, wherein said at least one auxiliary detection unit is operable to detect a rate at which said device, including said inductor assembly, is passed through said electronic credit card reader; and

a microprocessor operatively coupled to said inductor assembly and said at least one detection unit, wherein said microprocessor is operable to simulate magnetic-strip data fields using the inductor assembly, at a rate determined from said auxiliary detection units.

2. A method of Claim 1, wherein the inductor assembly is a planar coil which is a looped inductor with dimension roughly equal to, and along the axis of, the standard credit-card magnetic strip

3. A method of Claim 1, wherein said detection assembly consists of a plurality of motion rate detection units, which may comprise inductor coils and companion magnetic-field pickup coils, each of which is able to detect the proximity of metallic objects, such as magnetic-strip reader heads, passing through the magnetic field created by said inductor and detected by said pickup coil.

4. A method of Claim 1, wherein said device may incorporate a plurality of touch sensors arranged along the surface of said device which may;

allow user input of information,

allow introducing a transaction specific identifier,

to confirm/deny transaction information,

to operate in sequence, or with a gesture across said sensor for the purpose lock/unlock or control access for transactions

5. A method of Claim 4, wherein said device contains a real-time clock or counter unit which generates a sequential parameter when the card is read by said credit card reader, and which along with certain user information, transaction identifiers, user secrets, credit card authority secrets is combined to generate a limited-use credit card number, which has a limited recurrence, is limited in scope of use to a predetermined number of authorized transactions

6. A method of Claim 5, wherein the time, sequence, user, credit card authority and other information is similarly combined by credit card processing facility to generate a credit card number for comparison to the number transmitted by the credit card reader, for the purposes of authenticating said number is from a recognized card used in a user-authorized transaction

7. A method of Claim 1, wherein said device incorporates a display allowing credit card number, time, passcodes, sequence codes, amounts and other credit card transaction information to be displayed for user, merchant, bank or credit card authority

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8. An Apparatus for conducting credit transactions comprising,

wherein the edge of said device contains a connector for connection to standard computing devices such as a USB interface.

[0079] The foregoing description, for purpose of explanation, has been described with reference to specific embodiments. However, the illustrative discussions above are not intended to be exhaustive or to limit the invention to the precise forms disclosed. Many modifications and variations are possible in view of the above teachings. The embodiments were chosen and described in order to best explain the principles of the invention and its practical applications, to thereby enable others skilled in the art to best utilize the invention and various embodiments with various modifications as may be suited to the particular use contemplated.

[0080] Embodiments according to the invention are thus described. While the present disclosure has been described in particular embodiments, it should be appreciated that the invention should not be construed as limited by such embodiments, but rather construed according to the below claims.

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CLAIMS

What is claimed is:

1. A payment system comprising:

a payment card device free of any fixed payment numbers visible thereon and operable for use in payment card reader equipment; and

a computing device comprising:

a processor;

a memory;

a wireless interface;

a touch-screen user interface operable to provide a visual user-interface for user payment interactions; and

a user-input device coupled to the processor, and

wherein the processor is operable to store a transaction sequence count, a device account number and secrets limited to the computing device, and

wherein the computing device is operable to receive, store and transmit a payment card information not visible on the payment card device, and

wherein the processor is operable to generate at least a portion of a limited-use card payment information for use by an authenticated card user, and

wherein the computing device is operable to convey said payment information via an interface disposed of the computing device, and

wherein a card issuer authority is operable to reject as invalid a transaction attempt outside of its limitations of use,

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wherein a card issuer authority is operable to validate a payment information as authentic when received from at least one of: an authenticated users payment card; and an authenticated users computing device, and

wherein the card issuer authority is operable to permit the authentic transactions to complete.

2. The system of Claim 1, wherein the touch-screen user interface is operable to control an access for payment transactions by the card device, and is operable to enable as authentic payment transactions by the card device.

3. The system of Claim 1, wherein the touch-screen user interface is operable to control an access of the card device for payment transactions at an NFC Card Reader facility, and is operable to enable and disable NFC payment transactions by the card device.

4. The system of Claim 3, wherein the touch-screen user-interface is configurable for a locking and unlocking of payment transactions, and

wherein a card issuer authority is further operable for denying a payment transaction from at least one of:

a locked card device; and

a locked card-users computing device, and

wherein a card issuer authority is further operable to permit as authorized, a card payment transaction from an unlocked device.

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5. The system of Claim 1, wherein the payment card device is absent a payment number information necessary for completing an online transaction, and

wherein the information presented on an interface of said card device, are limited to an in-store merchant card reader facility use only.

6. A system of Claim 1, wherein:

the card issuer authority is operable to receive said transacted payment information, and

wherein a card issuer authority is operable to compute a limited-use payment information from a transaction information, a merchant, a facility information, a sequence counter, a payment card account information, secrets and an information limited to said card device and to said computing device, and

wherein a card issuer authority is operable to compare said computed payment information to said device transacted information, and

wherein a card issuer authority is operable to reject as invalid a device transaction used outside of a valid range of device limitations, and

wherein a card issuer authority is operable to authenticate as valid, a device transaction use within valid range of device limitations.

7. The system of Claim 1, wherein the computing device is further operable to transceive the card payment information via the wireless interface for completing an online transaction.

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8. The system of Claim 1, wherein the computing device is further operable to transceive the limited-use card payment information via an NFC interface of the computing device in an in-store NFC reader facility transaction.

9. The system of Claim 1, wherein the computing device is further operable to transceive the limited-use payment information wirelessly with another device via a wireless interface of the computing device, in a device-to-device transaction.

10. The system of Claim 1, wherein the computing device is further operable to transmit a payment information visually, in alphanumeric, graphical and iconography via the touch screen user interface.

11. The system of Claim 1, further comprising a touch-screen user interface control for a user approving and denying a transaction, and

wherein a card issuer authority is further operable to deny as authentic, a card payment transaction from a user-denied transaction, and to approve as authentic a card payment transaction from a user-approved transaction.

12. The system of Claim 1, wherein the computing device is further operable to present at least one challenge, of a set of security challenges comprising:

a card user personal information question,

a card issuer authority security question,

a user touch-screen entry,

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a user touch-screen swipe,

a user gesture of a device,

a user passcode entry,

a biometric sensing of a user touch,

a biometric sensing of a recognized user proximity, and

a biometric sensing of a recognized user, and

wherein the computing device is operable to reject and accept a user authorization to use the device based on the security challenge response, and

wherein the computing device is operable to decline performing a payment transaction in the possession of an unauthorized user, and

wherein the computing device is operable to perform a payment transaction while in the possession of a user correctly passing the at least one challenge.

13. The user computing device of Claim 12, wherein a payment issuing authority is operable to decline transactions performed by the computing device when a user fails the at least one security challenge.

14. The system of Claim 1, wherein a payment issuing authority is operable to decline transactions performed by the payment card device when a user fails at least one security challenge presented to a user by the computing device.

15. A payment system comprising:

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a payment card device that is free of any fixed payment numbers disposed thereon and is operable for use in a merchant card-reader equipment; and

A card-users personal computing device operable for completing a payment transaction and comprising:

A processor;

A touch-screen display interface;

A user-interface;

A wireless interface; and a memory for storing a payment card information accessible to the processor,

Wherein the computing device is configured to dynamically generate limited-use payment information, and

Wherein the computing device is configured to convey the limited-use payment information on a computing device interface upon the authorization of a valid user, and

Wherein a merchant is operable to receive a payment card information provided by a personal computing device, and

Wherein the limited-use payment information provided by at least one or both of: the payment card device, and the computing device, is validated by a card issuing authority when used in merchant in-store facility transactions, and

wherein a card issuing authority is operable to reject as invalid, a payment information used outside of its valid limitations of use, and

Wherein a card issuing authority is operable to validate generated limited-use card payment information provided by the computing device in an authorized transaction completed by the computing device.

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16. The system of Claim 15, wherein the touch-screen user interface is operable for displaying the limited-use payment information, and

wherein a merchant is operable to accept the displayed payment card information in a transaction at a merchant facility.

17. The system of Claim 15, wherein the touch-screen display interface is operable to display a merchant facility transaction, and

wherein the touch-screen display interface is operable to accept a user approval and denial of a payment transaction, and

wherein a card issuer authority is further operable to deny a card payment transaction from a user-denied merchant facility transaction, and to approve as authentic a card payment transaction from a user-approved facility transaction.

18. The system of Claim 15, wherein a plurality of issuer-provided payment information is wirelessly downloaded into the personal computing device, and

wherein the user-interface is operable for a user selection, of at least one of issuer-provided payment methods via the touch-screen display interface, and

wherein the payment card device is operable for a transaction with a user-selected payment method.

19. The card device of Claim 15, wherein the payment card device comprises fixed payment information disposed thereon, and

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wherein the fixed payment information comprises only:

a card-holder name;

a payment issuing logo;

a card payment network logo, and

a card reader interface icon, and

wherein the payment card device is free of any account numbers, expiration dates, card security codes, or other fixed payment numbers, disposed thereon.

20. An apparatus comprising:

a thin card-shaped device;

a memory configured to store identification data, secrets, a sequence counter, a real-time clock; and

a processor coupled to the memory,

wherein the processor is configured to generate a card payment information based on the identification data, the secrets, the clock time, and the sequence count, and

wherein the generated card information is configured to be used in place of card issuer information; and

an interface configured to communicate the generated card information, wherein the processor is configured to transmit the generated card information via the interface; and

a display configured to display at least a portion of the card payment information; and

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wherein the processor is further configured to dynamically generate from the stored information, a card security code number associated with the card issuer information, and present said dynamic number on said display.

21. The apparatus of Claim 20, wherein a card issuing authority is operable to receive a payment transaction information, and

wherein the card issuer authority is operable to compute an expected information from at least one of a set of information comprising:

an issuer clock time,

an issuer transaction sequence count,

an issuer card user information,

an issuer card account information,

a transaction amount,

a user credit limit,

a user account balance,

a merchant facility information, and

a transaction information, and

wherein the card issuer authority is operable to approve as authentic, a payment transaction substantially matching a compared expected information, and

wherein the card issuer authority is operable to deny as not authentic, a payment transaction not substantially matching a compared expected information, and

wherein the transaction completes when the card issuer authority approves a transaction.

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22. The apparatus of Claim 20, wherein the interface comprises a wireless interface configured to wirelessly communicate the card information; and

wherein the processor is configured to transmitting the card information via the wireless interface; and

wherein the processor is further configured to transmit said card information and said dynamically generated code, over said interface, to a wirelessly connected personal computing device.

23. The apparatus of Claim 20, wherein the interface comprises an NFC interface configured to communicate the card information to an NFC reader; and

wherein the processor is configured to transmitting the card information via the NFC interface.

24. The apparatus of Claim 20, wherein the interface comprises an chip-reader interface configured to communicate the card information to a chip card reader; and

wherein the processor is configured to transmit the card information via the chip-reader interface.

25. The apparatus of Claim 20, wherein the interface comprises a display interface configured to communicate the card information via alphanumerical, graphical, and iconographical imagery on the display, and

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wherein the processor is configured to dynamically update at least a portion of the payment information via the display interface.

26. The apparatus of Claim 20, wherein the processor is further configured to update the sequence count based on at least one selected from a set of events comprising:

a user input,

a card activation,

a card insertion in card-reader,

a transaction initiation,

a transaction completion,

a card-reader transaction acknowledgement,

a card generation of information,

a number of uses,

a remaining number of uses,

a number of limited uses, and

an information transaction over said interface.

27. An apparatus comprising:

a thin card-shaped device,

a display,

a memory configured to store a card issuer identification data, secrets, a sequence counter, and

a processor coupled to the memory,

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wherein the processor is configured to generate a card payment information based on the identification data, the secrets, and the sequence count, and

wherein the generated card information is configured to be used in place of card issuer information; and

an interface configured to communicate the generated card information,

wherein the processor is configured to transmitting the generated card information via the interface; and

wherein the processor is configured to display at least a portion of the generated card information; and

wherein the processor is further configured to dynamically generate from the stored information, a card security code number associated with the card issuer information, and present said dynamically generate number on said display.

28. The apparatus of Claim 27, wherein a card issuing authority is operable to receive a payment transaction information, and

wherein the card issuer authority is operable to compute an expected information from at least one of a set of information comprising:

an issuer clock time,

an issuer transaction sequence count,

an issuer card user information,

an issuer card account information,

a transaction amount,

a user credit limit,

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a user account balance,

a merchant facility information, and

a transaction information, and

wherein the card issuer authority is operable to approve as authentic, a payment transaction substantially matching a compared expected information, and

wherein the card issuer authority is operable to deny as not authentic, a payment transaction not substantially matching a compared expected information, and

wherein the transaction can complete when the card issuer authority approves a transaction.

29. The apparatus of Claim 27, wherein the processor is further configured to update the sequence count based on at least one selected from a set of events comprising:

a user input,

a card activation,

a card insertion in card-reader,

a transaction initiation,

a transaction completion,

a card-reader transaction acknowledgement,

a card generation of information,

a number of uses,

a remaining number of uses,

a number of limited uses, and

an information transaction over said interface.

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MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM

ABSTRACT

Embodiments include multi-function electronic payment card and device systems capable of generating a programmed magnetic field of alternating polarity based on a speed of a card swipe, and methods for constructing the device for the purpose of emulating a standard credit card. An apparatus is described to allow the device to emulate behavior of a credit card when used in electronic credit card readers. Additionally methods are described to allow user control of the device for the purpose of authorizing or controlling use of the device in the application of credit, debit and cash transactions, including cryptocurrency and card-to-card transactions. Methods are also described for generating a limited-duration credit card number when performing a transaction for the purpose of creating a limited-use credit card number, which is limited in scope of use to a predetermined number of authorized transactions. Furthermore the device may interact with other similar devices in proximity for the purpose of funds or credit/debit transfers.

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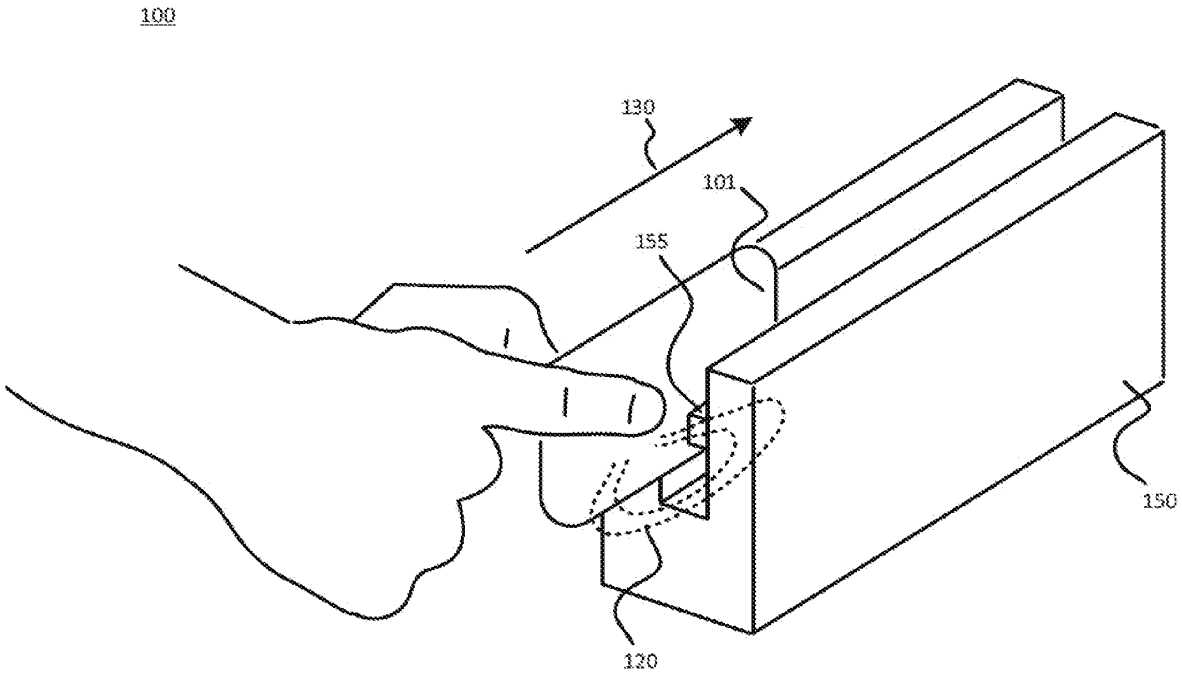


Fig. 1

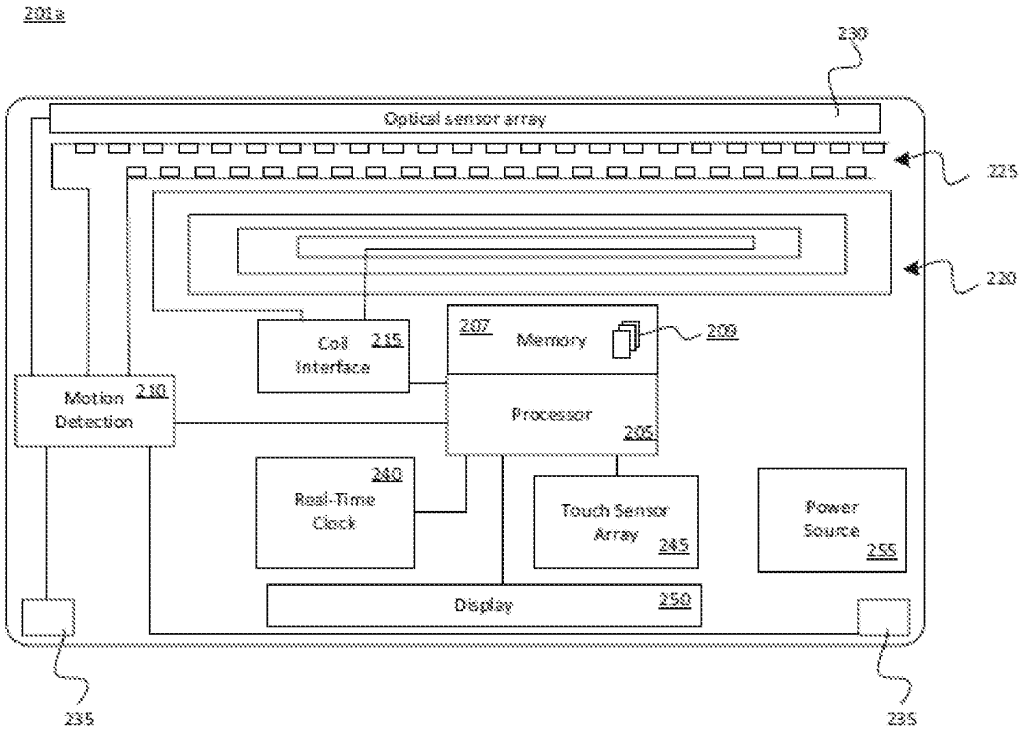

201a
230
Optical sensor array
225
220
Coil Interface 215
207
Memory
209
Motion Detection 210
Processor 205
240
Real-Time Clock
Touch Sensor Array 245
Power Source 255
Display 250
235
235

FIG. 2A

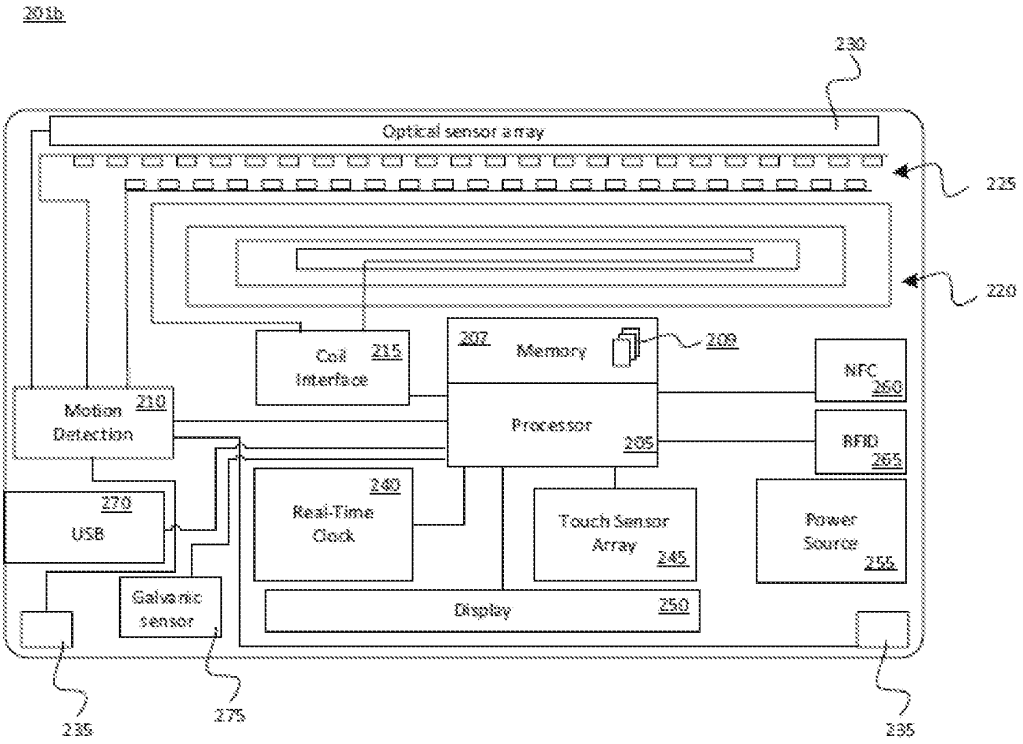

201b
230
Optical sensor array
225
220
Coil Interface 215
207
Memory
209
NFC 260
Motion Detection 210
Processor 205
RFID 265
270
USB
240
Real-Time Clock
Touch Sensor Array 245
Power Source 255
Galvanic sensor
Display 250
235
275
235

FIG. 2B

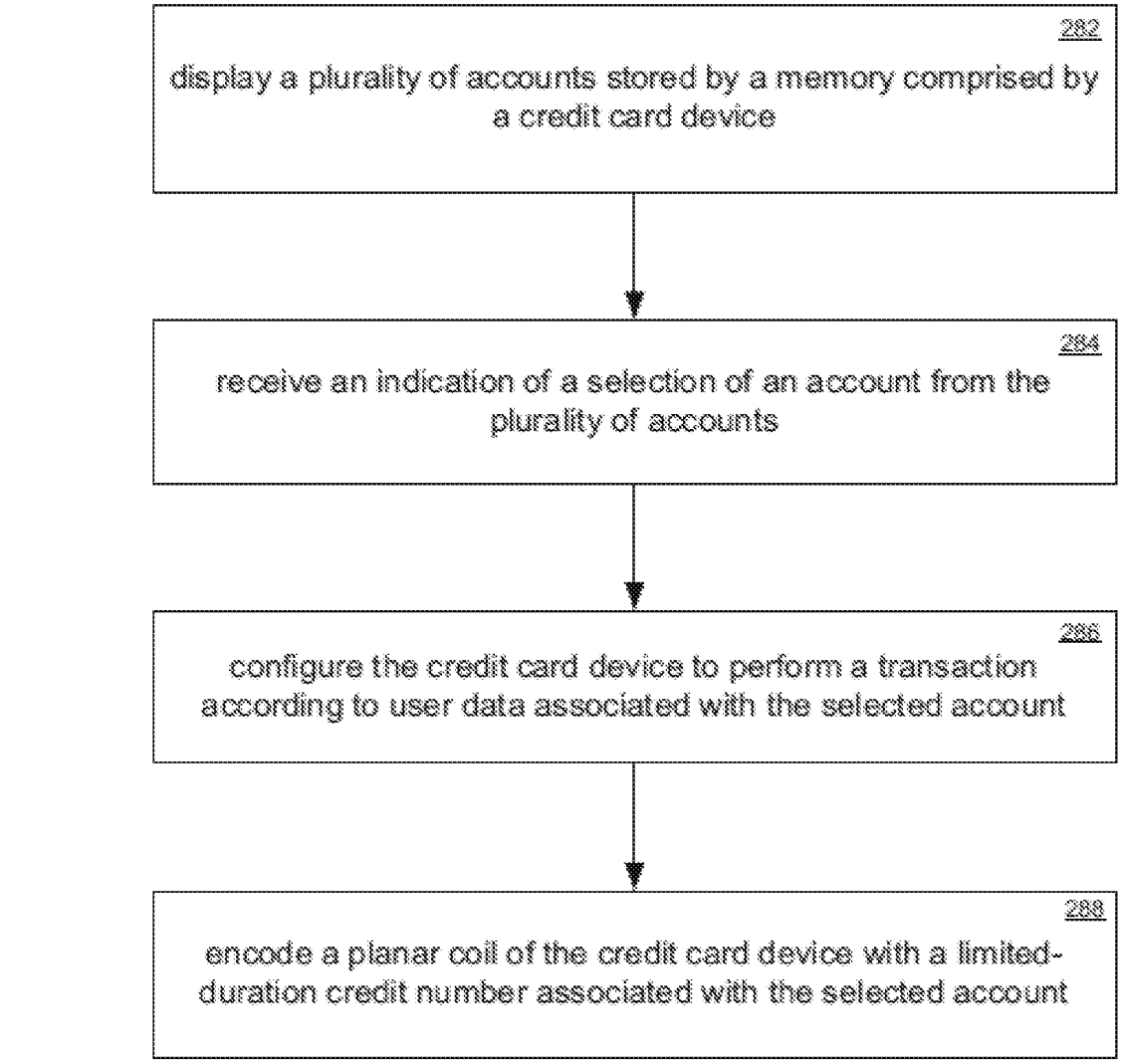

280
282
display a plurality of accounts stored by a memory comprised by a credit card device
284
receive an indication of a selection of an account from the plurality of accounts
286
configure the credit card device to perform a transaction according to user data associated with the selected account
288
encode a planar coil of the credit card device with a limited-duration credit number associated with the selected account

FIG. 2C

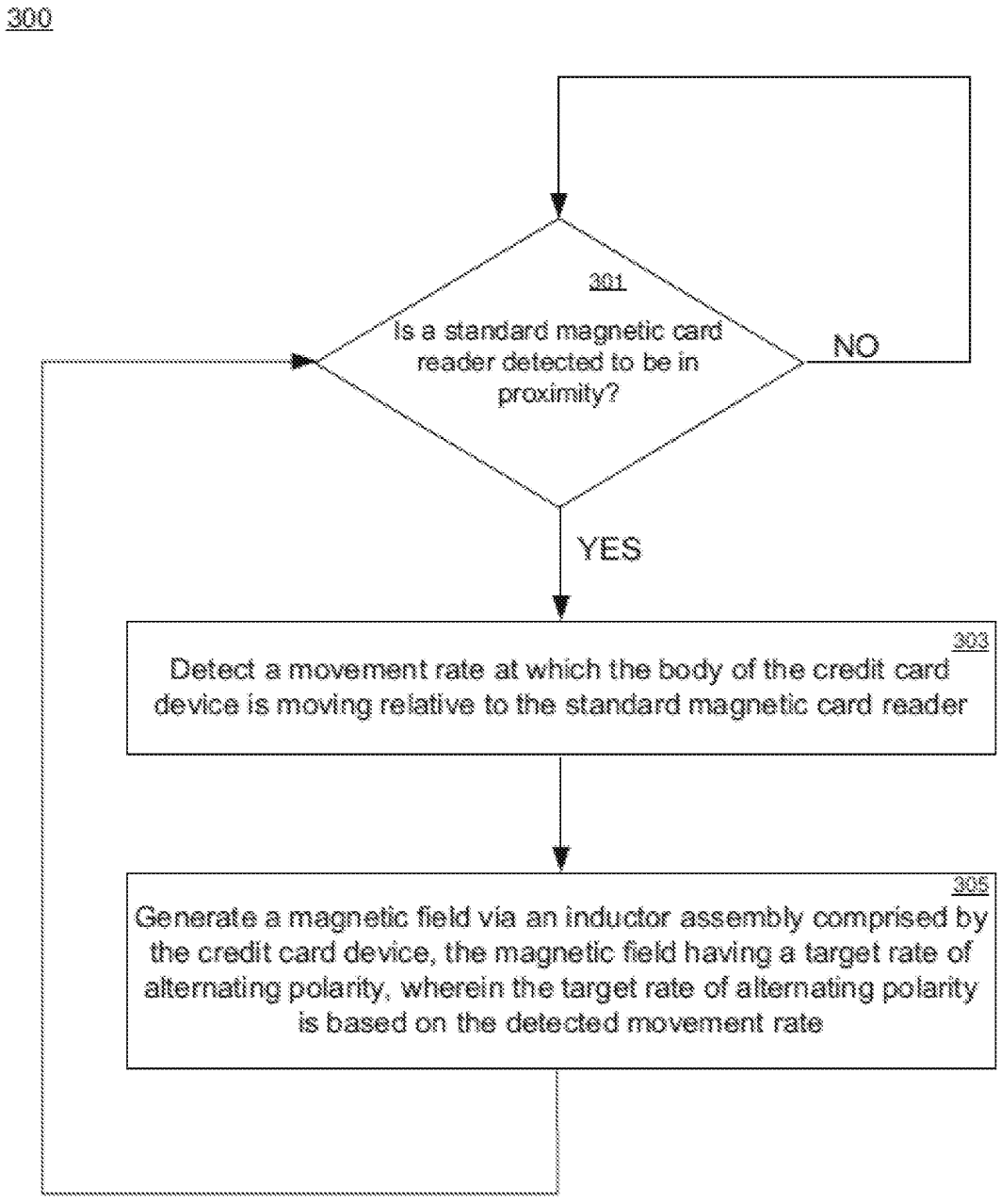

300
301
Is a standard magnetic card reader detected to be in proximity?
NO
YES
303
Detect a movement rate at which the body of the credit card device is moving relative to the standard magnetic card reader
305
Generate a magnetic field via an inductor assembly comprised by the credit card device, the magnetic field having a target rate of alternating polarity, wherein the target rate of alternating polarity is based on the detected movement rate

FIG. 3

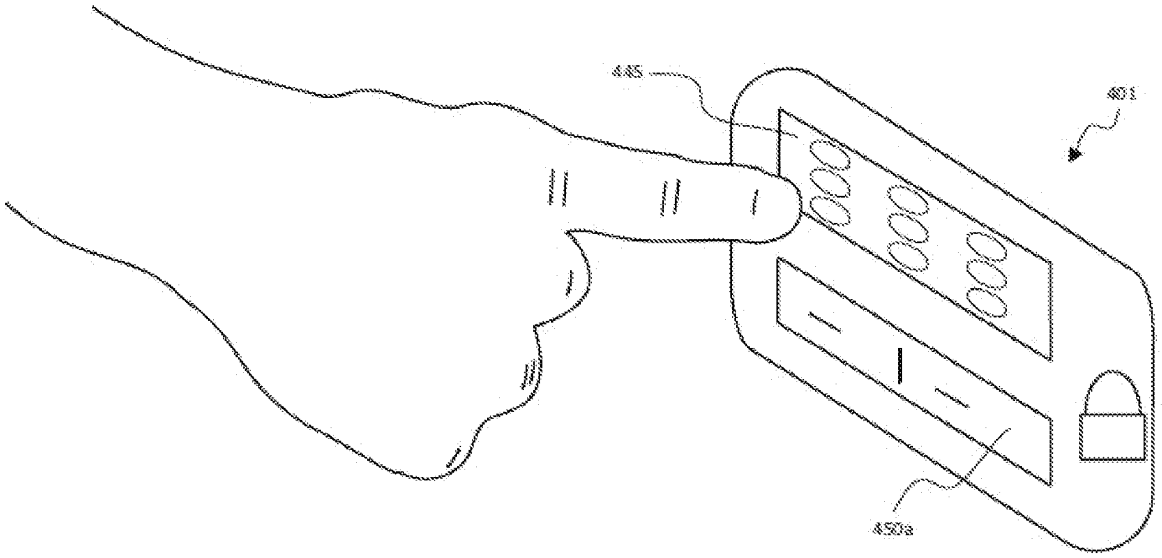


FIG. 4A

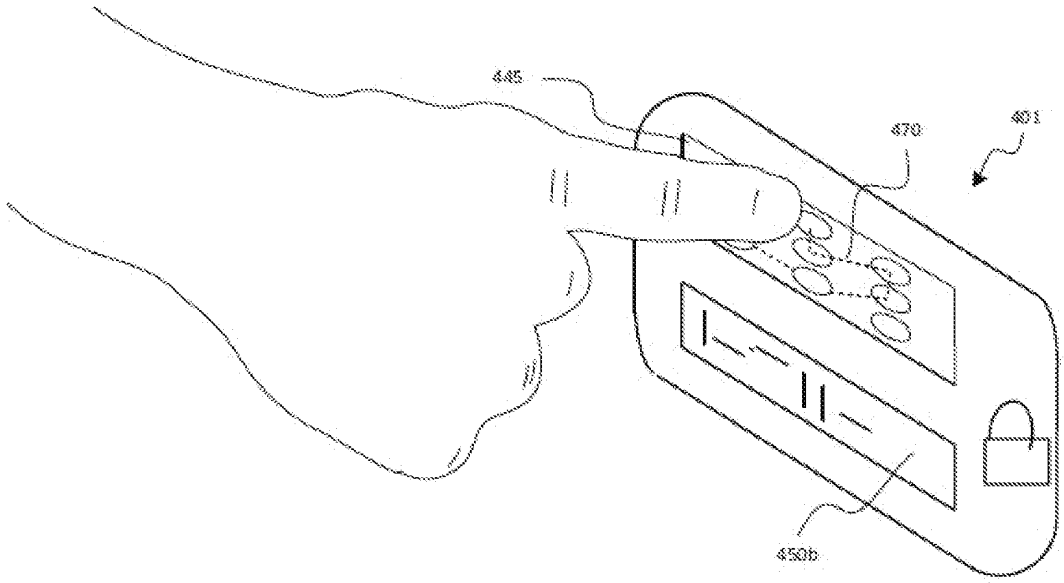


FIG. 4B

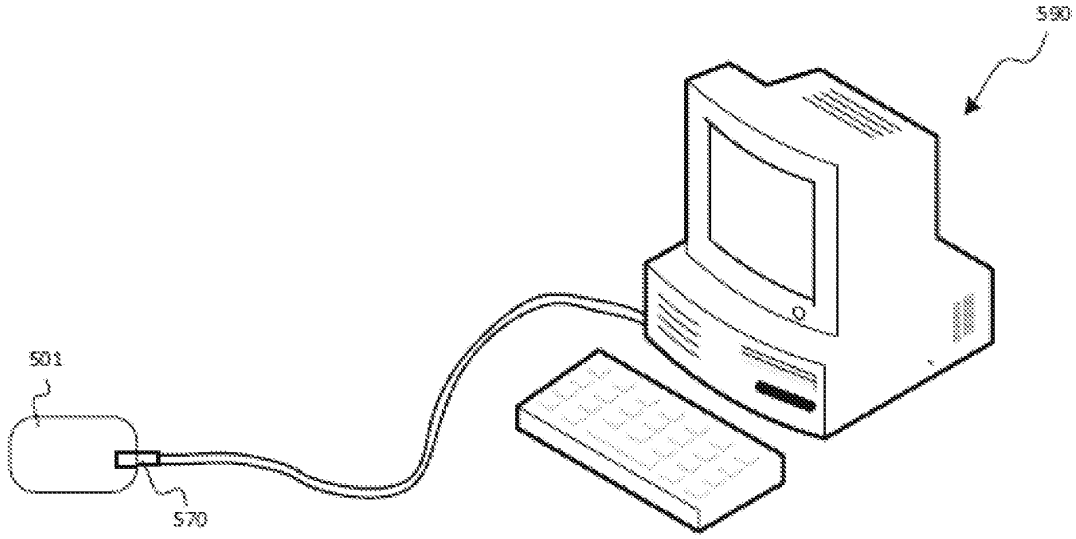


FIG. 5

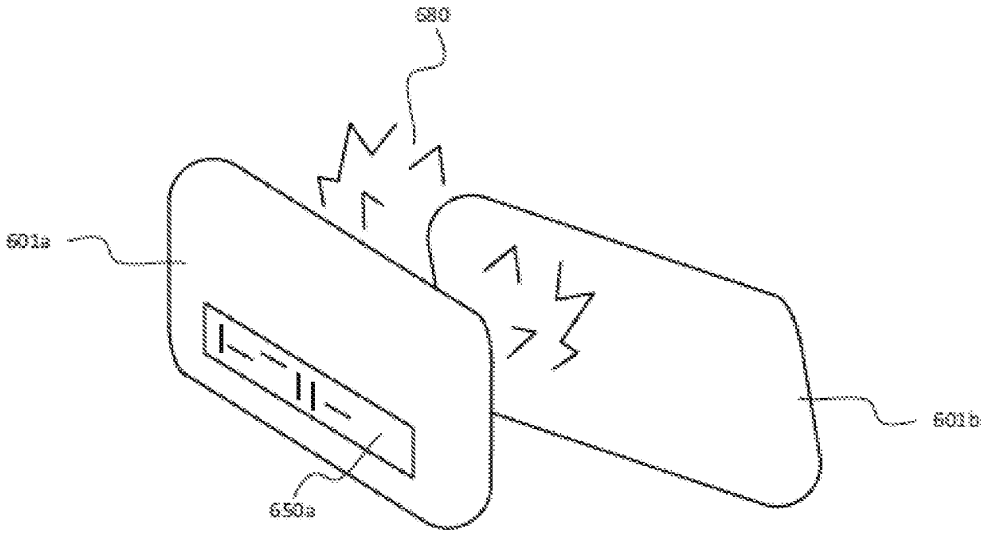


Fig. 6

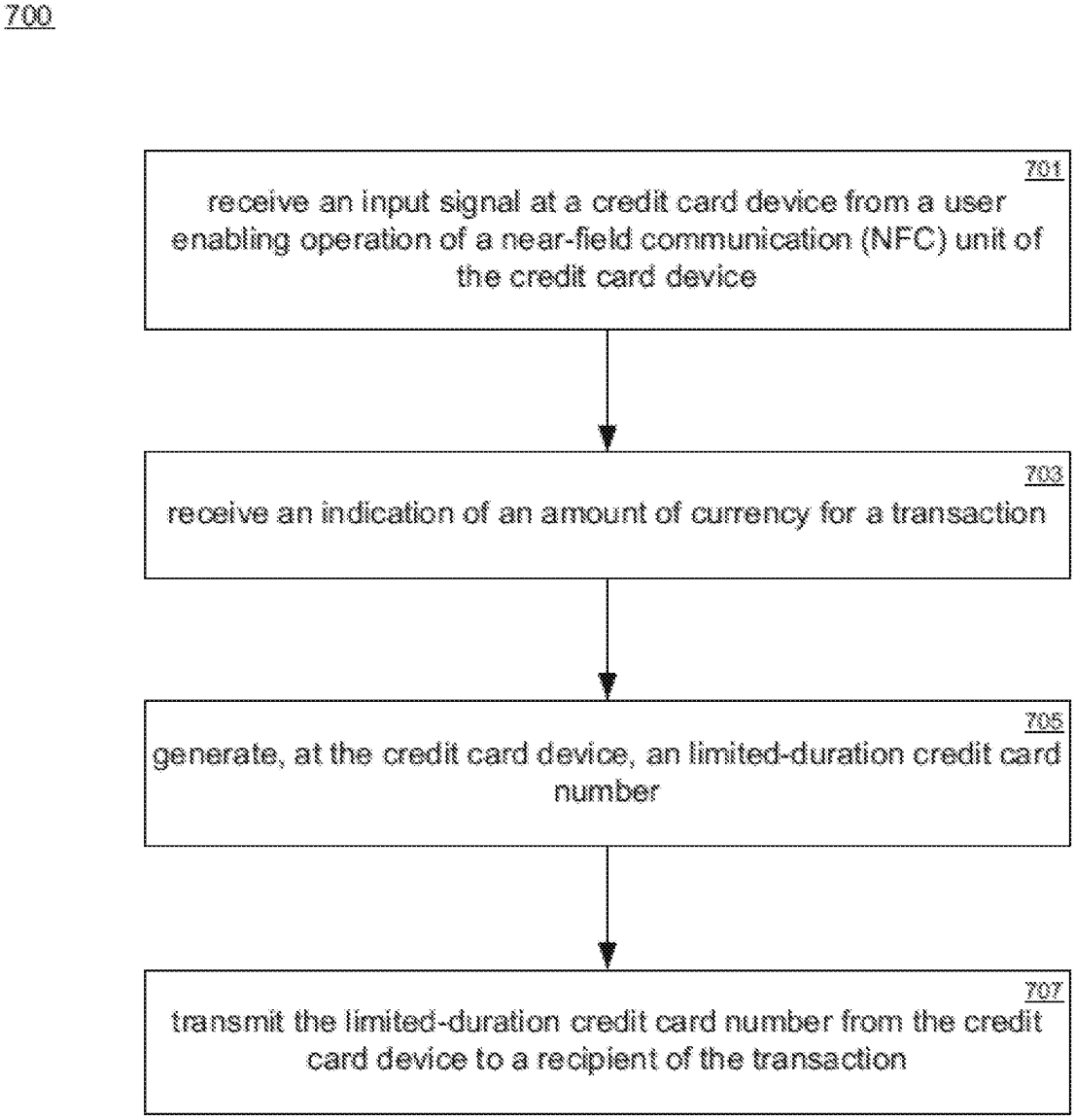

700
701
receive an input signal at a credit card device from a user enabling operation of a near-field communication (NFC) unit of the credit card device
703
receive an indication of an amount of currency for a transaction
705
generate, at the credit card device, an limited-duration credit card number
707
transmit the limited-duration credit card number from the credit card device to a recipient of the transaction

Fig. 7

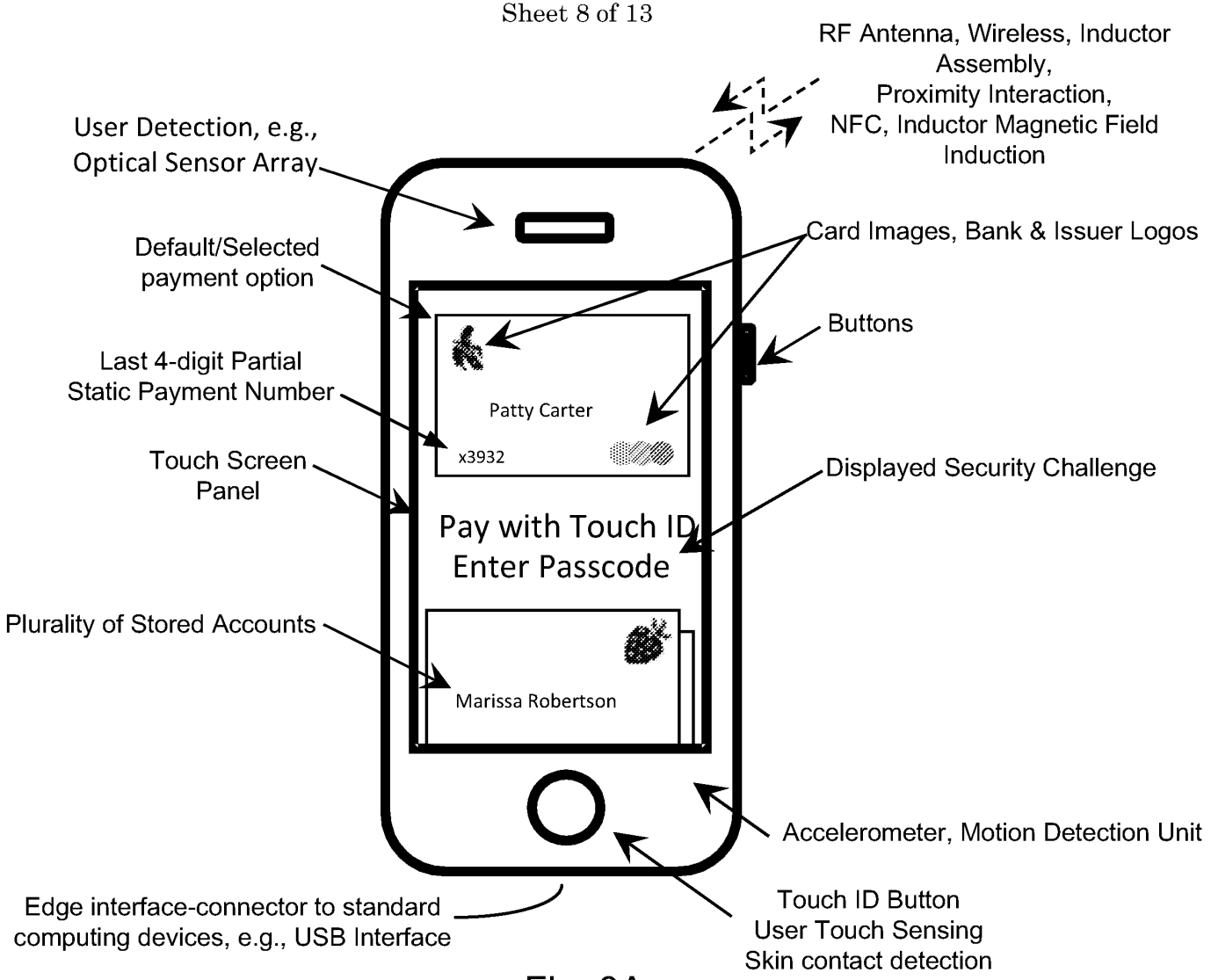


Fig. 8A

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Apple EX1072 Page 75

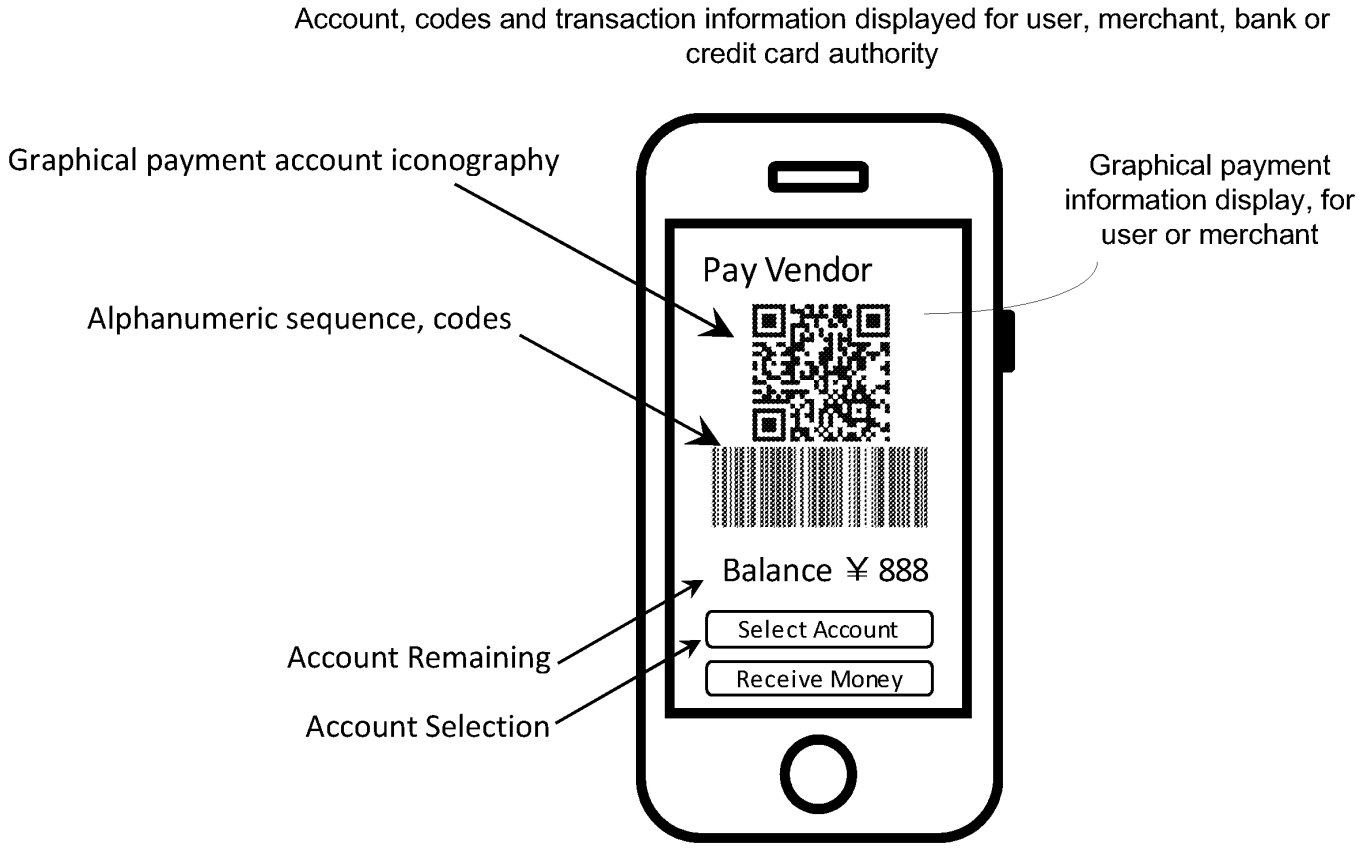


Fig. 8B

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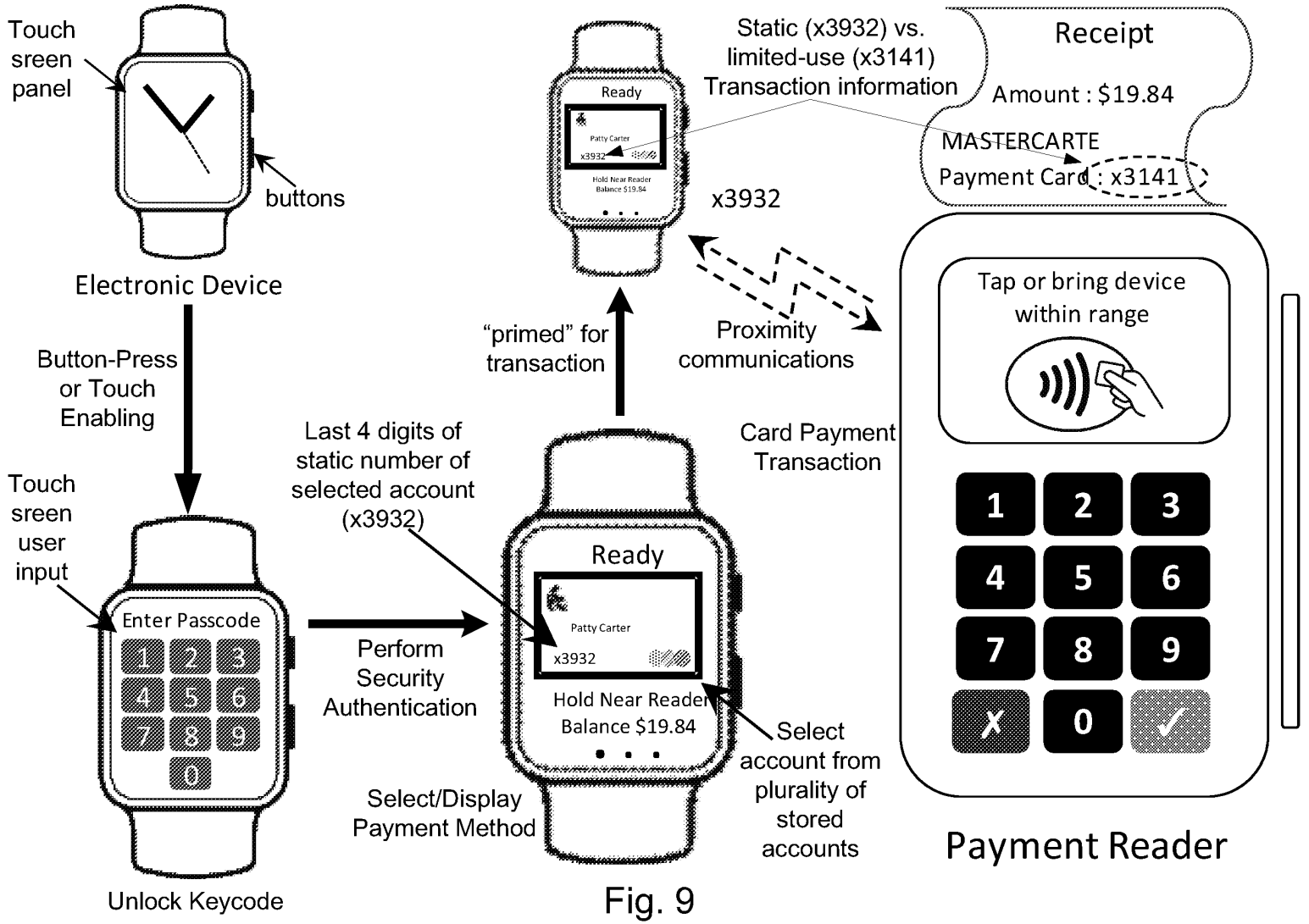


Fig. 9

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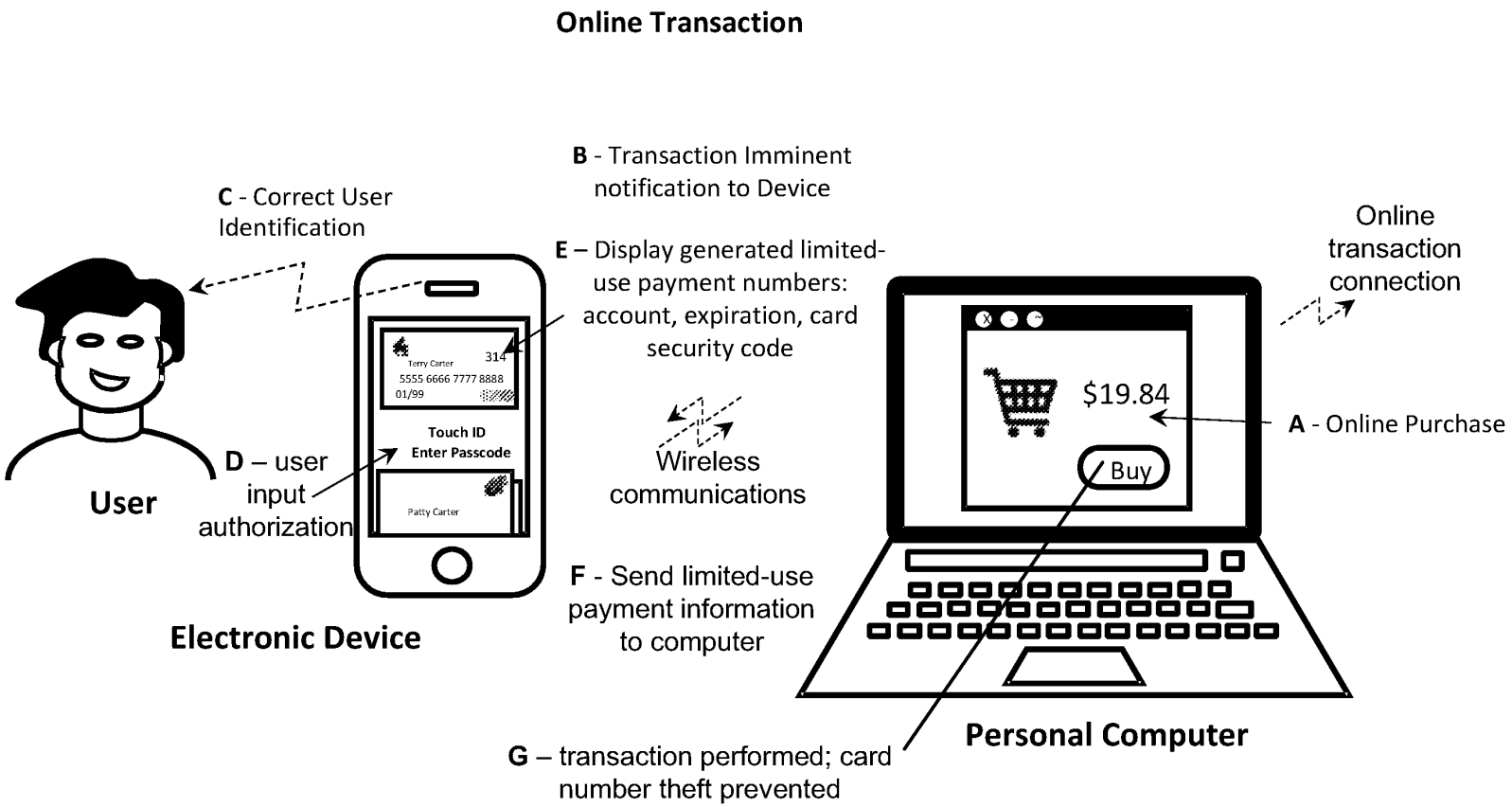


Fig 10

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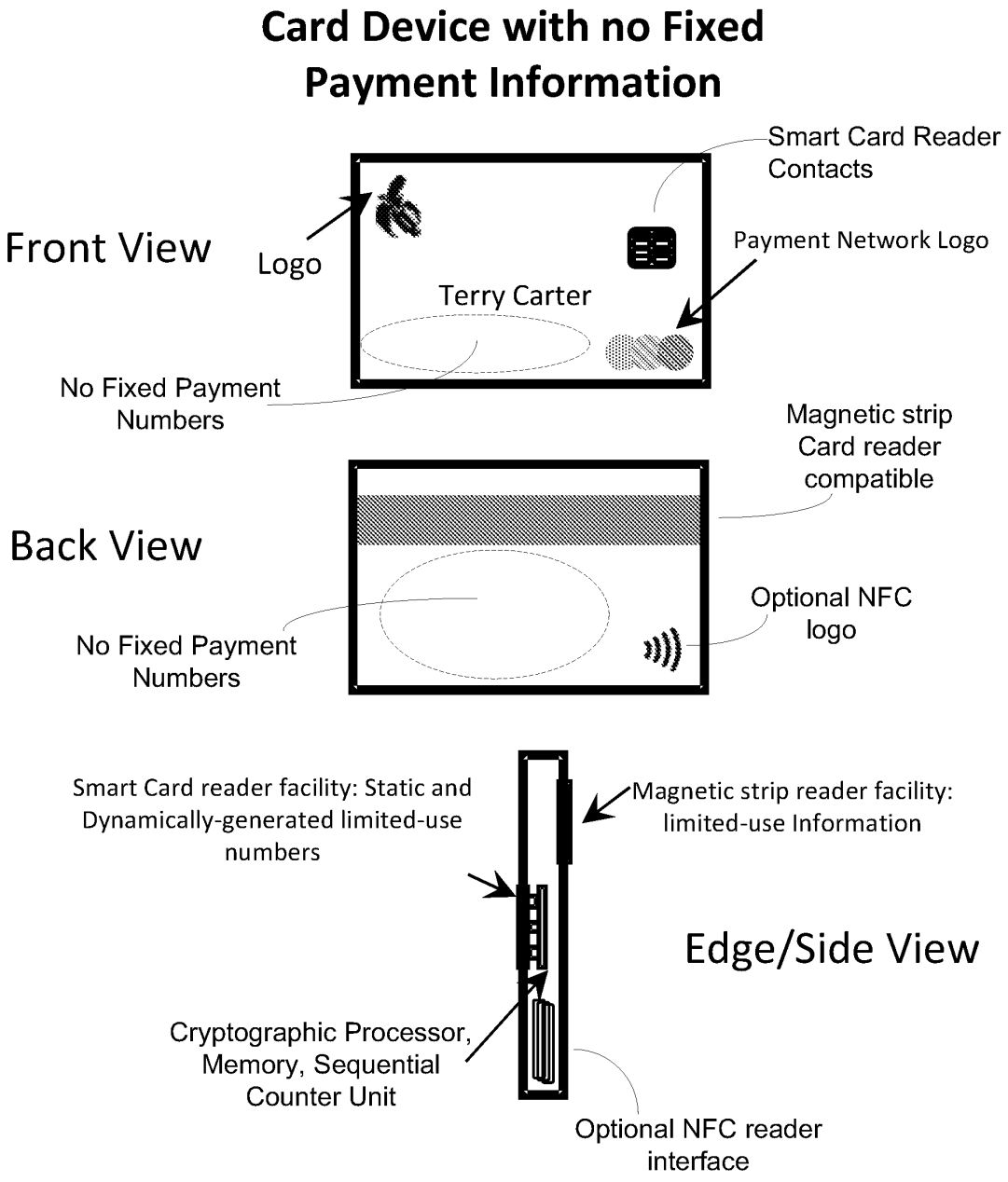

Card Device with no Fixed Payment Information
Front View
Logo
Smart Card Reader Contacts
Payment Network Logo
Terry Carter
No Fixed Payment Numbers
Back View
Magnetic strip Card reader compatible
Optional NFC logo
No Fixed Payment Numbers
Smart Card reader facility: Static and Dynamically-generated limited-use numbers
Magnetic strip reader facility: limited-use Information
Edge/Side View
Cryptographic Processor, Memory, Sequential Counter Unit
Optional NFC reader interface

Fig 11

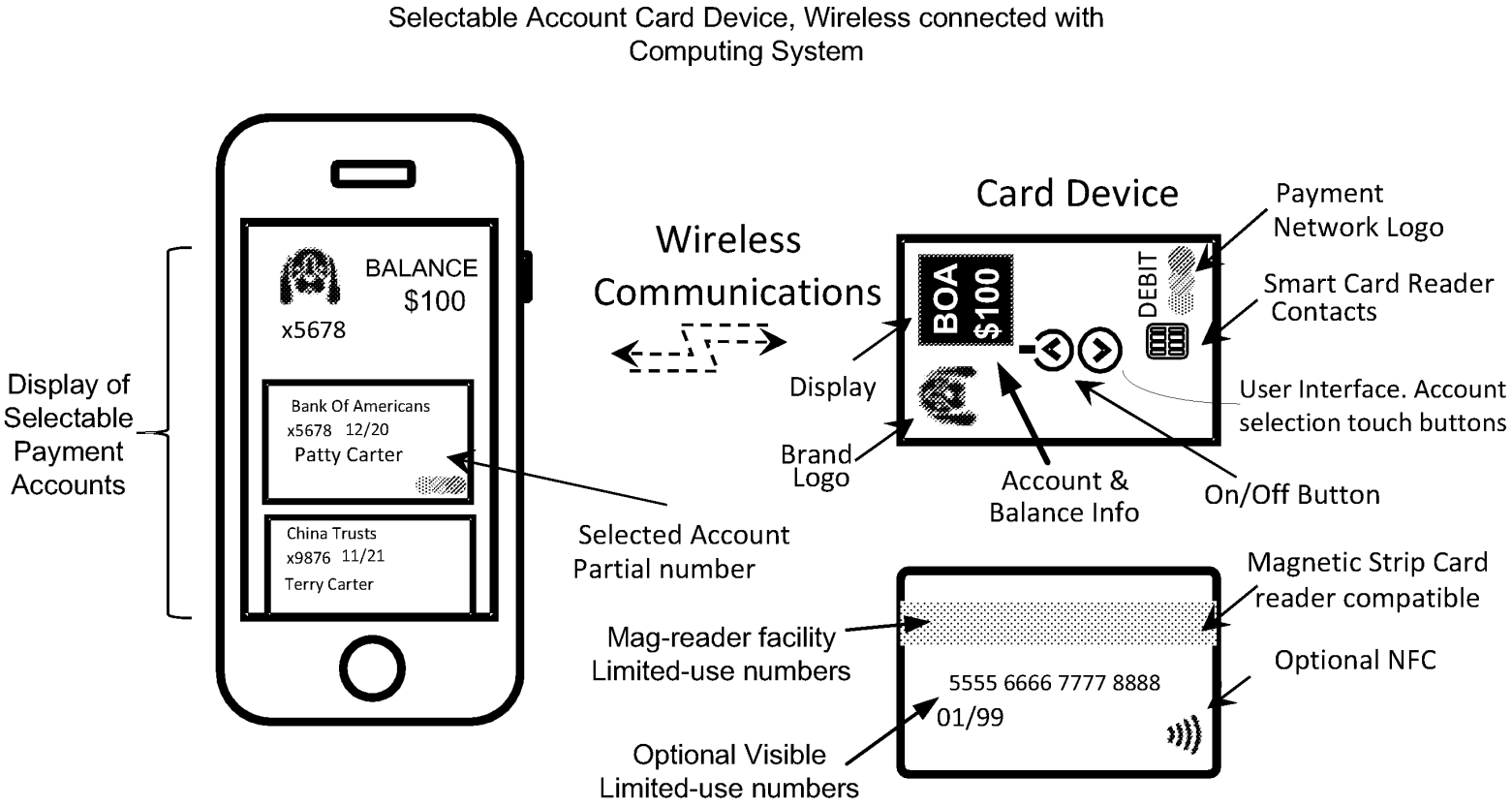


Fig. 12

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WYAT-0002.US

PTO/AIA/01 (06-12)
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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	MULTI-FUNCTIONAL CREDIT CARD TYPE PORTABLE ELECTRONIC DEVICE

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 hereby acknowledge that any willful false statement made in this 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: David WYATT Date (Optional): 3/17/14

Signature: D. A. Wyatt

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.

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

Electronic Acknowledgement Receipt	
EFS ID:	39225504
Application Number:	16854829
International Application Number:	
Confirmation Number:	3480
Title of Invention:	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM
First Named Inventor/Applicant Name:	David WYATT
Customer Number:	136197
Filer:	Anthony C. Murabito/Missy Isaac
Filer Authorized By:	Anthony C. Murabito
Attorney Docket Number:	WYAT-0002.USC1C1C1C
Receipt Date:	21-APR-2020
Filing Date:	
Time Stamp:	21:49:27
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	Application Data Sheet	WYAT-0002USC1C1C1C_ADS_04-21-2020.pdf	1793687 78a3bbf35877e4bb827c86e010b222dc0678fb63	no	9

Warnings:

Information:					
2		WYAT-0002USC1C1C1C_CON_APP_04-21-2020_.pdf	177299 580c2e42baf1d0a7b298bb27482f5437127cb5ee	yes	57
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	Document Description		**Start**	**End**	
	Specification		1	43	
	Claims		44	56	
	Abstract		57	57	
Warnings:					
Information:					
3	Drawings-only black and white line drawings	WYAT-0002USC1C1C1C_Figures_04-21-2020.pdf	820614 fe4ad000228b440a898fd46bc16ddf7e2d8ce763	no	13
Warnings:					
Information:					
4	Oath or Declaration filed	WYAT-0002C1C1C1CUS_DECLARATION.pdf	56241 d43cff7350236419444fe3b3e9dc955241ee5fb5	no	1
Warnings:					
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Total Files Size (in bytes):			2847841		

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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.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 16/854,829

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	75		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	330		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	380		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	29 minus 20 =	* 9	x 50 =	450	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	4 minus 3 =	* 1	x 230 =	230			
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	1465		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	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
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".

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The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

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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
16/854,829	04/21/2020	2876	0.00	WYAT-0002.USC1C1C1C	29	4

CONFIRMATION NO. 3480

FILING RECEIPT

136197
David Wyatt c/o Murabito, Hao & Barnes
111 North Market Street
Suite 700
San Jose, CA 95113

OC000000118369298

Date Mailed: 04/29/2020

Receipt is acknowledged of this non-provisional utility 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 FIRST INVENTOR, 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 corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction 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 provided that the request is grantable.

Inventor(s)

David WYATT, San Jose, CA;

Applicant(s)

Virtual Electric Inc., San Jose, CA;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 16/025,829 07/02/2018 PAT 10628820
which is a CON of 15/250,698 08/29/2016 PAT 10013693
which is a CON of 14/680,946 04/07/2015 PAT 9430765
which is a CON of 14/217,261 03/17/2014 PAT 9022286
which claims benefit of 61/794,891 03/15/2013

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.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

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Apple EX1072 Page 86

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The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/854,829**

Projected Publication Date: To Be Determined - pending completion of Missing Parts

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM

Preliminary Class

235

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

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Title 37, Code of Federal Regulations, 5.11 & 5.15

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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
16/854,829	04/21/2020	David WYATT	WYAT-0002.USC1C1C1C

CONFIRMATION NO. 3480

136197
David Wyatt c/o Murabito, Hao & Barnes
111 North Market Street
Suite 700
San Jose, CA 95113

FORMALITIES LETTER

OC000000116569299

Date Mailed: 04/29/2020

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The statutory basic filing fee is missing.
- The application search fee must be submitted.
- The application examination fee must be submitted.
- Additional claim fees of $ **680** as a small entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due.
- Surcharge as set forth in 37 CFR 1.16(f) must be submitted.
  The surcharge is due for any one of:
  - late submission of the basic filing fee, search fee, or examination fee,
  - late submission of inventor's oath or declaration,
  - filing an application that does not contain at least one claim on filing, or
  - submission of an application filed by reference to a previously filed application.

SUMMARY OF FEES DUE:

The fee(s) required within **TWO MONTHS** from the date of this Notice to avoid abandonment is/are itemized below. Small entity discount is in effect. If applicant is qualified for micro entity status, an acceptable Certification of Micro Entity Status must be submitted to establish micro entity status. (See 37 CFR 1.29 and forms PTO/SB/15A and 15B.)

- $ **75** basic filing fee.
- $ **80** surcharge.
- $ **330** search fee.
- $ **380** examination fee.
- $ **230** for **1** independent claims over 3.
- $ **450** for **9** total claims over 20.

- $(**0**) previous unapplied payment amount.
- $ **1545** TOTAL FEE BALANCE DUE.

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice". https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

For more information about EFS-Web please call the USPTO Electronic Business Center at 1-866-217-9197 or visit our website at http://www.uspto.gov/ebc.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/snguyen/

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/854,829	04/21/2020	David WYATT	WYAT-0002.USC1C1C1C

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/snguyen/

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Apple EX1072 Page 93

Electronic Patent Application Fee Transmittal	
Application Number:	16854829
Filing Date:	21-Apr-2020
Title of Invention:	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM
First Named Inventor/Applicant Name:	David WYATT
Filer:	Anthony C. Murabito/Missy Isaac
Attorney Docket Number:	WYAT-0002.USC1C1C1C

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	80	80
UTILITY SEARCH FEE	2111	1	350	350
UTILITY EXAMINATION FEE	2311	1	400	400
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	2202	9	50	450
INDEPENDENT CLAIMS IN EXCESS OF 3	2201	1	240	240
Miscellaneous-Filing:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 4 months with $0 paid	2254	1	1160	1160
Miscellaneous:				
		Total in USD ($)		**2680**

Electronic Acknowledgement Receipt	
EFS ID:	40868870
Application Number:	16854829
International Application Number:	
Confirmation Number:	3480
Title of Invention:	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM
First Named Inventor/Applicant Name:	David WYATT
Customer Number:	136197
Filer:	Anthony C. Murabito/Missy Isaac
Filer Authorized By:	Anthony C. Murabito
Attorney Docket Number:	WYAT-0002.USC1C1C1C
Receipt Date:	16-OCT-2020
Filing Date:	21-APR-2020
Time Stamp:	16:18:56
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	EFT
Payment was successfully received in RAM	$2680
RAM confirmation Number	E20200FG19562018
Deposit Account	504160
Authorized User	Missy Isaac
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.17 (Patent application and reexamination processing fees) 37 CFR 1.19 (Document supply fees)	

37 CFR 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	Applicant Response to Pre-Exam Formalities Notice	16854829_MP.pdf	77914 fb3347b00e3ba3318faa76d12bbc16d050b84971	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	40738 daadaafd60fcdbc80bacab49ab47d485bc3bd3e7	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	118652		

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.

UNITED STATES PATENT AND TRADEMARK OFFICE

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CONFIRMATION NO. 3480

136197
David Wyatt c/o Murabito, Hao & Barnes
111 North Market Street
Suite 700
San Jose, CA 95113

FORMALITIES LETTER

OC000000116569299

Date Mailed: 04/29/2020

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- $ **380** examination fee.
- $ **230** for **1** independent claims over 3.
- $ **450** for **9** total claims over 20.

- $(**0**) previous unapplied payment amount.
- $ **1545** TOTAL FEE BALANCE DUE.

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Alexandria VA 22313-1450

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For more information about EFS-Web please call the USPTO Electronic Business Center at 1-866-217-9197 or visit our website at http://www.uspto.gov/ebc.

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Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/snguyen/

Electronic Patent Application Fee Transmittal

Application Number:	16854829
Filing Date:	21-Apr-2020
Title of Invention:	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM
First Named Inventor/Applicant Name:	David WYATT
Filer:	Anthony C. Murabito/Missy Isaac
Attorney Docket Number:	WYAT-0002.USC1C1C1C

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
LATE FILING FEE FOR OATH OR DECLARATION	2051	1	80	80
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**80**

Electronic Acknowledgement Receipt	
EFS ID:	40869835
Application Number:	16854829
International Application Number:	
Confirmation Number:	3480
Title of Invention:	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM
First Named Inventor/Applicant Name:	David WYATT
Customer Number:	136197
Filer:	Anthony C. Murabito/Missy Isaac
Filer Authorized By:	Anthony C. Murabito
Attorney Docket Number:	WYAT-0002.USC1C1C1C
Receipt Date:	16-OCT-2020
Filing Date:	21-APR-2020
Time Stamp:	17:06:19
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	EFT
Payment was successfully received in RAM	$80
RAM confirmation Number	E20200FH13563102
Deposit Account	504160
Authorized User	Missy Isaac
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 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	Applicant Response to Pre-Exam Formalities Notice	16854829_MP.pdf	77914 fb3347b00e3ba3318faa76d12bbc16d050b84971	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30587 635598c35dc1a5f2f5bfc48ad8f8041e4d14daaf	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	108501		

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
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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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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
16/854,829	04/21/2020	2876	1600	WYAT-0002.USC1C1C1C	29	4

CONFIRMATION NO. 3480

UPDATED FILING RECEIPT

136197
David Wyatt c/o Murabito, Hao & Barnes
111 North Market Street
Suite 700
San Jose, CA 95113

OC000000120731942

Date Mailed: 10/20/2020

Receipt is acknowledged of this non-provisional utility 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 FIRST INVENTOR, 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 corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction 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 provided that the request is grantable.

Inventor(s)

David WYATT, San Jose, CA;

Applicant(s)

Virtual Electric Inc., San Jose, CA;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 16/025,829 07/02/2018 PAT 10628820
which is a CON of 15/250,698 08/29/2016 PAT 10013693
which is a CON of 14/680,946 04/07/2015 PAT 9430765
which is a CON of 14/217,261 03/17/2014 PAT 9022286
which claims benefit of 61/794,891 03/15/2013

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.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

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Apple EX1072 Page 104

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 04/28/2020

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/854,829**

Projected Publication Date: 01/28/2021

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM

Preliminary Class

235

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

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countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

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 U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop

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Apple EX1072 Page 106

technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

IPR2025-01150
Apple EX1072 Page 107

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 16/854,829

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	80		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	350		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	400		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	29 minus 20 =	* 9	x 50 =	450	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	4 minus 3 =	* 1	x 240 =	240			
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	1520		TOTAL	

APPLICATION AS AMENDED - PART II

AMENDMENT A

	(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($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
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	

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)	OR	RATE($)	ADDITIONAL FEE($)
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.

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
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 contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	16854829
Filing Date	2020-04-21
First Named Inventor	David WYATT
Art Unit	2876
Examiner Name	TBD
Attorney Docket Number	WYAT-0002.USC1C1C1C

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	5276311		1994-01-04	Hennige	
	2	9406011		2016-08-02	Bartenstein , et al.	
	3	9286561		2016-03-15	Olson , et al.	
	4	8870081		2014-10-28	Olson , et al.	
	5	9734345		2017-08-15	Spodak , et al.	
	6	9218557		2015-12-22	Spodak , et al.	
	7	9195926		2015-11-24	Spodak	
	8	9177241		2015-11-03	Spodak , et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16854829
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	First Named Inventor	David WYATT
	Art Unit	2876
	Examiner Name	TBD
	Attorney Docket Number	WYAT-0002.USC1C1C1C

	9	8788418		2014-07-22	Spodak , et al.	
	10	8671055		2014-03-11	Spodak , et al.	
	11	9129270		2015-09-08	Spodak	
	12	10255545		2019-04-09	Mullen , et al.	
	13	10223631		2019-03-05	Mullen , et al.	
	14	10032100		2018-07-24	Mullen , et al.	
	15	9547816		2017-01-17	Mullen , et al.	
	16	8827153		2014-09-09	Rhoades , et al.	
	17	8517276		2013-08-27	Mullen , et al.	
	18	6000832		1999-12-14	Franklin , et al.	
	19	7922082		2011-04-12	Muscato	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16854829
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	First Named Inventor	David WYATT
	Art Unit	2876
	Examiner Name	TBD
	Attorney Docket Number	WYAT-0002.USC1C1C1C

	20	8690059		2014-04-08	Wallner	
	21	8628012		2014-01-14	Wallner	
	22	9022285		2015-05-05	Graylin	
	23	8814046		2014-08-26	Wallner	
	24	9123036		2015-09-01	Graylin , et al.	
	25	9864994		2018-01-09	Huang , et al.	
	26	9412105		2016-08-09	Graylin , et al.	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20020073045	A1	2002-06-13	Rubin, Aviel D. ; et al.	
	2	20030195842	A1	2003-10-16	20030195842	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16854829
	Filing Date	2020-04-21
	First Named Inventor	David WYATT
	Art Unit	2876
	Examiner Name	TBD
	Attorney Docket Number	WYAT-0002.USC1C1C1C

	3	20080222047	A1	2008-09-11	Boalt; Adam	
	4	20090048971	A1	2009-02-19	Hathaway; Matthew ; et al.	
	5	20160125417	A1	2016-05-05	Huang; Enyang ; et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16854829
	Filing Date	2020-04-21
	First Named Inventor	David WYATT
	Art Unit	2876
	Examiner Name	TBD
	Attorney Docket Number	WYAT-0002.USC1C1C1C

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	16854829
	Filing Date	2020-04-21
	First Named Inventor	David WYATT
	Art Unit	2876
	Examiner Name	TBD
	Attorney Docket Number	WYAT-0002.USC1C1C1C

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the 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 the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Anthony C. Murabito/	Date (YYYY-MM-DD)	2020-10-26
Name/Print	Anthony C. Murabito	Registration Number	35295

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

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 record s.

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.

Electronic Acknowledgement Receipt	
EFS ID:	40944655
Application Number:	16854829
International Application Number:	
Confirmation Number:	3480
Title of Invention:	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM
First Named Inventor/Applicant Name:	David WYATT
Customer Number:	136197
Filer:	Anthony C. Murabito/Missy Isaac
Filer Authorized By:	Anthony C. Murabito
Attorney Docket Number:	WYAT-0002.USC1C1C1C
Receipt Date:	26-OCT-2020
Filing Date:	21-APR-2020
Time Stamp:	14:13:40
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	Information Disclosure Statement (IDS) Form (SB08)	WYAT-0002USC1C1C1C_IDS_10-26-2020.pdf	612690 6f0c22de4f1f4f4759a4d7f54d12e58e9672e781	no	7
Warnings:					

Information:	
Total Files Size (in bytes):	612690

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.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/854,829	04/21/2020	David WYATT	WYAT-0002.USC1C1C1C

CONFIRMATION NO. 3480

136197
David Wyatt c/o Murabito, Hao & Barnes
111 North Market Street
Suite 700
San Jose, CA 95113

PUBLICATION NOTICE

OC000000122980008

Title:MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM

Publication No.US-2021-0027276-A1
Publication Date:01/28/2021

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently https://portal.uspto.gov/pair/PublicPair. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

IPR2025-01150
Apple EX1072 Page 118

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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/854,829	04/21/2020	David WYATT	WYAT-0002.USC1C1C1C	3480

136197 7590 04/29/2021

David Wyatt c/o Murabito, Hao & Barnes
111 North Market Street
Suite 700
San Jose, CA 95113

EXAMINER	
LEE, SEUNG H	

ART UNIT	PAPER NUMBER
2887	

NOTIFICATION DATE	DELIVERY MODE
04/29/2021	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):

misaac@mhbpatents.com
officeaction@mhbpatents.com
terimurabito@mhbpatents.com

Office Action Summary	**Application No.** 16/854,829	**Applicant(s)** WYATT, David	
	Examiner SEUNG H LEE	**Art Unit** 2887	**AIA (FITF) Status** No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☐ This action is non-final.

3)☐ 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.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-29 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☐ Claim(s) _____ is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☑ Claim(s) 1-29 are subject to restriction and/or election requirement

* If any claims have been determined allowable, 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.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ 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)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

Election/Restrictions

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:

Group I. Claims 1-19, drawn to a payment system comprising a payment card device and a computing device for conducting payment transaction, classified in G06Q 20/367.

Group II. Claims 20-29, drawn to an apparatus comprising particular structure of a smart card for conducting payment transaction, classified in G06K 19/077.

3. The inventions are independent or distinct, each from the other because:

4. Inventions Group I and Group II are directed to related products for conducting payment transactions. The related inventions are distinct if: (1) the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect; (2) the inventions do not overlap in scope, i.e., are mutually exclusive; and (3) the inventions as claimed are not obvious variants. See MPEP § 806.05(j). In the instant case, the inventions as claimed have a different design and/or mode of operation, i.e., conducting transactions using the payment card and computing device (Group I), and conducting transactions using only the payment card

(Group II). Furthermore, the inventions as claimed do not encompass overlapping subject matter and there is nothing of record to show them to be obvious variants.

5. Restriction for examination purposes as indicated is proper because all the inventions listed in this action are independent or distinct for the reasons given above and there would be a serious search and/or examination burden if restriction were not required because one or more of the following reasons apply:

- the inventions require a different field of search (e.g., searching different classes/subclasses or electronic resources, or employing different search strategies or search queries).

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a invention to be examined even though the requirement may be traversed (37 CFR 1.143) **and (ii) identification of the claims encompassing the elected invention**.

The election of an invention may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable upon the elected invention.

Should applicant traverse on the ground that the inventions are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is

the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103 or pre-AIA 35 U.S.C. 103(a) of the other invention.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be corrected in compliance with 37 CFR 1.48(a) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. A request to correct inventorship under 37 CFR 1.48(a) must be accompanied by an application data sheet in accordance with 37 CFR 1.76 that identifies each inventor by his or her legal name and by the processing fee required under 37 CFR 1.17(i).

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SEUNG H LEE whose telephone number is (571)272-2401. The examiner can normally be reached on 7-4:00PM.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Paik can be reached on 571-272-2404. 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 https://ppair-my.uspto.gov/pair/PrivatePair. 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.

/SEUNG H LEE/
Primary Examiner, Art Unit 2887

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/854,829	WYATT, David
	Examiner	Art Unit
	SEUNG H LEE	2887

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS										
☐ Claims renumbered in the same order as presented by applicant						☐ CPA	☐ T.D.	☐ R.1.47		
CLAIM		DATE								
Final	Original	04/26/2021								
	1	÷								
	2	÷								
	3	÷								
	4	÷								
	5	÷								
	6	÷								
	7	÷								
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	29	÷								

IPR2025-01150
Apple EX1072 Page 125

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82A (07-13)
Approved for use through 11/30/2014. OMB 0651-0051
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	16/854,829
Filing Date	04-21-2020
First Named Inventor	David WYATT
Title	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM
Art Unit	2887
Examiner Name	LEE, SEUNG H
Attorney Docket Number	WYAT-0002.USC1C1C1C

SIGNATURE of Applicant or Patent Practitioner

Signature	/Anthony C. Murabito/	Date (Optional)	
Name	Anthony C. Murabito	Registration Number	35,295
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ *Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. 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 3 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.

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82B (07-13)
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POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☑ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 136197

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☑ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number

OR

Firm or individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Virtual Electric Inc.

☐ Inventor or Joint Inventor (title not required below)

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☑ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature	D.C.W.	Date (Optional)	1/23/18
Name	DAVID WYATT		
Title	CEO/CTO		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☑ Total of 2 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. 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 3 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.

Electronic Acknowledgement Receipt	
EFS ID:	42716112
Application Number:	16854829
International Application Number:	
Confirmation Number:	3480
Title of Invention:	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM
First Named Inventor/Applicant Name:	David WYATT
Customer Number:	136197
Filer:	Anthony C. Murabito/Missy Isaac
Filer Authorized By:	Anthony C. Murabito
Attorney Docket Number:	WYAT-0002.USC1C1C1C
Receipt Date:	13-MAY-2021
Filing Date:	21-APR-2020
Time Stamp:	14:43:57
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	Power of Attorney	WYAT-0002USC1C1C1C_POA_05-12-2021.pdf	2362568 bd17d542125876b5f1b64bc8171989f6ce14a129	no	2
Warnings:					

Information:	
Total Files Size (in bytes):	2362568

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.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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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
16/854,829	04/21/2020	David WYATT	WYAT-0002.USC1C1C1C

CONFIRMATION NO. 3480

136197
David Wyatt c/o Murabito, Hao & Barnes
111 North Market Street
Suite 700
San Jose, CA 95113

POA ACCEPTANCE LETTER

OC000000125610540

Date Mailed: 05/17/2021

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 05/13/2021.

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.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/dtdinh/

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	16854829
	Filing Date	2020-04-21
	First Named Inventor	David Wyatt
	Art Unit	2887
	Examiner Name	Lee, Seung H.
	Attorney Docket Number	WYAT-0002.USC1C1C1C

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	8851370		2014-10-07	DiMuro	
	2	9646301		2017-05-09	DiMuro	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	16854829
	Filing Date	2020-04-21
	First Named Inventor	David Wyatt
	Art Unit	2887
	Examiner Name	Lee, Seung H.
	Attorney Docket Number	WYAT-0002.USC1C1C1C

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

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EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	16854829
	Filing Date	2020-04-21
	First Named Inventor	David Wyatt
	Art Unit	2887
	Examiner Name	Lee, Seung H.
	Attorney Docket Number	WYAT-0002.USC1C1C1C

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the 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 the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Anthony C. Murabito/	Date (YYYY-MM-DD)	2021-08-04
Name/Print	Anthony C. Murabito	Registration Number	35295

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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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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 record s.

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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.

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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.

IPR2025-01150
Apple EX1072 Page 134

Electronic Acknowledgement Receipt	
EFS ID:	43427596
Application Number:	16854829
International Application Number:	
Confirmation Number:	3480
Title of Invention:	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM
First Named Inventor/Applicant Name:	David WYATT
Customer Number:	136197
Filer:	Anthony C. Murabito/Mina Oliveri
Filer Authorized By:	Anthony C. Murabito
Attorney Docket Number:	WYAT-0002.USC1C1C1C
Receipt Date:	04-AUG-2021
Filing Date:	21-APR-2020
Time Stamp:	16:36:22
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	Information Disclosure Statement (IDS) Form (SB08)	WYAT-0002USC1C1C1C_updated_IDS.pdf	1033851 bfbc1732d03553c96bba99278f6a6be5ad57620a	no	4

Warnings:

Information:	
Total Files Size (in bytes):	1033851

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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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Wyatt

Serial:	16/854,829	Group Art Unit:	2887
Filed:	4/21/2020	Examiner:	Lee, Seung H.
For:	Multi-Function Electronic Payment Card and Device System		

Honorable Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

RESPONSE TO RESTRICTION REQUIREMENT

Dear Sir:

In response to the Restriction/Election Requirement mailed 04-29-2021, please enter the following remarks for filing in the above captioned patent application.

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Apple EX1072 Page 137

REMARKS

Claims 1-29 are pending in the present application. Applicants respectfully request reconsideration of the present application in view of the following remarks.

Election/Restriction

In the Office Action mailed 04-29-2021, in the above captioned case, the Examiner has stated that the present Application contains claims directed to two distinct groups. As such, the Examiner has required the Applicants to elect a single disclosed invention for prosecution on the merits. Specifically, the Examiner has required the Applicants to elect between:

> Group I, Claims 1-19, characterized by the Requirement as drawn to a payment system comprising a payment card device and a computing device for conducting payment transaction, classified in G06Q 20/367; and
>
> Group II, Claims 20-29, characterized by the Requirement as drawn to an apparatus comprising particular structure of a smart card for conducting payment transaction, classified in G06K 19/077.

IPR2025-01150
Apple EX1072 Page 138

Election without Traverse

Applicants elect, without traverse, Group I, Claims 1-19, characterized by the Requirement as drawn to a payment system comprising a payment card device and a computing device for conducting payment transaction, classified in G06Q 20/367.

IPR2025-01150
Apple EX1072 Page 139

CONCLUSION

Claims 1-21 are pending in the present application. Applicants respectfully request reconsideration of the present application in view of the remarks presented herein.

The Examiner is invited to contact Applicants' undersigned representative if the Examiner believes such action would expedite resolution of the present Application.

Respectfully submitted,

MURABITO, HAO & BARNES LLP

Date: 09/29/2021

/Anthony C. Murabito/
Anthony C. Murabito
Reg. No. 35,295

Two North Market Street
Third Floor
San Jose, California 95113
(408) 938-9060

IPR2025-01150
Apple EX1072 Page 140

Electronic Patent Application Fee Transmittal	
Application Number:	16854829
Filing Date:	21-Apr-2020
Title of Invention:	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM
First Named Inventor/Applicant Name:	David WYATT
Filer:	Anthony C. Murabito/Missy Isaac
Attorney Docket Number:	WYAT-0002.USC1C1C1C

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

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:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 3 months with $0 paid	2253	1	740	740
Miscellaneous:				
		Total in USD ($)		**740**

Electronic Acknowledgement Receipt	
EFS ID:	43905185
Application Number:	16854829
International Application Number:	
Confirmation Number:	3480
Title of Invention:	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM
First Named Inventor/Applicant Name:	David WYATT
Customer Number:	136197
Filer:	Anthony C. Murabito/Missy Isaac
Filer Authorized By:	Anthony C. Murabito
Attorney Docket Number:	WYAT-0002.USC1C1C1C
Receipt Date:	29-SEP-2021
Filing Date:	21-APR-2020
Time Stamp:	17:31:46
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	EFT
Payment was successfully received in RAM	$740
RAM confirmation Number	E20219SH32112377
Deposit Account	504160
Authorized User	Missy Isaac
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.19 (Document supply fees)	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		WYAT-0002USC1C1C1C_RR_09-29-2021__.pdf	1088980 fdf227da662c136c4080f3eaf6f951b8904919f5	yes	4
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Response to Election / Restriction Filed		1	1	
	Applicant Arguments/Remarks Made in an Amendment		2	4	
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	38443 7be0b8f256fc81493eeefd667292fa80d98a3086	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1127423		

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.

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

136197 7590 12/15/2021

David Wyatt c/o Murabito, Hao & Barnes
111 North Market Street
Suite 700
San Jose, CA 95113

EXAMINER	
LEE, SEUNG H	
ART UNIT	PAPER NUMBER
2887	

DATE MAILED: 12/15/2021

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/854,829	04/21/2020	David WYATT	WYAT-0002.USC1C1C1C	3480

TITLE OF INVENTION: MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$600	$0.00	$0.00	$600	03/15/2022

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. 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: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PTOL-85 (Rev. 02/11)

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Apple EX1072 Page 145

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (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)

136197 7590 12/15/2021

David Wyatt c/o Murabito, Hao & Barnes
111 North Market Street
Suite 700
San Jose, CA 95113

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 transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/854,829	04/21/2020	David WYATT	WYAT-0002.USC1C1C1C	3480

TITLE OF INVENTION: MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$600	$0.00	$0.00	$600	03/15/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS
LEE, SEUNG H	2887	705-072000

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/AIA/122 or PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or 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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). 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. Fees submitted: ❑Issue Fee ❑Publication Fee (if required) ❑Advance Order - # of Copies _____

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

❑ Electronic Payment via EFS-Web ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

❑ Applicant asserting small entity status. See 37 CFR 1.27

❑ Applicant changing to regular undiscounted fee status.

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.
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.
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. _____

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/854,829	04/21/2020	David WYATT	WYAT-0002.USC1C1C1C	3480

136197 7590 12/15/2021

David Wyatt c/o Murabito, Hao & Barnes
111 North Market Street
Suite 700
San Jose, CA 95113

EXAMINER	
LEE, SEUNG H	

ART UNIT	PAPER NUMBER
2887	

DATE MAILED: 12/15/2021

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.

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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 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, 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. 16/854,829	Applicant(s) WYATT, David	
	Examiner SEUNG H LEE	Art Unit 2887	AIA (FITF) Status No

-- 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 9/29/2021.
   ☐ 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 1-19 . 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 10/26/2020, 8/04/2021.
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 _____.

/SEUNG H LEE/
Primary Examiner, Art Unit 2887

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DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

Election/Restrictions

2. This application is in condition for allowance except for the presence of claims 20-29 directed to an invention non-elected without traverse. Accordingly, claims 20-29 been cancelled.

Allowable Subject Matter

3. Claims 1-19 are allowed.

4. The following is an examiner's statement of reasons for allowance:

Brudnicki et al. (US 2013/0159186) teaches an authorization system for one-time payment, and Ramaci (US 2014/0164154) teaches a payment system using mobile device.

However, none of prior art teaches a payment system comprising a payment card device free of any fixed payment numbers visible thereon and operable for use in payment card reader equipment, the processor is operable to generate at least a portion of a limited-use card payment information for use by an authenticated card user, a card issuer authority is operable to reject as invalid a transaction attempt outside of its limitations of use, wherein a card issuer authority is operable to validate a payment information as authentic when received from at least one of an authenticated users

payment card, and an authenticated users computing device, and wherein the card issuer authority is operable to permit the authentic transactions to complete along with other limitations recited in the claims.

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

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SEUNG H LEE whose telephone number is (571)272-2401. The examiner can normally be reached 7-4:00PM.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Paik can be reached on 571-272-2404. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-

center for more information about Patent Center and

https://www.uspto.gov/patents/docx for information about filing in DOCX format. For

additional questions, contact the Electronic Business Center (EBC) at 866-217-9197

(toll-free). If you would like assistance from a USPTO Customer Service

Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SEUNG H LEE/
Primary Examiner, Art Unit 2887

Notice of References Cited	Application/Control No. 16/854,829	Applicant(s)/Patent Under Reexamination WYATT, David	
	Examiner SEUNG H LEE	Art Unit 2887	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20130159186-A1	06-2013	Brudnicki; David	H04W12/068	705/44
*	B	US-20140164154-A1	06-2014	Ramaci; Jonathan E.	G07F7/0893	705/16
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	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.

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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/854,829	WYATT, David
	Examiner	**Art Unit**
	SEUNG H LEE	2887

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	04/26/2021	12/04/2021							
1	1	÷	=							
2	2	÷	=							
3	3	÷	=							
4	4	÷	=							
5	5	÷	=							
6	6	÷	=							
7	7	÷	=							
8	8	÷	=							
9	9	÷	=							
10	10	÷	=							
11	11	÷	=							
12	12	÷	=							
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	28	÷	-							
	29	÷	-							

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Apple EX1072 Page 154

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/854,829	WYATT, David
	Examiner	Art Unit
	SEUNG H LEE	2887

CPC - Searched*		
Symbol	Date	Examiner
G06Q20/341 OR G06K19/06206 OR G06K19/0716 OR G06K19/07749 OR G06Q20/06 OR G06Q20/065 OR G06Q20/223 OR G06Q20/24 OR G06Q20/346 OR G06Q20/347 OR G06Q20/352 OR G06Q20/3827 OR G06Q20/385 OR G06Q20/4012 OR G06Q20/409 OR G07F7/0873 OR G07F19/00	12/04/2021	sl

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
PE2E	12/04/2021	sl
NPL	12/04/2021	sl
14/217261, 14/680946, 15/250698, 16/025829 (parent cases)	12/04/2021	sl

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
	same as above	12/04/2021	sl

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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/854,829	WYATT, David
	Examiner	**Art Unit**
	SEUNG H LEE	2887

CPC							
Symbol						**Type**	**Version**
G06Q	/	20	/	341		F	2013-01-01
G07F	/	19	/	00		I	2013-01-01
G06Q	/	20	/	06		I	2013-01-01
G06Q	/	20	/	223		I	2013-01-01
G06Q	/	20	/	347		I	2013-01-01
G06Q	/	20	/	385		I	2013-01-01
G07F	/	7	/	0873		I	2013-01-01
G06K	/	19	/	06206		I	2013-01-01
G06K	/	19	/	0716		I	2013-01-01
G06K	/	19	/	07749		I	2013-01-01
G06Q	/	20	/	24		I	2013-01-01
G06Q	/	20	/	352		I	2013-01-01
G06Q	/	20	/	409		I	2013-01-01
G06Q	/	20	/	065		I	2013-01-01
G06Q	/	20	/	346		I	2013-01-01
G06Q	/	20	/	3827		I	2013-01-01
G06Q	/	20	/	4012		I	2013-01-01

CPC Combination Sets								
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	19	
/SEUNG H LEE/ Primary Examiner, Art Unit 2887	04 December 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2C

U.S. Patent and Trademark Office — Part of Paper No.: 20211130

IPR2025-01150
Apple EX1072 Page 156

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/854,829	WYATT, David
	Examiner	**Art Unit**
	SEUNG H LEE	2887

INTERNATIONAL CLASSIFICATION				
CLAIMED				
G06Q20/34	/	20	/	34

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	19	
/SEUNG H LEE/ Primary Examiner, Art Unit 2887	04 December 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2C

U.S. Patent and Trademark Office — Part of Paper No.: 20211130

IPR2025-01150
Apple EX1072 Page 157

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/854,829	WYATT, David
	Examiner	**Art Unit**
	SEUNG H LEE	2887

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	10	10	19	19										
2	2	11	11												
3	3	12	12												
4	4	13	13												
5	5	14	14												
6	6	15	15												
7	7	16	16												
8	8	17	17												
9	9	18	18												

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	19	
/SEUNG H LEE/ Primary Examiner, Art Unit 2887	04 December 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2C

U.S. Patent and Trademark Office — Part of Paper No.: 20211130

IPR2025-01150
Apple EX1072 Page 158

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16854829
Filing Date	2020-04-21
First Named Inventor	David Wyatt
Art Unit	2887
Examiner Name	Lee, Seung H.
Attorney Docket Number	WYAT-0002.USC1C1C1C

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	8851370		2014-10-07	DiMuro	
	2	9646301		2017-05-09	DiMuro	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16854829
	Filing Date	2020-04-21
	First Named Inventor	David Wyatt
	Art Unit	2887
	Examiner Name	Lee, Seung H.
	Attorney Docket Number	WYAT-0002.USC1C1C1C

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

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EXAMINER SIGNATURE

Examiner Signature	/SEUNG H LEE/	Date Considered	11/30/2021

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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	Application Number	16854829
	Filing Date	2020-04-21
	First Named Inventor	David Wyatt
	Art Unit	2887
	Examiner Name	Lee, Seung H.
	Attorney Docket Number	WYAT-0002.USC1C1C1C

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the 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 the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Anthony C. Murabito/	Date (YYYY-MM-DD)	2021-08-04
Name/Print	Anthony C. Murabito	Registration Number	35295

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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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The information provided by you in this form will be subject to the following routine uses:

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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.

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PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	69	"854829"	(US-PGPUB; USPAT; EPO; JPO)	OR	ON	ON	2021/11/30 07:30 AM
L2	36204	(G06Q20/341 OR G06K19/06206 OR G06K19/0716 OR G06K19/07749 OR G06Q20/06 OR G06Q20/065 OR G06Q20/223 OR G06Q20/24 OR G06Q20/346 OR G06Q20/347 OR G06Q20/352 OR G06Q20/3827 OR G06Q20/385 OR G06Q20/4012 OR G06Q20/409 OR G07F7/0873 OR G07F19/00).cpc.	(US-PGPUB; USPAT; EPO; JPO)	OR	ON	ON	2021/11/30 08:20 AM
L3	183	card SAME payment SAME authenticat$4 SAME invalid	(US-PGPUB; USPAT; EPO; JPO)	OR	ON	ON	2021/11/30 09:18 AM
L4	59	2 AND 3	(US-PGPUB; USPAT; EPO; JPO)	OR	ON	ON	2021/11/30 09:19 AM
L5	591725	touch SAME (screen display) SAME interface	(US-PGPUB; USPAT; EPO; JPO)	OR	ON	ON	2021/11/30 09:19 AM
L6	1	3 SAME 5	(US-PGPUB; USPAT; EPO; JPO)	OR	ON	ON	2021/11/30 09:19 AM
L7	52	3 AND 5	(US-PGPUB; USPAT; EPO; JPO)	OR	ON	ON	2021/11/30 09:20 AM
L8	5064	wyatt.in.	(US-PGPUB; USPAT; EPO; JPO)	OR	ON	ON	2021/11/30 09:21 AM
L9	238	5 AND 8	(US-PGPUB; USPAT; EPO; JPO)	OR	ON	ON	2021/11/30 09:22 AM
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L11	12	10 AND 8	(US-PGPUB; USPAT; EPO; JPO)	OR	ON	ON	2021/11/30 09:22 AM
L12	1023	payment SAME card SAME limit$4 SAME issuer SAME (authenticat$4 verif$6)	(US-PGPUB; USPAT; EPO; JPO)	OR	ON	ON	2021/11/30 10:31 AM
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IPR2025-01150
Apple EX1072 Page 163

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L17	38	(Artificial Intelligence) More Like: US-10628820-B2 Text: (US-20210304187-A1 OR US-11176538-B2 OR US-10810579-B2 OR US-20190325428-A1 OR WO-2017127871-A1 OR US-20210027276-A1 OR US-9430765-B2 OR US-10339520-B2 OR US-20170132616-A1 OR US-10013693-B2 OR US-20140164154-A1 OR WO-2018203273-A1 OR WO-2016141352-A1 OR EP-3265979-A1 OR US-20180039983-A1 OR JP-2018508907-A OR RU-2014129856-A OR CN-104272332-B OR CN-104272332-A OR US-20140263627-A1).did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/30 08:28 PM
L18	3	("9022286").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA,	OR	ON	ON	2021/12/01 07:51 AM

			VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
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L21	16	20 SAME (touch SAME display)	(US-PGPUB; USPAT; EPO; JPO)	OR	ON	ON	2021/12/01 08:21 AM
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L23	266	2 AND 20	(US-PGPUB; USPAT; EPO; JPO)	OR	ON	ON	2021/12/01 08:30 AM
L24	18	2 AND 20.clm.	(US-PGPUB; USPAT; EPO; JPO)	OR	ON	ON	2021/12/01 08:30 AM
L25	808	("5276311").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/12/01 09:19 PM
L26	7	20 AND 25	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/12/01 09:20 PM
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IPR2025-01150
Apple EX1072 Page 165

		61"|"9406011"|"9734345"|"5276311"|"6000832"|"8827153"|"8870081"|"8628012"|"9123036"|"9195926"|"10223631"|"20020073045"|"20030195842"|"7922082").PN.					
L29	1	("9022286").pn.	(US-PGPUB; USPAT; EPO; JPO)	OR	ON	ON	2021/12/04 09:57 AM
L30	8	("6631849" | "6641050" | "7793851" | "7841539" | "8702007" | "20060032908" | "20080223937" | "20130048712").pn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/12/04 10:19 AM
L31	624	("6631849").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/12/04 10:19 AM
L32	4	8 AND 31	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/12/04 10:19 AM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

Bibliographic Data

Application No: 16/854,829

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☑ No ☐ Met After Allowance

Verified and Acknowledged: /SEUNG H LEE/ (Examiner's Signature) | (Initials)

Title: MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
04/21/2020	705	2887	WYAT-0002.USC1C1C1C
RULE			

APPLICANTS

Virtual Electric Inc., San Jose, CA, UNITED STATES

INVENTORS

David WYATT, San Jose, CA, UNITED STATES

CONTINUING DATA

This application is a CON of 16025829 07/02/2018 PAT 10628820

16025829 is a CON of 15250698 08/29/2016 PAT 10013693

15250698 is a CON of 14680946 04/07/2015 PAT 9430765

14680946 is a CON of 14217261 03/17/2014 PAT 9022286

14217261 has PRO of 61794891 03/15/2013

FOREIGN APPLICATIONS

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STATE OR COUNTRY

UNITED STATES

ADDRESS

David Wyatt c/o Murabito, Hao & Barnes
111 North Market Street
Suite 700
San Jose, CA 95113
UNITED STATES

FILING FEE RECEIVED

$2,680

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	16854829
Filing Date	2020-04-21
First Named Inventor	David WYATT
Art Unit	2876
Examiner Name	TBD
Attorney Docket Number	WYAT-0002.USC1C1C1C

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	5276311		1994-01-04	Hennige	
	2	9406011		2016-08-02	Bartenstein , et al.	
	3	9286561		2016-03-15	Olson , et al.	
	4	8870081		2014-10-28	Olson , et al.	
	5	9734345		2017-08-15	Spodak , et al.	
	6	9218557		2015-12-22	Spodak , et al.	
	7	9195926		2015-11-24	Spodak	
	8	9177241		2015-11-03	Spodak , et al.	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.L./

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	Filing Date	2020-04-21
	First Named Inventor	David WYATT
	Art Unit	2876
	Examiner Name	TBD
	Attorney Docket Number	WYAT-0002.USC1C1C1C

	9	8788418		2014-07-22	Spodak , et al.	
	10	8671055		2014-03-11	Spodak , et al.	
	11	9129270		2015-09-08	Spodak	
	12	10255545		2019-04-09	Mullen , et al.	
	13	10223631		2019-03-05	Mullen , et al.	
	14	10032100		2018-07-24	Mullen , et al.	
	15	9547816		2017-01-17	Mullen , et al.	
	16	8827153		2014-09-09	Rhoades , et al.	
	17	8517276		2013-08-27	Mullen , et al.	
	18	6000832		1999-12-14	Franklin , et al.	
	19	7922082		2011-04-12	Muscato	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.L./

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	First Named Inventor	David WYATT
	Art Unit	2876
	Examiner Name	TBD
	Attorney Docket Number	WYAT-0002.USC1C1C1C

	20	8690059		2014-04-08	Wallner	
	21	8628012		2014-01-14	Wallner	
	22	9022285		2015-05-05	Graylin	
	23	8814046		2014-08-26	Wallner	
	24	9123036		2015-09-01	Graylin , et al.	
	25	9864994		2018-01-09	Huang , et al.	
	26	9412105		2016-08-09	Graylin , et al.	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20020073045	A1	2002-06-13	Rubin, Aviel D. ; et al.	
	2	20030195842	A1	2003-10-16	20030195842	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.L./

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16854829
	Filing Date	2020-04-21
	First Named Inventor	David WYATT
	Art Unit	2876
	Examiner Name	TBD
	Attorney Docket Number	WYAT-0002.USC1C1C1C

	3	20080222047	A1	2008-09-11	Boalt; Adam	
	4	20090048971	A1	2009-02-19	Hathaway; Matthew ; et al.	
	5	20160125417	A1	2016-05-05	Huang; Enyang ; et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
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EXAMINER SIGNATURE

Examiner Signature	/SEUNG H LEE/	Date Considered	12/04/2021

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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	Examiner Name	TBD
	Attorney Docket Number	WYAT-0002.USC1C1C1C

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the 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 the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Anthony C. Murabito/	Date (YYYY-MM-DD)	2020-10-26
Name/Print	Anthony C. Murabito	Registration Number	35295

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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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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 record s.

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Search History

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Set #	Search Query	Details Results | Date & Time
100	((payment and system)) AND (wireless and issuer)	2 | Dec 4, 2021, 10:17:55 AM
99	wireless and issuer	18 | Dec 4, 2021, 10:17:29 AM
98	(((((No Keywords Specified))) AND (payment and system)) AND (limited and number)) AND (authenticate and transaction)	1 | Dec 4, 2021, 10:15:07 AM
97	(((((No Keywords Specified))) AND (payment and system)) AND (limited and number)) AND (touch and (screen or display))	0 | Dec 4, 2021, 10:14:45 AM
96	((payment and system)) AND (limited and number)	63 | Dec 4, 2021, 10:14:11 AM
95	authenticate and transaction	791 | Dec 4, 2021, 10:13:31 AM
94	limited and number	52599 | Dec 4, 2021, 10:13:11 AM
93	touch and (screen or display)	1084 | Dec 4, 2021, 10:12:47 AM
92	payment and system	4402 | Dec 4, 2021, 10:12:18 AM
91	((((((No Keywords Specified))) AND (electrode and layer)) AND (protecting and layer)) AND (metal and layer)) AND (antenna)	0 | Dec 2, 2021, 6:43:20 AM
90	(((electrode and layer)) AND (protecting and layer)) AND (metal and layer)	34 | Dec 2, 2021, 6:42:46 AM
89	(((((No Keywords Specified))) AND (antenna)) AND (metal and layer)) AND (protecting and layer)	13 | Dec 2, 2021, 6:42:13 AM
88	((antenna)) AND (metal and layer)	1364 | Dec 2, 2021, 6:41:46 AM
87	transparent and resin and film	26 | Dec 2, 2021, 6:41:13 AM
86	electrode and layer	11666 | Dec 2, 2021, 6:40:49 AM
85	protecting and layer	3115 | Dec 2, 2021, 6:40:16 AM
84	metal and layer	20234 | Dec 2, 2021, 6:39:56 AM
83	antenna	287347 | Dec 2, 2021, 6:39:39 AM

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IPR2025-01150
Apple EX1072 Page 176

Doc code: RCEX
Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
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 contains a valid OMB control number.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	16/854,829	Filing Date	2020/04/21	Docket Number (if applicable)	WYAT-0002.USC1C1C1C	Art Unit	2887
First Named Inventor	David Wyatt			Examiner Name			

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☐ Amendment/Reply
- ☒ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
(Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 504160

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

☐ Applicant Signature

PTO/SB/30EFS (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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Signature of Registered U.S. Patent Practitioner			
Signature	/Anthony C. Murabito/	Date (YYYY-MM-DD)	2022-03-15
Name	Anthony C. Murabito	Registration Number	35,295

This collection of information is required by 37 CFR 1.114. 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.

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

Privacy Act Statement

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Apple EX1072 Page 179

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	16854829
Filing Date	2020-04-21
First Named Inventor	David WYATT
Art Unit	2887
Examiner Name	LEE, SEUNG H
Attorney Docket Number	WYAT-0002.USC1C1C1C

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	9818104		2017-11-14	KATZER; ET AL.	
	2	9105020		2015-08-11	RONCA; ET AL	
	3	8571937		2013-10-29	ROSE; ET AL	
	4	11100431		2021-08-24	MULLEN; ET AL	
	5	10037524		2018-07-31	ROYYURU; ET AL	
	6	8690055		2014-04-08	ANDERSON; ET AL	
	7	7100821		2006-09-05	RASTI	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
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	Filing Date	2020-04-21
	First Named Inventor	David WYATT
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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20020153424		2002-10-24	LI	
	2	20110276416		2011-11-10	MULLEN, et al.	
	3	20150317632		2015-11-05	PARK, et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2012154915	WO	A1	2012-11-15	DYNAMICS INC		

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
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If you wish to add additional non-patent literature document citation information please click the Add button Add

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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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	First Named Inventor	David WYATT
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	Examiner Name	LEE, SEUNG H
	Attorney Docket Number	WYAT-0002.USC1C1C1C

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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IPR2025-01150
Apple EX1072 Page 184

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
15 November 2012 (15.11.2012)

WIPO | PCT

(10) International Publication Number
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(51) International Patent Classification:
G06Q 40/02 (2012.01)

(21) International Application Number:
PCT/US2012/037237

(22) International Filing Date:
10 May 2012 (10.05.2012)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

61/484,588	10 May 2011 (10.05.2011)	US
61/484,566	10 May 2011 (10.05.2011)	US
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(54) **Title:** SYSTEMS, DEVICES, AND METHODS FOR MOBILE PAYMENT ACCEPTANCE, MOBILE AUTHORIZATIONS, MOBILE WALLETS, AND CONTACTLESS COMMUNICATION MECHANISMS

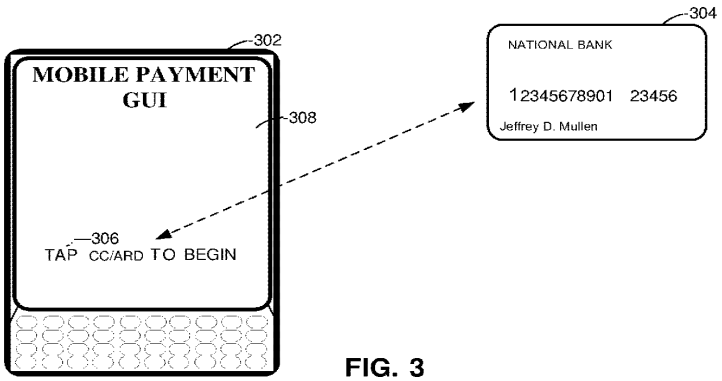


FIG. 3

(57) **Abstract:** A mobile device may provide payment acceptance and/or payment authorization for purchases, payments and/or money transfers by accepting payment information from a powered, or a non-powered, card using a contactless communication channel formed between the card and the mobile device. The payment information may be communicated by the mobile device to network entities that may be used to settle/authorize such purchase, payment and/or money transfer transactions. Physical cards may be presented to a mobile device to establish a contactless communication channel between the physical card and the mobile device. Information communicated by the physical card may be received, stored, and used by the mobile device to generate a mobile wallet of virtual cards.

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SYSTEMS, DEVICES, AND METHODS FOR MOBILE PAYMENT ACCEPTANCE, MOBILE AUTHORIZATIONS, MOBILE WALLETS, AND CONTACTLESS COMMUNICATION MECHANISMS

Background of the Invention

[0001] This invention relates to mobile devices and related systems.

Summary of the Invention

[0002] A mobile device is provided that may be used as a point-of-sale terminal. A contactless communication channel may, for example, be formed between the mobile device and a payment card to communicate payment information from the payment card to the mobile device. The mobile device may, for example, use the communicated payment information to complete a purchase transaction that may be initiated by the mobile device. Accordingly, for example, no payment information need reside on the mobile terminal to complete a payment transaction. Instead, an application may be remotely activated, or a user of a mobile device may activate an application on the mobile device, that allows the mobile device to accept payment

information directly from a payment card before and/or during a payment transaction.

[0003] A mobile device may, for example, provide a browsing activity where goods and/or services may be located for purchase on a website (e.g., an Amazon or eBay website). An application may, for example, be executed on a mobile device that may communicate with a checkout application running on a website. Payment information may be exchanged directly from a user's payment card to the checkout application using the user's mobile device. In so doing, for example, a mobile device may be used as a contactless payment acceptance terminal.

[0004] A user may be provided an option of storing payment information associated with a payment card within a memory of the mobile device. Accordingly, for example, a mobile device may store payment information associated with one or more payment accounts. In so doing, for example, a mobile device may store multiple payment accounts that may be recalled from a memory of the mobile device at the user's request to complete a payment transaction.

[0005] A mobile device may detect the presence of a card that is brought within a communication distance of a contactless interface of the mobile device. For example, a card having RFID capability may communicate with an RFID device of a mobile device when the card comes within a distance (e.g., up to 2 inches) of the mobile device. Accordingly, for example, a card type (e.g., a powered card or a non-powered card) may be identified by the mobile device.

[0006] A non-powered card may, for example, communicate one, two, and/or three tracks of magnetic

stripe data to a mobile device via a contactless interface of the mobile device. Accordingly, a processor of a mobile device may identify an account type (e.g., credit or debit) that may be associated with the non-powered card by inspection of magnetic stripe data (e.g., account number) received from the non-powered card.

[0007] A powered card may, for example, communicate information (e.g., information within discretionary data fields) to a contactless interface of a mobile device. In so doing, for example, the additional information may be analyzed by a processor of the mobile device to determine that a detected card is a powered card having increased capability. Accordingly, for example, a user of a powered card may select a feature (e.g., pay with credit) on the powered card and a processor of a mobile device may detect that such a feature is selected based upon an analysis of information (e.g., discretionary data) received from the powered card.

[0008] A mobile device may validate a payment card. For example, a mobile device may request entry of a PIN after a payment card is presented to the mobile device and payment information is communicated to the mobile device by the payment card. Once entered, a mobile device may, for example, access a server associated with the payment card's issuing entity to validate the PIN. Alternately, for example, a processor of a mobile device may compare the PIN entry against local memory contents of the mobile device to validate the entered PIN.

[0009] As per another example, a mobile device may validate a payment card by requiring that the physical

payment card be present during a payment transaction. Accordingly, for example, a mobile device may require that a physical payment card be tapped against the mobile device so that a contactless communication channel may be formed between the payment card and the mobile device to verify the identity of the payment card. Accordingly, for example, identifying information communicated by the payment card to the mobile device may be compared against information previously stored within a memory of the mobile device that may be associated with the payment card.

[0010] One or more payment cards may, for example, be presented to a mobile device to complete a purchase transaction. Accordingly, for example, split-payment options may be offered by a mobile device. In so doing, for example, a first payment card may be tapped against a mobile device and accepted by the mobile device as a first form of partial payment, a second payment card may be tapped against a mobile device and accepted by the mobile device as a second form of partial payment, and so on. A mobile device may, for example, allow a user to select an amount for each partial payment and may settle each partial payment amount with each respective issuer of each payment card presented for partial payment.

[0011] A mobile device may provide checkout options to a user. For example, a mobile device may allow a user to associate purchase categories (e.g., groceries, auto repair, or entertainment) to purchases transacted by the mobile device so that the user may prepare a more detailed accounting of his or her expenditures. As per another example, a rewards card may be tapped against a mobile device so that rewards card

information may be credited with purchases transacted by the mobile device.

[0012] A mobile device may provide receipt delivery options to a user. For example, a mobile device may allow a user to select one of many receipt delivery options (e.g., text messaging, email or autonomous delivery to accounting software executed by a processor of the mobile device) . Other receipt options may be provided by a mobile device in a graphical format (e.g., a barcode) so that proof-of-purchase may be verified by a reader (e.g., a barcode reader) .

[0013] Money transfers may, for example, be transacted by a mobile device. One or more payment accounts (e.g., a car account or a utility account) may be selected by a user of a mobile device to receive a payment transacted by the mobile device. Payment information may be recalled from memory and/or entered by a user of the mobile device and then communicated to network entities by the mobile device to complete payment transactions.

[0014] Person to person transfers may, for example, be transacted by a mobile device. A user of a mobile device may, for example, tap a payment card against the mobile device to communicate source account information to the mobile device where funds are to be withdrawn. A person receiving a transfer of funds may, for example, tap his or her payment card against a device (e.g., a mobile device) to communicate target account information where funds are to be deposited. A mobile device may, for example, gather source and target account information and communicate such information to network entities to complete the funds transfer transaction .

[0015] A mobile device may, for example, provide a scanning capability (e.g., via a camera) to scan images (e.g., barcodes) that may be analyzed by a processor of the mobile device. Accordingly, for example, a mobile device may be used to scan product information from a product tag (e.g., a barcode) to select an item for purchase. As items are selected for purchase, scanned information is processed and displayed by the mobile device to produce a summary of items that may be selected for purchase. The mobile device may, for example, collect payment information from a payment card via a contactless communication channel and then use the payment information to complete a purchase transaction for the items scanned by the mobile device.

[0016] A mobile device may access electronic billing information via one or more communication capabilities of the mobile device. A merchant (e.g., a restaurant) may provide access to an electronic tab generated by the merchant (e.g., a bill generated by a restaurant for a dinner for two). Items billed by the merchant may be accessed by a user of a mobile device and displayed by the mobile device to produce a summary of items billed. The mobile device may, for example, collect payment information from a payment card via a contactless communication channel and then use the payment information to complete a purchase transaction for the billed items.

[0017] Any mobile device, such as a laptop computer, a mobile telephonic device (e.g., a cellular phone), a PDA, an MP3 player, or a positioning device (e.g., a GPS) may be a point-of-sale terminal. Accordingly, for example, a mobile device may accept payment information from any payment card, communicate such payment

information via a network, complete a settlement process with network entities (e.g., an issuer or a payment server) on such a network, and provide results (e.g., an electronic receipt) of the completed purchase transaction to a user of the mobile device.

[0018] A mobile device may include a contactless communication device. Accordingly, for example, a mobile device may communicate with any card having contactless communication capability. For example, a card (e.g., a non-powered card) may include a near-field communication device (e.g., an RFID tag) that may communicate with a contactless communication device of a mobile device to form a two-way communication channel between the card and the mobile device. In so doing, for example, a non-powered card may communicate one, two, and/or three tracks of magnetic stripe information to a mobile device before and/or during a purchase transaction conducted by the mobile device.

[0019] A card (e.g., a powered card) may include a near-field communication device (e.g., an RFID) that may communicate with a contactless communication device of a mobile device. A powered card may, for example, include a battery, a processor, memory, and a manual input interface (e.g., one or more buttons) that may allow a user of the powered card to programmably communicate information to a mobile device. For example, a powered payment card may include a feature associated with a button that allows a user to, for example, pay with credit or pay with debit. Accordingly, for example, a powered payment card may communicate such a payment selection within discretionary data fields of one or more tracks of magnetic stripe data.

[0020] A powered card may, for example, include circuitry to simulate touch (e.g., a capacitance change) in order to form a contactless communication channel with a mobile device. Accordingly, for example, a powered card may be pressed against a touch-sensitive display of a mobile device and information may be communicated by the powered card to the mobile device through a series of card-simulated touches that may be detected by the touch-sensitive display of the mobile device and processed by a processor of the mobile device as data communicated by the powered card.

[0021] A powered card may, for example, include a light sensor to form a contactless communication channel with a mobile device. Accordingly, for example, a powered card may be pressed against a display of a mobile device and information may be communicated from the mobile device to the powered card through a series of light pulses generated by the display of the mobile device. A frequency, pulse width, and/or a pulse intensity of light pulses may, for example, be detected by a processor of a powered card as data communicated by a mobile device.

[0022] A powered card may, for example, include a light source (e.g., an LED) to form a contactless communication channel with a mobile device. Accordingly, for example, a powered card may emit varying light pulses from an LED that may be detected by a motion-capture device (e.g., a camera) of a mobile device as data communicated by the powered card. A powered card may, for example, include sound emission capabilities that may be detected by a microphone of a mobile device as data communicated by the powered card through a contactless communication channel. A mobile

device may, for example, include sound emission capabilities that may be detected by a microphone of a powered card as data communicated by the mobile device through a contactless communication channel.

[0023] A user may communicate information directly from a card to a memory location of a mobile device via a contactless communication channel between the card and the mobile device. Accordingly, for example, a mobile device may store information (e.g., payment information) associated with one or more cards (e.g., one or more payment cards) that have been presented within a proximity to the mobile device. In so doing, for example, a mobile device may be a mobile wallet having multiple accounts (e.g., payment, identification, and travel accounts) stored within a memory of the mobile wallet where each account may be recalled from a memory of the mobile wallet at the user's request to perform a function (e.g., to complete a payment transaction).

[0024] A mobile device may detect the presence of a card that is brought within a communication distance of a contactless interface of the mobile device. A card may, for example, provide RFID capability that may communicate with an RFID device of a mobile device when the card comes within a communication distance of the mobile device. Accordingly, for example, a card type may be identified by the mobile device and information associated with the card type may be communicated from the card to the mobile device. Information received by the mobile device from the card may be autonomously categorized by the mobile device in accordance with a card type and the information may be stored and

displayed to a user in accordance with the categorization .

[0025] A card (e.g., a non-powered payment card) may, for example, communicate one, two, and/or three tracks of magnetic stripe data to a mobile device via a contactless interface. Accordingly, for example, a processor of a mobile device may identify a card type (e.g., a payment card) by analyzing the magnetic stripe data received from the card. A processor of a mobile device may, for example, determine an account type (e.g., credit or debit) that may be associated with the non-powered payment card by inspection of magnetic stripe data (e.g., account number) received from the non-powered card.

[0026] A powered card may, for example, communicate information to a contactless interface of a mobile device. In so doing, for example, additional information (e.g., information presented in discretionary data) may be identified by a processor of the mobile device to determine that a detected card is a powered card having increased capability. Accordingly, for example, a user of a powered card may select a feature (e.g., pay with credit) on the powered card and a processor of a mobile device may detect that such a feature is selected based upon an analysis of the information received from the powered card.

[0027] A mobile device may, for example, validate a payment card. For example, a mobile device may request entry of a PIN after a payment card is presented to the mobile device. Once a PIN is entered, a mobile device may, for example, access a server associated with the issuing entity to validate the PIN. A processor of a mobile device may, for example, compare the PIN entry

against memory contents of the mobile device to locally validate the entered PIN.

[0028] Data received from a card may, for example, be encrypted. Accordingly, for example, data received from a card may be stored in an encrypted state and decrypted upon receipt of a decryption key. A decryption key may, for example, be received from a sponsoring entity of the card (e.g., a card issuer's server) . Decrypted data may, for example, be destroyed such that each usage of encrypted data may require a decryption key prior to usage. Alternately, for example, decrypted data may be stored within a protected memory of the mobile device and kept for future use.

[0029] A user of a mobile device may, for example, extract physical, or real, cards (e.g., payment, identification, travel, and rewards cards) from the user's physical wallet or purse and may convert each physical card into a virtual equivalent card that resides electronically within the mobile device. Accordingly, for example, each physical card (e.g., a powered card or a non-powered card) may be brought within a proximate, or touching, relationship with a mobile device to create a contactless communication channel. Card information (e.g., cardholder data, card data, and card configuration data) may, for example, be communicated by the card to the mobile device via such a contactless communication channel. In so doing, for example, a virtual card may be created within the mobile device that is both visibly and functionally equivalent to its physical counterpart.

[0030] A non-powered card may, for example, be virtually rendered onto a display of a mobile device in

a manner that resembles its physical counterpart. Card and cardholder information may, for example, be communicated by the non-powered card to the mobile device and rendered onto a virtual card that may be displayed by a processor of the mobile device. Accordingly, for example, the functionality of the physical card (e.g., a non-powered payment card) may be imparted to the virtual card by the mobile device when the mobile device communicates information (e.g., payment information) that may be associated with the non-powered payment card. As per one example, a mobile device may communicate payment information associated with a virtual card that may be displayed on a GUI of the mobile device when the mobile device is brought within a communication distance of a merchant terminal to complete a purchase transaction (e.g., an RFID device of the mobile device may communicate with an RFID device of a merchant terminal to exchange payment information between the mobile device and the merchant terminal to complete the purchase transaction) . As per another example, a mobile device may communicate payment information associated with a virtual card when the mobile device accesses a network entity (e.g., a payment server) via a wireless network (e.g., a cellular network or a Wi-Fi hotspot) to complete a purchase transaction using the communicated payment information .

[0031] A powered card may, for example, be virtually rendered onto a display of a mobile device in a manner that resembles its physical counterpart. A powered card may, for example, be virtually rendered onto a display of a mobile device in a manner that provides user interface functionality that may be associated

with the physical counterpart. A powered card may, for example, communicate configuration information (e.g., button placement and associated functionality, display placement and associated functionality and input/output functionality) to a processor of a mobile device and the processor may render such a configuration onto a virtual card such that the configuration of the virtual card provides substantially identical functionality as compared to its physical counterpart.

[0032] As per one example, a powered card (e.g., a powered payment card) may include one or more buttons that when activated determine a method of payment to be used to complete a transaction (e.g., pressing one button may invoke a credit payment transaction while pressing another button may invoke a debit payment transaction) . Accordingly, for example, a virtual card may be rendered onto a display of a mobile device that includes the same functionality, such that when one virtual button is touched on the virtual card, a credit payment message is communicated by the mobile device and when another virtual button is touched on the virtual card, a debit payment message is communicated by the mobile device.

[0033] As per another example, a powered card may be programmed for a particular feature by pressing a button on the powered card associated with that feature. Accordingly, for example, a powered card may communicate information associated with a selected feature to a mobile device and a processor of the mobile device may render a virtual card on a GUI of the mobile device in accordance with the selected feature. In so doing, for example, a powered card may be selected as a powered payment card with a debit feature

and the selected feature may be communicated to a mobile device (e.g., the debit feature may be communicated to a mobile device within a discretionary data field of a magnetic stripe message). The resulting virtual payment card rendered onto a display of the mobile device may, for example, provide a virtual payment card having a fixed payment feature (e.g., a fixed debit payment feature).

[0034] A mobile device may, for example, challenge a user of the mobile device to enter a password (e.g., a PIN) that may be associated with a card. A mobile device may, for example, require a password before a virtual card may be created and stored within the mobile device. A mobile device may, for example, allow a virtual card to be created and stored within a mobile device, but may challenge a user of the mobile device to enter a password associated with the virtual card before it can be recalled from a memory of the mobile device and used (e.g., used to complete a purchase transaction).

[0035] A user may, for example, participate in the personalization of a virtual card that may be stored within a memory of a mobile device. A mobile device may, for example, store various logos (e.g., issuer logos, network brand logos, and merchant logos) within a memory of the mobile device and may allow a user of the mobile device to use a GUI of the mobile device to personalize an appearance of a virtual card with such logos. Accordingly, for example, a user may perform drag-and-drop operations, alphanumeric entry operations, and any other operation to personalize an appearance of a virtual card stored within a memory of the mobile device.

[0036] A processor of a mobile device may, for example, organize two or more virtual cards for display on a GUI of the mobile device. A mobile device may, for example, keep track of a number of usages of one or more virtual cards and may sort such virtual cards within a list of displayed virtual cards so that a user may easily access his or her most used virtual card from a top of the displayed list. A mobile device may, for example, track a location of a user of the mobile device and organize a list of virtual cards in accordance with such a location. Accordingly, for example, a user may be shopping within a general merchandise store (e.g., Target), a processor of the user's mobile device may track the user's position to the Target store and the processor of the user's mobile device may display a virtual card (e.g., a Target gift card) at the top of a displayed list of virtual cards based upon the user's location. In so doing, for example, a virtual card most pertinent to the user's location may be sorted to the top of a displayed list of virtual cards for easy and convenient access by the user .

[0037] A user may, for example, select one virtual card from a list of virtual cards presented by a GUI of a mobile device and may perform one of many operations on the selected virtual card. A user may, for example, conduct a purchase transaction using a virtual payment card selected from a list of virtual cards. Accordingly, for example, a user may place a mobile device within a vicinity of a merchant terminal and may communicate payment information associated with a selected payment card to the merchant terminal. As per another example, payment information associated with a

selected virtual card may be communicated to a network entity (e.g., a payment server or an issuer's server) by the mobile device to complete a purchase transaction .

[0038] A mobile device may, for example, receive an electronic receipt for the purchase transaction either via a communication channel established between the mobile device and the merchant terminal or via other communication channels (e.g., text messaging or email exchange with a network entity such as a payment server) . A user may, for example, view documents (e.g., receipts or bank statements) that may be associated with a virtual card. Accordingly, for example, a mobile device may collect and store documents associated with a virtual payment card and may display the associated documents upon request from the user. A GUI of a mobile device may, for example, allow a user to annotate documents that may be associated with a virtual card (e.g., a user may make a note that may be electronically attached to an electronic receipt that may be associated with a virtual payment card) .

[0039] Other cards (e.g., other virtual cards) may be associated with a selected virtual card and those associations may be viewed from a GUI of the mobile device. For example, a payment card may be associated with a rewards card, such that in response to a request from a user of a mobile device, a processor of the mobile device may display the associations to the payment card and may use the associated virtual cards in support of a purchase transaction (e.g., the associated rewards card may be used during a payment transaction conducted with the selected virtual payment

card so that the rewards account may accrue rewards points for the purchase transaction) .

[0040] A mobile device may, for example, allow a user of the mobile device to cancel an account that may be associated with a virtual card stored within the mobile device. Accordingly, for example, a virtual payment card may be stored within a mobile device and may be associated with a payment account that is administered by an issuing entity of the payment account. A mobile device may, for example, communicate with such an issuing entity to cancel a payment account that may be associated with a virtual payment card stored within the mobile device. A mobile device may, for example, negotiate with other issuing entities to determine when new payment card offers may be available and to allow a user of the mobile device to accept such payment card offers. Once accepted, a user of a mobile device may conduct other transactions with the newly accepted payment card offers (e.g., account balance (s) associated with existing virtual cards may be transferred to the newly accepted payment card via a request made by the mobile device and an issuing server) .

[0041] Any mobile device, such as a laptop computer, a mobile telephonic device (e.g., a cellular phone), a PDA, an MP3 player, or a positioning device (e.g., a GPS) may be a mobile wallet. Accordingly, for example, a mobile device may accept payment and other information from any payment card, store and display such information as a virtual card on a GUI of the mobile device, communicate such payment information via a wired and/or a wireless network, complete a settlement process with network entities (e.g., an

issuer or a payment server) on such a network, and provide results (e.g., an electronic receipt) of the completed purchase transaction to a display of the mobile device.

[0042] A mobile device may include a contactless communication device. Accordingly, for example, a mobile device may communicate with any card having contactless communication capability. For example, a card (e.g., a non-powered card) may include a near-field communication device (e.g., an RFID tag) that may communicate with a contactless communication device of a mobile device to form a two-way communication channel between the card and the mobile device. In so doing, for example, a non-powered card may communicate one, two, and/or three tracks of magnetic stripe information to a mobile device before and/or during a purchase transaction conducted by the mobile device.

[0043] A card (e.g., a powered card) may include a near-field communication device (e.g., an RFID) that may communicate with a contactless communication device of a mobile device. A powered card may, for example, include a battery, a processor, memory, and a manual input interface (e.g., one or more buttons) that may allow a user of the powered card to programmably communicate information to a mobile device. For example, a powered payment card may include a feature associated with a button that allows a user to, for example, pay with credit or pay with debit. Accordingly, for example, a powered payment card may communicate such a payment selection within discretionary data fields of one or more tracks of magnetic stripe data.

[0044] A powered card may, for example, include circuitry to simulate touch (e.g., a capacitance change) in order to form a contactless communication channel with a mobile device. Accordingly, for example, a powered card may be pressed against a touch-sensitive display of a mobile device and information may be communicated by the powered card to the mobile device through a series of card-simulated touches that may be detected by the touch-sensitive display of the mobile device and processed by a processor of the mobile device as data communicated by the powered card.

[0045] A powered card may, for example, include a light sensor to form a contactless communication channel with a mobile device. Accordingly, for example, a powered card may be pressed against a display of a mobile device and information may be communicated from the mobile device to the powered card through a series of light pulses generated by the display of the mobile device. A frequency, pulse width, and/or a pulse intensity of light pulses may, for example, be detected by a processor of a powered card as data communicated by a mobile device.

[0046] A powered card may, for example, include a light source (e.g., an LED) to form a contactless communication channel with a mobile device. Accordingly, for example, a powered card may emit varying light pulses from an LED that may be detected by a motion-capture device (e.g., a camera) of a mobile device as data communicated by the powered card. A powered card may, for example, include sound emission capabilities that may be detected by a microphone of a mobile device as data communicated by the powered card through a contactless communication channel. A mobile

device may, for example, include sound emission capabilities that may be detected by a microphone of a powered card as data communicated by the mobile device through a contactless communication channel.

[0047] A mobile device may be used as an authorization terminal to conduct transactions (e.g., purchase transactions) using the mobile device. Purchase transactions may, for example, be completed by a mobile device using payment information stored within a memory of the mobile device. In order to conduct a purchase transaction, a processor of a mobile device may, for example, first require security credentials to authorize a purchase transaction. Security credentials may, for example, be any type of information that may be communicated to a mobile device by a contactless device using a contactless communication channel (e.g., an RFID communication channel).

[0048] Security credentials may, for example, be payment information that may be communicated to a processor of a mobile device by a payment card (e.g., a powered or a non-powered payment card). Accordingly, for example, if payment information communicated to a processor of a mobile device by a physical payment card matches payment information previously stored within a memory of the mobile device, the mobile device may authorize the purchase transaction.

[0049] As per an example, a mobile device may receive payment information (e.g., a payment account number and an expiration date) from a payment card via a contactless communication channel and may store such payment information within a memory of the mobile device for future use. Prior to conducting a requested purchase transaction, a processor of a mobile device

may first require that a physical payment card be used to authorize the purchase transaction. Accordingly, for example, the same physical payment card that was used to originally communicate payment information to a processor of the mobile device may be required to once again communicate payment information in order to authorize the purchase transaction. Upon verification that the newly communicated payment information matches at least a portion of payment information contained within a memory of the mobile device, the mobile device may authorize the payment transaction.

[0050] A powered card may, for example, communicate security credentials that may contain a dynamic security code and other information (e.g., at least a portion of a payment account number or a cardholder's name) . Accordingly, for example, an application executed by a processor of a mobile device may synchronize with a dynamic security code generation algorithm that may be executed by a processor of the powered card. In so doing, for example, a processor of the mobile device may generate a dynamic security code in accordance with the security code generation algorithm and may compare the generated dynamic security code to a security code received from a powered card during authorization of a purchase transaction. If a match exists, for example, the purchase transaction may be authorized by the mobile device .

[0051] A mobile device may, for example, communicate security credentials received from a physical card via a contactless communication channel to a network entity (e.g., an authorization server) . Accordingly, for example, the authorization server may analyze the

received security credentials and may either confirm or deny that the security credentials are authentic. A message may, for example, be communicated from the authorization server to the mobile device to either authorize or deny the purchase transaction.

[0052] A mobile device may, for example, arrange security credentials (e.g., payment information) stored within a memory of the mobile device as one or more virtual payment cards that may be provided on a display of the mobile device. Accordingly, for example, a user of a mobile device may select one or more virtual cards from a displayed list of virtual cards for use during a purchase transaction. In so doing, for example, a user may retrieve a physical payment card from his or her wallet that corresponds to the virtual payment card selected for use and may communicate (e.g., via a contactless communication channel) payment information from the physical payment card to a processor of the mobile device. Upon verification that the communicated payment information matches at least a portion of payment information stored within a memory of the mobile device, a processor of the mobile device may authorize the purchase transaction using the stored payment information.

[0053] A physical payment card may, for example, be used as a master physical payment card to authorize purchase transactions that are to be completed by the mobile device using stored payment information that does not match payment information received from the physical payment card. For example, a master physical payment card may be associated with a particular issuer and a mobile device may store several virtual cards within a memory of the mobile device having the same

issuer. Upon receipt of payment information from the master physical payment card, a processor of a mobile device may authorize purchase transactions using one or more virtual cards stored within a memory of the mobile device that may share the same issuer as the issuer of the master physical payment card.

[0054] Other devices (e.g., RFID enabled keys) may, for example, communicate security credentials via a contactless communication channel to a processor of a mobile device to authorize other transactions (e.g., non-purchase transactions) that may be conducted by the mobile device. Accordingly, for example, a processor of a mobile device may communicate commands to a wireless device (e.g., a user's car) to perform certain functions (e.g., start the engine of the user's car). In so doing, for example, a user may present an ignition key to the mobile device to communicate security credentials (e.g., a key code matched to the user's car) from the ignition key to the mobile device to authorize the requested function. Upon verification that the key code matches the key code of the user's car, for example, a processor of the mobile device may authorize the requested function and may communicate the associated command to the user's car to execute the requested function.

[0055] Any function may, for example, be authorized to be performed by a processor of a mobile device. Accordingly, for example, any decision to perform a function by a mobile device may be authorized by a processor of the mobile device. In so doing, for example, any function (e.g., checking a balance of a banking account or transitioning from paper bank statements to e-statements) that may be performed by a

processor of a mobile device may be authorized by the processor upon verification that security credentials (e.g., a bank account number) communicated to the processor from a contactless communication device (e.g., a bank card associated with the bank account) matches at least a portion of security credentials (e.g., banking information) that may be stored within a memory of the mobile device.

[0056] Any mobile device, such as a laptop computer, a mobile telephonic device (e.g., a cellular phone), a PDA, an MP3 player, or a positioning device (e.g., a GPS) may be an authorization terminal. Accordingly, for example, any mobile device may accept payment information from any physical payment card, store such payment information within a memory of the mobile device, require that the same (or associated) physical payment card communicate payment information to a processor of the mobile device, and complete a purchase transaction with network entities (e.g., an issuer or a payment server) upon verification that the communicated payment information matches at least a portion of payment information stored within a memory of the mobile device .

[0057] A mobile device may include a contactless communication device. Accordingly, for example, a mobile device may communicate with any card having contactless communication capability. For example, a card (e.g., a non-powered card) may include a near-field communication device (e.g., an RFID tag) that may communicate with a contactless communication device of a mobile device to form a two-way communication channel between the card and the mobile device. In so doing, for example, a non-powered card may communicate one,

two, and/or three tracks of magnetic stripe information to a processor of a mobile device before and/or during a purchase transaction conducted by the mobile device.

[0058] A card (e.g., a powered card) may include a near-field communication device (e.g., an RFID) that may communicate with a contactless communication device of a mobile device. A powered card may, for example, include a battery, a processor, memory, and a manual input interface (e.g., one or more buttons) that may allow a user of the powered card to programmably communicate information to a mobile device. For example, a powered payment card may include a feature associated with a button that allows a user to, for example, pay with credit or pay with debit. Accordingly, for example, a powered payment card may communicate such a payment selection within discretionary data fields of one or more tracks of magnetic stripe data.

[0059] A powered card may, for example, include circuitry to simulate touch (e.g., a capacitance change) in order to form a contactless communication channel with a mobile device. Accordingly, for example, a powered card may be pressed against a touch-sensitive display of a mobile device and information may be communicated by the powered card to the mobile device through a series of card-simulated touches that may be detected by the touch-sensitive display of the mobile device and processed by a processor of the mobile device as data communicated by the powered card.

[0060] A powered card may, for example, include a light sensor to form a contactless communication channel with a mobile device. Accordingly, for example, a powered card may be pressed against a

display of a mobile device and information may be communicated from the mobile device to the powered card through a series of light pulses generated by the display of the mobile device. A frequency, pulse width, and/or a pulse intensity of light pulses may, for example, be detected by a processor of a powered card as data communicated by a mobile device.

[0061] A powered card may, for example, include a light source (e.g., an LED) to form a contactless communication channel with a mobile device. Accordingly, for example, a powered card may emit varying light pulses from an LED that may be detected by a motion-capture device (e.g., a camera) of a mobile device as data communicated by the powered card. A powered card may, for example, include sound emission capabilities that may be detected by a microphone of a mobile device as data communicated by the powered card through a contactless communication channel. A mobile device may, for example, include sound emission capabilities that may be detected by a microphone of a powered card as data communicated by the mobile device through a contactless communication channel.

[0062] A card may include a dynamic magnetic communications device, which may take the form of a magnetic encoder or a magnetic emulator. A magnetic encoder, for example, may be utilized to modify information that is located on a magnetic medium, such that a magnetic stripe reader may then be utilized to read the modified magnetic information from the magnetic medium. A magnetic emulator, for example, may be provided to generate electromagnetic fields that directly communicate data to a read-head of a magnetic stripe reader. A magnetic emulator, for example, may

communicate data serially to a read-head of the magnetic stripe reader. A magnetic emulator, for example, may communicate data in parallel to a read-head of the magnetic stripe reader.

[0063] All, or substantially all, of the front surface, as well as the rear surface, of a card may be implemented as a display (e.g., bi-stable, non bi-stable, LCD, or electrochromic display) . Electrodes of a display may be coupled to one or more touch sensors, such that a display may be sensitive to touch (e.g., using a finger or a pointing device) and may be further sensitive to a location of the touch. The display may be sensitive, for example, to objects that come within a proximity of the display without actually touching the display.

[0064] A dynamic magnetic stripe communications device may be implemented on a multiple layer board (e.g., a two-layer flexible printed circuit board) . A coil for each track of information that is to be communicated by the dynamic magnetic stripe communications device may then be provided by including wire segments on each layer and interconnecting the wire segments through layer interconnections to create a coil. For example, a dynamic magnetic stripe communications device may include two coils such that two tracks of information may be communicated to two different read-heads included in a read-head housing of a magnetic stripe reader. A dynamic magnetic communications device may include, for example, three coils such that three tracks of information may be communicated to three different read-heads included in a read-head housing of a magnetic stripe reader.

[0065] Input and/or output devices may be included on a card, for example, to facilitate data exchange with the card. For example, an integrated circuit (IC) may be included on a card and exposed from the surface of the card. Such a chip (e.g., an EMV chip) may communicate information to a chip reader (e.g., an EMV chip reader). A contactless device (e.g., one or more RFID antennas and one or more associated RFID chips) may be included in a card, for example, to exchange information with an RFID device.

[0066] One or more detectors may be provided in a card, for example, to sense the presence of an external object, such as a person or device, which in turn, may trigger the initiation of a communication sequence with the external object. The sensed presence of the external object may then be communicated to a processor of the card, which in turn may direct the exchange of information between a card and the external object. Accordingly, timing aspects of the information exchange between an external object and the various I/O devices provided on a card may also be determined by circuitry (e.g., a processor) provided on a card.

[0067] The sensed presence of the external object or device may include the type of object or device that is detected and, therefore, may then determine the type of communication that is to be used with the detected object or device. For example, a detected object may include a determination that the object is a read-head housing of a magnetic stripe reader. Such an identifying detection, for example, may activate a dynamic magnetic stripe communications device so that information may be communicated to the read-head of the magnetic stripe reader. Information may be

communicated by a dynamic magnetic stripe communications device, for example, by re-writing magnetic information on a magnetic medium that is able to be read by a magnetic stripe reader or electromagnetically communicating data to the magnetic stripe reader.

[0068] As per another example, a detected object may include a determination that the object is an RFID enabled device. Such an identifying detection, for example, may cause RFID data to be communicated by a processor of a card to an RFID chip of a card. The RFID data may be temporarily contained within the RFID chip until the RFID data is communicated to a detected RFID device by an RFID antenna on the card. The RFID data may, for example, be erased from the RFID chip after being communicated to the RFID device.

[0069] A card may, for example, be an assembly of multiple printed circuit boards, electronics, one or more RFID antennas, and one or more associated RFID chips. An RFID antenna may, for example, be fabricated on one printed circuit board and an associated RFID chip may, for example, be attached to a separate printed circuit board. Communications (e.g., RFID data transfer between the RFID chip and the RFID antenna) may, for example, be transferred between separate printed circuit boards via conductive paths established between the separate printed circuit boards. An RFID antenna and an associated RFID chip may, for example, reside on the same printed circuit board so as to reduce a number of conductive traces that may be required between separate printed circuit boards.

[0070] A card assembly may, for example, be laminated such that all printed circuit boards,

electronic circuitry and components are covered in a polymer. For example, an electronics package may be provided between two layers of polymer and a liquid polymer may be introduced between these layers and hardened to form a card. A laminated card assembly may, for example, be devoid of electrical contacts on either surface of the laminated card. A laminated card assembly may, for example, provide electrical contacts (e.g., EMV chip contacts) on one or more surfaces of a laminated card assembly.

[0071] A mobile device, such as a laptop computer, a mobile telephonic device (e.g., a cellular phone), a PDA, an MP3 player, or a positioning device (e.g., a GPS) may include one or more RFID antennas and associated RFID chips. Accordingly, for example, any mobile device may establish an RFID communication channel with any other RFID enabled device (e.g., an RFID enabled card) . A computing device, such as a desktop computer, may be an RFID enabled device. Accordingly, for example, any RFID enabled device (e.g., an RFID enabled card or an RFID enabled mobile device) may establish an RFID communication channel with any RFID enabled computing device.

Brief Description of the Drawings

[0072] The principles and advantages of the present invention can be more clearly understood from the following detailed description considered in conjunction with the following drawings, in which the same reference numerals denote the same structural elements throughout, and in which:

[0073] FIG. 1 is an illustration of a mobile devices constructed in accordance with the principles of the present invention;

[0074] FIG. 2 is an illustration of a network topology constructed in accordance with the principles of the present invention;

[0075] FIG. 3 is an illustration of a mobile payment system constructed in accordance with the principles of the present invention;

[0076] FIG. 4 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0077] FIG. 5 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0078] FIG. 6 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0079] FIG. 7 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0080] FIG. 8 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0081] FIG. 9 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0082] FIG. 10 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0083] FIG. 11 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0084] FIG. 12 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0085] FIG. 13 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0086] FIG. 14 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0087] FIG. 15 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0088] FIG. 16 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0089] FIG. 17 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0090] FIG. 18 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0091] FIG. 19 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0092] FIG. 20 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0093] FIG. 21 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0094] FIG. 22 is an illustration of a mobile funds transfer system constructed in accordance with the principles of the present invention;

[0095] FIG. 23 is an illustration of a mobile payment system constructed in accordance with the principles of the present invention;

[0096] FIG. 24 is an illustration of a mobile payment system constructed in accordance with the principles of the present invention;

[0097] FIG. 25 is an illustration of a mobile payment system constructed in accordance with the principles of the present invention;

[0098] FIG. 26 is a flow chart of processes constructed in accordance with the principles of the present invention;

[0099] FIG. 27 is an illustration of a mobile devices constructed in accordance with the principles of the present invention;

[0100] FIG. 28 is an illustration of a network topology constructed in accordance with the principles of the present invention;

[0101] FIG. 29 is an illustration of a mobile wallet system constructed in accordance with the principles of the present invention;

[0102] FIG. 30 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0103] FIG. 31 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0104] FIG. 32 is an illustration of a mobile wallet system constructed in accordance with the principles of the present invention;

[0105] FIG. 33 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0106] **FIG.** 34 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0107] **FIG.** 35 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0108] **FIG.** 36 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0109] **FIG.** 37 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0110] **FIG.** 38 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0111] **FIG.** 39 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0112] **FIG.** 40 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0113] **FIG.** 41 is an illustration of a mobile wallet system constructed in accordance with the principles of the present invention;

[0114] **FIG.** 42 is an illustration of a mobile wallet system constructed in accordance with the principles of the present invention;

[0115] **FIG.** 43 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0116] **FIG.** 44 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0117] **FIG.** 45 is an illustration of a mobile wallet system constructed in accordance with the principles of the present invention;

[0118] **FIG.** 46 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0119] **FIG.** 47 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0120] **FIG.** 48 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0121] **FIG.** 49 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0122] **FIG.** 50 is an illustration of a mobile application constructed in accordance with the principles of the present invention;

[0123] **FIG.** 51 is a flow chart of processes constructed in accordance with the principles of the present invention;

[0124] **FIG.** 52 is an illustration of mobile devices constructed in accordance with the principles of the present invention;

[0125] **FIG.** 53 is an illustration of a network topology constructed in accordance with the principles of the present invention;

[0126] **FIG.** 54 is an illustration of a mobile authorization system constructed in accordance with the principles of the present invention;

[0127] **FIG.** 55 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0128] **FIG.** 56 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0129] **FIG.** 57 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0130] **FIG.** 58 is an illustration of a mobile authorization system constructed in accordance with the principles of the present invention;

[0131] **FIG.** 59 is an illustration of a mobile authorization system constructed in accordance with the principles of the present invention;

[0132] **FIG.** 60 is an illustration of a display screen constructed in accordance with the principles of the present invention;

[0133] **FIG.** 61 is a flow chart of processes constructed in accordance with the principles of the present invention;

[0134] **FIG.** 62 is an illustration of cards constructed in accordance with the principles of the present invention;

[0135] **FIG.** 63 is an illustration of a network topology constructed in accordance with the principles of the present invention;

[0136] **FIG.** 64 is an illustration of mobile devices constructed in accordance with the principles of the present invention;

[0137] **FIG.** 65 is an illustration of a card constructed in accordance with the principles of the present invention;

[0138] **FIG.** 66 is an illustration of a card constructed in accordance with the principles of the present invention;

[0139] FIG. 67 is an illustration of a card constructed in accordance with the principles of the present invention;

[0140] FIG. 68 is an illustration of a card constructed in accordance with the principles of the present invention;

[0141] FIG. 69 is an illustration of a card constructed in accordance with the principles of the present invention;

[0142] FIG. 70 is an illustration of a card constructed in accordance with the principles of the present invention;

[0143] FIG. 71 is an illustration of a system constructed in accordance with the principles of the present invention;

[0144] FIG. 72 is an illustration of a system constructed in accordance with the principles of the present invention; and

[0145] FIG. 73 is an illustration of process flow charts constructed in accordance with the principles of the present invention.

Detailed Description of the Invention

[0146] FIG. 1 shows mobile device 100. Mobile device 100 may be any mobile device, such as a mobile telephonic device (e.g., cell phone), a PDA, an electronic tablet, an MP3 player, or a locating device (e.g., a GPS device) . Accordingly, mobile device 100 may be operated in a mobile environment while a user of mobile device 100 goes about his or her daily activities (e.g., driving, shopping, walking, dining, and exercising) . In addition, for example, mobile device 100 may perform multiple functions

simultaneously (e.g., a person may carry on a conversation while at the same time browsing and purchasing products on the internet) .

[0147] Mobile device 100 may include audio processing devices (e.g., microphone 108 and speaker 110) . Accordingly, for example, mobile device 100 may receive voice commands from a user via microphone 108 and may process such commands to perform a function. For example, a user may place mobile device 100 into a desired operational mode by speaking a command into microphone 108 that is associated with the desired operational mode. In so doing, for example, mobile device 100 may engage in hands-free operation by receiving voice commands via microphone 108 and performing functions associated with the received voice commands .

[0148] Mobile device 100 may receive data input via microphone 108. For example, a voice-band modem may generate signals in a voice-band frequency range that may be received by microphone 108. A processor of mobile device 100 may interpret the received audible information as data signals and may process the data signals as, for example, data values and/or control data input .

[0149] Mobile device 100 may include camera 102. Camera 102 may capture one or more frames of video data and store the video data within a memory of mobile device 100. Accordingly, for example, a processor of mobile device 100 may receive one or more frames of video information via camera 102 and may process the video information as data values and/or control data input. In so doing, for example, mobile device 100 may receive optical information that is sensed by camera

102 during a series of one or more video capture events that produce one or more frames of video information. The one or more frames of video information may contain one or more data elements (e.g., pixels) having properties (e.g., color, intensity, or contrast) that may be interpreted by a processor of mobile device 100 as data values and/or control data.

[0150] Mobile device 100 may include manual input interface 112. Manual input interface 112 may, for example, include keys and/or buttons that may be sensitive to manual input, such as a touch or an application of pressure. Accordingly, for example, a user of mobile device 100 may enter information into mobile device 100 via manual interface 112 to cause a processor of mobile device 100 to enter a particular mode of operation. Manual interface 112 may, for example, be used for data entry (e.g., dialing a phone number or entering data as may be requested by mobile device 100) during a particular mode of operation of mobile device 100.

[0151] Mobile device 100 may include display 104. Display 104 may provide visible information that may be utilized by a user during interaction with mobile device 100. A portion or all of display 104 may be touch sensitive such that objects making contact with display 104 or objects coming within a proximity of display 104 may be detected by a processor of mobile device 100. Accordingly, for example, mobile payment graphical user interface 106 may be provided by display 104 so that graphical information may be displayed to solicit and/or receive data entry from a user. In so doing, for example, touch-sensitive graphical user interface devices such as radio buttons, textual input

boxes, virtual buttons, pull-down menus, and navigational tools may be used for data entry to initiate, change, and/or support functions performed by mobile device 100.

[0152] FIG. 1 shows architecture 150. User interface 152 may, for example, be included within architecture 150 to allow user interaction with architecture 150. For example, a dedicated key pad or keyboard may be included within user interface 152 to allow alphanumeric data entry into architecture 150.

[0153] Architecture 150 may include one or more displays 154. Display 154 may, for example, be touch-sensitive. Accordingly, for example, display 154 may be utilized for alphanumeric data entry using virtual buttons that may be rendered onto touch-sensitive portions of display 154. In so doing, for example, touching virtual buttons that may be associated with alphabetic and numeric characters of display 154 may be detected by processor 158 as alphanumeric data entry.

[0154] Alphanumeric entry boxes may, for example, be rendered onto display 154. A user may, for example, activate a cursor within such an alphanumeric entry box by touching an area within the alphanumeric entry box. A user may utilize user interface 152 and/or a virtual keypad rendered onto display 154 to select alphanumeric characters to be placed within the alphanumeric entry box in accordance with a character position identified by an activated cursor within the alphanumeric entry box. In so doing, for example, processor 158 may receive alphanumeric characters as typed into a alphanumeric entry box of display 154 and may use such alphanumeric characters as data input.

[0155] Display 154 may, for example, provide data output from architecture 150. For example, display 154 may communicate data using a series of light pulses. Accordingly, for example, processor 158 may cause one or more portions of display 154 to produce light pulses having varying characteristics (e.g., duration, intensity, and frequency) that may communicate information via such light pulses. In so doing, for example, a device that may be sensitive to light pulses may receive information communicated by display 154 via light pulses having varying characteristics. Display 154 may, for example, communicate data using visual information that may be substantially static (e.g., a barcode) .

[0156] Architecture 150 may include one or more transceivers 156. Transceiver 156 may communicate information to and/or may receive information from one or more devices. Transceiver 156 may, for example, communicate via a wireless interface with one or more cellular stations of a mobile network. Accordingly, for example, transceiver 156 may allow a mobile device (e.g., mobile device 100 of FIG. 1) to establish a communications channel with an associated cellular station. In so doing, for example, a mobile device (e.g., mobile device 100 of FIG. 1) may exchange information (e.g., voice, text, data, or multimedia) with one or more terrestrial networks (e.g., the internet or a payment network) via an associated cellular station. As per another example, transceiver 156 may exchange information with one or more other mobile devices via one or more associated cellular stations .

[0157] Transceiver 156 may, for example, communicate via a wireless interface with one or more mobile devices directly. Accordingly, for example, transceiver 156 may communicate with another mobile device without first accessing a mobile network via a cellular station of the mobile network. As per another example, transceiver 156 may, for example, communicate via a wireless interface with one or more network devices (e.g., a wireless access point) directly. Accordingly, for example, a mobile device (e.g., mobile device 100 of FIG. 1) may directly connect to a wired and/or a wireless network via any one or more wireless standards (e.g., Bluetooth or Wi-Fi) to exchange information with other devices that may be connected to the wired and/or wireless network. In so doing, for example, a wired and/or wireless network may be accessed by a mobile device without first accessing a mobile network via a cellular station of a mobile network .

[0158] Architecture 150 may include contactless communication device 162, which may communicate via any one or more contactless communication methodologies, such as for example, near field communications (e.g., RFID) , Bluetooth, touch simulation, light pulsing (e.g., via an LED), and electromagnetic data communication (e.g., via a dynamic magnetic stripe communications device) . Accordingly, for example, contactless communication device 162 may be compatible with any contactless device, such as for example, an RFID enabled payment card and a contactless reader (e.g., a magnetic stripe reader or an NFC reader) .

[0159] A non-powered card may, for example, communicate with contactless communications device 162.

Contactless communication device 162 may, for example, establish a carrier field (e.g., an RF field) that may be modulated by a device (e.g., an RFID tag) of a non-powered payment card. In so doing, for example, an RFID tag of a non-powered payment card may derive operational power from an RF field provided by contactless communications device 162 and may communicate information (e.g., one, two, and/or three tracks of magnetic stripe data) to contactless communication device 162 by modulating the RF field produced by contactless communications device 162.

[0160] A powered card may, for example, communicate with contactless communication device 162. A powered card may, for example, include a processor, a battery, a memory, wireless communications devices (e.g., a dynamic magnetic stripe communications device or RFID) and other electronics (e.g., buttons) that may allow a user to interact with the powered card to perform one or more functions. Accordingly, for example, a powered card may be used to communicate specific information to contactless communication device 162 by selective interaction with the buttons of the powered card. In so doing, for example, a powered card may be used to interactively communicate magnetic stripe information (e.g., one, two, and/or three tracks of magnetic stripe data) to contactless communication device 162 by sending a signal to a processor of a powered card (e.g., by pressing a button on the powered card) to initiate such communications .

[0161] Contactless communication device 162 may receive variable data sets from a powered card based upon, for example, manual input provided to a powered card. For example, a button associated with an on-line

purchase may be pressed on the powered card that causes a variable data set (e.g., account number and expiration date) to be communicated from the powered card to contactless communication device 162.

[0162] Discretionary data may, for example, be communicated by a powered card based upon which button was pressed on the powered card. In so doing, for example, a security code (e.g., "111") may be communicated within a discretionary data field when a button associated with a particular feature (e.g., pay with credit) is pressed on the powered card. As per another example, a different security code (e.g., "222") may be communicated within a discretionary data field when a button associated with a different feature (e.g., pay with debit) is pressed on the powered card. Accordingly, for example, processor 158 may identify what type of device may be in communication with contactless communication device 162 by analyzing the data communicated to contactless communication device 162.

[0163] Architecture 150 may include memory 160 and/or processor 158 may include internal memory. Accordingly, for example, application code may be stored within memory 160 and/or processor 158 and executed by processor 158 in support of functions performed by architecture 150. For example, an application (e.g., a graphical user interface) may be executed by architecture 150 and displayed onto display 154, which may be used to interact with a user of a mobile device (e.g., mobile device 100 of FIG. 1). Persons skilled in the art will appreciate that executable application code may be communicated to architecture 150 via any one or more interfaces of

architecture 150 (e.g., user interface 152, display 154, transceiver 156, and/or contactless communication device 162).

[0164] Application data (e.g., payment card data) may be stored within memory 160 and accessed by processor 158 during operation. For example, payment card data may be stored within memory 160 and recalled by processor 158 during a financial transaction being conducted by a mobile device (e.g., mobile device 100 of FIG. 1). Once recalled, processor 158 may communicate the payment card data via transceiver 156 and/or contactless communication device 162 to complete a financial transaction.

[0165] FIG. 2 shows network topology 200 that may include, for example, mobile device 202 (e.g., a mobile telephonic device, a PDA, an electronic tablet, a laptop, a GPS unit, or an MP3 player). Mobile device 202 may, for example, include a contactless interface that may initiate, sustain, and/or terminate communication channel 226 between contactless device 204 and mobile device 202. Contactless device 204 and mobile device 202 may communicate via channel 226 using any number of contactless mediums, which may include for example, visible, audible, capacitive, electromagnetic, magnetic, and/or RF mediums.

[0166] Mobile device 202 may provide one or more transceivers that may communicate with one or more wired networks (e.g., IP network 212 and/or payment network 214) and/or one or more wireless networks (e.g., mobile network 210). Mobile device 202 may, for example, communicate with a cellular station over a wireless radio interface (e.g., a GSM air interface) that may be used by mobile device 202 to communicate

information (e.g., voice and data) to cellular network access infrastructure 206 (e.g., one or more GSM base transceiver stations, base station controllers, and mobile switching centers). Persons skilled in the art will appreciate that cellular network access infrastructure 206 may utilize any multiple access architecture, such as for example, a code-division multiple access architecture and/or a time-division multiple access architecture.

[0167] Mobile device 202 may, for example, communicate with wireless access point 208 over a wireless interface (e.g., a Bluetooth interface or a Wi-Fi interface). Accordingly, for example, mobile device 202 may access one or more wired networks (e.g., IP network 212 and/or payment network 214) and/or one or more wireless networks (e.g., mobile network 210) without the need to first gain access to cellular network access infrastructure 206.

[0168] Contactless device 204 may, for example, be a powered card or a non-powered card (e.g., a powered payment card or a non-powered payment card). Accordingly, for example, payment information (e.g., a payment account number and a card expiration date) may be communicated from contactless device 204 to mobile device 202 in support of a financial transaction being conducted by mobile device 202. In so doing, for example, items for purchase on IP network 212 (e.g., the internet) may be accessed by a browser of mobile device 202 via an access point (e.g., wireless access point 208 or cellular network access infrastructure 206). Mobile device 202 may, for example, complete a purchase transaction by first obtaining required payment information from contactless device 204 and

then communicating such payment information to network entities (e.g., payment server 216 and/or issuer 220).

[0169] Payment server 216 may, for example, contact issuer 220 via a network (e.g., payment network 214) with payment information received from mobile device 202 for authorization of a purchase. Once authorized, payment transaction information may be recorded onto a receipt that may be delivered to mobile device 202 via any one or more delivery options (e.g., via a short messaging service of mobile network 210 or an email delivery service of IP network 212).

[0170] A payment receipt may, for example, be provided to mobile device 202 as a proof-of-purchase object (e.g., a barcode) that may be provided to a display of mobile device 202 and read by other computing equipment (e.g., a barcode scanner) for proof-of-purchase confirmation.

[0171] A mobile device (e.g., mobile device 224) may, for example, include a contactless communication device (e.g., an RFID) that may initiate, sustain, and/or terminate contactless communication channel 228 with merchant terminal 218. Accordingly, for example, mobile device 224 may communicate payment information to merchant terminal 218 to complete a financial transaction. In so doing, for example, mobile device 224 may first receive payment information via contactless communication channel 230 from contactless device 222 (e.g., a non-powered card), temporarily store the received payment information within a memory of mobile device 224, and forward the payment information onto merchant terminal 218 to complete a financial transaction. As per another example, mobile device 224 may provide previously stored financial

information associated with one or more payment cards (e.g., one or more non-powered payment cards). Accordingly, for example, payment information may be recalled from a memory of mobile device 224 and communicated to merchant terminal 218 via contactless communication channel 228 to complete a financial transaction using merchant terminal 218.

[0172] FIG. 3 shows system 300, which may include mobile device 302 and payment card 304. Mobile device 302 may, for example, be a laptop computer, a PDA, a mobile telephonic device (e.g., a smartphone), an MP3 player, a GPS, or any other mobile device. Display 308 may be a touch-sensitive display (e.g., sensitive to a change in capacitance). Payment card 304 may, for example, be a powered payment card or a non-powered payment card.

[0173] Mobile device 302 and payment card 304 may each include a contactless communication device (e.g., RFID) that may communicate via a contactless communication channel that may be formed between mobile device 302 and payment card 304 after coming into proximity to one another. Payment card 304 may, for example, be tapped onto display 308 of mobile device 302 to establish a proximity relationship that forms a communication channel between payment card 304 and mobile device 302. As per another example, payment card 304 may be brought within a proximity distance (e.g., up to two inches) of mobile device 302 to establish a contactless communication channel between mobile device 302 and payment card 304.

[0174] A processor of mobile device 302 may, for example, execute application code that may generate a graphical user interface (GUI) onto display 308 of

mobile device 302. Message 306 of a GUI may invite a user of mobile device 302 to begin a mobile payment by tapping a payment card against display 308. As per another example, by tapping payment card 304 against mobile device 302, mobile device 302 may autonomously determine that a mobile payment is desired and then generate a mobile payment GUI onto display 302.

[0175] Mobile device 302 may, for example, autonomously determine a type of card that may be tapped against it. For example, a processor of mobile device 302 may receive payment card data that may be indicative of a non-powered payment card (e.g., payment card data received from a non-powered card may not provide a security code associated with the card). As per another example, a processor of mobile device 302 may receive data that may be indicative of a powered card (e.g., payment card data received may contain a dynamically generated security code). Payment card data received from a powered card may, for example, include a dynamic security code that may change depending upon a type of transaction being conducted (e.g., debit or credit transaction).

[0176] As per another example, payment card 304 may be a powered payment card that may include electronics to simulate a human touch (e.g., payment card 304 may generate a change in capacitance that may be sensed by display 308). Through a series of simulated touches, payment card 304 may communicate a series of data bits to display 308, which may then be processed by a processor of mobile device 302. In so doing, for example, a contactless communication channel may be established where data is transferred from payment card

304 to mobile device 302 via a series of simulated touches .

[0177] Payment card 304 may, for example, include a light sensor. Accordingly, for example, payment card 304 may be sensitive to light pulses generated within a region of display 308. The light sensor of payment card 304 may receive a series of light pulses, which may be construed by a processor of payment card 304 as data generated by mobile device 302. In so doing, for example, payment card 304 may receive an optical data stream represented by a series of light pulses generated by display 308. As such, a two-way communication channel may be formed, where simulated touches may generate a data stream from payment card 304 to mobile device 302 and light pulses may generate a data stream from mobile device 302 to payment card 304 .

[0178] FIG. 4 shows GUI 400, that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 400 may, for example, generate results of a card detection operation that may be performed by a processor of a mobile device. For example, card information may be exchanged between a card and a mobile device via a contactless communication channel that may identify a type of card that is being presented to the mobile device. Any type of card may be detected by a processor of a mobile device, such as for example, an airline card, a travel card, a bank card, a healthcare card, an identification card, and a loyalty rewards card. A card number communicated to a mobile device may, for example, be indicative of a card type (e.g., bank card 404) that is presented to a mobile device. Accordingly, for

example, a processor of a mobile device may identify a card type presented to the mobile device by analyzing a card number received from the card and may indicate the identified card type via GUI 400 (e.g., the identified card type may be generated onto GUI 400 having a different graphical presentation than the other card types listed) .

[0179] A GUI may, for example, provide navigation aids. A GUI may, for example, provide navigation aids that may be touch sensitive. For example, GUI 400 may include navigation aids 406 and 408 to enable a user to revert to a previous GUI or advance to a subsequent GUI. Accordingly, for example, a user may touch an area on a display of a mobile device that displays a navigation aid to activate the touched navigation aid. In so doing, for example, a user may touch navigation aid 406 to revert to the previous GUI or a user may touch navigation aid 408 to advance to the next GUI.

[0180] FIG. 5 shows GUI 500, that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 500 may, for example, generate results of a payment card detection operation that may be performed by a processor of a mobile device. A non-powered payment card may, for example, communicate a single payment card number that may be associated with a number of payment options (e.g., debit, credit, or points). Accordingly, for example, GUI 500 may be generated to allow a user an opportunity to select which payment option (e.g., credit option 502) from a number of payment options is to be used to settle a payment transaction. Once identified, a payment option selection (e.g., credit option 502) may be communicated by a mobile device to

an issuer of the payment card to settle the transaction using the selected payment option.

[0181] As per another example, a powered payment card may include a user interface to allow a user to select from a number of payment options. A button on a powered payment card may, for example, be associated with one payment method (e.g., pay with credit) and another button may, for example, be associated with another payment method (e.g., pay with points) . Data associated with the selected payment method may be communicated from a powered payment card to a mobile device. Accordingly, for example, a processor of a mobile device may detect the payment method communicated by a powered payment card (e.g., as communicated within a discretionary data field) and may autonomously generate a graphical representation of the payment method selected (e.g., GUI 500 may autonomously generate a graphical representation that credit method 502 was selected) .

[0182] FIG. 6 shows GUI 600 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 600 may, for example, include a bank card validation screen as may be generated by a processor of a mobile device. A mobile device may, for example, challenge a user of the mobile device to enter a PIN that may be associated with a payment card (e.g., VISA credit 602) that was previously presented to the mobile device for payment. GUI 600 may, for example, generate virtual pin pad 606 that may include touch-sensitive buttons having alphanumeric indicia associated with each button. A user may touch one or more buttons of pin pad 606 that may correspond to respective characters of a PIN and an

indication of the user's selection may appear within area 604. Characters displayed within area 604 may, for example, be hidden for security purposes.

[0183] Activation of virtual button 608 may, for example, cause a processor of a mobile device to compare a PIN entered by a user of the mobile device to a PIN that may be associated with the payment card presented to the mobile device for payment. The PIN may, for example, be stored within protected memory of the mobile device, so that a processor of the mobile device may locally determine the validity of the PIN entered. Alternately, for example, the mobile device may communicate the PIN to the issuing bank for a remote validation of the PIN entered. Persons skilled in the art will appreciate that a user interface (e.g., a keypad or keyboard) of a mobile device may be used instead of virtual pin pad 606 to enter the one or more characters of a PIN.

[0184] FIG. 7 shows GUI 700 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 700 may, for example, include a bank card validation screen as may be generated by a processor of a mobile device. A mobile device may, for example, challenge a user of the mobile device to enter a security code that may be associated with a payment card (e.g., VISA credit 702) that was previously presented to the mobile device for payment. Such a security code (e.g., a CVV code) may, for example, be printed on the back of the payment card.

[0185] GUI 700 may, for example, generate virtual pin pad 706 that may include touch-sensitive buttons having alphanumeric indicia associated with each

button. A user may touch one or more buttons of pin pad 706 that may correspond to respective characters of a security code and an indication of the user's selection may appear within area 704. Characters displayed within area 704 may, for example, be hidden for security purposes.

[0186] Activation of virtual button 708 may, for example, cause a processor of a mobile device to compare a security code entered by a user of the mobile device to a security code that may be associated with the payment card presented to the mobile device for payment. The security code may, for example, be stored within protected memory of the mobile device, so that a processor of the mobile device may locally determine the validity of the security code entered. Alternately, for example, the mobile device may communicate the security code to the issuing bank for a remote validation of the security code entered. Persons skilled in the art will appreciate that a user interface (e.g., a keypad or keyboard) of a mobile device may be used instead of virtual pin pad 706 to enter the one or more characters of a security code.

[0187] FIG. 8 shows GUI 800 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 800 may, for example, include a bank card validation screen as may be generated by a processor of a mobile device. A mobile device may, for example, maintain memory of one or more payment cards previously presented to the mobile device for payment. A mobile device may, for example, allow a user to store payment information within the mobile device that may be associated with a payment card to be used at some point in the future.

[0188] Accordingly, for example, a user may recall payment information previously stored in memory of a mobile device in order to complete a purchase transaction using the mobile device. In order to validate that a user of a mobile device is actually the owner of payment information recalled from memory of the mobile device, GUI 800 may challenge the user to present the physical payment card whose associated payment information was recalled from memory. In so doing, for example, GUI 800 may prevent a fraudulent user of a mobile device from authorizing a purchase using payment information stored in memory of the mobile device that is not owned by the fraudulent user.

[0189] A user may, for example, be required to present a physical payment card to GUI 800 by placing (or tapping) the physical payment card within a proximity of a display of a mobile device that is generating GUI 800. In so doing, for example, a contactless communication channel (e.g., an RFID communication channel) may be established between the physical payment card and the mobile device, such that payment information may be communicated from the physical payment card to the mobile device. Upon verification that the communicated payment information matches payment information stored in memory of the mobile device, the payment information may be validated and authorized to be communicated from the mobile device to a network entity (e.g., a payment server or the issuer of the payment card) for settlement of the purchase transaction.

[0190] FIG. 9 shows GUI 900 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 900 may, for

example, include validation area 902 as generated by a processor of a mobile device. Validation area 902 may, for example, include one or more data exchange areas (e.g., data exchange areas 904 and 906). Icon 904 may, for example, be generated by GUI 900 within an area of a display of a mobile device that may be sensitive to touch (e.g., an area that may be sensitive to a capacitance change) . Area 906 may, for example, be generated by GUI 900 within an area of a display of a mobile device that may generate pulses of light.

[0191] A powered payment card may be validated for use by a mobile device through an exchange data with the powered payment card via data exchange areas 904 and 906. For example, a powered payment card may be pressed against validation area 902 so that a touch simulation device of the powered payment card aligns with data exchange area 904 and a light sensing device aligns with data exchange area 906. Accordingly, for example, the powered payment card may communicate information to a processor of a mobile device by simulating a series of touches in data exchange area 904 and data may be communicated to the powered payment card by a processor of the mobile device by generating a series of light pulses in data exchange area 906. In so doing, for example, a mobile device and a powered payment card may exchange validation information so that payment card information stored within the mobile device may be validated for use.

[0192] A mobile device may, for example, include a motion capture device (e.g., a camera) and a powered payment card may, for example, include a light source (e.g., an LED) . Accordingly, for example, information (e.g., validation information) may be exchanged between

a mobile device and a powered payment card such that information communicated by the powered payment card may be communicated as a series of light pulses while the camera of the mobile device captures the series of light pulses. A processor of the mobile device may construe the series of light pulses as information that may be used, for example, as validation information.

[0193] FIG. 10 shows GUI 1000 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 1000 may be generated, for example, after payment card information has been communicated by either of a non-powered payment card or a powered payment card to a mobile device. A user of a mobile device may, for example, elect whether to store such payment card information within a memory location of the mobile device. If a user chooses not to store payment information received from a payment card (e.g., as elected by selection of radio button 1004), a mobile device may delete all payment information previously received from a payment card after the payment information is used to complete a purchase transaction. Accordingly, a user wishing to use the same payment card to complete a payment transaction in the future is required to present the payment card to the mobile device so that the payment card may communicate payment card information to the mobile device in order to complete the payment transaction. If a user chooses to store payment information received from a payment card (e.g., as elected by selection of radio button 1002), a mobile device may store a portion of, or all, payment information previously received from a payment card in accordance with a user's preference.

[0194] FIG. 11 shows GUI 1100 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 1100 may, for example, offer storage options to a user of a mobile device that has elected to store a portion of, or all, payment card information previously communicated to the mobile device by a non-powered card or a powered card. A data storage option may, for example, be selected by a user of a mobile device (e.g., by touching a portion of text box 1102) that stores only a portion (e.g., an expiration date and payment card account number) of the payment card information into a memory of the mobile device. Accordingly, for example, a payment card may communicate one, two, and/or three tracks of magnetic stripe data to a mobile device, but the only payment information stored within a memory of the mobile device upon selection of text box 1102 is the expiration date and the payment card account number. All remaining information that may have been communicated by the payment card to the mobile device may be deleted by the mobile device .

[0195] Selection of text box 1104 may, for example, cause all payment information communicated by a payment card to a mobile device to be stored within a memory of the mobile device. Accordingly, for example, a mobile device may use a portion or all of the payment information stored within its memory to complete a purchase transaction. However, payment card validation information (e.g., a PIN or security code) may still be required to be entered by a user of the mobile device before the mobile device may complete a purchase transaction with the stored payment information.

[0196] Selection of box 1106 may, for example, cause all payment information communicated by a payment card to a mobile device to be stored within a memory of the mobile device. All validation information (e.g., a PIN or security code) that may be entered by a user of the mobile device to validate payment information received from a payment card may also be stored within a memory of the mobile device. Accordingly, for example, a mobile device may use a portion or all of the payment information, including validation information, stored within its memory to complete a purchase transaction.

[0197] Selection of box 1108 may, for example, cause all payment information, including discretionary data fields, communicated by a payment card to a mobile device to be stored within a memory of the mobile device. A powered payment card may, for example, allow a user of the powered payment card to select one or more options that may be associated with the powered payment card. A powered payment card may, for example, communicate indicia associated with the one or more selected options within discretionary data fields of magnetic stripe data that may be communicated to a mobile device .

[0198] For example, a user of a powered payment card may elect to pay for a purchase using rewards points by pressing a button on the powered payment card that is associated with a rewards points payment option. Accordingly, for example, a powered payment card may insert a rewards points payment code within a discretionary data field of a first, a second and/or a third track of magnetic stripe data and may communicate all track data, including the discretionary data field, to a mobile device. In so doing, for example, a

processor of a mobile device may detect such a payment code within a discretionary data field and may store payment information within a memory of the mobile device that is indicative of the rewards points payment code contained within the discretionary data field.

[0199] FIG. 12 shows GUI 1200 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 1200 may, for example, offer a split-payment option to a user of a mobile device, such that the user may elect to split payment for a selected purchase between two or more payment accounts. The mobile device may, for example, communicate payment information for each of the selected split-payment accounts to respective network entities (e.g., issuer and payment servers) of the selected split-payment accounts in order to settle the amounts owing on each of the selected split-payment accounts .

[0200] A user may, for example, select option 1202 (e.g., by tapping a payment card against a display of a mobile device or by presenting a payment card within proximity to the mobile device) . In so doing, for example, a contactless communication channel (e.g., an RFID communication channel) may be established between the payment card and the mobile device so that payment information associated with the payment card may be communicated by the payment card to the mobile device and used as a split-payment account for a selected purchase .

[0201] An alternate contactless communication channel may be established, for example, by pressing a payment card against portion 1208. Accordingly, for example, a payment card may communicate payment

information associated with the payment card to a processor of a mobile device by simulating a series of touches at a location within portion 1208 (e.g., at icon 1210) and the processor of the mobile device may communicate information to the payment card by generating a series of light pulses at a location within portion 1208 (e.g., at location 1212) . In so doing, for example, payment information associated with the payment card may be received by a processor of a mobile device and used as a split-payment account to partially cover the purchase price of a selected purchase .

[0202] Other contactless communication channels may be established. For example, a processor of a payment card may communicate payment information to a mobile device by generating a series of light pulses (e.g., via an LED of the payment card) , which may be captured by a camera of the mobile device and construed by a processor of the mobile device as payment information. As per another example, a payment card may communicate payment information using audible sounds that may be received by a microphone of a mobile device and construed by a processor of the mobile device as payment information.

[0203] A payment account may, for example, be selected from a memory of the mobile device (e.g., by selecting radio button 1204) . Associated payment information may, for example, be selectively retrieved from a memory of the mobile device and used by the mobile device as a split-payment account in partial payment for a selected purchase. Alternately, for example, a split-payment option may be declined by a

user of a mobile device (e.g., by selecting radio button 1206).

[0204] FIG. 13 shows GUI 1300 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 1300 may, for example, provide a summary of split-payment methods that may have been selected by a user of a mobile device. Portion 1302, for example, may display an amount owing for a particular selected purchase. Portions 1304-1308 may, for example, include an alphanumeric entry box to allow a user of a mobile device to input payment amounts (e.g., currency or points) that he or she wishes to apply towards a total amount owing as may be displayed in portion 1302. Portions 1304-1308 may, for example, include those payment accounts that a user of a mobile device previously selected as split-payment accounts.

[0205] Accordingly, for example, a user may elect to charge $10 against a VISA credit account, $35 against a M/C debit account, and 500 rewards points earned by the VISA credit account towards full payment of a $50 amount owing for a particular selected purchase. In so doing, for example, a mobile device may communicate with selected network entities (e.g., issuer and payment servers) to provide transaction information associated with each split-payment account selected, so that each amount owing may be settled.

[0206] Portions 1310-1314 may, for example, include alphanumeric entry boxes to allow a user of a mobile device to make comments on each account selected as a split-payment account. Accordingly, for example, a mobile device may communicate notes that may be entered by a user within portions 1310-1314 to, for example, a

payment server. In so doing, for example, receipts and/or account statements that may be generated by a network entity (e.g., an issuer or a payment server) may include such notes so that a user of a mobile device, upon receipt of such receipts and/or account statements, may be reminded of his or her thought process when such a split-payment was transacted.

[0207] FIG. 14 shows GUI 1400 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 1400 may, for example, offer checkout options to a user of a mobile device to allow a level of integration between the user and one or more issuers of associated payment accounts used by the mobile device in settlement of a selected purchase.

[0208] For example, a user may utilize billing tag list 1402 to categorize a selected purchase into one of many purchase categories. A user's physical presence may, for example, be at a fast-food establishment where the user may select a food purchase from the fast-food establishment's website using a browser of the user's mobile device. Payment information used to settle a transaction associated with the selected food purchase may be collected and/or generated by the mobile device and forwarded onto a payment server and/or an associated issuer for settlement. In addition, the mobile device may forward a billing tag selected from billing tag list 1402 to the associated issuer, so that the associated issuer may label the selected transaction on a billing statement using the selected billing tag. In so doing, for example, a user may customize an accounting of the issuer's billing statement by using a mobile device to communicate

payment information and billing tags associated with selected purchases to track expenditures within the various purchase categories of billing tag list 1402.

[0209] A user of a mobile device may select receipt delivery options for each purchase that may be transacted using a mobile device. For example, a receipt delivery list may be generated by a processor of a mobile device so that a user of the mobile device may select a receipt delivery option. Accordingly, for example, the selected receipt delivery option along with payment information may be communicated by a mobile device to a payment server and the payment server (or other entity) may direct a delivery of the receipt based upon the receipt delivery option received .

[0210] A user may, for example, request delivery of a purchase receipt via text messaging (e.g., by selecting receipt delivery option 1406) . In so doing, for example, a mobile device may complete a purchase transaction with an entity of a payment network (e.g., a payment server) and may further request that the payment server deliver a receipt to the mobile device in a text message format. Accordingly, for example, in addition to providing payment information to the payment server, a mobile device may also provide a text message address (e.g., an SMS text message address) to the payment server. In so doing, for example, the mobile device may receive a receipt of the completed purchase transaction from the payment server via a text message at the text message address provided by the mobile device .

[0211] As per another example, a multimedia message (e.g., an MMS message containing rich content) may be

received by a mobile device from a payment server in the form of, for example, a graphical image (e.g., barcode), such that the barcode may be used as a proof-of-purchase (e.g., proof-of-purchase of an airline ticket and an associated barcode that gains access by the user of the mobile device to a particular seating assignment on the airplane.)

[0212] A receipt (e.g., a receipt received via multimedia messaging) may, for example, provide rewards to a user of the mobile device for completing payment transactions via a mobile device. For example, a mobile device may communicate indicia to a payment server that identifies a payment transaction as a mobile payment transaction. The communicated mobile payment indicia may, for example, trigger a payment server to not only provide a receipt for the purchase transaction to the mobile device, but also to provide a multimedia game that may be executed by the mobile device. As per an example, an animated trivia question may be communicated to a mobile device via an MMS message upon completion of a mobile payment transaction. Upon successfully answering the animated trivia question, a user of the mobile device may receive another MMS message that contains a coupon for free merchandise from the merchant whose goods were just purchased. As per another example, a receipt received from a payment server may itself contain coupons for discounted or free merchandise without requiring that a user of the mobile device perform any further actions beyond completing a mobile payment purchase with a mobile device.

[0213] A user may, for example, request delivery of a purchase receipt via email (e.g., by selecting

receipt delivery option 1408) . In so doing, for example, an email address associated with the user may be provided by the mobile device to a payment server in addition to any required payment information that may be required to complete a purchase transaction. Accordingly, for example, a payment server may address a receipt to an email address received from a mobile device during a mobile payment transaction.

[0214] A user may, for example, request delivery of a purchase receipt (e.g., by selecting receipt delivery option 1410) via a format that may be compatible with an accounting software package (e.g., QuickBooks) . For example, a mobile device may allow a user to categorize a particular purchase within a particular expense account (e.g., an office supply expense account) during a purchase transaction. Once the purchase transaction is completed, an electronic receipt may be communicated to the mobile device that may be tagged with the categorized expense account (e.g., the accounting software package may have its own address that receipts may be delivered to) . In so doing, for example, an accounting software package that may be executing on the mobile device may autonomously access the electronic receipt from its own address and may autonomously enter the expense in the correct category so that all purchases made by the mobile device may be correctly accounted for within the accounting software package .

[0215] A user may, for example, request delivery of a purchase receipt (e.g., by selecting receipt delivery option 1412) via a format that may be compatible with the bank that issued the selected payment account. Accordingly, for example, a payment server may forward

a receipt of the purchase transaction to the issuing bank and the issuing bank may format the receipt for delivery with the user's month-end account statement.

[0216] A user may, for example, enter comments about a purchase transaction that may be included within a receipt. For example, a user may enter comments 1404 that may remind the user to include the receipt within his or her tax records because the purchase may be deemed as tax deductible. Accordingly, for example, comments 1404 may accompany payment information communicated by a mobile device to a payment server. In so doing, for example, a payment server may add comments 1404 to a receipt generated by the payment server and may forward the receipt with the added comments to the user of the mobile device as dictated by the receipt delivery options requested by the user of the mobile device.

[0217] FIG. 15 shows GUI 1500 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 1500 may, for example, offer a check-out option to a user of a mobile device, such that the user may elect to apply a rewards card to a selected purchase in order for the rewards card to accrue points for the purchase. The mobile device may, for example, submit rewards card information and transaction information to respective issuers of the rewards account so that the respective issuers may credit the rewards account accordingly.

[0218] A user may, for example, select option 1502 (e.g., by tapping a rewards card against a display of a mobile device or by presenting a rewards card within proximity to the mobile device) . In so doing, for example, a contactless communication channel (e.g., an

RFID communication channel) may be established between the rewards card and the mobile device so that information associated with the rewards card may be communicated by the rewards card to the mobile device.

[0219] An alternate contactless communication channel may be established, for example, by pressing a rewards card against portion 1508. Accordingly, for example, a rewards card may communicate information associated with the rewards card to a processor of a mobile device by simulating a series of touches within portion 1508 (e.g., at icon 1510) and the processor of the mobile device may communicate information to the rewards card by generating a series of light pulses within portion 1508 (e.g., at location 1512) . In so doing, for example, rewards information associated with the rewards card may be received by a mobile device and communicated to an issuer of the rewards card so that the rewards account may be updated with the purchase transaction information.

[0220] Other contactless communication channels may be established. For example, a processor of a rewards card may communicate rewards information to a mobile device by generating a series of light pulses (e.g., via an LED of the rewards card) , which may be captured by a camera of the mobile device and construed by a processor of the mobile device as rewards information. As per another example, a payment card may communicate payment information using audible sounds that may be received by a microphone of a mobile device and construed by a processor of the mobile device as payment information.

[0221] A rewards account may, for example, be selected from a memory of the mobile device (e.g., by

selecting radio button 1504) . Associated rewards information may, for example, be selectively retrieved from a memory of the mobile device and communicated by the mobile device to an issuer of the rewards account so that the rewards account may be credited with the selected purchase.

[0222] A user of a mobile device may, for example, place an order for a rewards card by selecting radio button 1506. Accordingly, for example, a mobile device may communicate payment information to a payment server to complete a purchase transaction and may also communicate a request that a rewards account be created. A payment server may, for example, forward the rewards account creation request to an issuer of a rewards account along with details of the purchase transaction, so that the issuer may first create the rewards account and may then credit the account according to the purchase transaction. Accordingly, for example, an electronic version of a newly created rewards card (e.g., a graphical representation of a newly created rewards card) may, for example, be communicated to a mobile device which may, for example, include a barcode representation of the rewards account information. In addition, rewards card information may, for example, be added to a memory of a mobile device for future access.

[0223] FIG. 16 shows GUI 1600 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 1600 may, for example, challenge a user of a mobile device to enter an access code that may be required to authenticate a purchase transaction. GUI 1600 may, for example, include virtual keyboard 1604 to allow a user of a

mobile device to enter such an access code. Alternately, for example, a manual input interface of a mobile device (e.g., a keyboard or a keypad) may be used to enter such an access code.

[0224] As a user of a mobile device enters each character of an access code, portion 1602 may reflect such entry. Such entries may, for example, be reflected within portion 1602 as protected characters (e.g., the actual value of each character may be blocked out) to protect the security and safety of the entered access code. Once an entered access code is verified and authenticated by a mobile device, the mobile device may complete the requested purchase transaction .

[0225] FIG. 17 shows GUI 1700 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 1700 may, for example, include portion 1702 that may display a graphical representation of a proof-of-purchase (e.g., a barcode) . Such a proof-of-purchase may be communicated to a mobile device via a network entity (e.g., a payment server) upon completion of a purchase transaction by the mobile device.

[0226] Accordingly, for example, portion 1702 may graphically display a proof-of-purchase that may be recognized by a reader (e.g., a barcode reader) . In so doing, for example, a system that may include a barcode reader may verify the validity of a proof-of-purchase barcode, which may then allow a user of a mobile device displaying such a barcode to enjoy the goods and/or services purchased by the user via the mobile device as acknowledged by the verified barcode. As per one example, such a verified barcode may allow entry onto

an airplane having a seat assignment that is encoded within the barcode. As per another example, a user may have made an on-line purchase of an appliance using his or her mobile device and may have requested pick-up of the purchased appliance at an appliance inventory warehouse. Upon arrival at the appliance inventory warehouse, a user may retrieve an electronic proof-of-purchase (e.g., a barcode) from a memory of the mobile device that was received by the user's mobile device upon completion of the appliance purchase transaction. A reader (e.g., a barcode reader) at the appliance inventory warehouse may read the user's barcode directly from a display of the user's mobile device, verify that a purchase was completed by the user's mobile device, and may authorize the appliance for pickup by the user.

[0227] FIG. 18 shows GUI 1800 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 1800 may, for example, enable a funds transfer to one or more financial accounts. GUI 1800 may, for example, enable a transfer of funds (e.g., by selecting radio button 1802) directly from one or more financial accounts into one or more financial accounts. GUI 1800 may, for example, generate a communication channel with a recipient of a funds transfer (e.g., by selecting radio button 1804) and may allow the recipient to interactively determine the financial account that is to receive the transferred funds.

[0228] FIG. 19 shows GUI 1900 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 1900 may, for example, enable a funds transfer to one or more

accounts. GUI 1900 may, for example, allow a user of a mobile device to select an object (e.g., by selecting an entry within menu list 1902) that may be associated with the funds transfer. GUI 1900 may, for example, allow a user to select an account (e.g., by selecting an entry within menu list 1904) that may be associated with the object selected within menu list 1902.

[0229] Accordingly, for example, a mobile device may include a memory within which a user may enter one or more potential recipients of a funds transfer. A processor of a mobile device may, for example, list each potential recipient of a funds transfer within menu list 1902. A user of a mobile device may, for example, select a recipient of a funds transfer by activating (e.g., touching) an entry within menu list 1902 that corresponds to the selected recipient. As per an example, a user's funds transfer recipient list, as may be reflected by menu list 1902, may include persons, financial accounts, inanimate objects, or any other type of object.

[0230] Once a selected funds transfer recipient is selected within menu list 1902, menu list 1904 may be populated. Accordingly, for example, a mobile device may include a memory within which a user may enter one or more accounts that may be associated with one or more potential recipients of a funds transfer. A processor of a mobile device may, for example, list each account in menu list 1904 that may be associated with the selected recipient of menu list 1902. A user of a mobile device may, for example, select an account for a funds transfer by activating (e.g., touching) an entry within menu list 1904 that corresponds to the selected account. As per an example, a user's funds

transfer account list, as may be reflected by menu list 1904, may include any account that may be associated with the selected recipient of menu list 1902.

[0231] FIG. 20 shows GUI 2000 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 2000 may, for example, enable a funds transfer from a source account (e.g., an account associated with a payment card that is tapped against a display of a mobile device) to a target account (e.g., a car loan account). Portion 2002 may, for example, list account details that may be associated with a target account (e.g., an account number associated with a car loan, the payoff amount, and the amount due). Portion 2002 may, for example, include details that may be associated with a target account that a mobile device has collected from a network entity (e.g., a bank) via a network connection between the mobile device and the network entity.

[0232] Portion 2004 (e.g., an alphanumeric entry box) may, for example, allow a user of a mobile device to enter an amount to be transferred (e.g., an amount that is equal to the minimum amount due on an installment payment agreement). GUI 2000 may, for example, request an identification of a source account from which the amount will be transferred. As per an example, a user of a mobile device may tap a payment card against a display of the mobile device to establish a contactless communication channel between the payment card and the mobile device within which payment information may be communicated from the payment card to the mobile device. As per another example, a payment card may communicate payment information to a mobile device via a series of touch

simulations (e.g., changes in capacitance generated by a payment card that may be detected by a touch-sensitive display of a mobile device). A series of light pulses, or audible information, for example, may be communicated by the payment card to the mobile device in order to communicate payment information.

[0233] GUI 2000 may, for example, display a summary of payment information that may have been received by a mobile device from a payment card via a contactless communication channel. For example, portion 2006 may be displayed by GUI 2000 to allow a user of a mobile device to confirm the identity of a payment account from which an amount of money will be transferred. Once confirmed, the mobile device may communicate with network entities (e.g., an issuer of the source account and a bank associated with the target account) to complete the money transfer.

[0234] FIG. 21 shows GUI 2100 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 2100 may, for example, enable a funds transfer to an account associated with a person. A recipient may, for example, interactively select an account into which the funds will be transferred. Accordingly, for example, contact list 2102 may be displayed by GUI 2100 as a list of potential recipients of a money transfer. Contact method list 2104 may, for example, by displayed by GUI 2100 as a list of methods that may be used to contact the recipient as selected within contact list 2102. In so doing, for example, a person within contact list 2102 (e.g., Trace) may be selected by a user of a mobile device to be the recipient of a funds transfer and the recipient may be contacted, for

example, in accordance with a method selected in contact method list 2104 (e.g., transfer alert) .

[0235] FIG. 22 shows system 2200, which may include mobile device 2202, receiving device 2204, and network 2210. Mobile device 2202 may be a device used to coordinate a money transfer and receiving device 2204 may be a device used to coordinate receipt of a money transfer. Receiving device may, for example, be a mobile device. Receiving device, for example, may not be a mobile device (e.g., a desktop computer) . Devices 2202-2204 may communicate via network 2210, which may include any combination of cellular network resources, wireless network resources, and/or wired network resources .

[0236] Mobile device 2202 may, for example, include a processor that may render money transfer GUI 2206 onto a display of mobile device 2202. GUI 2206 may, for example, pause while a user of mobile device 2202 selects a payment account from which a money transfer may be withdrawn. Accordingly, for example, mobile device 2202 may wait until a payment card is brought within a proximity to, or a touch relationship with, mobile device 2202 (e.g., a payment card may be tapped onto a display of mobile device 2202) . Alternately, for example, a payment card may communicate with mobile device 2202 using any number of contactless methods (e.g., using light, sound, capacitive, magnetic or electromagnetic communication) . In so doing, for example, mobile device 2202 may establish a contactless communication channel with a payment card in which payment information is communicated from the payment card to mobile device 2202 and is summarized onto GUI 2206 for review by a user of mobile device 2202. A

user of mobile device 2202 may enter an amount of money for transfer, may verify a money amount for transfer, and may enter a message to be communicated to receiving device 2204 .

[0237] Mobile device 2202 may communicate payment information received from a payment card along with information received from a user of mobile device 2202 to a network entity (e.g., an issuer) where, for example, authorization of the transfer amount from the account selected is performed. Once authorized, mobile device 2202 may communicate a transfer alert along with a transfer alert message to receiving device 2204. Receiving device 2204 may, for example, present a transfer alert along with the associated transfer alert message onto GUI 2208. A user of receiving device 2204 may respond to the transfer alert message received from mobile device 2202 by sending an acknowledgment message to mobile device 2202 via network 2210.

[0238] A user of receiving device 2204 may, for example, be asked to enter account information that is to be used as the receiving account for the money transfer. Accordingly, for example, a user of receiving device 2204 may provide such account information any number of ways. For example, a payment card associated with a receiving account may be brought within a proximity, or a touching, relationship to receiving device 2204. In so doing, for example, a contactless communication channel (e.g., an RFID channel) may be formed to communicate such information. Alternately, a payment card may communicate with receiving device 2204 using any number of contactless methods (e.g., using light, sound, capacitive, magnetic or electromagnetic communication) . A user of receiving

device 2204 may verify the receive account information as it may be displayed onto GUI 2208.

[0239] Receiving device 2204 may, for example, communicate information associated with a receiving account to mobile device 2202 via network 2210. Accordingly, for example, mobile device 2202 may coordinate the money transfer via network 2210 with network entities (e.g., an issuer of the account used to provide money to transfer and an issuer of the account used to receive money for transfer) . Once the money transfer is completed, an acknowledgment message may be displayed onto GUI 2206 by a processor of mobile device 2202 and an acknowledgment message may be communicated by mobile device 2202 to receiving device 2204 and then displayed onto GUI 2208 by a processor of receiving device 2204.

[0240] FIG. 23 shows system 2300, which may include a mobile device 2302, a powered or non-powered payment card 2304, a remote application 2308 and network 2306. Mobile device 2302 may, for example, access remote application 2308 via network 2306 in order to complete a purchase transaction. Accordingly, for example, payment card 2304 may communicate payment information to mobile device 2302 via contactless communication channel 2312 and mobile device 2302 may communicate the payment information to remote application 2308 via communication channel 2310 to complete the purchase transaction .

[0241] Contactless communication channel 2312 may be any type of contactless communication channel, such as for example, an RF, capacitive, audible, visible, electromagnetic, or magnetic communication channel. Contactless communication channel 2312 may be a two-way

communication channel, where mobile device 2302 may communicate with payment card 2304 in order to, for example, enhance data communication between mobile device 2302 and payment card 2304 .

[0242] As per one example, payment card 2304 may communicate payment information (e.g., one, two, and/or three tracks of magnetic stripe data) to mobile device 2302 after payment card 2304 is tapped against mobile device 2302. Remote application 2308 may, for example, be an on-line payment application that does not require a fully populated magnetic stripe message to complete a purchase transaction, but may only require a subset of a fully populated magnetic stripe message (e.g., account number and expiration date) . Accordingly, for example, mobile device 2302 may filter payment information received from payment card 2304 to only include the subset of information that may be required by remote application 2308 and may communicate only the filtered payment information to remote application 2308 to complete the purchase transaction.

[0243] In general, for example, mobile device 2302 may filter payment information received from payment card 2304 into a filtered subset of payment data that may be required by remote application 2308 to complete a purchase transaction. In so doing, for example, mobile device 2302 may customize a payment message to remote application 2308 that includes only the filtered subset of data that is needed by remote application 2308 to complete the purchase transaction.

[0244] As per another example, mobile device 2302 may query payment card 2304 via contactless communication channel 2312 for only a subset of payment information that may be required by remote application

2308 to complete a purchase transaction. Accordingly, for example, a processor of payment card 2304 may receive the request and may only supply the requested payment information via contactless communication channel 2312 instead of communicating a complete magnetic stripe message.

[0245] FIG. 24 shows system 2400, which may include a mobile device 2402, a payment card 2404, a rewards card 2416, and items to be purchased 2410-2414. Mobile device 2402 may, for example, include a scanning device (e.g., a camera) that may be used to capture images (e.g., barcode images) . Accordingly, for example, a user of mobile device 2402 may activate an application within mobile device 2402 that generates GUI 2408 and that activates a camera to capture barcode images. A processor of mobile device 2402 may, for example, analyze captured barcode images to extract information from the barcode images and construe the extracted information as data input. Accordingly, for example, a camera of mobile device 2402 may be used to scan barcodes of items that the user wishes to purchase and a processor of mobile device 2402 may analyze the scanned information to keep a running total of items selected for purchase. In so doing, for example, a user of mobile device 2402 may wander through a shopping market while scanning barcode labels of items for purchase (e.g., items 2410-2414).

[0246] Mobile device 2402 may access a network (e.g., a local Wi-Fi hotspot) within a shopping market to determine those items that may be offered at a discount to rewards members of the shopping market. Accordingly, for example, a user may scan barcode image 2418 of rewards card 2416 to obtain an instant credit

for discounted items for purchase. As per another example, rewards card 2416 may establish a contactless communication channel with mobile device 2402 so that rewards card 2416 may communicate rewards account information to mobile device 2402 via any one of a number of contactless communication mediums (e.g., RF, capacitive, audible, visible, electromagnetic, or magnetic communication mediums) .

[0247] Once a user of mobile device 2402 finishes shopping, the user may present payment card 2404 to mobile device 2402 for payment. Accordingly, for example, contactless communication channel 2406 (e.g., an RF, capacitive, audible, visible, electromagnetic, or magnetic communication channel) may be created and payment information may be communicated from payment card 2404 to mobile device 2402 so that mobile device 2402 may complete the purchase transaction with a network entity (e.g., an issuer of payment card 2404) .

[0248] FIG. 25 shows system 2500, which may include mobile device 2502 and payment card 2504. Mobile device 2502 may interact with a merchant establishment (e.g., a restaurant) to gain entry into a user's tab at the merchant's establishment (e.g., a food and alcohol bill generated by the restaurant) . Accordingly, for example, a user may monitor each item on the bill, enter an additional amount into the bill (e.g., a tip), and then pay the bill all from the convenience of the user's mobile device 2502.

[0249] Interaction with a merchant establishment may be accomplished any number of ways. For example, mobile device 2502 may access a local Wi-Fi hotspot and may communicate information (e.g., an email address or text messaging address) to the merchant that identifies

a user of mobile device 2502. Accordingly, for example, a merchant may send a message (e.g., an email or text message) to the user-supplied address that may contain a link to the user's bill. A user may, for example, click on the link, enter a pass code to gain entry to the user's bill, and then monitor the bill being generated onto a display of mobile device 2502 via GUI 2508.

[0250] As per another example, mobile device 2502 may place a phone call to a merchant's phone number to establish a communication channel (e.g., a data call) between the merchant server and mobile device 2502. The merchant server may, for example, render GUI 2508 onto a display of mobile device 2502 so that a user of mobile device 2502 may directly interact with the merchant server.

[0251] GUI 2508 may be rendered onto a display of mobile device 2502 to allow a user to remotely interact with his or her bill. For example, a user's meal tab at a restaurant may be itemized by GUI 2508 and an alphanumeric entry box (e.g., box 2510) may allow the user to enter additional data (e.g., add a tip to the bill) . A user may, for example, review a total to be charged, verify such a total, and then present payment card 2504 to mobile device 2502 to settle the total amount. In so doing, for example, contactless communication channel 2506 may receive payment information from payment card 2504 via any number of contactless communication mediums (e.g., RF, capacitive, audible, visible, electromagnetic, or magnetic communication mediums) and may communicate such payment information to a network entity (e.g., an

issuer of payment card 2504) to complete a purchase transaction for the total amount of the user's bill.

[0252] FIG. 26 shows flow charts for process sequences 2610-2650. Process sequence 2610 may, for example, execute a payment application on a mobile device (e.g., as in step 2611) to request a user of the mobile device to present a payment card to the mobile device. In step 2612, a user may present a payment card (e.g., tap a payment card onto a display of a mobile device) to begin a payment transaction. In step 2613, a contactless communication channel (e.g., an RF, capacitive, audible, visible, electromagnetic, or magnetic communication channel) may be generated between a payment card and a mobile device to communicate payment information from the payment card to the mobile device. In step 2614, a purchase may be completed by a mobile device by communicating received payment information to network entities to settle a payment transaction.

[0253] Process sequence 2620 may, for example, autonomously detect that a payment card is in a touching or a proximity relationship to a mobile device (e.g., as in step 2621). In step 2622, a contactless communication channel (e.g., an RF, capacitive, audible, visible, electromagnetic, or magnetic communication channel) may be generated between a payment card and a mobile device to communicate payment information from the payment card to the mobile device. In step 2623, a purchase may be completed by a mobile device by communicating received payment information to network entities to settle a payment transaction.

[0254] Step 2631 of sequence 2630 may include presenting a card to a mobile device. A card may, for

example, be a powered card or a non-powered card. In steps 2632 and 2633, a contactless communication channel may be established between a card and a mobile device and information may be exchanged between the card and the mobile device.

[0255] A card may, for example, include a near-field communication device (e.g., an RFID) that may communicate with a contactless communication device of a mobile device to form a two-way communication channel between the card and the mobile device. A card may, for example, include circuitry to simulate touch (e.g., a capacitance change) in order to form a contactless communication channel with a mobile device. Accordingly, for example, a card may be pressed against a touch-sensitive display of a mobile device and information may be communicated by the card to the mobile device through a series of card-simulated touches that may be detected by the touch-sensitive display of the mobile device.

[0256] A card may, for example, include a light sensor to form a contactless communication channel with a mobile device. Accordingly, for example, a card may be pressed against a display of a mobile device and information may be communicated from the mobile device to the card through a series of light pulses generated by the display of the mobile device. A frequency, pulse width, and/or a pulse intensity of light pulses may, for example, be detected by a processor of a card as data communicated by a mobile device.

[0257] A card may, for example, include a light source (e.g., an LED) to form a contactless communication channel. Accordingly, for example, a card may emit varying light pulses from an LED that may

be detected by a motion-capture device (e.g., a camera) of a mobile device as data communicated by the card. A card may, for example, include sound emission capabilities that may be detected by a microphone of a mobile device as data communicated by the card through a contactless communication channel. A mobile device may, for example, include sound emission capabilities that may be detected by a microphone of a card as data communicated by the mobile device through a contactless communication channel.

[0258] Step 2641 of sequence 2640 may include selecting items for purchase using a mobile device. A mobile device may, for example, include a scanning device (e.g., a camera) that may be used by a mobile device to capture images of barcodes that may be associated with items for purchase (e.g., grocery items in a grocery store). Accordingly, for example, a mobile device may collect images of barcodes and a processor of the mobile device may analyze the images to retrieve information (e.g., item description and cost) of each item scanned. Each item's description, cost and other information may, for example, be displayed on a GUI that may be generated by a processor and presented to a display of the mobile device as in step 2642. A payment card may, for example, be presented to the mobile device (e.g., as in step 2643) and payment information may be exchanged between the payment card and the mobile device (e.g., as in step 2644) via a contactless communication channel (e.g., an RF, capacitive, audible, visible, electromagnetic, or magnetic communication channel). In step 2645, a mobile device may communicate received payment

information to network entities (e.g., a payment server and/or an issuer) to complete the transaction.

[0259] In step 2651 of sequence 2650, for example, a mobile device may remotely access an electronic bill. For example, a merchant (e.g., a restaurant) may provide access to a bill (e.g., a restaurant tab for food and beverages) to a patron of the merchant via that patron's mobile device. As per one example, a merchant may provide a link to a bill via a message (e.g., an email message or a text message) that may be sent by the merchant to the patron's mobile device or that may be sent by the patron's mobile device to the merchant. The patron may click on the link and may be taken to a website that may provide access to the patron's tab via a browser that may be executing on the patron's mobile device. As per another example, a data call between a patron's mobile device and a merchant may execute an application (e.g., locally on the patron's mobile device and/or remotely on a merchant's server) to allow a patron to review his or her bill.

[0260] Each item on the patron's bill may, for example, include a description, cost and other information and may be displayed on a GUI that may be generated by a processor and presented to a display of the mobile device as in step 2652. A payment card may, for example, be presented to the mobile device (e.g., as in step 2653) and payment information may be exchanged between the payment card and the mobile device (e.g., as in step 2654) via a contactless communication channel (e.g., an RF, capacitive, audible, visible, electromagnetic, or magnetic communication channel). In step 2655, a mobile device may communicate received payment information to network

entities (e.g., a payment server and/or an issuer) to complete the transaction.

[0261] FIG. 27 shows mobile device 2700. Mobile device 2700 may be any mobile device, such as a mobile telephonic device (e.g., cell phone), a PDA, an electronic tablet, an MP3 player, or a locating device (e.g., a GPS device). Accordingly, for example, mobile device 2700 may be operated in a mobile environment while a user of mobile device 2700 goes about his or her daily activities (e.g., driving, shopping, walking, dining, and exercising). In addition, for example, mobile device 2700 may perform multiple functions simultaneously (e.g., a person may carry on a conversation while at the same time browsing and purchasing products on the internet).

[0262] Mobile device 2700 may include audio processing devices (e.g., microphone 2708 and speaker 2710). Accordingly, for example, mobile device 2700 may receive voice commands from a user via microphone 2708 and may process such commands to perform a function. For example, a user may place mobile device 2700 into a desired operational mode by speaking a command into microphone 2708 that is associated with the desired operational mode. In so doing, for example, mobile device 2700 may engage in hands-free operation by receiving voice commands via microphone 108 and performing functions associated with the received voice commands.

[0263] Mobile device 2700 may receive data input via microphone 2708. For example, a voice-band modem may generate signals in a voice-band frequency range that may be received by microphone 2708. A processor of mobile device 2700 may interpret the received audible

information as data signals and may process the data signals as, for example, data values and/or control data input .

[0264] Mobile device 2700 may include camera 2702. Camera 2702 may capture one or more frames of video data and store the video data within a memory of mobile device 2700. Accordingly, for example, a processor of mobile device 2700 may receive one or more frames of video information via camera 2702 and may process the video information as data values and/or control data input. In so doing, for example, mobile device 2700 may receive optical information that is sensed by camera 2702 during a series of one or more video capture events that produce one or more frames of video information. The one or more frames of video information may contain one or more data elements (e.g., pixels) having properties (e.g., color, intensity, or contrast) that may be interpreted by a processor of mobile device 2700 as data values and/or control data.

[0265] Mobile device 2700 may include manual input interface 2712. Manual input interface 2712 may, for example, include keys and/or buttons that may be sensitive to manual input, such as a touch or an application of pressure. Accordingly, for example, a user of mobile device 2700 may enter information into mobile device 2700 via manual interface 2712 to cause a processor of mobile device 2700 to enter a particular mode of operation. Manual interface 2712 may, for example, be used for data entry (e.g., dialing a phone number or entering data as may be requested by mobile device 2700) during a particular mode of operation of mobile device 2700.

[0266] Mobile device 2700 may include display 2704. Display 2704 may provide visible information that may be utilized by a user during interaction with mobile device 2700. A portion or all of display 2704 may be touch sensitive such that objects making contact with display 2704 or objects coming within a proximity of display 2704 may be detected by a processor of mobile device 2700. Accordingly, for example, mobile wallet graphical user interface 2706 may be provided by display 2704 so that graphical information may be displayed to solicit and/or receive data entry from a user. In so doing, for example, touch-sensitive graphical user interface devices such as radio buttons, textual input boxes, virtual buttons, pull-down menus, and navigational tools may be used for data entry to initiate, change, and/or support functions performed by mobile device 2700.

[0267] Display 2704 may, for example, display graphical objects that may interact with a user of mobile device 2700. Accordingly, for example, a virtual card (e.g., a virtual payment card) may be rendered onto display 2704 having interactive components associated with such a virtual payment card. In so doing, for example, a virtual payment card displayed by display 2704 may itself include a virtual user interface (e.g., one or more virtual buttons) that may be sensitive to touch or proximity. Such virtual buttons may be associated with a feature (e.g., one or more tracks of magnetic stripe information may be communicated by the mobile device when a button is activated) . In so doing, for example, a feature activated on a virtual payment card displayed by display 2704 may cause mobile device 2700 to behave

like a payment card (e.g., one or more tracks of magnetic stripe information may be communicated by mobile device 2700 when a virtual button of a virtual payment card of display 2704 is activated) .

[0268] FIG. 27 shows architecture 2750. User interface 2752 may, for example, be included within architecture 2750 to allow user interaction with architecture 2750. For example, a dedicated key pad or keyboard may be included within user interface 2752 to allow alphanumeric data entry into architecture 2750.

[0269] Architecture 2750 may include one or more displays 2754. Display 2754 may, for example, be touch-sensitive. Accordingly, for example, display 2754 may be utilized for alphanumeric data entry using virtual buttons that may be rendered onto touch-sensitive portions of display 2754. In so doing, for example, touching virtual buttons that may be associated with alphabetic and numeric characters of display 2754 may be detected by processor 2758 as alphanumeric data entry.

[0270] Alphanumeric entry boxes may, for example, be rendered onto display 2754. A user may, for example, activate a cursor within such an alphanumeric entry box by touching an area within the alphanumeric entry box. A user may utilize user interface 2752 and/or a virtual keypad rendered onto display 2754 to select alphanumeric characters to be placed within the alphanumeric entry box having a character position identified, for example, by an activated cursor within the alphanumeric entry box. In so doing, for example, processor 2758 may receive alphanumeric characters as typed into a alphanumeric entry box of display 2754 and may use such alphanumeric characters as data input.

[0271] Display 2754 may, for example, render a virtual representation of a card (e.g., one or more virtual payment cards stored within memory 2760) . Accordingly, for example, information (e.g., payment card number, cardholder name, bank logos and issuer identification) may be stored within memory 2760 and rendered onto display 2754 as a virtual representation of a card. In so doing, for example, virtual interactive objects (e.g., buttons, displays, light sources and light sensors) that may be associated with a virtual card on display 2754 may be utilized through interaction with display 2754 just as if the virtual card were physically present.

[0272] Display 2754 may, for example, provide data output from architecture 2750. For example, display 2754 may communicate data using a series of light pulses. Accordingly, for example, processor 2758 may cause one or more portions of display 2754 to produce light pulses having varying characteristics (e.g., duration, intensity, and frequency) that may communicate information via such light pulses. In so doing, for example, a device that may be sensitive to light pulses may receive information communicated by display 2754 via light pulses having varying characteristics. Display 2754 may, for example, communicate data using visual information that may be substantially static (e.g., a barcode).

[0273] Architecture 2750 may include one or more transceivers 2756. Transceiver 2756 may communicate information to and/or may receive information from one or more devices. Transceiver 2756 may, for example, communicate via a wireless interface with one or more cellular stations of a mobile network. Accordingly,

for example, transceiver 2756 may allow a mobile device (e.g., mobile device 2700 of FIG. 27) to establish a communications channel with an associated cellular station. In so doing, for example, a mobile device (e.g., mobile device 2700 of FIG. 27) may exchange information (e.g., voice, text, data, or multimedia) with one or more terrestrial networks (e.g., the internet or a payment network) via an associated cellular station. As per another example, transceiver 2756 may exchange information with one or more other mobile devices via one or more associated cellular stations .

[0274] Transceiver 2756 may, for example, communicate via a wireless interface with one or more mobile devices directly. Accordingly, for example, transceiver 2756 may communicate with another mobile device without first accessing a mobile network via a cellular station of the mobile network. As per another example, transceiver 2756 may, for example, communicate via a wireless interface with one or more network devices (e.g., a wireless access point) directly. Accordingly, for example, a mobile device (e.g., mobile device 2700 of FIG. 27) may directly connect to a wired and/or a wireless network via any one or more wireless standards (e.g., Bluetooth or Wi-Fi) to exchange information with other devices that may be connected to the wired and/or wireless network. In so doing, for example, a wired and/or wireless network may be accessed by a mobile device without first accessing a mobile network via a cellular station of a mobile network .

[0275] Architecture 2750 may include contactless communication device 2762, which may communicate via

any one or more contactless communication methodologies, such as for example, near field communications (e.g., RFID), Bluetooth, touch simulation, light pulsing (e.g., via an LED), and electromagnetic data communication (e.g., via a dynamic magnetic stripe communications device) . Accordingly, for example, contactless communication device 2762 may be compatible with any contactless device, such as for example, an RFID enabled payment card and a contactless reader (e.g., a magnetic stripe reader or an NFC reader) .

[0276] A non-powered card may, for example, communicate with contactless communications device 2762. Contactless communication device 2762 may, for example, establish a carrier field (e.g., an RF field) that may be modulated by a device (e.g., an RFID tag) of a non-powered payment card. In so doing, for example, an RFID tag of a non-powered payment card may derive operational power from an RF field provided by contactless communications device 2762 and may communicate information (e.g., one, two, and/or three tracks of magnetic stripe data) to contactless communication device 2762 by modulating the RF field produced by contactless communications device 2762.

[0277] A powered card may, for example, communicate with contactless communication device 2762. A powered card may, for example, include a processor, a battery, a memory, wireless communications devices (e.g., a dynamic magnetic stripe communications device or RFID) and other electronics (e.g., buttons, displays, light sources and light sensors) that may allow a user to interact with the powered card to perform one or more functions. Accordingly, for example, a powered card

may be used to communicate specific information to contactless communication device 2762 by selective interaction with the buttons of the powered card. In so doing, for example, a powered card may be used to interactively communicate magnetic stripe information (e.g., one, two, and/or three tracks of magnetic stripe data) to contactless communication device 2762 by sending a signal to a processor of a powered card (e.g., by pressing a button on the powered card) to initiate such communications.

[0278] Contactless communication device 2762 may receive variable data sets from a powered card based upon, for example, manual input provided to a powered card. For example, a button associated with an on-line purchase may be pressed on the powered card that causes a variable data set (e.g., account number and expiration date) to be communicated from the powered card to contactless communication device 2762.

[0279] Discretionary data may, for example, be communicated by a powered card based upon which button was pressed on the powered card. In so doing, for example, a security code (e.g., "111") may be communicated within a discretionary data field when a button associated with a particular feature (e.g., pay with credit) is pressed on the powered card. As per another example, a different security code (e.g., "222") may be communicated within a discretionary data field when a button associated with a different feature (e.g., pay with debit) is pressed on the powered card. Accordingly, for example, processor 2758 may identify what type of device may be in communication with contactless communication device 2762 by analyzing the

data communicated to contactless communication device 2762 .

[0280] Architecture 2750 may include memory 2760 and/or processor 2758 may include internal memory. Accordingly, for example, application code may be stored within memory 2760 and/or processor 2758 and executed by processor 2758 in support of functions performed by architecture 2750. For example, an application (e.g., a mobile wallet graphical user interface) may be executed by architecture 2750 and displayed onto display 2754, which may be used to interact with a user of a mobile device (e.g., mobile device 2700 of FIG. 27) . Persons skilled in the art will appreciate that executable application code may be communicated to architecture 2750 via any one or more interfaces of architecture 2750 (e.g., user interface 2752, display 2754, transceiver 2756, and/or contactless communication device 2762) .

[0281] Application data (e.g., virtual payment card data) may be stored within memory 2760 and accessed by processor 2758 during operation. For example, payment card data may be stored within memory 2760 and recalled by processor 2758 during a financial transaction being conducted by a mobile device (e.g., mobile device 2700 of FIG. 27) . Once recalled, processor 2758 may communicate the payment card data via transceiver 2756 and/or contactless communication device 2762 to complete a financial transaction.

[0282] FIG. 28 shows network topology 2800 that may include, for example, mobile wallet 2802 (e.g., a mobile telephonic device, a PDA, an electronic tablet, a laptop, a GPS unit, or an MP3 player) . Mobile wallet 2802 may, for example, include a contactless interface

that may initiate, sustain, and/or terminate a communication channel between a contactless device (e.g., an RFID enabled payment card) and mobile wallet 2802. A contactless device and mobile wallet 2802 may communicate using any number of contactless mediums, which may include for example, visible, audible, capacitive, electromagnetic, magnetic, and/or RF mediums .

[0283] Mobile wallet 2802 may provide one or more transceivers that may communicate with one or more wired networks (e.g., IP network 2812 and/or payment network 2814) and/or one or more wireless networks (e.g., mobile network 2810) . Mobile wallet 2802 may, for example, communicate with a cellular station over a wireless radio interface (e.g., a GSM air interface) that may be used by mobile wallet 2802 to communicate information (e.g., voice and data) to cellular network access infrastructure 2806 (e.g., one or more GSM base transceiver stations, base station controllers, and mobile switching centers) . Persons skilled in the art will appreciate that cellular network access infrastructure 2806 may utilize any multiple access architecture, such as for example, a code-division multiple access architecture and/or a time-division multiple access architecture.

[0284] Mobile wallet 2802 may, for example, communicate with wireless access point 2808 over a wireless interface (e.g., a Bluetooth interface or a Wi-Fi interface) . Accordingly, for example, mobile wallet 2802 may access one or more wired networks (e.g., IP network 2812 and/or payment network 2814) and/or one or more wireless networks (e.g., mobile

network 2810) without the need to first gain access to cellular network access infrastructure 2806.

[0285] Any contactless device (e.g., a powered payment card or a non-powered payment card) may, for example, communicate with mobile wallet 2802 via a contactless medium. Accordingly, for example, payment information (e.g., a payment account number and a card expiration date) may be communicated from a contactless device to mobile wallet 2802. In so doing, for example, items for purchase on IP network 2812 (e.g., the internet) may be accessed by a browser of mobile wallet 2802 via an access point (e.g., wireless access point 2808 or cellular network access infrastructure 2806) . Mobile wallet 2802 may, for example, complete a purchase transaction by first obtaining required payment information from a contactless device, storing such payment information and communicating such payment information to network entities (e.g., payment server 2816 and/or issuer 2820) .

[0286] Payment server 2816 may, for example, contact issuer 2820 via a network (e.g., payment network 2814) with payment information received from mobile wallet 2802 for authorization of a purchase. Once authorized, payment transaction information may be recorded onto a receipt that may be delivered to mobile wallet 2802 via any one or more delivery options (e.g., via a short messaging service of mobile network 2810 or an email delivery service of IP network 2812) . Mobile wallet 2802 may allow a user to associate purchase categories (e.g., groceries, auto repair, or entertainment) to purchases transacted by the mobile wallet so that the user may receive a more detailed accounting of his or her expenditures on his or her receipt. Accordingly,

for example, a user may enjoy a higher degree of integration such that a user may customize a level of detail provided on a receipt via mobile wallet 2802.

[0287] A payment receipt may, for example, be provided to mobile wallet 2802 as a proof-of-purchase object (e.g., a barcode) that may be provided to a display of mobile wallet 2802 and read by other computing equipment (e.g., a barcode scanner) for proof-of-purchase confirmation.

[0288] A mobile wallet (e.g., mobile wallet 2824) may, for example, include a contactless communication device (e.g., an RFID) that may initiate, sustain, and/or terminate contactless communication channel 228 with merchant terminal 2818. Accordingly, for example, mobile wallet 2824 may communicate payment information to merchant terminal 2818 to complete a financial transaction. In so doing, for example, mobile wallet 2824 may first receive payment information via a contactless communication channel from one or more contactless devices (e.g., a non-powered card), store the received payment information within a memory of mobile wallet 2824, and forward the payment information onto merchant terminal 2818 to complete a financial transaction. Accordingly, for example, payment information may be recalled from memory within mobile wallet 2824, optionally authenticated and authorized by a user of mobile wallet 2824 and communicated to merchant terminal 2818 via contactless communication channel 2828 to complete a financial transaction using merchant terminal 2818. An electronic receipt may, for example, be generated by merchant terminal 2818 and communicated to mobile wallet 2824 via contactless communication channel 2828.

[0289] FIG. 29 shows system 2900, which may include mobile wallet 2902 and payment card 2904. Mobile wallet 2902 may, for example, be a laptop computer, a PDA, a mobile telephonic device (e.g., a smartphone), an MP3 player, a GPS, or any other mobile device. Display 2908 may be a touch-sensitive display (e.g., sensitive to a change in capacitance). Payment card 2904 may, for example, be a powered payment card or a non-powered payment card.

[0290] Mobile wallet 2902 and payment card 2904 may each include a contactless communication device (e.g., RFID) that may communicate via a contactless communication channel that may be formed between mobile wallet 2902 and payment card 2904 after coming into proximity to one another. Payment card 2904 may, for example, be tapped onto display 2908 of mobile wallet 2902 to establish a proximity relationship that forms a communication channel between payment card 2904 and mobile wallet 2902. As per another example, payment card 2904 may be brought within a proximity distance (e.g., up to two inches) of mobile wallet 2902 to establish a contactless communication channel between mobile wallet 2902 and payment card 2904.

[0291] A processor of mobile wallet 2902 may, for example, execute application code that may generate a graphical user interface (GUI) onto display 2908 of mobile wallet 2902. Message 2906 of such a GUI may invite a user of mobile wallet 2902 to begin storage of card information (e.g., payment card information) by tapping one or more cards (e.g., one or more payment cards) against display 2908. As per another example, by tapping a card (e.g., payment card 2904) against mobile wallet 2902, a processor of mobile wallet 2902

may autonomously determine that card information associated with the tapped card is to be stored within a memory of mobile wallet 2902 and a processor of mobile wallet 2902 may then generate a mobile wallet GUI onto display 2908 to autonomously download the card information and engage a user of mobile wallet 2902 to administer any other activities that may be associated with such an information download.

[0292] A processor of mobile wallet 2902 may, for example, autonomously determine a type of card that may be tapped against it. For example, a processor of mobile wallet 2902 may receive payment card data that may be indicative of a non-powered payment card (e.g., payment card data received from a non-powered card may not provide a security code associated with the card). As per another example, a processor of mobile wallet 2902 may receive data that may be indicative of a powered card (e.g., payment card data received may contain a dynamically generated security code). Payment card data received from a powered card may, for example, include a dynamic security code that may change depending upon a type of transaction being conducted (e.g., debit or credit transaction).

[0293] As per another example, payment card 2904 may be a powered payment card that may include electronics to simulate a human touch (e.g., payment card 2904 may generate a change in capacitance that may be sensed by display 2908). Through a series of simulated touches, payment card 2904 may communicate a series of data bits to display 2908, which may then be processed by a processor of mobile wallet 2902. In so doing, for example, a contactless communication channel may be established where data is transferred from payment card

2904 to mobile wallet 2902 via a series of simulated touches .

[0294] Payment card 2904 may, for example, include a light sensor. Accordingly, for example, payment card 2904 may be sensitive to light pulses generated within a region of display 2908. The light sensor of payment card 2904 may receive a series of light pulses, which may be construed by a processor of payment card 2904 as data generated by mobile wallet 2902. In so doing, for example, payment card 2904 may receive an optical data stream represented by a series of light pulses generated by display 2908. As such, a two-way communication channel may be formed, where simulated touches may generate a data stream from payment card 2904 to mobile wallet 2902 and light pulses may generate a data stream from mobile device 2902 to payment card 2904.

[0295] FIG. 30 shows GUI 3000, that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 3000 may, for example, provide a summary information screen that provides virtual card 3002 and associated identifying information. Virtual card 3002, for example, may be a virtual representation of a physical card that may have been tapped against a display of a mobile device to form a contactless communication channel between the physical card and a mobile device.

[0296] Card (e.g., payment card) information (e.g., track 1 and track 2 magnetic stripe data) may be communicated to the mobile device via a contactless communication channel and such information may be displayed within virtual card 3002 as summary information that may be associated with the physical

payment card. A payment card number communicated to a mobile device within a magnetic stripe message may, for example, include issuer identification as well as an issuing network identifier. Accordingly, for example, a processor of a mobile device may analyze the payment card number received from a physical payment card and may render a portion or all of the identifying information associated with the payment card number onto virtual card 3002. In so doing, for example, issuer identification 3004 as well as a logo representative of an issuing network identifier may be rendered onto virtual card 3002. Additionally, a portion or all of payment card number 3006 as well as cardholder's information (e.g., cardholder's name 3008) may be rendered onto virtual card 3002.

[0297] A portion or all of the card information received from a physical card may be stored within a memory of a mobile device. Alternately, for example, a portion or all of the card information received from a physical card may be collected by a mobile device and communicated by the mobile device to a remote server for storage and/or validation purposes. In so doing, for example, instead of storing payment card information within a memory of a mobile device, card identification 3010 may, for example, be stored within a mobile device and used as an index identifier to look up payment information that may be stored within a remote server. A processor of a mobile device may generate card identification 3010 and may display card identification 3010 within an alphanumeric entry box. In so doing, for example, a user of a mobile device may either accept, or change, card identification 3010 to a value that may later be used to remind the user of

which physical payment card is associated with card identification 3010 and to recall payment information associated with card identification 3010 that may be remotely stored.

[0298] FIG. 31 shows GUI 3100, that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 3100 may, for example, include a bank card validation screen as may be generated by a processor of a mobile device. GUI 3100 may, for example, challenge a user of the mobile device to enter a PIN that may be associated with a payment card (e.g., VISA credit 3102) that was previously presented to the mobile device so that payment information may be uploaded from the payment card to the mobile device via a contactless communication channel generated between the payment card and the mobile device. GUI 3100 may, for example, generate virtual pin pad 3106 that may include touch-sensitive buttons having alphanumeric indicia associated with each button. A user may touch one or more buttons of pin pad 3106 that may correspond to respective characters of a PIN and an indication of the user's selection may appear within area 3104. Characters displayed within area 3104 may, for example, be hidden for security purposes.

[0299] Activation of virtual button 3108 may, for example, cause a processor of a mobile device to compare a PIN entered by a user of the mobile device to a PIN that may be associated with the payment card presented to the mobile device for storage. The PIN may, for example, be stored within protected memory of the mobile device, so that a processor of the mobile device may locally determine the validity of the PIN

entered. Alternately, for example, the mobile device may communicate the PIN to, for example, the issuing bank for a remote validation of the PIN entered. Persons skilled in the art will appreciate that a user interface (e.g., a keypad or keyboard) of a mobile device may be used instead of virtual pin pad 3106 to enter the one or more characters of a PIN.

[0300] Upon validation that the correct PIN was entered, virtual card 3110 may be displayed. In particular, for example, account number 3112 may be fully populated within virtual card 3110 to indicate to a user of the mobile device that the PIN was correctly entered and to allow the user to compare account number 3112 against an account number printed on the physical payment card of which virtual card 3110 is a representation. Persons skilled in the art will appreciate that virtual payment cards may be stored within a mobile wallet without first requiring a user to validate the payment card using a PIN entry. An alternate form of validation (e.g., a security code) may, for example, be required for validation. As per another example, no validation may be required to store a virtual payment card onto a mobile wallet.

[0301] FIG. 32 shows system 3200, which may include mobile wallet 3202 and card 3206. Card 3206 may, for example, be a powered card (e.g., a powered payment card) . Accordingly, for example, card 3206 may include a processor, display 3212, a battery, manual input interfaces (e.g., buttons 3208 and 3210) and other electronic components (e.g., a light source, a light sensor and a touch simulator) . A user of powered card 3206 may, for example, interact with card 3206 to

select the information that may be communicated to mobile wallet 3202 from card 3206.

[0302] A user may, for example, press button 3208 and then tap card 3206 against display 3204 of mobile wallet 3202 to generate a contactless communication channel (an RFID communication channel) between card 3206 and mobile wallet 3202. Accordingly, for example, card 3206 may communicate payment information (e.g., one, two and/or three tracks of magnetic stripe data) that may be associated with a feature selected by pressing button 3208. In so doing, for example, card 3206 may communicate information (e.g., within a discretionary data field) associated with a selected feature (e.g., a VISA debit payment feature).

[0303] FIG. 33 shows GUI 3300, that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 3300 may, for example, include a bank card validation screen as may be generated by a processor of a mobile device. GUI 3300 may, for example, render virtual card 3310 so that a user of the mobile device may compare information 3312 and 3314 to information that the user intended to communicate to the mobile device.

[0304] Accordingly, for example, a user may have pressed a button on a powered payment card associated with a debit pay feature and may have communicated the debit pay feature (e.g., within a discretionary data field of a magnetic stripe message) to a mobile device via a contactless communication channel that may have been created between the powered payment card and the mobile device. In so doing, for example, a processor of a mobile device may analyze the debit pay feature received from the powered payment card and may render

an indication (e.g., "Pay Now" identifier 3314) onto virtual card 3310 to indicate that virtual payment card 3310 has been stored within the mobile device such that when used by a user of the mobile device to complete a payment transaction, authorizes an immediate deduction of funds from the user's payment account. Alphanumeric entry box 3316 may, for example, allow the user to tag stored virtual card 3310 with a card identifier that reminds the user of the debit functionality associated with virtual card 3310.

[0305] FIG. 34 shows GUI 3400, that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 3400 may, for example, render virtual card 3410 to allow a user to verify information previously communicated to a mobile device via a contactless communication channel that may be generated between a powered payment card and the mobile device. A user of a mobile device may, for example, press a button on a powered payment card that may be associated with a credit pay feature and may communicate the credit pay feature along with other payment information (e.g., payment account number 3412 and expiration date) via a contactless communication channel to the mobile device.

[0306] A processor of a mobile device may, for example, analyze information received from a powered payment card (e.g., information received via a discretionary data field) and may determine that payment information received from the powered payment card may be associated with a credit feature (e.g., "Pay Later" feature 3414) . Accordingly, for example, a processor of a mobile device may use identifier 3414 of

virtual card 3410 to signify such a credit payment feature .

[0307] Virtual card identifier 3416 may, for example, be an editable card identifier to allow a user of a mobile device to store and recall virtual card 3410 to/from a memory of a mobile device. Card identifier 3416 may, for example, be used by a mobile device to access virtual card 3410 from a remote location (e.g., a remote server) such that the mobile device need not store sensitive information that may be associated with virtual card 3410 within the mobile device .

[0308] GUI 3400 may, for example, allow an additional card to be associated with virtual card 3410. A rewards card may, for example, be associated with a credit account that may be associated with virtual card 3410. Accordingly, for example, rewards card information may be communicated to a mobile device by tapping the rewards card against portion 3418 to generate a contactless communication channel (e.g., an RFID communication channel) between the rewards card and the mobile device. As per another example, an identification card (e.g., a driver's license) may be associated with virtual card 3410. Accordingly, for example, identifying information (e.g., date of birth and a picture) associated with the holder of the identification card may be communicated to a mobile device and stored within the mobile device. In so doing, for example, stored identification information may be recalled from a memory of the mobile device to provide authentication information while completing a purchase transaction using the mobile device.

[0309] A user may, for example, select option 3420 to allow card information to be scanned into a mobile device using a scanning device (e.g., a camera) of the mobile device. Accordingly, for example, a card (e.g., a driver's license) may be scanned into a mobile device by selecting radio button 3420 and holding the driver's license in front of the mobile device while a snapshot of the driver's license is taken by a camera of the mobile device and stored in a memory location of the mobile device. A mobile device may alternately, for example, access identifying information (e.g., name, address, phone number, and picture) from a database (e.g., a motor vehicle database) that may be accessible from a network. Such information may be rendered onto a virtual identification card (e.g., a driver's license) that may be stored within a mobile device. In so doing, for example, user identification data may be recalled from a memory of a mobile device and rendered onto a display of the mobile device, so that a merchant may verify the validity of the user identification data when virtual card 3410 is used to complete a purchase transaction in the presence of the merchant.

[0310] Card information may be communicated via programming portion 3422. A powered card may, for example, provide touch simulation electronics and a light sensor such that when the powered card is placed against portion 3422, a two-way contactless communication channel may be created. Accordingly, for example, information may be communicated from the powered card to the mobile device through a series of touch simulations generated by the powered card and sensed by a portion within portion 3422 that is touch sensitive. In so doing, for example, a processor of a

mobile device may construe a series of touch simulations as a series of data bits communicated by a powered card that may be indicative of information associated with the powered card. GUI 3400 may, for example, provide a series of light pulses within portion 3422 that may be received by a light sensor of the powered card and construed by a processor of the powered card as data communicated by the mobile device.

[0311] FIG. 35 shows GUI 3500 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 3500 may, for example, include upload area 3502 as generated by a processor of a mobile device. Upload area 3502 may, for example, include one or more data exchange areas (e.g., data exchange areas 3504 and 3506). Icon 3504 may, for example, be generated by GUI 3500 within an area of a display of a mobile device that may be sensitive to touch (e.g., an area that may be sensitive to a capacitance change) . Area 3506 may, for example, be generated by GUI 3500 within an area of a display of a mobile device that may generate pulses of light.

[0312] Information associated with a powered payment card may be uploaded for use by a mobile device by exchanging data with the powered payment card via data exchange areas 3504 and 3506. For example, a powered payment card may be pressed against upload area 3502 so that a touch simulation device of the powered payment card aligns with data exchange area 3504 and a light sensing device of the powered payment card aligns with data exchange area 3506. Accordingly, for example, the powered payment card may communicate information to a processor of a mobile device by simulating a series of touches in data exchange area 3504 and data may be

communicated to the powered payment card by a processor of the mobile device by generating a series of light pulses in data exchange area 3506. In so doing, for example, a mobile device and a powered payment card may exchange information so that payment card information may be stored within the mobile device.

[0313] Once payment card information is uploaded into a mobile device, GUI 3500 of the mobile device may display a summary of the uploaded information in validation area 3510. Accordingly, for example, one, two or three tracks of magnetic stripe information may be uploaded from a payment card into a mobile device via data exchange area 3504 of upload area 3502. A portion or all of the uploaded data may, for example, be rendered within validation area 3510, so that a user of the mobile device may validate that the correct payment card information was uploaded and stored within the mobile device.

[0314] FIG. 36 shows GUI 3600 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 3600 may, for example, render virtual card 3610 and may display a portion of information that may be associated with virtual card 3610. Accordingly, for example, a payment card (e.g., a gift card) may be brought within a proximity or touch relationship with a mobile device such that a contactless communication channel may be generated between the payment card and the mobile device. In so doing, for example, payment account information may be communicated from the payment card to the mobile device and a portion or all of the payment card information may be rendered onto virtual card 3610.

[0315] A user of a mobile device may, for example, customize a visual appearance of virtual card 3610 by utilizing any number of graphical user interface objects (e.g., list 3604 and alphanumeric input box 3612) that may be rendered by GUI 3600. A user may, for example, drag-and-drop logos from list 3604 onto virtual card 3610 to more clearly identify virtual card 3610. Accordingly, for example, a user may identify virtual card 3610 as a gift card (e.g., a Walmart gift card), using drag-and-drop operation 3608, having a particular network brand (e.g., a VISA network brand), using drag-and-drop operation 3606. A user may, for example, annotate virtual card 3610 using alphanumeric input box 3612 with any identifying information that may be useful to the user (e.g., information that may be used to recall virtual card 3610 from a memory of a mobile device) .

[0316] A mobile device may, for example, disallow certain customizations that may conflict with virtual card 3610. Accordingly, for example, a mobile device may prevent a user from applying a different network logo than was previously communicated by a physical card to the mobile device. In so doing, for example, a mobile device may prevent a user from customizing virtual card 3610 as, for example, a M/C network brand, when a payment card number previously communicated from a payment card to a mobile device indicated that the payment card was, for example, a payment card having a VISA network brand.

[0317] A credit balance, for example, may be communicated by a gift card to a mobile device via a contactless communication channel generated between the gift card and the mobile device and may be displayed as

account balance 3614 to represent an amount of credit that may be remaining on virtual card 3614 . Virtual card 3610 may, for example, be used by a mobile device to complete a purchase transaction in which payment card information associated with virtual card 3610 may be communicated to a merchant terminal (e.g., communicated via an RFID communication channel) and an amount of the purchase may be communicated from the merchant terminal to the mobile device. Accordingly, for example, account balance 3614 may be updated (e.g., reduced) by the amount of the purchase and displayed so that a user of the mobile device may be updated as to an amount of credit remaining on virtual card 3610.

[0318] A user of a mobile device may, for example, purchase additional credit to be added to virtual card 3610. Accordingly, for example, account balance 3614 may be updated (e.g., increased) when an amount of credit is added to virtual card 3610. In so doing, for example, an amount of credit added to virtual card 3610 may be communicated (e.g., communicated via an RFID communication channel) to a mobile device by a merchant terminal and updated via account balance 3614 so that a user of the mobile device may receive up-to-date information relating to a credit balance that may be available on virtual card 3610. As per an example, a user may recall a virtual payment card from a memory of a mobile device, activate the payment card for use, and use the mobile device to purchase additional credit on virtual card 3610 using the activated payment card as the payment vehicle.

[0319] FIG. 37 shows GUI 3700 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 3700 may, for

example, provide a visual representation of all virtual cards that may be stored within a memory of a mobile device (or within a remote server) and may display each virtual card within one or more categories that may be associated with each virtual card. A processor of a mobile device may, for example, analyze information received from a physical card via a contactless communication channel (e.g., an RFID, electromagnetic, visible, audible, capacitive, or magnetic communication channel) to determine a card category that may be associated with the corresponding virtual card.

[0320] An account number may, for example, be communicated by a card to a processor of a mobile device that may identify the card as a particular card type (e.g., bank card, rewards card, identification card, healthcare card, travel card or airline card) . Accordingly, for example, each virtual card stored within a memory of a mobile device may be assigned a category index by a processor of the mobile device and may then be rendered onto GUI 3700 in accordance with the category index assigned. As per another example, a user of a mobile device may assign a category index (e.g., card identification) to a virtual card after information associated with a corresponding physical card is communicated to the mobile device via a contactless communication channel.

[0321] One or more payment cards, for example, may be rendered onto GUI 3700 and each payment card may be aligned within category 3706. An ordering of each payment card in category 3706 may, for example, be established by a user of a mobile device via sort options 3702. A mobile device may, for example, maintain statistics (e.g., number of times each virtual

payment card is recalled from a memory of a mobile device and used to complete a purchase transaction via the mobile device) . Accordingly, for example, upon selection of one of sort options 3702 (e.g., Most used) , a processor of a mobile device may recall usage statistics that may be associated with each virtual payment card stored within a memory of a mobile device and may display each virtual payment card within category 3706 onto GUI 3700 in accordance with such usage statistics (e.g., the top virtual payment card displayed within category 3706 may have the most usages of all virtual payment cards stored within a memory of the mobile device) .

[0322] A mobile device may, for example, maintain other information associated with virtual payment cards of category 3706. Accordingly, for example, a mobile device may access network devices (e.g., issuer servers) associated with each virtual payment card stored within the mobile device. In so doing, for example, a mobile device may collect information (e.g., credit limit and credit available) associated with each virtual payment card stored within a memory of the mobile device and may display each virtual payment card on GUI 3700 in accordance with sort options 3702 (e.g., the top card displayed within category 3706 may have the highest credit limit or may have the most credit available) .

[0323] Category 3708 may, for example, be associated with all virtual gift cards that may be stored within a memory of a mobile device (or remote server) . Information associated with each virtual gift card may, for example, include a merchant identifier, a merchant type identifier, and an amount of credit available.

Accordingly, for example, a user may select one of sort options 3704 (e.g., Most credit available) to display a list of virtual gift cards within category 3708 in a descending order, where the top virtual gift card of category 3708 may have the highest credit available.

[0324] A mobile device may, for example, be a locating device (e.g., a GPS) or may, for example, include location determination electronics . Accordingly, for example, a mobile device may determine its own location and may determine whether its location corresponds with a location of a merchant's place of business that may be associated with a virtual gift card of category 3708. In so doing, for example, a mobile device may determine that its location is within a Walmart store and if, for example, sort options 3704 is selected to "Location", then a processor of the mobile device may re-order the virtual gift cards of category 3706 such that a Walmart virtual gift card is displayed as the top card in the stack. Accordingly, for example, the Walmart virtual gift card may be conveniently located within GUI 3700 for selection by a user of a mobile device to use during a purchase transaction conducted between a contactless communication channel formed between the mobile device and a merchant terminal at the Walmart store.

[0325] Virtual cards may, for example, be autonomously sorted across categories depending upon a virtual card placement that may exist in a particular category. A virtual payment card may, for example, be selected to occupy a top card placement within category 3706. A virtual rewards card may, for example, be associated with the virtual payment card selected for top placement in category 3706. Accordingly, for

example, the associated virtual rewards card may be selected for top placement within category 3708 based upon its association with the virtual payment card selected for top placement within category 3706. As per another example, a virtual identification card (e.g., a virtual driver's license card) may be selected for top placement within category 3710 based upon its general association with any virtual payment card selected for top placement within category 3706 or its general association with any virtual gift card selected for top placement within category 3708.

[0326] FIG. 38 shows GUI 3800 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 3800 may, for example, provide a visual representation of all virtual cards that may be stored within a mobile device (or remote server) and may display each virtual card within one or more categories that may be associated with each virtual card. GUI 3800 may, for example, be rendered onto a touch-sensitive display of a mobile device, such that by touching a location of the display that corresponds to a location of a virtual card, that card may be selected for use. Accordingly, for example, a user may touch any area within virtual card 3804 to activate virtual card 3804 for use. In so doing, for example, indicia may be provided on GUI 3800 to indicate that virtual card 3804 has been selected for use (e.g., an outline of virtual card 3804 may be highlighted) and a copy of virtual card 3804 (e.g., virtual card 3802) may be rendered onto GUI 3800 to indicate to a user of the mobile device that virtual card 3802 has been selected for use.

[0327] FIG. 39 shows GUI 3900 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 3900 may, for example, allow a user of a mobile device to select (e.g., touch) one of the virtual cards rendered onto GUI 3900. Once selected, the virtual card may rise from its position (e.g., virtual card 3904 may be elevated above the neighboring virtual cards in category 3902) and may be highlighted to indicate the selection to a user. Once elevated, the selected virtual card (e.g., card 3904) may display relevant information associated with the virtual card (e.g., information displayed on a front surface of the virtual card such as account number and merchant affiliation) so that a user may verify that the selected virtual card is the virtual card that the user wishes to use. If the selected virtual card is not the virtual card that the user wishes to use, then the user may deselect (e.g., touch) the selected virtual card and the virtual card may fall back within the ranks of its neighboring virtual cards. If the selected virtual card is the virtual card that a user wishes to use, then the user may confirm (e.g., touch the selected virtual card twice) that the selected card is the desired virtual card for use.

[0328] FIG. 40 shows GUI 4000 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 4000 may, for example, allow a user of a mobile device to use selected virtual card 4002 in some manner. A user may, for example, wish to complete a purchase transaction using the mobile device and selected virtual card 4004. Accordingly, for example, upon selection of option

4004, information associated with selected virtual card 4002 may be communicated from a mobile device to, for example, a merchant terminal to complete a purchase transaction. In so doing, for example, a contactless communication channel (e.g., an RFID communication channel) may be formed between the mobile device and the merchant terminal and payment information (e.g., payment account number and expiration date) may be communicated from the mobile device to the merchant terminal via the contactless communication channel. As per another example, other information (e.g., one, two, or three tracks of magnetic stripe information) that may be associated with virtual card 4002 may be communicated by the mobile device to the merchant terminal when the mobile device detects the presence of an RFID communication channel formed between the mobile device and the merchant terminal.

[0329] A mobile device may, for example, request electronic receipts to be delivered to the mobile device after purchase transactions are completed. Accordingly, for example, receipts may be delivered to the mobile device via an electronic delivery method (e.g., text messaging or email) and may be stored within a memory of the mobile device for future use. In so doing, for example, a user may select option 4006 to view a list of one or more receipts that may be associated with purchases conducted via the mobile device and virtual card 4002.

[0330] A mobile device may, for example, request electronic bank statements to be delivered to the mobile device at the end of each billing cycle of virtual card 4002. Alternately, for example, a mobile device may access a network entity (e.g., an issuer's

server) to retrieve bank statement information that may be associated with virtual card 4002. Accordingly, for example, a user of a mobile device may review any and all bank statements associated with virtual card 4002 that a user's mobile device may have collected via its network access capabilities (e.g., a wireless access point or cellular network access infrastructure).

[0331] A mobile device may, for example, allow virtual card 4002 to be associated with one or more virtual cards stored within a memory of the mobile device (or remote server). For example, virtual card 4002 may be associated with one or more cards (e.g., a rewards card and a driver's license) and a user of a mobile device may view such associations using a GUI of the mobile device.

[0332] A mobile device may, for example, allow virtual card 4002 to be associated with one or more virtual cards that may be stored within a memory of another mobile device and/or may allow virtual card 4002 to be associated with one or more physical cards not stored within any mobile device. Virtual card 4002 may, for example, be one of many (e.g., two) cards issued against the same general account (e.g., a husband and wife joint charge account). Accordingly, for example, a mobile device may recognize that virtual card 4002 is one of a pair of cards associated with such a joint account and may provide information to the user of the mobile device about such associations.

[0333] FIG. 41 shows system 4100, which may include a mobile device (e.g., mobile wallet 4102), merchant terminal 4106 and GUI 4108 that may be executed by a processor of mobile wallet 4102. A user of mobile wallet 4102 may recall a virtual card (e.g., a virtual

payment card) from a memory of mobile wallet 4102 (or from a remote server) and use mobile wallet 4102 to communicate payment information associated with the virtual payment card to a merchant terminal. Accordingly, for example, a user of mobile wallet 4102 may have selected a virtual payment account from within a memory of mobile wallet 4102 (or remote server) to complete a payment transaction.

[0334] Once mobile wallet 4102 is brought within a communication distance (e.g., within approximately 2 inches) of merchant terminal 4106, a contactless communication channel (e.g., RFID communication channel 4104) may be generated between mobile wallet 4102 and merchant terminal 4106. Payment information associated with a virtual payment card selected by a user of mobile wallet 4102 may, for example, be autonomously communicated by a processor of mobile wallet 4102 to merchant terminal 4106 via contactless communication channel 4104 once a presence of merchant terminal 4106 is detected by the processor of mobile wallet 4102.

[0335] Contactless communication channel 4104 may, for example, be a two-way communication channel. Accordingly, for example, merchant terminal 4106 may communicate information to mobile wallet 4102 via contactless communication channel 4104. In so doing, for example, merchant terminal 4106 may communicate a total sale amount to mobile wallet 4102 and may wait for a user of mobile wallet 4102 to acknowledge that the total sale amount is correct (e.g., a user of mobile wallet 4102 may press an acknowledgment key that causes mobile wallet 4102 to communicate a confirmation message to merchant terminal via contactless communication channel 4104). Further communication

from merchant terminal 4106 may query mobile wallet 4102 as to whether a user of mobile wallet 4102 requires cash back.

[0336] Once a purchase transaction is completed, a user of mobile wallet 4102 may request a receipt to be delivered to mobile wallet 4102 via any one of a number of mediums. A user may, for example, request that a receipt be delivered to mobile wallet 4102 at a later time (e.g., receipt queued for delivery at a later time via text messaging or email) . A user may, for example, request that a receipt be delivered to mobile wallet 4102 immediately. Accordingly, for example, an electronic receipt may be generated by merchant terminal 4106 and communicated to mobile wallet 4102 via contactless communication channel 4104.

[0337] An application executing on a mobile device (e.g., a receipt handler application associated with GUI 4108) may have its own address. Accordingly, for example, the receipt handler's address may be well known within a network (e.g., a payment network), such that a server (e.g., an email server associated with a merchant's payment server) may email an electronic receipt directly to the receipt handler application that may be running on the mobile device. In so doing, for example, one or more applications running on a mobile device may have well known addresses (e.g., email addresses and multimedia message addresses) associated with them, so that the applications may directly communicate with network entities to autonomously provide a user of the mobile device with up-to-date and valuable information.

[0338] FIG. 42 shows system 4200, which may include a mobile device (e.g., mobile wallet 4202), merchant

terminal 4212 and GUI 4204 that may be executed by a processor of mobile wallet 4202. Mobile wallet 4202 may, for example, complete a purchase transaction with merchant terminal 4212 by exchanging payment information with merchant terminal 4212 via a contactless communication channel (e.g., RFID communication channel 4214). Merchant terminal 4212 may, for example, communicate electronic receipt 4206 to mobile wallet 4202 after a purchase transaction completes. Electronic receipt 4206 may, for example, be displayed by a processor of mobile wallet 4202 onto GUI 4204 so that a user of mobile wallet 4202 may view electronic receipt 4206 and may execute certain options that may be associated with electronic receipt 4206.

[0339] Mobile wallet 4202 may, for example, allow a user of mobile wallet 4202 to annotate electronic receipt 4206 with a note that may be entered into alphanumeric entry box 4208. Mobile wallet 4202 may, for example, allow electronic receipt 4206 to be associated with a virtual card (e.g., virtual payment card VISA 3456 that was used to complete the purchase transaction) stored within a memory of mobile wallet 1602.

[0340] FIG. 43 shows GUI 4300 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 4300 may, for example, allow a user of a mobile device to view receipts that may be associated with a selected virtual card. Accordingly, for example, a user of a mobile device may select a virtual card (e.g., virtual payment card 4302) and may view a summary of receipts that may be associated with virtual payment card 4302. In so doing, for example, a user may select summary receipt

4304 (e.g., by touching portion 4304 on GUI 4300) and a processor of the mobile device may retrieve details of summary receipt 4304 from a memory of the mobile device and display them in receipt detail area 4306.

[0341] FIG. 44 shows GUI 4400 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 4400 may, for example, allow a user of a mobile device to view virtual cards stored within a memory of the mobile device (or remote server) that may be associated with a selected virtual card. Accordingly, for example, selected virtual card 4402 may have an association with virtual rewards card 4404 and selected virtual card 4402 may have an association with virtual identification card 4406.

[0342] A mobile device may, for example, access a user's rewards account by accessing a network entity (e.g., an issuer's server) to determine information associated with the rewards account (e.g., number of rewards points earned) . A mobile device may, for example, access the network entity on a regularly scheduled basis and store the retrieved rewards account information within a memory location of the mobile device. A mobile device may, for example, access the network entity only upon demand to retrieve rewards account information and may only display the retrieved rewards account information without storing the retrieved rewards account information.

[0343] GUI 4400 may, for example, allow a user to obtain further information that may be associated with virtual cards 4404 and/or 4406. A user may, for example, touch a display of a mobile device in the vicinity of virtual card 4404 to obtain other

information (e.g., a rewards point balance) associated with virtual card 4404. Accordingly, for example, a user may obtain a rewards points total that may be associated with virtual card 4404 and may touch virtual card 4404 again to conduct a purchase transaction with rewards points that may be associated with virtual card 4404. In so doing, for example, a mobile device may, for example, establish a contactless communication channel (e.g., an RFID communication channel) with a merchant terminal and may communicate points information that may be associated with virtual card 4404 so that a purchase transaction may be completed using rewards points that may be associated with virtual card 4404.

[0344] GUI 4400 may, for example, provide other information to a user concerning virtual card 4406. For example, a processor of a mobile device may detect that an expiration date of virtual card 4406 is approaching. Accordingly, for example, a user may touch a display in the vicinity of virtual card 4406 to automatically renew the driver's license using the mobile device. In so doing, for example, a mobile device may contact a network entity (e.g., a driver's license renewal server) to order a renewal driver's license. The renewal driver's license may, for example, be delivered to the user as a physical card, in which case the user may upload information associated with the physical driver's license into the mobile device via a contactless communication channel formed between the physical driver's license and the mobile device. Alternately, for example, a mobile device may receive an electronic copy of a virtual driver's license and replace information associated

with virtual card 4406 with the updated information received from a driver's license renewal server.

[0345] FIG. 45 shows system 4500, which may include mobile wallet 4502 and a powered card (e.g., powered payment card 4506) . Powered card 4506 may, for example, include a contactless communication device (e.g., an RFID) that may communicate with a contactless communication device (e.g., an RFID) of mobile wallet 4502. A GUI executed by a processor of mobile wallet 4502 may invite a user of powered card 4506 to tap powered card 4506 against display 4504 of mobile wallet 4502. Such contact with, or proximity to, mobile wallet 4502 may generate a contactless communication channel within which information may be exchanged between powered card 4506 and mobile wallet 4502.

[0346] As per another example, powered card 4506 may include circuitry that may simulate a touch. Display 4504 may be touch-sensitive. Accordingly, for example, powered card 4506 may communicate data to mobile wallet 4502 by simulating a series of touches that may be sensed by display 4504 and processed by a processor of mobile wallet 4502 as data received from powered card 4506. Powered card 4506 may include light sensor 4510. Accordingly, for example, a processor of mobile wallet 4502 may generate a series of light pulses on a portion of display 4504 that may be detected by light sensor 4510 of powered card 4506 and processed by a processor of powered card 4506 as data communicated by mobile wallet 4502. In so doing, for example, data may be communicated by powered card 4506 via a series of simulated touches and data may be communicated by mobile wallet 4502 via a series of light pulses.

[0347] Information communicated by powered card 4506 to mobile wallet 4502 may, for example, include payment information (e.g., payment account number, expiration date, and cardholder name) . Information communicated by powered card 4506 to mobile wallet 4502 may, for example, include other information relating to a configuration of powered card 4506 including, for example, whether or not a display exists and if so, at what location; whether or not a manual input interface (e.g., one or more buttons) exists and if so, at what location; and whether or not a light sensor exists and if so, at what location. Accordingly, for example, configuration information relating to powered card 4506 may be communicated to mobile wallet 4502, so that when a virtual card relating to powered card 4506 is generated and stored within mobile wallet 4502, the virtual card may employ all of the features that may be employed by its physical counterpart.

[0348] Information communicated by powered card 4506 may, for example, be encrypted. Decryption may, for example, be executed within mobile wallet 4502 so that information communicated by powered card 4506 may be stored within a memory of mobile wallet 4502 in a decrypted format. Alternately, for example, information communicated by powered card 4506 may be stored within a memory of mobile wallet 4502 in an encrypted format. Mobile wallet 4502 may, for example, authenticate itself to a network entity (e.g., an issuer server) such that each time encrypted information is recalled from a memory of mobile wallet 4502, a decryption key may be communicated by the network entity to mobile wallet 4502 for decryption purposes .

[0349] FIG. 46 shows GUI 4600 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 4600 may, for example, display virtual card 4602 that may employ all of the features of its physical counterpart. Accordingly, for example, manual input interfaces (e.g., virtual buttons 4606 through 4614) may have the same functionality on virtual card 4602 as they do on the physical counterpart to virtual card 4602. In so doing, for example, virtual buttons 4606 through 4614 may be displayed on portions of GUI 4600 that may be touch-sensitive, such that when virtual buttons 4606 through 4614 are touched, a processor of the mobile device may impart a functionality to the mobile device just as if the mobile device itself was the physical card (e.g., a PIN may be entered into virtual card 4602 via one or more buttons 4606-4614 to unlock virtual dynamic portion 4618 of virtual payment card number 4616).

[0350] A mobile device may, for example, provide a light-sensitive display, such that when virtual card 4602 is rendered onto the light-sensitive display, light sensor 4604 may exhibit the same functionality as its physical counterpart. Accordingly, for example, virtual card 4602 may be rendered so that light sensor 4604 exists on a light-sensitive portion of a display of a mobile device. A processor of the mobile device may, for example, detect light pulses sensed at light sensor 4604 as data communicated to virtual card 4602. In so doing, for example, virtual card 4602 may receive information that changes the functionality of virtual card 4602 (e.g., an expiration date of virtual payment card 4602 may be updated via light sensor 4604).

[0351] A mobile device may, for example, provide a display that may simulate touch. Accordingly, for example, virtual card 4602 may be rendered onto a display of a mobile device so that touch-simulating portion 4620 aligns with a portion of the display that may be capable of simulating touch. In so doing, for example, virtual card 4602 may communicate information to another device (e.g., another mobile device) when touch-simulating portion 4620 of GUI 4600 is pressed against another device (e.g., a touch-sensitive display of another mobile device) and simulates a series of touches that may be construed by a processor of the other device as data communicated to the other device.

[0352] Virtual display 4618 may, for example, display a dynamic portion of payment card number 4616 just as it would be displayed on the physical counterpart to virtual card 4602. For example, virtual card 4602 may be disabled for use when virtual display 4618 does not display a valid portion of virtual card number 4616. Upon entry of a password (e.g., a PIN may be entered by touching one or more buttons 4606-4614 that corresponds to the PIN), virtual card 4602 may be activated for use. Accordingly, for example, once a valid PIN is entered, virtual display 4618 may be populated with a remaining portion of virtual payment card number 4616 thereby activating virtual card 4602 for use. In so doing, for example, a mobile device that displays activated virtual card 4602 via GUI 4600 may communicate payment information (e.g., virtual payment card number 4616 and expiration date) to a device (e.g., a merchant terminal) via a contactless communication channel (e.g., an RFID communication channel) so that a purchase transaction may be

completed between the mobile device and the merchant terminal .

[0353] FIG. 47 shows GUI 4700 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 4700 may, for example, display virtual card 4702 that may employ all of the features of its physical counterpart. For example, a powered card (e.g., a powered payment card) may establish a contactless communication channel (e.g., an RFID communication channel) with a mobile device and communicate configuration and payment information that may be associated with the powered card. Accordingly, for example, a powered card may provide a manual interface (e.g., buttons) to allow a user to select a method of payment (e.g., credit, debit, or points) at the point of sale and may communicate such methods of payment to a mobile device. In so doing, for example, a mobile device may render virtual payment card 4702 having a virtual manual interface (e.g., virtual buttons 4704 through 4708), which a user may select (e.g., touch) in order to select a method of payment to be used by the mobile device when the mobile device communicates payment information to complete a purchase transaction.

[0354] A mobile device may, for example, establish a contactless communication channel (e.g., an RFID communication channel) with a merchant terminal to communicate payment information to the merchant terminal to complete a purchase transaction. Accordingly, for example, a user may touch one of virtual buttons 4704-4708 just prior to placing the mobile device within a proximity to the merchant terminal. In so doing, for example, the mobile device

may communicate one, two, and/or three tracks of magnetic stripe data to the merchant terminal and may include additional information (e.g., within a discretionary data field) to communicate a method of payment (e.g., credit, debit, or points) to the merchant terminal. Persons skilled in the art will appreciate that payment information may be communicated by a mobile device to a network entity (e.g., a payment server) via a wireless interface (e.g., a cellular interface) such that a method of payment (e.g., credit, debit, or points) may be communicated by the mobile device to the payment server to complete a remote purchase transaction.

[0355] FIG. 48 shows GUI 4800 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 4800 may, for example, allow a user of a mobile device to break a payment up into multiple payment methods for a single purchase. For example, a user of a mobile device may have provided a mobile device within a proximity to a merchant terminal, such that the mobile device may have communicated a method of payment (e.g., credit) to the merchant terminal based upon a user selection made via a GUI displayed by the mobile device. A processor of the mobile device may, for example, recognize that a virtual card selected by the user for payment may offer additional payment methods (e.g., debit and points). Accordingly, for example, GUI 4800 may be rendered by a processor of the mobile device to allow the user of the mobile device the option to spread the payment across several accounts by entering amounts into alphanumeric entry boxes 4804-4808. In so doing, for example, a user may spread a purchase across multiple payment

methods by entering an amount desired to be charged to each payment method (e.g., $5 credit, $5 debit, and 1500 points for a $25 total purchase). The mobile device may, for example, settle the transaction as three separate financial transactions by communicating payment information to one or more network entities (e.g., a payment server) that corresponds to each of the three financial transactions.

[0356] FIG. 49 shows GUI 4900 that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 4900 may, for example, communicate a credit offer to a user of a mobile device that may have been communicated to the mobile device via any one of a number of electronic means (e.g., text messaging, email, or internet browser pop-up). A credit offer may, for example, be extended to a user of a mobile device to add a payment card to the user's mobile device. A credit offer (e.g., credit offer 4906) may, for example, be extended to a user of a mobile device to replace a virtual card (e.g., virtual payment card 4904) that already exists within the user's mobile device. Accordingly, for example, network entities may examine virtual cards and related information that may be stored within a memory of a mobile device and attempt to sway the user of the mobile device to opt into another virtual card offer that may be better for the user (e.g., the new virtual card may offer a lower interest rate than a user's current virtual payment card).

[0357] GUI 4900 may, for example, provide credit offer options 4908 to a user of a mobile device. Accordingly, for example, a user may elect to accept a new credit offer and cancel a current virtual payment

card with the same option. In so doing, for example, a mobile device may communicate with a network entity (e.g., an issuer of virtual payment card 4904) to cancel virtual payment card 4904 and may communicate with a network entity (e.g., an issuer for payment card offer 4906) to open the new payment account being offered .

[0358] Other options may be provided by GUI 4900. For example, a user may opt to accept the new credit offer, but keep virtual payment card 4904 as well. As per another example, a user may opt to accept the new credit offer, keep virtual payment card 4904, and transfer any balance that may be owing on virtual payment card 4904 to the new payment account now being offered.

[0359] FIG. 50 shows mobile application 5000 that may be executed by a processor of a mobile device and provided onto a display of the mobile device. Application 5000 may, for example, be any executable application that may reside within a memory of a mobile device. For example, application 5000 may be an internet browsing application that may allow a user of a mobile device to browse online for goods and/or services and may allow the user to purchase such goods and/or services from application 5000. As per another example, mobile application 5000 may be a gaming activity that may require a purchase transaction to continue on to a next level of play or to obtain gaming features for purchase.

[0360] Application 5000 may, for example, provide access to mobile wallet 5002 which may be another application running on a mobile device. Accordingly, for example, when application 5000 requires payment for

a particular function performed by application 5000 (e.g., a user wishes to purchase goods from an Amazon website), application 5000 may launch mobile wallet 5002 to allow a user to select a method of payment from mobile wallet 5002. A user may browse through each virtual card of mobile wallet 5002 by touching a virtual card to display the virtual card. Once a user has verified that a particular virtual card is the virtual card to be used to complete a purchase transaction, the user may touch the virtual card twice again to authorize a mobile device to complete a purchase transaction using payment information associated with the selected virtual card.

[0361] As per another example, a user may preselect payment options, such that mobile application 5000 need not launch mobile wallet 5002 to obtain a payment authorization. Instead, for example, a user may pre-authorize one virtual payment card within mobile wallet 5002 to be used by any other application running on a mobile device for purchase transactions. In so doing, for example, a user may pre-authorize payment information to be autonomously retrieved from mobile wallet 5002 without involving user interaction to authorize application 5000 for the purchase transaction.

[0362] FIG. 51 shows flow charts for process sequences 5110-5150. Process sequence 5110 may, for example, execute a mobile wallet application on a mobile device (e.g., as in step 5111) to request a user of the mobile device to present a card to the mobile device. In step 5112, a user may present a card to a mobile device (e.g., tap a card onto a display of a mobile device). In step 5113, a contactless

communication channel (e.g., an RF, capacitive, audible, visible, electromagnetic, or magnetic communication channel) may be generated between a card and a mobile device to communicate card information from the payment card to the mobile device. In step 5114, information may be stored within the mobile device or remote server (e.g., virtual cards may be generated, stored, and displayed by a GUI of the mobile device) for future use.

[0363] Process sequence 5120 may, for example, autonomously detect that a card is in a touching or a proximity relationship to a mobile device (e.g., as in step 5121). In step 5122, a contactless communication channel (e.g., an RF, capacitive, audible, visible, electromagnetic, or magnetic communication channel) may be generated between a card and a mobile device to communicate information from the card to the mobile device. In step 5123, information associated with each physical card presented to the mobile device may be stored within the mobile device for future use.

[0364] Step 5131 of sequence 5130 may include presenting a card to a mobile device. A card may, for example, be a powered card or a non-powered card. In steps 5132 and 5133, a contactless communication channel may be established between a card and a mobile device and information may be exchanged between the card and the mobile device.

[0365] A card may, for example, include a near-field communication device (e.g., an RFID) that may communicate with a contactless communication device of a mobile device to form a two-way communication channel between the card and the mobile device. A card may, for example, include circuitry to simulate touch (e.g.,

a capacitance change) in order to form a contactless communication channel with a mobile device. Accordingly, for example, a card may be pressed against a touch-sensitive display of a mobile device and information may be communicated by the card to the mobile device through a series of card-simulated touches that may be detected by the touch-sensitive display of the mobile device.

[0366] A card may, for example, include a light sensor to form a contactless communication channel with a mobile device. Accordingly, for example, a card may be pressed against a display of a mobile device and information may be communicated from the mobile device to the card through a series of light pulses generated by the display of the mobile device. A frequency, pulse width, and/or a pulse intensity of light pulses may, for example, be detected by a processor of a card as data communicated by a mobile device.

[0367] A card may, for example, include a light source (e.g., an LED) to form a contactless communication channel. Accordingly, for example, a card may emit varying light pulses from an LED that may be detected by a motion-capture device (e.g., a camera) of a mobile device as data communicated by the card. A card may, for example, include sound emission capabilities that may be detected by a microphone of a mobile device as data communicated by the card through a contactless communication channel. A mobile device may, for example, include sound emission capabilities that may be detected by a microphone of a card as data communicated by the mobile device through a contactless communication channel.

[0368] Step 5141 of sequence 5140 may include arranging information contained within a memory of a mobile device and/or a remote server and rendering the information on a display of a mobile device. The rendered information may, for example, be virtual cards that are representative of physical card counterparts previously presented to the mobile device for upload.

[0369] The virtual cards may, for example, be arranged according to category (e.g., payment cards, gift cards and identification cards) . Within each category, virtual cards may be sorted according to any sort preference. For example, payment cards may be sorted in an order of most frequently used to least frequently used, in order of most available credit to least available credit, or in order of highest credit limit to lowest credit limit. Other cards (e.g., merchant gift cards) may be sorted in accordance with a user's location. For example, a mobile device may determine a location of its user and may sort virtual cards in response to the determined location (e.g., a virtual Walmart gift card may be displayed at the top of a gift card list based upon a user's location within a Walmart store) .

[0370] Virtual cards displayed by a GUI of a mobile device may, for example, be selected for use (e.g., as in step 5142) . A user may, for example, touch a virtual card among several virtual cards displayed by a mobile device to view information related to the touched virtual card. If desired for use, the touched virtual card may be touched twice again and activated for use (e.g., as in step 5143) . An activated virtual card may, for example, be used to complete a purchase transaction via the mobile device. An activated

virtual card may, for example, be deleted from a memory of the mobile device. Documents associated with an activated virtual card, such as purchase transaction receipts and bank statements, may be viewed from a display of a mobile device. Virtual cards that may be associated with an activated virtual card may be viewed from a display of a mobile device and activated themselves to perform other functions (e.g., an activated virtual payment card may be associated with a virtual rewards card, where the virtual rewards card may be activated to obtain and view the total number of rewards points that may be associated with the virtual rewards card) .

[0371] Step 5151 of sequence 5150 may include running an application on a mobile device. Such an application may be any executable application that may require purchase transactions to be completed while the application executes. As per one example, a user booking airline tickets using his or her mobile device may select their itinerary and may book their itinerary through a purchase transaction conducted by the mobile device. Accordingly, for example, the mobile application may request access to a mobile wallet application also running on the mobile device (e.g., as in step 5152), a user may grant access to the mobile wallet application (e.g., as in step 5153) by selecting a virtual payment card from within the mobile wallet and may authorize a purchase transaction to be conducted by the mobile application using the authorized virtual payment card. As per another example, a mobile application may autonomously request access to a mobile wallet application (e.g., as in step 5152) that has been pre-authorized by a user of the

mobile device (e.g., as in step 5153) such that the mobile application may autonomously conduct the purchase transaction without any further involvement with the user.

[0372] FIG. 52 shows mobile device 5200. Mobile device 5200 may be any mobile device, such as a mobile telephonic device (e.g., cell phone), a PDA, an electronic tablet, an MP3 player, or a locating device (e.g., a GPS device). Accordingly, mobile device 5200 may be operated in a mobile environment while a user of mobile device 5200 goes about his or her daily activities (e.g., driving, shopping, walking, dining, and exercising). In addition, for example, mobile device 5200 may perform multiple functions simultaneously (e.g., a person may carry on a conversation while at the same time browsing and authorizing purchases on the internet).

[0373] Mobile device 5200 may include audio processing devices (e.g., microphone 5208 and speaker 5210). Accordingly, for example, mobile device 5200 may receive voice commands from a user via microphone 5208 and may process such commands to perform a function. For example, a user may place mobile device 5200 into a desired operational mode by speaking a command into microphone 5208 that is associated with the desired operational mode. In so doing, for example, mobile device 5200 may engage in hands-free operation by receiving voice commands via microphone 5208 and performing functions associated with the received voice commands.

[0374] Mobile device 5200 may receive data input via microphone 5208. For example, a voice-band modem may generate signals in a voice-band frequency range that

may be received by microphone 5208. A processor of mobile device 5200 may interpret the received audible information as data signals and may process the data signals as, for example, data values and/or control data input .

[0375] Mobile device 5200 may include camera 5202. Camera 5202 may capture one or more frames of video data and store the video data within a memory of mobile device 5202. Accordingly, for example, a processor of mobile device 5200 may receive one or more frames of video information via camera 5202 and may process the video information as data values and/or control data input. In so doing, for example, mobile device 5200 may receive optical information that may be sensed by camera 5202 during a series of one or more video capture events that produce one or more frames of video information. The one or more frames of video information may contain one or more data elements (e.g., pixels) having properties (e.g., color, intensity, or contrast) that may be interpreted by a processor of mobile device 5200 as data values and/or control data.

[0376] Mobile device 5200 may include manual input interface 5212. Manual input interface 5212 may, for example, include keys and/or buttons that may be sensitive to manual input, such as a touch or an application of pressure. Accordingly, for example, a user of mobile device 5200 may enter information into mobile device 5200 via manual interface 5212 to cause a processor of mobile device 5200 to enter a particular mode of operation. Manual interface 5212 may, for example, be used for data entry (e.g., dialing a phone number or entering data as may be requested by mobile

device 5200) during a particular mode of operation of mobile device 5200.

[0377] Mobile device 5200 may include display 5204. Display 5204 may provide visible information that may be utilized by a user during interaction with mobile device 5200. A portion or all of display 5204 may be touch sensitive such that objects making contact with display 5204 or objects coming within a proximity of display 5204 may be detected by a processor of mobile device 5200. Accordingly, for example, mobile authorization graphical user interface 5206 may be provided by display 5204 so that graphical information may be displayed to solicit and/or receive data entry from a user. In so doing, for example, touch-sensitive graphical user interface devices such as radio buttons, alphanumeric input boxes, virtual buttons, pull-down menus, and navigational tools may be used for data entry to initiate, change, and/or support functions performed by mobile device 5200.

[0378] FIG. 52 shows architecture 5250. User interface 5252 may, for example, be included within architecture 5250 to allow user interaction with architecture 5250. For example, a dedicated key pad or keyboard may be included within user interface 5252 to allow alphanumeric data entry into architecture 5250.

[0379] Architecture 5250 may include one or more displays 5254. Display 5254 may, for example, be touch-sensitive. Accordingly, for example, display 5254 may be utilized for alphanumeric data entry using virtual buttons that may be rendered onto touch-sensitive portions of display 5254. In so doing, for example, touching virtual buttons that may be associated with alphabetic and numeric characters of

display 5254 may be detected by processor 5258 as alphanumeric data entry.

[0380] Alphanumeric entry boxes may, for example, be rendered onto display 5254. A user may, for example, activate a cursor within such an alphanumeric entry box by touching an area within the alphanumeric entry box. A user may utilize user interface 5252 and/or a virtual keypad rendered onto display 5254 to select alphanumeric characters to be placed within the alphanumeric entry box in accordance with a character position identified by an activated cursor within the alphanumeric entry box. In so doing, for example, processor 5258 may receive alphanumeric characters as typed into a alphanumeric entry box of display 5254 and may use such alphanumeric characters as data input.

[0381] Display 5254 may, for example, provide data output from architecture 5250. For example, display 5254 may communicate data using a series of light pulses. Accordingly, for example, processor 5258 may cause one or more portions of display 5254 to produce light pulses having varying characteristics (e.g., duration, intensity, and frequency) that may communicate information via such light pulses. In so doing, for example, a device that may be sensitive to light pulses may receive information communicated by display 5254 via light pulses having varying characteristics. Display 5254 may, for example, communicate data using visual information that may be substantially static (e.g., a barcode).

[0382] Architecture 5250 may include one or more transceivers 5256. Transceiver 5256 may communicate information to and/or may receive information from one or more devices. Transceiver 5256 may, for example,

communicate via a wireless interface with one or more cellular stations of a mobile network. Accordingly, for example, transceiver 5256 may allow a mobile device (e.g., mobile device 5200 of FIG. 52) to establish a communications channel with an associated cellular station. In so doing, for example, a mobile device (e.g., mobile device 5200 of FIG. 52) may exchange information (e.g., voice, text, data, or multimedia) with one or more terrestrial networks (e.g., the internet or a payment network) via an associated cellular station. As per another example, transceiver 156 may exchange information with one or more other mobile devices via one or more associated cellular stations .

[0383] Transceiver 5256 may, for example, communicate via a wireless interface with one or more mobile devices directly. Accordingly, for example, transceiver 5256 may communicate with another mobile device without first accessing a mobile network via a cellular station of the mobile network. As per another example, transceiver 5256 may, for example, communicate via a wireless interface with one or more network devices (e.g., a wireless access point) directly. Accordingly, for example, a mobile device (e.g., mobile device 5200 of FIG. 52) may directly connect to a wired and/or a wireless network via any one or more wireless standards (e.g., Bluetooth or Wi-Fi) to exchange information with other devices that may be connected to the wired and/or wireless network. In so doing, for example, a wired and/or wireless network may be accessed by a mobile device without first accessing a mobile network via a cellular station of a mobile network .

[0384] Architecture 5250 may include contactless communication device 5262, which may communicate via any one or more contactless communication methodologies, such as for example, near field communications (e.g., RFID), Bluetooth, touch simulation, light pulsing (e.g., via an LED), and electromagnetic data communication (e.g., via a dynamic magnetic stripe communications device) . Accordingly, for example, contactless communication device 5262 may be compatible with any contactless device, such as for example, an RFID enabled payment card and a contactless reader (e.g., a magnetic stripe reader or an NFC reader) .

[0385] A non-powered card may, for example, communicate with contactless communications device 5262. Contactless communication device 5262 may, for example, establish a carrier field (e.g., an RF field) that may be modulated by a device (e.g., an RFID tag) of a non-powered payment card. In so doing, for example, an RFID tag of a non-powered payment card may derive operational power from an RF field provided by contactless communications device 5262 and may communicate information (e.g., one, two, and/or three tracks of magnetic stripe data) to contactless communication device 5262 by modulating the RF field produced by contactless communications device 5262.

[0386] A powered card may, for example, communicate with contactless communication device 5262. A powered card may, for example, include a processor, a battery, a memory, wireless communication devices (e.g., a dynamic magnetic stripe communications device or RFID) and other electronics (e.g., buttons) that may allow a user to interact with the powered card to perform one

or more functions. Accordingly, for example, a powered card may be used to communicate specific information to contactless communication device 5262 by selective interaction with the buttons of the powered card. In so doing, for example, a powered card may be used to interactively communicate magnetic stripe information (e.g., one, two, and/or three tracks of magnetic stripe data) to contactless communication device 5262 by sending a signal to a processor of a powered card (e.g., by pressing a button on the powered card) to initiate such communications .

[0387] Contactless communication device 5262 may receive variable data sets from a powered card based upon, for example, manual input provided to a powered card. For example, a button associated with an on-line purchase may be pressed on the powered card that causes a variable data set (e.g., account number and expiration date) to be communicated from the powered card to contactless communication device 5262.

[0388] Discretionary data may, for example, be communicated by a powered card based upon which button was pressed on the powered card. In so doing, for example, a security code (e.g., "111") may be communicated within a discretionary data field when a button associated with a particular feature (e.g., pay with credit) is pressed on the powered card. As per another example, a different security code (e.g., "222") may be communicated within a discretionary data field when a button associated with a different feature (e.g., pay with debit) is pressed on the powered card. A powered card may, for example, communicate a different security code no matter what feature may be selected on the powered card. Accordingly, for

example, processor 5258 may identify what type of device may be in communication with contactless communication device 5262 by analyzing the data communicated to contactless communication device 5262.

[0389] Any device having contactless communication capability may communicate with contactless communication device 5262 to authorize functions that may be performed by a mobile device. An RFID enabled device (e.g., an RFID equipped automobile key) may, for example, communicate with contactless communication device 5262 to authorize functions that may be performed by a mobile device (e.g., mobile device 5200 of FIG. 52) on a device that may be controlled by the RFID enabled device (e.g., an automobile that corresponds to the RFID equipped automobile key). For example, processor 5258 may execute an automobile application that may wirelessly communicate with an automobile to perform remote functions (e.g., start an engine of the automobile or unlock the driver's door). Through use of an RFID equipped key, for example, such functions may be authorized to be performed by a mobile device (e.g., mobile device 5200 of FIG. 52) once the RFID equipped key has communicated the necessary security credentials (e.g., a key code) to an application running on a processor of the mobile device to establish that a one-to-one correspondence exists between the automobile and the RFID equipped key.

[0390] Architecture 5250 may include memory 5260 and/or processor 5258 may include internal memory. Accordingly, for example, application code may be stored within memory 5260 and/or processor 5258 and executed by processor 5258 in support of functions performed by architecture 5250. For example, an

application (e.g., a graphical user interface) may be executed by processor 5258 and displayed onto display 5254, which may be used to interact with a user of a mobile device (e.g., mobile device 5200 of FIG. 52). Persons skilled in the art will appreciate that executable application code may be communicated to architecture 5250 via any one or more interfaces of architecture 5250 (e.g., user interface 5252, display 5254, transceiver 5256, and/or contactless communication device 5262).

[0391] Application data (e.g., security credentials) may be stored within memory 5260 and accessed by processor 5258 during operation. For example, security credentials may be stored within memory 5260 and recalled by processor 5258 to authorize a function that may be performed by processor 5258 of a mobile device (e.g., mobile device 5200 of FIG. 52). Accordingly, for example, processor 5258 of a mobile device may challenge a user of the mobile device to produce security credentials to authorize any function that may be performed by the mobile device. A processor of the mobile device may, for example, validate the security credentials locally within the mobile device itself. Alternately, for example, security credentials may be forwarded to a network entity (e.g., an authorization server) for remote validation.

[0392] FIG. 53 shows network topology 5300 that may include, for example, mobile device 5302 (e.g., a mobile telephonic device, a PDA, an electronic tablet, a laptop, a GPS unit, or an MP3 player). Mobile device 5302 may, for example, include a contactless interface that may initiate, sustain, and/or terminate communication channel 5326 between contactless device

5304 and mobile device 5302. Contactless device 5304 and mobile device 5302 may communicate via channel 5326 using any number of contactless mediums, which may include for example, visible, audible, capacitive, electromagnetic, magnetic, and/or RF mediums.

[0393] Mobile device 5302 may provide one or more transceivers that may communicate with one or more wired networks (e.g., IP network 5312 and/or payment network 5314) and/or one or more wireless networks (e.g., mobile network 5310). Mobile device 5302 may, for example, communicate with a cellular station over a wireless radio interface (e.g., a GSM air interface) that may be used by mobile device 5302 to communicate information (e.g., voice and data) to cellular network access infrastructure 5306 (e.g., one or more GSM base transceiver stations, base station controllers, and mobile switching centers). Persons skilled in the art will appreciate that cellular network access infrastructure 5306 may utilize any multiple access architecture, such as for example, a code-division multiple access architecture and/or a time-division multiple access architecture.

[0394] Mobile device 5302 may, for example, communicate with wireless access point 5308 over a wireless interface (e.g., a Bluetooth interface or a Wi-Fi interface). Accordingly, for example, mobile device 5302 may access one or more wired networks (e.g., IP network 5312 and/or payment network 5314) and/or one or more wireless networks (e.g., mobile network 5310) without the need to first gain access to cellular network access infrastructure 5306.

[0395] Contactless device 5304 may, for example, be a powered card, a non-powered card (e.g., a powered

payment card or a non-powered payment card) or any contactless enabled device (e.g., an RFID enabled device). Accordingly, for example, security credentials may be communicated via a contactless communication channel from contactless device 5304 to mobile device 5302 to authenticate a purchase transaction that may be performed by mobile device 5302. In so doing, for example, items for purchase on IP network 5312 (e.g., the internet) may be accessed by a browser of mobile device 5302 via an access point (e.g., wireless access point 5308 or cellular network access infrastructure 5306), payment information may be retrieved from a memory of mobile device 5302, a user of mobile device 5302 may be challenged for security credentials (e.g., at least a portion of a payment account number and a card expiration date communicated to mobile device 5302 from a payment card corresponding to the payment information retrieved from a memory of mobile device 5302), such payment information may be authenticated by such security credentials, and such payment information may be communicated to network entities (e.g., issuer 5320) to complete the purchase transaction.

[0396] Issuer 5320 may, for example, contact authorization server 5316 via a network (e.g., payment network 5314) with payment information and security credentials received from mobile device 5302 for authorization of a purchase. Once authorized, payment transaction information may be recorded onto a receipt that may be delivered to mobile device 5302 via any one or more delivery options (e.g., via a short messaging service of mobile network 5310 or an email delivery service of IP network 5312). Mobile device 5302 may

allow a user to associate purchase categories (e.g., groceries, auto repair, or entertainment) to purchases transacted by the mobile device so that the user may receive a more detailed accounting of his or her expenditures on his or her receipt. Accordingly, for example, a user may enjoy a higher degree of integration such that a user may customize a level of detail provided on a receipt via mobile device 5302.

[0397] A payment receipt may, for example, be provided to mobile device 5302 as a proof-of-purchase object (e.g., a barcode) that may be provided to a display of mobile device 5302 and read by other computing equipment (e.g., a barcode scanner) for proof-of-purchase confirmation.

[0398] A processor of mobile device 5302 may, for example, authorize wireless device 5334 to perform functions that may be authenticated by contactless device 5304 (e.g., via security credentials communicated by contactless device 5304 to a processor of mobile device 5302). Accordingly, for example, a processor of mobile device 5302 may require security credentials to be communicated by contactless device 5304 via contactless communication channel 5326 and based upon a validity of the security credentials communicated, the processor may communicate instructions to wireless device 5334 via contactless communication channel 5336 to perform some function. As per another example, a processor of mobile device 5302 may communicate instructions (e.g., via wireless access point 5308 or cellular network access infrastructure 5306) to wireless device 5334 (e.g., a car or a home) to perform a function (e.g., start the

engine of the car) based upon a validity of security credentials communicated by contactless device 5304.

[0399] A processor of mobile device 5302 may, for example, locally validate security credentials communicated by contactless device 5304. Alternately, for example, mobile device 5302 may forward security credentials communicated by contactless device 5304 to a network entity (e.g., authorization server 5332) for remote validation.

[0400] A mobile device (e.g., mobile device 5324) may, for example, include a contactless communication device (e.g., an RFID device) that may initiate, sustain, and/or terminate contactless communication channel 5328 with merchant terminal 5318. Accordingly, for example, a processor of mobile device 5324 may communicate payment information to merchant terminal 5318 to complete a financial transaction. In so doing, for example, a processor of mobile device 5324 may receive payment information via contactless communication channel 5330 from contactless device 5322 (e.g., a powered or a non-powered card) and store the received payment information within a memory of mobile device 5324. To complete a purchase transaction, contactless device 5322 may, for example, be presented to mobile device 5324 and may communicate security credentials (e.g., at least a portion of a payment card number and a cardholder's name) via contactless communication channel 5330. A processor of mobile device 5324 may validate the security credentials and may forward the payment information onto merchant terminal 5318 to complete the purchase transaction.

[0401] FIG. 54 shows system 5400, which may include mobile device 5402 and contactless devices 5408-5414.

Mobile device 5402 may, for example, be a laptop computer, a PDA, a mobile telephonic device (e.g., a smartphone) , an MP3 player, a GPS, or any other mobile device. Display 5404 may be a touch-sensitive display (e.g., sensitive to a change in capacitance) . Contactless devices may, for example, include non-powered payment card 5408, identification card (e.g., driver's license 5410), powered payment card 5412, key 5414, and any other device capable of communicating security credentials to mobile device 5402 via a contactless communication channel that may be formed with mobile device 5402.

[0402] Mobile device 5402 and contactless devices 5408-5414 may each include a contactless communication device (e.g., an RFID device) that may communicate via a contactless communication channel that may be formed between mobile device 302 and contactless devices 5408-5414 after coming into proximity to one another. Contactless devices 5408-5414 may, for example, be tapped onto display 5404 of mobile device 5402 to establish a proximity relationship that forms a communication channel with mobile device 5402. As per another example, contactless devices 5408-5414 may be brought within a proximity distance (e.g., up to two inches) of mobile device 5402 to establish a contactless communication channel with mobile device 5402 .

[0403] A processor of mobile device 5402 may, for example, execute application code that may generate a graphical user interface (GUI) onto display 5404 of mobile device 5402. Message 5406 of a GUI may invite a user of mobile device 5402 to begin a mobile authorization by tapping a contactless device against

display 5404. As per another example, by tapping a contactless device against mobile device 5402, a processor of mobile device 5402 may autonomously determine that a mobile authorization is desired and may then generate a mobile authorization GUI onto display 5404.

[0404] Mobile device 5402 may, for example, autonomously determine a type of contactless device that may be tapped against it. For example, a processor of mobile device 5402 may receive security credentials that may be indicative of a non-powered payment card (e.g., security credentials received from non-powered payment card 5408 may include at least a portion of a payment card number and a cardholder's name). As per another example, a processor of mobile device 5402 may receive security credentials that may be indicative of a powered card (e.g., security credentials received from powered card 5412 may contain a dynamically generated security code). Security credentials received from powered card 5412 may, for example, include a dynamic security code that may change for each function authorized by powered card 5412.

[0405] A contactless device (e.g., key 5414) may, for example, be a key that may start the ignition of a car, open a door to a home, or open a safe deposit box. Key 5414 may, for example, include a contactless communication device (e.g., an RFID device) that may communicate security credentials to a processor of mobile device 5402. Once security credentials received from key 5414 are validated, a processor of mobile device 5402 may effect an operation that may eliminate the need to physically use key 5414 to perform the

operation (e.g., a user of mobile device 5402 may remotely start the engine of the user's car by running an application on a processor of mobile device 5402 to validate security credentials received from key 5414 and wirelessly communicate with a wireless device of the user's car to start its ignition). As per an example, the user's physical key 5414 may, for example, be locked inside the user's car, in which case the user may select another contactless device (e.g., identification card 5410) to present to mobile device 5402. Identification card 5410 may, for example, communicate security credentials to a processor of mobile device 5402 and once the processor authorizes the identify of the user of mobile device 5402, mobile device 5402 may, for example, wirelessly communicate with the user's car to unlock its doors so that the user may retrieve key 5414 that may have been previously locked within the user's car.

[0406] Powered payment card 5412 may, for example, include electronics to simulate a human touch (e.g., powered payment card 5412 may generate a change in capacitance that may be sensed by display 5404). Through a series of simulated touches, powered payment card 5412 may communicate a series of data bits to display 5404, which may then be processed by a processor of mobile device 5402 as security credentials. In so doing, for example, a contactless communication channel may be established where data is transferred from powered payment card 5412 to a processor of mobile device 5402 via a series of simulated touches to authorize a function to be performed (or commanded to be performed) by a processor of mobile device 5402.

[0407] Powered payment card 5412 may, for example, include a light sensor. Accordingly, for example, powered payment card 5412 may be sensitive to light pulses generated within a region of display 5404. The light sensor of powered payment card 5412 may receive a series of light pulses, which may be construed by a processor of powered payment card 5412 as data generated by a processor of mobile device 5402. In so doing, for example, powered payment card 5412 may receive an optical data stream represented by a series of light pulses generated by display 5404. As such, a two-way communication channel may be formed, where simulated touches may generate a data stream from powered payment card 5412 to mobile device 5402 and light pulses may generate a data stream from mobile device 5402 to powered payment card 5412.

[0408] Mobile device 5402 may, for example, include a motion-capture device (e.g., a camera) . Identification card (e.g., driver's license 5410) may, for example, include a barcode. Accordingly, for example, a contactless communication channel may be formed between identification card 5410 and mobile device 5402 where a camera of mobile device 5402 may capture an image of the barcode of identification card 5410. In so doing, for example, a processor of mobile device 5402 may analyze the barcode image and extract information from the barcode image that may be construed by the processor as security credentials that when validated, may authorize a processor of mobile device 5402 to perform (or cause to perform) any function .

[0409] As per another example, a user's photograph may appear on identification card 5410. Accordingly,

for example, a camera of mobile device 5402 may capture an image of the picture and a processor of mobile device 5402 may construe the captured image as a security credential. In so doing, for example, a processor of mobile device 5402 may compare a scanned image of a user's picture to an image contained within a memory of mobile device 5402 (or contained within a memory of a remote authorization server) for authorization. As per yet another example, a user may snap a picture of himself or herself with a camera of mobile device 5402 so that a processor of mobile device 5402 may scan the snapped picture for authorization purposes .

[0410] Mobile device 5402 may, for example, require authorization before being activated for use. Accordingly, for example, a processor of mobile device 5402 may require a password to be entered and verified before a processor of mobile device 5402 may unlock functions available to be performed by mobile device 5402. In so doing, for example, one or more contactless devices 5408-5414 may be presented to mobile device 5402 and security credentials may be communicated by the one or more contactless devices 5408-5414 in lieu of providing a password to mobile device 5402. Upon validation of the security credentials, a processor of mobile device 5402 may unlock those functions that may be available to be executed by the processor of mobile device 5402.

[0411] FIG. 55 shows GUI 5500, that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 5500 may, for example, provide a summary of each card that may be available for use within a memory of the mobile device

(e.g., each card may be displayed as virtual cards having visible and functional features that are substantially the same as their physical counterparts) .

[0412] Physical card (e.g., payment card) information (e.g., track 1, track 2, and/or track 3 magnetic stripe data) may be communicated by the physical card to the mobile device via a contactless communication channel and such information may be displayed within a virtual card (e.g., virtual payment card 5502) as summary information that may be associated with the physical payment card. A payment card number communicated to a processor of a mobile device may, for example, include issuer identification as well as an issuing network identifier. Accordingly, for example, a processor of a mobile device may analyze the payment card number received from a physical payment card and may render a portion or all of the identifying information associated with the payment card number onto virtual payment card 5502 . In so doing, for example, issuer identification as well as a logo representative of an issuing network identifier may be rendered onto virtual payment card 5502. Other virtual payment cards may, for example, be sorted behind virtual payment card 5502 in virtually any order (e.g., most popular to least popular, highest credit limit to lowest credit limit, or highest credit available to lowest credit available) . Other virtual cards (e.g., virtual gift card 404 and virtual driver's license 5506) may be stored within a memory of a mobile device as well.

[0413] FIG. 56 shows GUI 5600, that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 5600 may, for

example, allow a selection of a virtual card contained within a memory of a mobile device to be authorized for use by its physical counterpart. Accordingly, for example, a user may touch anywhere within the vicinity of virtual card 5604 as it is being displayed by GUI 5600. Such a selection may be verified by highlighting attributes of a selected card (e.g., highlighting an outline of virtual card 5604) and by displaying the selected virtual card within verification region 502. In so doing, for example, a user of a mobile device may view a virtual card that is selected for authorization (e.g., as viewed within region 5602) so that the user may retrieve the physical card that corresponds to the virtual card that is to be authorized.

[0414] Once retrieved, a user may tap the physical card against region 5602. Accordingly, for example, a contactless communication channel (e.g., an RFID communication channel) may be formed between the physical card and the mobile device, such that security credentials may be communicated from the physical card to the mobile device via the contactless communication channel to authorize virtual payment card 5602 for use. In so doing, for example, a physical card may communicate security credentials (e.g., at least a portion of a payment card number of the physical card and/or a cardholder's name) to a processor of the mobile device and the processor may compare the received security credentials to security credentials stored within a memory of the mobile device that may be associated with virtual payment card 5602. If the processor of the mobile device determines that the received security credentials match at least a portion of the security credentials associated with virtual

payment card 5602, then virtual card 5602 may be authorized for use.

[0415] FIG. 57 shows GUI 5700, that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 5700 may, for example, allow the authorization of a virtual card via an alternate contactless communication channel. For example, GUI 5700 may display a virtual payment card (e.g., virtual payment card 5702) in a region within GUI 5700 that may provide a touch-sensitive area 5704 and area 5706 that may be capable of producing light pulses having varying characteristics (e.g., intensity, pulse width, and/or color) .

[0416] A user's physical card that corresponds to virtual payment card 5702 may, for example, be a powered card having touch-simulation electronics and a light sensor. Accordingly, for example, the user's physical card may be pressed against region 5702, such that the touch simulation electronics of the physical card aligns with touch-sensitive portion 5704 and the light sensor of the physical card aligns with portion 5706. In so doing, for example, a contactless communication channel may be formed between the user's physical card and the mobile device, such that data may be communicated from the user's physical card to the mobile device through a series of simulated touches generated by the physical card and sensed at portion 5704 by a processor of the mobile device. Such communicated data may be construed by a processor of the mobile device as security credentials communicated by the user's physical card.

[0417] Security credentials that may be communicated (e.g., via a capacitive, visible, audible,

electromagnetic, magnetic, or RFID-based contactless communication channel) to a mobile device by a powered payment card may, for example, include a dynamic security code that may change with each use. Accordingly, for example, a network entity (e.g., an authorization server) may be synchronized with the user's powered payment card, such that when a dynamic security code of the powered payment card changes, so does the corresponding dynamic security code of the authorization server. In so doing, for example, a dynamic security code received by a mobile device from a powered payment card during authorization of virtual payment card 5702 may be communicated by a processor of the mobile device to an authorization server for verification that the dynamic security code matches the dynamic security code maintained by the authorization server. If so, virtual payment card 5702 may be authorized for use by the mobile device (e.g., payment information associated with virtual payment card 5702 may be communicated by the mobile device to complete a purchase transaction).

[0418] FIG. 58 shows system 5800 that may include mobile terminal 5802, payment card 5808, network 5814 and authorization server 5810. A processor of mobile device 5802 may, for example, execute an application (e.g., GUI 5804) that allows a user of mobile device 5802 to perform any financial account management function (e.g., change from paper statements to e-statements, transfer money from one account to another or open a checking account).

[0419] Prior to authorizing the financial account management function, GUI 5804 may challenge a user of mobile device 5802 to tap a card against mobile device

5802 that may be associated with the transaction. Accordingly, for example, a payment card (e.g., payment card 5808) that may be associated with the financial accounts used for the financial account management function may be used as a security credential to authorize the transaction. In so doing, for example, security credentials communicated by payment card 5808 to mobile device 5802 via contactless communication channel 5806 (e.g., an RFID communication channel) may be relayed by mobile device 5802 to authorization server 5810 via communication channel 5812 for authorization of the financial account management function. Once authorized, a processor of mobile device 5802 may receive the authorization from authorization server 5810 and may contact other network entities (e.g., a payment server of network 5814) to complete the financial account management function.

[0420] Payment card 5808 need not be directly related to the financial accounts involved with a financial account management function. Instead, authorization server 5810 may, for example, maintain links between various financial accounts that may be owned by a user of a mobile device. Accordingly, for example, while payment card 5808 may not be used as the source account from which money is to be transferred to an auto loan account, payment card 5808 may nevertheless be linked with the source account (e.g., M/C 1234). In so doing, for example, authorization server 5810 may recognize the link between payment card 5808 and the source account (e.g., M/C 1234) and may authorize the money transfer due to the recognized link.

[0421] Payment card 5808 may, for example, be a powered payment card. Accordingly, for example, a dynamic security code may be communicated from payment card 5808 to a processor of mobile device 5802 (e.g., via a discretionary data field of a magnetic stripe message communicated by payment card 5808) along with other identifying information (e.g., at least a portion of a dynamic payment card number or a cardholder's name). In so doing, for example, the dynamic security code and/or other optional identifying information may serve as the security credential that authorizes mobile device 5802 to perform the requested function. The dynamic security code and/or other optional identifying information may, for example, be relayed to authorization server 5810. Accordingly, for example, authorization server 5810 may analyze the security code and any other optional identifying information to determine whether the requested function is to be authorized. If so, the authorization may be communicated by authorization server 5810 to a processor of mobile device 5802 via communication channel 5812 so that the function may be completed.

[0422] FIG. 59 shows system 5900 that may include mobile terminal 5902, key 5908, network 5912 and car 5914. A processor of mobile device 5902 may, for example, execute an automobile application (e.g., GUI 5904) that may allow a user of mobile device 5902 to establish wireless link 5910 between car 5914 and mobile device 5902. Accordingly, for example, a user of mobile device 5902 may communicate wireless commands to car 5914 via wireless communication channel 5910.

[0423] A user may, for example, start his or her car from the convenience and warmth of the user's office at

work when temperatures outside may warrant a time period within which car 5914 may need to warm up. Accordingly, for example, a user may start his or her car via commands communicated by a processor of mobile device 5902 to car 5914 prior to leaving the office for the day. In so doing, for example, a processor of mobile device 5902 may require authorization to issue the command, in which case the user may be challenged to present key 5908 within a communication distance from mobile device 5902 to form contactless communication channel 5906. Security credentials may, for example, be communicated from key 5908 to a processor of mobile device 5902 via contactless communication channel 5906 and the processor may compare the received security credentials to security credentials stored within a memory of mobile device 5902 (or a remote authorization server). If a match is found, for example, a processor of mobile device 5902 may be authorized to issue one or more commands 5916 to car 5914.

[0424] A wireless device of car 5914 may, for example, communicate to a processor of mobile device 5902 via communication channel 5910. Accordingly, for example, once a command is authorized and sent to a wireless device of car 5914 by a processor of mobile device 5902, the wireless device of car 5914 may respond with an acknowledgment that the command (e.g., "Start car") was executed. A wireless device of car 5914 may, for example, provide status to a display of mobile device 5902. Accordingly, for example, a wireless device of car 5914 may report a gasoline level status to mobile device 5902 via communication channel 5910 so that the user of mobile device 5902 may know

that leaving car 5914 running for a length of time may deplete the car's gas reserves.

[0425] FIG. 60 shows GUI 6000, that may be generated by a processor of a mobile device and provided onto a display of the mobile device. GUI 6000 may, for example, allow a user of a mobile device to determine how certain functions that may be performed by the mobile device may be authorized. GUI 6000 may, for example, provide authorization options 6002 to determine how the mobile device itself may be authorized for use. A PIN, for example, may be required to be entered in order to activate the mobile device for use. As per another example, a memory of the mobile device may contain information associated with any physical card. Accordingly, for example, authorization to activate the mobile device may require that a user produce a physical card (e.g., a driver's license) that may correspond to a virtual card (e.g., a virtual driver's license) that may be stored within a memory of the mobile device. Alternately, for example, a physical card that corresponds to any virtual card or any virtual bank card stored within a memory of the mobile device may be used to authorize the mobile device for use .

[0426] Banking functions performed by a mobile device may, for example, be authorized as defined by options 6004. A mobile device may, for example, be equipped with scanning capability, such that biometrics (e.g., fingerprints) may be taken from the user of the mobile device and verified before banking functions may be authorized. As per another example, a dynamic security code communicated to a processor of a mobile device by a powered payment card via a contactless

communication channel may authorize banking functions to be performed by the mobile device.

[0427] Functions associated with remote operation of a car may, for example, be authorized as defined by options 6006. A mobile device may, for example, be equipped with a camera, such that only when a picture of an authorized user is taken with the camera and verified by a processor of the mobile device will that user be able to issue remote commands (e.g., unlock driver's door) to the user's car.

[0428] Other functions, such as remote house functions, may be authorized as defined by options 6008. For example, a garage door of a user's house may be commanded to be opened by the user's mobile device, but only if a house key communicates security credentials (e.g., a key code) to a processor of the user's mobile device via a contactless communication channel. Alternately, for example, a user may disable any house functions to be conducted by the user's mobile device.

[0429] FIG. 61 shows flow charts for process sequences 6110-6140. Process sequence 6110 may, for example, execute an authorization setup application (e.g., a GUI) on a mobile device that allows a user of the mobile device to select authorization options (e.g., as in steps 6111-6112) to be enforced by a processor of the mobile device (e.g., as in step 6113). For example, banking functions that may be performed by a mobile device may first require that a physical bank card be placed in proximity to the mobile device so that the physical bank card may communicate security credentials to a processor of the mobile device via a contactless communication channel that may be formed

between the physical banking card and the mobile device. In so doing, for example, a processor of the mobile device may compare the security credentials received from the physical card to security credentials stored within a memory of the mobile device (or remote authorization server). Upon a successful comparison, a processor of a mobile device may authorize banking functions to be performed by the mobile device.

[0430] A memory of a mobile device may, for example, contain a number of virtual cards that may correspond to information communicated to a processor of the mobile device via physical card counterparts to the virtual cards. Such virtual cards may, for example, be selected (e.g., as in step 6121 of sequence 6120) to perform a function in conjunction with the mobile device (e.g., payment information associated with a virtual payment card may be selected to complete a purchase transaction using the mobile device). In step 6122, a user of a mobile device may be required to produce a physical card that corresponds to the selected virtual card. A contactless communication channel (e.g., an RFID communication channel) may be formed between the physical card and the mobile device so that security credentials may be communicated from the physical card to a processor of the mobile device via the contactless communication channel (e.g., as in step 6123). In step 6124, a processor of a mobile device may compare the security credentials to security credentials stored within a memory of the mobile device (or remote authorization server) that corresponds to a physical card. Upon a favorable comparison, a processor of a mobile device may authorize the selected virtual card for use.

[0431] Any function (e.g., non-purchase transactions) that may be performed by a mobile device may be requested (e.g., as in step 6131 of sequence 6130) and challenged (e.g., as in step 6132 of sequence 6130). For example, a processor of a mobile device may be requested to perform any function (e.g., remotely start the engine of a user's car) and a processor of the mobile device may first require security credentials to be presented before the function may be performed. Security credentials may, for example, be any information that may be communicated to a mobile device by a contactless device (e.g., an RFID enabled ignition key) via a contactless communication channel. A processor of the mobile device may authorize the requested function if the security credentials are verified (e.g., as in step 6133) and may deny the requested function if the security credentials are not verified (e.g., as in step 6134).

[0432] In step 6141 of sequence 6140, a user of a mobile device may request a function to be performed by a mobile device. Upon receipt of security credentials communicated by a contactless communication device to a processor of the mobile device (e.g., as in step 6142), the security credentials may be forwarded (e.g., as in step 6143) to a remote authorization server for verification. In step 6144, the remote authorization server may communicate a message to a processor of the mobile device to either grant or deny authorization for the mobile device to perform the requested function.

[0433] FIG. 62 shows card 6200 that may include, for example, a dynamic number that may be entirely, or partially, displayed using a display (e.g., display 6206). A dynamic number may include a permanent

portion such as, for example, permanent portion 6204 and a dynamic portion such as, for example, dynamic portion 6206. Card 6200 may include a dynamic number having permanent portion 6204 and permanent portion 6204 may be incorporated on card 6200 so as to be visible to an observer of card 6200. For example, labeling techniques, such as printing, embossing, laser etching, etc., may be utilized to visibly implement permanent portion 6204.

[0434] Card 6200 may include a second dynamic number that may be entirely, or partially, displayed via a second display (e.g., display 6208). Display 6208 may be utilized, for example, to display a dynamic code such as a dynamic security code. Card 6200 may also include third display 6222 that may be used to display graphical information, such as logos and barcodes. Third display 6222 may also be utilized to display multiple rows and/or columns of textual and/or graphical information.

[0435] Persons skilled in the art will appreciate that any one or more of displays 6206, 6208, and/or 6222 may be implemented as a bi-stable display. For example, information provided on displays 6206, 6208, and/or 6222 may be stable in at least two different states (e.g., a powered-on state and a powered-off state). Any one or more of displays 6206, 6208, and/or 6222 may be implemented as a non-bi-stable display. For example, the display is stable in response to operational power that is applied to the non-bi-stable display. Other display types, such as LCD or electro-chromic, may be provided as well.

[0436] Other permanent information, such as permanent information 6220, may be included within card

6200, which may include user specific information, such as the cardholder's name or username. Permanent information 6220 may, for example, include information that is specific to card 6200 (e.g., a card issue date and/or a card expiration date) . Information 6220 may represent, for example, information that includes information that is both specific to the cardholder as well as information that is specific to card 6200.

[0437] Card 6200 may accept user input data via any one or more data input devices, such as buttons 6210-6218. Buttons 6210-6218 may be included to accept data entry through mechanical distortion, contact, or proximity. Buttons 6210-6218 may be responsive to, for example, induced changes and/or deviations in light intensity, pressure magnitude, or electric and/or magnetic field strength. Such information exchange may then be determined and processed by a processor of card 6200 as data input. An RFID chip may, for example, include memory that may be populated with data to be communicated via RFID antenna 6224 when one or more buttons 6210-6218 are pressed. Accordingly, for example, once a button is pressed, RFID data may be loaded into an RFID chip memory and once an RFID communication channel is formed (e.g., once card 6200 is brought within an RFID communication distance of an RFID enabled device) the data in RFID chip memory may be communicated via an RFID communication channel using RFID antenna 6224. Once RFID data is communicated, or after a configurable delay period, the RFID chip memory may be erased.

[0438] FIG. 62 shows architecture 6250, which may include one or more processors 6254. One or more processors 6254 may be configured to utilize external

memory 6252, internal memory of processor 6254, internal memory of RFID chip 6262, or a combination of external memory 6252, internal memory of RFID chip 6262, and internal memory of processor 6254 for dynamically storing information, such as executable machine language, related dynamic machine data, RFID data and user input data values.

[0439] One or more of the components shown in architecture 6250 may be configured to transmit information to processor 6254 and/or may be configured to receive information as transmitted by processor 6254. For example, one or more displays 6256 may be coupled to receive data from processor 6254. The data received from processor 6254 may include, for example, at least a portion of dynamic numbers and/or dynamic codes. The data to be displayed on the display may be displayed on one or more displays 6256.

[0440] One or more displays 6256 may be, for example, touch sensitive and/or proximity sensitive. For example, objects such as fingers, pointing devices, etc., may be brought into contact with displays 6256, or in proximity to displays 6256. Detection of object proximity or object contact with displays 6256 may be effective to perform any type of function (e.g., transmit data to processor 6254) . Displays 6256 may have multiple locations that are able to be determined as being touched, or determined as being in proximity to an object.

[0441] Persons skilled in the art will appreciate that a card (e.g., card 6200 of FIG. 62) may, for example, be a self-contained device that derives its own operational power from one or more batteries 6258. Furthermore, one or more batteries 6258 may be

included, for example, to provide operational power for a period of time (e.g., approximately 2-4 years) . One or more batteries 6258 may be included, for example, as rechargeable batteries.

[0442] Input and/or output devices may be implemented on architecture 6250. For example, integrated circuit (IC) chip 6260 (e.g., an EMV chip) may be included on architecture 150 to communicate information to a chip reader (e.g., an EMV chip reader) via contacts that may be formed on a surface of a card (e.g., card 6200 of FIG. 62) . Other input and/or output devices may be included on architecture 6250, for example, to provide any number of input and/or output capabilities within architecture 6250. For example, other input and/or output devices may include an audio device capable of receiving and/or transmitting audible information. Other input and/or output devices may include a device that exchanges analog and/or digital data using a visible data carrier. Alternately, for example, other input and/or output devices may include a device that is sensitive to a non-visible data carrier, such as an infrared data carrier or electromagnetic data carrier.

[0443] A dynamic magnetic stripe communications device may be included within architecture 6250 to communicate information to, for example, a read-head of a magnetic stripe reader via, for example, electromagnetic signals. For example, electromagnetic field generators 6270-6274 may be included to communicate one or more tracks of electromagnetic data to read-heads of a magnetic stripe reader. Electromagnetic field generators 6270-6274 may include, for example, a series of electromagnetic elements,

where each electromagnetic element may be implemented as a coil wrapped around one or more materials (e.g., a magnetic material and/or a non-magnetic material). Additional materials may be placed outside the coil (e.g., a magnetic material and/or a non-magnetic material).

[0444] Electrical excitation by processor 6254 of one or more coils of one or more electromagnetic elements via, for example, driving circuitry 6264 may be effective to generate electromagnetic fields from one or more electromagnetic elements. One or more electromagnetic field generators 6270-6274 may be utilized to communicate electromagnetic information to, for example, one or more read-heads of a magnetic stripe reader.

[0445] Timing aspects of information exchange between architecture 6250 and the various I/O devices implemented on architecture 6250 may be determined by processor 6254. Detector 6266 may be utilized, for example, to sense the proximity and/or actual contact, of an external device, which in turn, may trigger the initiation of a communication sequence. The sensed presence and/or touch of the external device may then be communicated to a controller (e.g., processor 6254), which in turn may direct the exchange of information with the external device. The sensed presence and/or touch of the external device may be effective to, for example, determine the type of device or object detected.

[0446] For example, the detection may include the detection of, for example, a read-head of a magnetic stripe reader. In response, processor 6254 may activate one or more electromagnetic field generators

6270-6274 to initiate a communications sequence with, for example, one or more read-heads of a magnetic stripe reader. The timing relationships associated with communications between one or more electromagnetic field generators 6270-6274 and one or more read-heads of a magnetic stripe reader may be provided through use of the detection of the magnetic stripe reader.

[0447] Persons skilled in the art will appreciate that processor 6254 may provide user-specific and/or card-specific information through utilization of any one or more of buttons 6210-6218, RFID chip 6262, RFID antenna 6268, IC chip 6260, electromagnetic field generators 6270-6274, and any other input and/or output device. RFID antenna 6268 may, for example, be brought within a communication distance of an RFID enabled device which may be generating a carrier field (e.g., an RF field) . In so doing, RFID antenna 6268 may collect energy from the RF field which may then be detected by RFID chip 6262. RFID chip 6262 may, for example, communicate a presence of an RFID communication device to processor 6252. Processor 6252 may, in turn, populate a memory of RFID chip 6262 with user-specific and/or card-specific information (e.g., a payment account number, cardholder name, and a dynamic security code) that may then be communicated to the RFID enabled device via RFID antenna 168.

[0448] RFID antenna 6268 may be configured to receive data from an RFID device (e.g., an RFID tag) . Accordingly, for example, RFID chip 6262 may interrogate the capabilities of an RFID device and may receive data from the RFID device upon a determination that the RFID device may communicate data. RFID antenna 6268 may, for example, be provided as two or

more RFID antennas that may be used to enhance RFID data communication and/or reception with an RFID enabled device.

[0449] FIG. 63 shows network topology 6300 that may include, for example, mobile device 6302 (e.g., a mobile telephonic device, a PDA, an electronic tablet, a laptop, a GPS unit, or an MP3 player) . Mobile device 6302 may, for example, include a contactless interface that may initiate, sustain, and/or terminate communication channel 6326 between card 6304 and mobile device 6302. Card 6304 and mobile device 6302 may communicate via channel 6326 via a contactless communication medium (e.g., an RF medium) .

[0450] Mobile device 6302 may provide one or more transceivers that may communicate with one or more wired networks (e.g., IP network 6312 and/or payment network 6314) and/or one or more wireless networks (e.g., mobile network 6310) . Mobile device 6302 may, for example, communicate with a cellular station over a wireless radio interface (e.g., a GSM air interface) that may be used by mobile device 6302 to communicate information (e.g., voice and data) to cellular network access infrastructure 6306 (e.g., one or more GSM base transceiver stations, base station controllers, and mobile switching centers) . Persons skilled in the art will appreciate that cellular network access infrastructure 6306 may utilize any multiple access architecture, such as for example, a code-division multiple access architecture and/or a time-division multiple access architecture.

[0451] Mobile device 6302 may, for example, communicate with wireless access point 6308 over a wireless interface (e.g., a Bluetooth interface or a

Wi-Fi interface) . Accordingly, for example, mobile device 6302 may access one or more wired networks (e.g., IP network 6312 and/or payment network 6314) and/or one or more wireless networks (e.g., mobile network 6310) without the need to first gain access to cellular network access infrastructure 6306.

[0452] Card 6304 may, for example, be a powered card or a non-powered card (e.g., a powered payment card or a non-powered payment card) . Accordingly, for example, payment information (e.g., a payment account number and a card expiration date) may be communicated from card 6304 to mobile device 6302 in support of a financial transaction being conducted by mobile device 6302. In so doing, for example, items for purchase on IP network 6312 (e.g., the internet) may be accessed by a browser of mobile device 6302 via an access point (e.g., wireless access point 6308 or cellular network access infrastructure 6306) . Mobile device 6302 may, for example, complete a purchase transaction by first obtaining required payment information from card 6304 and then communicating such payment information to network entities (e.g., payment server 6316 and/or issuer 6320) .

[0453] Payment server 6316 may, for example, contact issuer 6320 via a network (e.g., payment network 6314) with payment information received from mobile device 6302 for authorization of a purchase. Once authorized, payment transaction information may be recorded onto a receipt that may be delivered to mobile device 6302 via any one or more delivery options (e.g., via a short messaging service of mobile network 6310 or an email delivery service of IP network 6312) . Mobile device 6302 may allow a user to associate purchase categories

(e.g., groceries, auto repair, or entertainment) to purchases transacted by the mobile device so that the user may receive a more detailed accounting of his or her expenditures on his or her receipt. Accordingly, for example, a user may enjoy a higher degree of integration such that a user may customize a level of detail provided on a receipt via mobile device 6302. A payment receipt may, for example, be provided to mobile device 6302 as a proof-of-purchase object (e.g., a barcode) that may be provided to a display of mobile device 6302 and read by other computing equipment (e.g., a barcode scanner) for proof-of-purchase confirmation .

[0454] A device (e.g., mobile device 6328 and/or card 6322) may, for example, include a contactless communication device (e.g., an RFID device) that may initiate, sustain, and/or terminate a contactless communication channel (e.g., an RFID communications channel) with merchant terminal 6318. Accordingly, for example, card 6322 and/or mobile device 6328 may communicate payment information to merchant terminal 6318 to complete a financial transaction. In so doing, for example, mobile device 6328 and/or card 6322 may first receive a request from a user to communicate payment information to merchant terminal 6318.

[0455] As per an example, a user of card 6322 may press a button on card 6322 that may cause payment information to be transferred to a memory of a processor (e.g., an RFID chip) . An associated RFID antenna may, for example, sense the presence of merchant terminal 6318 by detecting an RF carrier field that may be generated by an RFID device of merchant terminal 6318. Once the presence of merchant terminal

6318 is sensed, payment information may be transferred from an RFID chip of card 6322 to an RFID antenna of card 6322 to communicate the payment information via an RFID communication channel to merchant terminal 6318 to complete a financial transaction.

[0456] As per another example, card 6322 may be a non-powered card (e.g., a non-powered payment card). Accordingly, for example, card 6322 may include an RFID chip and associated RFID antenna that may be brought within proximity to merchant terminal 6318. An RFID antenna of card 6322 may sense an RF carrier field generated by merchant terminal 6318 and may derive operational power from the RF carrier field. The operational power may, for example, be collected by an RFID antenna of card 6322 and provided to an associated RFID chip of card 6322 in order to energize the RFID chip of card 6322. Once energized, an RFID chip of card 6322 may modulate an RF carrier field generated by merchant terminal 6318 to, for example, communicate payment information from card 6322 to merchant terminal 218 to complete a purchase transaction.

[0457] Any computing device (e.g., desktop computer 6330) may, for example, provide contactless communication electronics (e.g., an RFID reader) that may communicate with a contactless communication device (e.g., card 6332 and/or mobile device 6334). Accordingly, for example, any information that may be communicated by card 6332 (e.g., payment information) may be received by computing device 6330 (e.g., received via an RFID communication channel established between card 6332 and computing device 6330) and forwarded onto a network entity (e.g., issuer 6320 and/or payment server 6316) to complete a purchase

transaction. Persons skilled in the art will appreciate that any RFID information may be exchanged between computing device 6330 and an RFID enabled device (e.g., card 6332 and/or mobile device 6334).

[0458] FIG. 64 shows mobile device 6400. Mobile device 6400 may be any mobile device, such as a mobile telephonic device (e.g., cell phone), a PDA, an electronic tablet, an MP3 player, or a locating device (e.g., a GPS device). Accordingly, mobile device 6400 may be operated in a mobile environment while a user of mobile device 6400 goes about his or her daily activities (e.g., driving, shopping, walking, dining, and exercising). In addition, for example, mobile device 6400 may perform multiple functions simultaneously (e.g., a person may carry on a conversation while at the same time browsing and purchasing products on the internet).

[0459] Mobile device 6400 may include audio processing devices (e.g., microphone 6408 and speaker 6410). Accordingly, for example, mobile device 6400 may receive voice commands from a user via microphone 6408 and may process such commands to perform a function. For example, a user may place mobile device 6400 into a desired operational mode by speaking a command into microphone 6408 that is associated with the desired operational mode. In so doing, for example, mobile device 6400 may engage in hands-free operation by receiving voice commands via microphone 6408 and performing functions associated with the received voice commands.

[0460] Mobile device 6400 may receive data input via microphone 6408. For example, a voice-band modem may generate signals in a voice-band frequency range that

may be received by microphone 6408. A processor of mobile device 6400 may interpret the received audible information as data signals and may process the data signals as, for example, data values and/or control data input .

[0461] Mobile device 6400 may include camera 6402. Camera 6402 may capture one or more frames of video data and store the video data within a memory of mobile device 6400. Accordingly, for example, a processor of mobile device 6400 may receive one or more frames of video information via camera 6402 and may process the video information as data values and/or control data input. In so doing, for example, mobile device 6400 may receive optical information that is sensed by camera 6402 during a series of one or more video capture events that produce one or more frames of video information. The one or more frames of video information may contain one or more data elements (e.g., pixels) having properties (e.g., color, intensity, or contrast) that may be interpreted by a processor of mobile device 6400 as data values and/or control data.

[0462] Mobile device 6400 may include manual input interface 6412. Manual input interface 6412 may, for example, include keys and/or buttons that may be sensitive to manual input, such as a touch or an application of pressure. Accordingly, for example, a user of mobile device 6400 may enter information into mobile device 6400 via manual interface 6412 to cause a processor of mobile device 6400 to enter a particular mode of operation. Manual interface 6412 may, for example, be used for data entry (e.g., dialing a phone number or entering data as may be requested by mobile

device 6400) during a particular mode of operation of mobile device 6400.

[0463] Mobile device 6400 may include display 6404. Display 6404 may provide visible information that may be utilized by a user during interaction with mobile device 6400. A portion or all of display 6404 may be touch sensitive such that objects making contact with display 6404 or objects coming within a proximity of display 6404 may be detected by a processor of mobile device 6400. Accordingly, for example, RFID operations graphical user interface 6406 may be provided by display 6404 so that graphical information may be displayed to solicit and/or receive data entry from a user. In so doing, for example, touch-sensitive graphical user interface devices such as radio buttons, textual input boxes, virtual buttons, pull-down menus, and navigational tools may be used for data entry to initiate, change, and/or support functions performed by mobile device 6400.

[0464] FIG. 64 shows architecture 6450. User interface 6452 may, for example, be included within architecture 6450 to allow user interaction with architecture 6450. For example, a dedicated key pad or keyboard may be included within user interface 6452 to allow alphanumeric data entry into architecture 6450.

[0465] Architecture 6450 may include one or more displays 6454. Display 6454 may, for example, be touch-sensitive. Accordingly, for example, display 6454 may be utilized for alphanumeric data entry using virtual buttons that may be rendered onto touch-sensitive portions of display 6454. In so doing, for example, touching virtual buttons that may be associated with alphabetic and numeric characters of

display 6454 may be detected by processor 6458 as alphanumeric data entry.

[0466] Alphanumeric entry boxes may, for example, be rendered onto display 6454. A user may, for example, activate a cursor within such an alphanumeric entry box by touching an area within the alphanumeric entry box. A user may utilize user interface 6452 and/or a virtual keypad rendered onto display 6454 to select alphanumeric characters to be placed within the alphanumeric entry box in accordance with a character position identified by an activated cursor within the alphanumeric entry box. In so doing, for example, processor 6458 may receive alphanumeric characters as typed into a alphanumeric entry box of display 6454 and may use such alphanumeric characters as data input.

[0467] Display 6454 may, for example, provide data output from architecture 6450. For example, display 6454 may communicate data using a series of light pulses. Accordingly, for example, processor 6458 may cause one or more portions of display 6454 to produce light pulses having varying characteristics (e.g., duration, intensity, and frequency) that may communicate information via such light pulses. In so doing, for example, a device that may be sensitive to light pulses may receive information communicated by display 6454 via light pulses having varying characteristics. Display 6454 may, for example, communicate data using visual information that may be substantially static (e.g., a barcode).

[0468] Architecture 6450 may include one or more transceivers 6456. Transceiver 6456 may communicate information to and/or may receive information from one or more devices. Transceiver 6456 may, for example,

communicate via a wireless interface with one or more cellular stations of a mobile network. Accordingly, for example, transceiver 6456 may allow a mobile device (e.g., mobile device 6400 of FIG. 64) to establish a communications channel with an associated cellular station. In so doing, for example, a mobile device (e.g., mobile device 6400 of FIG. 64) may exchange information (e.g., voice, text, data, or multimedia) with one or more terrestrial networks (e.g., the internet or a payment network) via an associated cellular station. As per another example, transceiver 356 may exchange information with one or more other mobile devices via one or more associated cellular stations .

[0469] Transceiver 6456 may, for example, communicate via a wireless interface with one or more mobile devices directly. Accordingly, for example, transceiver 6456 may communicate with another mobile device without first accessing a mobile network via a cellular station of the mobile network. As per another example, transceiver 6456 may, for example, communicate via a wireless interface with one or more network devices (e.g., a wireless access point) directly. Accordingly, for example, a mobile device (e.g., mobile device 6400 of FIG. 64) may directly connect to a wired and/or a wireless network via any one or more wireless standards (e.g., Bluetooth or Wi-Fi) to exchange information with other devices that may be connected to the wired and/or wireless network. In so doing, for example, a wired and/or wireless network may be accessed by a mobile device without first accessing a mobile network via a cellular station of a mobile network .

[0470] Architecture 6450 may include RFID chip 6464, RFID antenna 6462, and optional RFID antenna 6466 which may combine to communicate with an RFID enabled device via an RFID communication channel. Accordingly, for example, architecture 6450 may be compatible with any RFID device, such as for example, an RFID enabled card, an RFID reader, and an RFID enabled computing device (e.g., an RFID enabled desktop computer) . RFID antenna 6466 may, for example, be provided to enhance RFID data communication and/or reception.

[0471] RFID antenna 6462 and/or RFID antenna 6466 may, for example, establish an RF carrier field that may be modulated by an RFID device (e.g., an RFID tag of a non-powered payment card) . In so doing, for example, an RFID tag of a non-powered payment card may derive operational power from an RF field provided by RFID antenna 6462 and/or RFID antenna 6466 and may communicate information (e.g., one, two, and/or three tracks of magnetic stripe data) to RFID antenna 6462 and/or RFID antenna 6466 by modulating the RF field produced by RFID antenna 6462 and/or RFID antenna 6466.

[0472] A powered card may, for example, communicate with RFID antenna 6462 and/or RFID antenna 6466. A powered card may, for example, include a processor, a battery, a memory, a wireless communications device (e.g., a powered RFID device) and other electronics (e.g., buttons) that may allow a user to interact with the powered card to perform one or more functions. Accordingly, for example, a powered card may be used to communicate specific information to RFID antenna 6462 and/or RFID antenna 6466 by selective interaction with the buttons of the powered card. In so doing, for example, a powered card may be used to interactively

communicate magnetic stripe information (e.g., one, two, and/or three tracks of magnetic stripe data) to RFID antenna 6462 and/or RFID antenna 6466 by sending a signal to a processor of a powered card (e.g., by pressing a button on the powered card) to initiate such communications .

[0473] RFID chip 6464 may, for example, receive RFID data from processor 6458 and may store such RFID data temporarily. Accordingly, for example, once an RFID communication channel is formed with an RFID enabled device, RFID data contained within RFID chip 6464 may be communicated to the RFID enabled device via RFID antenna 6462 and/or RFID antenna 6466. RFID antennas 6462 and 6466 may, for example, communicate the same RFID data to an RFID enabled device. RFID antennas 6462 and 6466 may, for example, communicate different RFID data sets to an RFID enabled device and the differences between the RFID data sets communicated may provide multiple other channels of data that may be communicated (e.g., an amplitude difference between RFID data sets may be an RFID data channel and a phase difference between RFID data sets may be an additional RFID data channel) .

[0474] Architecture 6450 may include memory 6460 and/or processor 6458 may include internal memory. Accordingly, for example, application code may be stored within memory 6460 and/or processor 6458 and executed by processor 6458 in support of functions performed by architecture 6450. For example, an application (e.g., a graphical user interface) may be executed by processor 6458 and displayed onto display 6454, which may be used to interact with a user of a mobile device (e.g., mobile device 6400 of FIG. 64) .

Persons skilled in the art will appreciate that executable application code may be communicated to architecture 6450 via any one or more interfaces of architecture 6450 (e.g., user interface 6452, display 6454, transceiver 6456, and/or RFID antennas 6462 and/or 6466).

[0475] Application data (e.g., payment data) may be temporarily stored within RFID chip 6464 and communicated by RFID antenna 6462 and/or RFID antenna 6466 during operation. For example, payment data may be temporarily communicated to RFID chip 6464 by processor 6458 during a financial transaction being conducted via an RFID communication channel between a mobile device (e.g., mobile device 6400 of FIG. 64) and another RFID device (e.g., a merchant terminal). Once RFID data is communicated (or after a configurable delay period has expired), processor 6458 may cause the payment data stored within RFID chip 6464 to be erased so as to reduce an ability of an RFID skimmer to access data from RFID chip 6464.

[0476] FIG. 65 shows card 6500, which may be a powered card and may include, for example, board 6502, board 6504, dynamic magnetic communications device 6506, RFID chip 6518, board 6508, battery 6514, conductive leads 6520-6526 and RFID antenna 6516. Additional circuitry may be provided on board 6502, which may include, for example, processor 6530, an EMV chip, a display, a display driver, driver circuitry for dynamic magnetic stripe communications device 6506, light emitting diodes, light sensors, infrared sensors and transmitters, capacitive sensing contacts, and a user interface (e.g., one or more buttons).

[0477] All boards, circuitry, and other components of card 6500 may be laminated to form card assembly 6510. Such a lamination may, for example, be implemented using a series of lamination process steps, such that an electronics package containing boards 6502, 6504, and/or 6508 and associated electronics may be encapsulated by an injection molding process (e.g., a reaction injection molding process), whereby a silicon-based material or a polyurethane-based material may be injected and cured (e.g., using temperature and/or chemical reaction) to form the electronics package. The electronics package may then be sandwiched between layers of laminate (e.g., layers of polymer laminate). Accordingly, for example, both surfaces of card assembly 6510 may be formed by a layer of laminate such that no electrical contacts exist on either surface of card assembly 6510. Alternately, for example, a surface of card assembly 6510 may be formed by a layer of laminate such that electrical contacts may exist on a surface of card assembly 6510 to provide connectivity from a surface of card assembly 6510 to a processor (e.g., an EMV chip) of card 6500.

[0478] RFID antenna 6516 may, for example, be formed using an additive technique, whereby patterns of a conductive element (e.g., copper) may be applied to a PCB substrate (e.g., applied to either side of board 6508) according to a patterning mask definition layer. RFID antenna 6516 may, for example, be formed using a subtractive technique whereby patterns of a conductive element (e.g., copper) may be removed from a pre-plated PCB substrate (e.g., removed from either side of board 6508) according to an etching mask definition layer. Other non-PCB fabrication techniques may be used to

implement RFID antenna 6516 as may be required by a particular application.

[0479] Conductive leads 6520 and 6522 may, for example, provide electrical conductivity between board 6508 and board 6502. Accordingly, for example, RFID data signals received by RFID antenna 6516 may be communicated to RFID chip 6518 via conductive leads 6520 and 6522. RFID data signals to be communicated by RFID antenna 6516 (e.g., RFID data signals provided to RFID chip 6518 via processor 6530) may, for example, be received from RFID chip 6518 via conductive leads 6520 and 6522. Conductive leads 6524 and 6526 may, for example, provide electrical conductivity between board 6508 and board 6502 so that operational power may be provided to the active electrical components that may exist on board 6502 from battery 6514 . Conductive leads 6520-6526, for example, may use conductive adhesive, soldering paste, or any other type of conductive applications to provide electrical conductivity between boards 6508 and 6502.

[0480] FIG. 66 shows card 6600, which may be a powered card and may include, for example, board 6602, board 6604, dynamic magnetic communications device 6606, RFID chip 6618, board 6608, battery 6614, conductive leads 6620-6626 and RFID antenna 6616. Additional circuitry may be provided on board 6602, which may include, for example, processor 6630, an EMV chip, a display, a display driver, driver circuitry for dynamic magnetic stripe communications device 6606, light emitting diodes, light sensors, infrared sensors and transmitters, capacitive sensing contacts, and a user interface (e.g., one or more buttons) . All boards, circuitry, and other components of card 6600

may, for example, be encapsulated by an injection molding process and sandwiched between two layers of laminate to form card assembly 6610 having no exposed contacts. Alternately, for example, a surface of card assembly 6610 may be formed by a layer of laminate such that electrical contacts may exist on a surface of card assembly 6610 to provide connectivity from a surface of card assembly 6610 to a processor (e.g., an EMV chip) of card 6600.

[0481] RFID antenna 6616 may, for example, be formed using additive and/or subtractive techniques to define patterns of a conductive element (e.g., copper) to form RFID antenna 6616 (e.g., on either side of board 6604). Conductive leads 6620 and 6622 may, for example, provide electrical conductivity between board 6604 and board 6602. Accordingly, for example, RFID data signals received by RFID antenna 6616 may be communicated to RFID chip 6618 via conductive leads 6620 and 6622. RFID data signals to be communicated by RFID antenna 6616 (e.g., as may be provided to RFID chip 6618 by processor 6630) may be received from RFID chip 6618 via conductive leads 6620 and 6622. Conductive leads 6624 and 6626 may, for example, provide electrical conductivity between board 6608 and board 6602 so that operational power may be provided to the active electrical components that may exist on board 6602 from battery 6614.

[0482] FIG. 67 shows card 6700, which may be a powered card and may include, for example, board 6702, board 6704, dynamic magnetic communications device 6706, RFID chip 6718, board 6708, battery 6714, conductive leads 6722-6726 and RFID antenna 6716. Additional circuitry may be provided on board 6702,

which may include, for example, processor 6730, an EMV chip, a display, a display driver, driver circuitry for dynamic magnetic stripe communications device 6706, light emitting diodes, light sensors, infrared sensors and transmitters, capacitive sensing contacts, and a user interface (e.g., one or more buttons). All boards, circuitry, and other components of card 6700 may, for example, be encapsulated by an injection molding process and sandwiched between two layers of laminate to form card assembly 6710 having no exposed contacts. Alternately, for example, a surface of card assembly 6710 may be formed by a layer of laminate such that electrical contacts may exist on a surface of card assembly 6710 to provide connectivity from a surface of card assembly 6710 to a processor (e.g., an EMV chip) of card 6700.

[0483] RFID antenna 6716 may, for example, be formed using additive and/or subtractive techniques to define patterns of a conductive element (e.g., copper) to form RFID antenna 6716 (e.g., on either side of board 6704). One or more conductive leads 6722 may, for example, provide electrical conductivity between RFID chip 6718 of board 6704 and processor 6730 of board 6702. Accordingly, for example, while data exchanged between RFID chip 6718 and RFID antenna 6716 may remain on board 6704, one or more conduction paths 6722 may be provided so that data that is to be communicated by RFID antenna 6716 may first be communicated to RFID chip 6718 by processor 6730 that may exist, for example, on board 6702. Conductive leads 6724 and 6726 may, for example, provide electrical conductivity between board 6708 and board 6702 so that operational power may be provided to the active electrical

components that may exist on boards 6702 and 6704 from battery 6714.

[0484] FIG. 68 shows card 6800, which may be a powered card and may include, for example, board 6802, board 6804, dynamic magnetic communications device 6806, RFID chip 6818, board 6808, battery 6814, conductive leads 6824-6826 and RFID antenna 6816. Additional circuitry may be provided on board 6802, which may include, for example, processor 6830, an EMV chip, a display, a display driver, driver circuitry for dynamic magnetic stripe communications device 6806, light emitting diodes, light sensors, infrared sensors and transmitters, capacitive sensing contacts, and a user interface (e.g., one or more buttons) . All boards, circuitry, and other components of card 6800 may, for example, be encapsulated by an injection molding process and sandwiched between two layers of laminate to form card assembly 6810 having no exposed contacts. Alternately, for example, a surface of card assembly 6810 may be formed by a layer of laminate such that electrical contacts may exist on a surface of card assembly 6810 to provide connectivity from a surface of card assembly 6810 to a processor (e.g., an EMV chip) of card 6800.

[0485] RFID antenna 6816 may, for example, be formed using additive and/or subtractive techniques to define patterns of a conductive element (e.g., copper) to form RFID antenna 6816 (e.g., on a top side of board 6802) . Accordingly, for example, RFID antenna 6816 may be applied to board 6802 at a location proximate to a location of board 6804. In so doing, for example, RFID antenna 6816 may be applied to board 6802 below a location where board 6804 attaches to board 6802 and

conduction paths may be extended to RFID chip 6818 from RFID antenna 6816 (e.g., via conductive traces on board 6802) . Conductive leads 6824 and 6826 may, for example, provide electrical conductivity between board 6808 and board 6802 so that operational power may be provided to the active electrical components that may exist on board 6802 from battery 6814 . Persons skilled in the art will appreciate that RFID antenna 6816 may be placed anywhere on any board (e.g., around a perimeter of board 6802) so as to maximize an effectiveness of RFID antenna 6816.

[0486] Persons skilled in the art will further appreciate that any combination of processors, EMV chips, display drivers, dynamic magnetic stripe communications device drivers, RFID chips, and associated circuitry may be combined into one or more application specific integrated circuits (ASIC) . Accordingly, for example, a core processor may interoperate with an ASIC that combines the functionalities of an RFID chip, a dynamic magnetic stripe communications device driver, and a display driver. Alternately, for example, a core processor, RFID chip, a dynamic magnetic stripe communications device driver, a display driver and associated electronics may be consolidated into a single ASIC. As per another example, a core processor and an RFID chip may be provided as discrete components that may interoperate with an ASIC that may be dedicated to dynamic magnetic stripe communications device driver functions and another ASIC that may be dedicated to display driver functions .

[0487] FIG. 69 shows card 6900, which may include multiple RFID antennas (e.g., RFID antennas 6902-6904)

and associated RFID chips (e.g., RFID chips 6906-6908). Additional circuitry may be provided on card 6900, which may include, for example, a processor, an EMV chip, a display, a display driver, driver circuitry for a dynamic magnetic stripe communications device, light emitting diodes, light sensors, infrared sensors and transmitters, capacitive sensing contacts, and a user interface (e.g., one or more buttons) . All boards, circuitry, and other components of card 6900 may, for example, be encapsulated by an injection molding process and sandwiched between two layers of laminate to form card assembly 6912 having no exposed contacts. Alternately, for example, a surface of card assembly 6912 may be formed by a layer of laminate such that electrical contacts may exist on a surface of card assembly 6912 to provide connectivity from a surface of card assembly 6912 to a processor (e.g., an EMV chip) of card 6900.

[0488] Processor 6910 may, for example, provide data to RFID chips 6906 and/or 6908 that may be communicated by RFID antenna 6902 and/or RFID antenna 6904, respectively. Processor 6910 may, for example, receive data from RFID chips 6906 and/or 6908 that may be received by RFID antenna 6902 and/or RFID antenna 6904, respectively.

[0489] Card 6900 may, for example, be placed within a communication distance of one or more RFID devices (e.g., one or more RFID enabled merchant terminals) in order to conduct a purchase transaction. Accordingly, for example, processor 6910 may communicate track 1 and track 2 magnetic stripe data to the RFID enabled merchant terminal via RFID chip 6906 and associated RFID antenna 6902. Alternately, for example, processor

6910 may communicate track 1 and track 2 magnetic stripe data to the RFID enabled merchant terminal via RFID chip 6908 and associated RFID antenna 6904.

[0490] As per another example, processor 6910 may utilize both RFID antennas 6902 and 6904 and associated RFID chips 6906 and 6908, respectively, to increase communication efficiency. Accordingly, for example, processor 6910 may communicate track 1 magnetic stripe data to RFID chip 6906 and track 2 magnetic stripe data to RFID chip 6908, so that track 1 magnetic stripe data may be communicated to an RFID enabled merchant terminal via RFID antenna 6902 and track 2 magnetic stripe data may be communicated to an RFID enabled merchant terminal via RFID antenna 6904. In so doing, for example, two tracks of magnetic stripe data may be communicated in half the time.

[0491] As per yet another example, RFID data communicated to RFID chips 6906 and 6908 by processor 6910 may be communicated in a fashion such that multiple channels of information may be communicated in addition to the first and second channels of information communicated by RFID chips 6906 and 6908. For example, phase, frequency, and/or amplitude differences between data communicated by RFID chip 6906/RFID antenna 6902 and data communicated by RFID chip 6908/RFID antenna 6904 may be used to communicate multiple channels of information. Accordingly, for example, a first set of information may be communicated by RFID chip 6906/RFID antenna 6902, a second set of information may be communicated by RFID chip 6908/RFID antenna 6904, and a third set of information may be communicated as an amplitude difference between each data element of the first and second information sets.

A fourth set of information may be communicated, for example, as a phase difference between each data element of the first and second data sets. A fifth set of information may be communicated, for example, as a rate of change of the phase difference (e.g., frequency difference) between each data element of the first and second information sets. Persons skilled in the art will appreciate that any number of channels of information may be communicated by a pair of RFID communicators when differences between RFID data sets communicated by each RFID communicator are exploited as data channels.

[0492] A pair of RFID communicators may, for example, be used to increase accuracy of RFID data communicated. For example, the same RFID data may be communicated by RFID chip 6906/RFID antenna 6902 as is communicated by RFID chip 6908/RFID antenna 6904 so as to increase a probability that an RFID reader may receive RFID data that was intended to be communicated. Accordingly, for example, an RFID reader that may be spatially oriented such that data reception quality from a first RFID communicator is diminished in relation to a data reception quality from a second RFID communicator, may nevertheless receive a complete set of RFID data due to the redundant RFID communication configuration .

[0493] An RFID reader may, for example, employ collision avoidance algorithms, so that communications received from a first RFID communicator do not trump communications received from a second RFID communicator. Accordingly, for example, processor 6910 of card 6900 may communicate to such an RFID reader that dual RFID communicators may be present within card

6900. In so doing, for example, the RFID reader may activate its collision avoidance algorithm to accept RFID communications from both RFID communicators (e.g., RFID chip 6906/RFID antenna 6902 and RFID chip 6908/RFID antenna 6904) simultaneously.

[0494] RFID data may, for example, be received by RFID chip 6906/RFID antenna 6902 and RFID chip 6908/RFID antenna 6904. Accordingly, for example, card 6900 may be an RFID reader that may utilize a pair of RFID readers (e.g., a first RFID reader is provided by RFID chip 6906/RFID antenna 6902 and a second RFID reader is provided by RFID chip 6908/RFID antenna 6904). In so doing, for example, processor 6910 may impose an RFID communication protocol that accepts RFID data form each RFID reader simultaneously.

[0495] FIG. 70 shows card 7000 that may include, for example, configuration 7002. Configuration 7002 may include, for example, button 7004, button 7008, display 7006 and display 7010. Button 7004 may be associated with display 7006. Button 7004 may be pressed to utilize the option described by display 7006. Button 7008 may be associated with display 7010. Button 7008 may be pressed to utilize the option described by display 7010. A card may include additional buttons or displays or may not include the number of buttons or displays of card 7000. For example, a card may include only a single button (e.g., button 7004).

[0496] A user of card 7000 may, for example, select options 7006 or 7010 when card 7000 is to be used (e.g., when card 7000 is to be utilized at a point-of-sale terminal to complete a purchase transaction). Accordingly, for example, a user of card 7000 may press button 7004 to select option 7006 if the user wishes to

exchange RFID data between card 7000 and an RFID device. Alternately, for example, a user of card 7000 may press button 7008 to select option 7010 if the user wishes to communication information to a magnetic stripe reader.

[0497] A user may, for example, press button 7008 to prepare card 7000 for communications with a magnetic stripe reader. Accordingly, for example, a processor of card 7000 may initiate a mode of operation upon activation of option 7010, whereby the processor searches for the presence of a read-head housing of a magnetic stripe reader. Once option 7010 is activated, a user may bring card 7000 within a communication distance of a magnetic stripe reader (e.g., the user may swipe card 7000 through a magnetic stripe reader). Upon the detection of the read-head housing of the magnetic stripe reader, the processor may communicate one, two, and/or three tracks of magnetic stripe data to a read-head of the detected magnetic stripe reader via dynamic magnetic stripe communications device 7014.

[0498] Alternately, for example, a user may press button 7004 to prepare card 7000 for communication with an RFID device. Accordingly, for example, a processor of card 7000 may initiate a mode of operation upon activation of option 7006, whereby a processor of card 7000 provides magnetic stripe information (e.g., one, two, and/or three tracks of magnetic stripe data) to an RFID chip of card 7000. Once option 7006 is activated, a user may bring card 7000 within a communication distance of an RFID reader (e.g., the user may wave card 7000 within an RFID communication distance of an RFID reader) and an RFID communication sequence between card 7000 and an RFID reader may be completed where

RFID data may be provided to RFID antenna 7012 from an RFID chip on card 7000 and communicated from RFID antenna 7012 to the RFID reader.

[0499] Upon activation of option 7006, a processor of card 7000 may activate passive RFID communications or active RFID communications using RFID antenna 7012 and an associated RFID chip. Passive RFID communications, for example, may require little or no energy to be expended by card 7000. Instead, RFID antenna 7012 may collect energy from an RFID reader when a user of card 7000 brings card 7000 within a communication distance of the RFID reader. The energy collected by RFID antenna 7012 may, for example, provide power to an RFID chip of card 7000. In so doing, for example, an RFID chip of card 7000 may communicate with a processor of card 7000, so that the processor may populate a memory of the RFID chip with information (e.g., payment information) that may be needed to complete a transaction (e.g., a purchase transaction) . Once populated with information, the RFID chip of card 7000 may communicate the information to RFID antenna 7012, which may then communicate the information to the RFID reader.

[0500] Active RFID communications from card 7000 may, for example, utilize battery power from within card 7000. Accordingly, for example, once card 7000 is brought within a communication distance of an RFID reader, RFID antenna 7012 may detect the RFID reader and may wake an RFID chip from a low-power state. In so doing, for example, an RFID antenna 7012 may detect energy from an RFID reader and an RFID chip of card 7000 may utilize battery power of card 7000 to receive information from a processor of card 7000 and to

provide the received information to RFID antenna 7012 for subsequent communication to an RFID reader.

[0501] Card 7000 may, for example, operate as an RFID reader, such that when brought within a communication distance of another RFID device, an RFID chip of card 7000 may interrogate the RFID device to determine whether the RFID device is to receive information from card 7000 (e.g., the RFID device is operating as an RFID reader) or whether the RFID device is to communicate information to card 7000 (e.g., the RFID device is operating as an RFID tag) . Accordingly, for example, an RFID chip of card 7000 may interrogate the RFID device to determine that the RFID device is an RFID tag an that RFID data may be communicated from the RFID device to an RFID chip of card 7000. In so doing, for example, an RFID chip of card 7000 may receive information, such as executable machine code, payment information, or any other type of information that may be required by card 7000 to operate as intended and may forward such information to a processor of card 7000 to be stored within a memory of card 7000. As per one example, an RFID chip of card 7000 may receive personalization information (e.g., cardholder information and cardholder account information) to prepare card 7000 for use as a payment card.

[0502] FIG. 71 shows system 7100, which may include card 7102 and one or more RFID devices (e.g., mobile devices 7104 and 7106) . Card 7102 may, for example, communicate with multiple RFID devices simultaneously. A user of card 7102 may, for example, enable RFID communications with card 7102 by pressing one of buttons 7112 or 7114. Accordingly, for example, payment information (e.g., payment account number and

cardholder name) may be communicated from a core processor within card 7102 and stored within one or more RFID chips of card 7102. Data indicative of which button was pushed (e.g., discretionary data indicative of either credit button 7112 or debit button 7114) may also be communicated and stored within the one or more RFID chips of card 7102.

[0503] As per one example, card 7102 may provide two RFID communication devices that may detect an RF carrier field that may be generated by each of mobile devices 7104 and 7106. Users of mobile devices 7104 and 7106 may, for example, be husband and wife who may wish to store payment information associated with card 7102 on respective memory locations of mobile devices 7104 and 7104 so that such payment information may be used to complete purchase transactions using mobile devices 7104 and 7106.

[0504] A first RFID communication device of card 7102 may establish RFID communication channel 7110 with an RFID reader of mobile device 7104 and a second RFID communication device of card 7102 may establish communication channel 7108 with an RFID reader of mobile device 7106. Accordingly, for example, the first and second RFID communication devices of card 7102 may communicate payment information temporarily stored within an RFID chip of each respective RFID communication device of card 7102. In so doing, for example, mobile devices 7104 and 7106 may store payment information communicated via RFID communication channels 7110 and 7108, respectively, within respective memory locations of mobile devices 7104 and 7106. Mobile devices 7104 and 7106 may later recall such payment information from their respective memory

locations, communicate the stored payment information via channels 7116 and 7118, respectively, of payment network 7120, and complete payment transactions with network entity 7122 using payment information received from card 7102.

[0505] FIG. 72 shows system 7200, which may include mobile device 7202, a stationary device (e.g., desktop computer 7204), payment network 7206, and network entity 7208. An application (e.g., RFID operations GUI 7212) may be executed by a processor of mobile device 7202 and may, for example, report a detection of an RFID device to a display of mobile device 7202. Such an RF device may, for example, include any device (e.g., desktop computer 7204) that may be RFID equipped. An RFID antenna and associated RFID chip may, for example, exist within desktop computer 7204 such that when mobile device 7202 is brought within an RFID communication distance of desktop computer 7204, an RFID antenna of mobile device 7202 may detect its presence, report the same to an RFID chip within mobile device 7202, which may then be reported to a processor of mobile device 7202 and reported to a user of mobile device 7202 via GUI 7212.

[0506] GUI 7212 may, for example, ask the user of mobile device 7202 whether he or she wishes to allow an RFID connection between mobile device 7202 and desktop computer 7204. The user may indicate his or her wish via radio buttons 7214 and may also indicate whether information (e.g., payment information) stored within a memory of mobile device 7202 is to be communicated to desktop computer 7204 via an RFID communication channel previously authorized by the user of mobile device 7202 (e.g., by selecting one of radio buttons 7216). If so,

then such information may be communicated to desktop computer 7204 by mobile device 7202 and stored within a memory of desktop computer 7204. In so doing, for example, payment information communicated by mobile device 7202 to desktop computer 7204 may subsequently be communicated by desktop computer 7204 via communication channel 7210 of payment network 7206 to complete a purchase transaction (e.g., an online purchase of items contained within a shopping cart generated by an internet browser of desktop computer 7204) via network entity 7208.

[0507] A flow diagram of communication sequences is shown in FIG. 73. Step 7311 of sequence 7310 may, for example, include activating an RFID search within a card. Accordingly, for example, a user interface (e.g., one or more buttons) of a card may be associated with a communication feature on the card, whereby pressing one of the buttons may activate an RFID communication device on the card. In step 7312, an RFID device may be detected by the card and an RFID connection may be established between the card and the RFID device. RFID data may, for example, be transferred to an RFID chip on the card (e.g., as in step 7313) and the RFID data contained within an RFID chip on the card may, for example, be communicated via an RFID antenna on the card to the RFID device (e.g., as in step 7314) . Once RFID data is communicated, RFID data contained within an RFID chip on the card may be erased so as to reduce a likelihood of skimming RFID data from the RFID chip on the card.

[0508] Step 7321 of sequence 7320 may, for example, include activating an RFID search within a mobile device. Accordingly, for example, a user interface

(e.g., a GUI executing on a processor of the mobile device) may be associated with a communication feature on the mobile device, whereby interfacing with the GUI may activate an RFID communication channel between a detected RFID device and the mobile device (e.g., as in step 7322). In step 7323, RFID data may, for example, be transferred to an RFID chip on the mobile device and the RFID data contained within an RFID chip on the mobile device may, for example, be communicated via an RFID antenna on the mobile device to the RFID device (e.g., as in step 7324). Once RFID data is communicated, RFID data contained within an RFID chip on the mobile device may be erased so as to reduce a likelihood of skimming RFID data from the RFID chip on the mobile device.

[0509] Step 7331 of sequence 7330 may, for example, include transferring RFID data from a core processor to an RFID chip on a card or a mobile device in preparation for communicating the RFID data via an RFID antenna on the card or the mobile device. If a timeout period that may be set in step 7332 expires before the RFID data is communicated by the card or mobile device (e.g., as in step 7333), then RFID data previously transferred to the RFID chip may be erased from the RFID chip by the core processor.

[0510] Step 7341 of sequence 7340 may, for example, include transferring RFID data from a core processor to an RFID chip on a card or a mobile device in preparation for communicating the RFID data via two RFID antennas on the card or the mobile device. In step 7342, the same data may be transferred to both RFID antennas. Alternately, for example, different data may be transferred each RFID antenna. In step

7343, both RFID antennas may communicate data to an RFID reader. As per one example, the same data may be communicated by both RFID antennas so as to increase a reliability of data communication. As per another example, different data may be communicated by each RFID antenna in order to increase an efficiency of data communication. As per yet another example, different data may be communicated by each RFID antenna, where differences (e.g., phase, frequency, and/or amplitude) may be used to communicate multiple other data channels .

[0511] Persons skilled in the art will appreciate that the present invention is not limited to only the embodiments described. Instead, the present invention more generally involves mobile information and the exchange thereof. Persons skilled in the art will also appreciate that the apparatus of the present invention may be implemented in other ways than those described herein. All such modifications are within the scope of the present invention, which is limited only by the claims that follow.

What is claimed is:

1. A method, comprising:

accessing a network using a mobile device;

selecting an object for purchase from said network using said mobile device;

communicating payment information from a payment card to said mobile device using a contactless communication channel; and

communicating said payment information from said mobile device to said network to complete a purchase transaction for said object.

2. A method, comprising:

communicating source account information to a first mobile device using a first contactless communication channel;

communicating target account information to a second mobile device using a second contactless communication channel;

communicating said target account information from said second mobile device to said first mobile device; and

coordinating a money transfer from said source account into said target account using said first mobile device.

3. The method of claim 1, wherein said mobile device is a laptop computer.

4. The method of claim 1, wherein said mobile device is a PDA.

5. The method of claim 1, wherein said mobile device is a phone.

6. The method of claim 1, wherein said contactless communication channel is an RFID communication channel.

7. The method of claim 1, wherein said mobile device and said payment card are brought within a proximity distance of up to two inches to establish said contactless communication channel.

8. The method of claim 1, wherein said payment card is a powered card.

9. The method of claim 1, wherein said payment card is a non-powered card.

10. The method of claim 1, wherein said payment card simulates a series of touches to a display of said mobile device to establish at least a portion of said contactless communication channel.

11. The method of claim 1, wherein said mobile device communicates an optical data stream to said payment card to establish at least a portion of said contactless communication channel.

12. The method of claim 2, wherein a powered card communicates said target account information.

13. The method of claim 2, wherein a non-powered card communicates said target account information.

14. The method of claim 2, wherein a powered card communicates said source account information.

15. The method of claim 2, wherein a non-powered card communicates said source account information.

16. The method of claim 2, wherein said first mobile device is a laptop computer..

17. The method of claim 2, wherein said first mobile device is a PDA.

18. The method of claim 2, wherein said first mobile device is a phone.

19. The method of claim 2, wherein said second mobile device is a laptop computer..

20. The method of claim 2, wherein said second mobile device is a PDA.

21. The method of claim 2, wherein said second mobile device is a phone.

22. A method, comprising:

establishing a contactless communication channel between one or more physical cards and a mobile device;

communicating information from said physical card to said mobile device using said contactless communication channel;

creating a mobile wallet of virtual cards within a memory of said mobile device from said communicated information; and

selecting one of said virtual cards to complete a purchase transaction using said mobile device.

23. The method of claim 22, wherein said mobile device is a laptop.

24. The method of claim 22, wherein said mobile device is a PDA.

25. The method of claim 22, wherein said mobile device is a phone.

26. The method of claim 22, wherein said mobile device is an MP3 device.

27. The method of claim 22, wherein said mobile device is a GPS device.

28. The method of claim 22, wherein said physical card is a non-powered card.

29. The method of claim 22, wherein said physical card is a powered card.

30. The method of claim 22, wherein said contactless communication channel is an RFID communication channel.

31. The method of claim 22, wherein said mobile device and said physical card are brought within a proximity distance of up to two inches to establish said contactless communication channel.

32. The method of claim 22, wherein said physical card simulates a series of touches to a display of said mobile device to establish at least a portion of said contactless communication channel.

33. The method of claim 22, wherein said mobile device communicates an optical data stream to said physical card to establish at least a portion of said contactless communication channel.

34. The method of claim 22, wherein establishing said contactless communication channel comprises entering a PIN associated with said physical card to authorize said communicated information.

35. The method of claim 22, wherein said communicated information is selected based on manual input entered into said physical card.

36. The method of claim 22, wherein said communicated information includes payment information associated with a first payment account selected by pressing a first button of said physical card.

37. The method of claim 22, wherein said virtual cards include gift cards.

38. The method of claim 22, wherein said mobile device includes a graphical user interface to modify a visual appearance of said virtual cards as displayed by said mobile device.

39. The method of claim 22, wherein said communicated information is used to create a visual appearance of said virtual cards as displayed by said mobile device.

40. The method of claim 22, wherein said virtual cards are sorted onto a display of said mobile device based on manual input selection received by a graphical user interface of said mobile device.

41. The method of claim 22, wherein completing said purchase transaction includes establishing a second contactless communication channel between said mobile device and a merchant terminal and communicating payment information associated with said selected virtual card to said merchant terminal via said second contactless communication channel.

42. A method, comprising:

executing an application on a processor of a mobile device to perform a function;

communicating information to said mobile device from a contactless device using a contactless communication channel;

confirming said communicated information matches at least a portion of predetermined information; and

executing said function from said mobile device based on said confirmation.

43. The method of claim 42, wherein said mobile device is a laptop.

44. The method of claim 42, wherein said mobile device is a PDA.

45. The method of claim 42, wherein said mobile device is a phone.

46. The method of claim 42, wherein said mobile device is an MP3 device.

47. The method of claim 42, wherein said mobile device is a GPS device.

48. The method of claim 42, wherein said contactless device is a non-powered card.

49. The method of claim 42, wherein said contactless device is a powered card.

50. The method of claim 42, wherein said contactless device is an automobile key.

51. The method of claim 42, wherein said contactless device is a home door key.

52. The method of claim 42, wherein said contactless device is a key to a safe deposit box.

53. The method of claim 42, wherein said contactless communication channel is an RFID communication channel.

54. The method of claim 42, wherein a camera of said mobile device establishes said contactless communication channel.

55. The method of claim 42, wherein said contactless device is a powered card, said mobile device and said powered card being brought within a proximity distance of up to two inches to establish said contactless communication channel.

56. The method of claim 42, wherein said contactless device is a powered card, said powered card simulating a series of touches to a display of said mobile device to establish at least a portion of said contactless communication channel.

57. The method of claim 42, wherein said contactless device is a powered card, said mobile device communicating an optical data stream to said powered card to establish at least a portion of said contactless communication channel.

58. The method of claim 42, wherein said predetermined information exists on a memory of said mobile device.

59. The method of claim 42, wherein said predetermined information exists on a memory of a remote authorization server.

60. The method of claim 42, wherein said contactless device is a non-powered card, said non-powered card providing said communicated information to authorize a purchase transaction based on payment account information associated with said non-powered card.

61. The method of claim 42, wherein said function is executed by a device external to said mobile device.

62. A card, comprising:

a first board including a first RFID chip and a first RFID antenna; and

a second board including a processor, wherein first data is transferred from said processor to said first RFID chip via conductive terminals between said first and second boards and wherein said first data is communicated from said first RFID chip to a first RFID communication channel via said first RFID antenna.

63. A card, comprising:

a first board including a first RFID antenna; and

a second board including a first RFID chip and a processor, wherein first data is transferred from said processor to said RFID chip and wherein said first data is communicated from said first RFID chip to a first RFID communication channel via said first RFID antenna.

64. The card of claim 62, further comprising a second RFID antenna, wherein second data is transferred from said processor to a second RFID chip via conductive terminals between said first and second boards and wherein said second data is communicated from said second RFID chip to a second RFID communication channel via said second RFID antenna, said first and second data being the same.

65. The card of claim 62, further comprising a second RFID antenna, wherein second data is transferred from said processor to a second RFID chip via conductive terminals between said first and second boards and wherein said second data is communicated from said second RFID chip to a second RFID communication channel

via said second RFID antenna, said first and second data being different.

66. The card of claim 62, further comprising a second RFID antenna, wherein second data is transferred from said processor to a second RFID chip via conductive terminals between said first and second boards and wherein said second data is communicated from said second RFID chip to a second RFID communication channel via said second RFID antenna, wherein a difference between said first and second data forms information for a third RFID communication channel.

67. The card of claim 62, further comprising a second RFID antenna, wherein second data is transferred from said processor to a second RFID chip via conductive terminals between said first and second boards and wherein said second data is communicated from said second RFID chip to a second RFID communication channel via said second RFID antenna, wherein a first difference between said first and second data forms information for a third RFID communication channel and a second difference between said first and second data forms information for a fourth RFID communication channel .

68. The card of claim 62, wherein said first data is erased from said first RFID chip after said first data is communicated from said first RFID chip to said first RFID communication channel.

8 . The card of claim 1, wherein said first data is erased from said first RFID chip after a delay period has expired.

69. The card of claim 62, wherein said first and second boards are encapsulated, said encapsulation being laminated between first and second lamination layers .

70. The card of claim 62, further comprising a dynamic magnetic stripe communications device.

71. The card of claim 63, further comprising a second RFID antenna, wherein second data is transferred from said processor to a second RFID chip and wherein said second data is communicated from said second RFID chip to a second RFID communication channel via said second RFID antenna, said first and second data being the same .

72. The card of claim 63, further comprising a second RFID antenna, wherein second data is transferred from said processor to a second RFID chip and wherein said second data is communicated from said second RFID chip to a second RFID communication channel via said second RFID antenna, said first and second data being different .

73. The card of claim 63, further comprising a second RFID antenna, wherein second data is transferred from said processor to a second RFID chip and wherein said second data is communicated from said second RFID chip to a second RFID communication channel via said second RFID antenna, wherein a first difference between said first and second data forms information for a third RFID communication channel.

74. The card of claim 63, further comprising a second RFID antenna, wherein second data is transferred from said processor to a second RFID chip and wherein said second data is communicated from said second RFID chip to a second RFID communication channel via said second RFID antenna, wherein a first difference between said first and second data forms information for a third RFID communication channel and a second difference between said first and second data forms information for a fourth RFID communication channel.

75. The card of claim 63, wherein said first data is erased from said first RFID chip after said first data is communicated from said first RFID chip to said first RFID communication channel.

76. The card of claim 63, wherein said first data is erased from said first RFID chip after a delay period has expired.

77. The card of claim 63, wherein said first and second boards are encapsulated, said encapsulation being laminated between first and second lamination layers .

78. The card of claim 63, further comprising a dynamic magnetic stripe communications device.

79. A method comprising:

communicating first data from a device to a reader via a first RFID communication channel;

communicating second data from said device to said reader via a second RFID communication channel;

receiving said first and second data via said reader; and

avoiding collisions between said first and second data within said reader.

80. The method of claim 79, wherein said first and second data are different.

81. A system, comprising:

means for accessing a network;

means for selecting an object for purchase from said network;

means for communicating payment information from a payment card to a mobile device; and

means for communicating said payment information from said mobile device to a network to complete a purchase transaction for said object.

82. A system, comprising:

means for communicating source account information to a first mobile device;

means for communicating target account information to a second mobile device;

means for communicating said target account information from said second mobile device to said first mobile device; and

means for coordinating a money transfer from said source account into said target account.

83. A system, comprising:

means for establishing a contactless communication channel between one or more physical cards and a mobile device;

means for communicating information from said physical card to said mobile device using said contactless communication channel;

means for creating a mobile wallet of virtual cards within a memory of said mobile device from said communicated information; and

means for selecting one of said virtual cards to complete a purchase transaction using said mobile device.

84. A system, comprising:

means for executing an application on a mobile device to perform a function;

means for communicating information to said mobile device from a contactless device;

means for confirming said communicated information matches at least a portion of predetermined information; and

means for executing said function from said mobile device based on said confirmation.

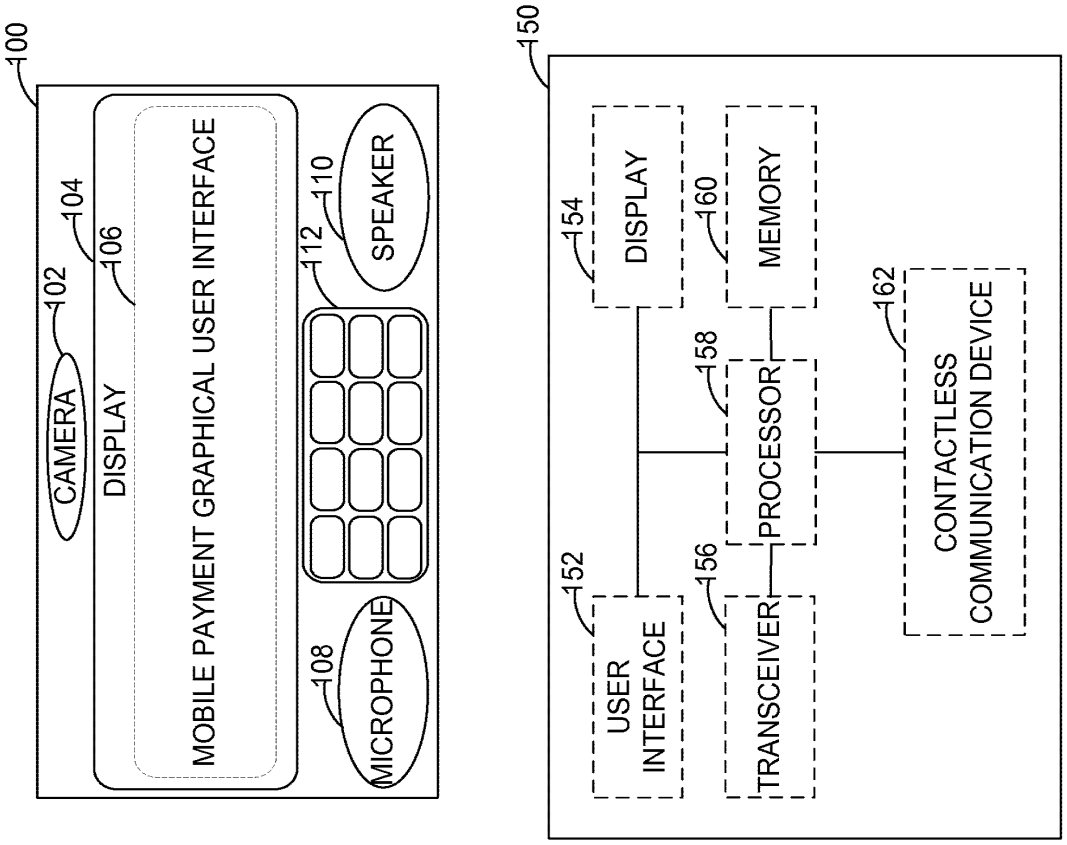

100
CAMERA
102
DISPLAY
104
MOBILE PAYMENT GRAPHICAL USER INTERFACE
106
MICROPHONE
108
112
SPEAKER
110
150
USER INTERFACE
152
TRANSCEIVER
156
PROCESSOR
158
DISPLAY
154
MEMORY
160
CONTACTLESS COMMUNICATION DEVICE
162

FIG. 1

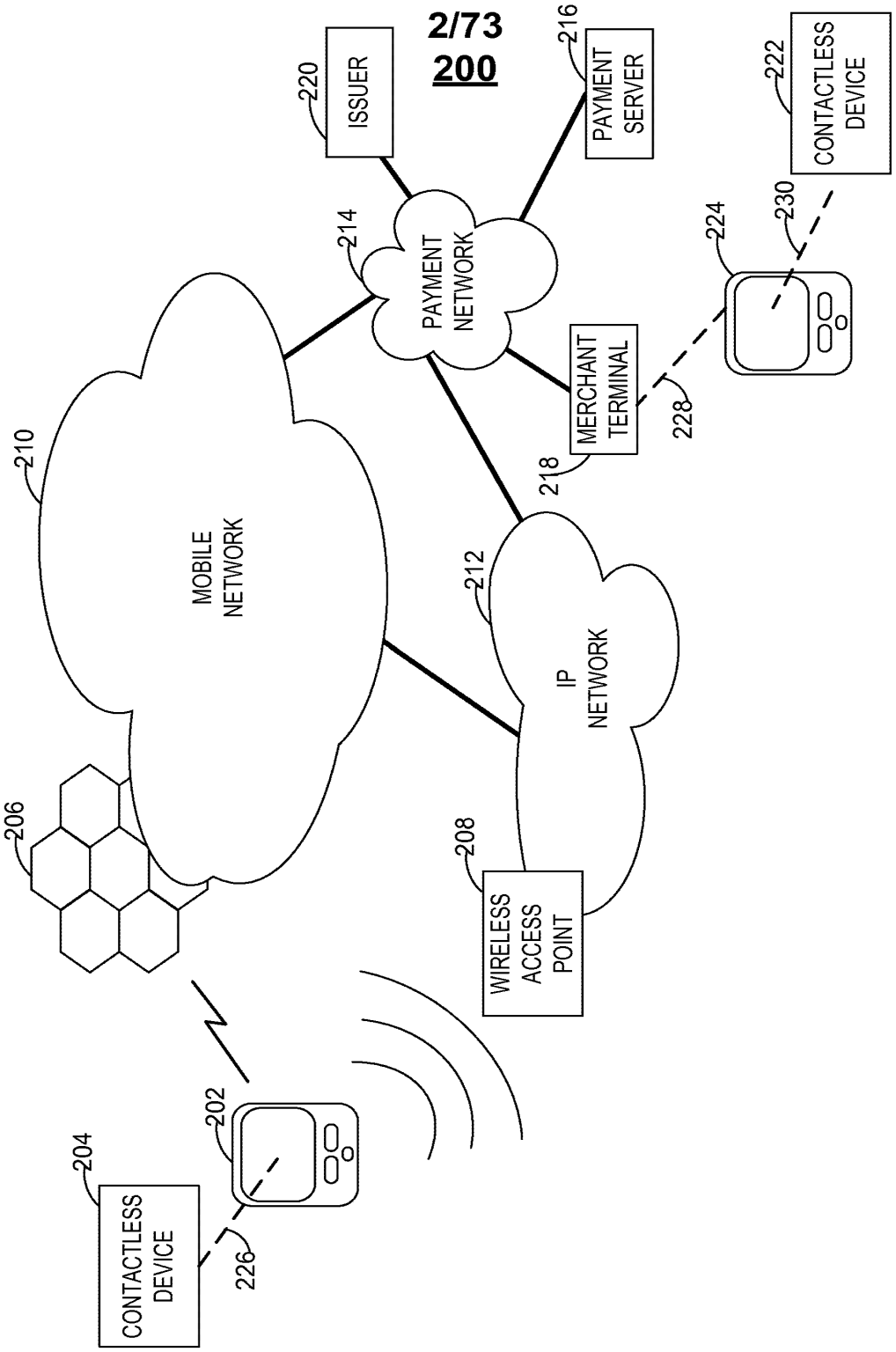

200
ISSUER
220
PAYMENT SERVER
216
CONTACTLESS DEVICE
222
PAYMENT NETWORK
214
MOBILE NETWORK
210
IP NETWORK
212
MERCHANT TERMINAL
218
224
230
228
206
208
WIRELESS ACCESS POINT
202
204
CONTACTLESS DEVICE
226

FIG. 2

300

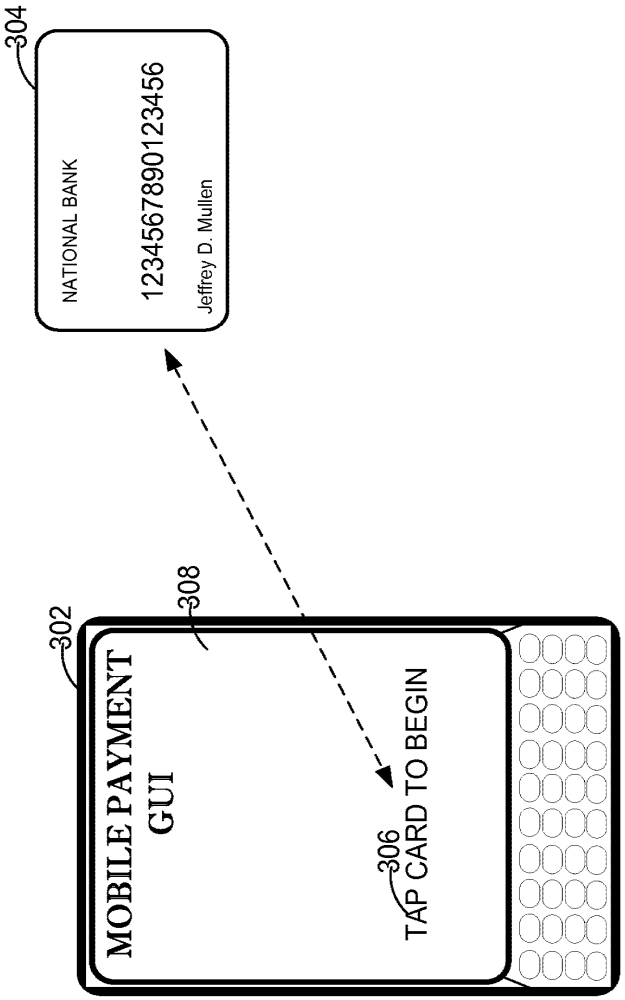

304
NATIONAL BANK
1234567890123456
Jeffrey D. Mullen
308
302
MOBILE PAYMENT
GUI
306
TAP CARD TO BEGIN

FIG. 3

400


CARD DETECTION
AIRLINE CARD
TRAVEL CARD
BANK CARD
404
HEALTHCARE CARD
IDENTIFICATION CARD
REWARDS CARD
BACK
406
CONTINUE
408

FIG. 4

500

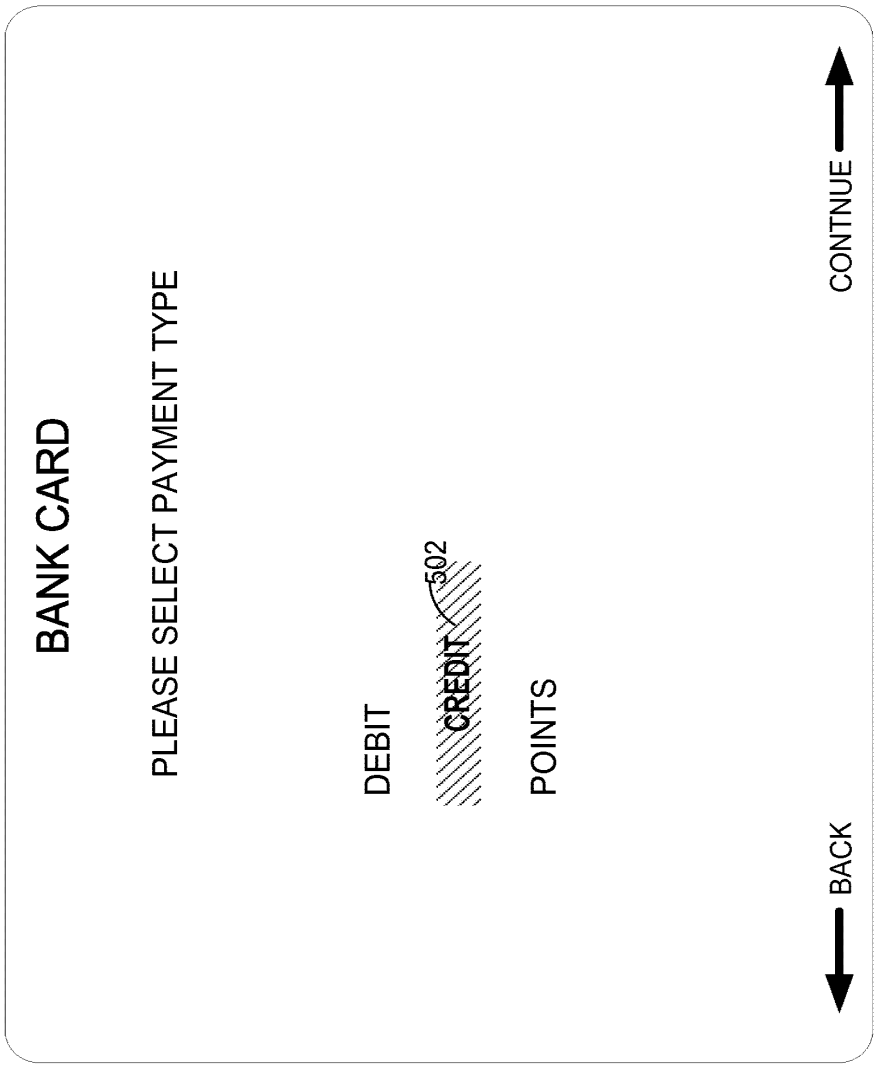

BANK CARD
PLEASE SELECT PAYMENT TYPE
DEBIT
CREDIT
502
POINTS
CONTNUE
BACK

FIG. 5

600

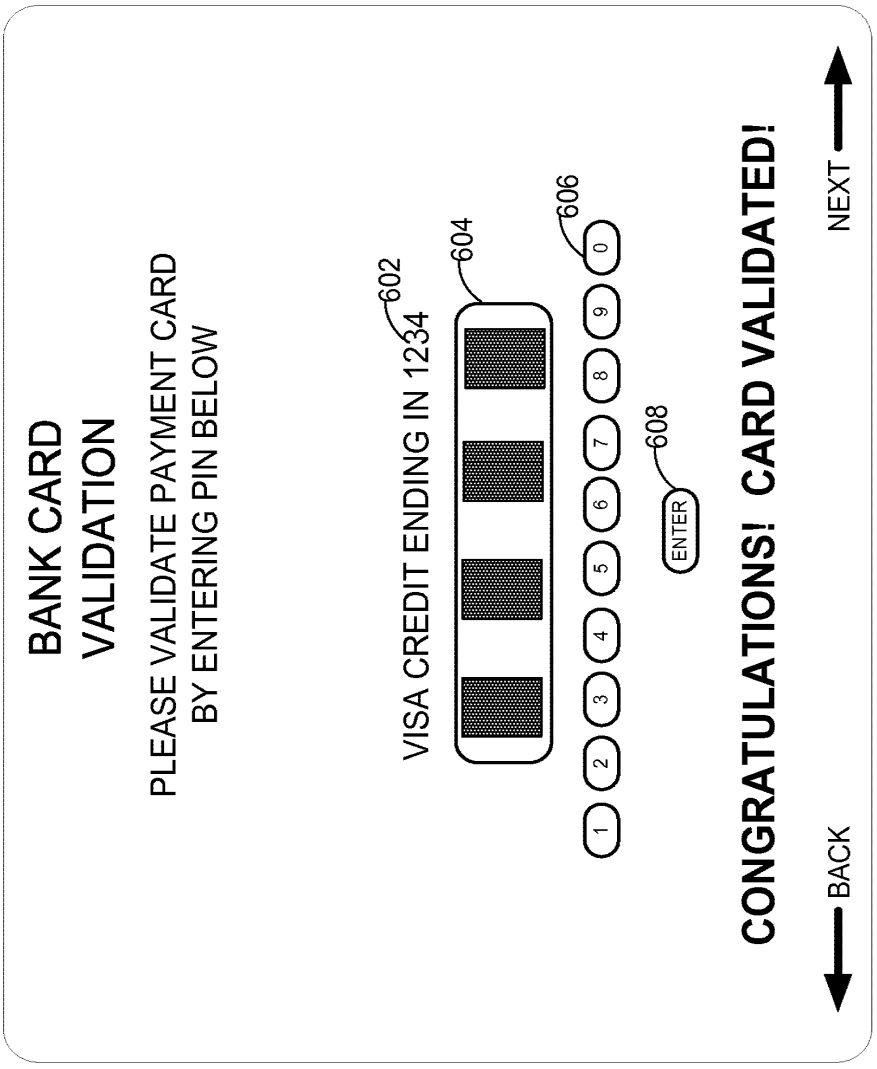

BANK CARD
VALIDATION
PLEASE VALIDATE PAYMENT CARD
BY ENTERING PIN BELOW
VISA CREDIT ENDING IN 1234
602
604
606
608
1
2
3
4
5
6
7
8
9
0
ENTER
CONGRATULATIONS! CARD VALIDATED!
BACK
NEXT

FIG. 6

700

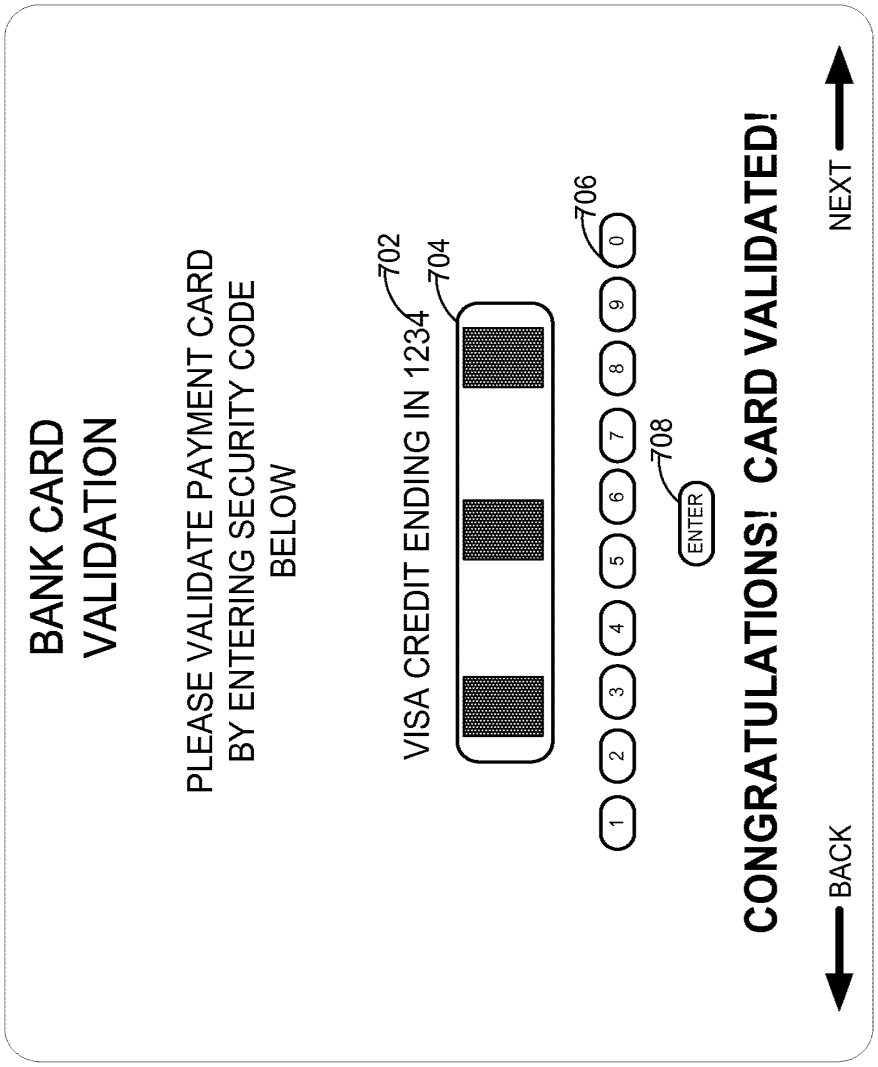

BANK CARD VALIDATION
PLEASE VALIDATE PAYMENT CARD BY ENTERING SECURITY CODE BELOW
VISA CREDIT ENDING IN 1234
702
704
706
708
1 2 3 4 5 6 7 8 9 0
ENTER
CONGRATULATIONS! CARD VALIDATED!
BACK
NEXT

FIG. 7

800

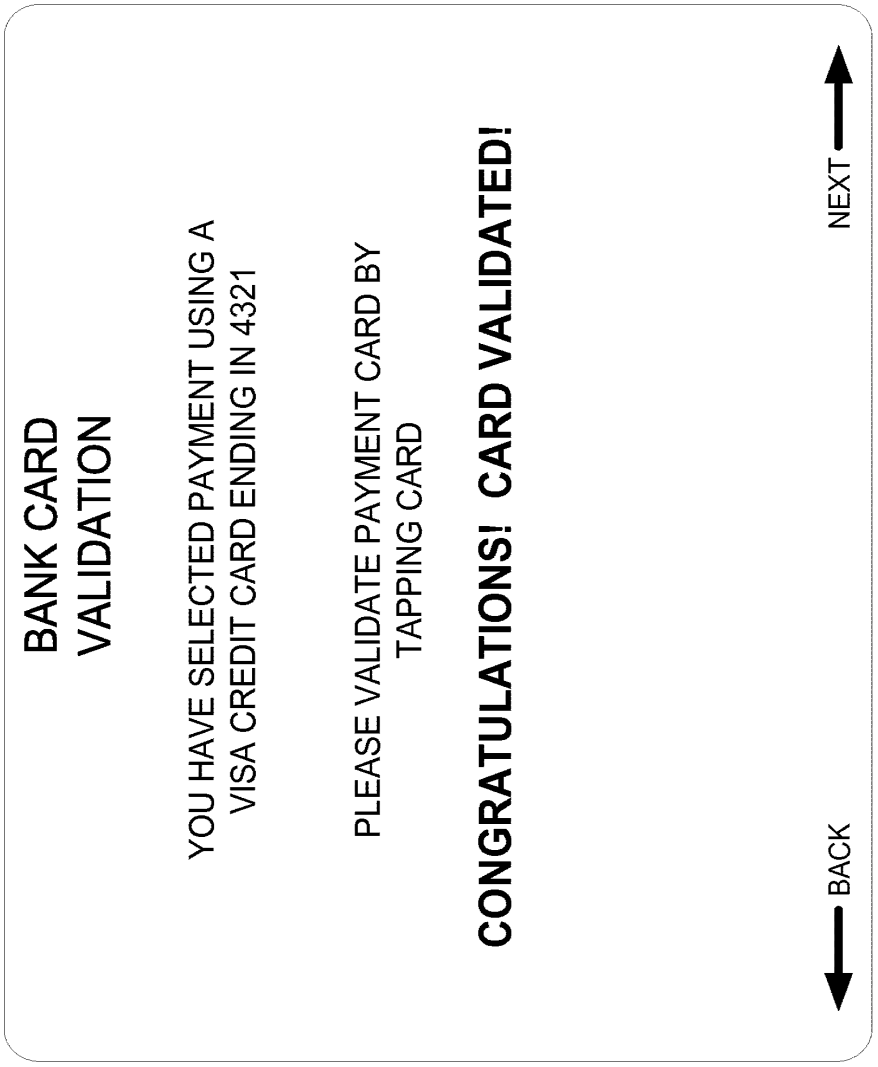

BANK CARD
VALIDATION
YOU HAVE SELECTED PAYMENT USING A
VISA CREDIT CARD ENDING IN 4321
PLEASE VALIDATE PAYMENT CARD BY
TAPPING CARD
CONGRATULATIONS! CARD VALIDATED!
BACK
NEXT

FIG. 8

9/73
900

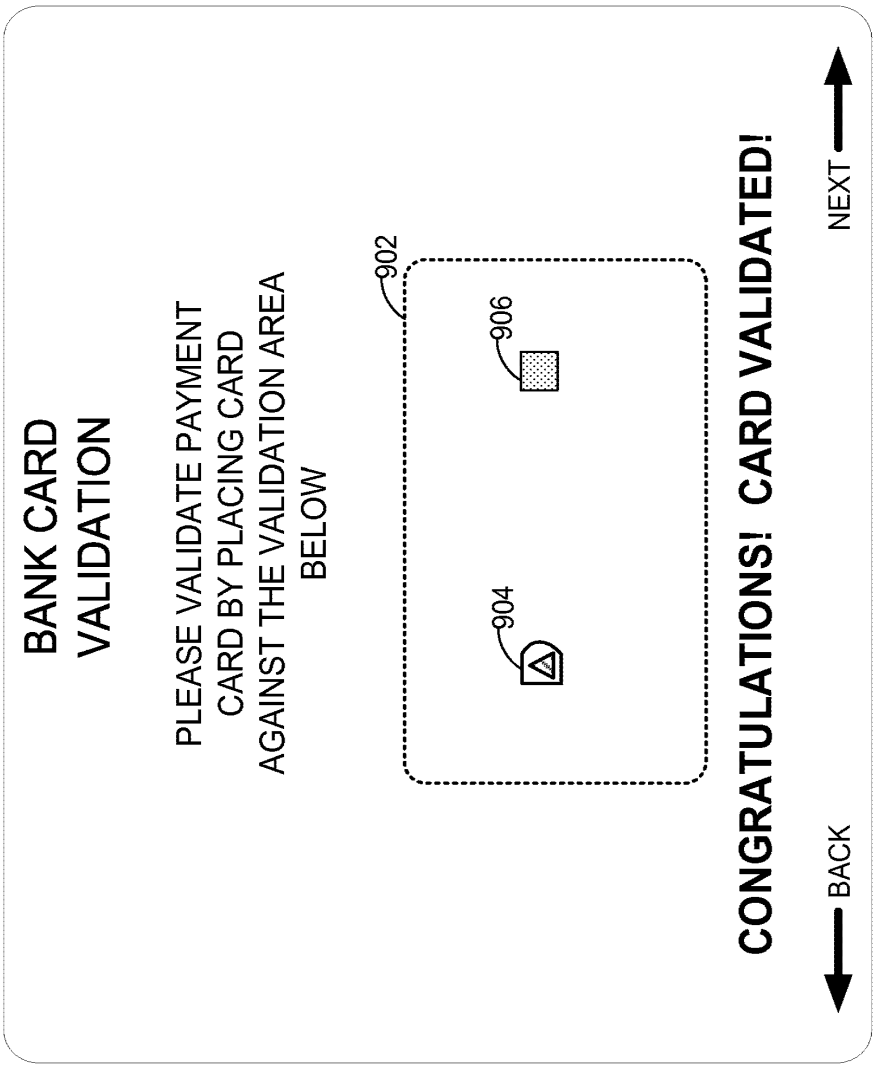

BANK CARD VALIDATION
PLEASE VALIDATE PAYMENT CARD BY PLACING CARD AGAINST THE VALIDATION AREA BELOW
902
906
904
CONGRATULATIONS! CARD VALIDATED!
NEXT
BACK

FIG. 9

1000

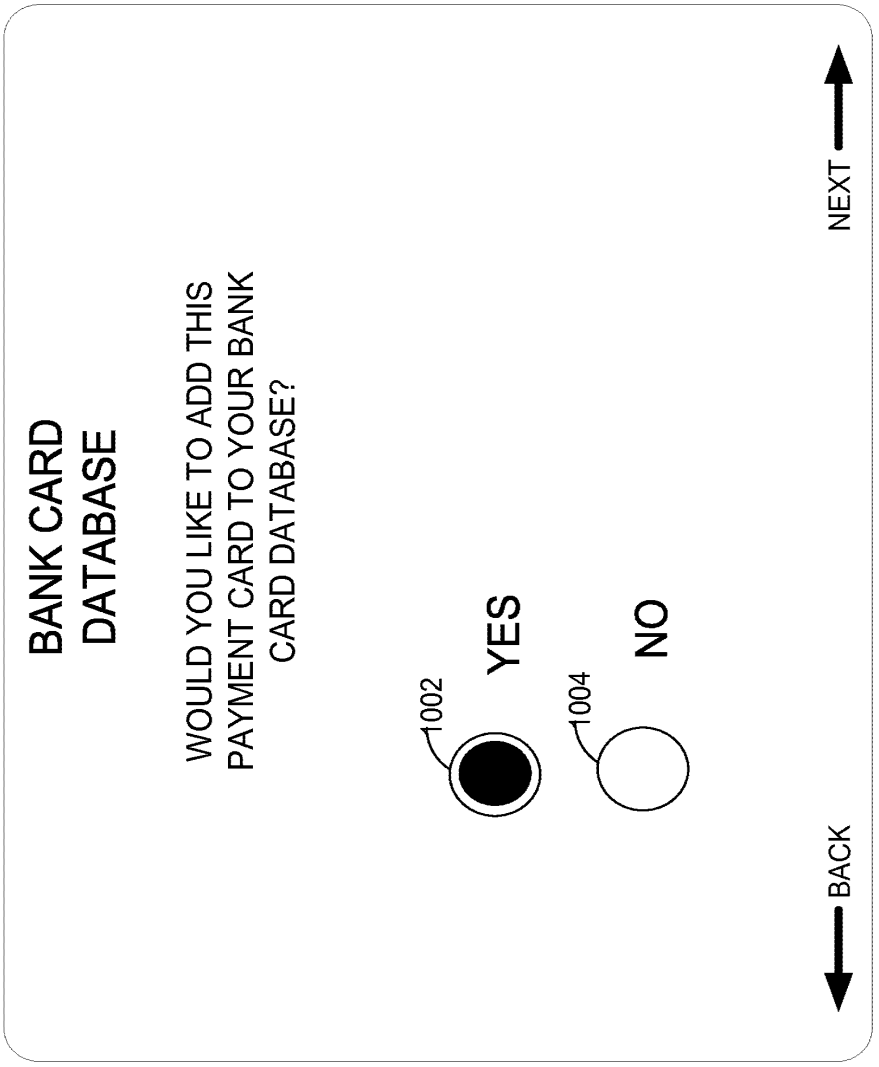

BANK CARD DATABASE
WOULD YOU LIKE TO ADD THIS PAYMENT CARD TO YOUR BANK CARD DATABASE?
1002
YES
1004
NO
NEXT
BACK

FIG. 10

11/73
1100

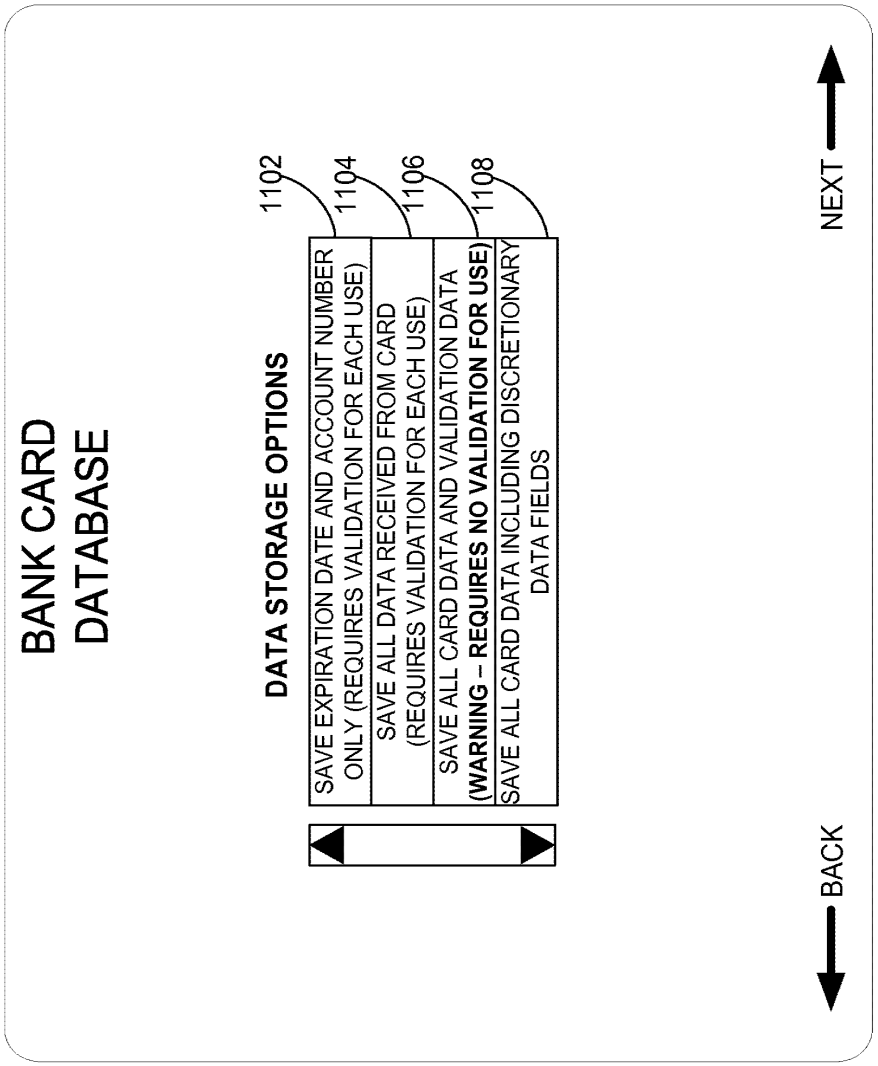


FIG. 11

1200

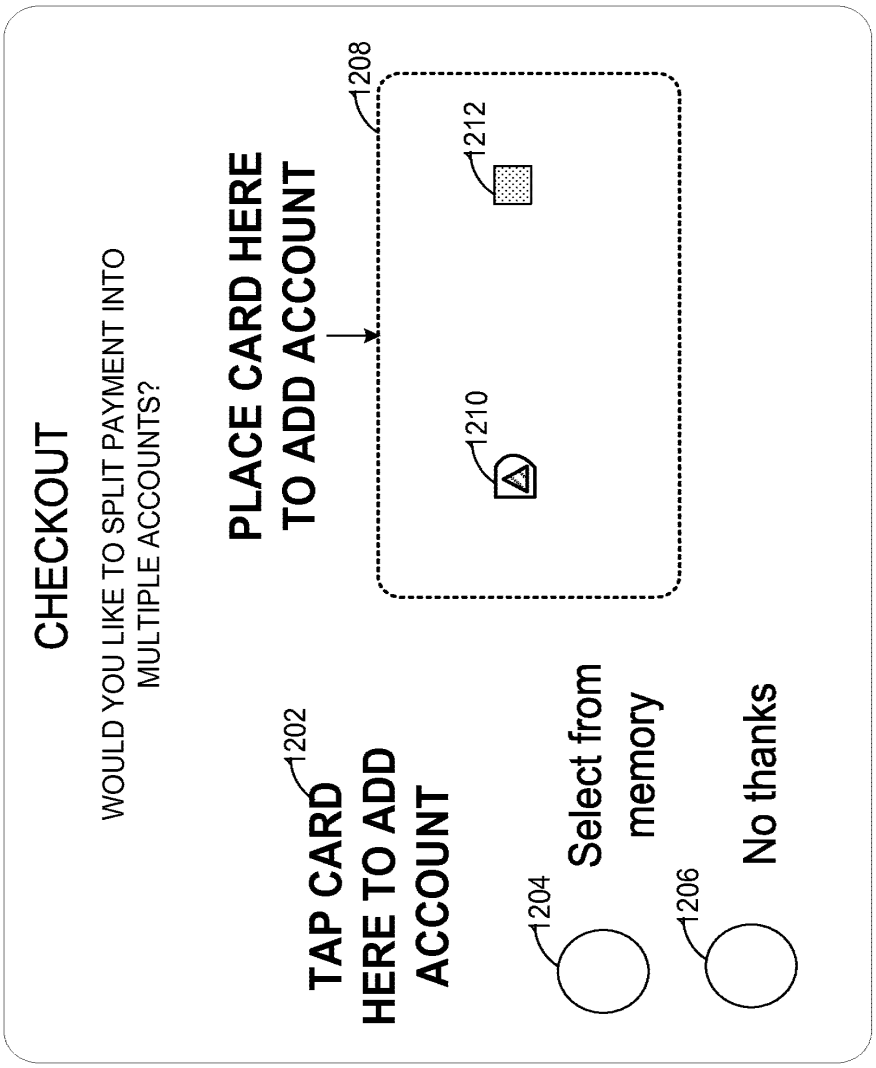

CHECKOUT
WOULD YOU LIKE TO SPLIT PAYMENT INTO MULTIPLE ACCOUNTS?
PLACE CARD HERE TO ADD ACCOUNT
1208
1212
1210
1202
TAP CARD HERE TO ADD ACCOUNT
1204
Select from memory
1206
No thanks

FIG. 12

13/73

1300

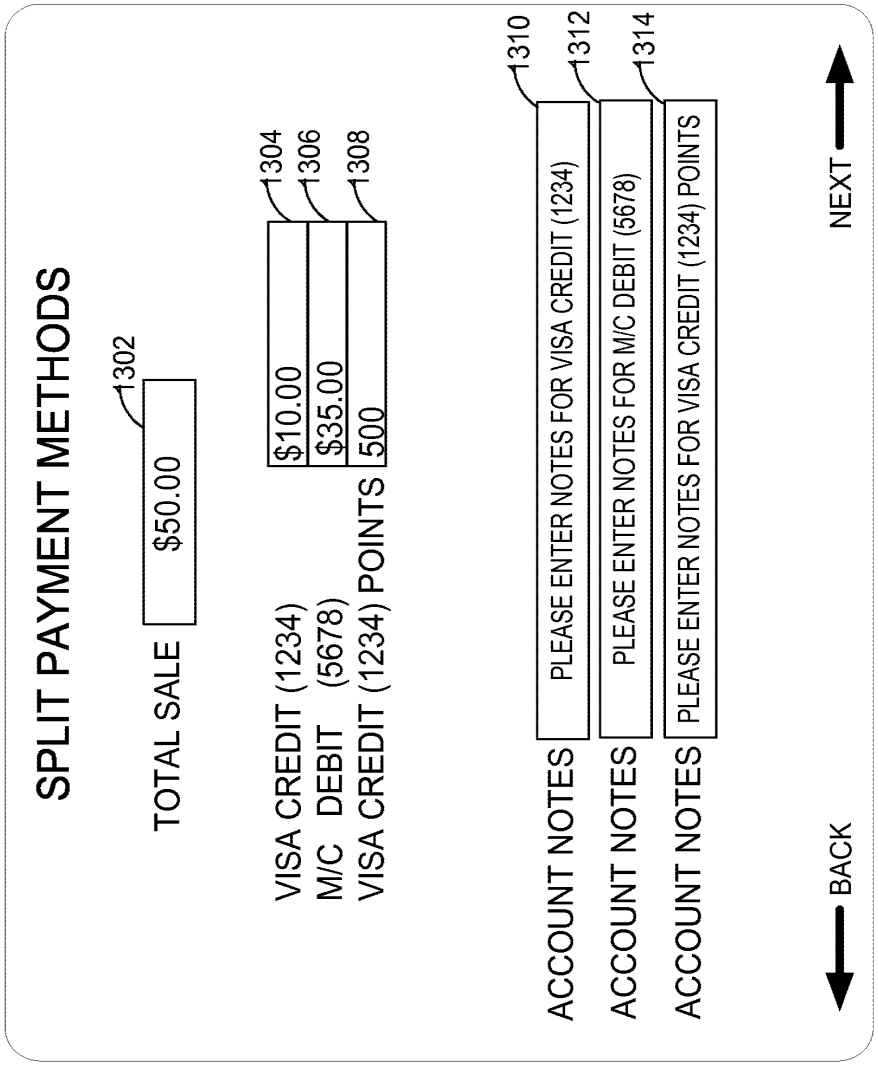


FIG. 13

14/73
1400

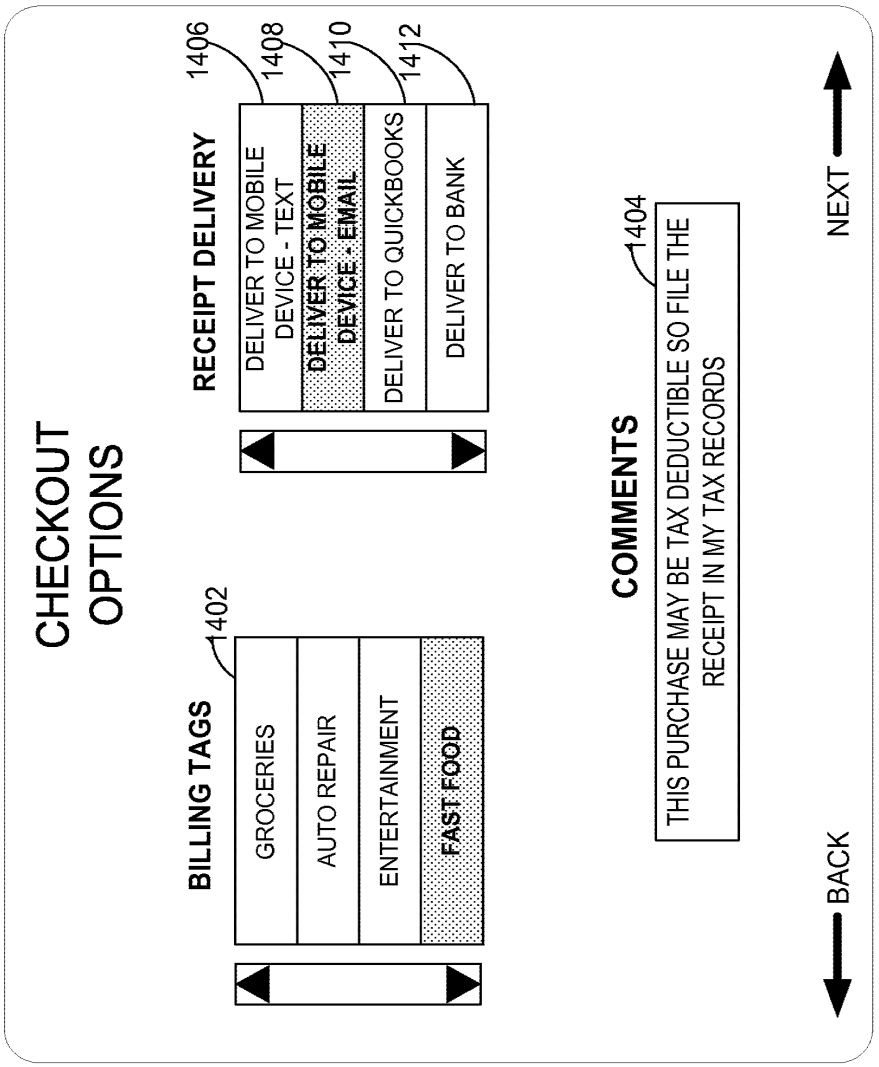


FIG. 14

1500

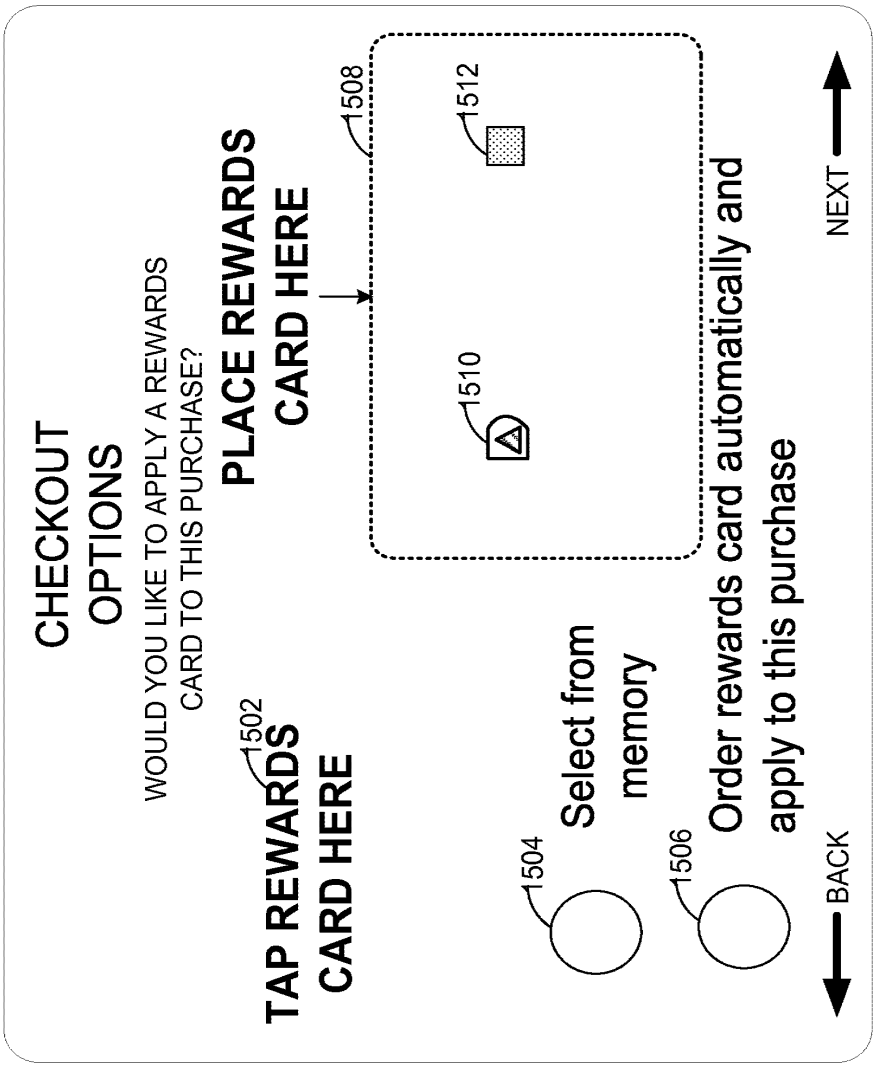

CHECKOUT OPTIONS
WOULD YOU LIKE TO APPLY A REWARDS CARD TO THIS PURCHASE?
TAP REWARDS CARD HERE
1502
PLACE REWARDS CARD HERE
1508
1512
1510
1504
Select from memory
1506
Order rewards card automatically and apply to this purchase
BACK
NEXT

FIG. 15

1600

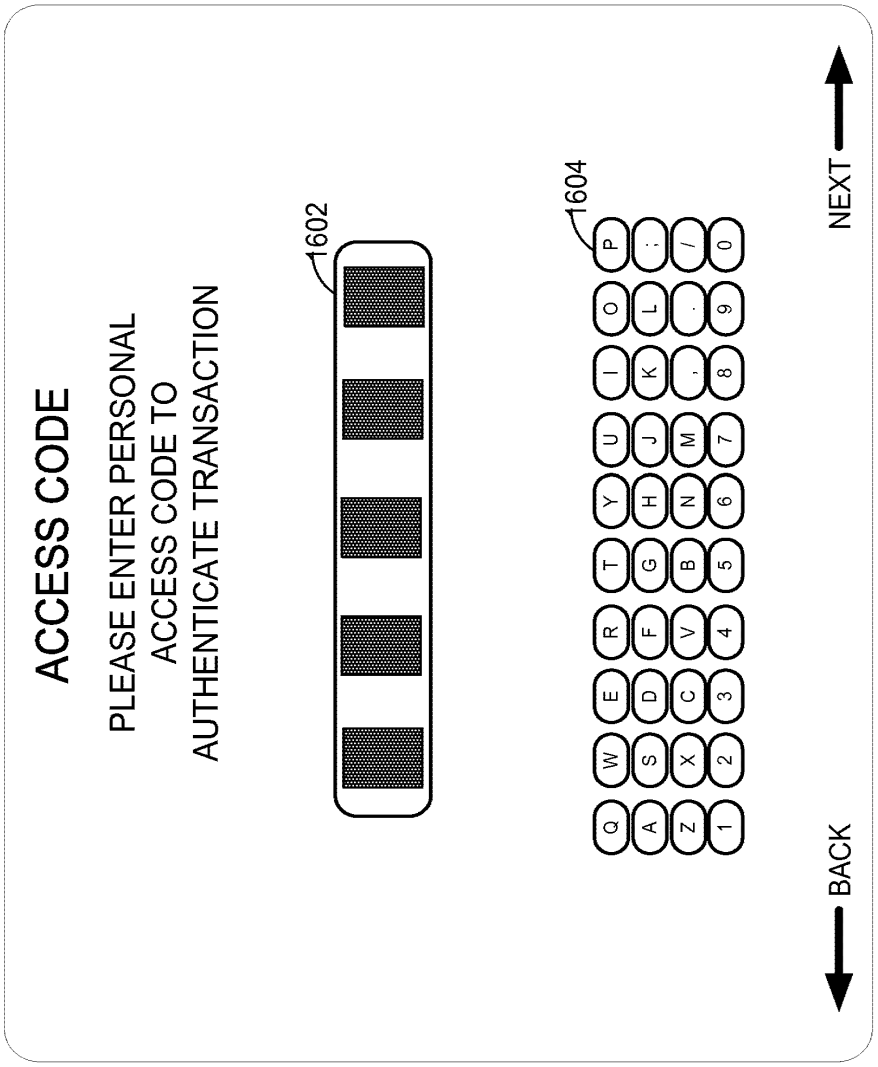

ACCESS CODE
PLEASE ENTER PERSONAL ACCESS CODE TO AUTHENTICATE TRANSACTION
1602
1604
NEXT
BACK
Q A Z 1
W S X 2
E D C 3
R F V 4
T G B 5
Y H N 6
U J M 7
I K , 8
O L . 9
P ; / 0

FIG. 16

17/73
1700

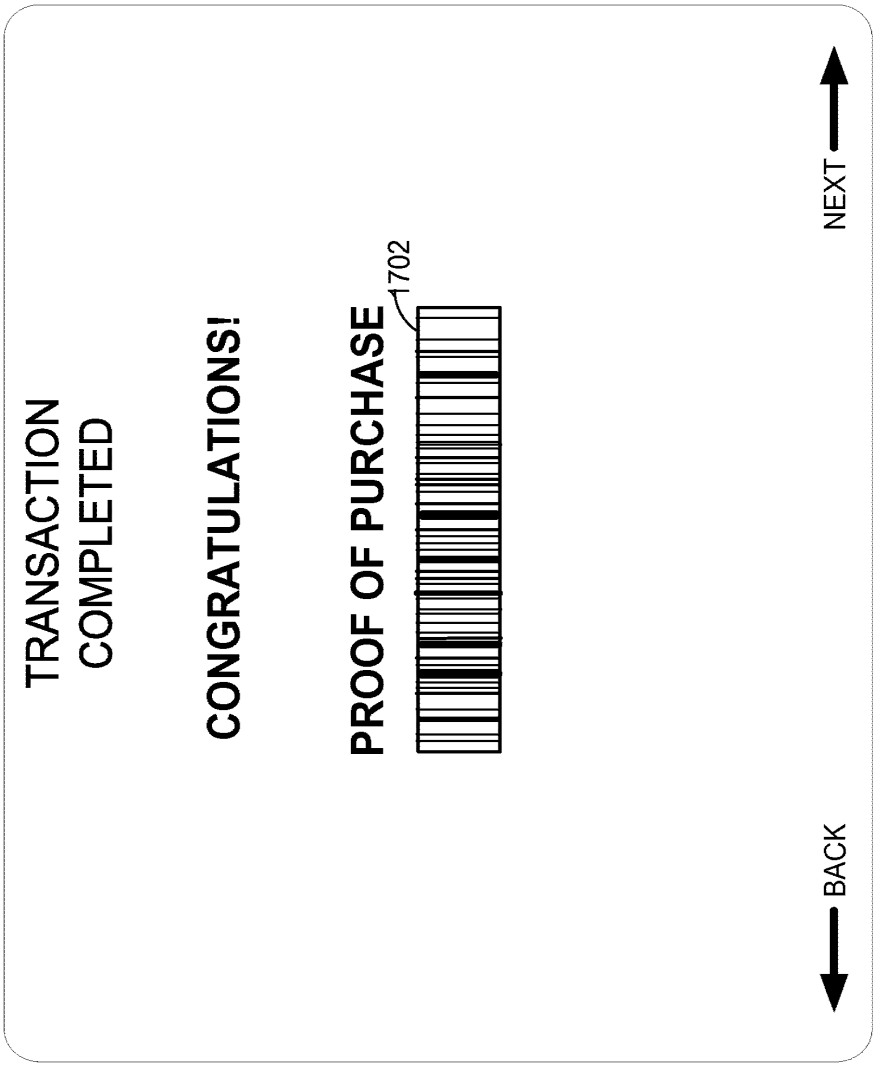


FIG. 17

1800


TRANSFER FUNDS
Select transfer account
Contact transferee
1802
1804
NEXT
BACK

FIG. 18

1900

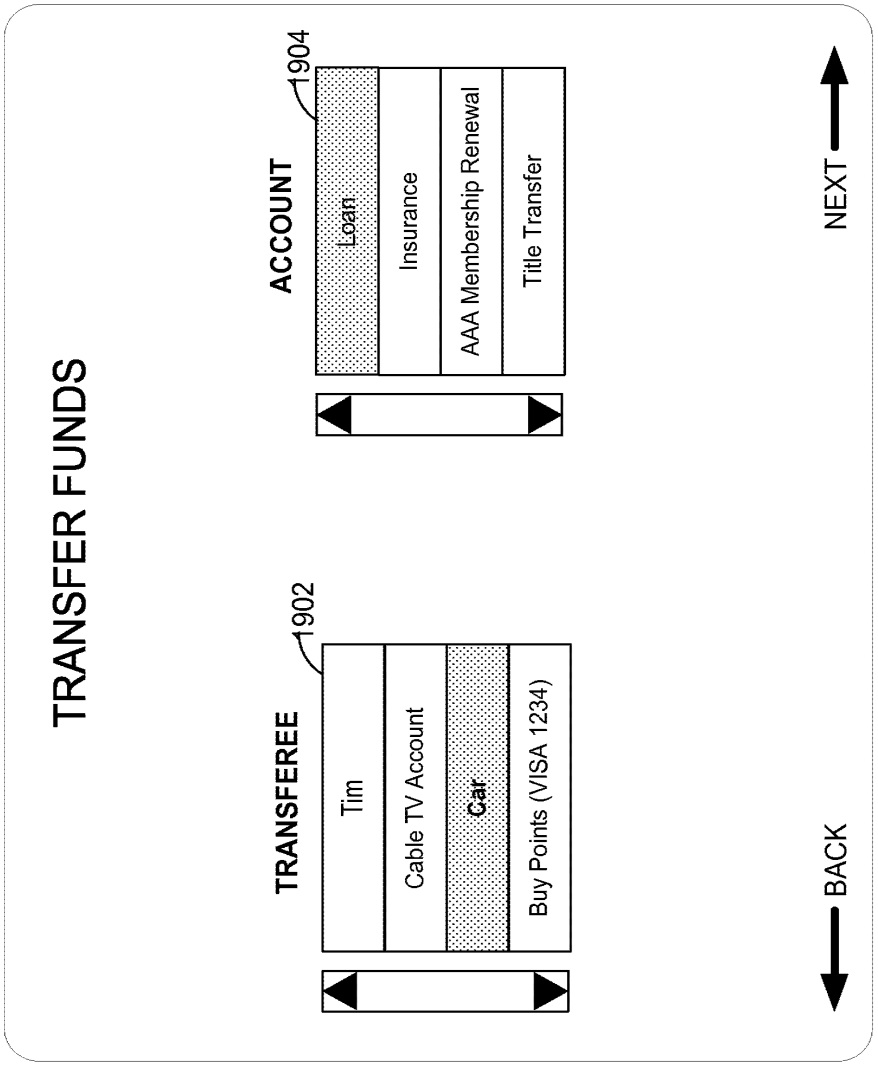

TRANSFER FUNDS
TRANSFEREE
1902
Tim
Cable TV Account
Car
Buy Points (VISA 1234)
ACCOUNT
1904
Loan
Insurance
AAA Membership Renewal
Title Transfer
NEXT
BACK

FIG. 19

2000

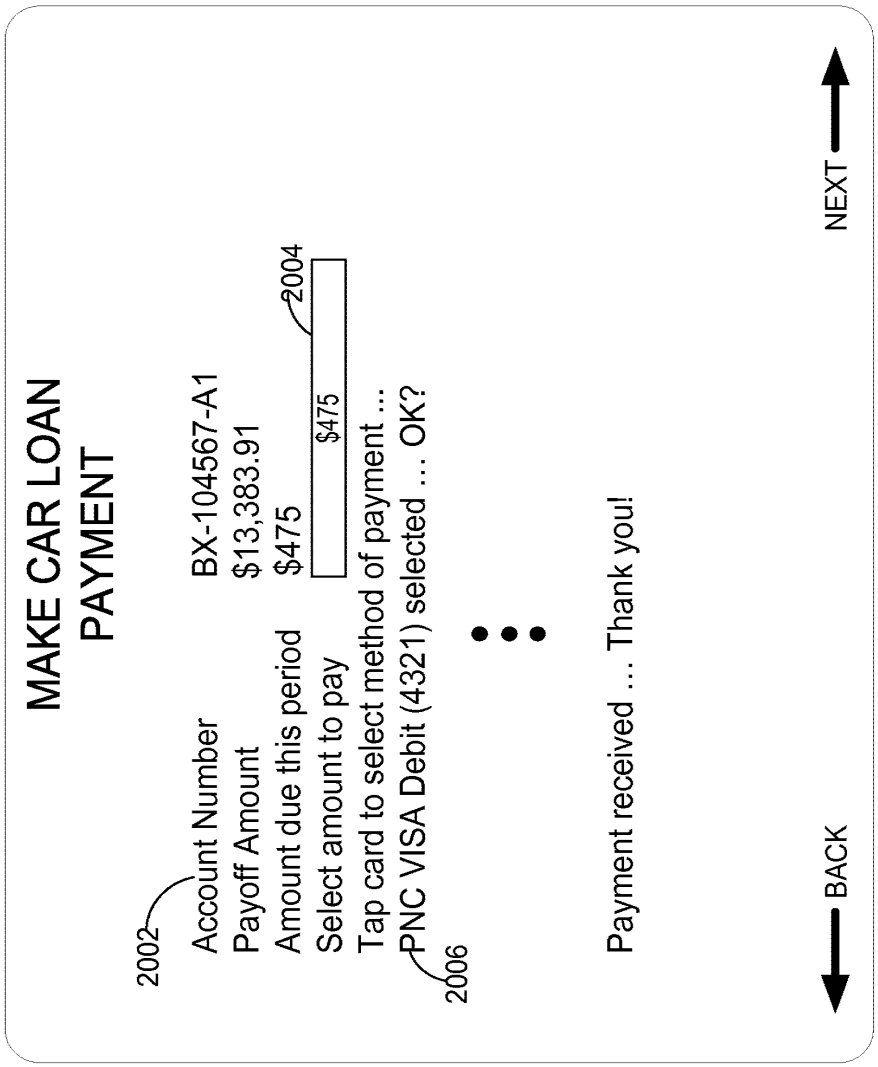

MAKE CAR LOAN PAYMENT
2002
Account Number
BX-104567-A1
Payoff Amount
$13,383.91
Amount due this period
$475
Select amount to pay
$475
2004
Tap card to select method of payment ...
PNC VISA Debit (4321) selected ... OK?
2006
Payment received ... Thank you!
BACK
NEXT

FIG. 20

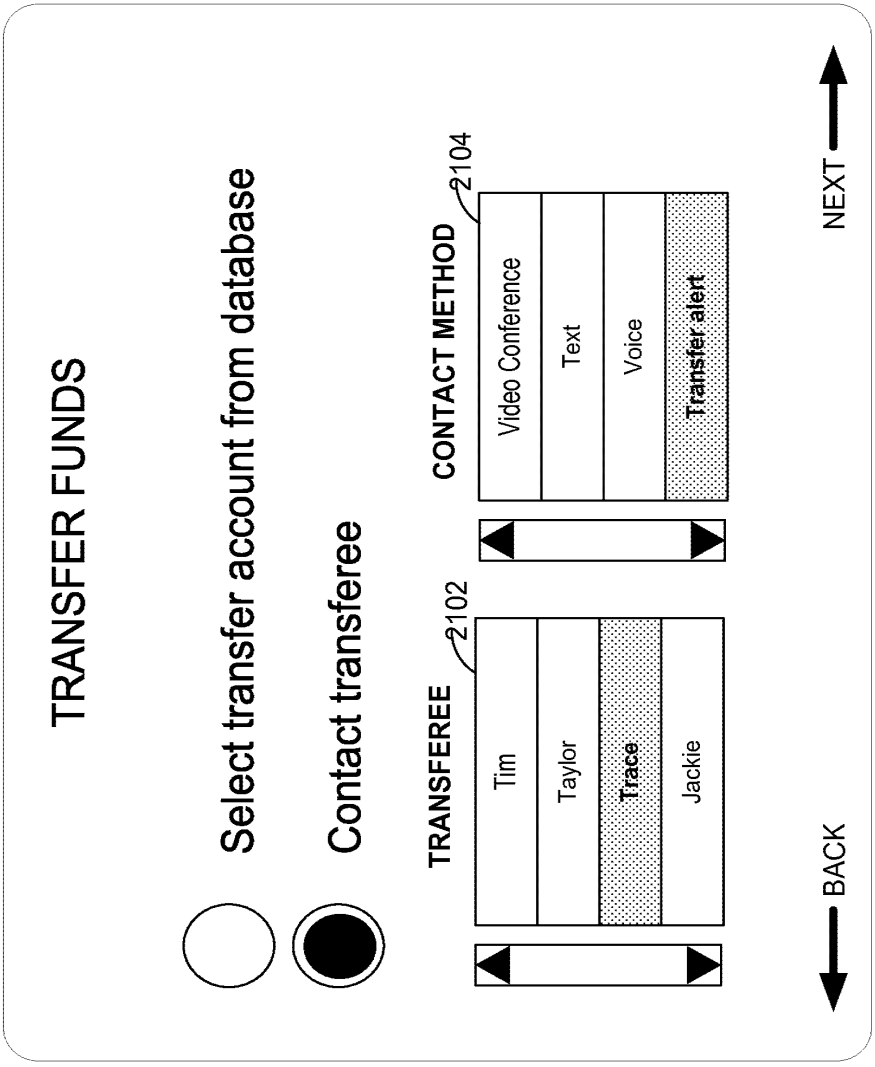

TRANSFER FUNDS
Select transfer account from database
Contact transferee
TRANSFEREE
2102
Tim
Taylor
Trace
Jackie
CONTACT METHOD
2104
Video Conference
Text
Voice
Transfer alert
BACK
NEXT

FIG. 21

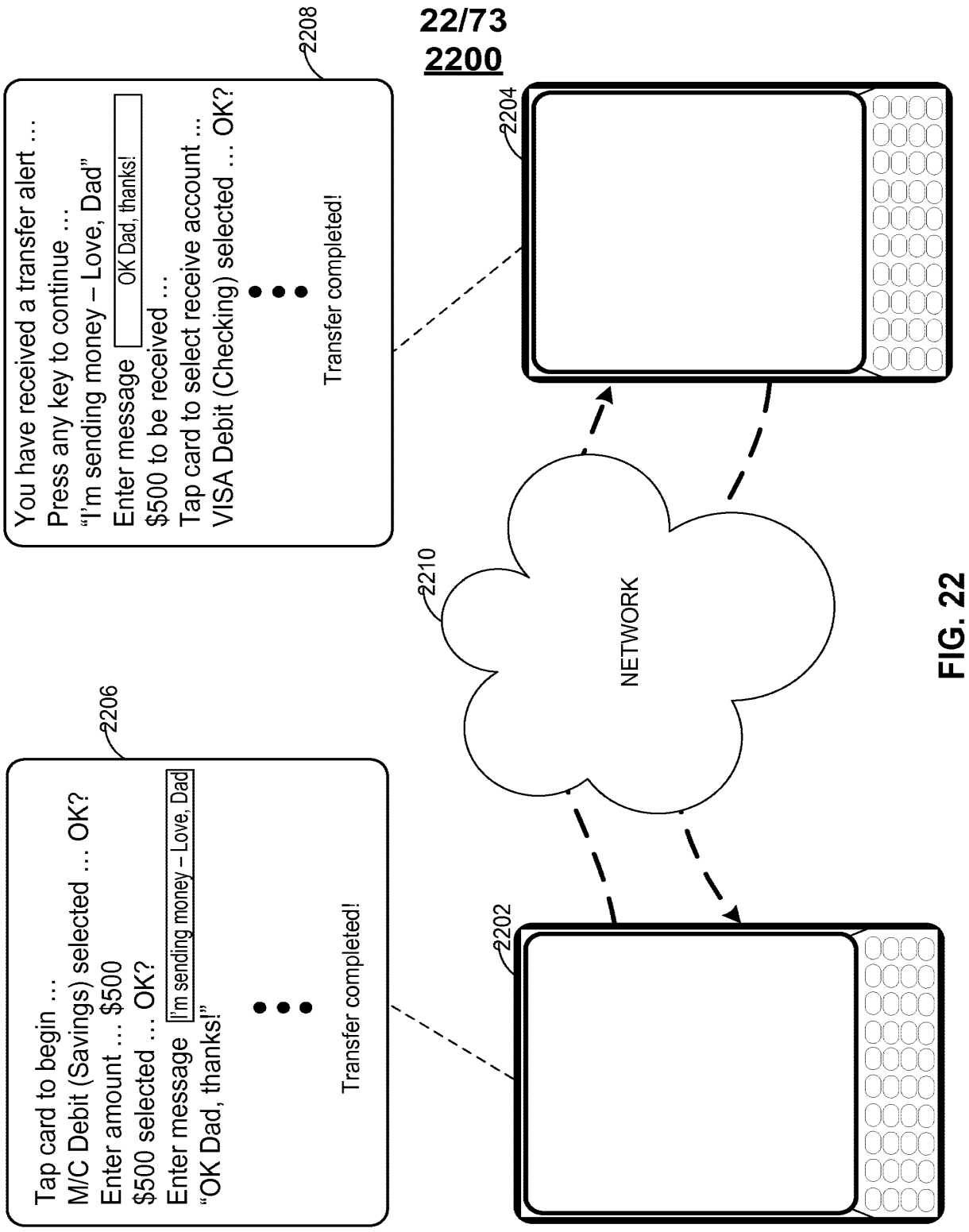

2200
2202
2204
2206
2208
2210
NETWORK
Tap card to begin …
M/C Debit (Savings) selected … OK?
Enter amount … $500
$500 selected … OK?
Enter message I'm sending money – Love, Dad
"OK Dad, thanks!"
Transfer completed!
You have received a transfer alert …
Press any key to continue …
"I'm sending money – Love, Dad"
Enter message OK Dad, thanks!
$500 to be received …
Tap card to select receive account …
VISA Debit (Checking) selected … OK?
Transfer completed!

FIG. 22

2300

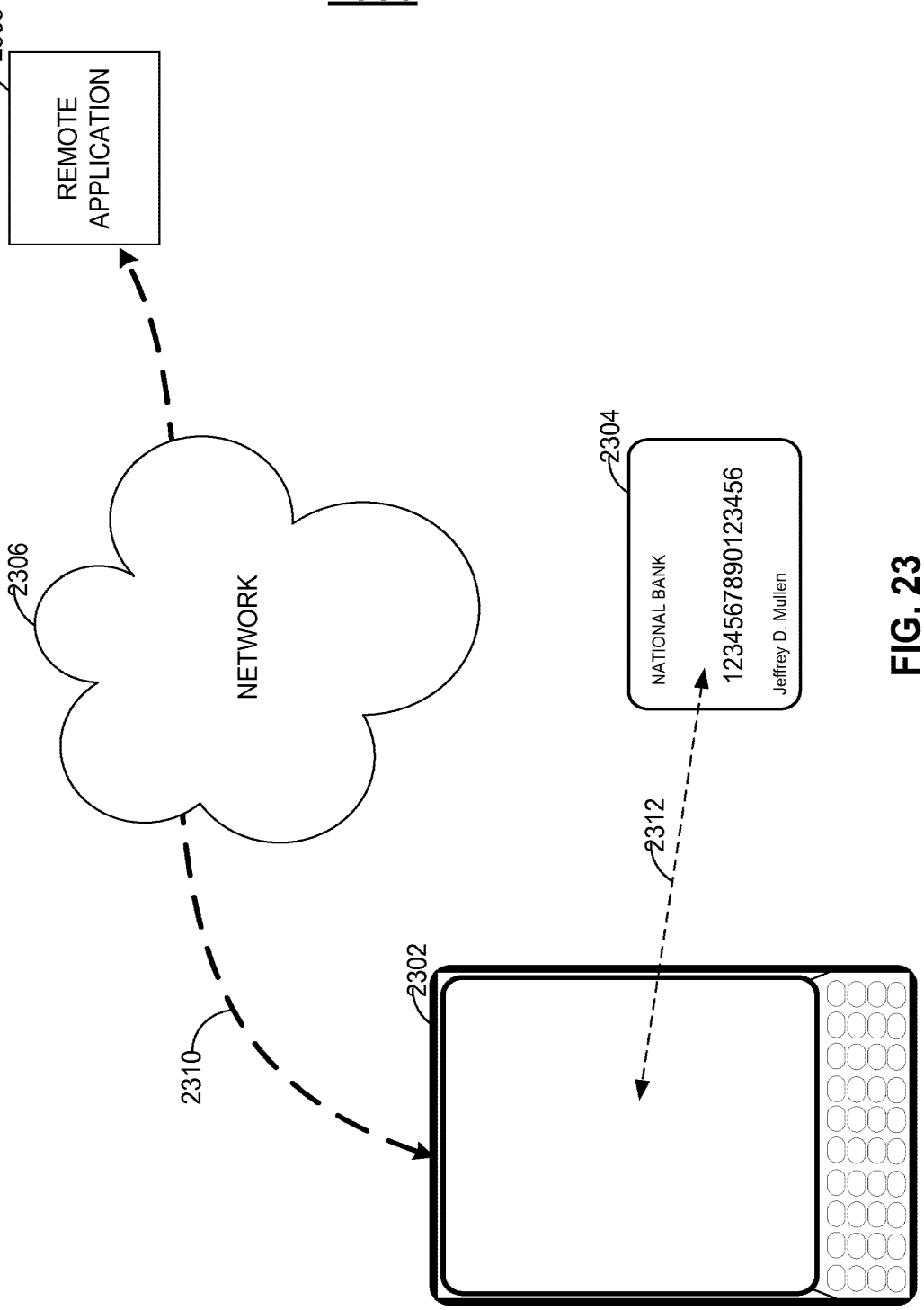

2308
REMOTE APPLICATION
2306
NETWORK
2304
NATIONAL BANK
1234567890123456
Jeffrey D. Mullen
2312
2302
2310

FIG. 23

2400

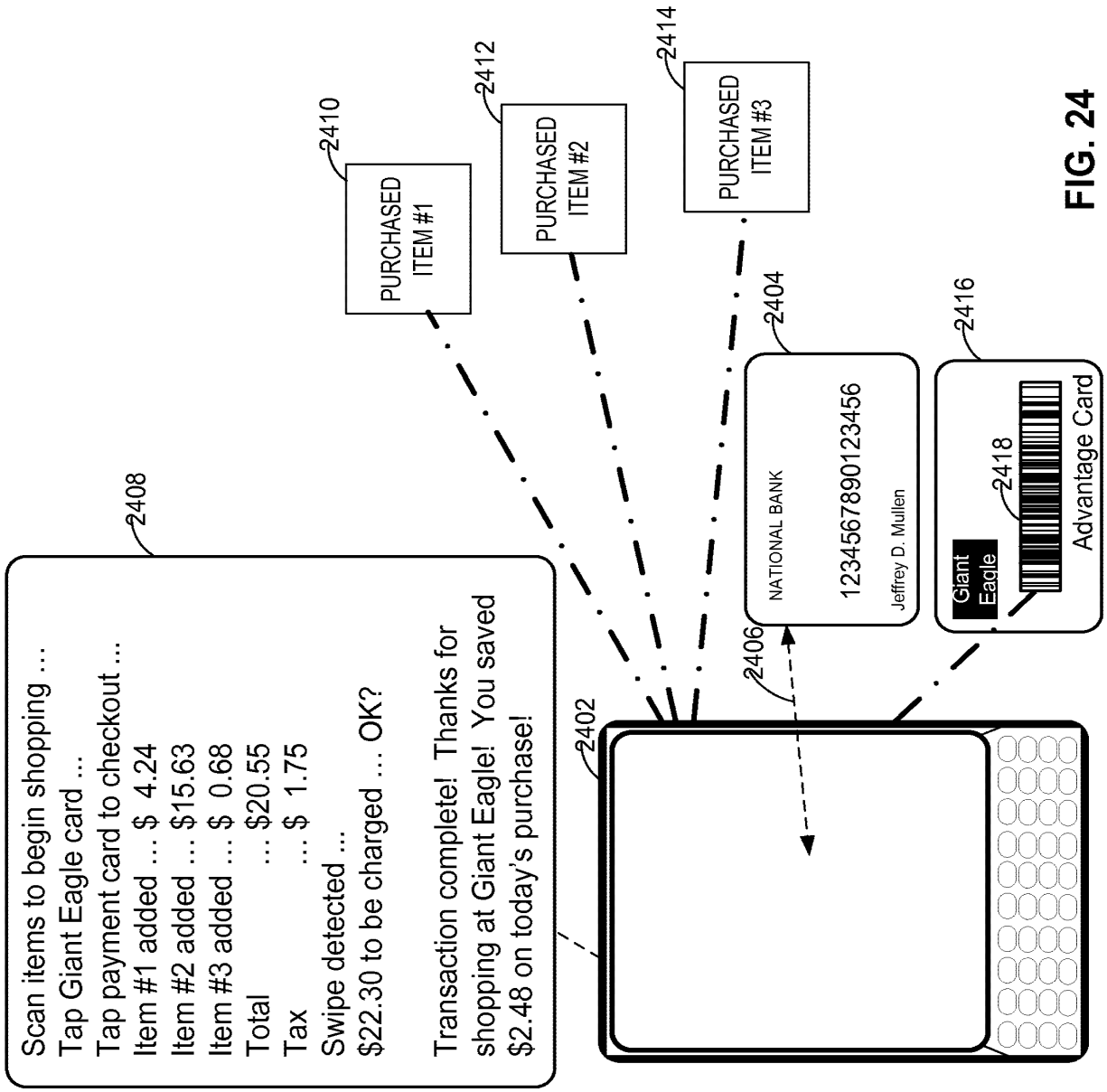

Scan items to begin shopping ...
Tap Giant Eagle card ...
Tap payment card to checkout ...
Item #1 added .... $ 4.24
Item #2 added $15.63
Item #3 added .... $ 0.68
Total $20.55
Tax .... $ 1.75
Swipe detected ...
$22.30 to be charged .... OK?
Transaction complete! Thanks for shopping at Giant Eagle! You saved $2.48 on today's purchase!
2408
PURCHASED ITEM #1
2410
PURCHASED ITEM #2
2412
PURCHASED ITEM #3
2414
NATIONAL BANK
1234567890123456
Jeffrey D. Mullen
2404
Giant Eagle
2418
Advantage Card
2416
2406
2402

FIG. 24

2500

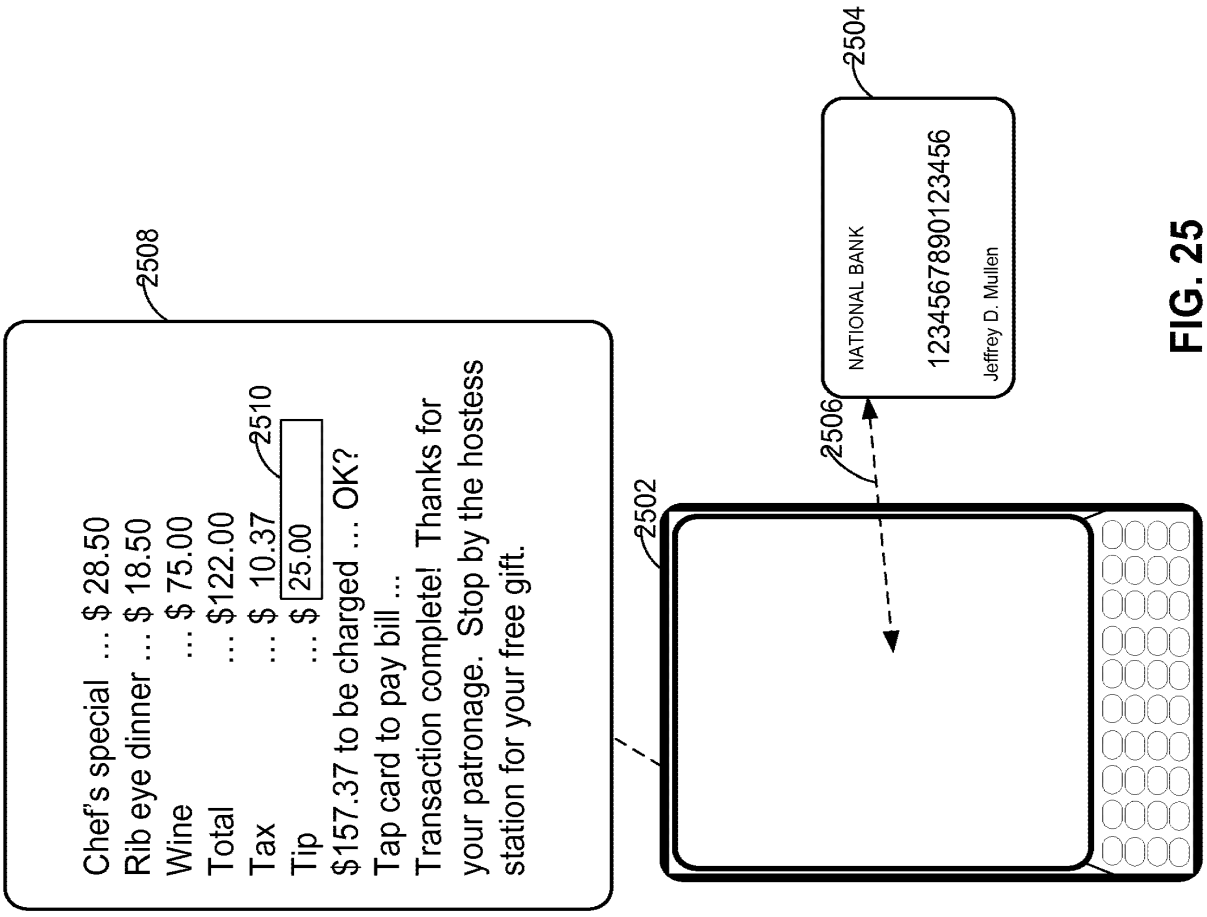

2508
Chef's special ... $ 28.50
Rib eye dinner ... $ 18.50
Wine ... $ 75.00
Total ... $122.00
Tax ... $ 10.37
2510
Tip ... $ 25.00
$157.37 to be charged ... OK?
Tap card to pay bill ...
Transaction complete! Thanks for your patronage. Stop by the hostess station for your free gift.
2502
2506
2504
NATIONAL BANK
1234567890123456
Jeffrey D. Mullen

FIG. 25

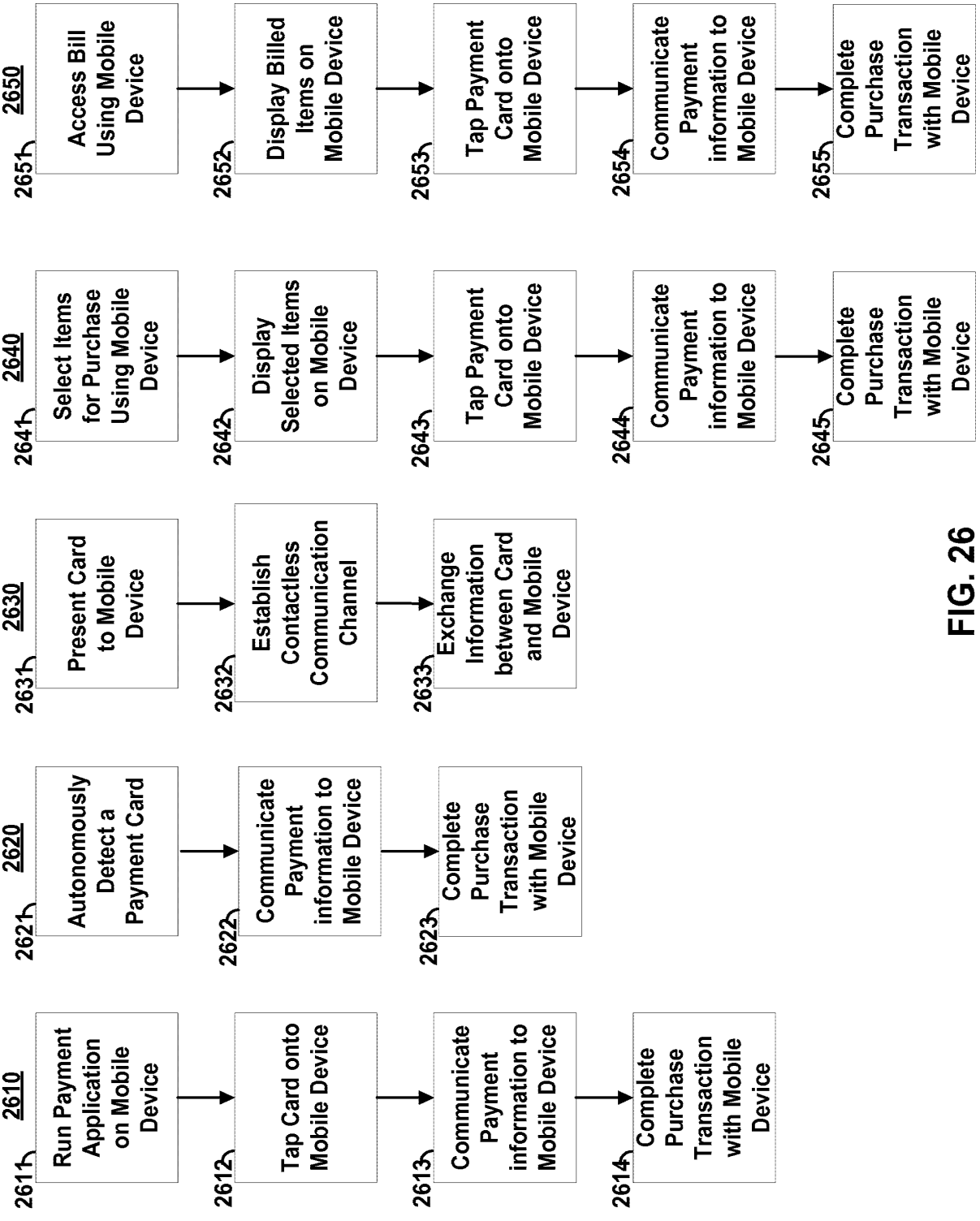

2610
2611
Run Payment Application on Mobile Device
2612
Tap Card onto Mobile Device
2613
Communicate Payment information to Mobile Device
2614
Complete Purchase Transaction with Mobile Device
2620
2621
Autonomously Detect a Payment Card
2622
Communicate Payment information to Mobile Device
2623
Complete Purchase Transaction with Mobile Device
2630
2631
Present Card to Mobile Device
2632
Establish Contactless Communication Channel
2633
Exchange Information between Card and Mobile Device
2640
2641
Select Items for Purchase Using Mobile Device
2642
Display Selected Items on Mobile Device
2643
Tap Payment Card onto Mobile Device
2644
Communicate Payment information to Mobile Device
2645
Complete Purchase Transaction with Mobile Device
2650
2651
Access Bill Using Mobile Device
2652
Display Billed Items on Mobile Device
2653
Tap Payment Card onto Mobile Device
2654
Communicate Payment information to Mobile Device
2655
Complete Purchase Transaction with Mobile Device

FIG. 26

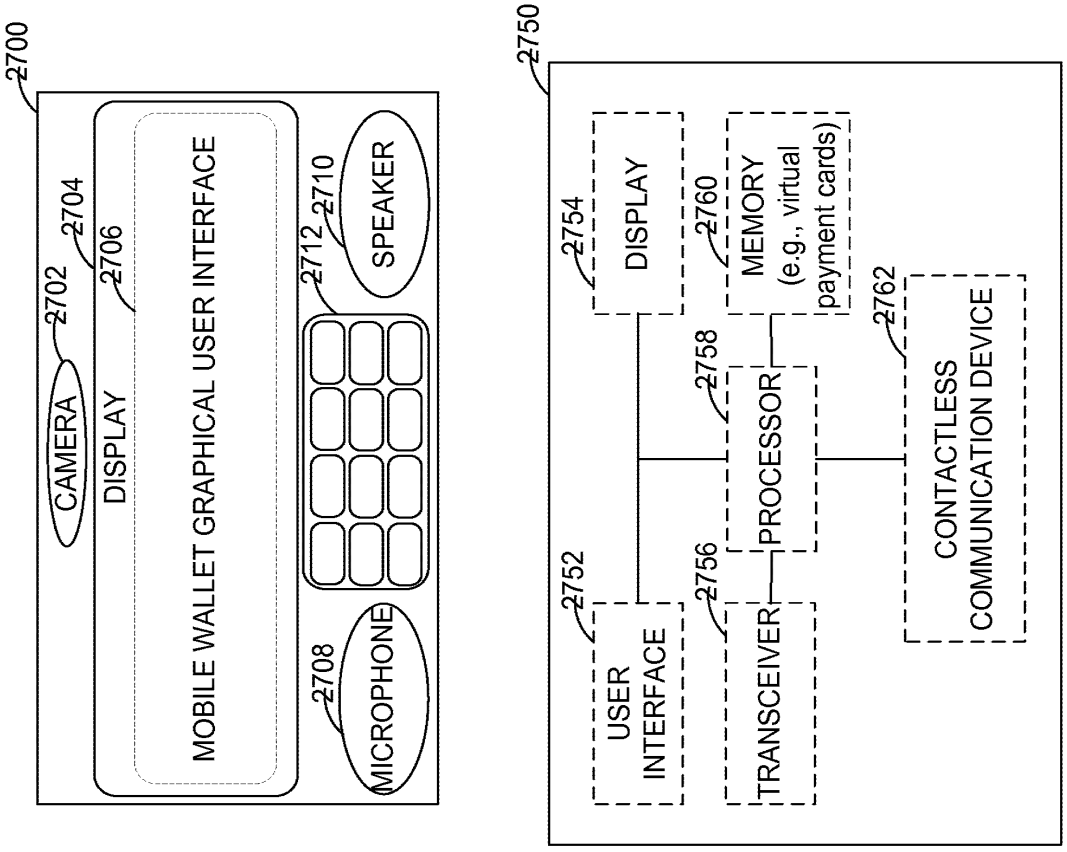

2700
CAMERA
2702
2704
DISPLAY
2706
MOBILE WALLET GRAPHICAL USER INTERFACE
2712
2710
SPEAKER
MICROPHONE
2708
2750
2754
DISPLAY
2760
MEMORY
(e.g., virtual
payment cards)
2758
PROCESSOR
2762
CONTACTLESS
COMMUNICATION DEVICE
2752
USER
INTERFACE
2756
TRANSCEIVER

FIG. 27

2800

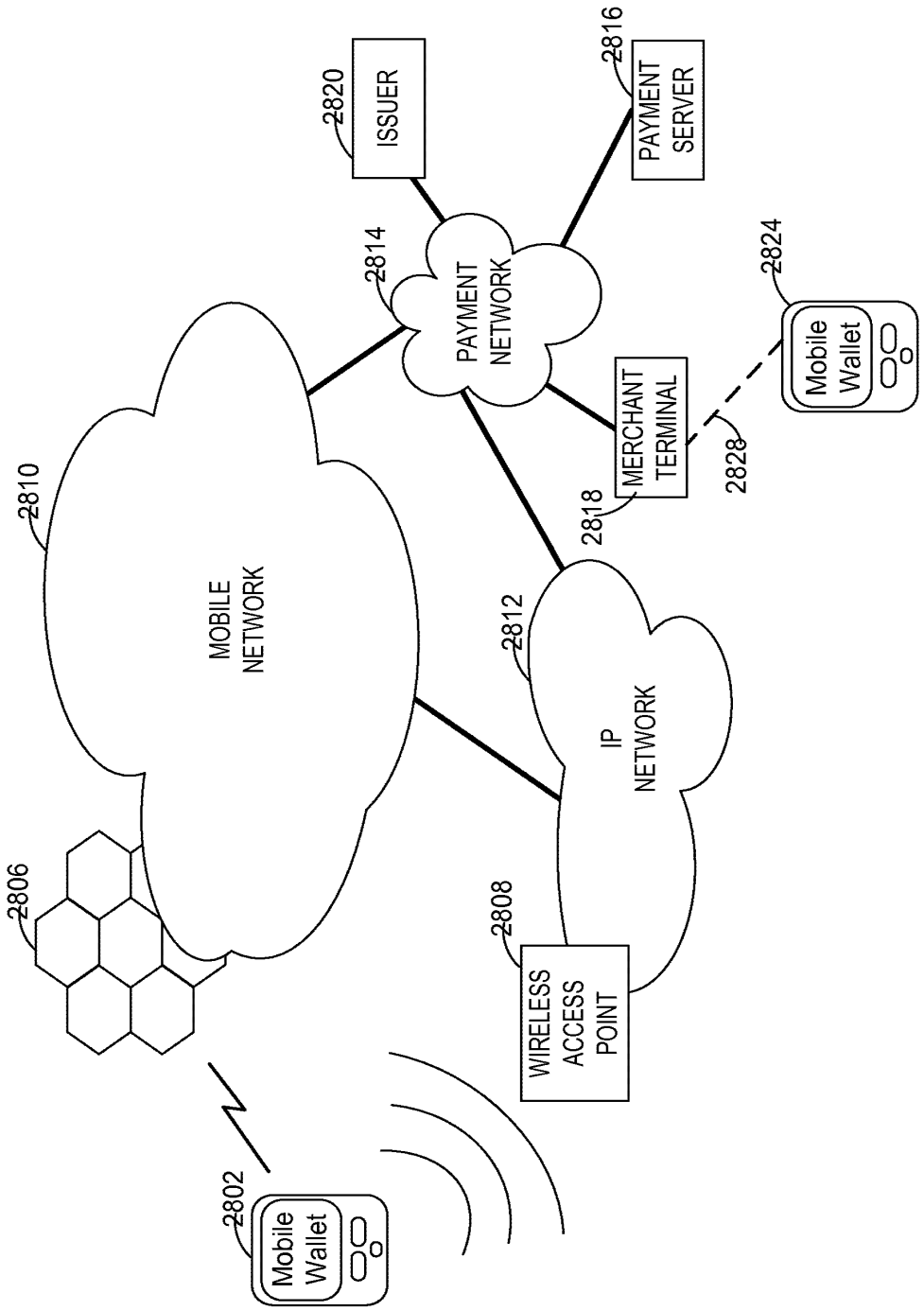

2820
ISSUER
2816
PAYMENT SERVER
2814
PAYMENT NETWORK
2824
Mobile Wallet
2828
MERCHANT TERMINAL
2818
2810
MOBILE NETWORK
2812
IP NETWORK
2806
2808
WIRELESS ACCESS POINT
2802
Mobile Wallet

FIG. 28

2900

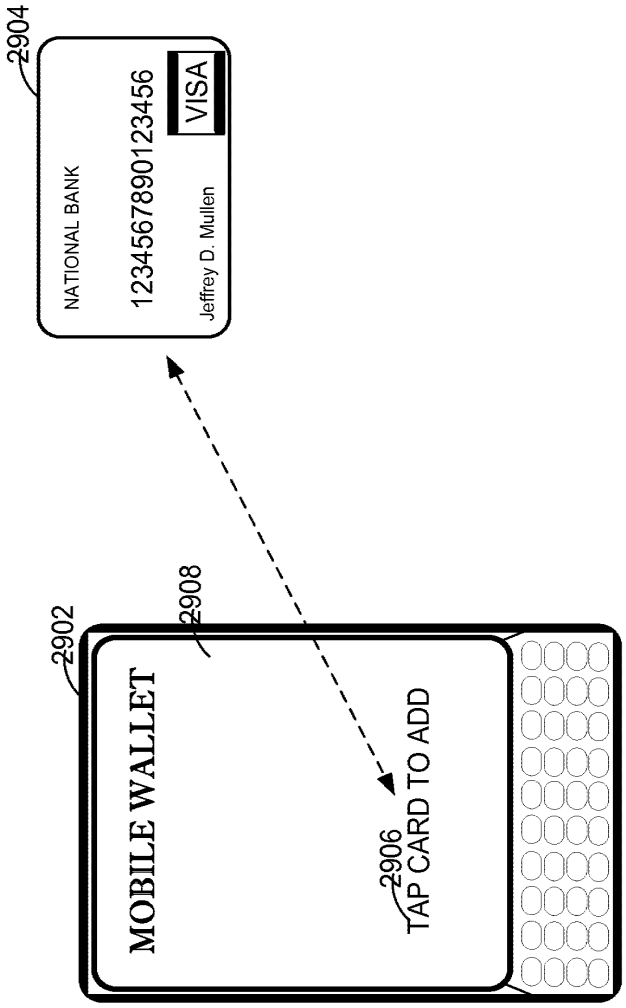

2904
NATIONAL BANK
1234567890123456
VISA
Jeffrey D. Mullen
2902
2908
MOBILE WALLET
2906
TAP CARD TO ADD

FIG. 29

3000

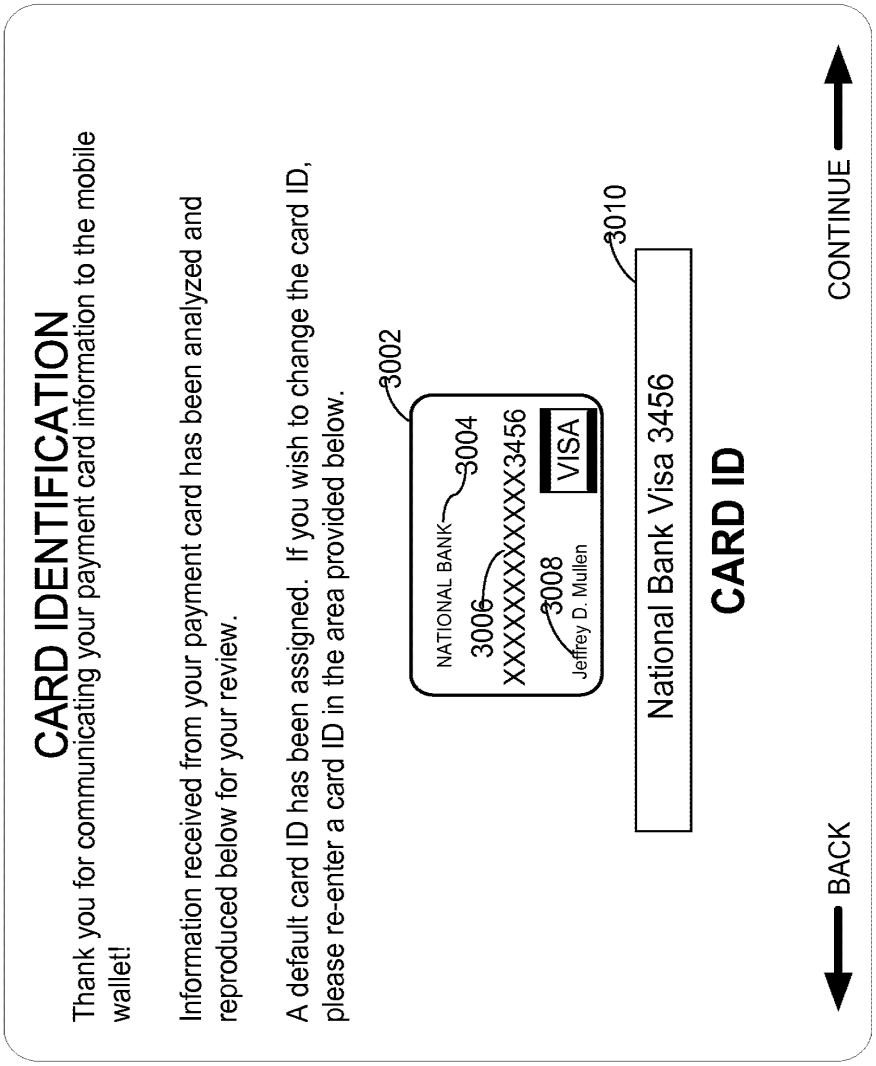

CARD IDENTIFICATION
Thank you for communicating your payment card information to the mobile wallet!
Information received from your payment card has been analyzed and reproduced below for your review.
A default card ID has been assigned. If you wish to change the card ID, please re-enter a card ID in the area provided below.
3002
NATIONAL BANK
3004
3006
XXXXXXXXXXXX3456
VISA
3008
Jeffrey D. Mullen
3010
National Bank Visa 3456
CARD ID
BACK
CONTINUE

FIG. 30

31/73
3100

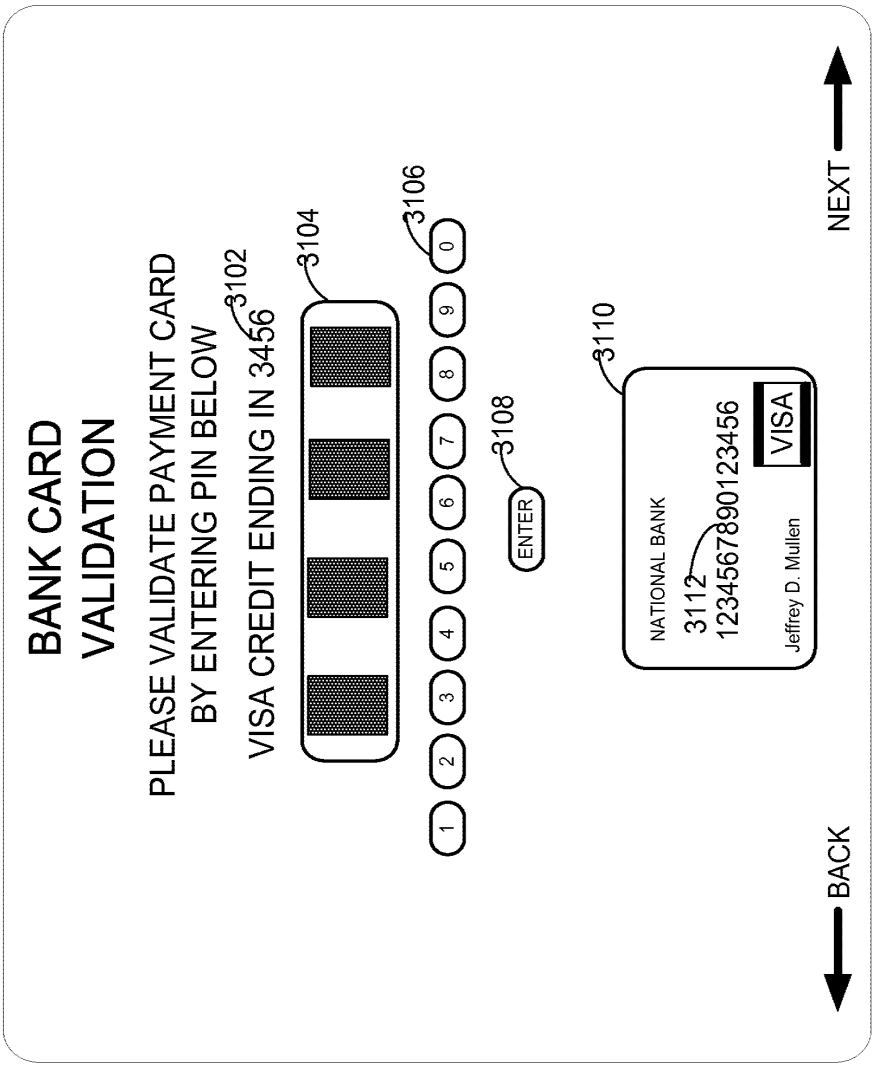


FIG. 31

3200

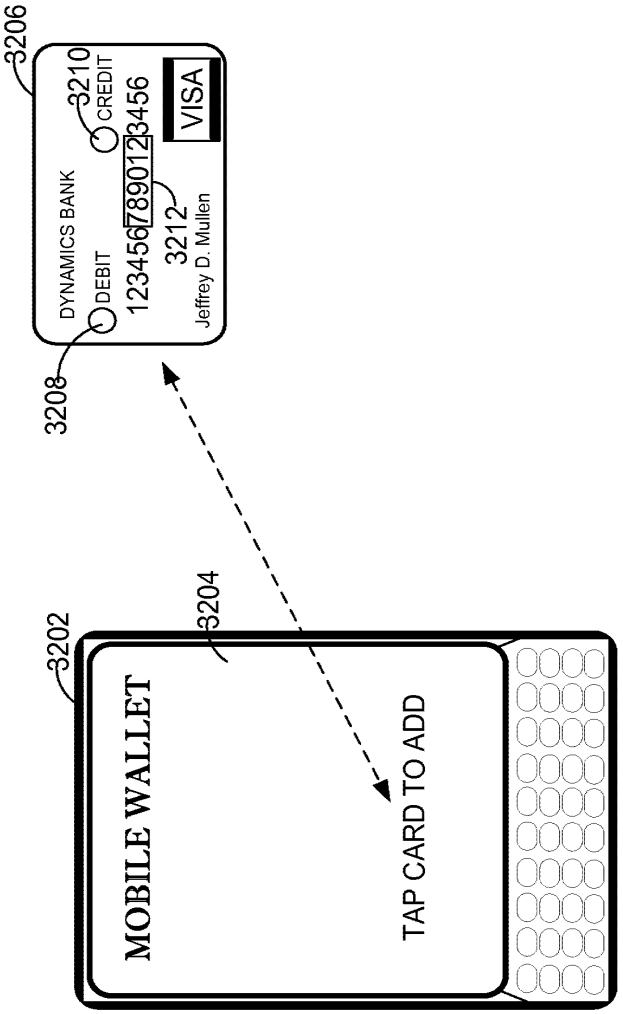

3206
3210
CREDIT
VISA
DYNAMICS BANK
DEBIT
1234567890123456
3212
Jeffrey D. Mullen
3208
3204
3202
MOBILE WALLET
TAP CARD TO ADD

FIG. 32

3300

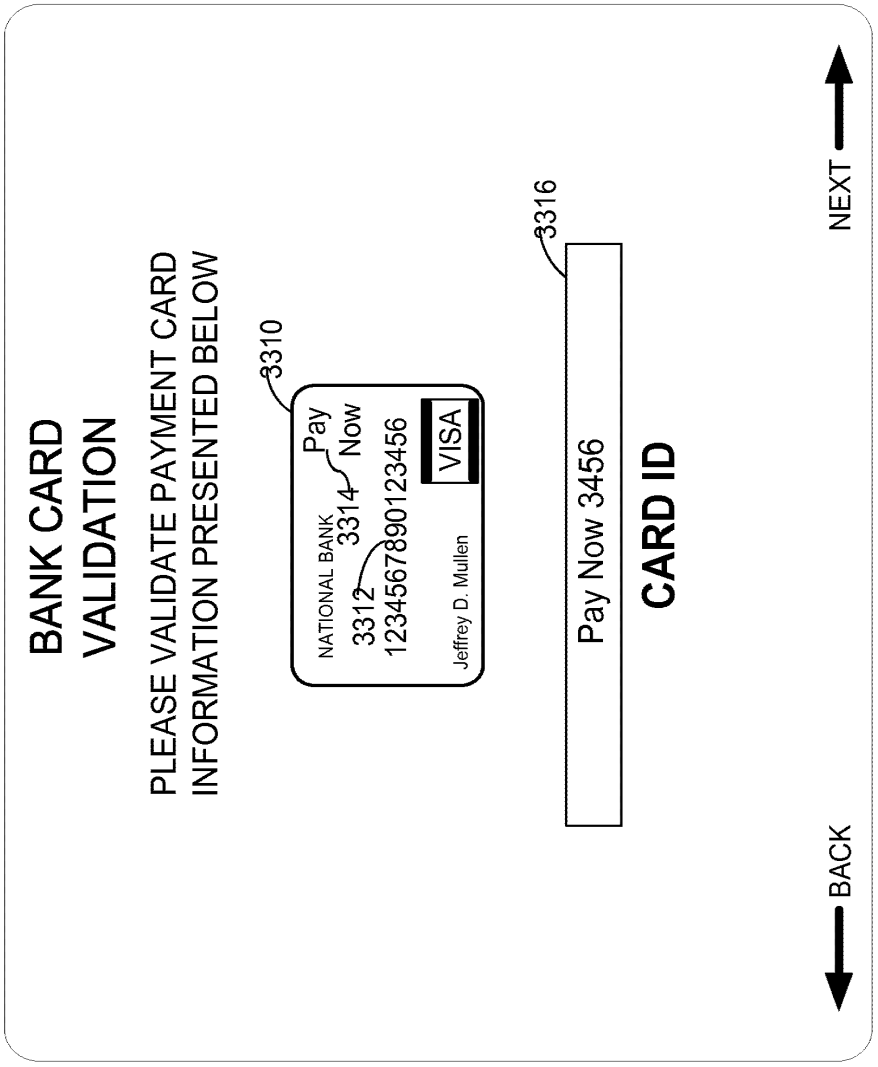

BANK CARD
VALIDATION
PLEASE VALIDATE PAYMENT CARD
INFORMATION PRESENTED BELOW
3310
NATIONAL BANK
Pay
Now
3314
3312
1234567890123456
VISA
Jeffrey D. Mullen
3316
Pay Now 3456
CARD ID
NEXT
BACK

FIG. 33

3400

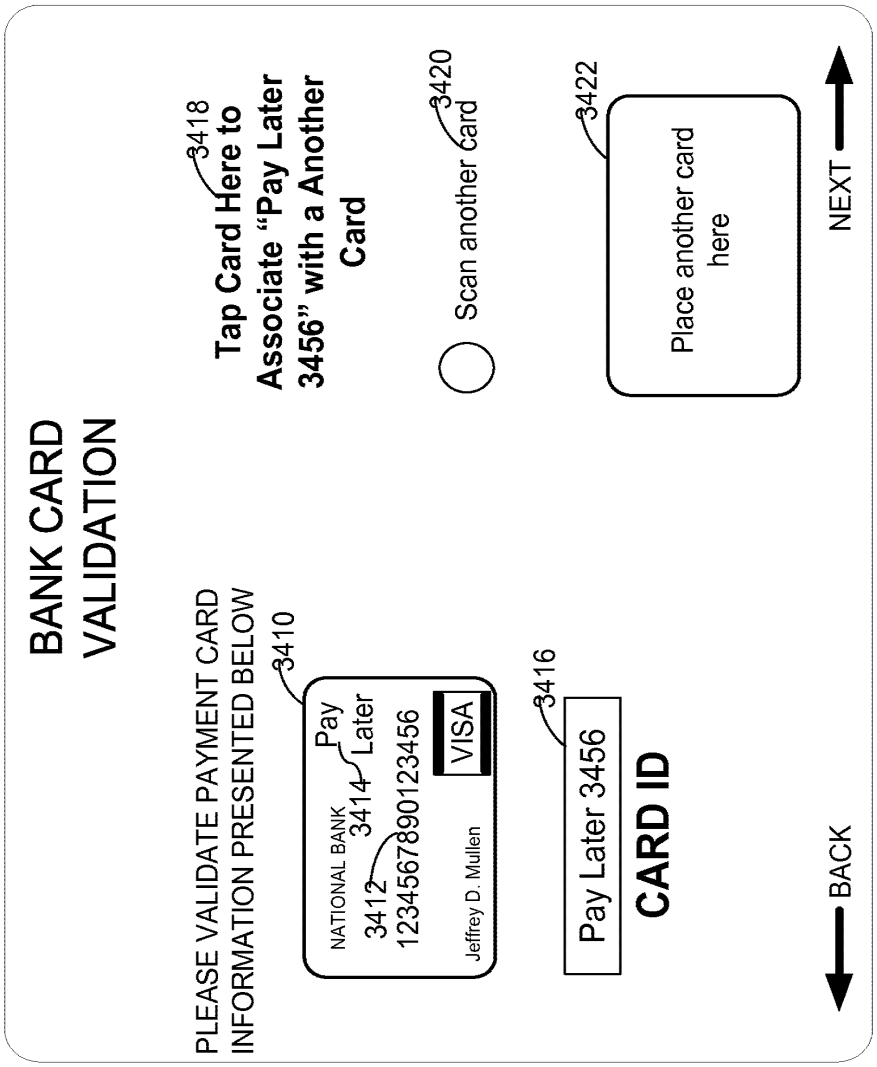

BANK CARD VALIDATION
PLEASE VALIDATE PAYMENT CARD INFORMATION PRESENTED BELOW
3410
NATIONAL BANK
Pay Later
3414
3412
1234567890123456
Jeffrey D. Mullen
VISA
3416
Pay Later 3456
CARD ID
3418
Tap Card Here to Associate "Pay Later 3456" with a Another Card
3420
Scan another card
3422
Place another card here
BACK
NEXT

FIG. 34

3500

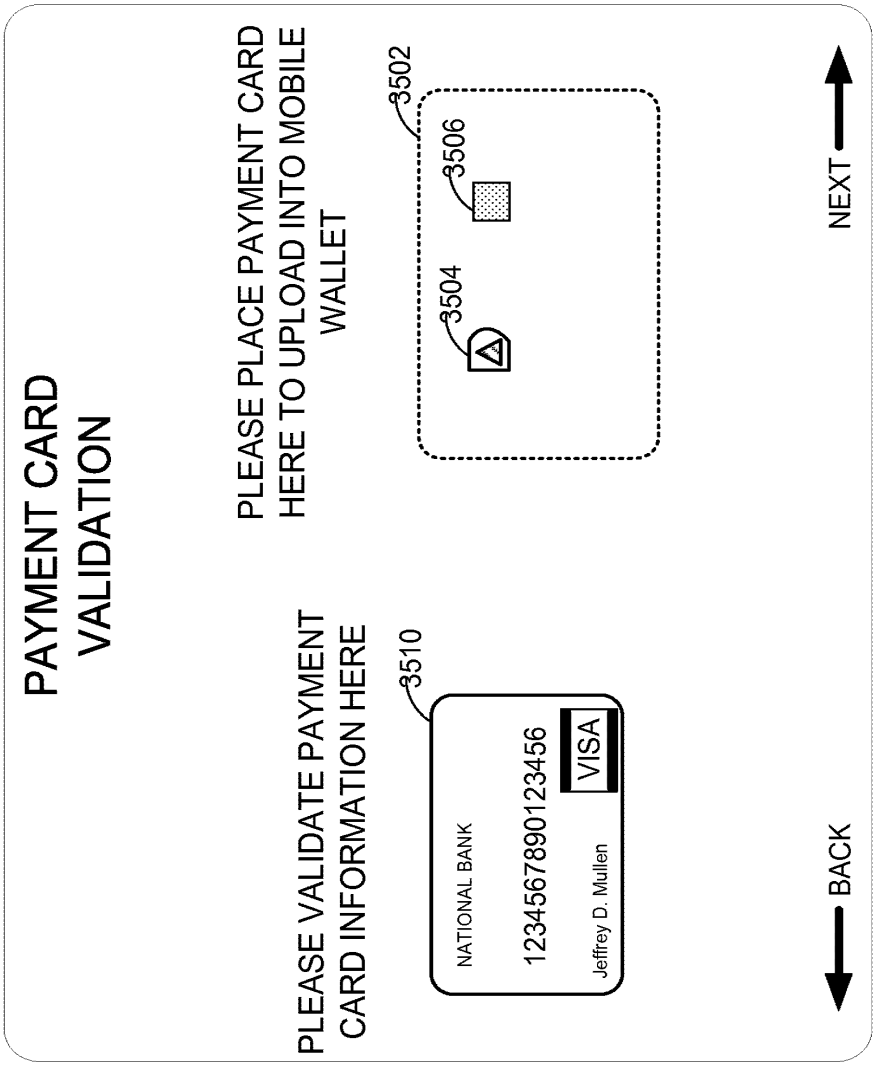

PAYMENT CARD VALIDATION
PLEASE PLACE PAYMENT CARD HERE TO UPLOAD INTO MOBILE WALLET
3502
3506
3504
PLEASE VALIDATE PAYMENT CARD INFORMATION HERE
3510
NATIONAL BANK
1234567890123456
VISA
Jeffrey D. Mullen
BACK
NEXT

FIG. 35

3600

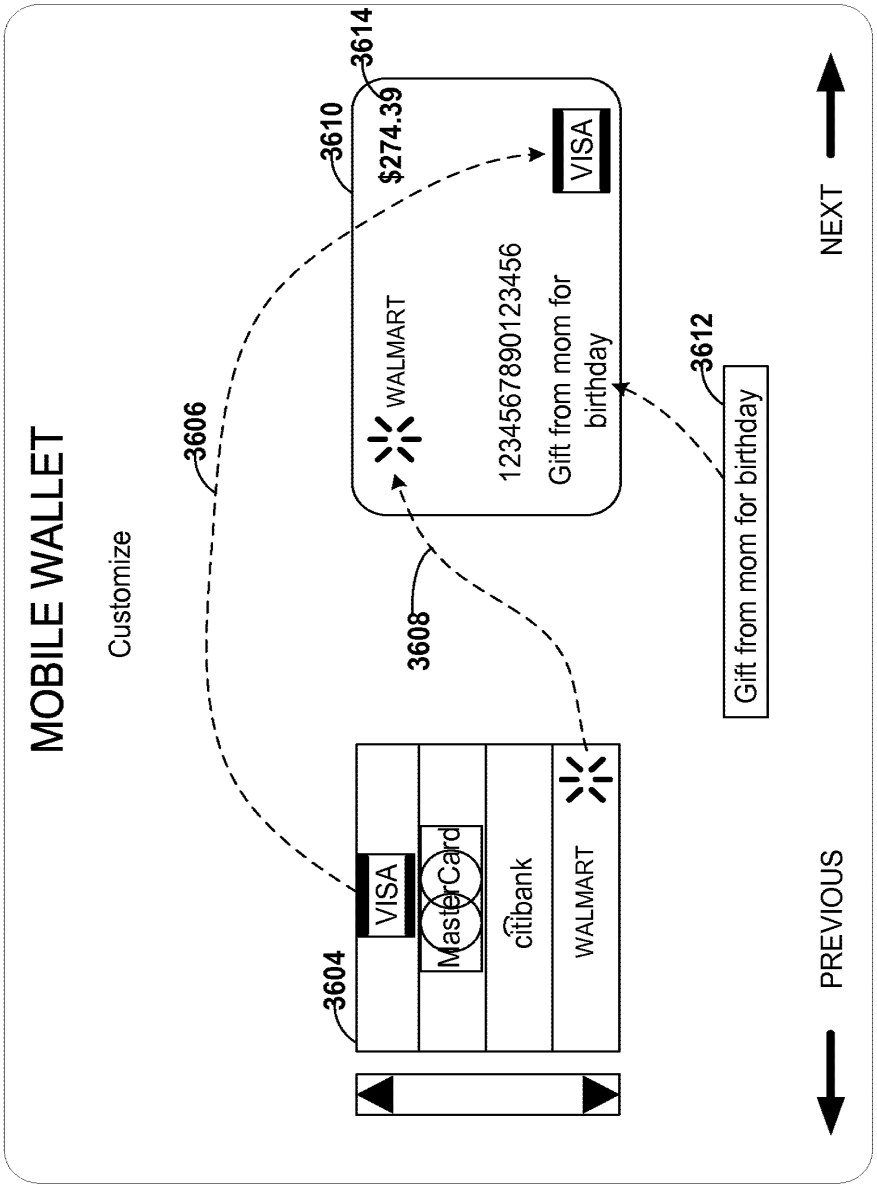

MOBILE WALLET
Customize
3606
3614
3610
$274.39
VISA
WALMART
1234567890123456
Gift from mom for birthday
3612
Gift from mom for birthday
3608
3604
VISA
MasterCard
citibank
WALMART
NEXT
PREVIOUS

FIG. 36

37/73

3700

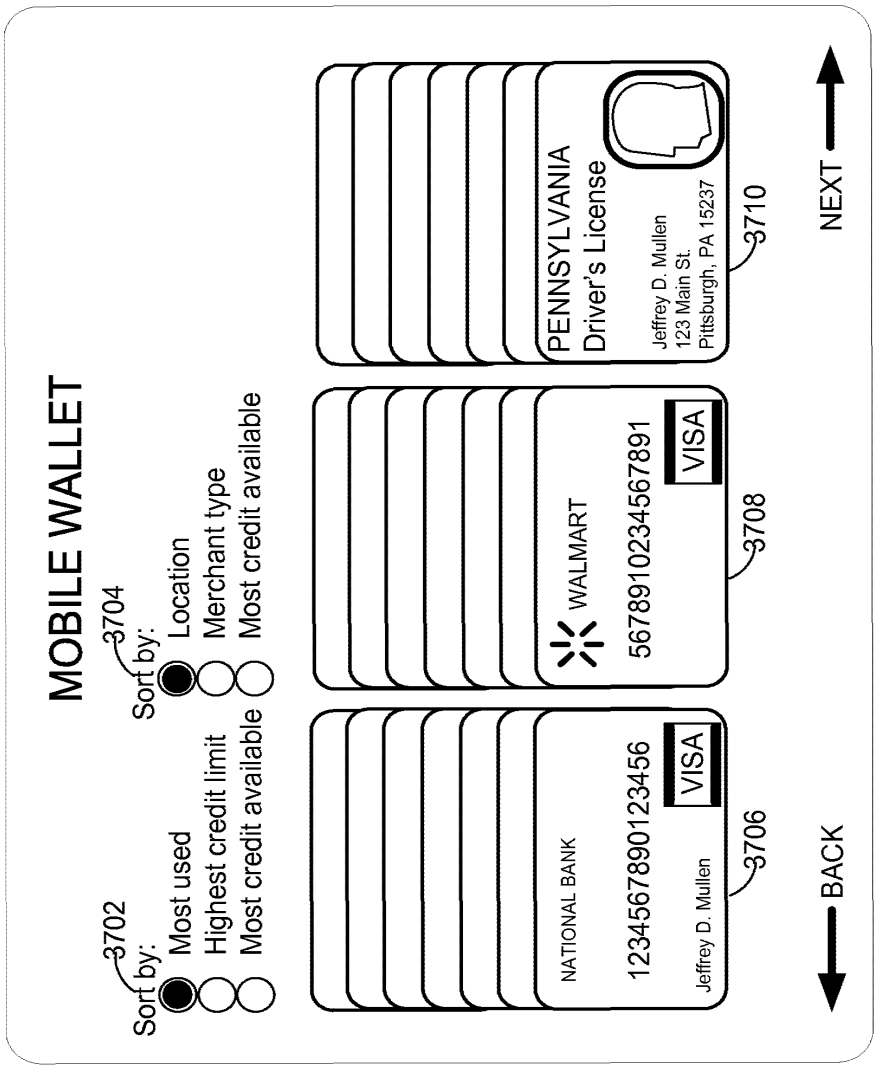


FIG. 37

3800

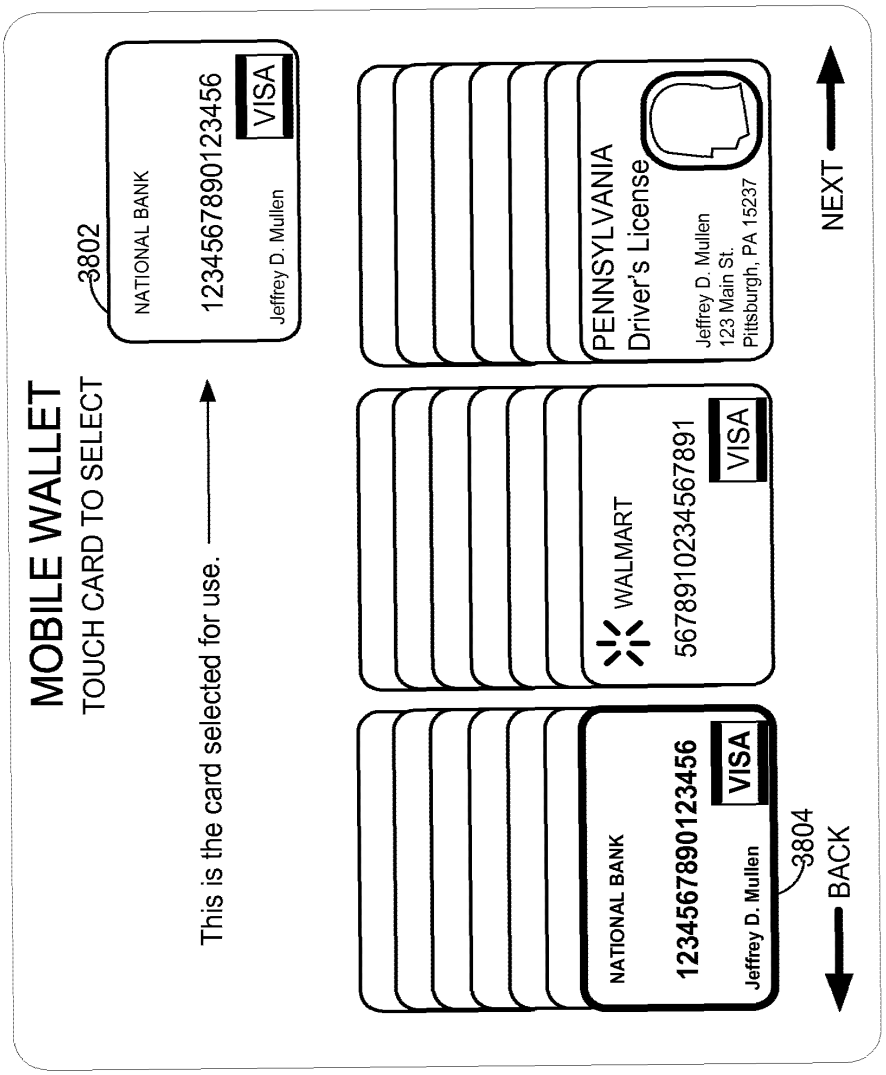

MOBILE WALLET
TOUCH CARD TO SELECT
This is the card selected for use.
3802
NATIONAL BANK
1234567890123456
VISA
Jeffrey D. Mullen
PENNSYLVANIA
Driver's License
Jeffrey D. Mullen
123 Main St.
Pittsburgh, PA 15237
WALMART
5678910234567891
VISA
NATIONAL BANK
1234567890123456
VISA
Jeffrey D. Mullen
3804
NEXT
BACK

FIG. 38

39/73
3900

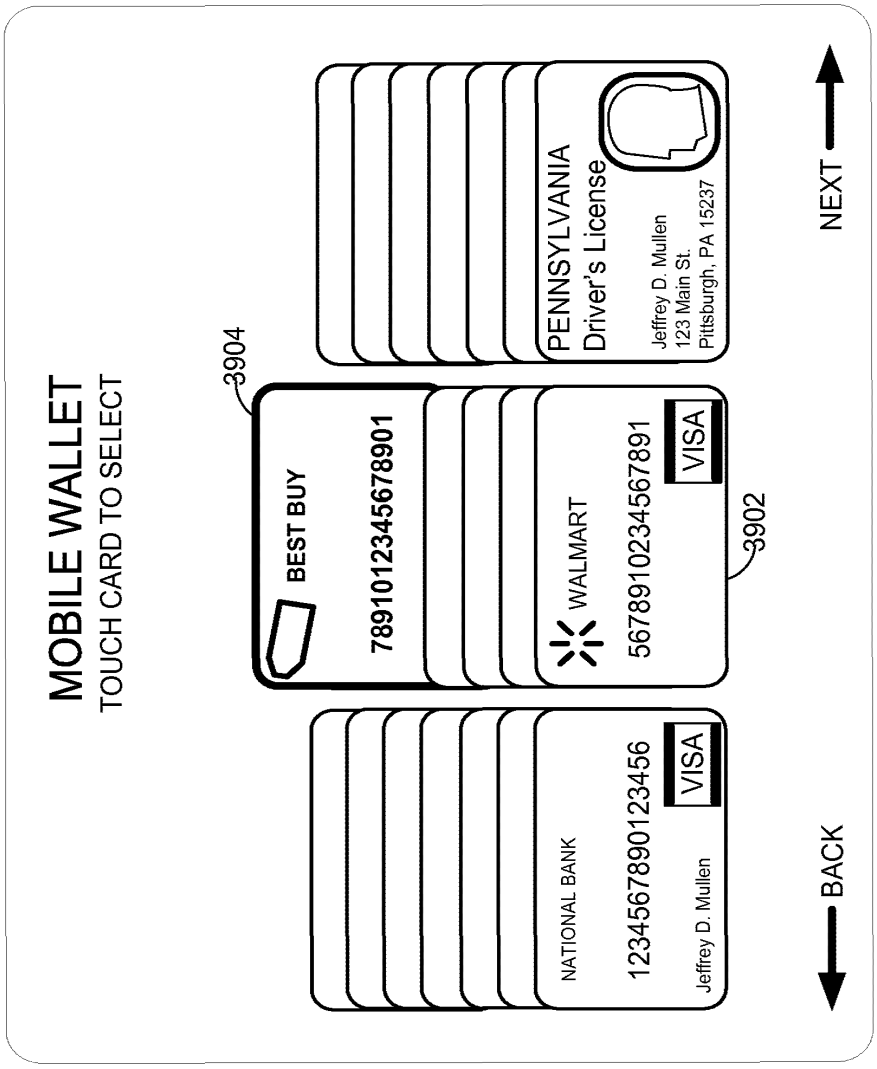


FIG. 39

40/73
4000

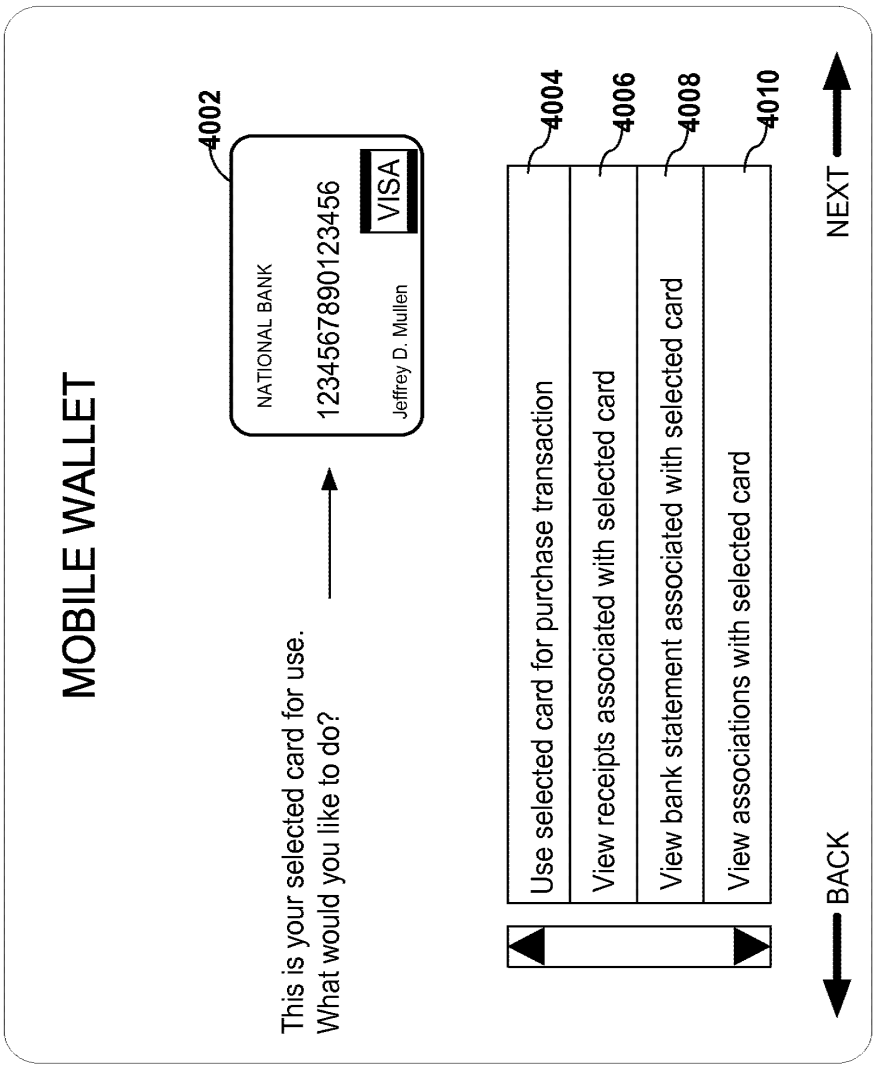


FIG. 40

4100

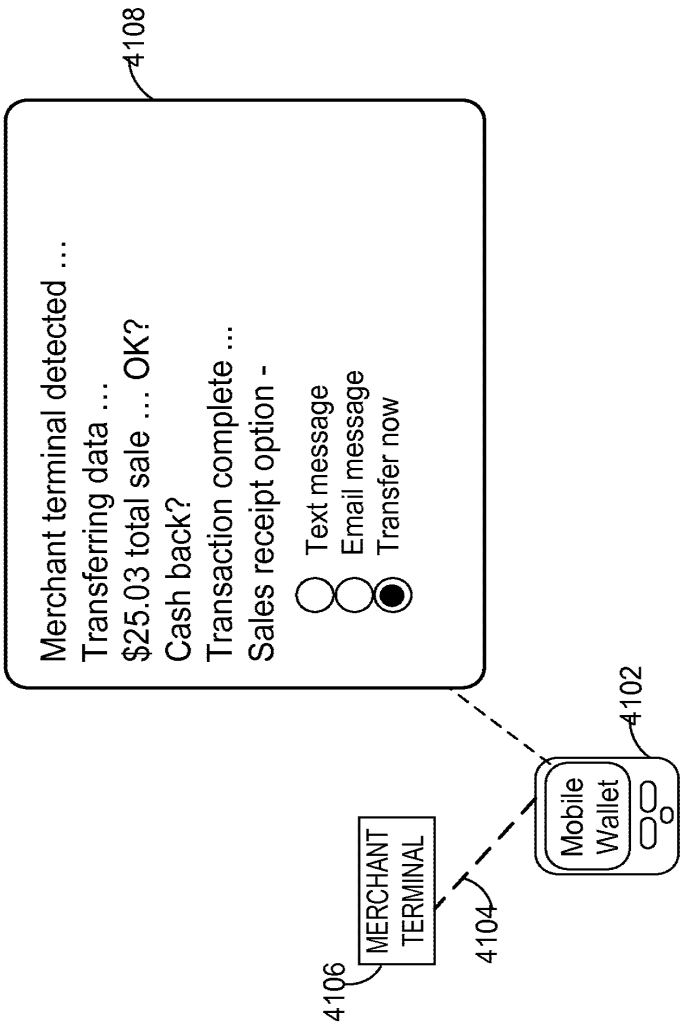

4108
Merchant terminal detected ...
Transferring data ...
$25.03 total sale ... OK?
Cash back?
Transaction complete ...
Sales receipt option -
Text message
Email message
Transfer now
4102
Mobile Wallet
4104
MERCHANT TERMINAL
4106

FIG. 41

4200

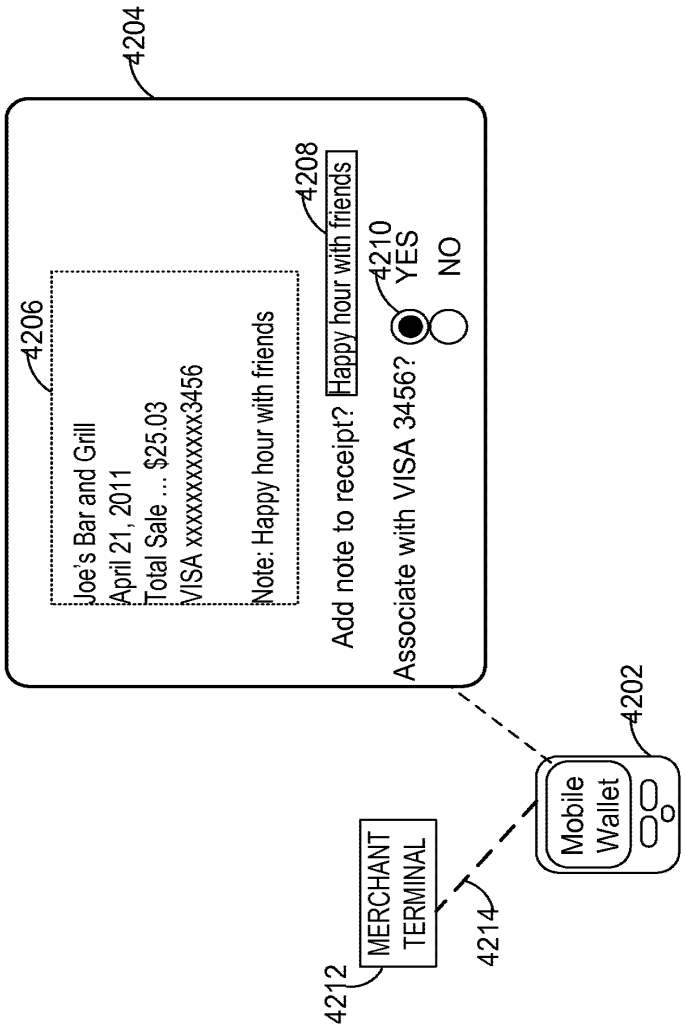

4204
4206
Joe's Bar and Grill
April 21, 2011
Total Sale ... $25.03
VISA xxxxxxxxxxx3456
Note: Happy hour with friends
4208
Add note to receipt? Happy hour with friends
4210
Associate with VISA 3456?
YES
NO
4202
Mobile Wallet
4214
4212
MERCHANT TERMINAL

FIG. 42

4300

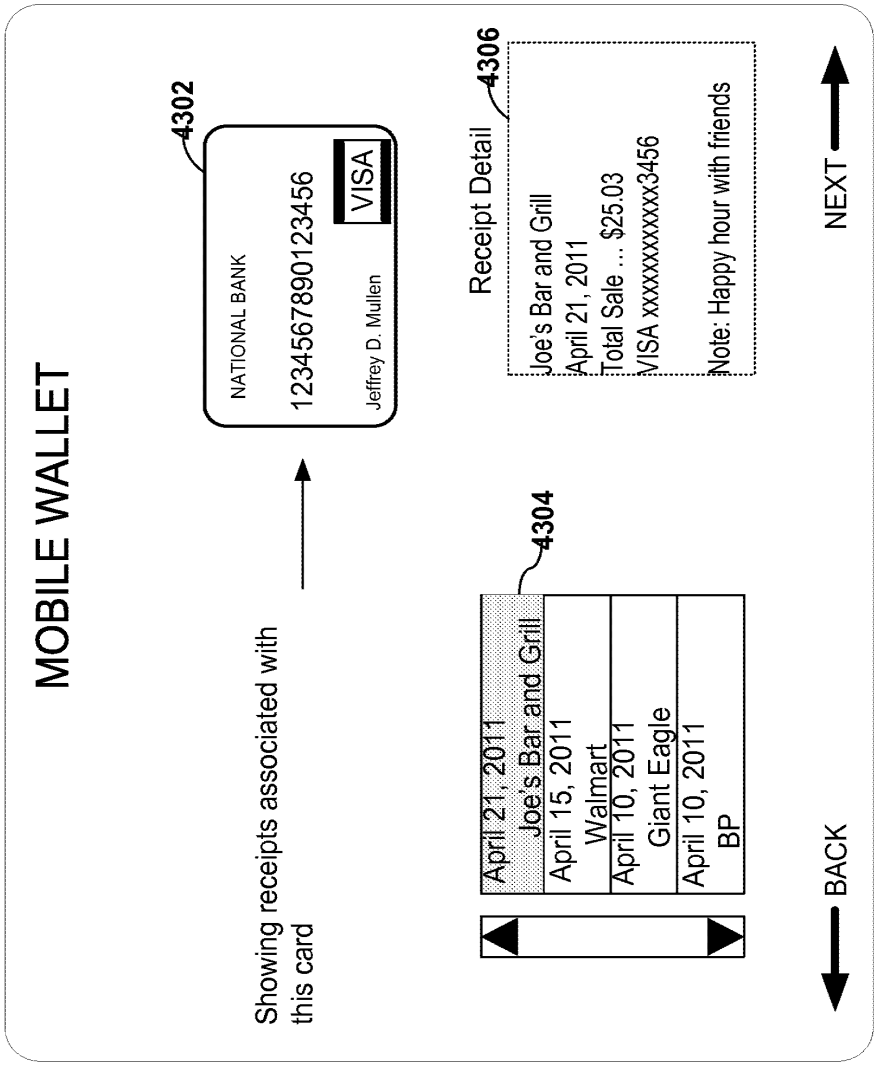

MOBILE WALLET
Showing receipts associated with this card
4302
NATIONAL BANK
1234567890123456
VISA
Jeffrey D. Mullen
4304
April 21, 2011
Joe's Bar and Grill
April 15, 2011
Walmart
April 10, 2011
Giant Eagle
April 10, 2011
BP
Receipt Detail
4306
Joe's Bar and Grill
April 21, 2011
Total Sale ... $25.03
VISA xxxxxxxxxxx3456
Note: Happy hour with friends
BACK
NEXT

FIG. 43

44/73
4400

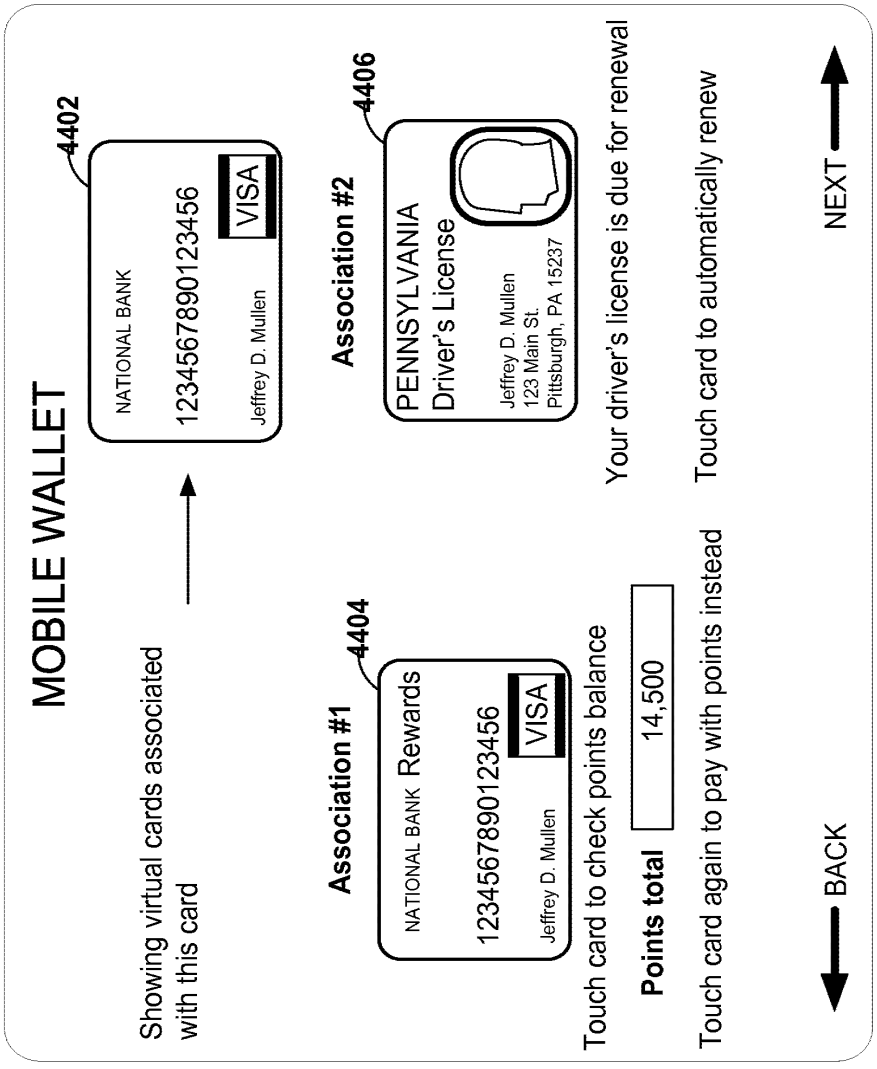


FIG. 44

45/73

4500

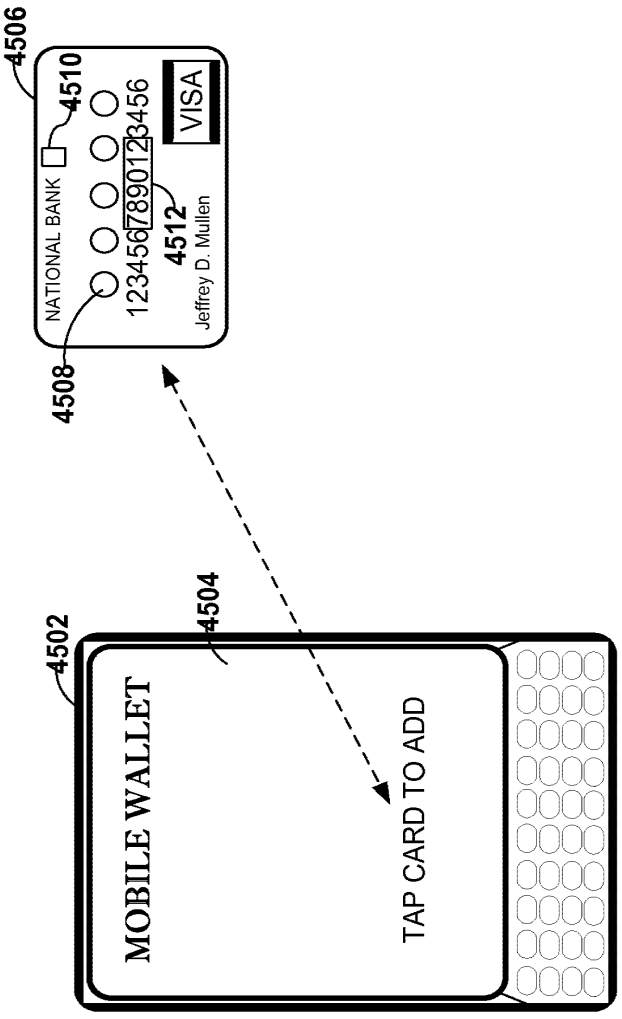


FIG. 45

4600

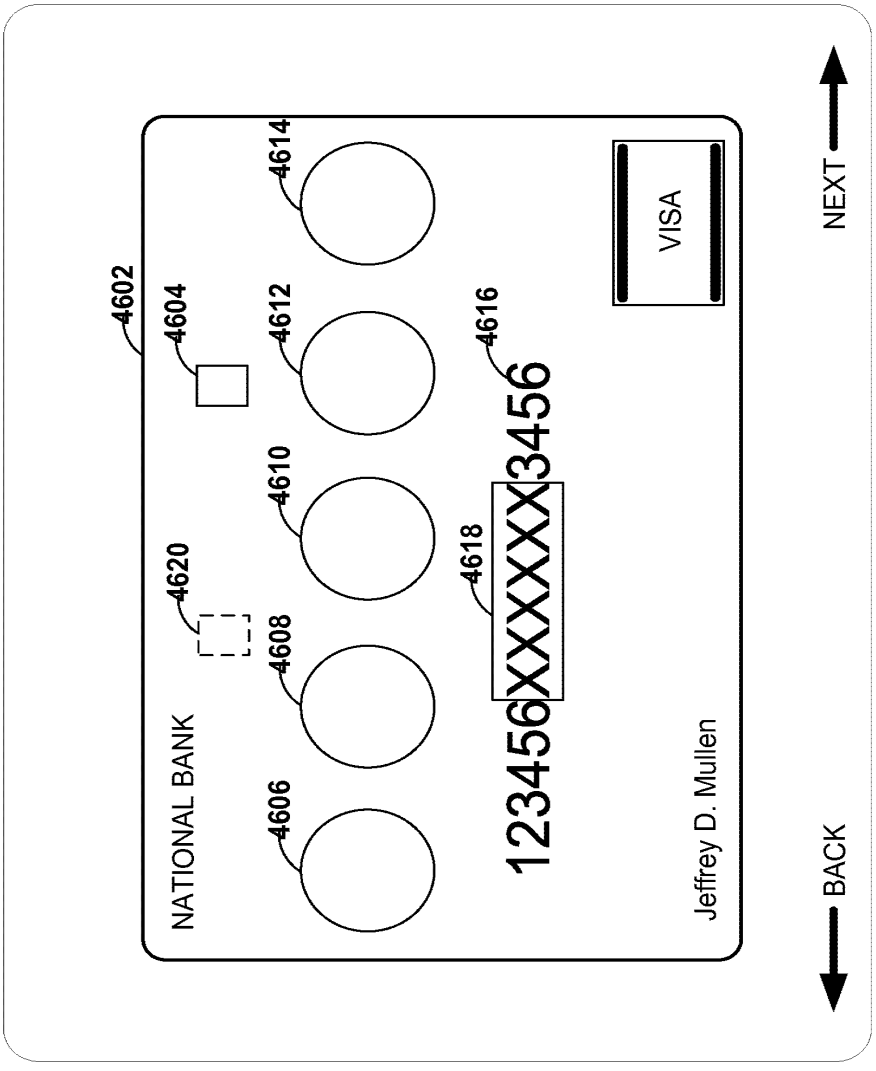

4602
4604
4606
4608
4610
4612
4614
4616
4618
4620
NATIONAL BANK
123456XXXXXX3456
Jeffrey D. Mullen
VISA
NEXT
BACK

FIG. 46

47/73
4700

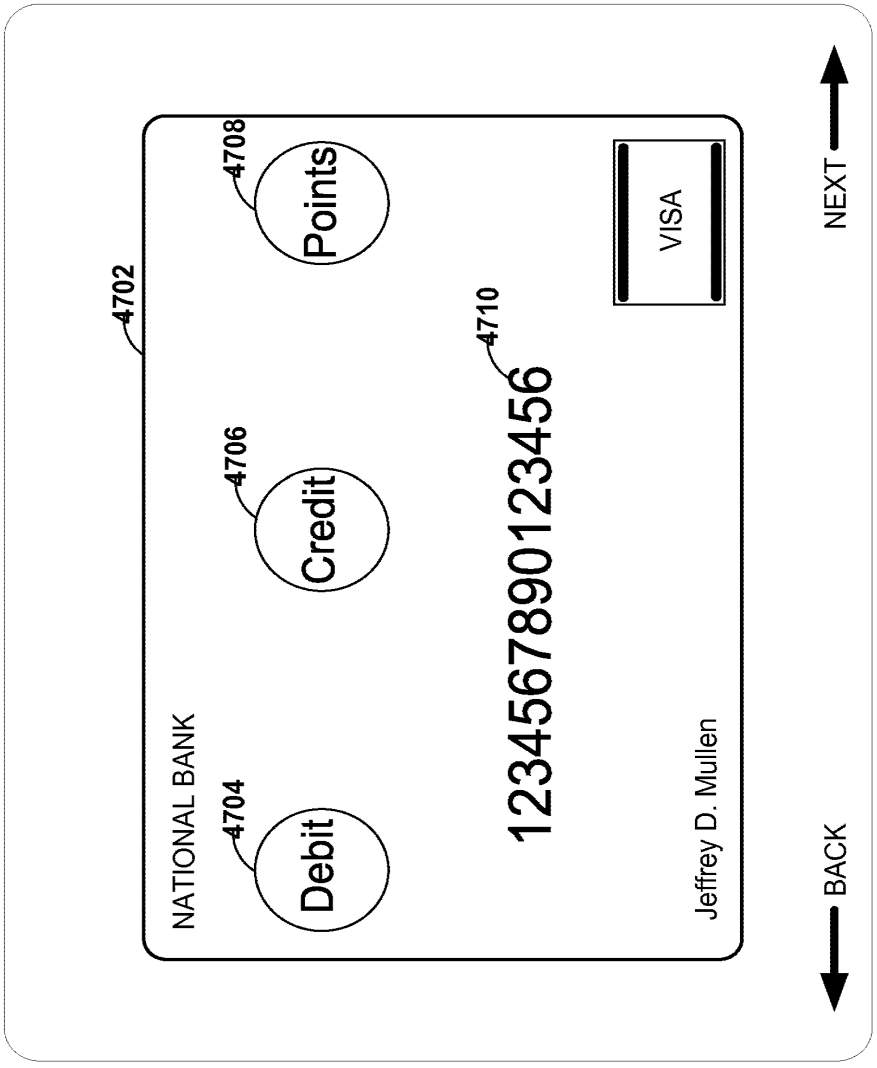


FIG. 47

4800

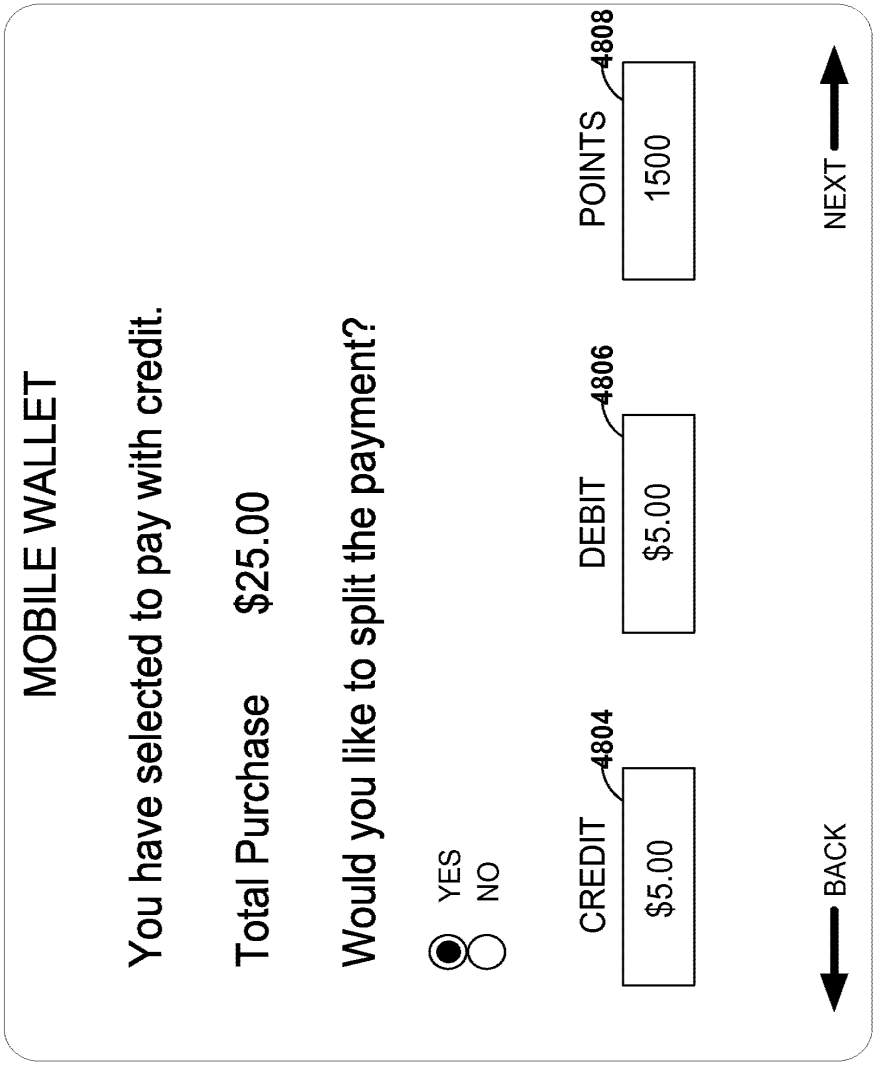

MOBILE WALLET
You have selected to pay with credit.
Total Purchase $25.00
Would you like to split the payment?
YES
NO
CREDIT
4804
$5.00
DEBIT
4806
$5.00
POINTS
4808
1500
BACK
NEXT

FIG. 48

4900

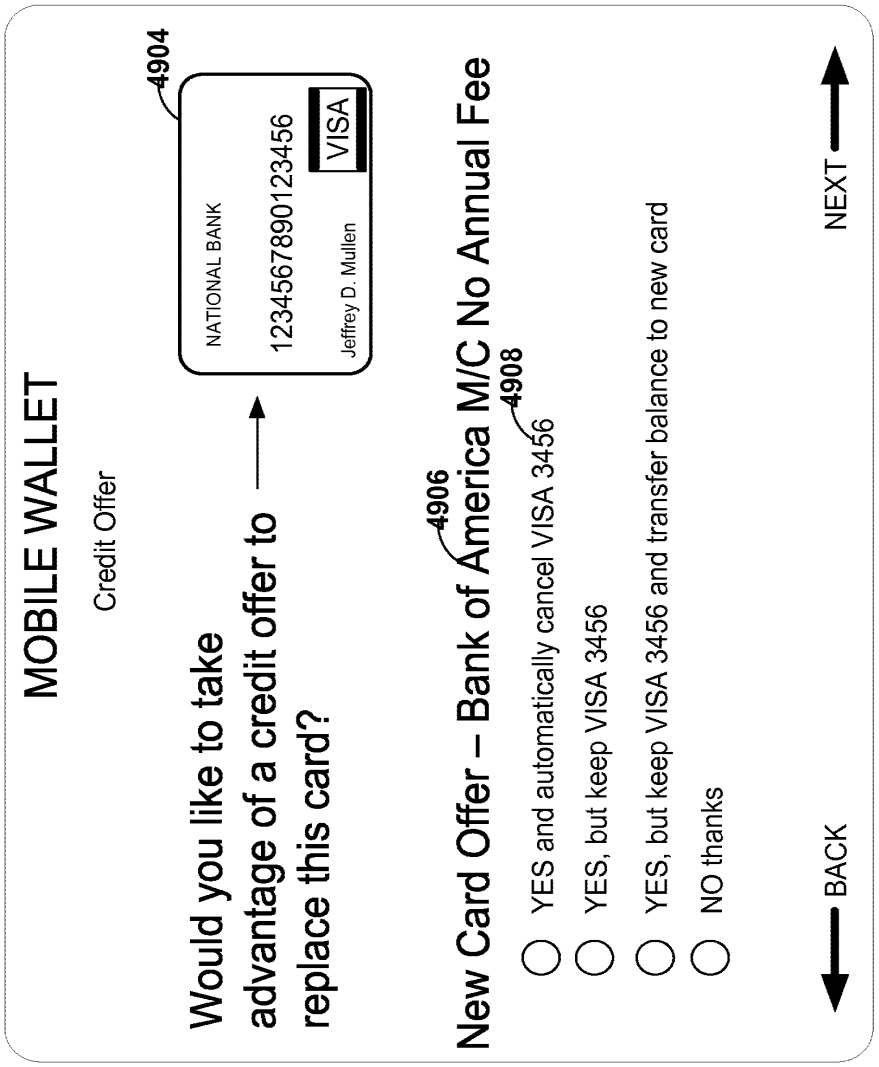

MOBILE WALLET
Credit Offer
Would you like to take advantage of a credit offer to replace this card?
4904
NATIONAL BANK
1234567890123456
Jeffrey D. Mullen
VISA
New Card Offer – Bank of America M/C No Annual Fee
4906
4908
YES and automatically cancel VISA 3456
YES, but keep VISA 3456
YES, but keep VISA 3456 and transfer balance to new card
NO thanks
BACK
NEXT

FIG. 49

50/73
5000

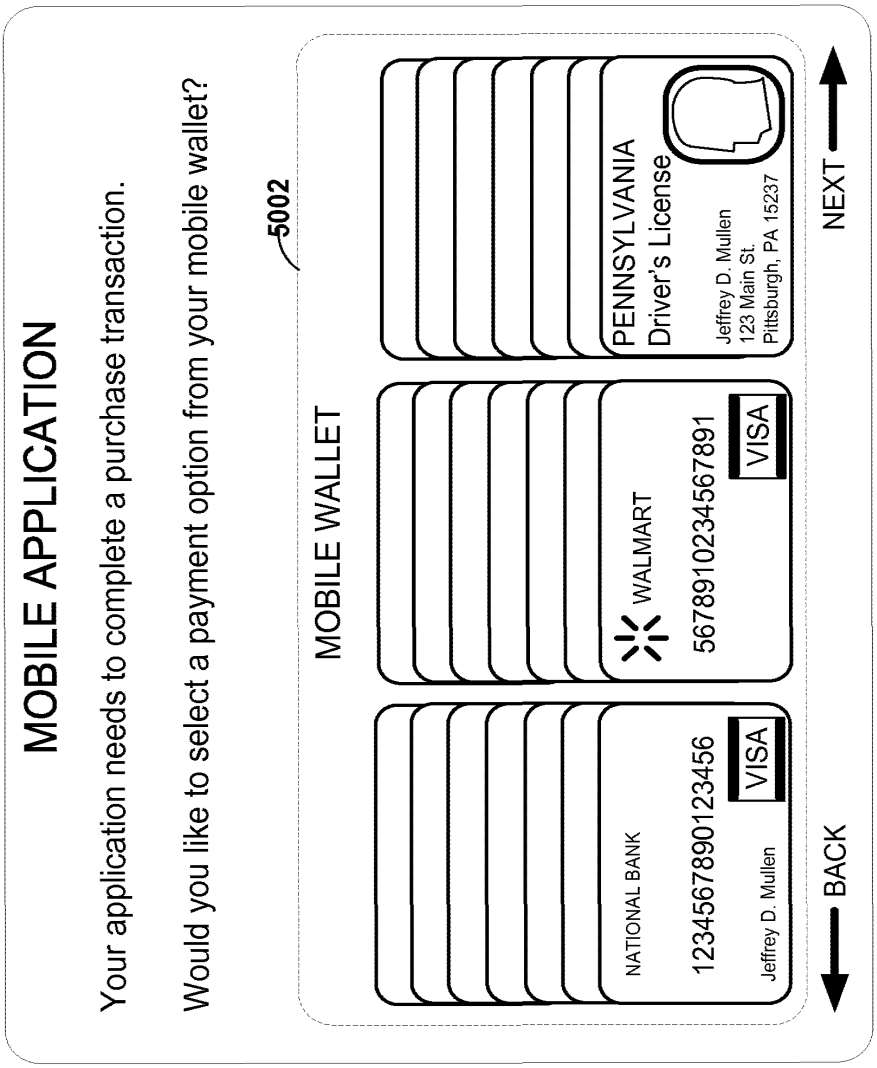


FIG. 50

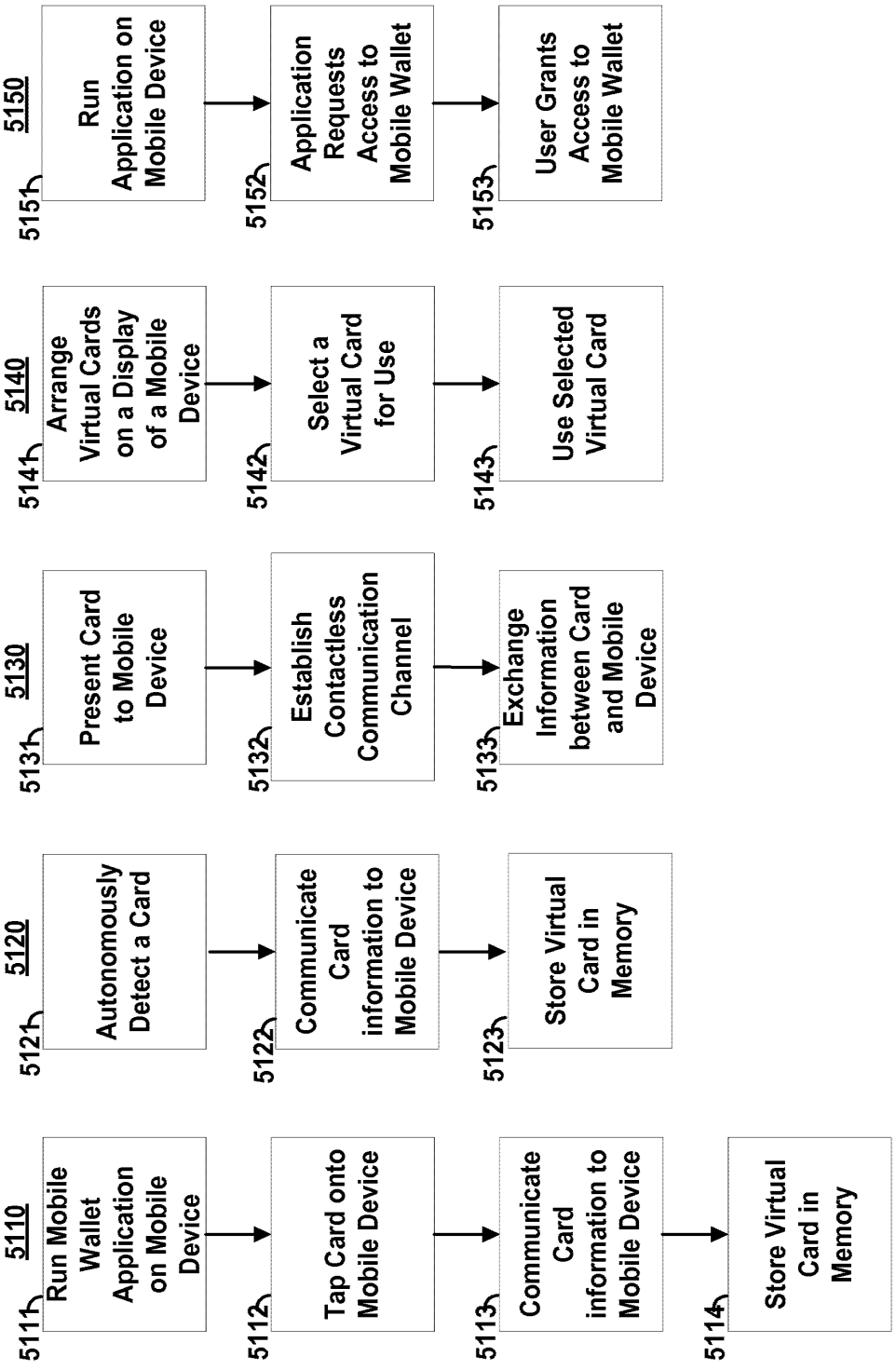

5110
5111
Run Mobile Wallet Application on Mobile Device
5112
Tap Card onto Mobile Device
5113
Communicate Card information to Mobile Device
5114
Store Virtual Card in Memory
5120
5121
Autonomously Detect a Card
5122
Communicate Card information to Mobile Device
5123
Store Virtual Card in Memory
5130
5131
Present Card to Mobile Device
5132
Establish Contactless Communication Channel
5133
Exchange Information between Card and Mobile Device
5140
5141
Arrange Virtual Cards on a Display of a Mobile Device
5142
Select a Virtual Card for Use
5143
Use Selected Virtual Card
5150
5151
Run Application on Mobile Device
5152
Application Requests Access to Mobile Wallet
5153
User Grants Access to Mobile Wallet

FIG. 51

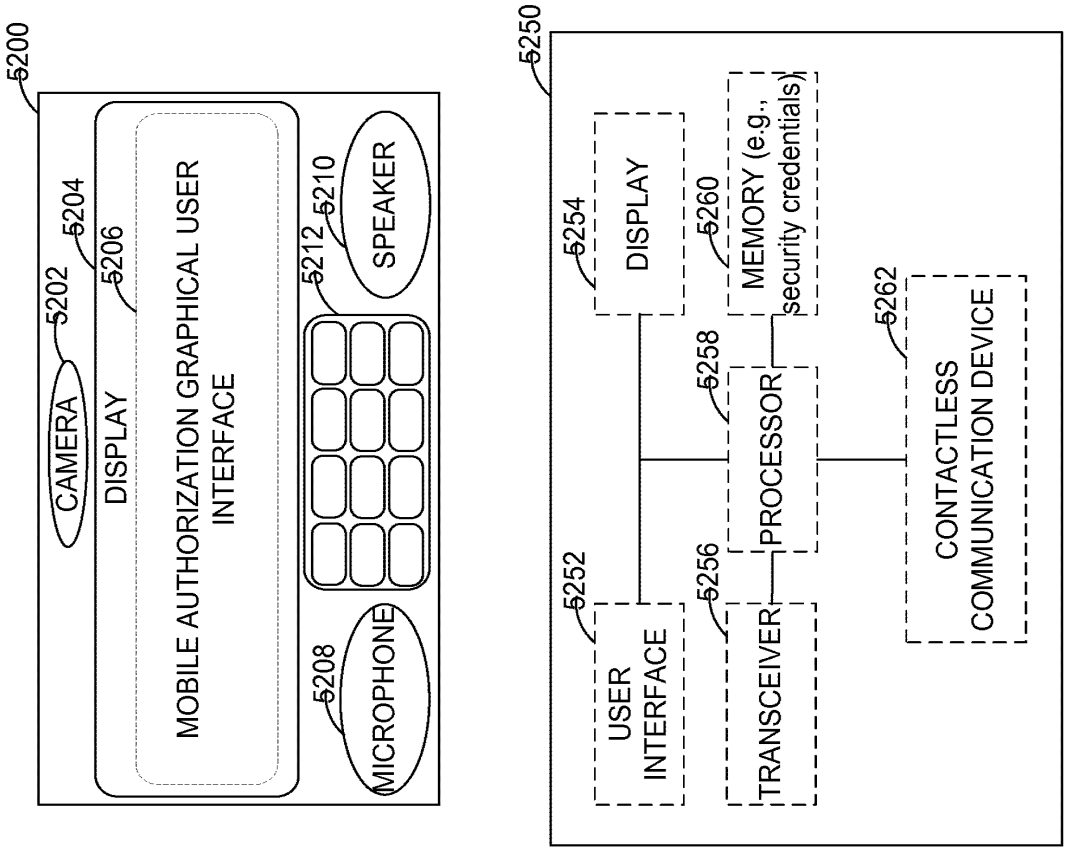

5200
CAMERA
5202
DISPLAY
5204
MOBILE AUTHORIZATION GRAPHICAL USER INTERFACE
5206
SPEAKER
5210
5212
MICROPHONE
5208
5250
USER INTERFACE
5252
DISPLAY
5254
TRANSCEIVER
5256
PROCESSOR
5258
MEMORY (e.g., security credentials)
5260
CONTACTLESS COMMUNICATION DEVICE
5262

FIG. 52

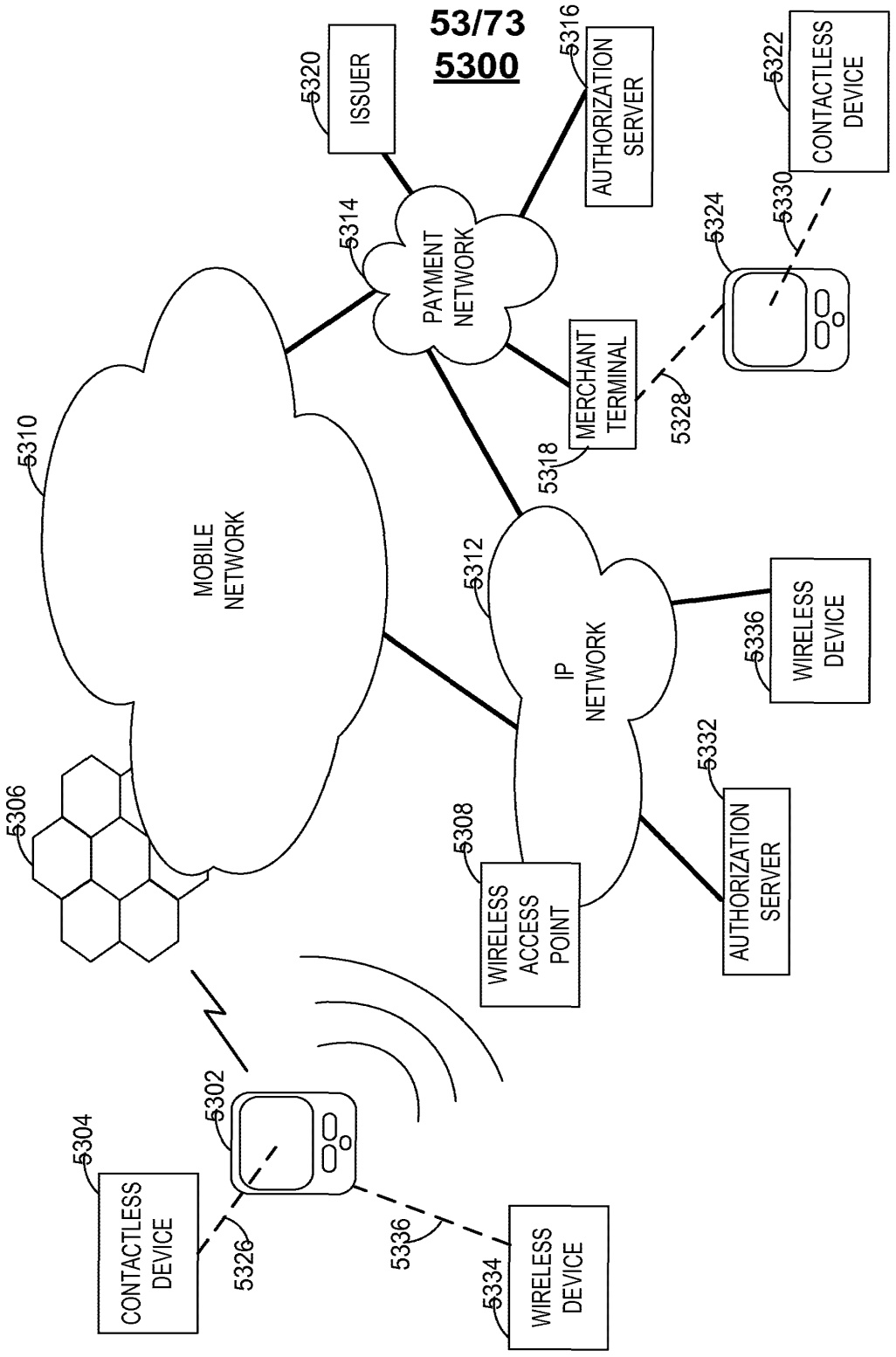

53/73
5300
ISSUER
5320
AUTHORIZATION SERVER
5316
CONTACTLESS DEVICE
5322
PAYMENT NETWORK
5314
5330
5324
MERCHANT TERMINAL
5328
5318
MOBILE NETWORK
5310
IP NETWORK
5312
WIRELESS DEVICE
5336
5332
AUTHORIZATION SERVER
5306
5308
WIRELESS ACCESS POINT
5302
5304
CONTACTLESS DEVICE
5326
5336
5334
WIRELESS DEVICE

FIG. 53

54/73
5400

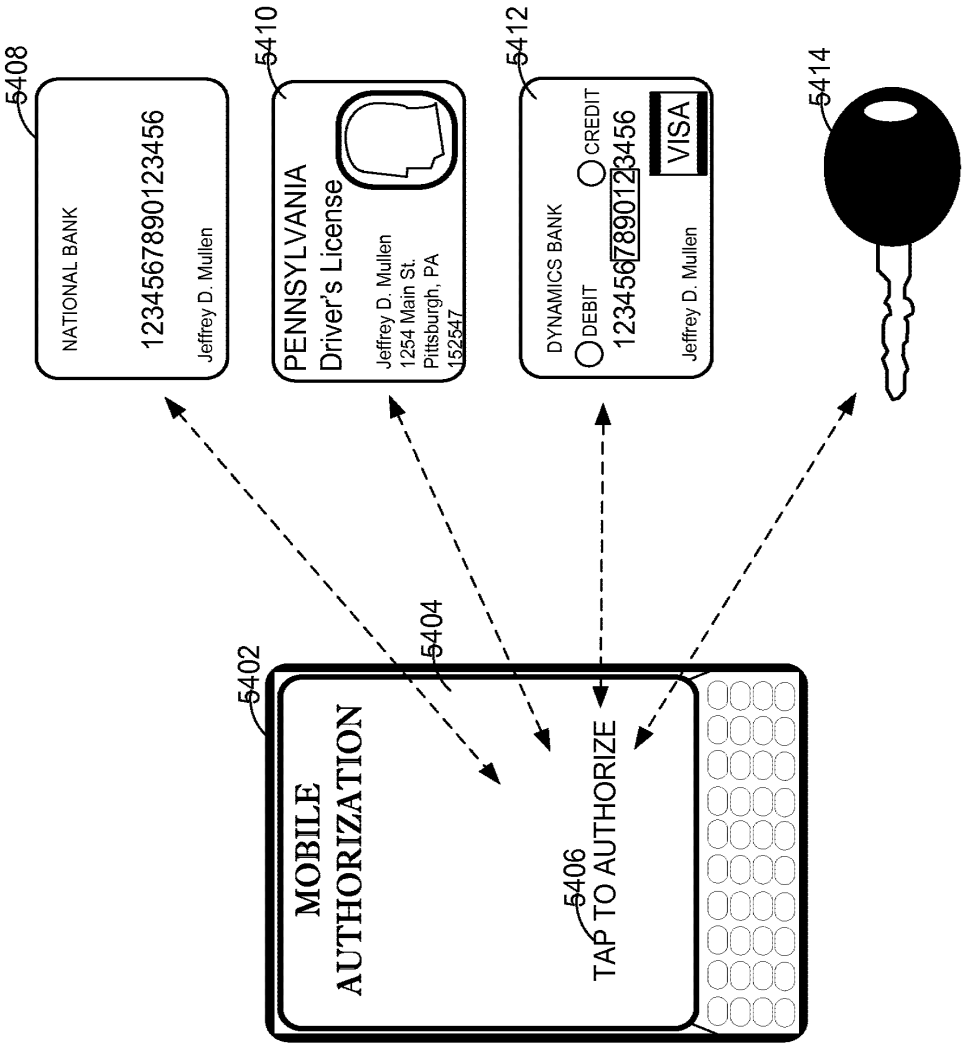


FIG. 54

5500

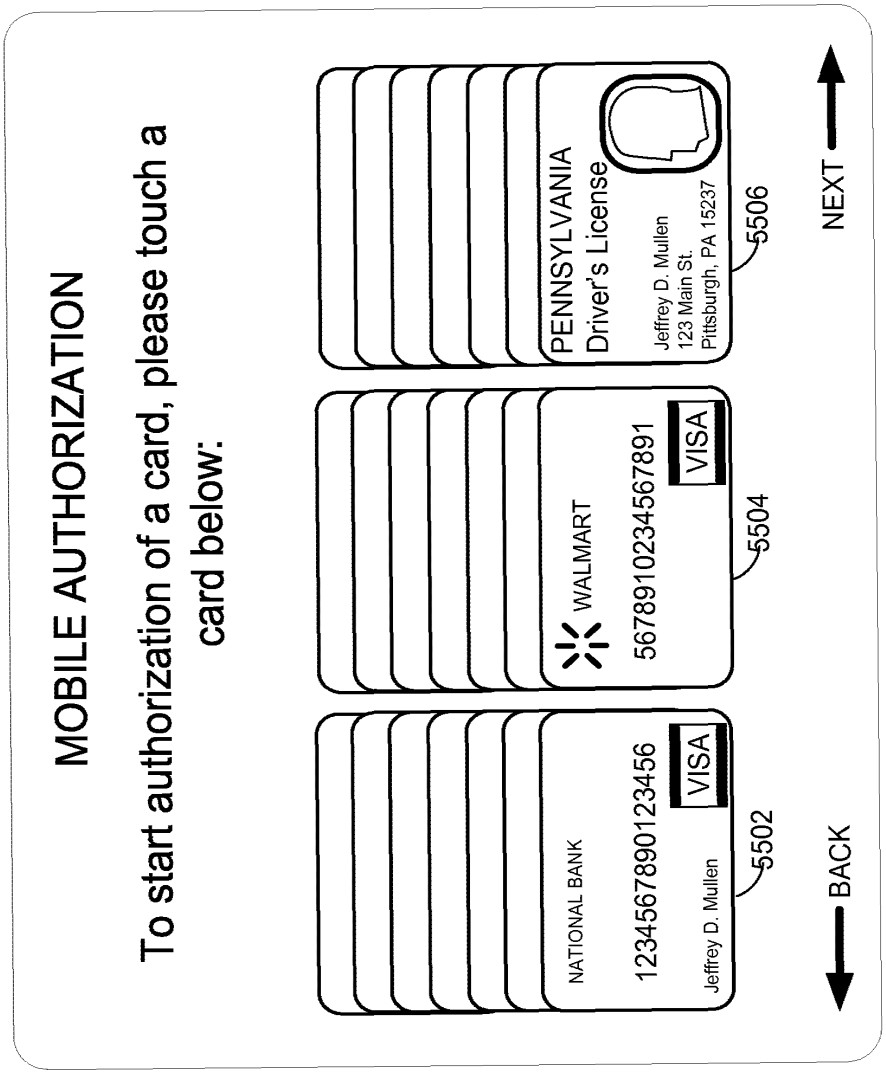

MOBILE AUTHORIZATION
To start authorization of a card, please touch a card below:
NATIONAL BANK
1234567890123456
VISA
Jeffrey D. Mullen
5502
WALMART
5678910234567891
VISA
5504
PENNSYLVANIA
Driver's License
Jeffrey D. Mullen
123 Main St.
Pittsburgh, PA 15237
5506
BACK
NEXT

FIG. 55

5600

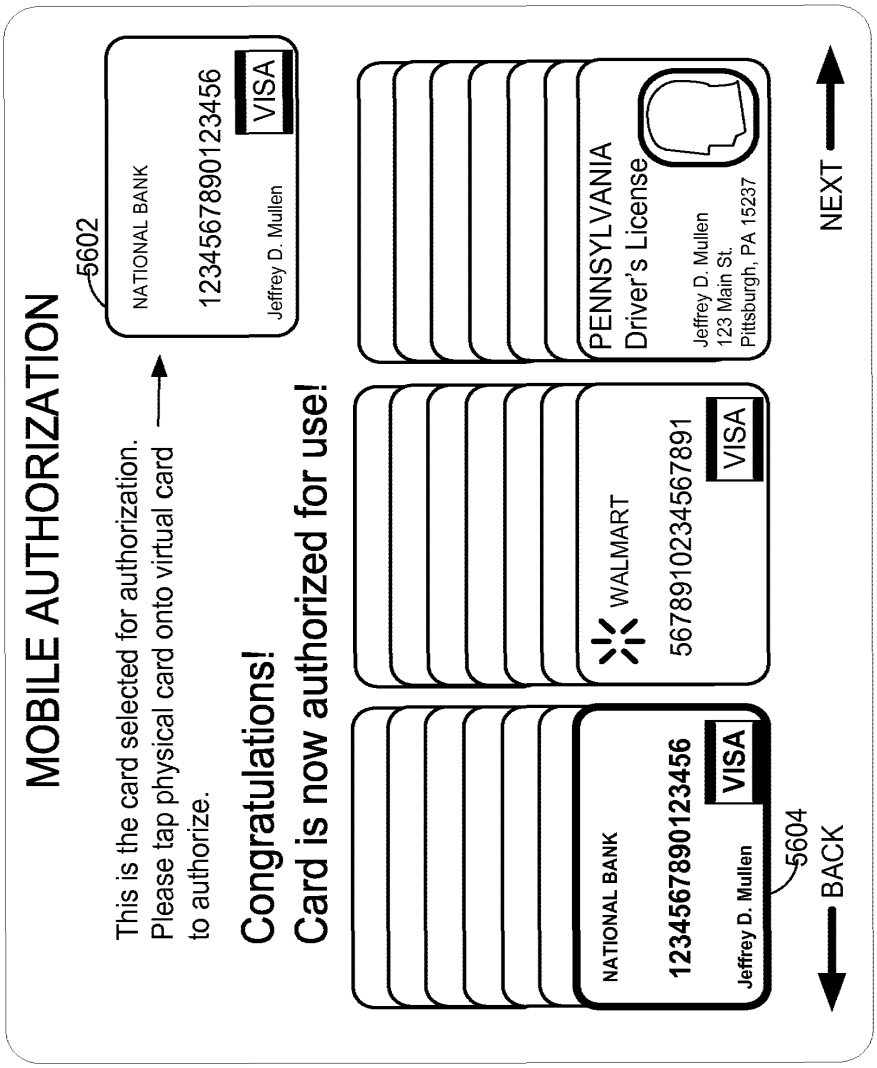

MOBILE AUTHORIZATION
This is the card selected for authorization.
Please tap physical card onto virtual card
to authorize.
Congratulations!
Card is now authorized for use!
5602
NATIONAL BANK
1234567890123456
Jeffrey D. Mullen
VISA
WALMART
5678910234567891
VISA
PENNSYLVANIA
Driver's License
Jeffrey D. Mullen
123 Main St.
Pittsburgh, PA 15237
NATIONAL BANK
1234567890123456
Jeffrey D. Mullen
VISA
5604
BACK
NEXT

FIG. 56

57/73
5700

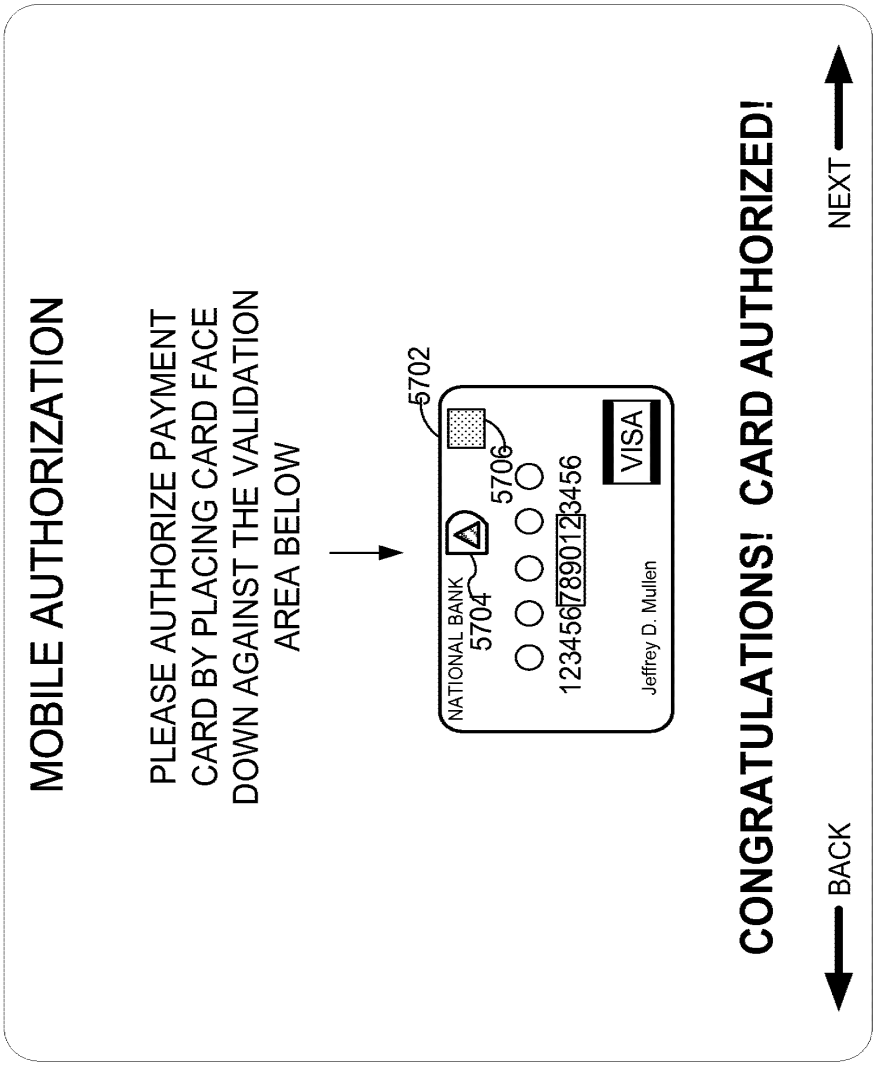


FIG. 57

58/73
5800

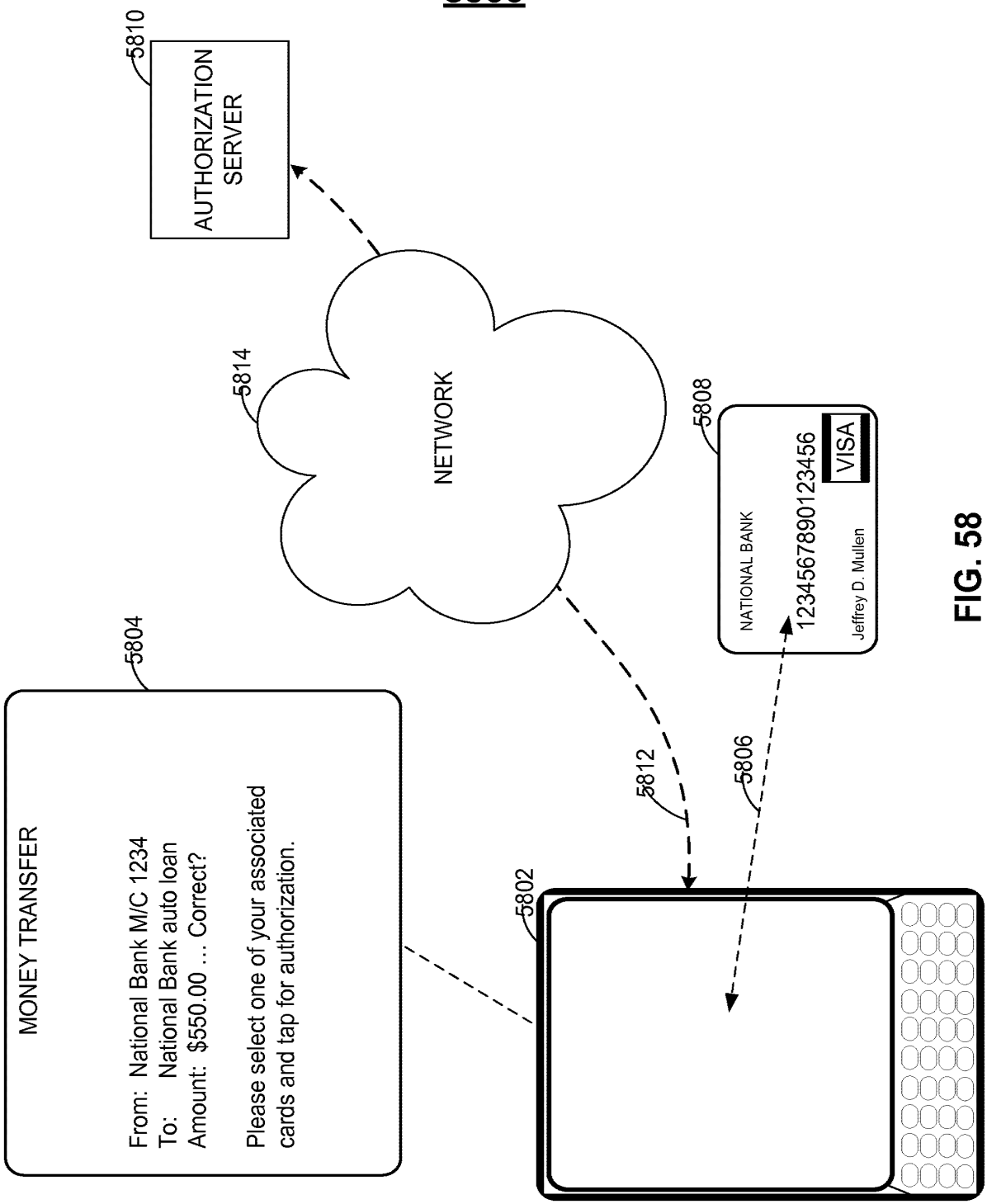


FIG. 58

59/73
5900

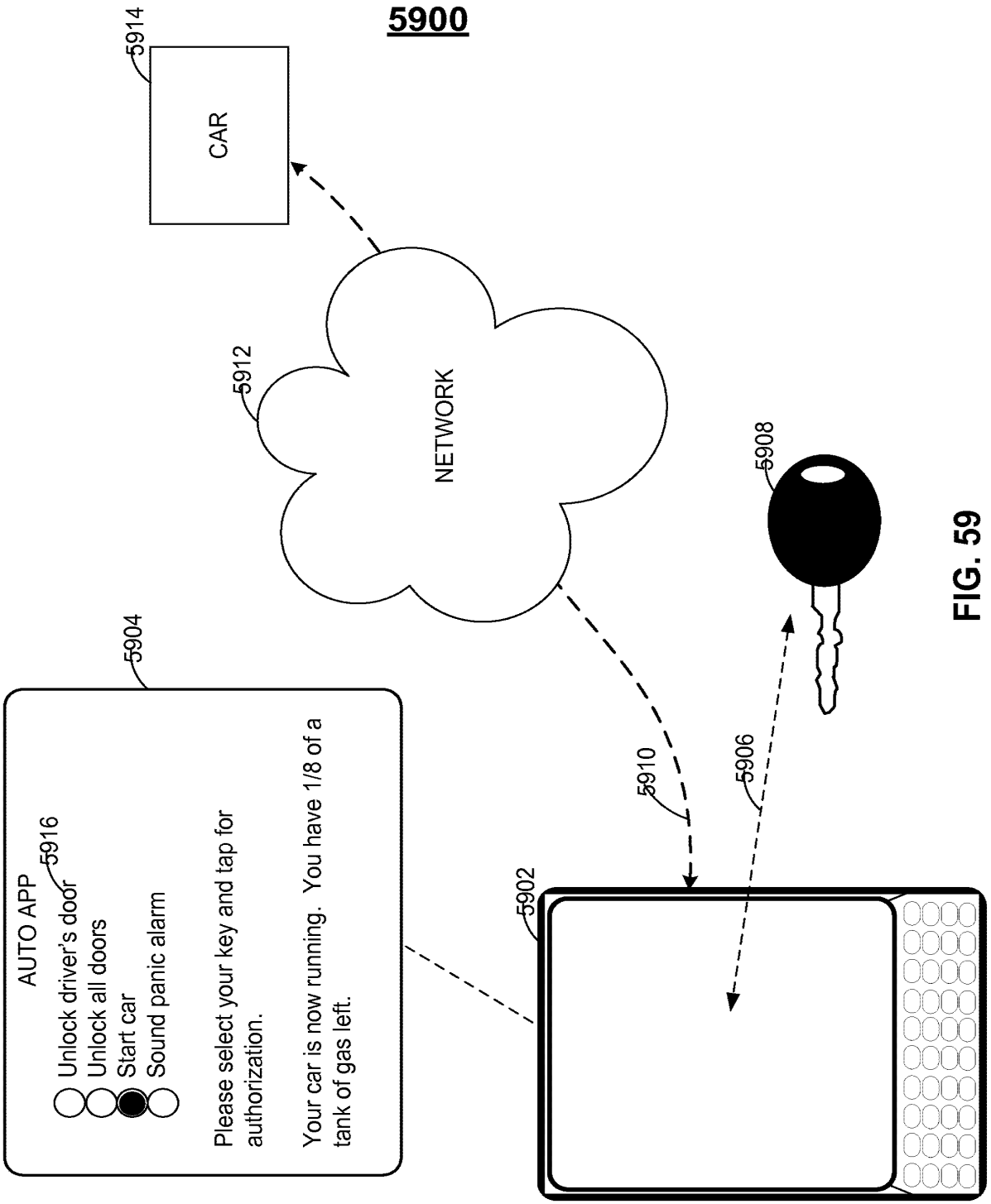


FIG. 59

6000

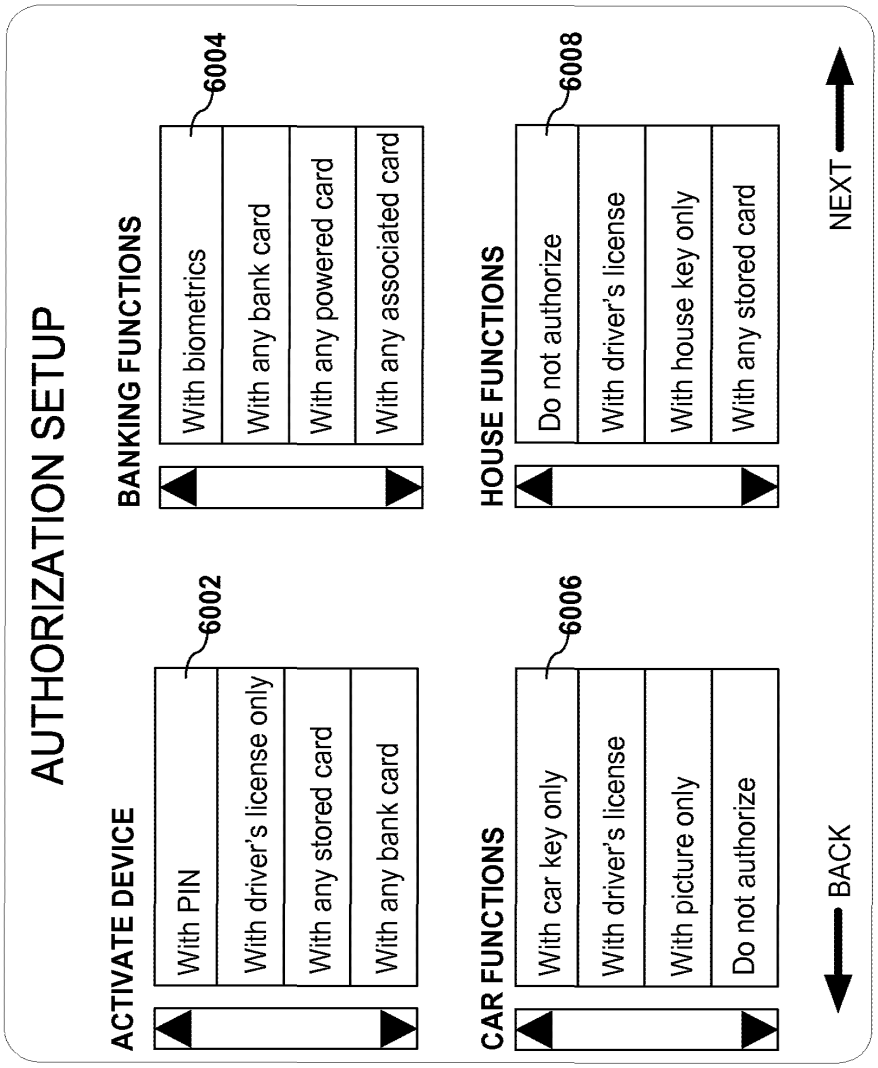

AUTHORIZATION SETUP
ACTIVATE DEVICE
6002
With PIN
With driver's license only
With any stored card
With any bank card
BANKING FUNCTIONS
6004
With biometrics
With any bank card
With any powered card
With any associated card
CAR FUNCTIONS
6006
With car key only
With driver's license
With picture only
Do not authorize
HOUSE FUNCTIONS
6008
Do not authorize
With driver's license
With house key only
With any stored card
BACK
NEXT

FIG. 60

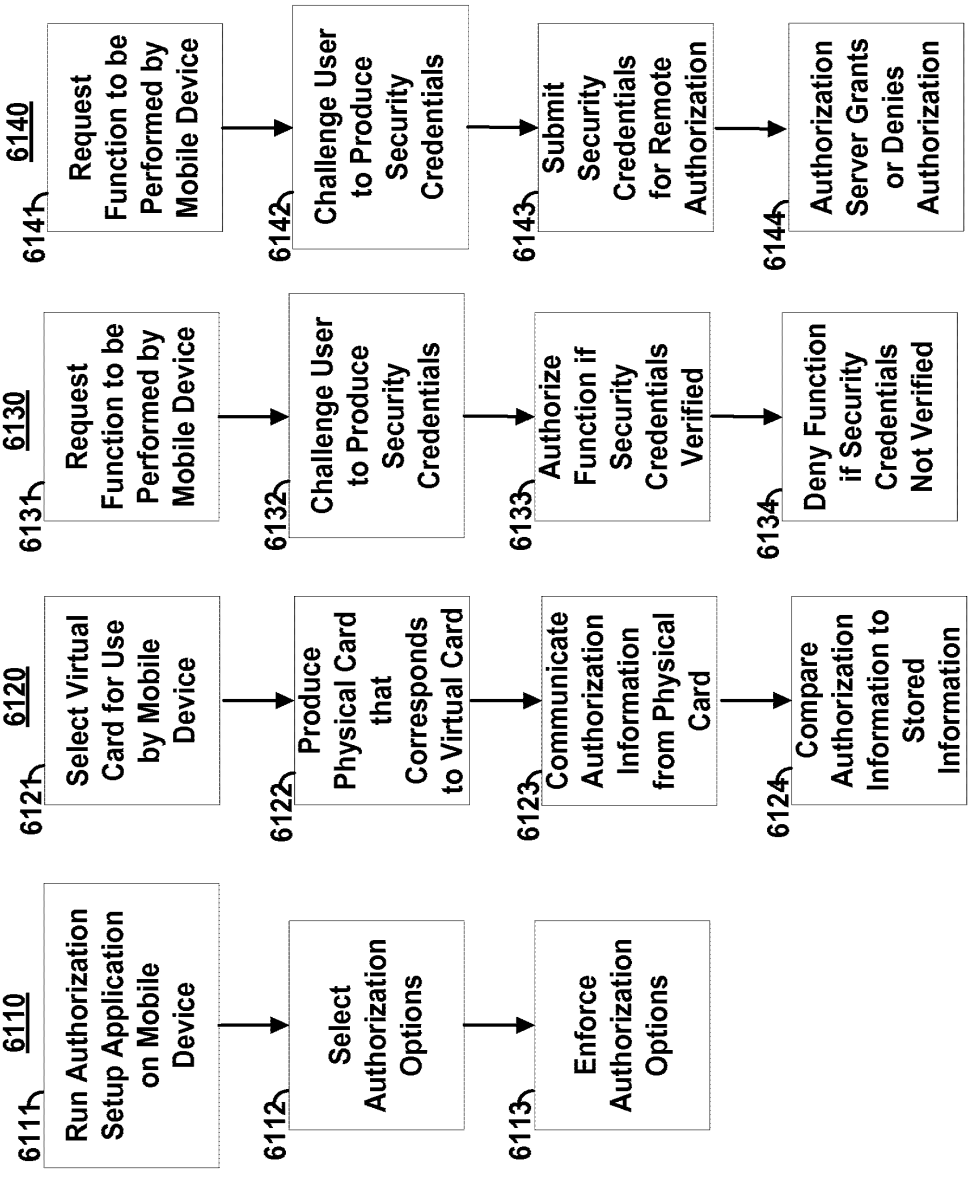

6110
6111
Run Authorization Setup Application on Mobile Device
6112
Select Authorization Options
6113
Enforce Authorization Options
6120
6121
Select Virtual Card for Use by Mobile Device
6122
Produce Physical Card that Corresponds to Virtual Card
6123
Communicate Authorization Information from Physical Card
6124
Compare Authorization Information to Stored Information
6130
6131
Request Function to be Performed by Mobile Device
6132
Challenge User to Produce Security Credentials
6133
Authorize Function if Security Credentials Verified
6134
Deny Function if Security Credentials Not Verified
6140
6141
Request Function to be Performed by Mobile Device
6142
Challenge User to Produce Security Credentials
6143
Submit Security Credentials for Remote Authorization
6144
Authorization Server Grants or Denies Authorization

FIG. 61

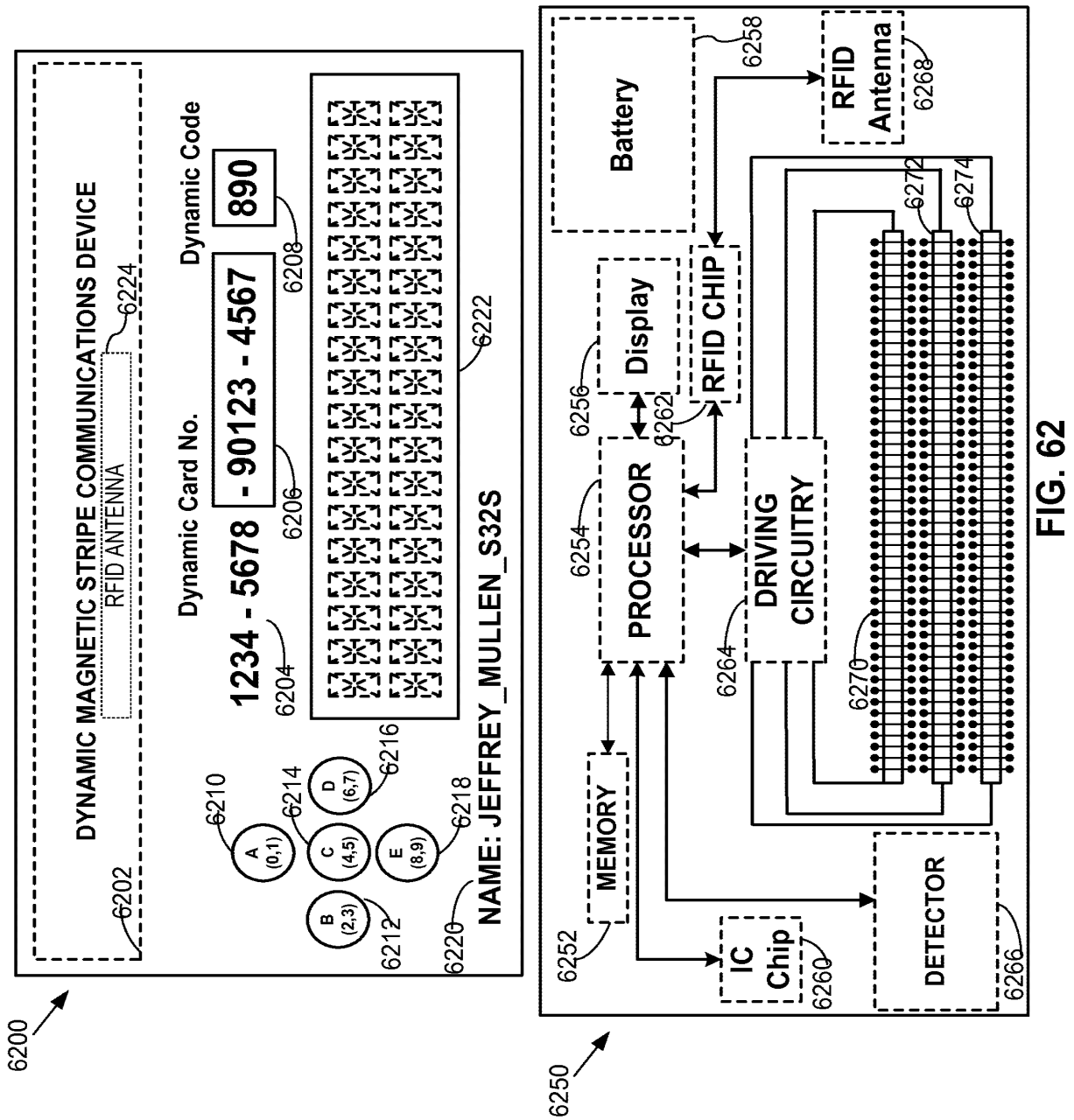

6200
DYNAMIC MAGNETIC STRIPE COMMUNICATIONS DEVICE
RFID ANTENNA
6224
6202
Dynamic Card No.
1234 - 5678
6204
- 90123 - 4567
6206
Dynamic Code
890
6208
6222
A (0,1)
B (2,3)
C (4,5)
D (6,7)
E (8,9)
6210
6212
6214
6216
6218
6220
NAME: JEFFREY_MULLEN_S32S
6250
Battery
6258
RFID Antenna
6268
Display
6256
RFID CHIP
6262
PROCESSOR
6254
DRIVING CIRCUITRY
6264
6270
6272
6274
MEMORY
6252
IC Chip
6260
DETECTOR
6266

FIG. 62

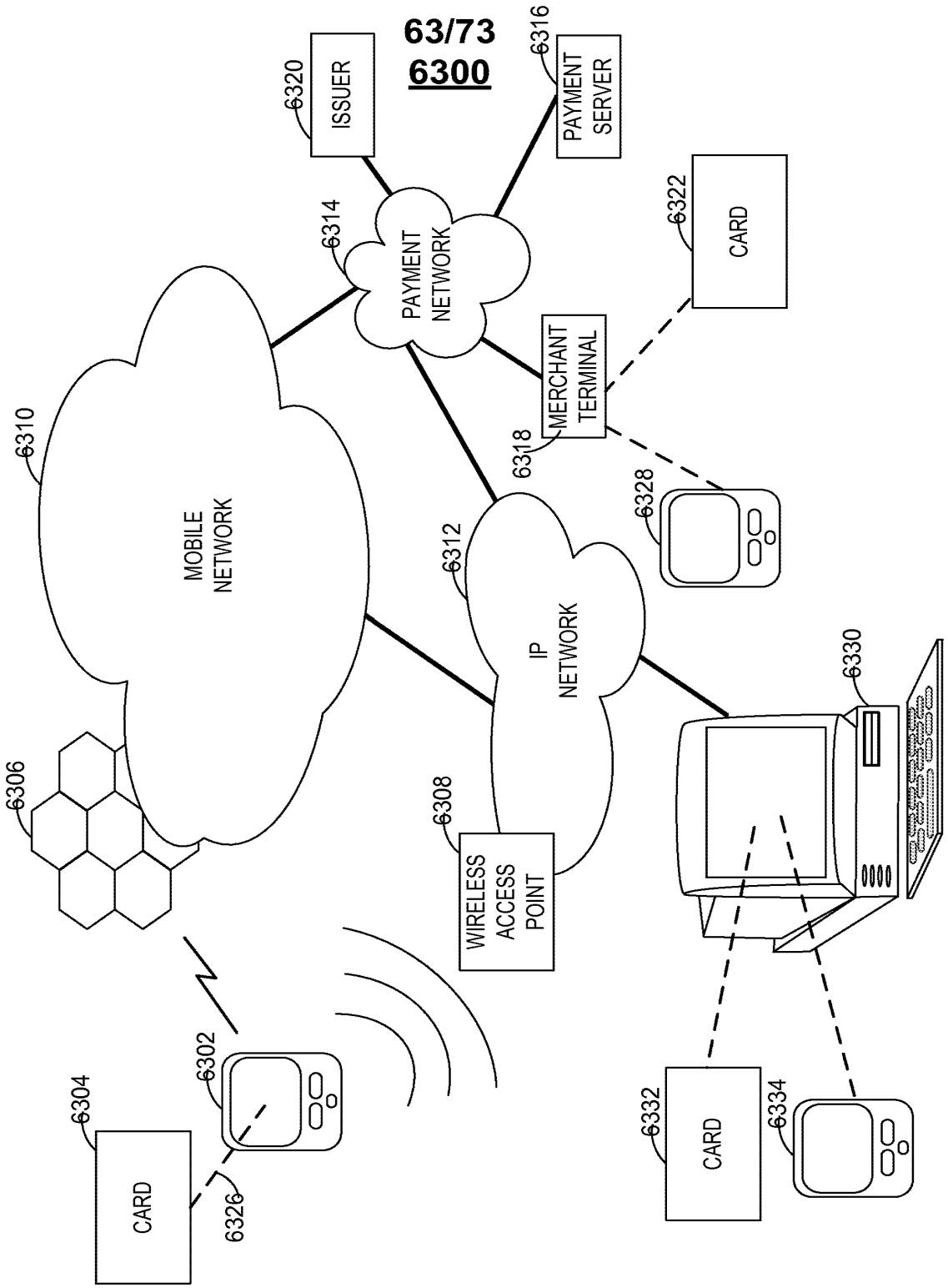

63/73
6300
6320
ISSUER
6316
PAYMENT SERVER
6314
PAYMENT NETWORK
6322
CARD
6310
MOBILE NETWORK
MERCHANT TERMINAL
6318
6328
6312
IP NETWORK
6330
6306
6308
WIRELESS ACCESS POINT
6302
6304
CARD
6326
6332
CARD
6334

FIG. 63

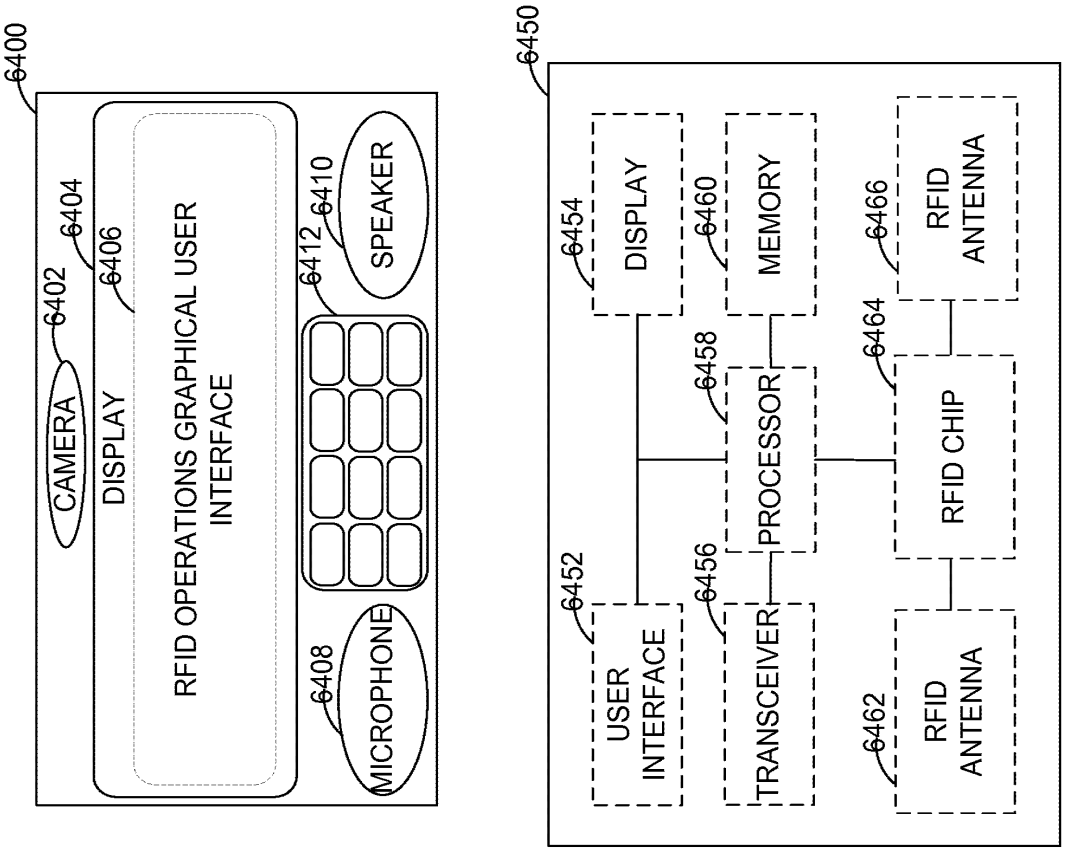

6400
CAMERA
6402
DISPLAY
6404
RFID OPERATIONS GRAPHICAL USER INTERFACE
6406
6408
MICROPHONE
6410
SPEAKER
6412
6450
USER INTERFACE
6452
TRANSCEIVER
6456
PROCESSOR
6458
DISPLAY
6454
MEMORY
6460
RFID CHIP
6464
RFID ANTENNA
6462
RFID ANTENNA
6466

FIG. 64

6500

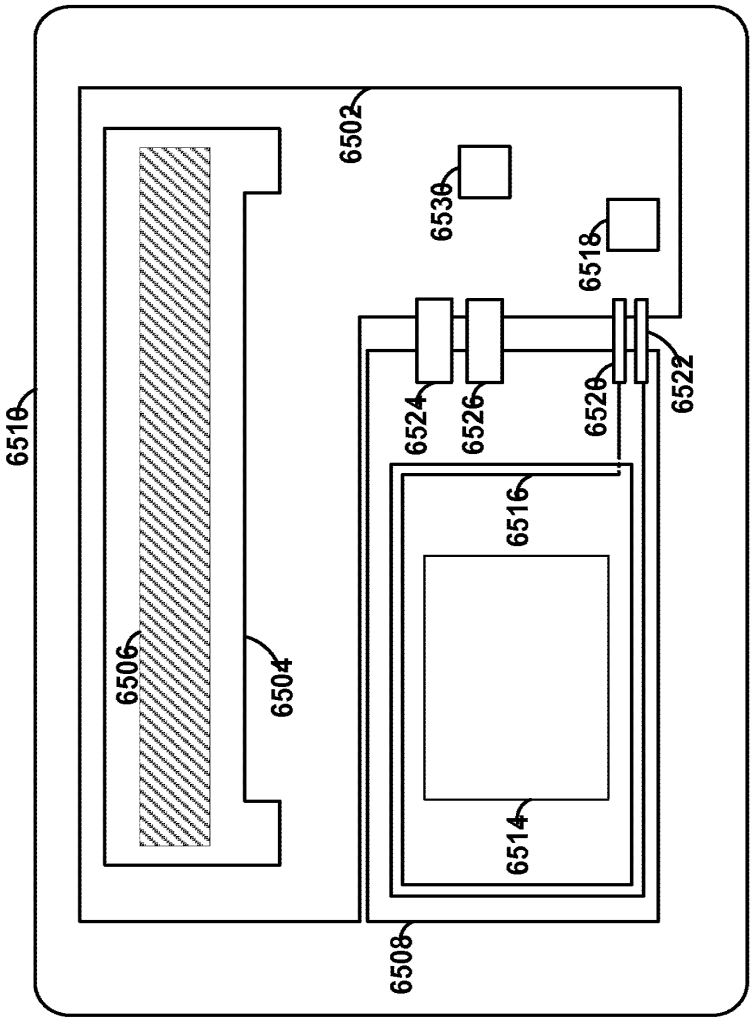

6502
6538
6518
6510
6524
6526
6528
6522
6516
6506
6504
6514
6508

FIG. 65

66/73
6600

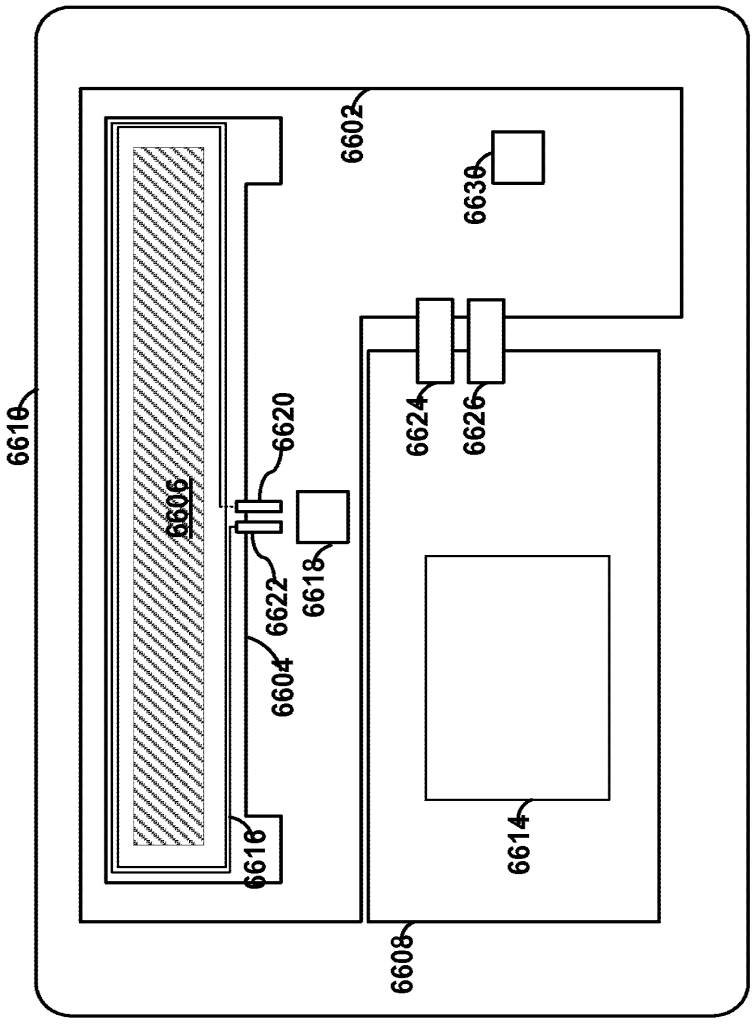


FIG. 66

6700

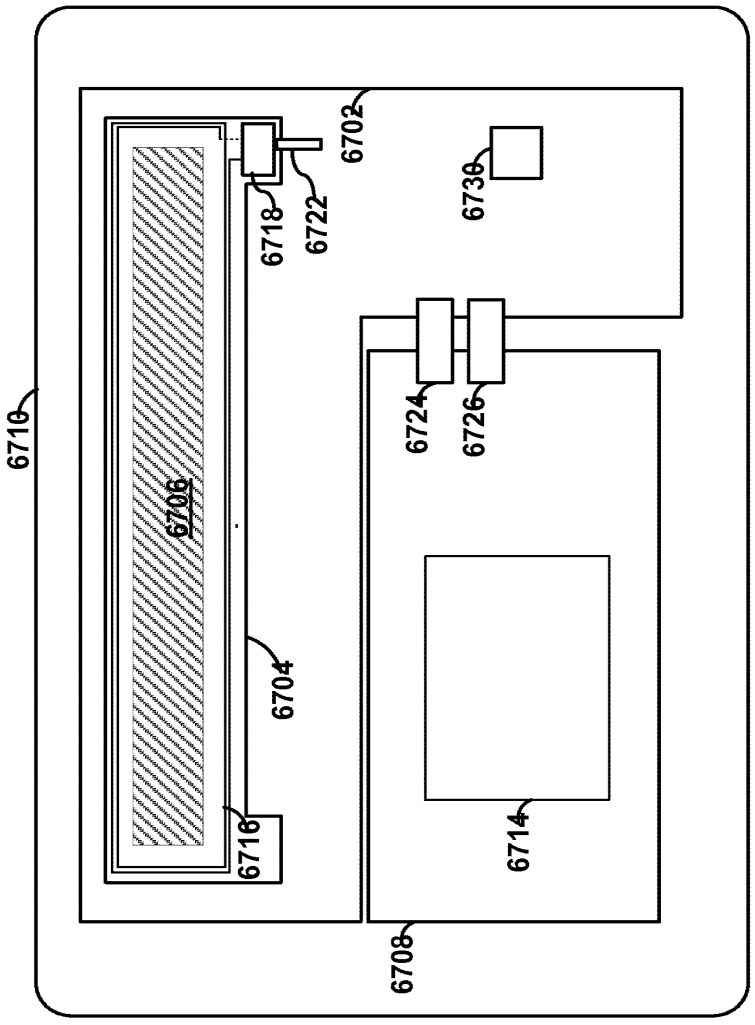


FIG. 67

6800

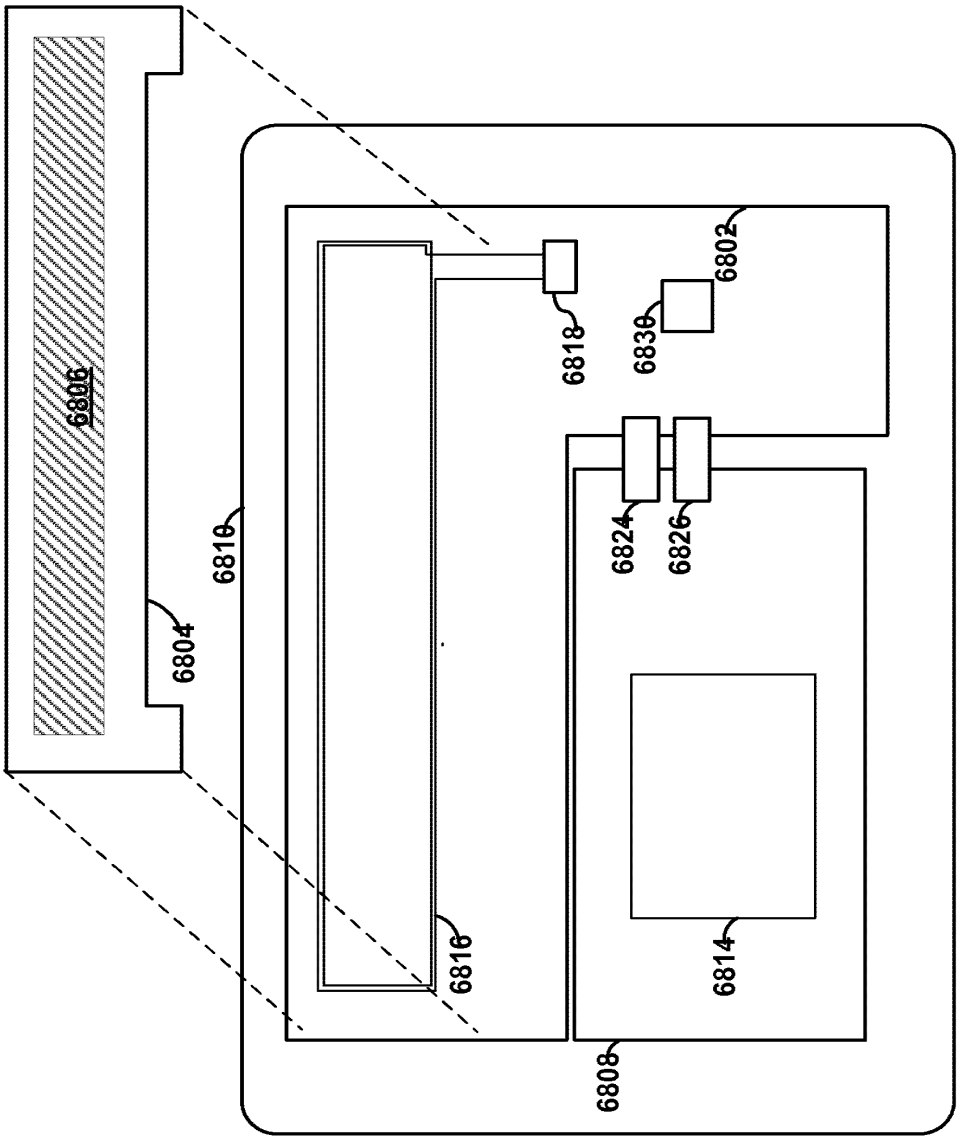


FIG. 68

6900

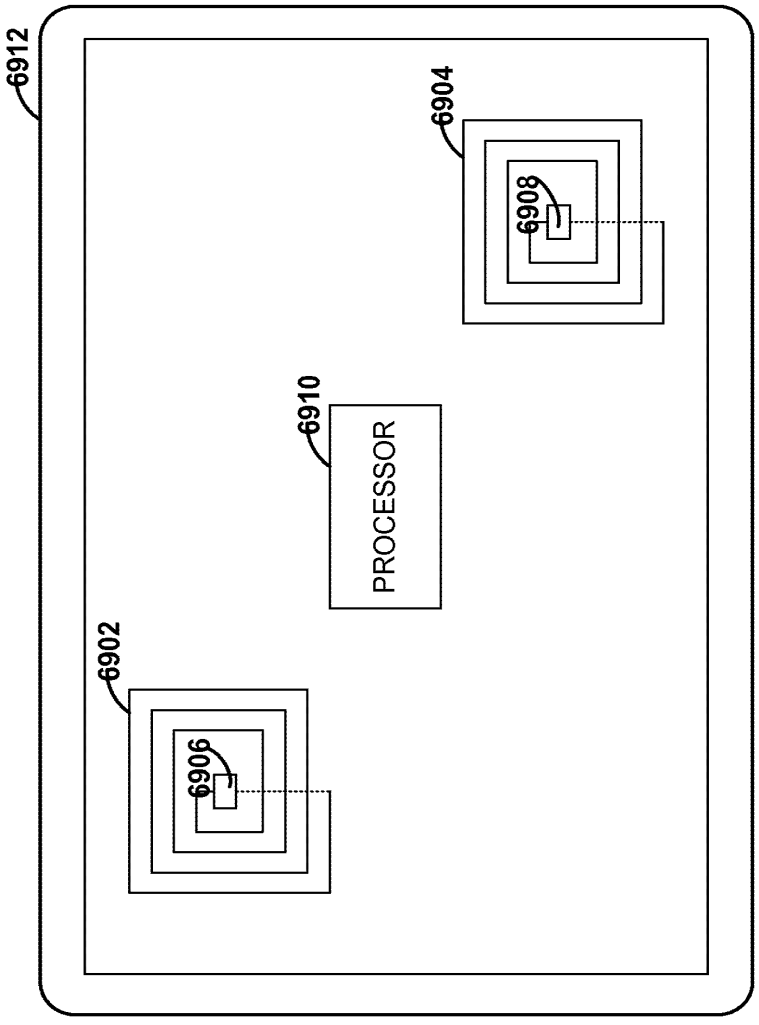


FIG. 69

70/73
7000

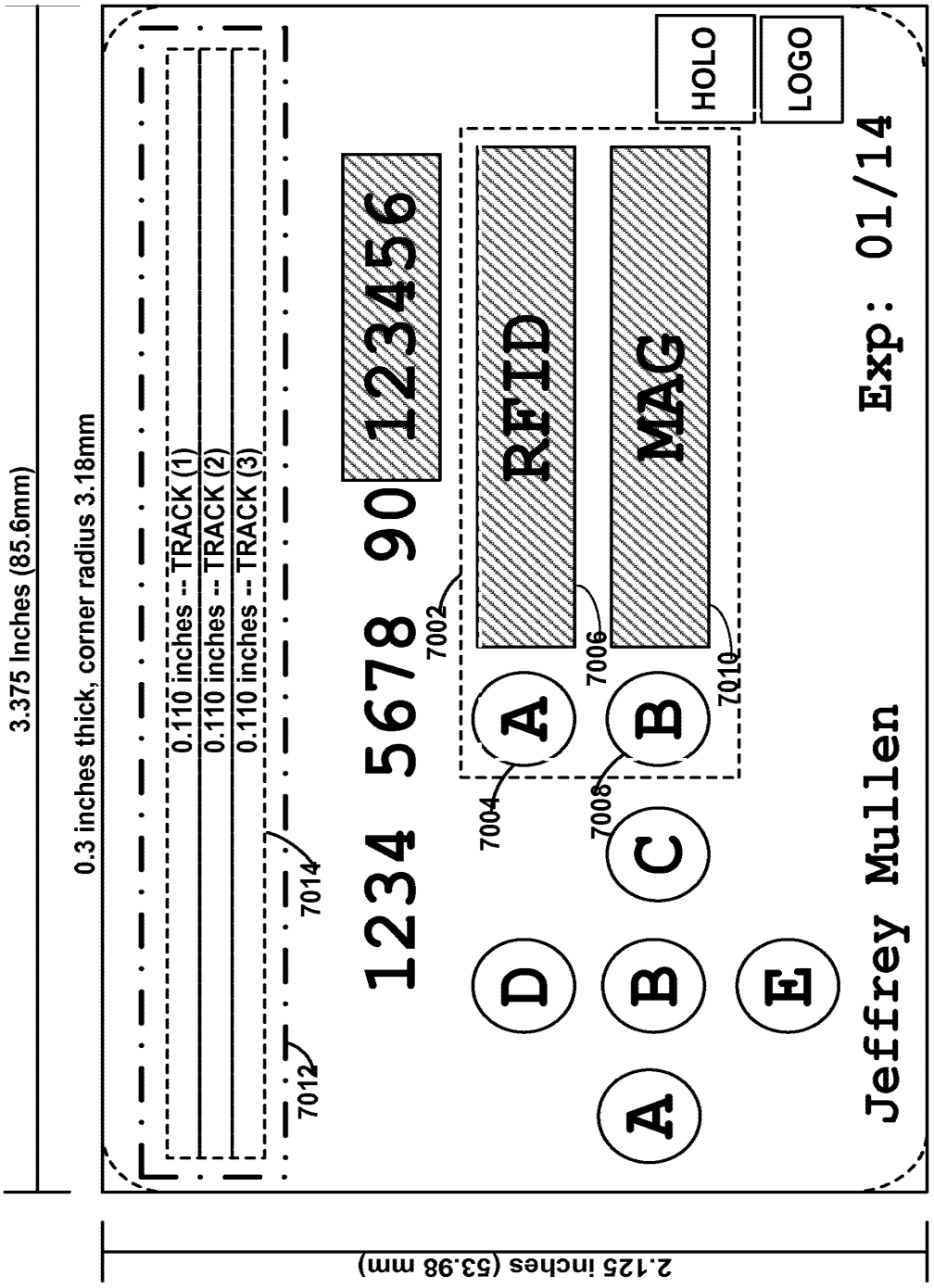


FIG. 70

71/73
7100

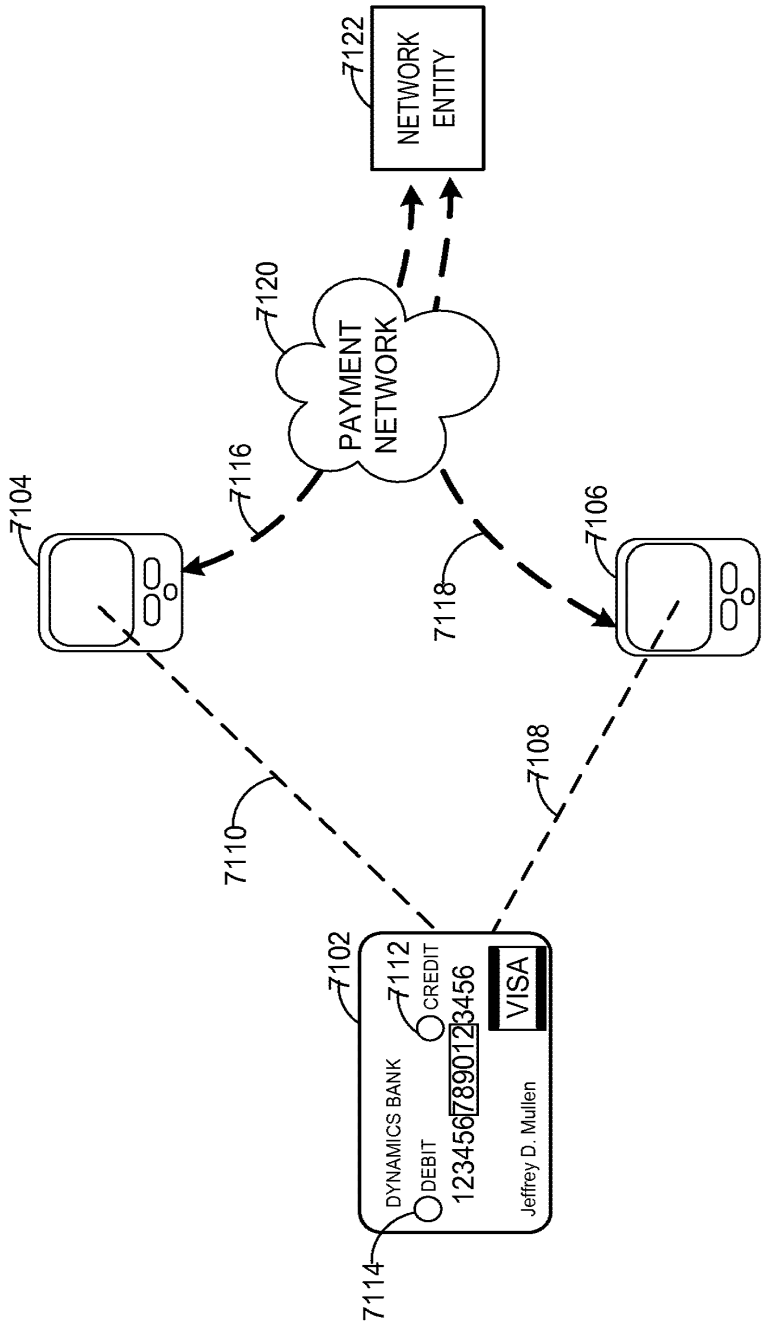


FIG. 71

72/73
7200

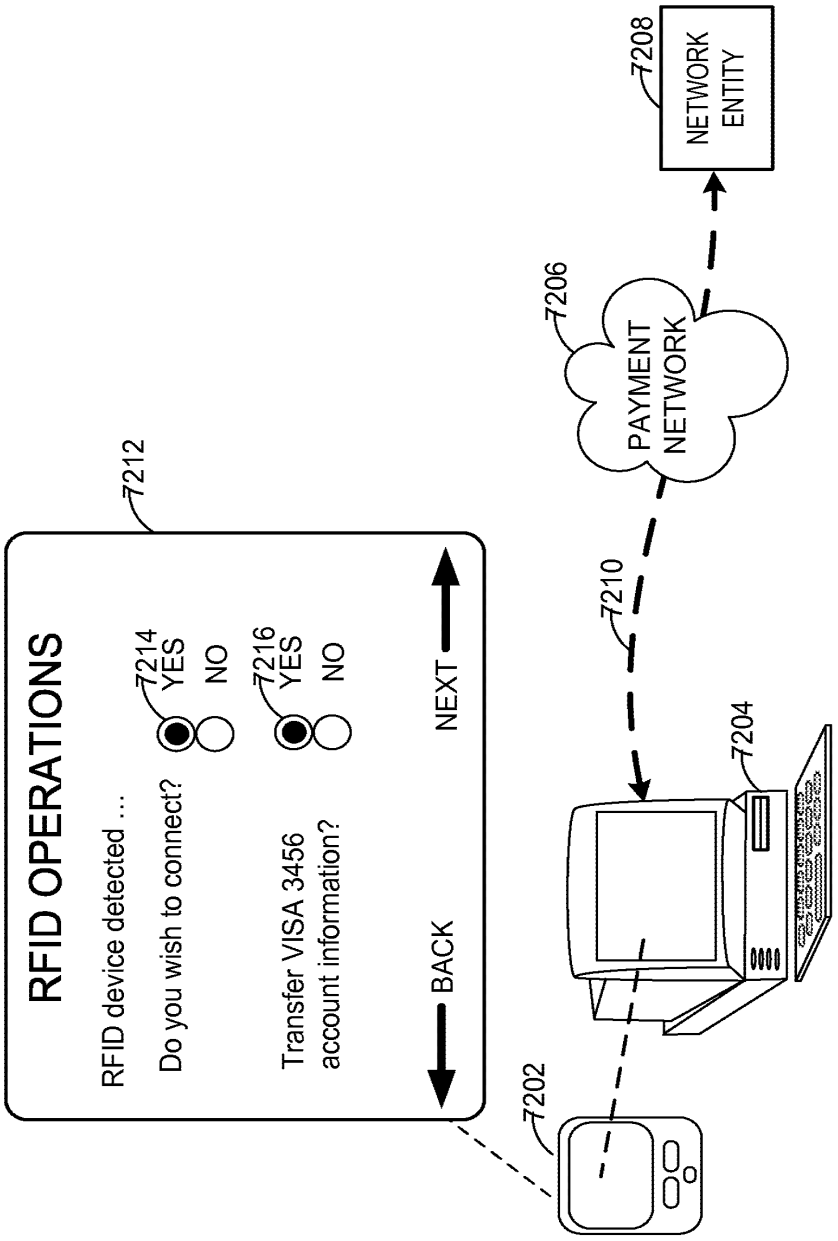


FIG. 72

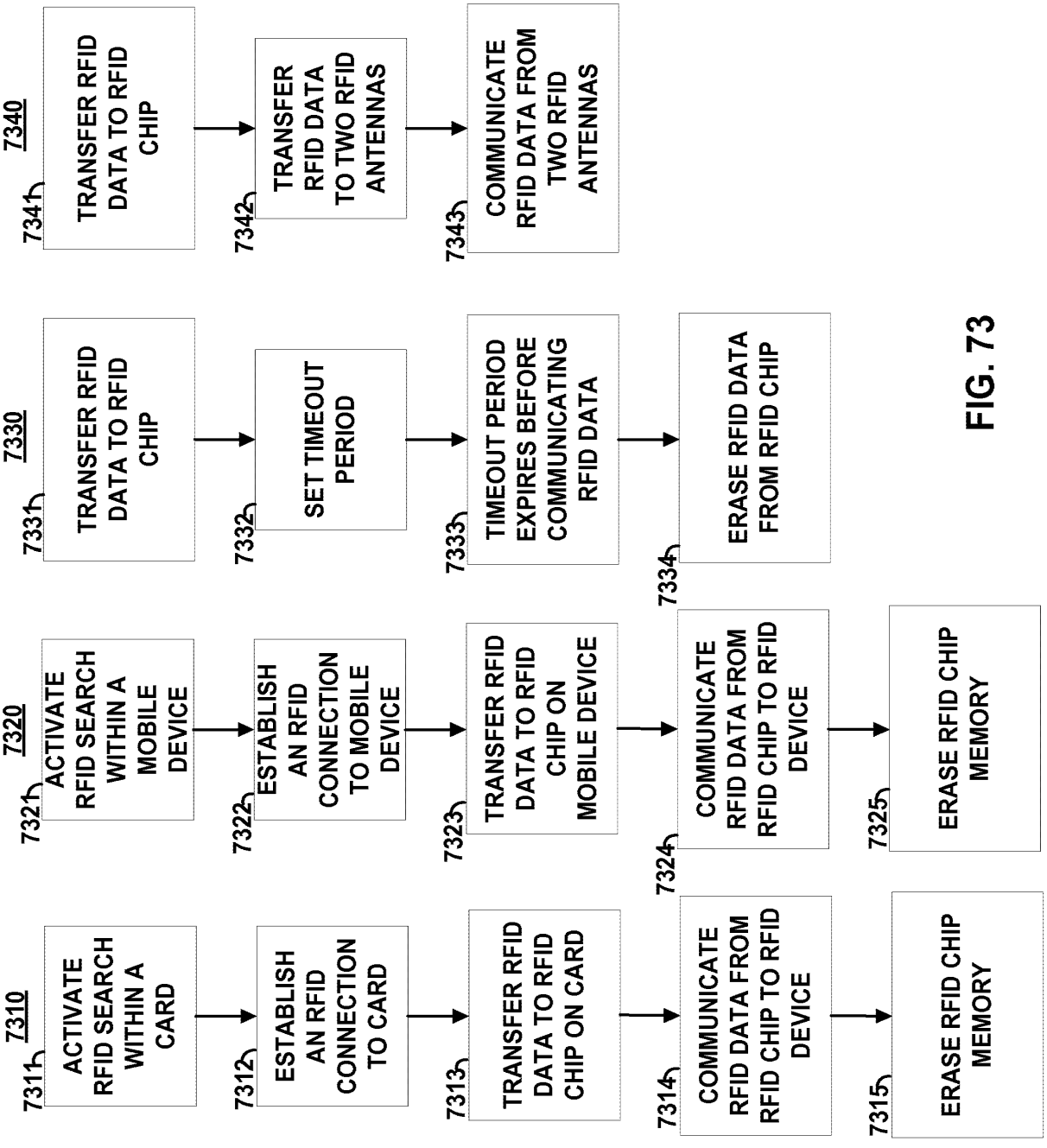

7310
7311
ACTIVATE RFID SEARCH WITHIN A CARD
7312
ESTABLISH AN RFID CONNECTION TO CARD
7313
TRANSFER RFID DATA TO RFID CHIP ON CARD
7314
COMMUNICATE RFID DATA FROM RFID CHIP TO RFID DEVICE
7315
ERASE RFID CHIP MEMORY
7320
7321
ACTIVATE RFID SEARCH WITHIN A MOBILE DEVICE
7322
ESTABLISH AN RFID CONNECTION TO MOBILE DEVICE
7323
TRANSFER RFID DATA TO RFID CHIP ON MOBILE DEVICE
7324
COMMUNICATE RFID DATA FROM RFID CHIP TO RFID DEVICE
7325
ERASE RFID CHIP MEMORY
7330
7331
TRANSFER RFID DATA TO RFID CHIP
7332
SET TIMEOUT PERIOD
7333
TIMEOUT PERIOD EXPIRES BEFORE COMMUNICATING RFID DATA
7334
ERASE RFID DATA FROM RFID CHIP
7340
7341
TRANSFER RFID DATA TO RFID CHIP
7342
TRANSFER RFID DATA TO TWO RFID ANTENNAS
7343
COMMUNICATE RFID DATA FROM TWO RFID ANTENNAS

FIG. 73

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US20 12/037237

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G06Q 40/02 (201 2.01)
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) - G06Q 30/06, 40/00, 40/02 (2012.01)
USPC - 455/41 .1, 705/39, 40, 4 1, 42

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, Google Patents, Google.com

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	**US 2009/0210308 A1 (TOOMER et al) 20 August 2009 (20.08.2009) entire document**	**1, 3-1 1, 81**
X	**US 2009/019181 1 A1 (GRIFFIN et al) 30 July 2009 (30.07.2009) entire document**	**2, 12-21, 82**
A	**US 2010/0304670 A1 (SHUO) 02 December 2010 (02.12.2010) entire document**	**1-21 , 81-82**
A	**US 2010/0023449 A1 (SKOWRONEK et al) 28 January 2010 (28.01.2010) entire document**	**1-21, 81-82**
A	**US 2009/0170432 A1 (LORTZ) 02 July 2009 (02.07.2009) entire document**	**1-21 , 81-82**
A	**US 2010/0153269 A1 (MCCABE) 17 June 2010 (17.06.2010) abstract, Fig. 1-2, paragraphs 13, 15, 30-31, 36-40, 47.**	**1-21, 81-82**

☐ 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
18 September 2012	**16 OCT 2012**
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: **Blaine R. Copenheaver** **PCT Helpdesk: 571-272-4300** **PCT OSP: 571-272-7774**

Form PCT/ISA /210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/037237

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

See extra sheet.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-21 , 81-82

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

IPR2025-01150
Apple EX1072 Page 475

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US20 12/037237

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claims 1-21, 81-82, drawn to a method and system comprising accessing a network using a mobile device, selecting an object for purchase from said network, communicating payment information/target account information to a second device, and completing a purchase transaction/coordinating a money transfer.
Group II, claims 22-41, 83, drawn to a method and system comprising creating a mobile wallet of virtual cards within a memory of a mobile device from communicated information, and selecting one of said virtual cards to complete a purchase transaction.
Group III, claims 42-61, 84, drawn to a method and system comprising executing an application on a processor of a mobile device to perform a function, communicating information to said mobile device, confirming said communicated information matches at least a portion of predetermined information, and executing said function from said mobile device based on said confirmation.
Group IV, claims 62-78, drawn to a card comprising a second board including a processor, wherein first data is transferred from a processor to a first RFID chip via conductive terminals between first and second boards and wherein said first data is communicated from said first RFID chip to a first RFID communication channel via said first RFID antenna.
Group V, claims 79-80, drawn to a method comprising communicating second data from a device to a reader via a second RFID communication channel, receiving first and second data via said reader and avoiding collisions between said first and second data within said reader.

The inventions listed as Groups I, II, III, IV and IV do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the special technical feature of the Group I invention: a method and system comprising accessing a network using a mobile device, selecting an object for purchase from said network, communicating payment information/target account information to a second device as claimed therein is not present in the invention of Groups II, III, IV or V. The special technical feature of the Group II invention: a method and system comprising creating a mobile wallet of virtual cards within a memory of a mobile device from communicated information, and selecting one of said virtual cards as claimed therein is not present in the invention of Groups I, III, IV or V. The special technical feature of the Group III invention: a method and system comprising executing an application on a processor of a mobile device to perform a function, confirming that communicated information matches at least a portion of predetermined information, and executing said function from said mobile device based on said confirmation as claimed therein is not present in the invention of Groups I, II, IV or V. The special technical feature of the Group IV invention: a card comprising a second board including a processor, wherein first data is transferred from a processor to a first RFID chip via conductive terminals between first and second boards as claimed therein is not present in the invention of Groups I, II, III or V. The special technical feature of the Group V invention: a method comprising communicating second data from a device to a reader via a second RFID communication channel, receiving first and second data via said reader and avoiding collisions between said first and second data within said reader as claimed therein is not present in the invention of Groups I, II, III or IV.

Groups I, II, III, IV and V lack unity of invention because even though the inventions of these groups require the technical feature of a method, system and card comprising establishing a contactless communication channel between a physical card and a mobile device through a first board including a first RFID chip and a first RFID antenna; communicating payment/source account information from a payment card to a mobile device using a contactless communication channel wherein first data is communicated from said first RFID chip to a first RFID communication channel visa said first RFID antenna; completing a purchase transaction/coordinating a money transfer, this technical feature is not a special technical feature as it does not make a contribution over the prior art in view of US 2010/0153269 A1 (MCCABE) 17 June 2010 (17.06.2010), abstract. Fig. 1-2, paragraphs 13, 15, 30-31, 36-40, 47.

Since none of the special technical features of the Group I, II, III, IV or V inventions are found in more than one of the inventions, unity of invention is lacking.

IPR2025-01150
Apple EX1072 Page 476

Electronic Patent Application Fee Transmittal					
Application Number:	16854829				
Filing Date:	21-Apr-2020				
Title of Invention:	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM				
First Named Inventor/Applicant Name:	David WYATT				
Filer:	Anthony C. Murabito/Mina Oliveri				
Attorney Docket Number:	WYAT-0002.USC1C1C1C				
Filed as Small Entity					
Filing Fees for Utility under 35 USC 111(a)					
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:					
Extension-of-Time:					

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
RCE- 1ST REQUEST	2801	1	680	680
		Total in USD ($)		**680**

Electronic Acknowledgement Receipt	
EFS ID:	45235544
Application Number:	16854829
International Application Number:	
Confirmation Number:	3480
Title of Invention:	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM
First Named Inventor/Applicant Name:	David WYATT
Customer Number:	136197
Filer:	Anthony C. Murabito/Mina Oliveri
Filer Authorized By:	Anthony C. Murabito
Attorney Docket Number:	WYAT-0002.USC1C1C1C
Receipt Date:	15-MAR-2022
Filing Date:	21-APR-2020
Time Stamp:	18:18:33
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	EFT
Payment was successfully received in RAM	$680
RAM confirmation Number	E20223EI19050344
Deposit Account	504160
Authorized User	Mina Oliveri
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.17 (Patent application and reexamination processing fees) 37 CFR 1.19 (Document supply fees)	

37 CFR 1.20 (Post Issuance fees)

37 CFR 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	Request for Continued Examination (RCE)	WYAT-0002USC1C1C1C_RCE_TRAN.pdf	654577 0f22345eeb29d96c4bd0c5923095467467d91466	no	3
Warnings:					
This is not a USPTO supplied RCE SB30 form.					
Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	WYAT-0002USC1C1C1C_IDS_03-15-2022.pdf	612509 f46d9c8188dc20ca72b1b625bebdc66aa73057e4	no	5
Warnings:					
Information:					
3	Foreign Reference	WO2012154915A1.pdf	2516187 c1c7bbd68df08bfa9b406ffb565ca8064c32717d	no	292
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	38111 5e62ec436ec4e507e3ab6077668822f7d02804b8	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	3821384		

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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Wyatt

Serial:	16/854,829	Group Art Unit:	2887
Filed:	4/21/2020	Examiner:	Lee, Seung H.
For:	Multi-Function Electronic Payment Card and Device System		

Honorable Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

SUPPLEMENTAL AMENDMENT

Dear Sir:

Before examination on the merits, please enter the following amendments for filing in the above captioned patent application.

Listing of claims begins on page 2 of this paper. This listing of claims will replace all prior versions and listings of claims in the application.

Remarks/Arguments begin on page 19 of this paper.

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LISTING OF CLAIMS

1. (Currently Amended) A payment system comprising:

a payment card device free of any fixed payment numbers visible thereon and wherein said payment card device is operable for use in payment card reader equipment; and

a computing device comprising:

a processor;

a memory;

a wireless interface;

a touch-screen user interface operable to provide a visual user-interface for user payment interactions; and

a user-input device coupled to the processor, and

wherein the processor is operable to store a transaction sequence count, a device account number and secrets limited to the computing device, and

wherein the computing device is operable to receive, store and transmit a card payment ~~card~~ information not visible on the payment card device, and

wherein the processor is operable to generate at least a portion of a limited-use card payment information for use by an authenticated card user, and

wherein the computing device is operable to convey said limited-use card payment information via an interface ~~disposed~~ of the computing device, and

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wherein a card issuer authority is operable to reject as invalid a transaction attempt outside of its limitations of use,

wherein a card issuer authority is operable to validate a card payment information as authentic when received from at least one of: an authenticated users payment card; and an authenticated users computing device, and

wherein the card issuer authority is operable to permit the authentic transactions to complete.

2. (Original) The system of Claim 1, wherein the touch-screen user interface is operable to control an access for payment transactions by the card device, and is operable to enable as authentic payment transactions by the card device.

3. (Original) The system of Claim 1, wherein the touch-screen user interface is operable to control an access of the card device for payment transactions at an NFC Card Reader facility, and is operable to enable and disable NFC payment transactions by the card device.

4. (Original) The system of Claim 3, wherein the touch-screen user-interface is configurable for a locking and unlocking of payment transactions, and

wherein a card issuer authority is further operable for denying a payment transaction from at least one of:

a locked card device; and

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a locked card-users computing device, and

wherein a card issuer authority is further operable to permit as authorized, a card payment transaction from an unlocked device.

5. (Original) The system of Claim 1, wherein the payment card device is absent a payment number information necessary for completing an online transaction, and

wherein the information presented on an interface of said card device, are limited to an in-store merchant card reader facility use only.

6. (Original) A system of Claim 1, wherein:

the card issuer authority is operable to receive said transacted payment information, and

wherein a card issuer authority is operable to compute a limited-use payment information from a transaction information, a merchant, a facility information, a sequence counter, a payment card account information, secrets and an information limited to said card device and to said computing device, and

wherein a card issuer authority is operable to compare said computed payment information to said device transacted information, and

wherein a card issuer authority is operable to reject as invalid a device transaction used outside of a valid range of device limitations, and

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wherein a card issuer authority is operable to authenticate as valid, a device transaction use within valid range of device limitations.

7. (Original) The system of Claim 1, wherein the computing device is further operable to transceive the card payment information via the wireless interface for completing an online transaction.

8. (Original) The system of Claim 1, wherein the computing device is further operable to transceive the limited-use card payment information via an NFC interface of the computing device in an in-store NFC reader facility transaction.

9. (Original) The system of Claim 1, wherein the computing device is further operable to transceive the limited-use payment information wirelessly with another device via a wireless interface of the computing device, in a device-to-device transaction.

10. (Original) The system of Claim 1, wherein the computing device is further operable to transmit a payment information visually, in alphanumeric, graphical and iconography via the touch screen user interface.

11. (Original) The system of Claim 1, further comprising a touch-screen user interface control for a user approving and denying a transaction, and

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wherein a card issuer authority is further operable to deny as authentic, a card payment transaction from a user-denied transaction, and to approve as authentic a card payment transaction from a user-approved transaction.

12. (Original) The system of Claim 1, wherein the computing device is further operable to present at least one challenge, of a set of security challenges comprising:

a card user personal information question,

a card issuer authority security question,

a user touch-screen entry,

a user touch-screen swipe,

a user gesture of a device,

a user passcode entry,

a biometric sensing of a user touch,

a biometric sensing of a recognized user proximity, and

a biometric sensing of a recognized user, and

wherein the computing device is operable to reject and accept a user authorization to use the device based on the security challenge response, and

wherein the computing device is operable to decline performing a payment transaction in the possession of an unauthorized user, and

wherein the computing device is operable to perform a payment transaction while in the possession of a user correctly passing the at least one challenge.

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13. (Original) The user computing device of Claim 12, wherein a payment issuing authority is operable to decline transactions performed by the computing device when a user fails the at least one security challenge.

14. (Original) The system of Claim 1, wherein a payment issuing authority is operable to decline transactions performed by the payment card device when a user fails at least one security challenge presented to a user by the computing device.

15. (Currently Amended) A payment system comprising:

a payment card device that is free of any fixed payment numbers disposed thereon and wherein said payment card device is operable for use in a merchant card-reader equipment; and

a card-users personal computing device operable for completing a payment transaction and comprising:

a processor;

a touch-screen display interface;

a user-interface;

a wireless interface; and a memory for storing a payment ~~card~~ information accessible to the processor,

wherein the computing device is configured to dynamically generate limited-use payment information, and

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wherein the computing device is configured to convey the limited-use payment information on a computing device interface upon the authorization of a valid user, and

wherein a merchant is operable to receive a payment ~~card~~ information provided by a personal computing device, and

wherein the limited-use payment information provided by at least one or both of: the payment card device, and the computing device, is validated by a card issuing authority when used in merchant in-store facility transactions, and

wherein a card issuing authority is operable to reject as invalid, a payment information used outside of its valid limitations of use, and

wherein a card issuing authority is operable to validate generated limited-use ~~card~~ payment information provided by the computing device in an authorized transaction completed by the computing device.

16. (Original) The system of Claim 15, wherein the touch-screen user interface is operable for displaying the limited-use payment information, and

wherein a merchant is operable to accept the displayed payment card information in a transaction at a merchant facility.

17. (Original) The system of Claim 15, wherein the touch-screen display interface is operable to display a merchant facility transaction, and

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wherein the touch-screen display interface is operable to accept a user approval and denial of a payment transaction, and

wherein a card issuer authority is further operable to deny a card payment transaction from a user-denied merchant facility transaction, and to approve as authentic a card payment transaction from a user-approved facility transaction.

18. (Original) The system of Claim 15, wherein a plurality of issuer-provided payment information is wirelessly downloaded into the personal computing device, and

wherein the user-interface is operable for a user selection, of at least one of issuer-provided payment methods via the touch-screen display interface, and

wherein the payment card device is operable for a transaction with a user-selected payment method.

19. (Original) The card device of Claim 15, wherein the payment card device comprises fixed payment information disposed thereon, and

wherein the fixed payment information comprises only:

a card-holder name;

a payment issuing logo;

a card payment network logo, and

a card reader interface icon, and

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wherein the payment card device is free of any account numbers, expiration dates, card security codes, or other fixed payment numbers, disposed thereon.

20. (Withdrawn) An apparatus comprising:

a thin card-shaped device;

a memory configured to store identification data, secrets, a sequence counter, a real-time clock; and

a processor coupled to the memory,

wherein the processor is configured to generate a card payment information based on the identification data, the secrets, the clock time, and the sequence count, and

wherein the generated card information is configured to be used in place of card issuer information; and

an interface configured to communicate the generated card information, wherein the processor is configured to transmit the generated card information via the interface; and

a display configured to display at least a portion of the card payment information; and

wherein the processor is further configured to dynamically generate from the stored information, a card security code number associated with the card issuer information, and present said dynamic number on said display.

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21. (Withdrawn)The apparatus of Claim 20, wherein a card issuing authority is operable to receive a payment transaction information, and

wherein the card issuer authority is operable to compute an expected information from at least one of a set of information comprising:

an issuer clock time,

an issuer transaction sequence count,

an issuer card user information,

an issuer card account information,

a transaction amount,

a user credit limit,

a user account balance,

a merchant facility information, and

a transaction information, and

wherein the card issuer authority is operable to approve as authentic, a payment transaction substantially matching a compared expected information, and

wherein the card issuer authority is operable to deny as not authentic, a payment transaction not substantially matching a compared expected information, and

wherein the transaction completes when the card issuer authority approves a transaction.

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22. (Withdrawn) The apparatus of Claim 20, wherein the interface comprises a wireless interface configured to wirelessly communicate the card information; and

wherein the processor is configured to transmitting the card information via the wireless interface; and

wherein the processor is further configured to transmit said card information and said dynamically generated code, over said interface, to a wirelessly connected personal computing device.

23. (Withdrawn) The apparatus of Claim 20, wherein the interface comprises an NFC interface configured to communicate the card information to an NFC reader; and

wherein the processor is configured to transmitting the card information via the NFC interface.

24. (Withdrawn) The apparatus of Claim 20, wherein the interface comprises an chip-reader interface configured to communicate the card information to a chip card reader; and

wherein the processor is configured to transmit the card information via the chip-reader interface.

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25. (Withdrawn) The apparatus of Claim 20, wherein the interface comprises a display interface configured to communicate the card information via alphanumerical, graphical, and iconographical imagery on the display, and

wherein the processor is configured to dynamically update at least a portion of the payment information via the display interface.

26. (Withdrawn) The apparatus of Claim 20, wherein the processor is further configured to update the sequence count based on at least one selected from a set of events comprising:

a user input,

a card activation,

a card insertion in card-reader,

a transaction initiation,

a transaction completion,

a card-reader transaction acknowledgement,

a card generation of information,

a number of uses,

a remaining number of uses,

a number of limited uses, and

an information transaction over said interface.

27. (Withdrawn) An apparatus comprising:

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a thin card-shaped device,

a display,

a memory configured to store a card issuer identification data, secrets, a sequence counter, and

a processor coupled to the memory,

wherein the processor is configured to generate a card payment information based on the identification data, the secrets, and the sequence count, and

wherein the generated card information is configured to be used in place of card issuer information; and

an interface configured to communicate the generated card information,

wherein the processor is configured to transmitting the generated card information via the interface; and

wherein the processor is configured to display at least a portion of the generated card information; and

wherein the processor is further configured to dynamically generate from the stored information, a card security code number associated with the card issuer information, and present said dynamically generate number on said display.

28. (Withdrawn) The apparatus of Claim 27, wherein a card issuing authority is operable to receive a payment transaction information, and

wherein the card issuer authority is operable to compute an expected information from at least one of a set of information comprising:

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an issuer clock time,

an issuer transaction sequence count,

an issuer card user information,

an issuer card account information,

a transaction amount,

a user credit limit,

a user account balance,

a merchant facility information, and

a transaction information, and

wherein the card issuer authority is operable to approve as authentic, a payment transaction substantially matching a compared expected information, and

wherein the card issuer authority is operable to deny as not authentic, a payment transaction not substantially matching a compared expected information, and

wherein the transaction can complete when the card issuer authority approves a transaction.

29. (Withdrawn) The apparatus of Claim 27, wherein the processor is further configured to update the sequence count based on at least one selected from a set of events comprising:

a user input,

a card activation,

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a card insertion in card-reader,

a transaction initiation,

a transaction completion,

a card-reader transaction acknowledgement,

a card generation of information,

a number of uses,

a remaining number of uses,

a number of limited uses, and

an information transaction over said interface.

30. (New) A payment system comprising:

a payment card device, free of any depictions of fixed payment numbers thereon, and operable for use in payment card reader equipment; and

a computing device comprising:

a processor;

a memory;

a wireless interface;

a touch-screen user interface operable to provide a visual user-interface for user payment interactions; and

a user-input device coupled to the processor; and

wherein the memory is operable to store a transaction sequence count, a static device account number and secrets limited to the computing device;

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wherein the computing device is operable to receive, store, display and transmit issuer-provided payment information, associated with, but not depicted on, the payment card device;

wherein the processor is operable to dynamically generate at least a portion of a limited-use payment information for use by an authenticated card user, and to combine said at least a portion of the limited-use payment information with at least said static device account number to create combined payment information;

wherein the computing device is operable to convey said combined payment information via an interface of the computing device; and

wherein the computing device is operable to receive information, from an issuer, in response to the conveyed combined payment information, indicating that a payment transaction is valid.

31. (New) The system of Claim 30 wherein the computing device is operable to wirelessly receive the static device account number.

32. (New) The system of Claim 30, wherein the processor is operable to dynamically generate the at least a portion of a limited-use payment information based on a transaction sequence counter count, and further wherein the generated limited-use payment information is valid for a single use.

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33. (New) The system of Claim 32 wherein the processor is operable to dynamically generate the at least a portion of a limited-use payment information further based on payment processing authority secrets.

34. (New) The system of Claim 32 wherein the processor is operable to dynamically generate the at least a portion of a limited-use payment information further based on the static device account number.

35. (New) The system of Claim 33 wherein the processor is operable to dynamically generate the at least a portion of a limited-use payment information further based on the static device account number.

36. (New) The system of Claim 34 wherein the computing device is operable to wirelessly receive the static device account number.

37. (New) The system of Claim 35 wherein the computing device is operable to wirelessly receive the static device account number.

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REMARKS/ARGUMENTS

Claims 1-19 and 30-37 are pending in the present application. Claims 20-29 are withdrawn due to prior election. Applicants respectfully request reconsideration of the present application in view of the claim amendments presented herein.

Claims 1 and 15 are amended herein to correct informalities. Claims 30-37 are added herein and Applicants assert these newly added claims fall within the elected Group I. Applicants assert that no new matter is introduced as a result of the claim amendments filed herewith.

The Examiner is invited to contact Applicants' undersigned representative if the Examiner believes such action would expedite resolution of the present Application.

Please charge any additional fees or apply any credits to our PTO deposit account number: 50-4160.

Respectfully submitted,

MURABITO, HAO & BARNES LLP

Date: 03/24/2022

/Anthony C. Murabito/
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Electronic Acknowledgement Receipt	
EFS ID:	45314865
Application Number:	16854829
International Application Number:	
Confirmation Number:	3480
Title of Invention:	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM
First Named Inventor/Applicant Name:	David WYATT
Customer Number:	136197
Filer:	Anthony C. Murabito/Missy Isaac
Filer Authorized By:	Anthony C. Murabito
Attorney Docket Number:	WYAT-0002.USC1C1C1C
Receipt Date:	24-MAR-2022
Filing Date:	21-APR-2020
Time Stamp:	19:13:37
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		WYAT-0002USC1C1C1C_Supplemental_Amend_03-24-2022_.pdf	7890675 6c2e72fba613b3d912aabe6514fb966301fd836f	yes	20

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Supplemental Response or Supplemental Amendment	1	1
	Claims	2	18
	Applicant Arguments/Remarks Made in an Amendment	19	20
Warnings:			
Information:			
	Total Files Size (in bytes):	7890675	

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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.
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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.

Document Description: Application Data Sheet to update/correct info
Doc Code: ADS.CORR

CORRECTED ADS FORM

Application Number	16854829
Title of Invention	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM

Inventor Information

****If no data is shown, no data has been corrected****

	Data of Record	Updated Data
Order Number		
Name		
Residence Information		
Residency		
City		
State		
Country of Residence		
Mailing Address of Inventor		
Address 1		
Address 2		
City,State/Province, Postal Code		
Country		

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Document Description: Application Data Sheet to update/correct info
Doc Code: ADS.CORR

Application Information

	Data of Record	Updated Data
Title of Invention	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM	
Attorney Docket Number	WYAT-0002.USC1C1C1C	
Entity Type	Small	

Domestic Benefit/National Stage Information

****If no data is shown, no data has been corrected****

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121,365(c), or 386(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(a).

		Data of Record	Updated Data
	Prior Application Status		
	Application Number		
	Continuity Type		
	Prior Application Number		
	Filing Date (YYYY-MM-DD)		
	Patent Number		
	Issue Date (YYYY-MM-DD)		

Foreign Priority Information

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Document Description: Application Data Sheet to update/correct info
Doc Code: ADS.CORR

****If no data is shown, no data has been corrected****

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. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(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).

		Data of Record	Updated Data
	Application Number		
	Country		
	Filing Date		
	Access Code		

Applicant Information

****If no data is shown, no data has been corrected****
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.

	Data of Record	Updated Data
Applicant Type	ASG	
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		
Applicant is an Organization	Yes	
Name		
Organization Name	~~Virtual Electric Inc.~~	CARDWARE, INC
Address 1		2470 CAMROSE AVE.
Address 2		

Corrected ADS 1.0

City,State/Province,Postal Code	~~San Jose CA~~	SAN JOSE CA 95130
Country	US	
Phone Number		
Fax Number		
Email Address		

Assignee Information including Non-Applicant Assignee Information

****If no data is shown, no data has been corrected****
Providing this information in the application data sheet does not substitute for compliance with any requirement of part 3 of Title 37 of the CFR to have an assignment recorded in the Office

	Data of Record	Updated Data
Order		
Applicant is an Organization		
Name		
Organization Name		
Mailing Address		
Address 1		
Address 2		
City,State/Province,Postal Code		
Country		
Phone Number		
Fax Number		
Email Address		

Corrected ADS 1.0

Signature

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b).

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Jose S. Garcia/	Registration Number	43628
First Name	Jose	Last Name	Garcia

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Doc Code: R46C.REQ
Document Description: Request under 37 CFR 1.46(c) to correct, update or change the applicant.

PTO/AIA/41 (04-15)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE
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REQUEST TO CORRECT OR UPDATE THE NAME OF THE APPLICANT UNDER 37 CFR 1.46(c)(1), OR CHANGE THE APPLICANT UNDER 37 CFR 1.46(c)(2)
(FOR USE ONLY IN APPLICATIONS FILED ON OR AFTER SEPTEMBER 16, 2012)

Application Number	16/854,829
Filing Date	04-21-2020
First Named Inventor	David WYATT
Art Unit	2887
Examiner Name	LEE, SEUNG H.
Practitioner Docket Number	WYAT-0002USC1C1C1C1

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

Applicant hereby **requests that the name of the applicant be corrected or updated under 37 CFR 1.46(c)(1), or that the applicant be changed under 37 CFR 1.46(c)(2),** in the above-identified application. **Requests under 37 CFR 1.46(c)(1) or (c)(2) cannot be submitted after payment of the issue fee or if the application has been patented.**

Please check the applicable box(es) below.

☐ 1. This request is to **correct or update the name of the applicant** (**under 37 CFR 1.46(c)(1)**) and includes:

☐ An application data sheet (ADS) in accordance with 37 CFR 1.76(c) with the corrected or updated information shown with markings (*e.g.*, underlining for insertions, strikethrough for deletions). A Corrected Web-based ADS may be used.

Note: Requests under 37 CFR 1.46(c)(1) may be filed to correct typographical errors in the name of the § 1.46 applicant, or for updating the name of the § 1.46 applicant (*i.e.*, where there is no change in the applicant itself but just in the applicant's name). See the Manual of Patent Examining Procedure (MPEP) section 605.01.

■ 2. This request is to **change the applicant** (**under 37 CFR 1.46(c)(2)**) and includes:

■ An application data sheet (ADS) in accordance with 37 CFR 1.76(c) that identifies the changes with proper markings (underlining for insertions and strikethrough for deletions). A Corrected Web-based ADS may be used.

■ A Statement Under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent). See MPEP 325.

I am the

☐ applicant* ☐ attorney or agent of record Registration number _____ ■ attorney or agent acting under 37 CFR 1.34 Registration number 43628

Signature /Jose S. Garcia/
Typed or printed name Jose S. Garcia
Date 4/7/2022

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. *Juristic entities must be represented by a patent practitioner (See 37 CFR 1.31, applicable to any paper filed on or after September 16, 2012 that is presented on behalf of a juristic entity, regardless of application filing date). Submit multiple forms if more than one signature is required, see below**.

☐ ** Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.36. 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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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.

PTO/AIA/96 (08-12)
Approved for use through 11/30/2020. OMB 0651-0031
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.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: CARDWARE, INC

Application No./Patent No.: 16/854,829 Filed/Issue Date: 04-21-2020

Titled: MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM

CARDWARE, INC, a corporation

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☐ 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 at Reel _____, Frame _____, or for which a copy thereof is attached.

B. ☑ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: DAVID WYATT To: CARDWARE, INC

   The document was recorded in the United States Patent and Trademark Office at

   Reel 058889, Frame 0693, or for which a copy thereof is attached.

2. From: _____ To: _____

   The document was recorded in the United States Patent and Trademark Office at

   Reel _____, Frame _____, or for which a copy thereof is attached.

This collection of information is required by 37 CFR 3.73(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**.

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

PTO/AIA/96 (08-12)
Approved for use through 11/30/2020. OMB 0651-0031
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.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☑ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Jose S. Garcia/	4/7/2022
Signature	Date
Jose S. Garcia	attorney for CARDWARE, INC
Printed or Typed Name	Title or Registration 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.
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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.
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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.

Electronic Acknowledgement Receipt	
EFS ID:	45417945
Application Number:	16854829
International Application Number:	
Confirmation Number:	3480
Title of Invention:	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM
First Named Inventor/Applicant Name:	David WYATT
Customer Number:	136197
Filer:	Jose S. Garcia
Filer Authorized By:	
Attorney Docket Number:	WYAT-0002.USC1C1C1C
Receipt Date:	07-APR-2022
Filing Date:	21-APR-2020
Time Stamp:	12:17:24
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	Application Data Sheet to update/ correct info	CorrectedADS.pdf	99985 f29ea57a14ee60f995064ad4f63064cf8960d7e4	no	5
Warnings:					

Information:					
2	Request for Corrected Filing Receipt	WYAT-0002USC1C1C1C1_aia0041_Request_to_Change_Applicant.pdf	204982 6541d43bb13bcda563490bfab24eaa63edda05e8	no	2
Warnings:					
Information:					
3	Assignee showing of ownership per 37 CFR 3.73	WYAT-0002USC1C1C1C1_aia0096_Statement_under_3_73c.pdf	191225 decccb2d83636a9615181b5a75905cd28268c58e9	no	3
Warnings:					
Information:					
		Total Files Size (in bytes):	496192		

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.

<u>New Applications Under 35 U.S.C. 111</u>
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.
<u>National Stage of an International Application under 35 U.S.C. 371</u>
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.
<u>New International Application Filed with the USPTO as a Receiving Office</u>
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.

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

136197 7590 04/08/2022

David Wyatt c/o Murabito, Hao & Barnes
111 North Market Street
Suite 700
San Jose, CA 95113

EXAMINER	
LEE, SEUNG H	
ART UNIT	PAPER NUMBER
2887	

DATE MAILED: 04/08/2022

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/854,829	04/21/2020	David WYATT	WYAT-0002.USC1C1C1C	3480

TITLE OF INVENTION: MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$600	$0.00	$0.00	$600	07/08/2022

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. 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: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PTOL-85 (Rev. 02/11)

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PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (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)

136197 7590 04/08/2022

David Wyatt c/o Murabito, Hao & Barnes
111 North Market Street
Suite 700
San Jose, CA 95113

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 transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/854,829	04/21/2020	David WYATT	WYAT-0002.USC1C1C1C	3480

TITLE OF INVENTION: MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$600	$0.00	$0.00	$600	07/08/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS
LEE, SEUNG H	2887	705-072000

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/AIA/122 or PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or 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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). 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. Fees submitted: ❑Issue Fee ❑Publication Fee (if required) ❑Advance Order - # of Copies _____

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

❑ Electronic Payment via EFS-Web ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

❑ Applicant asserting small entity status. See 37 CFR 1.27

❑ Applicant changing to regular undiscounted fee status.

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.
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.
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. _____

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Apple EX1072 Page 517

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.
16/854,829	04/21/2020	David WYATT	WYAT-0002.USC1C1C1C	3480

136197 7590 04/08/2022

David Wyatt c/o Murabito, Hao & Barnes
111 North Market Street
Suite 700
San Jose, CA 95113

EXAMINER	
LEE, SEUNG H	

ART UNIT	PAPER NUMBER
2887	

DATE MAILED: 04/08/2022

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.

IPR2025-01150
Apple EX1072 Page 518

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 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, 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

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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.
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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.
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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. 16/854,829	Applicant(s) WYATT, David	
	Examiner SEUNG H LEE	Art Unit 2887	AIA (FITF) Status No

-- 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 3/24/2022.
   ☐ 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 1-19 and 30-37 . 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 3/15/2022.
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 _____.

/SEUNG H LEE/
Primary Examiner, Art Unit 2887

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Apple EX1072 Page 520

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 15, 2022 has been entered.

Election/Restrictions

3. This application is in condition for allowance except for the presence of claims 20-29 directed to an invention non-elected without traverse. Accordingly, claims 20-29 been cancelled.

Allowable Subject Matter

4. Claims 1-19, and 30-37 are allowed.

5. The following is an examiner's statement of reasons for allowance:

None of prior art teaches a payment system comprising a payment card device free of any fixed payment numbers visible thereon and operable for use in payment card reader equipment, the processor is operable to generate at least a portion of a limited-use card payment information for use by an authenticated card user, a card issuer

authority is operable to reject as invalid a transaction attempt outside of its limitations of use, wherein a card issuer authority is operable to validate a card payment information as authentic when received from at least one of an authenticated users payment card, and an authenticated users computing device, and wherein the card issuer authority is operable to permit the authentic transactions to complete, and wherein the computing device is to receive, store, display and transmit issuer-provided payment information, associated with, but not depicted on, the payment card device; wherein the processor is operable to dynamically generate at least a portion of a limited-use payment information for use by an authenticated card user, and to combine said at least a portion of the limited-use payment information with at least said static device account number to create combined payment information; wherein the computing device is operable to convey said combined payment; information via an interface of the computing device; and wherein the computing device is operable to receive information, from an issuer, in response to the conveyed combined payment information, indicating that a payment transaction is valid along with other limitations recited in the claims.

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

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SEUNG H LEE whose telephone number is (571)272-2401. The examiner can normally be reached 7-4:00PM.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Paik can be reached on 571-272-2404. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SEUNG H LEE/
Primary Examiner, Art Unit 2887

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/854,829	WYATT, David
	Examiner	Art Unit
	SEUNG H LEE	2887

CPC - Searched*		
Symbol	Date	Examiner
G06Q20/341 OR G06K19/06206 OR G06K19/0716 OR G06K19/07749 OR G06Q20/06 OR G06Q20/065 OR G06Q20/223 OR G06Q20/24 OR G06Q20/346 OR G06Q20/347 OR G06Q20/352 OR G06Q20/3827 OR G06Q20/385 OR G06Q20/4012 OR G06Q20/409 OR G07F7/0873 OR G07F19/00	03/22/2022	sl

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
PE2E	03/22/2022	sl
NPL	12/04/2021	sl
14/217261, 14/680946, 15/250698, 16/025829 (parent cases)	03/22/2022	sl

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
	same as above	03/22/2022	sl

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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/854,829	WYATT, David
	Examiner	**Art Unit**
	SEUNG H LEE	2887

CPC							
Symbol						**Type**	**Version**
G06Q	/	20	/	341		F	2013-01-01
G07F	/	19	/	00		I	2013-01-01
G06Q	/	20	/	06		I	2013-01-01
G06Q	/	20	/	223		I	2013-01-01
G06Q	/	20	/	347		I	2013-01-01
G06Q	/	20	/	385		I	2013-01-01
G07F	/	7	/	0873		I	2013-01-01
G06K	/	19	/	06206		I	2013-01-01
G06K	/	19	/	0716		I	2013-01-01
G06K	/	19	/	07749		I	2013-01-01
G06Q	/	20	/	24		I	2013-01-01
G06Q	/	20	/	352		I	2013-01-01
G06Q	/	20	/	409		I	2013-01-01
G06Q	/	20	/	065		I	2013-01-01
G06Q	/	20	/	346		I	2013-01-01
G06Q	/	20	/	3827		I	2013-01-01
G06Q	/	20	/	4012		I	2013-01-01

CPC Combination Sets								
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	27	
/SEUNG H LEE/ Primary Examiner, Art Unit 2887	22 March 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2C

U.S. Patent and Trademark Office — Part of Paper No.: 20220321

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Apple EX1072 Page 525

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/854,829	WYATT, David
	Examiner	**Art Unit**
	SEUNG H LEE	2887

INTERNATIONAL CLASSIFICATION				
CLAIMED				
G06Q20/34	/	20	/	34

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	27	
/SEUNG H LEE/ Primary Examiner, Art Unit 2887	22 March 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2C

U.S. Patent and Trademark Office — Part of Paper No.: 20220321

IPR2025-01150
Apple EX1072 Page 526

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/854,829	WYATT, David
	Examiner	**Art Unit**
	SEUNG H LEE	2887

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	10	10	19	19										
2	2	11	11	20	30										
3	3	12	12	21	31										
4	4	13	13	22	32										
5	5	14	14	23	33										
6	6	15	15	26	34										
7	7	16	16	24	35										
8	8	17	17	27	36										
9	9	18	18	25	37										

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	27	
/SEUNG H LEE/ Primary Examiner, Art Unit 2887	22 March 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2C

U.S. Patent and Trademark Office — Part of Paper No.: 20220321

IPR2025-01150
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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/854,829	WYATT, David
	Examiner	Art Unit
	SEUNG H LEE	2887

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	04/26/2021	12/04/2021	03/22/2022						
1	1	÷	=	=						
2	2	÷	=	=						
3	3	÷	=	=						
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22	32			=						
23	33			=						
26	34			=						
24	35			=						
27	36			=						
25	37			=						

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Web Search History

date, time	web site	search string
3/22/2022 5:11:59 PM	Google	card touch screen generating limited num
3/22/2022 5:12:28 PM	Google	card touch screen generating limited number authentica
3/22/2022 5:12:49 PM	Google	card touch screen generating limited number in
3/22/2022 5:13:09 PM	Google	card touch screen generating limited number valid
3/22/2022 5:14:55 PM	Google	payment card generate num
3/22/2022 5:15:26 PM	Google	payment card number gener
3/22/2022 5:16:14 PM	Google Patents	Keyword Group 1 [payment card number screen]
3/22/2022 5:18:39 PM	Google Patents	Keyword Group 1 [payment card number screen authenticate]
3/22/2022 5:18:58 PM	Google Patents	Keyword Group 1 [payment card number screen authenticate valid]
3/22/2022 5:19:22 PM	Google Patents	Keyword Group 1 [payment card number screen authenticate valid] Assignee(s) [Visa International Service Association] After Priority Date: priority:20000101
3/22/2022 5:19:23 PM	Google Patents	Keyword Group 1 [payment card number screen authenticate valid] After Priority Date: priority:20000101
3/22/2022 5:19:25 PM	Google Patents	Keyword Group 1 [payment card number screen authenticate valid] Assignee(s) [Mastercard International Incorporated] After Priority Date: priority:20000101

IPR2025-01150
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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
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 contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	16854829
Filing Date	2020-04-21
First Named Inventor	David WYATT
Art Unit	2887
Examiner Name	LEE, SEUNG H
Attorney Docket Number	WYAT-0002.USC1C1C1C

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	9818104		2017-11-14	KATZER; ET AL.	
	2	9105020		2015-08-11	RONCA; ET AL	
	3	8571937		2013-10-29	ROSE; ET AL	
	4	11100431		2021-08-24	MULLEN; ET AL	
	5	10037524		2018-07-31	ROYYURU; ET AL	
	6	8690055		2014-04-08	ANDERSON; ET AL	
	7	7100821		2006-09-05	RASTI	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.L./

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16854829
	Filing Date	2020-04-21
	First Named Inventor	David WYATT
	Art Unit	2887
	Examiner Name	LEE, SEUNG H
	Attorney Docket Number	WYAT-0002.USC1C1C1C

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20020153424		2002-10-24	LI	
	2	20110276416		2011-11-10	MULLEN, et al.	
	3	20150317632		2015-11-05	PARK, et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2012154915	WO	A1	2012-11-15	DYNAMICS INC		

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature	/SEUNG H LEE/	Date Considered	03/22/2022

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

EFS Web 2.1.17

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.L./

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16854829
	Filing Date	2020-04-21
	First Named Inventor	David WYATT
	Art Unit	2887
	Examiner Name	LEE, SEUNG H
	Attorney Docket Number	WYAT-0002.USC1C1C1C

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.L./

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16854829
	Filing Date	2020-04-21
	First Named Inventor	David WYATT
	Art Unit	2887
	Examiner Name	LEE, SEUNG H
	Attorney Docket Number	WYAT-0002.USC1C1C1C

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the 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 the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Anthony C. Murabito/	Date (YYYY-MM-DD)	2022-03-15
Name/Print	Anthony C. Murabito	Registration Number	35295

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.L./

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 record s.

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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.L./

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L141	14	("10037524"|"11100431"|"20020153424"|"20110276416"|"20150317632"|"7100821"|"8571937"|"8690055"|"9105020"|"9818104").PN.	(US-PGPUB; USPAT; EPO; JPO)	OR	ON	ON	2022/03/22 02:59 PM
L142	143	(payment credit smart ic) SAME card SAME generat$4 SAME portion SAME number SAME screen	(US-PGPUB; USPAT; EPO; JPO)	OR	OFF	OFF	2022/03/22 05:22 PM
L143	37333	(G06Q20/341 OR G06K19/06206 OR G06K19/0716 OR G06K19/07749 OR G06Q20/06 OR G06Q20/065 OR G06Q20/223 OR G06Q20/24 OR G06Q20/346 OR G06Q20/347 OR G06Q20/352 OR G06Q20/3827 OR G06Q20/385 OR G06Q20/4012 OR G06Q20/409 OR G07F7/0873 OR G07F19/00).cpc.	(US-PGPUB; USPAT; EPO; JPO)	OR	OFF	OFF	2022/03/22 05:22 PM
L144	16	142 AND 143	(US-PGPUB; USPAT; EPO; JPO)	OR	OFF	OFF	2022/03/22 05:22 PM
L145	5	142.clm.	(US-PGPUB; USPAT; EPO; JPO)	OR	OFF	OFF	2022/03/22 05:23 PM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N1	143	(payment credit smart ic) SAME card SAME generat$4 SAME portion SAME number SAME screen	(US-PGPUB; USPAT)	OR	OFF	OFF	2022/03/22 05:27 PM

PART B – FEE(S) TRANSMITTAL

Complete and send this form, together with the applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

By fax, send to: (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)

David Wyatt c/o Murabito, Hao & Barnes LLP
111 North Market Street
Suite 700
San Jose, CA 95113

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 transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

Mina Oliveri	(Typed or printed name)
/Mina Oliveri/	(Signature)
4-8-2022	(Date)

APPLICATION NO	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO	CONFIRMATION NO
16/854,829	04/21/2020	David Wyatt	WYAT-0002.USC1C1C1C	3480

TITLE OF INVENTION:

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$600	$0.00	$0.00	$600	07/08/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS

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 03-09 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, 1.

(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. 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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE	(B) RESIDENCE: (CITY and STATE or COUNTRY)
CARDWARE, INC.	SAN JOSE, CA

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☑ Corporation or other private group entity ☐ Government

4a. Fees Submitted: ☑ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment (*Please first reapply any previously paid fee shown above*):

☑ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 504160

5. Change of 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 as a notification of loss of entitlement to micro entity status.

☐ Applicant changing to regular undiscounted fee status. NOTE: Checking this box will be taken as 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 /Anthony C. Murabito/ Date 4-08-2022

Typed or printed name Anthony C. Murabito Registration No. 35,295

IPR2025-01150
Apple EX1072 Page 536

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 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, 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.

Electronic Patent Application Fee Transmittal

Application Number:	16854829
Filing Date:	21-Apr-2020
Title of Invention:	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM
First Named Inventor/Applicant Name:	David WYATT
Filer:	Anthony C. Murabito/Mina Oliveri
Attorney Docket Number:	WYAT-0002.USC1C1C1C

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

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	600	600

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**600**

Electronic Acknowledgement Receipt	
EFS ID:	45432140
Application Number:	16854829
International Application Number:	
Confirmation Number:	3480
Title of Invention:	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM
First Named Inventor/Applicant Name:	David WYATT
Customer Number:	136197
Filer:	Anthony C. Murabito/Mina Oliveri
Filer Authorized By:	Anthony C. Murabito
Attorney Docket Number:	WYAT-0002.USC1C1C1C
Receipt Date:	08-APR-2022
Filing Date:	21-APR-2020
Time Stamp:	15:13:03
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	EFT
Payment was successfully received in RAM	$600
RAM confirmation Number	E202248F14171350
Deposit Account	504160
Authorized User	Mina Oliveri
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.17 (Patent application and reexamination processing fees) 37 CFR 1.19 (Document supply fees)	

37 CFR 1.20 (Post Issuance fees)

37 CFR 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)	WYAT-0002_USC1C1C1C_Issue Fee_Tran.pdf	280133 45b1e4ffe45d443b6c5d6f0f42e84657e02e30ce	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	37904 22641093f9fdb520ede01a2b5a0e83c22a43e3d9	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	318037		

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.

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82A (07-13)
Approved for use through 03/31/2021. OMB 0651-0035
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 FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	16/854,829
Filing Date	04-21-2020
First Named Inventor	David WYATT
Title	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM
Art Unit	2887
Examiner Name	LEE, SEUNG H
Attorney Docket Number	WYAT-0002USC1C1C1C1

SIGNATURE of Applicant or Patent Practitioner

Signature	/Jose S. Garcia/	Date (Optional)	4-8-2022
Name	Jose S. Garcia	Registration Number	43628
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ *Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. 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 3 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.

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82B (07-13)
Approved for use through 03/31/2021. OMB 0651-0035
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

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☑ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 136197

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☑ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

CARDWARE, INC

☐ Inventor or Joint Inventor (title not required below)

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☑ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature	D.L. Wyatt	Date (Optional)	March 29th, 2022
Name	David Wyatt		
Title	CEO/CTO/President		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ Total of forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. 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 3 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.

Electronic Acknowledgement Receipt	
EFS ID:	45432333
Application Number:	16854829
International Application Number:	
Confirmation Number:	3480
Title of Invention:	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM
First Named Inventor/Applicant Name:	David WYATT
Customer Number:	136197
Filer:	Jose S. Garcia
Filer Authorized By:	
Attorney Docket Number:	WYAT-0002.USC1C1C1C
Receipt Date:	08-APR-2022
Filing Date:	21-APR-2020
Time Stamp:	15:24:18
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	Power of Attorney	WYAT-0002USC1C1C1C1_AIA_82_POA_to_MHB_Signed.pdf	349918 478a3181f7fdabb50dba8d5bd81498b84ab2632f	no	2

Warnings:

Information:	
Total Files Size (in bytes):	349918

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.

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	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
16/854,829	04/21/2020	2887	1600	WYAT-0002.USC1C1C1C	29	4

CONFIRMATION NO. 3480

CORRECTED FILING RECEIPT

136197
David Wyatt c/o Murabito, Hao & Barnes
111 North Market Street
Suite 700
San Jose, CA 95113

OC000000133052943

Date Mailed: 04/11/2022

Receipt is acknowledged of this non-provisional utility 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 FIRST INVENTOR, 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 corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction 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 provided that the request is grantable.

Inventor(s)

David WYATT, San Jose, CA;

Applicant(s)

CARDWARE, INC, SAN JOSE, CA;

Power of Attorney: The patent practitioners associated with Customer Number 136197

Domestic Priority data as claimed by applicant

This application is a CON of 16/025,829 07/02/2018 PAT 10628820
which is a CON of 15/250,698 08/29/2016 PAT 10013693
which is a CON of 14/680,946 04/07/2015 PAT 9430765
which is a CON of 14/217,261 03/17/2014 PAT 9022286
which claims benefit of 61/794,891 03/15/2013

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.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

IPR2025-01150
Apple EX1072 Page 546

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 04/28/2020

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/854,829**

Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM

Preliminary Class

705

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

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Apple EX1072 Page 547

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

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Title 37, Code of Federal Regulations, 5.11 & 5.15

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Apple EX1072 Page 549

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www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/854,829	04/21/2020	David WYATT	WYAT-0002USC1C1C1C1

CONFIRMATION NO. 3480

136197
David Wyatt c/o Murabito, Hao & Barnes
111 North Market Street
Suite 700
San Jose, CA 95113

POA ACCEPTANCE LETTER

OC000000133094993

Date Mailed: 04/12/2022

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 04/08/2022.

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.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/ltaba/

Doc Code: DIST.E.FILE Document Description: Electronic Terminal Disclaimer - Filed	PTO/SB/26 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT**
Application Number	16854829
Filing Date	21-Apr-2020
First Named Inventor	David WYATT
Attorney Docket Number	WYAT-0002USC1C1C1C1
Title of Invention	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM

☒ Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action

☒ This electronic Terminal Disclaimer is not being used for a Joint Research Agreement.

Owner	Percent Interest
CARDWARE, INC	100%

The owner(s) with percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of prior patent number(s)

9022286

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10013693

10339520

10628820

10810579

as the term of said prior patent is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the prior patent, "as the term of said prior patent is presently shortened by any terminal disclaimer," in the event that said prior patent later:
- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

◉ Terminal disclaimer fee under 37 CFR 1.20(d) is included with Electronic Terminal Disclaimer request.

○ I certify, in accordance with 37 CFR 1.4(d)(4), that the terminal disclaimer fee under 37 CFR 1.20(d) required for this terminal disclaimer has already been paid in the above-identified application.

Applicant claims the following fee status:

◉ Small Entity

○ Micro Entity

○ Regular Undiscounted

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES

I certify, in accordance with 37 CFR 1.4(d)(4) that I am:

◉ An attorney or agent registered to practice before the Patent and Trademark Office who is of record in this application

Registration Number 43628

○ A sole inventor

○ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application

○ A joint inventor; all of whom are signing this request

Signature	/Jose S. Garcia/
Name	Jose S. Garcia

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).
Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

Electronic Patent Application Fee Transmittal

Application Number:	16854829
Filing Date:	21-Apr-2020
Title of Invention:	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM
First Named Inventor/Applicant Name:	David WYATT
Filer:	Jose S. Garcia
Attorney Docket Number:	WYAT-0002USC1C1C1C1

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
STATUTORY OR TERMINAL DISCLAIMER	2814	1	170	170
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**170**

Doc Code: DISQ.E.FILE
Document Description: Electronic Terminal Disclaimer – Approved

Application No.: 16854829

Filing Date: 21-Apr-2020

Applicant/Patent under Reexamination: WYATT

Electronic Terminal Disclaimer filed on April 14, 2022

☒ APPROVED

This patent is subject to a terminal disclaimer

☐ DISAPPROVED

Approved/Disapproved by: Electronic Terminal Disclaimer automatically approved by EFS-Web

U.S. Patent and Trademark Office

Electronic Acknowledgement Receipt	
EFS ID:	45473428
Application Number:	16854829
International Application Number:	
Confirmation Number:	3480
Title of Invention:	MULTI-FUNCTION ELECTRONIC PAYMENT CARD AND DEVICE SYSTEM
First Named Inventor/Applicant Name:	David WYATT
Customer Number:	136197
Filer:	Jose S. Garcia
Filer Authorized By:	
Attorney Docket Number:	WYAT-0002USC1C1C1C1
Receipt Date:	14-APR-2022
Filing Date:	21-APR-2020
Time Stamp:	11:51:59
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$170
RAM confirmation Number	E20224DB51553601
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Terminal Disclaimer-Filed (Electronic)	eTerminal-Disclaimer.pdf	44224 8108a9aa38a4be8908edfa3959d608d5e0e36e5c	no	3
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	37802 10fa6e96db73481e896206b1c46c6df29ebbf6d8	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	82026		

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.

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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.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16854829
	Filing Date	2020-04-21
	First Named Inventor	David WYATT
	Art Unit	2876
	Examiner Name	TBD
	Attorney Docket Number	WYAT-0002.USC1C1C1C

	20	8690059		2014-04-08	Wallner	
	21	8628012		2014-01-14	Wallner	
	22	9022285		2015-05-05	Graylin	
	23	8814046		2014-08-26	Wallner	
	24	9123036		2015-09-01	Graylin , et al.	
	25	9864994		2018-01-09	Huang , et al.	
	26	9412105		2016-08-09	Graylin , et al.	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20020073045	A1	2002-06-13	Rubin, Aviel D. ; et al.	
Change(s) applied to document, /J.E./ 12/22/2021	2	20030195842	A1	2003-10-16	~~20030195842~~ Reece	

EFS Web 2.1.17

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.L./

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/854,829	05/10/2022	11328286	WYAT-0002USC1C1C1C1	3480

136197 7590 04/20/2022

David Wyatt c/o Murabito, Hao & Barnes
111 North Market Street
Suite 700
San Jose, CA 95113

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 Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

INVENTOR(s) (Please see PAIR WEB site http://pair.uspto.gov for additional inventors):

David WYATT, San Jose, CA;

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

CARDWARE, INC, SAN JOSE, CA;

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AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

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 Eastern District of Texas, Marshall Division on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
2:22-cv-00141	5/11/2022	Eastern District of Texas, Marshall Division

PLAINTIFF	DEFENDANT
CardWare Inc.	Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	10,339,520	7/2/2019	CardWare Inc.
2	10,628,820	4/21/2020	CardWare Inc.
3	10,810,579	10/20/2020	CardWare Inc.
4	11,176,538	11/16/2021	CardWare Inc.
5	11,328,286	4/20/2022	CardWare Inc.

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**

Trials@uspto.gov
571-272-7822

Paper 14
Date: August 11, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

CARDWARE INC.,
Patent Owner.

PGR2023-00012
Patent 11,328,286 B2

Before ELIZABETH M. ROESEL, SHARON FENICK, and IFTIKHAR AHMED, *Administrative Patent Judges.*

FENICK, *Administrative Patent Judge.*

DECISION
Granting Institution of Post-Grant Review
35 U.S.C. § 324

I. INTRODUCTION

A. Background and Summary

Samsung Electronics Co., Ltd. ("Petitioner") filed a Petition (Paper 3, "Pet.") requesting post-grant review of claims 1–27 ("the challenged claims") of U.S. Patent No. 11,328,286 B2 (Ex. 1001, "the '286 patent"). CardWare Inc. ("Patent Owner") filed a Preliminary Response (Paper 9, "Prelim. Resp."). With the Board's authorization, Petitioner filed a Preliminary Reply (Paper 10) and Patent Owner filed a Preliminary Sur-reply (Paper 11). After further authorization, Petitioner filed a corrected Preliminary Reply (Paper 12, "Prelim. Reply") and Patent Owner filed a corresponding second Preliminary Sur-reply (Paper 13, "Prelim. Sur-reply").

A post-grant review may be instituted only if "the information presented in the petition filed under section 321, if such information is not rebutted, would demonstrate that it is more likely than not that at least 1 of the claims challenged in the petition is unpatentable." 35 U.S.C. § 324(a). For the reasons below, Petitioner has demonstrated that it is more likely than not that at least one of the challenged claims is unpatentable. Accordingly, we institute a post-grant review of the challenged claims of the '286 patent on all grounds raised in the Petition.

B. Real Parties in Interest

Petitioner identifies itself, Samsung Electronics Co., Ltd., as well as Samsung Electronics America, Inc. as real parties-in-interest. Pet. 91.

Patent Owner identifies itself, CardWare Inc., as a real party-in-interest. Paper 4 (Patent Owner's Mandatory Notices), 1.

C. Related Matters

The parties each identify as a related matter the district court case styled as *CardWare Inc. v. Samsung Electronics Co., Ltd. and Samsung*

Electronics America, Inc., Case No. 2:22-cv-00141 (E.D. Tex.). Pet. 91; Paper 4, 1.

The parties also indicate that the '286 is being challenged in another petition for post-grant review (PGR2023-00013). Pet. 91; Paper 4, 1.

D. The '286 Patent

The '286 patent is titled "Multi-Function Electronic Payment Card and Device System" and describes emulating a standard credit card with a device capable of generating a programmed magnetic field of alternating polarity when used in an electronic credit card reader. Ex. 1001, codes (54), (57), 2:22–28. The '286 patent observes that presently available credit cards, including cards with magnetic strips, cards with smart integrated circuit chips, and radio frequency identification (RFID) cards, have certain security limitations. *Id.* at 1:39–2:8. In addition, according to the '286 patent, chip cards and RFID cards "are not in wide use at present because they are incompatible with existing credit card infrastructure." *Id.* at 2:8–11. The '286 patent thus describes a device for "credit, debit and cash transactions, including cryptocurrency and card-to-card transactions," particularly with a limited-duration credit card number, that generates "a magnetic field of alternating polarity responsive to the body being detected as adjacent to a standard magnetic card reader." *Id.* at 2:28–51.

Figure 2B, reproduced below, illustrates "an exemplary embodiment of a smart multi-function electronic device." *Id.* at 5:62–63.

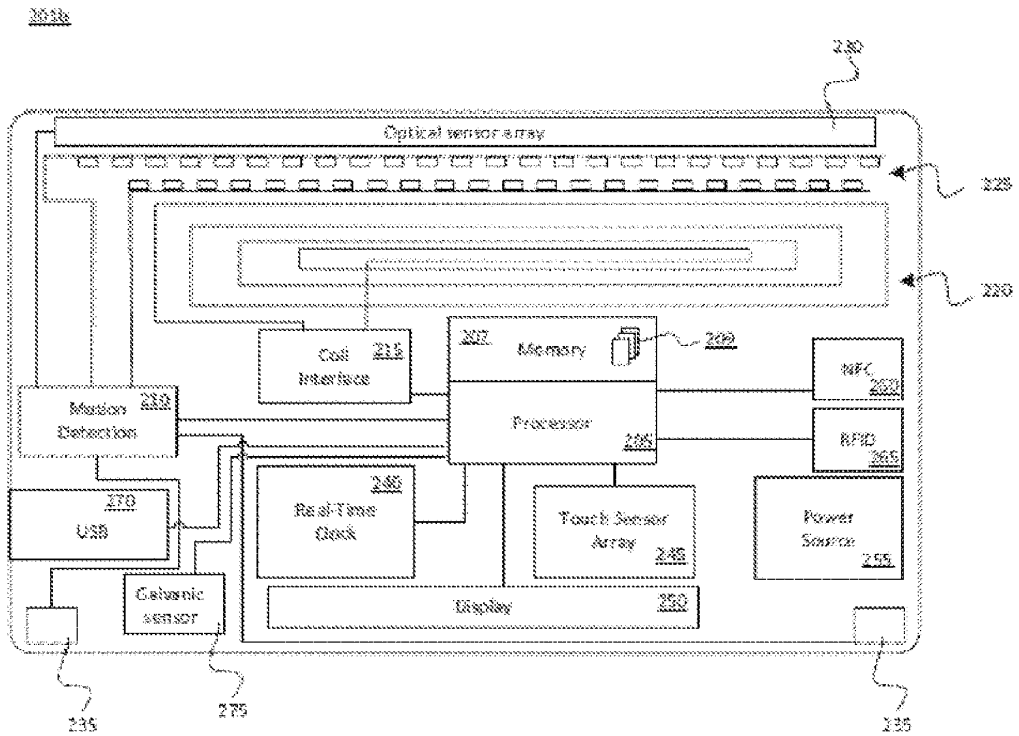


FIG. 2B

Figure 2B shows multi-function electronic device 201*b* comprising processor 205 and memory unit 207 that stores accounts 209, "which may be credit card accounts, banking accounts, merchant accounts, online accounts, cryptocurrency accounts, and combinations thereof." *Id.* at 6:51–59. Motion detector module 210 is coupled to processor unit 205 and to motion detection units, including rate detection assembly 225, optical sensor array 230, and accelerometers 235. *Id.* at 6:59–62. "Each of the motion detection units detects the motion of the credit card . . . in a distinct manner," and a detected movement signal received by motion detection module 210 and sent to processor unit 205 can be "generated by any one of the set of motion detection units, or any combination of motion detection units of the set." *Id.* at 8:2–9:3. Planar coil 220, controlled by processor unit 205 via coil

interface 215, generates a magnetic field that changes polarity to encode the user data at a rate depending "on the rate of relative movement detected by the rate detector." *Id.* at 6:64–7:1.

Device 201*b* also comprises touch-sensor array 245 and display 250, both of which are coupled to processor unit 205. *Id.* at 7:1–4. "A user input may be made via the touch sensor array 245, which may comprise a touch screen panel, a keypad, or a combination thereof." *Id.* at 7:4–6. And "display 250 is able to display an alphanumeric sequence, as well as graphical icons (such as a logo for a bank, or other images)." *Id.* at 7:7–9.

Figure 2C, reproduced below, illustrates "a process of selecting an account from a plurality of stored accounts in order to perform a transaction with the selected account." *Id.* at 7:38–40.

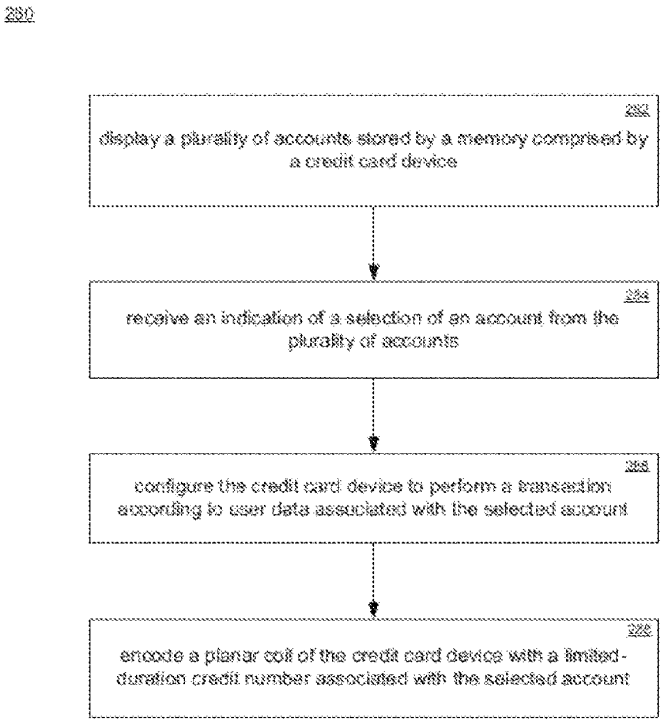


FIG. 2C

As shown in Figure 2C, process 280 begins at step 282 with the display, on display 250 of a multi-function electronic device, of accounts stored in memory unit 207. *Id.* at 7:41–45; *see also id.*, Fig. 2B. At step 284, a user selects an account by using touch sensor array 245, and the selected account may be indicated on display 250. *Id.* at 7:45–49; *see also id.*, Fig. 2B. At step 286, the multi-function electronic device is then "configured according to account information associated with the selected account, which may include an account number, an expiration date, and other user information associated with the account (e.g. a username, PIN, password, email address, etc.)." *Id.* at 7:49–54. Planar coil 220 is then, at step 288, "encoded with a limited-duration credit card number that is associated with the selected account." *Id.* at 7:54–57.

E. Illustrative Claim

Of the challenged claims, claims 1, 15, and 20 are independent. Claim 1, reproduced below with bracketed identifiers added as used by the Petitioner (*see* Pet. v), is illustrative.

1. [1.0] A payment system comprising:

[1.1] a payment card device free of any fixed payment numbers visible thereon and wherein said payment card device is operable for use in payment card reader equipment; and

[1.2] a computing device comprising:

a processor;

[1.3] a memory;

[1.4] a wireless interface;

[1.5] a touch-screen user interface operable to provide a visual user-interface for user payment interactions; and

[1.6] a user-input device coupled to the processor, and

[1.7a] wherein the processor is operable to store a transaction sequence count, [1.7b] a device account number and [1.7c] secrets limited to the computing device, and

[1.8] wherein the computing device is operable to receive, store and transmit a card payment information not visible on the payment card device, and

[1.9] wherein the processor is operable to generate at least a portion of a limited-user card payment information for use by an authenticated card user, and

[1.10] wherein the computing device is operable to convey said limited-use card payment information via an interface of the computing device, and

[1.11] wherein a card issuer authority is operable to reject as invalid a transaction attempt outside of its limitations of use,

[1.12] wherein a card issuer authority is operable to validate a card payment information as authentic when received from at least one of: an authenticated users payment card; and an authenticated users computing device, and

[1.13] wherein the card issuer authority is operable to permit the authentic transactions to complete.

Ex. 1001, 19:50–20:15.

F. Asserted Grounds

Petitioner raises the following grounds of unpatentability with respect to the challenged claims:

Claims Challenged	35 U.S.C. §[1]	References
1, 2, 7–10, 12–16, 18	103	Smith[2], Kobylkin[3], Gomez[4]
3	103	Smith, Kobylkin, Gomez, Saarisalo[5]
4	103	Smith, Kobylkin, Gomez, Saarisalo, Slonecker[6]
5, 11, 17	103	Smith, Kobylkin, Gomez, Mestre[7]
6	103	Smith, Kobylkin, Gomez, Sahota[8]
19	103	Smith, Kobylkin, Gomez, Moosavi[9]
20–27	103	Smith, Kobylkin, Gomez, Mullen[10]

Pet. 7.

[1] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103. Because we preliminarily find that the '286 patent includes at least one claim with an effective filing date in the priority application, filed March 15, 2013, we use the AIA versions , we refer to the AIA version of § 103.
[2] Smith et al., US 2013/0232083 A1 (Ex. 1004).
[3] Kobylkin et al., US 2013/0166441 A1 (Ex. 1005).
[4] Gomez, Sr. et al., US 9,600,808 B1 (Ex. 1017).
[5] Saarisalo, US 2009/0291634 A1 (Ex. 1011).
[6] Slonecker, Jr., US 2007/0045403 A1 (Ex. 1013).
[7] Mestre et al., US 2011/0112918 A1 (Ex. 1010).
[8] Sahota et al., US 2005/0043997 A1 (Ex. 1006).
[9] Moosavi, WO 2010/037218 A1 (Ex. 1015).
[10] Mullen et al., WO 2012/154915 A1 (Ex. 1007).

II. POST-GRANT REVIEW ELIGIBILITY

As a threshold issue, we must determine whether the '286 patent is eligible for post-grant review. The post-grant review provisions of the AIA apply to a patent that contains a claim with an effective filing date on or after March 16, 2013. *See* AIA, Pub. L. No. 112-29, 125 Stat. 284 (2011), §§ 3(n)(1), 6(f)(2)(A). The statute defines the "effective filing date" as:

> (A) if subparagraph (B) does not apply, the actual filing date of the patent or the application for the patent containing a claim to the invention; or
>
> (B) the filing date of the earliest application for which the patent is entitled, as to such invention, to a right of priority under section 119, 365(a), 365(b), 386(a), or 386(b) or to the benefit of an earlier filing date under section 120, 121, 365(c), or 386(c).

35 U.S.C. § 100(i)(1).

For a claim in a later-filed application to be entitled to the filing date of an earlier application, the earlier application must provide written description support for the claimed subject matter. *Anascape, Ltd. v. Nintendo of Am. Inc.*, 601 F.3d 1333, 1337 (Fed. Cir. 2010). The written description requirement "guards against the inventor's overreaching by insisting that he [or she] recount his [or her] invention in such detail that his [or her] future claims can be determined to be encompassed within his [or her] original creation." *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1561 (Fed. Cir. 1991). The test for determining compliance with the written description requirement under § 112(a) is whether the original disclosure of the earlier-filed application reasonably would have conveyed to one with ordinary skill in the art that the inventor had possession of the claimed subject matter at the time of the earlier-filed application. *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). It is well settled that "[e]ntitlement to a filing date does not extend to subject matter

which is not disclosed but would be obvious over what is expressly disclosed." *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1571–72 (Fed. Cir. 1997). "It is not sufficient for purposes of the written description requirement of § 112 that the disclosure, when combined with the knowledge in the art, would lead one to speculate as to modifications that the inventor might have envisioned, but failed to disclose." *Id.*

The '286 patent claims priority to a provisional application filed on March 15, 2013, U.S. Provisional App. No. 61/794,891 (Ex. 1012, "the '891 provisional"). Ex. 1001, code (60), 1:6–27. Petitioner argues that claims 3, 5, 6, 12, 15, and 20[11] of the '286 patent lack written description and enabling support in the '891 provisional, and that therefore the '286 patent is eligible for post-grant review. Pet. 1–6. Patent Owner argues that Petitioner has not shown that any claim is not entitled to claim priority to the '891 provisional. Prelim. Resp. 14–26. We address claim 5 in detail. Based on the present record and for the purpose of institution, we determine that there is insufficient support for claim 5 in the '891 provisional, and the '286 patent is eligible for post-grant review.

A. Level of Ordinary Skill in the Art

Petitioner contends that:

> A person of ordinary skill in the art . . . would have had (1) a bachelor's degree in computer science, computer engineering, electrical engineering, or a related field, and (2) one to two years of experience working with payment processing and/or digital authentication systems, including familiarity with short-range wireless technologies.

[11] Claim 20 is listed as unsupported in a table listing assertedly unsupported claims, but argument is only presented with respect to the other claims in the table. Pet. 2–6.

Pet. 10 (citing Ex. 1003 ¶¶ 49–54). Patent Owner does not dispute Petitioner's proposed level of ordinary skill in the art. *See* Prelim. Resp. 13.

For purposes of this Decision, we apply Petitioner's definition of the level of ordinary skill in the art, which is consistent with the level of skill reflected in the Specification and in the asserted prior art references. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

B. Claim 5

Claim 5 depends from claim 1, adding two additional limitations, one of which recites that "the information presented on an interface of said card device, are limited to an in-store merchant card reader facility use only." Ex. 1001, 20:39–41.

Petitioner argues that "the provisional application does not describe limiting the field of use of the payment card device to in-store card reader facility use only, to the exclusion of online transactions." Pet. 4 (citing Ex. 1003 (Declaration of Dr. Michael I. Shamos) ¶ 35). Petitioner argues that the provisional application states explicitly that "the credit card of the present invention could also be used to make online purchases." *Id.* (citing Ex. 1012 ¶ 17). Patent Owner contends that the '891 provisional's disclosure is of a card that only generates usable payment information upon use at an in-store merchant, and that such a card therefore "lacks payment information, such that it cannot be used in an online store." Prelim. Resp. 17–18 (citing Ex. 1012, page 19[12] (figure)), ¶ 14; Ex. 2007 (Declaration of Dr. William C. Easttom II) ¶ 36)). Patent Owner argues, with respect to the '891 provisional's disclosure relating to online transactions, that this

[12] Exhibit 1012 contains page numbers added by Petitioner; when not referring to paragraph numbers, we use these added page numbers to refer to portions of the '891 provisional.

disclosure describes the card connecting to a personal computer "to ***uniquely*** generate" payment information for online purchases. *Id.* at 18 (quoting Ex. 1012 ¶ 17). Patent Owner argues that this means that "the information for online purchases is unique from that used for in-store transactions." *Id.*

On this record, and for the purposes of institution, we agree that Petitioner has sufficiently shown that the information presented on the interface of the card device is not described in the '891 provisional as being limited to use in an in-store merchant card reader facility. The '891 provisional describes the card "connect[ing] to a personal computer" for use in generating payment information for online purchases. Ex. 1012 ¶ 17. While Patent Owner argues that the description in the '891 provisional of "uniquely generat[ing] a credit card number" means a use "unique from that used for in-store transactions," this description echoes the general description of the use of the card to provide "a unique credit card number . . . for each transaction." *Compare* Ex. 1012 ¶ 14, *with id.* ¶ 17.

Dr. Easttom's testimony that "[g]iven that the payment card disclosed in the provisional does not have visible account information, there is no way for a user to simply use the information that might be presented on an interface of the card (such as a partial number) to perform an online transaction," does not appear to take into account the description in the provisional that the card is connected to the personal computer via RFID or near field technology to generate the credit card number, and thus that information would not need to be visually presented to a user in order to be used. Ex. 2007 ¶¶ 36–39; Ex. 1012 ¶ 17. The description of this connection is followed by a description that the number "*could* also" be displayed on a front display of the card. Ex. 1012 ¶ 17 (emphasis added). Our determination is that this describes the generated number *could* be displayed

for the user, or alternatively (if not displayed) could be used without being displayed on the front display of the card. This is confirmed in the immediately following sentence, describing an embodiment in which the payment card is "equipped with a means for communicating with the USB port on the computer in connection with making the online purchases." *Id.* "A connector for connection to standard computing devices" is described in the '891 provisional as a "USB *interface*." *Id.* at claim 8 (p. 17).

Dr. Easttom concludes that, if there is no visible account information on the payment card, "there is no way for a user to simply use the information that might be presented on an interface of the card . . . to perform an online transaction." Ex. 2007 ¶ 36. This conclusion appears to rely on an assumption that claim 5's "an interface of said card device" must be a display of the card device, such as the thin film liquid crystal display described in the '891 provisional. Ex. 2007 ¶ 36; Ex. 1012 ¶ 16 (describing display), p. 19 (figure). But, as discussed, the '891 provisional describes a card with a USB interface used in making online purchases.

On this record, and for the purposes of institution, Petitioner has shown sufficiently that the '891 provisional does not support a payment card device presenting information on an interface of said card device that is limited to in-store merchant card reader facility use, as recited in claim 5, and the '286 patent is eligible for post-grant review.

III. DISCRETION UNDER 35 U.S.C. § 324(a)

Patent Owner argues that we should exercise discretion to deny institution under 35 U.S.C. § 324(a) because the factors identified in *Apple, Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential) ("*Fintiv*"), weigh in favor of denying institution. Prelim. Resp. 43–51; Prelim. Sur-reply 4–6. Petitioner argues we should not

discretionarily deny institution under *Fintiv*. Pet. 88–90; Prelim. Reply. 4–6. Additionally, Petitioner, having filed two petitions for post grant review (in this proceeding and PGR2023-00013), submitted a Ranking of Petitions. Paper 2. As Petitioner ranked this Petition first (Paper 2, 1) we address our discretion to deny on the basis of multiple petitions in PGR2023-00013.

The precedential decision in *Fintiv* identifies a non-exclusive list of factors parties may consider addressing where there is a related, parallel district court action to determine whether such action provides any basis for discretionary denial. *Fintiv*, 5–16. Those factors include:

> 1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
>
> 2. proximity of the court's trial date to the Board's projected statutory deadline for a final written decision;
>
> 3. investment in the parallel proceeding by the court and the parties;
>
> 4. overlap between issues raised in the petition and in the parallel proceeding;
>
> 5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
>
> 6. other circumstances that impact the Board's exercise of discretion, including the merits.

Id. at 5–6.

In evaluating the factors, we take a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review. *Id.* at 6. The Director has issued additional guidance on the application of *Fintiv*. *See* Katherine K. Vidal, *Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court*

Litigation (June 21, 2022)[13] ("*Fintiv* Memo"). Additionally, we are guided by the precedential decisions of the Director in *OpenSky Indus., LLC v. VLSI Tech. LLC*, IPR2021-01064, Paper 102, 49–50 (Oct. 4, 2022) (precedential) and *CommScope Techs. LLC v. Dali Wireless, Inc*, IPR2022-01242, Paper 23 (Feb. 27, 2023) (precedential) ("*CommScope*").

We are instructed to consider compelling merits under *Fintiv* factor six only after a determination that the first five *Fintiv* factors favor discretionary denial. *CommScope*, 4–5. Thus, we begin by considering the first five *Fintiv* factors.[14]

A. Fintiv Factors

1. Factor 1 - Whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted

"A district court stay of the litigation pending resolution of the PTAB trial allays concerns about inefficiency and duplication of efforts." *Fintiv*, 6. *Fintiv* indicated that, in previous Board decisions, the existence of a district court stay pending Board resolution of an *inter partes* review has weighed strongly against discretionary denial, while a denial of such a stay request sometimes weighs in favor of discretionary denial. *Id.* at 6–8.

Patent Owner notes that a stay was requested after the filing of the Petition and not granted in the district court litigation, and asserts that this

[13] Available at https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf

[14] While *Fintiv* factor six encompasses considerations other than the compelling merits, neither party has argued such considerations exist in this case.

factor should be viewed as neutral. Prelim. Resp. 45; Prelim. Sur-reply 5; Ex. 1107.[15]

Petitioner notes that the dismissal of the stay request was without prejudice, and that it maintains the right to move for a stay if we institute. Prelim. Reply 4; Ex. 1107. Petitioner argues that the factor should be considered "at worst" neutral, that is (as we understand it), either to militate against discretionary denial or to be neutral. *Id.* at 5.

The court in the district court litigation noted in its denial of the stay request that it was following "the universal practice" in the district, to deny a stay based on post-grant review requests where institution decisions have not yet been issued, and provided no additional reasoning or indication of future action with respect to any potential renewal of the stay request. Ex. 1107. Because, "[i]n the absence of specific evidence, we will not attempt to predict" whether a district court would stay "based on a variety of circumstances and facts beyond our control and to which the Board is not privy," we find this factor to be neutral. *See Sand Revolution II, LLC v. Cont'l Intermodal Group – Trucking LLC*, IPR2019-01393, Paper 24 at 7 (PTAB June 16, 2020) (informative) ("*Sand Revolution*").

2. Factor 2 - Proximity of the court's trial date to the Board's projected statutory deadline for a final written decision

The proximity factor in *Fintiv* asks us to evaluate our discretion in light of a trial date that has been set in a parallel litigation. *See Fintiv*, 3, 5 ("*NHK* applies to the situation where the district court has set a trial date to occur earlier than the Board's deadline to issue a final written decision in an

[15] Patent Owner cites Exhibit 2003. Exhibits 1107 and 2003 appear to be the same order, but Exhibit 1107 is signed by the magistrate judge.

instituted proceeding."; "When the patent owner raises an argument for discretionary denial under *NHK* due to an earlier trial date, the Board's decisions have balanced the following factors . . . .") (citing *NHK Spring Co. v. Intri-Plex Techs., Inc.*, IPR2018-00752, Paper 8 at 20 (PTAB Sept. 12, 2018) (precedential)("*NHK*")). As noted above in the discussion of the first factor, *Fintiv* cites concern regarding "inefficiency and duplication of efforts." *Id.* at 6. In its analysis of the proximity factor, *Fintiv* echoes that concern in its guidance that "[i]f the court's trial date is at or around the same time as the projected statutory deadline or even significantly after the projected statutory deadline, the decision whether to institute will likely implicate other factors discussed herein, such as the resources that have been invested in the parallel proceeding." *Id.* at 9. Similarly, in *NHK*, the Board expressed concern that a trial before the deadline for a final written decision addressing the same prior art and arguments would have undermined the Board's objectives of providing an effective and efficient alternative to district court litigation. *See NHK*, 20 (citing *General Plastic Indus. Co., Ltd. v. Cannon Kabushiki Kaisha*, IPR2016-01357, Paper 19 at 16–17 (PTAB Sept. 6, 2017 (precedential))).

We are instructed that

> when analyzing the proximity of the court's trial date under factor two of *Fintiv*, when other relevant factors weigh against exercising discretion to deny institution or are neutral, the proximity to trial should not alone outweigh all of those other factors. Parties may present evidence regarding the most recent statistics on median time-to-trial for civil actions in the district court in which the parallel litigation resides for the PTAB's consideration. Where the parties rely on time-to-trial statistics, the PTAB will also consider additional supporting factors such as the number of cases before the judge in the parallel litigation and the speed and availability of other case dispositions.

Fintiv Memo, 8–9 (internal citations and footnote deleted).

Based on median time-to-trial data for the Eastern District of Texas, Petitioner asserts that "trial would be expected to occur in May, 2024" but that "delays are possible" and indicated by the median time to trial statistics. Pet. 88–89 (citing Ex. 1103, 35; Ex. 1104). According to Petitioner, a final written decision ("FWD") in this proceeding is anticipated in July of 2024. *Id.* at 88. Nevertheless, Petitioner argues that "[t]he Board should not deny institution due to the close proximity of the FWD and the predicted trial date in E.D. Tex." *Id.* at 88–89. In its Preliminary Reply, Petitioner noted that the median time to trial decreased to 19 months. Prelim. Reply 4, 5 (citing Ex. 1109, 35).

Patent Owner contends that as the docket control order sets jury selection for February 5, 2024, the district court trial date precedes the anticipated final written decision deadline by six months. Prelim. Resp. 46 (citing Ex. 2001). Patent Owner additionally argues that, if the Board relies on median time-to-trial, then we should use the more recent time-to-trial data for the district, which would indicate an even earlier trial date than that scheduled in the docket control order, or the specific judge's median time-to-trial, which is similar. *Id.* at 47 (citing Ex. 2004, 35; Ex. 2002, 1); *see* Prelim. Sur-reply 4 at n.2.

Because the trial in the district court litigation, under any of the parties' proposed approaches, appears likely to begin several months before our deadline to reach a decision, this factor weighs in favor of discretionary denial.

3. Factor 3 - Investment in the parallel proceeding by the court and the parties

If, at the time of the institution decision, the district court has issued substantive orders related to the challenged patent, such as a claim construction order, this fact weighs in favor of denial. *See Fintiv*, 9–10. On the other hand, if the district court has not issued such orders, this fact weighs against discretionary denial. *Id.* at 10.

Petitioner argues that the bulk of investment in the district court litigation has yet to occur, and that no part of claim construction or document production had occurred at the time of the filing of the Petition. Pet. 89. Petitioner further argues that its diligence in filing the Petition four months after the service of preliminary infringement contentions "heavily favors institution." Prelim. Reply 6.

Patent Owner argues that by the time of our decision, the claim construction process will be complete and the document production process substantially complete. Prelim. Resp. 47–48 (citing Ex. 2001, 3–4).

The docket control order shows that the claim construction hearing was scheduled to take place on August 1, 2023. Ex. 2001, 3. *Fintiv* directs us to consider whether "the petitioner filed the petition expeditiously." *Fintiv*, 11. Although we are mindful of the investment of the parties to date, we find that, at this time, that no substantive orders related to the challenged patent have been issued by the district court. Additionally, on the record before us the filing of the Petition was expeditious. We determine this factor weighs slightly against exercising discretion to deny institution.

4. Factor 4 - Overlap between issues raised in the petition and in the parallel proceeding

"[I]f the petition includes the same or substantially the same claims, grounds, arguments, and evidence as presented in the parallel proceeding, this fact has favored denial." *Fintiv*, 12. "Conversely, if the petition includes materially different grounds, arguments, and/or evidence than those presented in the district court, this fact has tended to weigh against exercising discretion to deny institution under *NHK*." *Id.* at 12–13. A stipulation as in *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 at 18–19 (PTAB Dec. 1, 2020) (precedential as to § II.A), if one is entered, would be highly relevant. "Consistent with *Sotera Wireless, Inc.*, the PTAB will not discretionarily deny institution in view of parallel district court litigation where a petitioner presents a stipulation not to pursue in a parallel proceeding the same grounds or any grounds that could have reasonably been raised before the PTAB." *Fintiv* Memo 3 (footnote omitted).

Petitioner offers, in the Petition, a stipulation that, if IPR is instituted, "it will not pursue in the Related Litigation any invalidity grounds against the Challenged Claims of the '286 patent that are the same as those raised in this Petition." Pet. 89–90. It later offers an additional stipulation that "if this PGR is instituted, Petitioner will not pursue an invalidity defense in the E.D. Texas litigation with respect to the claims of the '286 Patent in the instituted PGR based on (i) any of the same grounds in the instituted PGR or (ii) any prior art reference that forms the basis of any ground in the instituted PGR." Prelim. Reply 5; Ex. 1110. Petitioner argues that this stipulation "leaves only meaningfully different prior art for use in E.D. Tex." Prelim. Reply 6. Petitioner additionally notes that Patent Owner dropped

claims 1–19 from the related litigation and that this is the only forum where the validity of those claims is to be assessed. *Id.* at 5 (citing Ex. 1112).

Patent Owner argues that, in the new stipulation, Petitioner only restricts itself from pursuing "in district court the same grounds or the specific references in those grounds," but "leaves Petitioner free to pursue the very same arguments in district court under the guise of technically different references or combinations." Prelim. Resp. 49 (emphases omitted). Patent Owner argues that, because Petitioner has not offered a *Sotera* stipulation and the same or substantially the same prior art or arguments may be considered, factor 4 favors denial. *Id.* at 50–51. Patent Owner additionally argues that Petitioner's stipulation is further ineffective as it does not affect grounds brought under 35 U.S.C. §§ 101 and 112 in PGR2023-00013. *Id.* at 50. And Patent Owner contends that the reduction in the number of claims in the district court litigation counsels against institution or has no impact because "the Board will be considering claims that are not at issue in district court" and because, in the Petition, the analysis with respect to the claims at issue in the district court is related to that with respect to the claims no longer at issue in the district court. Prelim. Sur-reply 5.

While not a *Sotera* stipulation, Petitioner's stipulation appears to be similar to that in *Sand Revolution*. *Sand Revolution*, 11–12 (finding that a stipulation not to pursue the same grounds in the parallel litigation "mitigates to some degree the concerns of duplicative efforts"). We recognize that *Sand Revolution*-type stipulations are narrower in scope than *Sotera*-type stipulations. However, Petitioner's stipulation still reduces potential overlap with the district court litigation. In *Sand Revolution*, such a stipulation weighed marginally in favor of not exercising discretion. *Sand*

Revolution, 12. The fact that the Petition challenges claims that are no longer at issue in the district court litigation reduces the overlap of issues, notwithstanding any similarity in arguments.

We determine this factor weighs against exercising discretion to deny institution.

5. *Factor 5 - Whether the petitioner and the defendant in the parallel proceeding are the same party*

If the petitioner is unrelated to the defendant in the parallel proceeding, that might weigh against discretionary denial. *See Fintiv*, 13–14.

Patent Owner notes that the related district court litigation involves the same parties. Prelim. Resp. 51.

As with *Fintiv* factor 2, therefore, this factor weighs marginally in favor of exercising our discretion to deny the Petition.

B. Conclusion

We have considered the circumstances and facts before us in view of the first five *Fintiv* factors. Because our analysis is fact-driven, no single factor is determinative of our conclusion. Considering these five *Fintiv* factors together, we determine that they do not favor a discretionary denial. As we do not find that the first five *Fintiv* factors favor discretionary denial, we therefore do not make a determination regarding compelling merits under *Fintiv* factor 6, and our consideration ends with this conclusion. *CommScope*, 4–5.

IV. PATENTABILITY ANALYSIS

In a post-grant review, the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable. *See* 35 U.S.C. § 322(a)(3) (requiring post-grant review petitions to identify "with

particularity . . . the evidence that supports the grounds for the challenge to each claim"); *cf. Harmonic Inc.*, 815 F.3d at 1363 (Fed. Cir. 2016) ("[I]t was [Petitioner's] burden to explain to the Board how [the combination of prior art] rendered the challenged claims unpatentable."). This burden never shifts to Patent Owner. *Cf. Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)) (discussing the burden of proof in *inter partes* review).

A. Claim Construction

We construe claim terms according to the standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–17 (Fed. Cir. 2005) (en banc), i.e., as construed in a civil action under 35 U.S.C. § 282(b). *See* 37 C.F.R. § 42.100(b). Under *Phillips*, claim terms are afforded "their ordinary and customary meaning." *Phillips*, 415 F.3d at 1312. "[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention." *Phillips*, 415 F.3d at 1313. "Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Phillips*, 415 F.3d at 1313. An inventor may rebut that presumption by providing a definition of the term in the specification "with reasonable clarity, deliberateness, and precision." *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). In the absence of such a definition, limitations are not to be read from the specification into the claims. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

We address the meaning of several claim terms below and determine that no additional claim construction is needed for purposes of this Decision.

Our claim constructions are not final, and we invite the parties to address claim construction in their post-institution submissions to the extent allowable by our rules.

1. Alleged printed matter in claims 1, 5, 15, 19, and 20

Petitioner contends that claims 1, 5, 15, 19, and 20 include limitations directed to printed matter because they have "no functional or structural relationship to the claimed substrate on which the information is disposed or printed," and that these limitations, therefore, are entitled to no patentable weight. Pet. 8–9.

On this record, we agree with Petitioner that claim elements 1.1, 1.8, 5.0, 15.1, 19.0, 19.1, and 20.1[16] recite printed matter entitled to no patentable weight.

"[P]rinted matter encompasses any information claimed for its communicative content, and the doctrine prohibits patenting such printed matter unless it is 'functionally related' to its 'substrate,' which encompasses the structural elements of the claimed invention." *C R Bard Inc. v. AngioDynamics, Inc.*, 979 F.3d 1372, 1381 (Fed. Cir. 2020); *see also Praxair Distribution, Inc. v. Mallinckrodt Hosp. Prod. IP Ltd.*, 890 F.3d 1024, 1031 (Fed. Cir. 2018) ("Claim limitations directed to printed matter are not entitled to patentable weight unless the printed matter is functionally related to the substrate on which the printed matter is applied."); *In re Distefano*, 808 F.3d 845, 848 (Fed. Cir. 2015) ("[I]f a limitation claims (a) printed matter that (b) is not functionally or structurally related to the

[16] We use the claim limitation identifiers as used by Petitioner in the Petition's claim listing. *See* Pet. v–ix.

physical substrate holding the printed matter, it does not lend any patentable weight to the patentability analysis.").

In our view, claim elements 1.1, 1.8, 5.0, 15.1, 19.1, and 20.1 recite printed matter entitled to no patentable weight because they require that a particular type of information—"fixed payment numbers" or "card payment information" or "payment number information"—be absent from the face of the payment card device. If they were affirmatively recited, "fixed payment numbers" or "payment number information" would no doubt qualify as information claimed for its communicative content that is not functionally related to the substrate, as no reference to or functional use of such fixed payment numbers, card payment information, or payment number information is found in claims 1, 5, 15, 19, and 20. The negative limitation, that no fixed payment numbers, card payment information, or payment number information is on the device, is just as much recitation of printed matter as the affirmative recitation would be. In both cases, information is being claimed for its communicative content. These claim elements simply recite that a particular type of information—fixed payment numbers, card payment information, or payment number information—is not included in the communication.

Patent Owner argues that these claim elements are "functionally related to the claimed devices within the claimed system" because "the claimed 'no fixed payment numbers' and similar enhance the security of the claimed systems by removing the possibility that 'a malicious third party [would] record [such information] in order to later make fraudulent transactions on the account.'" Prelim. Resp. 22 (citing Ex. 1001, 9:62–10:2). We disagree. Our reviewing court instructs: "In evaluating the existence of a functional relationship, we have considered whether the

printed matter merely informs people of the claimed information, or whether it instead interacts with the other elements of the claim to create a new functionality in a claimed device or to cause a specific action in a claimed process." *Bard*, 979 F.3d at 1381. Fixed payment numbers inform people of particular information, and claim elements 1.1, 1.8, 5.0, 15.1, 19.1, and 20.1 recite that the matter printed on the payment card device should not inform people of that particular information. The absence of fixed payment numbers does not interact with the other elements of the claim to create a new functionality in a claimed device or to cause a specific action in a claimed process.

The foregoing analysis applies equally to element 19.0 of dependent claim 19, which recites an limitation that recites that the payment card device "comprises fixed payment information disposed thereon," but that such fixed payment information "comprises only" certain types of information.

2. Alleged additional non-limiting claim features in claims 1, 6, 11, 13–15, and 17

Petitioner contends that claims 1, 6, 11, 13–15, and 17 include features that "are not limiting as they do not define further limitations of the recited payment devices and systems." Pet. 9–10. The claim elements relate to certain limitations on a "card issuer authority," a "card issuing authority," or a "payment issuing authority." Ex. 1001, 20:7–15, 20:45–59, 21:13–16, 21:38–46, 22:6–12, 22:25–29. Petitioner argues, without more, that in claim 1, the "card issuer authority" is not recited as being included in the "payment system" and that therefore "language describing a function the card issuer authority 'is operable' to perform does not limit any aspect of the claimed

payment system." Pet. 10. On this record, Petitioner has not shown these limitations to be non-limiting to the scope of the claims.

B. Obviousness of claims 1, 2, 7–10, 12–16, and 18 over Smith, Kobylkin, and Gomez

Petitioner challenges claims 1, 2, 7–10, 12–16, and 18 based on Smith, Kobylkin, and Gomez. Pet. 7, 11–51. Patent Owner opposes. Prelim. Resp. 28–33, 35–43. We begin with an overview of Smith, Kobylkin, and Gomez before turning to the disputed issues.

1. Smith (Ex. 1004)

Smith discloses using a mobile device to conduct a contactless payment transaction. Ex. 1004 ¶¶ 2–6. Smith discloses processing a financial transaction by mapping a mobile cloud account to a payment account. *Id.* at code (57), ¶¶ 2, 6–8, 15, 32, Fig. 1. According to Smith, a mobile device, such as a smart phone, stores mobile cloud account data, including a mobile cloud account number ("MCA") that is associated with a real account number ("RCA"). *Id.* ¶¶ 33, 34. The MCA enables the user to conduct a financial transaction without storing the RCA on the mobile device, thereby reducing the potential for fraud. *Id.* ¶¶ 32, 34.

2. Kobylkin (Ex. 1005)

Kobylkin discloses an "instant disposable payment card" having a quick response ("QR") code, which can be scanned by the user to facilitate activation and/or funding of the payment card and/or creation of an account or activation of a pre-created account at a payment system provider. Ex. 1005, code (57). According to Kobylkin, the user "can then use the instant payment card to pay for purchases." *Id.*

3. Gomez (Ex. 1017)

Gomez discloses a secure payment card that generates an authentication cryptogram, which is unique for each attempted use of the payment card to make a transaction and which expires within a short period of time thereafter. Ex. 1017, codes (54), (57), 1:58–63, 5:13–18, 5:48–57, Figs. 2, 9, 10.

4. Independent Claim 1

Petitioner challenges claim 1 based on a combination of Smith, Kobylkin, and Gomez. Pet. 21–41.

a) Claim Element 1.7b

Claim 1 is directed to a payment system that, *inter alia*, comprises a computing device comprising a processor, and claim element 1.7b specifies that the processor is operable to store a device account number. Ex. 1001, 10:50–64.

Petitioner contends that Smith discloses or suggests claim element 1.7b. Pet. 27–28 (citing Ex. 1004 ¶ 34; Ex. 1003 ¶ 149). Petitioner asserts that "Smith describes that the 'MCA may be mapped to the RCA such that the user may conduct a financial transaction using the MCA for funding of the financial transaction, and the funds may be supplied by the payment account corresponding to the RCA' [and 'a]s a result the user may be able to conduct a payment transaction using the mobile device 102 without storing the RCA, thereby reducing the potential for fraud.'" *Id.* at 28.

Patent Owner disputes Petitioner's contention that Smith's mobile cloud account data is "device account number." Prelim. Resp. 29–30. According to Patent Owner, Smith's MCA does not correspond to a device,

and Smith discloses mobile devices separately from mobile cloud accounts. *Id.* at 30 (citing Ex. 1004 ¶¶ 15, 32, 34, 77, 83, 93). "In sum," Patent Owner argues, "the MCA corresponds to the mobile cloud account, not a device." *Id.*

For purposes of institution, we find that Petitioner makes a sufficient showing for claim element 1.7b. Pet. 27–28. At this stage, Patent Owner does not dispute Petitioner's contention that, according to Smith, mobile cloud account data is wirelessly provisioned to a mobile device. Prelim. Resp. 29–30; *see also* Prelim. Sur-reply at 1 (In Smith, "the mobile cloud account data is generated and provided to a mobile device."). Patent Owner argues that Smith's "mobile cloud account data" is not associated with the mobile device that receives it. Prelim. Resp. 30. Patent Owner's argument overlooks Smith's teaching of "a mapping database . . . wherein each mapping record includes at least a master key identifier, a mobile cloud account number (MCA), and a real card account number (RCA)." Ex. 1004 ¶ 8. As Patent Owner discusses in its review of Smith, the master key identifier "may be [a value that is] unique to the mobile device" and is used "to identify an MCA and map the MCA to the RCA." Prelim. Resp. 8–9 (quoting Ex. 1004 ¶ 43, citing *id* ¶¶ 43, 44, 49–51, 54, 56–59, 79–87, Figs. 4A, 4B, 9).

In our preliminary view, this teaching shows an association between at least one component of Smith's mobile cloud account data—the mobile account number (MCA)—and a master key identifier that is unique to the mobile device.

b) Combination of Smith, Kobylkin, and Gomez

Petitioner contends that a person of ordinary skill in the art ("POSITA") would have been motivated to configure Smith's mobile device

to be used in activating and/or funding Kobylkin's disposable payment card so that the user could "make ready use of disposable payment cards." Pet. 15 (citing Ex. 1003 ¶ 120). Petitioner further contends a POSITA would have wanted:

> to permit a user to perform Kobylkin's activation and funding operations on the *same* mobile device as the user uses for other tasks such as conducting mobile payment transactions as taught in Smith—especially since use of the same device for both purposes would have increased convenience and freed the user from needing to access separate devices for performing online payment transactions based on Smith's techniques and for funding or activating a disposable card based on Kobylkin's [techniques].

Id. at 16 (citing Ex. 1003 ¶ 121).

Patent Owner argues that Petitioner does not "explain how or why a POSITA would . . . activate or fund Kobylkin's instant disposable payment card in the context of Smith, which is directed to a mobile device for conducting contactless payment transactions at a physical payment terminal." Prelim. Resp. 38 (citing Ex. 1004 ¶ 35, Fig. 1; Ex. 1005 ¶ 31).

For purposes of institution, we find that Petitioner provides a sufficient rationale for combining Smith and Kobylkin, as summarized above, and that Petitioner's rationale is sufficiently supported by the cited prior art and Dr. Shamos's Declaration. Pet. 15–18 (citing Ex. 1004 ¶¶ 4, 33; Ex. 1005 ¶¶ 31, 50, 52, 134; Ex. 1003 ¶¶ 120–124). Petitioner relies on Kobylkin, which discloses that disposable payment cards are "easily made" and "have no value to anyone unless and when the user funds the . . . disposable payment cards;" that funding the disposable payment cards "can be easily accomplished anywhere by the user scanning the QR code with a user smart phone;" and the disposable payment cards "provide a safe way

for the user to make payments, while limiting exposure that a credit or debit card can have." Ex. 1005 ¶ 52 (cited at Pet. 15).

Petitioner contends that "[a] POSITA would have . . . found it obvious for Smith's payment device to store a transaction sequence count, and to generate a payment cryptogram for each transaction only after receiving a valid credential . . . from the user, based on the teachings of Gomez." Pet. 18–19 (citing Ex. 1003 ¶ 126). Petitioner further contends that:

> [i]mplementing Gomez's transaction counting and cryptogram generation techniques in Smith's mobile device would further Smith's aim of "reducing the potential for fraud" by preventing the use of a stolen mobile device to initiate fraudulent transactions, and preventing the re-use of intercepted cryptograms for additional transactions, as taught by Gomez.

Pet. 19 (citing Ex. 1004 ¶¶ 34, 45; Ex. 1017, 5:39–41, 7:24–26, 8:37–41, 10:34–42, 10:66–11:2, Fig. 7; Ex. 1003 ¶ 126).

Patent Owner argues that Smith "already includes security measures to prevent fraudulent access to the functions of the mobile device" and that Gomez discloses a less secure payment card. Prelim. Resp. 39.

For purposes of institution, we find that Petitioner provides a sufficient rationale for combining Gomez with Smith and Kobylkin, as summarized above, and that Petitioner's rationale is sufficiently supported by the cited prior art and Dr. Shamos's Declaration. Pet. 18–21 (citing Ex. 1004 ¶¶ 33, 34, 45; Ex. 1017, 5:39–41, 7:24–26, 8:37–41, 10:34–42, 10:66–11:2, 13:1–4, Fig. 7; Ex. 1003 ¶¶ 126–130). Petitioner relies on Smith, which indicates that "reducing the potential for fraud" is one aim of the disclosed system. Ex. 1006 ¶ 34. Petitioner also relies on Gomez, which discloses a payment card that "generates an authentication cryptogram for each attempted transaction only after the cardholder successfully presents a

credential, such as a fingerprint or PIN number, into the payment card." Ex. 1007, 5:14–18 (cited at Pet. 13).

Patent Owner's counterargument raises factual issues as to the motivations of a POSITA, but does not preclude a determination of obviousness. *See Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1331 (Fed. Cir. 2019) ("Whether a skilled artisan would have been motivated to combine prior art references is . . . a question of fact."); *see also Intel*, 61 F.4th at 1380–81 (holding that the Board improperly rejected *KSR*'s known-technique rationale when it reasoned that Kabemoto "already addresses" the prior art problem and that it "fail[ed] to see why" a POSITA would regard Bauman's technique as an obvious improvement to Kabemoto).

On the present record, and for the purposes of institution, we conclude that Petitioner's provided explanation of the motivation for the combination of Smith, Kobylkin, and Gomez is sufficient.

c) Remaining Claim Elements

At this stage, Patent Owner does not dispute Petitioner's contention that the combination of Smith, Kobylkin, and Gomez teaches or suggests claim elements 1.0 (to the extent limiting), 1.1–1.7a, and 1.7c–1.13. We determine that Petitioner's showing for independent claim 1 is sufficient for purposes of institution.

5. Independent Claim 15

Petitioner challenges claim 15 based on a combination of Smith, Kobylkin, and Gomez, including by reference to the challenge of claim 1. Pet. 46–48.

a) Claim Element 15.7

Claim element 1.9 of claim 1 specifies that the processor of element 1.2 of claim 1 "is operable to generate at least a portion of a limited-use card payment information for use by an authenticated card user." Ex. 1001, 20:1–3. Claim element 15.7 of claim 15 specifies that the [card-users personal] computing device of limitation 15.2 "is configured to dynamically generate limited-use payment information." Petitioner's contentions with respect to limitation 15.7 refer to its contentions with respect to limitation 1.9. Pet. 47.

Petitioner contends that Smith discloses or suggests claim element 1.9 in its disclosure of a user initiating transmission of payment credentials including a payment cryptogram generated based on at least a portion of the MCA data. Pet. 35 (citing Ex. 1004 ¶¶ 67, 96, 103; Ex. 1003 ¶ 164). Petitioner quotes Smith's disclosure that the payment cryptogram may be "an authorization request cryptogram or dynamic card validation code." *Id.* (quoting Ex. 1004 ¶ 67). Petitioner additionally argues that Gomez teaches that its "authentication cryptogram" is generated if the cardholder successfully presents a credential, and that the cryptogram is thus generated only for an authenticated user. *Id.* at 35–36 (citing Ex. 1017 5:25–28; Ex. 1003 ¶ 165).

Patent Owner argues that because limitation 15.7 requires dynamic generation of limited-use payment information, and limitation 1.9 does not specify that the generation of at least a portion of limited-use card payment information is dynamic, Petitioner has not adequately shown that Smith discloses the dynamic generation of claim 15.7. Prelim. Resp. 35–36. Patent Owner focuses on the Petition's citation of Smith's payment cryptogram and does not address the disclosure that it may be a "dynamic

card validation code." *Id.* at 36–37. Patent Owner argues that Petitioner's citation of Gomez is also unavailing because "Petitioner fails to explain how [Gomez's] cryptogram is dynamically generated or corresponds to limited use payment information." *Id.* at 37–38.

For purposes of institution, we find that Petitioner makes a sufficient showing for claim element 15.7. Pet. 18–20, 35–36, 47. Petitioner has adequately shown how Gomez's cryptogram generation techniques would be used in combination with Smith's teachings. *See id.* at 18–20, 35–36.

In our preliminary view, Petitioner has adequately shown, for the purposes of institution, how limitation 15.7 is taught or suggested in its proposed combination of Smith, Kobylkin, and Gomez.

b) Remaining Claim Elements

At this stage, Patent Owner does not dispute Petitioner's contention that the combination of Smith, Kobylkin, and Gomez teaches or suggests the additional claim elements of claim 15. We determine that Petitioner's showing for independent claim 1 is sufficient for purposes of institution.

6. Dependent Claims 2, 7–10, 12–14, 16, and 18

Claims 2, 7–10, and 12–14 depend from claim 1 and claims 16 and 18 from claim 15. Petitioner challenges these claims based on Smith, Kobylkin, and Gomez. Pet. 7, 41–46, 49–51. Patent Owner does not present arguments for dependent claims 2, 7–10, 12–14, 16, and 18 separate from its arguments for independent claims 1 and 15.

C. Additional Grounds – claims 3–6, 11, 17, and 19–27

Petitioner challenges claims 3–6, 11, 17, and 19–27 based on Smith, Kobylkin, and Gomez, adding Saarisalo, Slonecker, Mestre, Sahota, Moosavi, and Mullen to the combinations for various claims. Pet. 7, 52–88.

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Patent Owner does not raise arguments with respect to these grounds separate from its arguments above.

V. CONCLUSION

We determine that Petitioner has demonstrated that it is more likely than not that at least one of the challenged claims is unpatentable. Accordingly, we institute a post-grant review of all challenged claims on all asserted grounds.

VI. ORDER

It is

ORDERED that, pursuant to 35 U.S.C. § 324(a), a post-grant review of claims 1–27 of the '286 patent is instituted; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 324(d) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial commencing on the entry date of this Order.

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Paper 14
Date: August 11, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

CARDWARE INC.,
Patent Owner.

PGR2023-00013
Patent 11,328,286 B2

Before ELIZABETH M. ROESEL, SHARON FENICK, and IFTIKHAR AHMED, *Administrative Patent Judges.*

FENICK, *Administrative Patent Judge.*

DECISION
Granting Institution of Post-Grant Review
35 U.S.C. § 324

I. INTRODUCTION

A. Background and Summary

Samsung Electronics Co., Ltd. ("Petitioner") filed a Petition (Paper 2, "Pet.") requesting post-grant review of claims 1–27 ("the challenged claims") of U.S. Patent No. 11,328,286 B2 (Ex. 1001, "the '286 patent"). CardWare Inc. ("Patent Owner") filed a Preliminary Response (Paper 9, "Prelim. Resp."). With the Board's authorization, Petitioner filed a Preliminary Reply (Paper 10) and Patent Owner filed a Preliminary Sur-reply (Paper 11). After further authorization, Petitioner filed a corrected Preliminary Reply (Paper 12, "Prelim. Reply") and Patent Owner filed a corresponding second Preliminary Sur-reply (Paper 13, "Prelim. Sur-reply").

A post-grant review may be instituted only if "the information presented in the petition filed under section 321, if such information is not rebutted, would demonstrate that it is more likely than not that at least 1 of the claims challenged in the petition is unpatentable." 35 U.S.C. § 324(a). For the reasons below, Petitioner has demonstrated that it is more likely than not that at least one of the challenged claims is unpatentable. Accordingly, we institute a post-grant review of the challenged claims of the '286 patent on all grounds raised in the Petition.

B. Real Parties in Interest

Petitioner identifies itself, Samsung Electronics Co., Ltd., as well as Samsung Electronics America, Inc. as real parties-in-interest. Pet. 50.

Patent Owner identifies itself, CardWare Inc., as a real party-in-interest. Paper 5 (Patent Owner's Mandatory Notices), 1.

C. Related Matters

The parties each identify as a related matter the district court case styled as *CardWare Inc. v. Samsung Electronics Co., Ltd. and Samsung*

Electronics America, Inc., Case No. 2:22-cv-00141 (E.D. Tex.). Pet. 50–51; Paper 5, 1.

The parties also indicate that the '286 is being challenged in another petition for post-grant review (PGR2023-00012). Pet. 51; Paper 5, 1.

D. The '286 Patent

The '286 patent is titled "Multi-Function Electronic Payment Card and Device System" and describes emulating a standard credit card with a device capable of generating a programmed magnetic field of alternating polarity when used in an electronic credit card reader. Ex. 1001, codes (54), (57), 2:22–28. The '286 patent observes that presently available credit cards, including cards with magnetic strips, cards with smart integrated circuit chips, and radio frequency identification (RFID) cards, have certain security limitations. *Id.* at 1:39–2:8. In addition, according to the '286 patent, chip cards and RFID cards "are not in wide use at present because they are incompatible with existing credit card infrastructure." *Id.* at 8–11. The '286 patent thus describes a device for "credit, debit and cash transactions, including cryptocurrency and card-to-card transactions," particularly with a limited-duration credit card number, that generates "a magnetic field of alternating polarity responsive to the body being detected as adjacent to a standard magnetic card reader." *Id.* at 2:28–51.

Figure 2B, reproduced below, illustrates "an exemplary embodiment of a smart multi-function electronic device." *Id.* at 5:62–63.

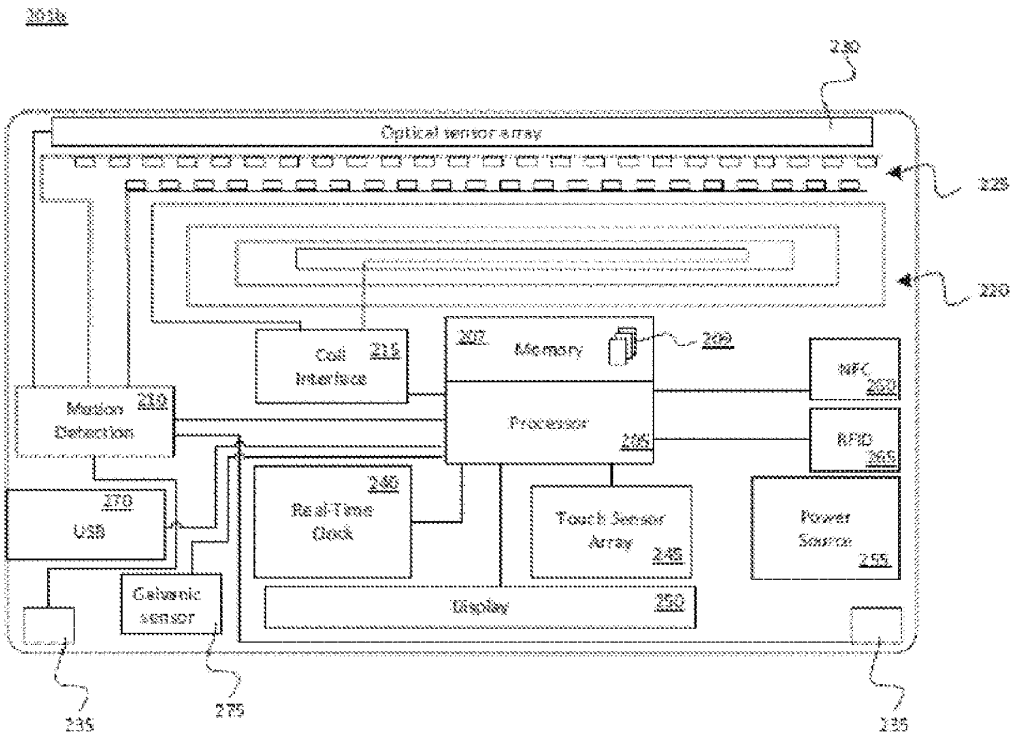


FIG. 2B

Figure 2B shows multi-function electronic device 201*b* comprising processor 205 and memory unit 207 that stores accounts 209, "which may be credit card accounts, banking accounts, merchant accounts, online accounts, cryptocurrency accounts, and combinations thereof." *Id.* at 6:51–59. Motion detector module 210 is coupled to processor unit 205 and to motion detection units, including rate detection assembly 225, optical sensor array 230, and accelerometers 235. *Id.* at 6:59–62. "Each of the motion detection units detects the motion of the credit card . . . in a distinct manner," and a detected movement signal received by motion detection module 210 and sent to processor unit 205 can be "generated by any one of the set of motion detection units, or any combination of motion detection units of the set." *Id.* at 8:2–9:3. Planar coil 220, controlled by processor unit 205 via coil

interface 215, generates a magnetic field that changes polarity to encode the user data at a rate depending "on the rate of relative movement detected by the rate detector." *Id.* at 6:64–7:1.

Device 201*b* also comprises touch-sensor array 245 and display 250, both of which are coupled to processor unit 205. *Id.* at 7:1–4. "A user input may be made via the touch sensor array 245, which may comprise a touch screen panel, a keypad, or a combination thereof." *Id.* at 7:4–6. And "display 250 is able to display an alphanumeric sequence, as well as graphical icons (such as a logo for a bank, or other images)." *Id.* at 7:7–9.

Figure 2C, reproduced below, illustrates "a process of selecting an account from a plurality of stored accounts in order to perform a transaction with the selected account." *Id.* at 7:38–40.

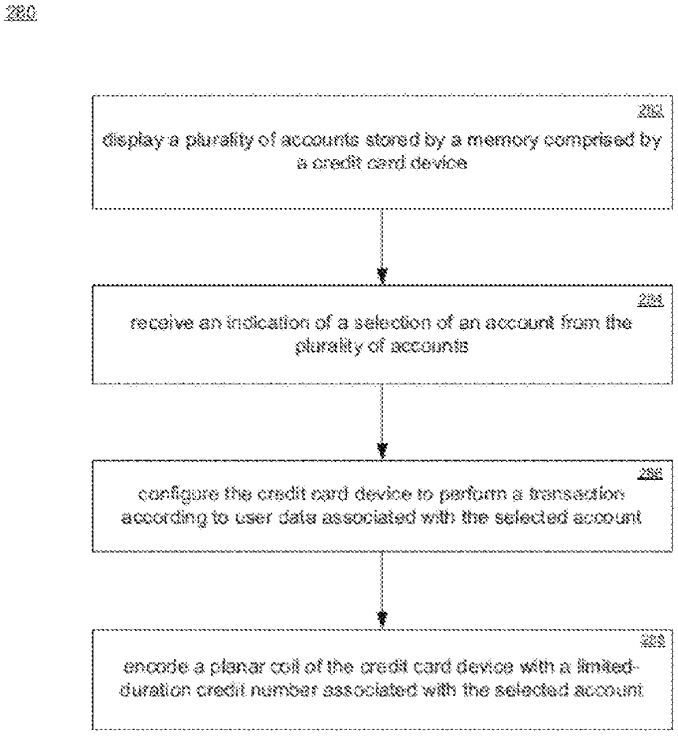


FIG. 2C

As shown in Figure 2C, process 280 begins at step 282 with the display, on display 250 of a multi-function electronic device, of accounts stored in memory unit 207. *Id.* at 7:41–45; *see also id.*, Fig. 2B. At step 284, a user selects an account by using touch sensor array 245, and the selected account may be indicated on display 250. *Id.* at 7:45–49; *see also id.*, Fig. 2B. At step 286, the multi-function electronic device is then "configured according to account information associated with the selected account, which may include an account number, an expiration date, and other user information associated with the account (e.g. a username, PIN, password, email address, etc.)." *Id.* at 7:49–54. Planar coil 220 is then, at step 288, "encoded with a limited-duration credit card number that is associated with the selected account." *Id.* at 7:54–57.

E. Illustrative Claim

Of the challenged claims, claims 1, 15, and 20 are independent. Claim 1, reproduced below with bracketed identifiers added as used by the Petitioner (*see* Pet. vi–vii), is illustrative.

1. [1.0] A payment system comprising:

[1.1] a payment card device free of any fixed payment numbers visible thereon and wherein said payment card device is operable for use in payment card reader equipment; and

[1.2] a computing device comprising:

a processor;

[1.3] a memory;

[1.4] a wireless interface;

[1.5] a touch-screen user interface operable to provide a visual user-interface for user payment interactions; and

[1.6] a user-input device coupled to the processor, and

[1.7] wherein the processor is operable to store a transaction sequence count, a device account number and secrets limited to the computing device, and

[1.8] wherein the computing device is operable to receive, store and transmit a card payment information not visible on the payment card device, and

[1.9] wherein the processor is operable to generate at least a portion of a limited-user card payment information for use by an authenticated card user, and

[1.10] wherein the computing device is operable to convey said limited-use card payment information via an interface of the computing device, and

[1.11] wherein a card issuer authority is operable to reject as invalid a transaction attempt outside of its limitations of use,

[1.12] wherein a card issuer authority is operable to validate a card payment information as authentic when received from at least one of: an authenticated users payment card; and an authenticated users computing device, and

[1.13] wherein the card issuer authority is operable to permit the authentic transactions to complete.

Ex. 1001, 19:50–20:15.

F. Asserted Grounds

Petitioner raises the following grounds of unpatentability with respect to the challenged claims:

Claims Challenged	35 U.S.C. §	Basis
1–27	101	Patent Eligibility
1–19	112	Indefiniteness
12, 13, 17	112	Enablement
20–27	112	Written Description

Pet. 7.

II. POST-GRANT REVIEW ELIGIBILITY

As a threshold issue, we must determine whether the '286 patent is eligible for post-grant review. The post-grant review provisions of the AIA apply to a patent that contains a claim with an effective filing date on or after March 16, 2013. *See* AIA, Pub. L. No. 112-29, 125 Stat. 284 (2011), §§ 3(n)(1), 6(f)(2)(A). The statute defines the "effective filing date" as:

> (A) if subparagraph (B) does not apply, the actual filing date of the patent or the application for the patent containing a claim to the invention; or
>
> (B) the filing date of the earliest application for which the patent is entitled, as to such invention, to a right of priority under section 119, 365(a), 365(b), 386(a), or 386(b) or to the benefit of an earlier filing date under section 120, 121, 365(c), or 386(c).

35 U.S.C. § 100(i)(1).

For a claim in a later-filed application to be entitled to the filing date of an earlier application, the earlier application must provide written description support for the claimed subject matter. *Anascape, Ltd. v. Nintendo of Am. Inc.*, 601 F.3d 1333, 1337 (Fed. Cir. 2010). The written description requirement "guards against the inventor's overreaching by insisting that he [or she] recount his [or her] invention in such detail that his [or her] future claims can be determined to be encompassed within his [or her] original creation." *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1561 (Fed. Cir. 1991). The test for determining compliance with the written description requirement under § 112(a) is whether the original disclosure of the earlier-filed application reasonably would have conveyed to one with ordinary skill in the art that the inventor had possession of the claimed subject matter at the time of the earlier-filed application. *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). It is well settled that "[e]ntitlement to a filing date does not extend to subject matter

which is not disclosed but would be obvious over what is expressly disclosed." *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1571–72 (Fed. Cir. 1997). "It is not sufficient for purposes of the written description requirement of § 112 that the disclosure, when combined with the knowledge in the art, would lead one to speculate as to modifications that the inventor might have envisioned, but failed to disclose." *Id.*

The '286 patent claims priority to a provisional application filed on March 15, 2013, U.S. Provisional App. No. 61/794,891 (Ex. 1012, "the '891 provisional"). Ex. 1001, code (60), 1:6–27. Petitioner argues that claims 3, 5, 6, 12, 15, and 20[1] of the '286 patent lack written description and enabling support in the '891 provisional, and that therefore the '286 patent is eligible for post-grant review. Pet. 1–6. Patent Owner argues that Petitioner has not shown that any claim is not entitled to claim priority to the '891 provisional. Prelim. Resp. 14–26. We address claim 5 in detail. Based on the present record and for the purpose of institution, we determine that there is insufficient support for claim 5 in the '891 provisional, and the '286 patent is eligible for post-grant review.

A. Level of Ordinary Skill in the Art

Petitioner contends that:

> A person of ordinary skill in the art . . . would have had (1) a bachelor's degree in computer science, computer engineering, electrical engineering, or a related field, and (2) one to two years of experience working with payment processing and/or digital authentication systems, including familiarity with short-range wireless technologies.

[1] Claim 20 is listed as unsupported in the table listing assertedly unsupported claims, but argument is only presented with respect to the other claims in the table. Pet. 2–6.

Pet. 9 (citing Ex. 1003 ¶¶ 46–61). Patent Owner does not dispute Petitioner's proposed level of ordinary skill in the art. *See* Prelim. Resp.

For purposes of this Decision, we apply Petitioner's definition of the level of ordinary skill in the art, which is consistent with the level of skill reflected in the Specification and in the asserted prior art references. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

B. Claim 5

Claim 5 depends from claim 1, adding two additional limitations, one of which recites that "the information presented on an interface of said card device, are limited to an in-store merchant card reader facility use only." Ex. 1001, 20:39–41.

Petitioner argues that "the provisional application does not describe limiting the field of use of the payment card device to in-store card reader facility use only, to the exclusion of online transactions." Pet. 4 (citing Ex. 1003 (Declaration of Dr. Michael I. Shamos) ¶ 35). Petitioner argues that the provisional application states explicitly that "the credit card of the present invention could also be used to make online purchases." *Id.* (citing Ex. 1012 ¶ 17). Patent Owner contends that the '891 provisional's disclosure is of a card that only generates usable payment information upon use at an in-store merchant, and that such a card therefore "lacks payment information, such that it cannot be used in an online store." Prelim. Resp. 17–18 (citing Ex. 1012, page 19[2] (figure)), ¶ 14; Ex. 2007 (Declaration of Dr. William C. Easttom II) ¶ 36)). Patent Owner argues, with respect to the '891 provisional's disclosure relating to online transactions, that this

[2] Exhibit 1012 contains page numbers added by Petitioner; when not referring to paragraph numbers, we use these added page numbers to refer to portions of the '891 provisional.

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disclosure describes the card connecting to a personal computer "to ***uniquely*** generate" payment information for online purchases. *Id.* at 18 (quoting Ex. 1012 ¶ 17). Patent Owner argues that this means that "the information for online purchases is unique from that used for in-store transactions." *Id.*

On this record, and for the purposes of institution, we agree that Petitioner has sufficiently shown that the information presented on the interface of the card device is not described in the '891 provisional as being limited to use in an in-store merchant card reader facility. The '891 provisional describes the card "connect[ing] to a personal computer" for use in generating payment information for online purchases. Ex. 1012 ¶ 17. While Patent Owner argues that the description in the '891 provisional of "uniquely generat[ing] a credit card number" means a use "unique from that used for in-store transactions," this description echoes the general description of the use of the card to provide "a unique credit card number . . . for each transaction." *Compare* Ex. 1012 ¶ 14, *with id.* ¶ 17.

Dr. Easttom's testimony that "[g]iven that the payment card disclosed in the provisional does not have visible account information, there is no way for a user to simply use the information that might be presented on an interface of the card (such as a partial number) to perform an online transaction," does not appear to take into account the description in the provisional that the card is connected to the personal computer via RFID or near field technology to generate the credit card number, and thus that information would not need to be visually presented to a user in order to be used. Ex. 2007 ¶¶ 36–39; Ex. 1012 ¶ 17. The description of this connection is followed by a description that the number "*could* also" be displayed on a front display of the card. Ex. 1012 ¶ 17 (emphasis added). Our determination is that this describes the generated number *could* be displayed

for the user, or alternatively (if not displayed) could be used without being displayed on the front display of the card. This is confirmed in the immediately following sentence, describing an embodiment in which the payment card is "equipped with a means for communicating with the USB port on the computer in connection with making the online purchases." *Id.* "A connector for connection to standard computing devices" is described in the '891 provisional as a "USB *interface*." *Id.* at claim 8 (p. 17).

Dr. Easttom concludes that, if there is no visible account information on the payment card, "there is no way for a user to simply use the information that might be presented on an interface of the card . . . to perform an online transaction." Ex. 2007 ¶ 36. This conclusion appears to rely on an assumption that claim 5's "an interface of said card device" must be a display of the card device, such as the thin film liquid crystal display described in the '891 provisional. Ex. 2007 ¶ 36; Ex. 1012 ¶ 16 (describing display), p. 19 (figure). But, as discussed, the '891 provisional describes a card with a USB interface used in making online purchases.

On this record, and for the purposes of institution, Petitioner has shown sufficiently that the '891 provisional does not support a payment card device presenting information on an interface of said card device that is limited to in-store merchant card reader facility use, as recited in claim 5, and the '286 patent is eligible for post-grant review.

III. DISCRETION UNDER 35 U.S.C. § 324(a)

Petitioner, having filed two petitions for post grant review (in this proceeding and PGR2023-00012) of the '286 patent, submitted a Ranking of Petitions. Paper 3 ("Ranking Paper"); *see* PTAB Consolidated Trial Practice Guide, 59–60 (Nov. 2019) ("CTPG"). We address whether the parallel petitions raise fairness, timing, and efficiency concerns. CTPG 59–60.

Additionally, Patent Owner argues that we should exercise discretion to deny institution under 35 U.S.C. § 324(a) because the factors identified in *Apple, Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential) ("*Fintiv*"), weigh in favor of denying institution. Prelim. Resp. 48–50. Petitioner argues we should not discretionarily deny institution for efficiency reasons and after considering the *Fintiv* factors. Pet. 50–57.

A. Parallel Petitions Challenging the Same Patent

As noted above, Petitioner filed two petitions on the same day. This Petition challenges all claims of the '286 patent under 35 U.S.C. §§ 101 and 112, and PGR2023-00012 challenges the same claims under obviousness grounds. Pet. 7; PGR2023-00012, Paper 3 (Petition), 7.

Pursuant to the Board's Consolidated Trial Practice Guide ("Trial Practice Guide"), Petitioner provides a ranking of the two petitions in the order in which Petitioner wishes the Board to consider the merits and an explanation of the differences between the petitions. Ranking Paper; *see* CTPG 59–60. Petitioner ranks its petition in PGR2023-00012 first, and ranks the Petition here second. Petitioner asserts that because Patent Owner has asserted a large number of claims in the district court litigation, and because "the claims are long, with multiple wordy limitations, and generally include distinct limitations that are required to be addressed individually with respect to the cited prior art references," the parallel petitions are justified. Ranking Paper 1–2 (citing CTPG 59).

Patent Owner does not directly address whether we should use our discretion to deny this Petition due to the parallel filing of PGR2023-00012. Patent Owner does argue that we should deny institution of the Petition based on efficiency concerns because "the vast majority – if not all – of

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Samsung's multiple challenges" do not meet the institution standard. Prelim. Resp. 50–51. However, this argument relates to the strength of the merits and not to the propriety of considering these two parallel petitions. Patent Owner additionally argues, with respect to *Fintiv* factor 4, that the stipulation offered is less effective because it does not "take into account Samsung's dual Petitions challenging the same claims." *Id.* at 55–56.

Institution of a post-grant review is discretionary. *See* 35 U.S.C. § 324(a); *cf. Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) (interpreting, in an *inter partes* context, that the similar language in 35 U.S.C. § 314(a) means "the PTO is permitted, but never compelled, to institute an IPR proceeding."). In evaluating whether to exercise that discretion here, we turn to the Trial Practice Guide, which provides guidance on whether institution of more than one concurrently filed petition challenging the same patent is appropriate. *See* CTPG 59.

The Trial Practice Guide states that "one petition should be sufficient to challenge the claims of a patent in most situations." CTPG 59. "Two or more petitions filed against the same patent at or about the same time . . . may place a substantial and unnecessary burden on the Board and the patent owner and could raise fairness, timing, and efficiency concerns." *Id.* (citing 35 U.S.C. § 316(b), which is identical to 35 U.S.C. § 326(b)). Although rare circumstances may necessitate two petitions, "the Board finds it unlikely that circumstances will arise where three or more petitions by a petitioner with respect to a particular patent will be appropriate." *Id.*

To help the Board determine whether multiple petitions are necessary, the Trial Practice Guide further instructs a petitioner filing multiple petitions challenging the same patent to explain "the differences between the petitions, why the issues addressed by the differences are material, and why

the Board should exercise its discretion to institute additional petitions if it identifies one petition that satisfies petitioner's burden under 35 U.S.C. § 314(a)." CTPG 59–60. Additionally, the Trial Practice Guide instructs the patent owner to "clearly proffer any necessary stipulations," where the patent owner asserts that "the differences identified by the petitioner are directed to an issue that is not material or not in dispute." *Id.* at 61. The patent owner may, for example, "seek to avoid additional petitions by proffering a stipulation that certain claim limitations are not disputed or that certain references qualify as prior art." *Id.*

In light of the particular facts before us, we decline to exercise our discretion to deny the Petition pursuant to 35 U.S.C. § 324(a) on the basis of the filing of two parallel petitions. In particular, we recognize that the two petitions do not include duplicate attacks on the basis of unpatentability over prior art, but rather break the issues into two distinct parts—prior-art based unpatentability challenges, in PGR2023-00012, and 35 U.S.C. §§ 101 and 112 challenges here. The usual considerations of fairness, timing, and efficiency do not weigh in favor of exercising our discretion to deny institution. In particular, the petitions were filed concurrently, which means that Petitioner did not gain a timing advantage that might otherwise occur if the petitions were filed serially. Additionally, the proceedings can be coordinated, and a similar or common schedule can be adopted. To the extent that Patent Owner argues (*see* Prelim. Resp. 55–56) that Petitioner was attempting to avoid providing a single stipulation that (upon institution) Petitioner will pursue neither section 103 grounds on certain art, as per the stipulation offered in PGR2023-00012, nor section 101 and 112 grounds as per the stipulation here (*see* Pet. 49), discretionary denial of this Petition would not provide such a stipulation. Because we institute both here and in

PGR2023-00012, the effect of the two stipulations in these two proceedings is equivalent to our best understanding of Patent Owner's desired stipulation "tak[ing] into account" the two Petitions.

Accordingly, based on the particular facts and circumstances before us, we decline to exercise our discretion to deny the instant Petition under § 324(a) on the basis of the Petitioner's filing of multiple petitions.

B. Fintiv *Analysis*

The precedential decision in *Fintiv* identifies a non-exclusive list of factors parties may consider addressing where there is a related, parallel district court action to determine whether such action provides any basis for discretionary denial. *Fintiv*, 5–16. Those factors include:

> 1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
>
> 2. proximity of the court's trial date to the Board's projected statutory deadline for a final written decision;
>
> 3. investment in the parallel proceeding by the court and the parties;
>
> 4. overlap between issues raised in the petition and in the parallel proceeding;
>
> 5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
>
> 6. other circumstances that impact the Board's exercise of discretion, including the merits.

Id. at 5–6.

In evaluating the factors, we take a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review. *Id.* at 6. The Director has issued additional guidance on the application of *Fintiv*. *See* Katherine K. Vidal, *Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court*

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Litigation (June 21, 2022)[3] ("*Fintiv* Memo"). Additionally, we are guided by the precedential decisions of the Director in *OpenSky Indus., LLC v. VLSI Tech. LLC*, IPR2021-01064, Paper 102, 49–50 (Oct. 4, 2022) (precedential) and *CommScope Techs. LLC v. Dali Wireless, Inc*, IPR2022-01242, Paper 23 (Feb. 27, 2023) (precedential) ("*CommScope*").

We are instructed to consider compelling merits under *Fintiv* factor six only after a determination that the first five *Fintiv* factors favor discretionary denial. *CommScope*, 4–5. Thus, we begin by considering the first five *Fintiv* factors.[4]

1. First Five Fintiv *Factors*

a) Factor 1 - Whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted

"A district court stay of the litigation pending resolution of the PTAB trial allays concerns about inefficiency and duplication of efforts." *Fintiv*, 6. *Fintiv* indicated that, in previous Board decisions, the existence of a district court stay pending Board resolution of an *inter partes* review has weighed strongly against discretionary denial, while a denial of such a stay request sometimes weighs in favor of discretionary denial. *Id.* at 6–8.

Patent Owner notes that a stay was requested after the filing of the Petition and not granted in the district court litigation, and asserts that this factor should be viewed as neutral. Prelim. Resp. 52; Ex. 1107.[5]

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[3] Available at https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf

[4] While *Fintiv* factor six encompasses considerations other than the compelling merits, neither party has argued such considerations exist in this case.

[5] Patent Owner cites Exhibit 2003. Exhibits 1107 and 2003 appear to be the same order, but Exhibit 1107 is signed by the magistrate judge.

The court in the district court litigation noted in its denial of the stay request that it was following "the universal practice" in the district, to deny a stay based on post-grant review requests where institution decisions have not yet been issued, and provided no additional reasoning or indication of future action with respect to any potential renewal of the stay request. Ex. 1107. Because, "[i]n the absence of specific evidence, we will not attempt to predict" whether a district court would stay "based on a variety of circumstances and facts beyond our control and to which the Board is not privy," we find this factor to be neutral. *See Sand Revolution II, LLC v. Cont'l Intermodal Group – Trucking LLC*, IPR2019-01393, Paper 24 at 7 (PTAB June 16, 2020) (informative) ("*Sand Revolution*").

b) Factor 2 - Proximity of the court's trial date to the Board's projected statutory deadline for a final written decision

The proximity factor in *Fintiv* asks us to evaluate our discretion in light of a trial date that has been set in a parallel litigation. *See Fintiv*, 3, 5 ("*NHK* applies to the situation where the district court has set a trial date to occur earlier than the Board's deadline to issue a final written decision in an instituted proceeding."; "When the patent owner raises an argument for discretionary denial under *NHK* due to an earlier trial date, the Board's decisions have balanced the following factors . . . .") (citing *NHK Spring Co. v. Intri-Plex Techs., Inc.*, IPR2018-00752, Paper 8 at 20 (PTAB Sept. 12, 2018) (precedential)("*NHK*")). As noted above in the discussion of the first factor, *Fintiv* cites concern regarding "inefficiency and duplication of efforts." *Id.* at 6. In its analysis of the proximity factor, *Fintiv* echoes that concern in its guidance that "[i]f the court's trial date is at or around the same time as the projected statutory deadline or even significantly after the projected statutory deadline, the decision whether to institute will likely

implicate other factors discussed herein, such as the resources that have been invested in the parallel proceeding." *Id.* at 9. Similarly, in *NHK*, the Board expressed concern that a trial before the deadline for a final written decision addressing the same prior art and arguments would have undermined the Board's objectives of providing an effective and efficient alternative to district court litigation. *See NHK*, 20 (citing *General Plastic Indus. Co., Ltd. v. Cannon Kabushiki Kaisha*, IPR2016-01357, Paper 19 at 16–17 (PTAB Sept. 6, 2017 (precedential))).

We are instructed that

> when analyzing the proximity of the court's trial date under factor two of *Fintiv*, when other relevant factors weigh against exercising discretion to deny institution or are neutral, the proximity to trial should not alone outweigh all of those other factors. Parties may present evidence regarding the most recent statistics on median time-to-trial for civil actions in the district court in which the parallel litigation resides for the PTAB's consideration. Where the parties rely on time-to-trial statistics, the PTAB will also consider additional supporting factors such as the number of cases before the judge in the parallel litigation and the speed and availability of other case dispositions.

Fintiv Memo, 8–9 (internal citations and footnote deleted).

Based on median time-to-trial data for the Eastern District of Texas, Petitioner asserts that "trial would be expected to occur in May, 2024" but that "delays are possible" and indicated by the median time to trial statistics. Pet. 48 (citing Ex. 1103, 35; Ex. 1104). According to Petitioner, a final written decision ("FWD") in this proceeding is anticipated in July of 2024. *Id.* Nevertheless, Petitioner argues that "[t]he Board should not deny institution due to the close proximity of the expected FWD and the predicted trial date in E.D. Tex." *Id.*

Patent Owner contends that as the docket control order sets jury selection for February 5, 2024, the district court trial date precedes the anticipated final written decision deadline by six months. Prelim. Resp. 52 (citing Ex. 2001). Patent Owner additionally argues that, if the Board relies on median time-to-trial, then we should use the more recent time-to-trial data for the district, which would indicate an even earlier trial date than that scheduled in the docket control order, or the specific judge's median time-to-trial, which is similar. *Id.* at 53–54 (citing Ex. 2004, 35; Ex. 2002, 1). Patent Owner additionally argues that the *Markman* hearing was set for August 1, 2023. *Id.* at 52 (citing Ex. 2001).

Because the trial in the district court litigation, under any of the parties' proposed approaches, appears likely to begin several months before our deadline to reach a decision, this factor weighs in favor of discretionary denial.

c) Factor 3 - Investment in the parallel proceeding by the court and the parties

If, at the time of the institution decision, the district court has issued substantive orders related to the challenged patent, such as a claim construction order, this fact weighs in favor of denial. *See Fintiv*, 9–10. On the other hand, if the district court has not issued such orders, this fact weighs against discretionary denial. *Id.* at 10.

Petitioner argues that the bulk of investment in the district court litigation has yet to occur, and that no part of claim construction or document production had occurred at the time of the filing of the Petition. Pet. 49.

Patent Owner argues that by the time of our decision, the claim construction process will be complete and the document production process substantially complete. Prelim. Resp. 54 (citing Ex. 2001, 3–4).

The docket control order shows that the claim construction hearing was scheduled to take place on August 1, 2023. Ex. 2001, 3. *Fintiv* directs us to consider whether "the petitioner filed the petition expeditiously." *Fintiv*, 11. Although we are mindful of the investment of the parties to date, we find that, at this time, that no substantive orders related to the challenged patent have been issued by the district court. Additionally, on the record before us the filing of the Petition was expeditious. We determine this factor weighs slightly against exercising discretion to deny institution.

d) Factor 4 - Overlap between issues raised in the petition and in the parallel proceeding

"[I]f the petition includes the same or substantially the same claims, grounds, arguments, and evidence as presented in the parallel proceeding, this fact has favored denial." *Fintiv*, 12. "Conversely, if the petition includes materially different grounds, arguments, and/or evidence than those presented in the district court, this fact has tended to weigh against exercising discretion to deny institution under *NHK*." *Id.* at 12–13. A stipulation as in *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 at 18–19 (PTAB Dec. 1, 2020) (precedential as to § II.A), if one is entered, would be highly relevant. "Consistent with *Sotera Wireless, Inc.*, the PTAB will not discretionarily deny institution in view of parallel district court litigation where a petitioner presents a stipulation not to pursue in a parallel proceeding the same grounds or any grounds that could have reasonably been raised before the PTAB." *Fintiv* Memo 3 (footnote omitted).

Petitioner offers, in the Petition, a stipulation that, if IPR is instituted, "it will not pursue in the Related District Court Litigation invalidity grounds under 35 U.S.C. §§ 101 or 112 against the Challenged Claims of the '286 patent." Pet. 49. Petitioner argues that this will remove all overlap between the proceedings.

Patent Owner argues "the Related Litigation will have already considered at least Section 112 pre-institution and reached a final jury verdict on validity months before the statutory deadline for a Final Written Decision." Prelim. Resp. 55. Patent Owner additionally argues that "Samsung has already asked the district court to consider many of the *same* indefiniteness arguments in district court." *Id.* (citing Ex. 2006; Ex. 2034).

Patent Owner's reference to the final jury verdict ignores the language of the stipulation – that Petitioner will not pursue section 101 or 112 invalidity grounds in the related district court litigation *if we institute*. Although we understand that a *Markman* hearing was scheduled to occur in the days before this Decision, we do not understand an order to have issued, and thus, there is no conflicting decision. Additionally, while Patent Owner argues that "many of the *same* indefiniteness arguments" are at issue in district court, the parties prehearing statement in the related litigation shows that the claim terms of the '286 patent that Petitioner asserted were indefinite are "static" in claims 20, 21, and 24–27, "its limitations of use" in claim 1, "valid range of device limitations" in claim 6, and "a biometric sensing of a recognized user proximity" in claim 12. Ex. 2034, 18, 28, 29. Only two of these indefiniteness arguments are made before us, while many additional arguments related to indefiniteness are made here that are not at issue in district court. *See* Pet. 39–45. Based on this record, we find that

Petitioner's stipulation will reduce the potential overlap that may occur with the district court litigation, and that the potential for overlap is not extensive.

Thus, we determine this factor weighs against exercising discretion to deny institution.

e) Factor 5 - Whether the petitioner and the defendant in the parallel proceeding are the same party

If the petitioner is unrelated to the defendant in the parallel proceeding, that might weigh against discretionary denial. *See Fintiv*, 13–14.

Patent Owner notes that the related district court litigation involves the same parties. Prelim. Resp. 56.

As with *Fintiv* factor 2, therefore, this factor weighs marginally in favor of exercising our discretion to deny the Petition.

2. Conclusion

We have considered the circumstances and facts before us in view of the first five *Fintiv* factors. Because our analysis is fact-driven, no single factor is determinative of our conclusion. Considering these five *Fintiv* factors together, we determine that they do not favor a discretionary denial. As we do not find that the first five *Fintiv* factors favor discretionary denial, we therefore do not make a determination regarding compelling merits under *Fintiv* factor 6, and our consideration ends with this conclusion. *CommScope*, 4–5.

IV. PATENTABILITY ANALYSIS

In a post-grant review, the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable. *See* 35 U.S.C. § 322(a)(3) (requiring post-grant review petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to

each claim"); *cf. Harmonic Inc.*, 815 F.3d at 1363 (Fed. Cir. 2016) ("[I]t was [Petitioner's] burden to explain to the Board how [the combination of prior art] rendered the challenged claims unpatentable."). This burden never shifts to Patent Owner. *Cf. Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)) (discussing the burden of proof in *inter partes* review).

A. Claim Construction

We construe claim terms according to the standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–17 (Fed. Cir. 2005) (en banc), i.e., as construed in a civil action under 35 U.S.C. § 282(b). *See* 37 C.F.R. § 42.100(b). Under *Phillips*, claim terms are afforded "their ordinary and customary meaning." *Phillips*, 415 F.3d at 1312. "[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention." *Phillips*, 415 F.3d at 1313. "Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Phillips*, 415 F.3d at 1313. An inventor may rebut that presumption by providing a definition of the term in the specification "with reasonable clarity, deliberateness, and precision." *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). In the absence of such a definition, limitations are not to be read from the specification into the claims. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

We address the meaning of several claim terms below and determine that no additional claim construction is needed for purposes of this Decision. Our claim constructions are not final, and we invite the parties to address

claim construction in their post-institution submissions to the extent allowable by our rules.

1. Alleged printed matter in claims 1, 5, 15, 19, and 20

Petitioner contends that claims 1, 5, 15, 19, and 20 include limitations directed to printed matter because they have "no functional or structural relationship to the claimed substrate on which the information is disposed or printed," and that these limitations, therefore, are entitled to no patentable weight. Pet. 8–9.

On this record, we agree with Petitioner that claim elements 1.1, 1.8, 5.0, 15.1, 19.0, 19.1, and 20.[6]1 recite printed matter entitled to no patentable weight.

"[P]rinted matter encompasses any information claimed for its communicative content, and the doctrine prohibits patenting such printed matter unless it is 'functionally related' to its 'substrate,' which encompasses the structural elements of the claimed invention." *C R Bard Inc. v. AngioDynamics, Inc.*, 979 F.3d 1372, 1381 (Fed. Cir. 2020); *see also Praxair Distribution, Inc. v. Mallinckrodt Hosp. Prod. IP Ltd.*, 890 F.3d 1024, 1031 (Fed. Cir. 2018) ("Claim limitations directed to printed matter are not entitled to patentable weight unless the printed matter is functionally related to the substrate on which the printed matter is applied."); *In re Distefano*, 808 F.3d 845, 848 (Fed. Cir. 2015) ("[I]f a limitation claims (a) printed matter that (b) is not functionally or structurally related to the physical substrate holding the printed matter, it does not lend any patentable weight to the patentability analysis.").

[6] We use the claim limitation identifiers as used by Petitioner in the Petition's claim listing. *See* Pet. vi–xiii.

In our view, claim elements 1.1, 1.8, 5.0, 15.1, 19.1, and 20.1 recite printed matter entitled to no patentable weight because they require that a particular type of information—"fixed payment numbers" or "card payment information" or "payment number information"—be absent from the face of the payment card device. If they were affirmatively recited, "fixed payment numbers" or "payment number information" would no doubt qualify as information claimed for its communicative content that is not functionally related to the substrate, as no reference to or functional use of such fixed payment numbers, card payment information, or payment number information is found in claims 1, 5, 15, 19, and 20. The negative limitation, that no fixed payment numbers, card payment information, or payment number information is on the device, is just as much recitation of printed matter as the affirmative recitation would be. In both cases, information is being claimed for its communicative content. These claim elements simply recite that a particular type of information—fixed payment numbers, card payment information, or payment number information—is not included in the communication.

Patent Owner argues that these claim elements are "functionally related to the claimed devices within the claimed system" because "the claimed 'no fixed payment numbers' and similar enhance the security of the claimed systems by removing the possibility that 'a malicious third party [would] record [such information] in order to later make fraudulent transactions on the account.'" Prelim. Resp. 22 (citing Ex. 1001, 9:62–10:2). We disagree. Our reviewing court instructs: "In evaluating the existence of a functional relationship, we have considered whether the printed matter merely informs people of the claimed information, or whether it instead interacts with the other elements of the claim to create a new

functionality in a claimed device or to cause a specific action in a claimed process." *Bard*, 979 F.3d at 1381. Fixed payment numbers inform people of particular information, and claim elements 1.1, 1.8, 5.0, 15.1, 19.1, and 20.1 recite that the matter printed on the payment card device should not inform people of that particular information. The absence of fixed payment numbers does not interact with the other elements of the claim to create a new functionality in a claimed device or to cause a specific action in a claimed process.

The foregoing analysis applies equally to element 19.0 of dependent claim 19, which recites an limitation that recites that the payment card device "comprises fixed payment information disposed thereon," but that such fixed payment information "comprises only" certain types of information.

2. Alleged additional non-limiting claim features in claims 1, 6, 11, 13–15, and 17

Petitioner contends that claims 1, 6, 11, 13–15, and 17 include features that "are not limiting as they do not define further limitations of the recited payment devices and systems." Pet. 9–10. The claim elements relate to certain limitations on a "card issuer authority," a "card issuing authority," or a "payment issuing authority." Ex. 1001, 20:7–15, 20:45–59, 21:13–16, 21:38–46, 22:6–12, 22:25–29. Petitioner argues, without more, that in claim 1, the "card issuer authority" is not recited as being included in the "payment system" and that therefore "language describing a function the card issuer authority 'is operable' to perform does not limit any aspect of the claimed payment system." Pet. 10. On this record, Petitioner has not shown these limitations to be non-limiting to the scope of the claims.

B. Ground 1: Patent-ineligibility of claims 1–27

An invention is patent-eligible if it claims a "new and useful process, machine, manufacture, or composition of matter." 35 U.S.C. § 101. However, the Supreme Court has long interpreted 35 U.S.C. § 101 to include implicit exceptions: "[l]aws of nature, natural phenomena, and abstract ideas" are not patentable. *E.g.*, *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014).

In determining whether a claim falls within an excluded category, we are guided by the Supreme Court's two-step framework, described in *Mayo* and *Alice*. *Alice*, 573 U.S. at 217–18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75–77 (2012)). In accordance with that framework, we first determine what concept the claim is "directed to." *See id.* at 219 ("On their face, the claims before us are drawn to the concept of intermediated settlement, *i.e.*, the use of a third party to mitigate settlement risk."); *see also Bilski v. Kappos*, 561 U.S. 593, 611 (2010) ("Claims 1 and 4 in petitioners' application explain the basic concept of hedging, or protecting against risk.").

Concepts determined to be abstract ideas, and thus patent ineligible, include certain methods of organizing human activity, such as fundamental economic practices (*Alice*, 573 U.S. at 219–20; *Bilski*, 561 U.S. at 611); mathematical formulas (*Parker v. Flook*, 437 U.S. 584, 594–95 (1978)); and mental processes (*Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)). Concepts determined to be patent eligible include physical and chemical processes, such as "molding rubber products" (*Diamond v. Diehr*, 450 U.S. 175, 191 (1981)); "tanning, dyeing, making water-proof cloth, vulcanizing India rubber, smelting ores" (*id.* at 182 n.7 (quoting *Corning v. Burden*, 56 U.S.

252, 267–68 (1854))); and manufacturing flour (*Benson*, 409 U.S. at 69 (citing *Cochrane v. Deener*, 94 U.S. 780, 785 (1876))).

In *Diehr*, the claim at issue recited a mathematical formula, but the Supreme Court held that "a claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula." *Diehr*, 450 U.S. at 187; *see also id.* at 191 ("We view respondents' claims as nothing more than a process for molding rubber products and not as an attempt to patent a mathematical formula."). Having said that, the Supreme Court also indicated that a claim "seeking patent protection for that formula in the abstract . . . is not accorded the protection of our patent laws, . . . and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment." *Id.* (citing *Benson* and *Flook*); *see, e.g.*, *id.* at 187 ("It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.").

If the claim is "directed to" an abstract idea, we turn to the second step of the *Alice* and *Mayo* framework, where "we must examine the elements of the claim to determine whether it contains an 'inventive concept' sufficient to 'transform' the claimed abstract idea into a patent-eligible application." *Alice*, 573 U.S. at 221 (quotation marks omitted). "A claim that recites an abstract idea must include 'additional features' to ensure 'that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].'" *Id.* (alterations in original) (quoting *Mayo*, 566 U.S. at 77). "[M]erely requir[ing] generic computer implementation[] fail[s] to transform that abstract idea into a patent-eligible invention." *Id.*

In January 2019, the U.S. Patent and Trademark Office ("USPTO") published revised guidance on the application of § 101. 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019) ("Guidance").[7] "All USPTO personnel are, as a matter of internal agency management, expected to follow the guidance." (*Id.* at 51; *see also* October 2019 Update at 1).[8]

Under the 2019 Revised Guidance, we first look to whether the claim recites:

> (1) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activity such as a fundamental economic practice, or mental processes) ("Step 2A, Prong One"); and
>
> (2) additional elements that integrate the judicial exception into a practical application (*see* Manual of Patent Examining Procedure ("MPEP") § 2106.05(a)–(c), (e)–(h) (9th ed. Rev. 10.2019 (June 2020))) ("Step 2A, Prong Two").[9]

(Guidance, 84 Fed. Reg. at 52–55).

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[7] In response to received public comments, the Office issued further guidance on October 17, 2019, clarifying the 2019 Revised Guidance. USPTO, *October 2019 Update: Subject Matter Eligibility* (the "October 2019 Update") (available at https://www.uspto.gov/sites/default/files/documents/peg_oct_2019_update.pdf).

[8] The Manual of Patent Examining Procedure incorporates the 2019 Guidance and subsequent updates in Section 2106 (9th ed. Rev. 10.2019, rev. June 2020).

[9] This evaluation is performed by (a) identifying whether there are any additional elements recited in the claim beyond the judicial exception, and (b) evaluating those additional elements individually and in combination to determine whether the claim as a whole integrates the exception into a practical application. *See* Guidance – Section III(A)(2), 84 Fed. Reg. at 54–55.

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, do we then look, under Step 2B, to whether the claim:

> (3) adds a specific limitation beyond the judicial exception that is not "well-understood, routine, conventional" in the field (*see* MPEP § 2106.05(d)); or
>
> (4) simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception.

(Guidance, 84 Fed. Reg. at 52–56). The U.S. Court of Appeals for the Federal Circuit has explained that "the 'directed to' inquiry applies a stage-one filter to claims, considered in light of the [S]pecification, based on whether 'their character as a whole is directed to excluded subject matter.'" *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335 (Fed. Cir. 2016) (quoting *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1346 (Fed. Cir. 2015)). It asks whether the focus of the claims is on a specific improvement in relevant technology or on a process that itself qualifies as an "abstract idea" for which computers are invoked merely as a tool. *See Enfish*, 822 F.3d at 1335–36.

In so doing, as indicated above, we apply a "directed to" two prong test: 1) evaluate whether the claim recites a judicial exception, and 2) if the claim recites a judicial exception, evaluate whether the claim "appl[ies], rel[ies] on, or use[s] the judicial exception in a manner that imposes a meaningful limit on the judicial exception, such that the claim is more than a drafting effort designed to monopolize the judicial exception." (Guidance, 84 Fed. Reg. at 53; *see also* MPEP §§ 2106.04–2106.05).

1. Prong One – Evaluation of Whether the Claim Recites a Judicial Exception

Petitioner argues that claim 1 is directed to generic and conventional computer components, and to the use of those components in generating, receiving, storing, transmitting, and analyzing payment information. Pet. 16–18. Petitioner argues that this is similar to the claims enabling a transaction between a user and a merchant that the Federal Circuit found ineligible in *Universal Secure Registry v. Apple, Inc.*, 10 F.4th 1342, 1349 (Fed. Cir. 2021) ("*USR*"). Petitioner asserts that the '286 patent describes the generation of a limited-duration credit card number "according to" certain information associated with the transaction, but "discloses no formulas or instructions on how to generate the limited-duration credit card number" according to the recited information. *Id.* at 18. Generally, Petitioner argues that the claims are directed to fundamental economic practices and commercial or legal interactions. *Id.* at 28–29.

Patent Owner argues that the claim is directed to a payment system incorporating security improvements utilizing a specific technique that departs from earlier approaches to solve a specific computer problem. Prelim. Resp. 18–22, 24–25 (citing *Ancora Techs., Inc. v. HTC Am.*, Inc., 908 F.3d 1343 (Fed. Cir. 2018); *Finjan, Inc. v. Blue Coat Systems*, 879 F.3d 1299, 1305 (Fed. Cir. 2018); *SRI Int'l Inc. v. Cisco Systems, Inc.*, 930 F.3d 1295 (Fed. Cir. 2019)). Patent Owner argues that the *USR* case is inapposite because Petitioner "oversimplifies the claimed invention of the '286 patent and ignores the improvement to payment security" and "[t]he claims [of the '286 patent] are not simply directed to a 'mapping' of one piece of information to another." *Id.* at 22–24. Patent Owner argues that Petitioner's

arguments are contradicted by its arguments in its application for a patent relating to improved network security. *Id.* at 27–29.

On the present record, we determine that Petitioner has sufficiently shown that the claim 1 is directed to the secure verification of a user's information in order to enable a transaction with a payment server. *See USR*, 10 F.4th at 1353; *Innovation Scis., LLC v. Amazon.com, Inc.*, 778 F. App'x 859, 863 (Fed. Cir. 2019) (finding "securely processing a credit card transaction with a payment server" to be an abstract idea). As the Petitioner argues, "Representative Claim 1 concerns payment transactions using substitute payment information that is available for a 'limited use' in place of, e.g., a credit card number, and conveying and validating that substitute information prior to completing a transaction." Pet. 16. The decisions in *Ancora Techs.*, *Finjan*, and *SRI Int'l* do not change our preliminary view of the sufficiency of Petitioner's contentions. In *Ancora Techs.*, the court found that the claim "specifically identifie[d] how [the] functionality improvement is effectuated in an assertedly unexpected way" and had "the specificity required to transform a claim from one claiming only a result to one claiming a way of achieving it," by specifying the use of a particular portion of the computer's firmware. *Ancora Techs.*, 908 F.3d at 1348–49. *Finjan* and *SRI Int'l* similarly find that each includes a non-abstract improvement to computer technology. *Finjan*, 879 F. 3d at 1305 ("[T]he method of claim 1 employs a new kind of file that enables a computer security system to do things it could not do before'"); *SRI Int'l*, 930 F.3d at 1303–04 ("[T]he representative claim improves the technical functioning of the computer and computer networks by reciting a specific technique for improving computer network security."). While Patent Owner argues that the claims include "a payment card free of fixed payment information that

can generate a dynamic number at the time of the transaction" and "an electronic device that can generate a limited-use payment number," on this record and for the purposes of institution, we find that Petitioner has sufficiently shown that the claims are directed to an abstract idea in the realm of fundamental economic practices and commercial or legal interactions.

2. Prong Two – Integration into a Practical Application

Turning to the second prong of the "directed to" test, Petitioner argues that the claim 1 (along with the balance the of the challenged claims) does not recite an improvement to technology that integrates the technology into a practical application. Pet. 29–30. Patent Owner asserts that claim 1 imposes a meaningful limit on the judicial exception, because of the use of a "payment number-free card and an electronic device that generates a limited-use number." Prelim. Resp. 31–32. Patent Owner asserts that this is "a *new* way of performing a transaction . . . that works within the existing payment infrastructure." *Id.* at 32.

On the present record and for the purposes of institution, we determine that Petitioner has sufficiently shown that none of the recitations of claim 1 integrates the judicial exception as to "impose[] a meaningful limit on the judicial exception, such that the claim is more than a drafting effort designed to monopolize the judicial exception." Guidance at 53. That claims do not preempt all forms of the abstraction does not make them any less abstract. *See OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1362–63 (Fed. Cir. 2015) ("And that the claims do not preempt all price optimization or may be limited to price optimization in the e-commerce setting do not make them any less abstract."). The recitation of "a payment card device," "computing device," "processor," "memory," "wireless

interface," "touch screen user interface," "user-input device," "interface," and "payment card reader equipment" in claim 1 do not improve the functioning of a computer or another technological field and instead are simply used as tools to implement the abstract idea identified above. *See Credit Acceptance Corp. v. Westlake Servs.*, 859 F.3d 1044, 1055 (Fed. Cir. 2017) (using a computer as a tool to process an application for financing a purchase); *Affinity Labs of Tex., LLC v. DirecTV, LLC*, 838 F.3d 1253, 1262 (Fed. Cir. 2016) ("[T]he claims are directed not to an improvement in cellular telephones but simply to the use of cellular telephones as tools in the aid of a process focused on an abstract idea.").

3. Step 2B – "significantly more"

Having preliminarily concluded that the claim 1 recites judicial exceptions and are not integrated into a practical application, we turning to the second step of the *Alice* analysis and determine whether the claim 1 includes an "inventive concept," i.e., whether there is an element or combination of elements sufficient to ensure that the claim in practice amounts to significantly more than the abstract idea itself. *See Alice*, 573 U.S. at 217–18 (quoting *Mayo Collaborative Servs.*, 566 U.S. at 72–73).

Petitioner argues that no additional limitations beyond the judicial exception are present in claim 1. Pet. 31–33. Specifically addressing "limited-use card payment information," Petitioner argues this could be any information used in place of a payment number, which it argues is conventional. *Id.* at 22–23, 31–33 (citing Ex. 1004 ¶¶ 67, 96, 103; Ex. 1006 ¶¶ 7, 21, 29; Ex. 1017, 196, 202–205; Ex. 1019, 62–63, 70, 113; Ex. 1020, 90, 98, 112, 122; Ex. 1030, 5; Ex. 1003 ¶¶ 63–66, 76–81, 104–109).

Patent Owner, argues, however, that the limited-use card payment information was not conventional. *Id.* at 34–35. Patent Owner argues that

Petitioner's references are disparate and do not establish that the technology was conventional. *Id.*

For the purposes of institution and on the present record, Petitioner has sufficiently shown with its references and testimony of Dr. Shamos that limited-use card payment information was conventional. Additionally, on the present record we determine that Petitioner has sufficiently shown that claim 1 amounts to nothing significantly more than instructions to apply the abstract idea using generic components, and, considered as an ordered combination, nothing is added that is not already present when the steps are considered separately. *See Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 715 (Fed. Cir. 2014) (sequence of receiving, selecting, offering for exchange, display, allowing access, and receiving payment recited an abstraction); *Inventor Holdings, LLC v. Bed Bath & Beyond, Inc.*, 876 F.3d 1372, 1378 (Fed. Cir. 2017) (holding that sequence of data retrieval, analysis, modification, generation, display, and transmission was abstract); *Two-Way Media Ltd. v. Comcast Cable Commc'ns, LLC*, 874 F.3d 1329, 1339 (Fed. Cir. 2017) (holding sequence of processing, routing, controlling, and monitoring was abstract).

4. Conclusion

For the reasons described above, on this record we have determined that Petitioner has demonstrated that it is more likely than not that at least one of the challenged claims is unpatentable as ineligible.

Our institution is on all claims and all grounds. *Cf. SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018); *PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (indicating that a decision whether to institute an *inter partes* review "require[s] a simple yes-or-no institution

choice respecting a petition, embracing all challenges included in the petition").

C. Ground 2: Indefiniteness of claims 1–19

Under 35 U.S.C. § 112(b), a patent specification "shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor . . . regards as the invention." This is commonly referred to as the definiteness requirement.

The Board applies in post-grant reviews the same indefiniteness standard as used in federal courts and the U.S. International Trade Commission under *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898 (2014), and its progeny. USPTO Memorandum, Approach To Indefiniteness Under 35 U.S.C. § 112 In AIA Post-Grant Proceedings (Jan. 6, 2021).[10] Under *Nautilus*, "a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus*, 572 U.S. at 901. "[A] patent must be precise enough to afford clear notice of what is claimed, thereby apprising the public of what is still open to them," but the present standard recognizes that "absolute precision is unattainable." *Id.* at 909–10 (internal quotation marks and brackets omitted). The definiteness requirement seeks to "ensure that the claims delineate the scope of the invention using language that adequately notifies the public of the patentee's right to exclude." *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005). To do so does not require "absolute clarity" or precision in claim language; this

[10] Available at https://www.uspto.gov/sites/default/files/documents/IndefinitenessMemo.pdf

court has ruled that claims are not invalid for indefiniteness unless they are "'not amenable to construction' or 'insolubly ambiguous.'" *Id.*

Petitioner argues that claims 1–19 are indefinite, providing specific arguments with respect to claim limitations present in claims 1, 4–9, 12, 13, 15, 17, and 19. Pet. 39–45. Patent Owner provides contrary arguments relating to these claims. Prelim. Resp. 36–44.

We address claims 1 and 6, but again note that our institution is on all asserted grounds in the Petition.

1. Claim 1

Petitioner argues that claim 1 is indefinite because element 1.11, which recites that "a card issuer authority is operable to reject as invalid a transaction attempt outside of its limitations of use," and it is not clear whether "its" refers to the "card issuer authority," the "transaction attempt," the "limited-use card payment information" or some other component or entity. Pet. 39. Additionally, as elements 1.11 and 1.12 of claim 1 each recite "a card issuer authority" (emphasis added), Petitioner argues that "the card issuer authority" in element 1.13 "lacks clear antecedent basis." *Id.* at 40.

Patent Owner argues that "read in context" the term "its" in the phrase, "its limitation of use," in claim element 1.11 is clear and refers to "limited-use card payment information." Prelim. Resp. 36. Patent Owner argues that no other theory makes sense in the context of the invention—"[n]either the claim nor the specification refer to a limitation of use on the card issuer authority or a transaction attempt." *Id.* Patent Owner acknowledges that the claim twice recites "a card issuer authority"—in the first instance, one that rejects a transaction (claim element 1.11) and in the second instance, one that validates a transaction (claim element 1.12). *Id.* at

38. Patent Owner contends, however, that claim element 1.13 refers only to the second instance, one that validates the transaction (claim element 1.12). *Id.*

While we do not make a determination regarding whether Petitioner has shown it is more likely than not that Claim 1 is indefinite based on the word "its" in claim element 1.11, we note that, on the present record, limitations of use are described with respect to a "limited-duration credit card number" (Ex. 1001, 11:11–16) and that the specification further describes that "if an expired limited-duration credit card is attempted to be used for a transaction, . . . an automatic notification is able to be made to a credit authority . . . to prevent transactions on the account" (*id.* at 11:16–21). As we institute on all claims and all grounds, we invite the parties to address, to the extent provided for by our rules, whether this claim, in light of the specification and prosecution history, inform one of ordinary skill in the art with reasonable certainty about its scope. *Nautilus*, 572 U.S. at 901.

With respect to "the card issuer authority" of element 1.13, we again do not make a preliminary determination whether it is more likely than not that this recitation makes the claim indefinite. To the extent provided for by our rules regarding the proper scope of briefing, the parties are welcome to address this or other relevant issues.

2. Claim 6

Among other arguments, Petitioner argues that the term "valid range of device limitations" in the limitation that "a card issuer authority is operable to reject as invalid a device transaction used outside of a valid range of *device* limitations" (emphasis added) is indefinite because it is unclear whether the "payment card device," computing device," or "user-input device" is being referred to as the *device*. Pet. 42. Patent Owner

responds that "the *only* device in the claim that conveys payment information" is the "computing device." Prelim. Resp. 40. However, element 1.12 of claim 1 describes the card issuer authority validating a card payment information as authentic when "received from at least one of: an authenticated users payment card; and an authenticated users computing device." Ex. 1001, 20:10–13.

With respect to this term, on the present record and for the purposes of institution, we determine that Petitioner has shown that it is more likely than not that claim 6, which depends from claim 1, is indefinite.

D. Ground 3: Lack of enablement of claims 12, 13, and 17

Petitioner argues that claims 12 and 13 are invalid as lacking enablement, because these claims, according to Petitioner, require "the computing device to both reject and accept the same user authorization." Pet. 46. Petitioner argues that claim 17 is not enabled because it "requires the user to approve and deny the same payment transaction." *Id.* Patent Owner puts forth an interpretation of these claims where they do not require simultaneous actions, but instead recite that the computing device is "operable to both reject and accept a user authorization" and the touch-screen display is "'operable to' accept both a user approval and a denial." Prelim. Resp. 41–44.

To be enabling, "the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation.'" *MagSil Corp. v. Hitachi Global Strorage Techs., Inc.*, 687 F.3d 1377, 1380–81 (Fed. Cir. 2012).

We note that Petitioner argues that claims 12, 13, and 17 are indefinite and therefore "not amenable to construction" and Patent Owner contests this. Pet. 43–44; Prelim. Resp. 41–43. With respect to enablement, the parties'

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differences necessarily relate to the proper claim construction of the claims. *See AK Steel Corp. v. Sollac & Ugine*, 344 F.3d 1234, 1241 (Fed. Cir. 2003) ("Because a patent specification must enable the full scope of a claimed invention, an enablement inquiry typically begins with a construction of the claims."). As we institute on all claims and all grounds, the parties may address claim construction in their post-institution submissions to the extent allowable by our rules.

E. Ground 4: Lack of written description support for claims 20–27

To satisfy the written description requirement under 35 U.S.C. § 112(a), the specification must "reasonably convey[] to those skilled in the art that the inventor had possession" of the claimed invention as of the filing date based on an "objective inquiry into the four corners of the specification." *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351–52 (Fed. Cir. 2010) (en banc). An adequate description does not require any particular form of disclosure or that the specification recite the claimed invention *in haec verba*, but must do more than render the claimed invention obvious. *Id.* at 1352.

The written description inquiry is a question of fact, is context specific, and must be determined on a case-by-case basis. *Id.* at 1351. Factors used to evaluate the sufficiency of a disclosure include: 1) "the existing knowledge in the particular field"; 2) "the extent and content of the prior art"; 3) "the maturity of the science or technology"; and 4) "the predictability of the aspect at issue" (the "*Ariad* factors"). *Id.*

Petitioner argues that claims 20–27 lack written description support, because claim 20's recitation that the computing device "is operable to . . . display . . . issuer-provided payment information, associated with, but not depicted on, the payment card device" is not supported by written

description in the specification or original claims as filed. Pet. 47–48 (citing Ex. 1003 ¶¶ 172–174).

Patent Owner makes three arguments regarding support for the disputed recitation. Prelim. Resp. 45–50. First, Patent Owner argues that Figures 8A, 9, and 11 support this recitation. Prelim. Resp. 45–47. Patent Owner notes that Figures 8A and 9 each show a computing device that includes a static number associated with the payment card device. *Id.* (citing Ex. 1001, Figs. 8A, 9). Patent Owner additionally argues that the specification discloses a payment card device free of fixed payment numbers. *Id.* at 46 (citing Ex. 1001, Fig. 11, 11:43–46, 12:56–13:1). Patent Owner contends that the display on the computing devices of Figures 8A and 9 supports the disputed limitation "when used in combination with the disclosed payment number-free card." *Id.* at 46–47.

Patent Owner additionally cites claim 11 of U.S. Patent No. 10,628,820 ("the '820 patent," Ex. 2033), which was incorporated by reference into the '286 patent's specification. *Id.* at 47–48 (citing Ex. 1001, 1:6–8). Patent Owner argues that claim 11 of this patent supports the disputed limitation because it describes the conveyance of generated payment information via a display of a personal computing device, in a system where a separate thin payment device "compris[es] no fixed payment numbers visible thereon." *Id.* (citing Ex. 2033, 22:10–35).

Lastly, Patent Owner argues that the '891 provisional application also supports the disputed limitation. *Id.* at 48–50. Patent Owner contends that the provisional provides for a credit card device that generates payment information at the instant the card is being used, and that has no fixed number depicted on the device. *Id.* at 48–49 (citing Ex. 1012 ¶ 14). Patent Owner further notes that the provisional describes the use of the credit card

to make online purchases by connecting to a personal computer. *Id.* at 49 (citing Ex. 1012 ¶ 17). Patent Owner contends that "in March 2013, at the time the provisional was filed, a person of ordinary skill would have understood that paying for goods online using the traditional 'credit card infrastructure' would involve typing in a payment number, such that it gets displayed on the personal computer." *Id.* Thus, Patent Owner concludes, the '891 provisional supports a uniquely generated number being produced by the credit card but displayed on the personal computer. *Id.* at 49–50.

On the present record, and for the purposes of institution, we determine that it is more likely than not that claim 20 (and its dependent claims) lack written description support in the '286 patent specification and claims as filed, the '820 patent, and the '891 provisional.

With respect to the asserted support provided by Figures 8A and 9 (for the computing device) and Figure 11 (for the payment card device), the specification indicates that each of these is an independent "multi-function electronic device," and, on the present record, we see no indication that the multi-function electronic device of Figure 11 is usable in the same system with the multi-function electronic devices of Figures 8A and 9. *See* Ex. 1001, 11:25–51; *see also id.* at 3:50–52, 3:56–59, 3:64–67.

With respect to the asserted support in the '820 patent's claims, Patent Owner argues that the computing device generates and displays the limited use number, which is "based on the card device payment account information," and which in turn is "associated with the issuer-provided payment information." Prelim. Resp. 47–48 (citing claim 11 of the '820 patent, Ex. 2033:10–35). But the disputed limitation recites that "issuer-provided" payment information is received and displayed, which, on the present record, does not appear to be supported in claim 11 of the '820

patent. Ex. 2033, 22:10–35. Additionally, while claim 11 does recite that "no fixed payment numbers" are visible on the "thin payment device," there is no disclosure regarding the lack of a visible display of the complete payment information or limited-use payment information on that thin payment device. *Id.*

Lastly, as discussed above, Section II.B, the '891 provisional describes the online use of the card through a connection to the personal computer via RFID or near field technology to generate the credit card number. Ex. 1012 ¶ 17. Where, as disclosed, the payment card is "equipped with a means for communicating with the USB port on the computer in connection with making the online purchases," contrary to Patent Owner's argument, a user would not have necessarily had to type in a payment number that would be displayed on the computer. *Id.*

On this record, and for the purposes of institution, we determine that Petitioner has shown it is more likely than not that claim 20 (and its dependent claims) do not have adequate written description support.

V. CONCLUSION

We determine that Petitioner has demonstrated that it is more likely than not that at least one of the challenged claims is unpatentable. Accordingly, we institute a post-grant review of all challenged claims on all asserted grounds.

VI. ORDER

It is

ORDERED that, pursuant to 35 U.S.C. § 324(a), a post-grant review of claims 1–27 of the '286 patent is instituted; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 324(d) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial commencing on the entry date of this Order.

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Paper 14
Date: August 11, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

CARDWARE INC.,
Patent Owner.

PGR2023-00012
Patent 11,328,286 B2

Before ELIZABETH M. ROESEL, SHARON FENICK, and IFTIKHAR AHMED, *Administrative Patent Judges.*

FENICK, *Administrative Patent Judge.*

DECISION
Granting Institution of Post-Grant Review
35 U.S.C. § 324

I. INTRODUCTION

A. Background and Summary

Samsung Electronics Co., Ltd. ("Petitioner") filed a Petition (Paper 3, "Pet.") requesting post-grant review of claims 1–27 ("the challenged claims") of U.S. Patent No. 11,328,286 B2 (Ex. 1001, "the '286 patent"). CardWare Inc. ("Patent Owner") filed a Preliminary Response (Paper 9, "Prelim. Resp."). With the Board's authorization, Petitioner filed a Preliminary Reply (Paper 10) and Patent Owner filed a Preliminary Sur-reply (Paper 11). After further authorization, Petitioner filed a corrected Preliminary Reply (Paper 12, "Prelim. Reply") and Patent Owner filed a corresponding second Preliminary Sur-reply (Paper 13, "Prelim. Sur-reply").

A post-grant review may be instituted only if "the information presented in the petition filed under section 321, if such information is not rebutted, would demonstrate that it is more likely than not that at least 1 of the claims challenged in the petition is unpatentable." 35 U.S.C. § 324(a). For the reasons below, Petitioner has demonstrated that it is more likely than not that at least one of the challenged claims is unpatentable. Accordingly, we institute a post-grant review of the challenged claims of the '286 patent on all grounds raised in the Petition.

B. Real Parties in Interest

Petitioner identifies itself, Samsung Electronics Co., Ltd., as well as Samsung Electronics America, Inc. as real parties-in-interest. Pet. 91.

Patent Owner identifies itself, CardWare Inc., as a real party-in-interest. Paper 4 (Patent Owner's Mandatory Notices), 1.

C. Related Matters

The parties each identify as a related matter the district court case styled as *CardWare Inc. v. Samsung Electronics Co., Ltd. and Samsung*

Electronics America, Inc., Case No. 2:22-cv-00141 (E.D. Tex.). Pet. 91; Paper 4, 1.

The parties also indicate that the '286 is being challenged in another petition for post-grant review (PGR2023-00013). Pet. 91; Paper 4, 1.

D. The '286 Patent

The '286 patent is titled "Multi-Function Electronic Payment Card and Device System" and describes emulating a standard credit card with a device capable of generating a programmed magnetic field of alternating polarity when used in an electronic credit card reader. Ex. 1001, codes (54), (57), 2:22–28. The '286 patent observes that presently available credit cards, including cards with magnetic strips, cards with smart integrated circuit chips, and radio frequency identification (RFID) cards, have certain security limitations. *Id.* at 1:39–2:8. In addition, according to the '286 patent, chip cards and RFID cards "are not in wide use at present because they are incompatible with existing credit card infrastructure." *Id.* at 2:8–11. The '286 patent thus describes a device for "credit, debit and cash transactions, including cryptocurrency and card-to-card transactions," particularly with a limited-duration credit card number, that generates "a magnetic field of alternating polarity responsive to the body being detected as adjacent to a standard magnetic card reader." *Id.* at 2:28–51.

Figure 2B, reproduced below, illustrates "an exemplary embodiment of a smart multi-function electronic device." *Id.* at 5:62–63.

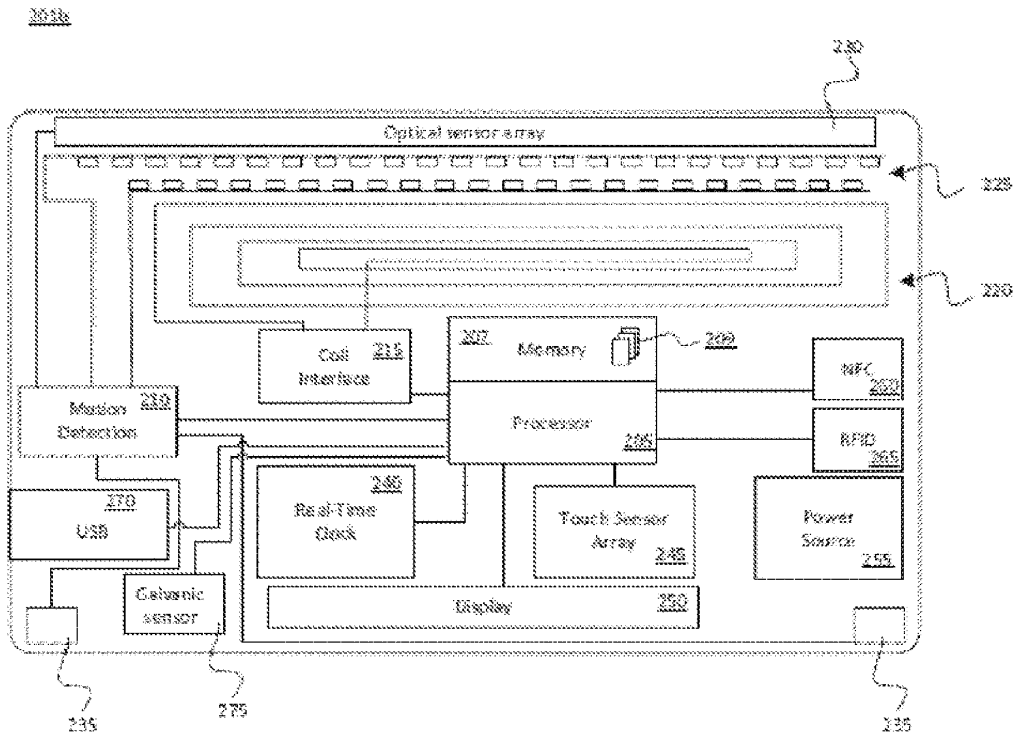


FIG. 2B

Figure 2B shows multi-function electronic device 201*b* comprising processor 205 and memory unit 207 that stores accounts 209, "which may be credit card accounts, banking accounts, merchant accounts, online accounts, cryptocurrency accounts, and combinations thereof." *Id.* at 6:51–59. Motion detector module 210 is coupled to processor unit 205 and to motion detection units, including rate detection assembly 225, optical sensor array 230, and accelerometers 235. *Id.* at 6:59–62. "Each of the motion detection units detects the motion of the credit card . . . in a distinct manner," and a detected movement signal received by motion detection module 210 and sent to processor unit 205 can be "generated by any one of the set of motion detection units, or any combination of motion detection units of the set." *Id.* at 8:2–9:3. Planar coil 220, controlled by processor unit 205 via coil

interface 215, generates a magnetic field that changes polarity to encode the user data at a rate depending "on the rate of relative movement detected by the rate detector." *Id.* at 6:64–7:1.

Device 201*b* also comprises touch-sensor array 245 and display 250, both of which are coupled to processor unit 205. *Id.* at 7:1–4. "A user input may be made via the touch sensor array 245, which may comprise a touch screen panel, a keypad, or a combination thereof." *Id.* at 7:4–6. And "display 250 is able to display an alphanumeric sequence, as well as graphical icons (such as a logo for a bank, or other images)." *Id.* at 7:7–9.

Figure 2C, reproduced below, illustrates "a process of selecting an account from a plurality of stored accounts in order to perform a transaction with the selected account." *Id.* at 7:38–40.

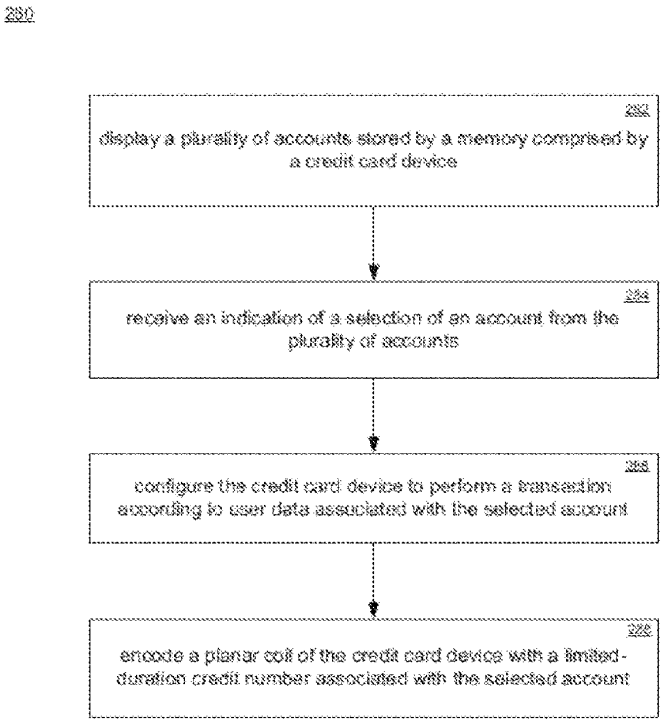


FIG. 2C

As shown in Figure 2C, process 280 begins at step 282 with the display, on display 250 of a multi-function electronic device, of accounts stored in memory unit 207. *Id.* at 7:41–45; *see also id.*, Fig. 2B. At step 284, a user selects an account by using touch sensor array 245, and the selected account may be indicated on display 250. *Id.* at 7:45–49; *see also id.*, Fig. 2B. At step 286, the multi-function electronic device is then "configured according to account information associated with the selected account, which may include an account number, an expiration date, and other user information associated with the account (e.g. a username, PIN, password, email address, etc.)." *Id.* at 7:49–54. Planar coil 220 is then, at step 288, "encoded with a limited-duration credit card number that is associated with the selected account." *Id.* at 7:54–57.

E. Illustrative Claim

Of the challenged claims, claims 1, 15, and 20 are independent. Claim 1, reproduced below with bracketed identifiers added as used by the Petitioner (*see* Pet. v), is illustrative.

1. [1.0] A payment system comprising:

[1.1] a payment card device free of any fixed payment numbers visible thereon and wherein said payment card device is operable for use in payment card reader equipment; and

[1.2] a computing device comprising:

a processor;

[1.3] a memory;

[1.4] a wireless interface;

[1.5] a touch-screen user interface operable to provide a visual user-interface for user payment interactions; and

[1.6] a user-input device coupled to the processor, and

[1.7a] wherein the processor is operable to store a transaction sequence count, [1.7b] a device account number and [1.7c] secrets limited to the computing device, and

[1.8] wherein the computing device is operable to receive, store and transmit a card payment information not visible on the payment card device, and

[1.9] wherein the processor is operable to generate at least a portion of a limited-user card payment information for use by an authenticated card user, and

[1.10] wherein the computing device is operable to convey said limited-use card payment information via an interface of the computing device, and

[1.11] wherein a card issuer authority is operable to reject as invalid a transaction attempt outside of its limitations of use,

[1.12] wherein a card issuer authority is operable to validate a card payment information as authentic when received from at least one of: an authenticated users payment card; and an authenticated users computing device, and

[1.13] wherein the card issuer authority is operable to permit the authentic transactions to complete.

Ex. 1001, 19:50–20:15.

F. Asserted Grounds

Petitioner raises the following grounds of unpatentability with respect to the challenged claims:

Claims Challenged	35 U.S.C. §[1]	References
1, 2, 7–10, 12–16, 18	103	Smith[2], Kobylkin[3], Gomez[4]
3	103	Smith, Kobylkin, Gomez, Saarisalo[5]
4	103	Smith, Kobylkin, Gomez, Saarisalo, Slonecker[6]
5, 11, 17	103	Smith, Kobylkin, Gomez, Mestre[7]
6	103	Smith, Kobylkin, Gomez, Sahota[8]
19	103	Smith, Kobylkin, Gomez, Moosavi[9]
20–27	103	Smith, Kobylkin, Gomez, Mullen[10]

Pet. 7.

[1] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103. Because we preliminarily find that the '286 patent includes at least one claim with an effective filing date in the priority application, filed March 15, 2013, we use the AIA versions , we refer to the AIA version of § 103.
[2] Smith et al., US 2013/0232083 A1 (Ex. 1004).
[3] Kobylkin et al., US 2013/0166441 A1 (Ex. 1005).
[4] Gomez, Sr. et al., US 9,600,808 B1 (Ex. 1017).
[5] Saarisalo, US 2009/0291634 A1 (Ex. 1011).
[6] Slonecker, Jr., US 2007/0045403 A1 (Ex. 1013).
[7] Mestre et al., US 2011/0112918 A1 (Ex. 1010).
[8] Sahota et al., US 2005/0043997 A1 (Ex. 1006).
[9] Moosavi, WO 2010/037218 A1 (Ex. 1015).
[10] Mullen et al., WO 2012/154915 A1 (Ex. 1007).

II. POST-GRANT REVIEW ELIGIBILITY

As a threshold issue, we must determine whether the '286 patent is eligible for post-grant review. The post-grant review provisions of the AIA apply to a patent that contains a claim with an effective filing date on or after March 16, 2013. *See* AIA, Pub. L. No. 112-29, 125 Stat. 284 (2011), §§ 3(n)(1), 6(f)(2)(A). The statute defines the "effective filing date" as:

> (A) if subparagraph (B) does not apply, the actual filing date of the patent or the application for the patent containing a claim to the invention; or
>
> (B) the filing date of the earliest application for which the patent is entitled, as to such invention, to a right of priority under section 119, 365(a), 365(b), 386(a), or 386(b) or to the benefit of an earlier filing date under section 120, 121, 365(c), or 386(c).

35 U.S.C. § 100(i)(1).

For a claim in a later-filed application to be entitled to the filing date of an earlier application, the earlier application must provide written description support for the claimed subject matter. *Anascape, Ltd. v. Nintendo of Am. Inc.*, 601 F.3d 1333, 1337 (Fed. Cir. 2010). The written description requirement "guards against the inventor's overreaching by insisting that he [or she] recount his [or her] invention in such detail that his [or her] future claims can be determined to be encompassed within his [or her] original creation." *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1561 (Fed. Cir. 1991). The test for determining compliance with the written description requirement under § 112(a) is whether the original disclosure of the earlier-filed application reasonably would have conveyed to one with ordinary skill in the art that the inventor had possession of the claimed subject matter at the time of the earlier-filed application. *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). It is well settled that "[e]ntitlement to a filing date does not extend to subject matter

which is not disclosed but would be obvious over what is expressly disclosed." *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1571–72 (Fed. Cir. 1997). "It is not sufficient for purposes of the written description requirement of § 112 that the disclosure, when combined with the knowledge in the art, would lead one to speculate as to modifications that the inventor might have envisioned, but failed to disclose." *Id.*

The '286 patent claims priority to a provisional application filed on March 15, 2013, U.S. Provisional App. No. 61/794,891 (Ex. 1012, "the '891 provisional"). Ex. 1001, code (60), 1:6–27. Petitioner argues that claims 3, 5, 6, 12, 15, and 20[11] of the '286 patent lack written description and enabling support in the '891 provisional, and that therefore the '286 patent is eligible for post-grant review. Pet. 1–6. Patent Owner argues that Petitioner has not shown that any claim is not entitled to claim priority to the '891 provisional. Prelim. Resp. 14–26. We address claim 5 in detail. Based on the present record and for the purpose of institution, we determine that there is insufficient support for claim 5 in the '891 provisional, and the '286 patent is eligible for post-grant review.

A. Level of Ordinary Skill in the Art

Petitioner contends that:

> A person of ordinary skill in the art . . . would have had (1) a bachelor's degree in computer science, computer engineering, electrical engineering, or a related field, and (2) one to two years of experience working with payment processing and/or digital authentication systems, including familiarity with short-range wireless technologies.

[11] Claim 20 is listed as unsupported in a table listing assertedly unsupported claims, but argument is only presented with respect to the other claims in the table. Pet. 2–6.

Pet. 10 (citing Ex. 1003 ¶¶ 49–54). Patent Owner does not dispute Petitioner's proposed level of ordinary skill in the art. *See* Prelim. Resp. 13.

For purposes of this Decision, we apply Petitioner's definition of the level of ordinary skill in the art, which is consistent with the level of skill reflected in the Specification and in the asserted prior art references. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

B. Claim 5

Claim 5 depends from claim 1, adding two additional limitations, one of which recites that "the information presented on an interface of said card device, are limited to an in-store merchant card reader facility use only." Ex. 1001, 20:39–41.

Petitioner argues that "the provisional application does not describe limiting the field of use of the payment card device to in-store card reader facility use only, to the exclusion of online transactions." Pet. 4 (citing Ex. 1003 (Declaration of Dr. Michael I. Shamos) ¶ 35). Petitioner argues that the provisional application states explicitly that "the credit card of the present invention could also be used to make online purchases." *Id.* (citing Ex. 1012 ¶ 17). Patent Owner contends that the '891 provisional's disclosure is of a card that only generates usable payment information upon use at an in-store merchant, and that such a card therefore "lacks payment information, such that it cannot be used in an online store." Prelim. Resp. 17–18 (citing Ex. 1012, page 19[12] (figure)), ¶ 14; Ex. 2007 (Declaration of Dr. William C. Easttom II) ¶ 36)). Patent Owner argues, with respect to the '891 provisional's disclosure relating to online transactions, that this

[12] Exhibit 1012 contains page numbers added by Petitioner; when not referring to paragraph numbers, we use these added page numbers to refer to portions of the '891 provisional.

disclosure describes the card connecting to a personal computer "to ***uniquely*** generate" payment information for online purchases. *Id.* at 18 (quoting Ex. 1012 ¶ 17). Patent Owner argues that this means that "the information for online purchases is unique from that used for in-store transactions." *Id.*

On this record, and for the purposes of institution, we agree that Petitioner has sufficiently shown that the information presented on the interface of the card device is not described in the '891 provisional as being limited to use in an in-store merchant card reader facility. The '891 provisional describes the card "connect[ing] to a personal computer" for use in generating payment information for online purchases. Ex. 1012 ¶ 17. While Patent Owner argues that the description in the '891 provisional of "uniquely generat[ing] a credit card number" means a use "unique from that used for in-store transactions," this description echoes the general description of the use of the card to provide "a unique credit card number . . . for each transaction." *Compare* Ex. 1012 ¶ 14, *with id.* ¶ 17.

Dr. Easttom's testimony that "[g]iven that the payment card disclosed in the provisional does not have visible account information, there is no way for a user to simply use the information that might be presented on an interface of the card (such as a partial number) to perform an online transaction," does not appear to take into account the description in the provisional that the card is connected to the personal computer via RFID or near field technology to generate the credit card number, and thus that information would not need to be visually presented to a user in order to be used. Ex. 2007 ¶¶ 36–39; Ex. 1012 ¶ 17. The description of this connection is followed by a description that the number "*could* also" be displayed on a front display of the card. Ex. 1012 ¶ 17 (emphasis added). Our determination is that this describes the generated number *could* be displayed

for the user, or alternatively (if not displayed) could be used without being displayed on the front display of the card. This is confirmed in the immediately following sentence, describing an embodiment in which the payment card is "equipped with a means for communicating with the USB port on the computer in connection with making the online purchases." *Id.* "A connector for connection to standard computing devices" is described in the '891 provisional as a "USB *interface*." *Id.* at claim 8 (p. 17).

Dr. Easttom concludes that, if there is no visible account information on the payment card, "there is no way for a user to simply use the information that might be presented on an interface of the card . . . to perform an online transaction." Ex. 2007 ¶ 36. This conclusion appears to rely on an assumption that claim 5's "an interface of said card device" must be a display of the card device, such as the thin film liquid crystal display described in the '891 provisional. Ex. 2007 ¶ 36; Ex. 1012 ¶ 16 (describing display), p. 19 (figure). But, as discussed, the '891 provisional describes a card with a USB interface used in making online purchases.

On this record, and for the purposes of institution, Petitioner has shown sufficiently that the '891 provisional does not support a payment card device presenting information on an interface of said card device that is limited to in-store merchant card reader facility use, as recited in claim 5, and the '286 patent is eligible for post-grant review.

III. DISCRETION UNDER 35 U.S.C. § 324(a)

Patent Owner argues that we should exercise discretion to deny institution under 35 U.S.C. § 324(a) because the factors identified in *Apple, Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential) ("*Fintiv*"), weigh in favor of denying institution. Prelim. Resp. 43–51; Prelim. Sur-reply 4–6. Petitioner argues we should not

discretionarily deny institution under *Fintiv*. Pet. 88–90; Prelim. Reply. 4–6. Additionally, Petitioner, having filed two petitions for post grant review (in this proceeding and PGR2023-00013), submitted a Ranking of Petitions. Paper 2. As Petitioner ranked this Petition first (Paper 2, 1) we address our discretion to deny on the basis of multiple petitions in PGR2023-00013.

The precedential decision in *Fintiv* identifies a non-exclusive list of factors parties may consider addressing where there is a related, parallel district court action to determine whether such action provides any basis for discretionary denial. *Fintiv*, 5–16. Those factors include:

> 1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
>
> 2. proximity of the court's trial date to the Board's projected statutory deadline for a final written decision;
>
> 3. investment in the parallel proceeding by the court and the parties;
>
> 4. overlap between issues raised in the petition and in the parallel proceeding;
>
> 5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
>
> 6. other circumstances that impact the Board's exercise of discretion, including the merits.

Id. at 5–6.

In evaluating the factors, we take a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review. *Id.* at 6. The Director has issued additional guidance on the application of *Fintiv*. *See* Katherine K. Vidal, *Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court*

Litigation (June 21, 2022)[13] ("*Fintiv* Memo"). Additionally, we are guided by the precedential decisions of the Director in *OpenSky Indus., LLC v. VLSI Tech. LLC*, IPR2021-01064, Paper 102, 49–50 (Oct. 4, 2022) (precedential) and *CommScope Techs. LLC v. Dali Wireless, Inc*, IPR2022-01242, Paper 23 (Feb. 27, 2023) (precedential) ("*CommScope*").

We are instructed to consider compelling merits under *Fintiv* factor six only after a determination that the first five *Fintiv* factors favor discretionary denial. *CommScope*, 4–5. Thus, we begin by considering the first five *Fintiv* factors.[14]

A. Fintiv Factors

1. Factor 1 - Whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted

"A district court stay of the litigation pending resolution of the PTAB trial allays concerns about inefficiency and duplication of efforts." *Fintiv*, 6. *Fintiv* indicated that, in previous Board decisions, the existence of a district court stay pending Board resolution of an *inter partes* review has weighed strongly against discretionary denial, while a denial of such a stay request sometimes weighs in favor of discretionary denial. *Id.* at 6–8.

Patent Owner notes that a stay was requested after the filing of the Petition and not granted in the district court litigation, and asserts that this

[13] Available at https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf

[14] While *Fintiv* factor six encompasses considerations other than the compelling merits, neither party has argued such considerations exist in this case.

factor should be viewed as neutral. Prelim. Resp. 45; Prelim. Sur-reply 5; Ex. 1107.[15]

Petitioner notes that the dismissal of the stay request was without prejudice, and that it maintains the right to move for a stay if we institute. Prelim. Reply 4; Ex. 1107. Petitioner argues that the factor should be considered "at worst" neutral, that is (as we understand it), either to militate against discretionary denial or to be neutral. *Id.* at 5.

The court in the district court litigation noted in its denial of the stay request that it was following "the universal practice" in the district, to deny a stay based on post-grant review requests where institution decisions have not yet been issued, and provided no additional reasoning or indication of future action with respect to any potential renewal of the stay request. Ex. 1107. Because, "[i]n the absence of specific evidence, we will not attempt to predict" whether a district court would stay "based on a variety of circumstances and facts beyond our control and to which the Board is not privy," we find this factor to be neutral. *See Sand Revolution II, LLC v. Cont'l Intermodal Group – Trucking LLC*, IPR2019-01393, Paper 24 at 7 (PTAB June 16, 2020) (informative) ("*Sand Revolution*").

2. Factor 2 - Proximity of the court's trial date to the Board's projected statutory deadline for a final written decision

The proximity factor in *Fintiv* asks us to evaluate our discretion in light of a trial date that has been set in a parallel litigation. *See Fintiv*, 3, 5 ("*NHK* applies to the situation where the district court has set a trial date to occur earlier than the Board's deadline to issue a final written decision in an

[15] Patent Owner cites Exhibit 2003. Exhibits 1107 and 2003 appear to be the same order, but Exhibit 1107 is signed by the magistrate judge.

instituted proceeding."; "When the patent owner raises an argument for discretionary denial under *NHK* due to an earlier trial date, the Board's decisions have balanced the following factors . . . .") (citing *NHK Spring Co. v. Intri-Plex Techs., Inc.*, IPR2018-00752, Paper 8 at 20 (PTAB Sept. 12, 2018) (precedential)("*NHK*")). As noted above in the discussion of the first factor, *Fintiv* cites concern regarding "inefficiency and duplication of efforts." *Id.* at 6. In its analysis of the proximity factor, *Fintiv* echoes that concern in its guidance that "[i]f the court's trial date is at or around the same time as the projected statutory deadline or even significantly after the projected statutory deadline, the decision whether to institute will likely implicate other factors discussed herein, such as the resources that have been invested in the parallel proceeding." *Id.* at 9. Similarly, in *NHK*, the Board expressed concern that a trial before the deadline for a final written decision addressing the same prior art and arguments would have undermined the Board's objectives of providing an effective and efficient alternative to district court litigation. *See NHK*, 20 (citing *General Plastic Indus. Co., Ltd. v. Cannon Kabushiki Kaisha*, IPR2016-01357, Paper 19 at 16–17 (PTAB Sept. 6, 2017 (precedential))).

We are instructed that

> when analyzing the proximity of the court's trial date under factor two of *Fintiv*, when other relevant factors weigh against exercising discretion to deny institution or are neutral, the proximity to trial should not alone outweigh all of those other factors. Parties may present evidence regarding the most recent statistics on median time-to-trial for civil actions in the district court in which the parallel litigation resides for the PTAB's consideration. Where the parties rely on time-to-trial statistics, the PTAB will also consider additional supporting factors such as the number of cases before the judge in the parallel litigation and the speed and availability of other case dispositions.

Fintiv Memo, 8–9 (internal citations and footnote deleted).

Based on median time-to-trial data for the Eastern District of Texas, Petitioner asserts that "trial would be expected to occur in May, 2024" but that "delays are possible" and indicated by the median time to trial statistics. Pet. 88–89 (citing Ex. 1103, 35; Ex. 1104). According to Petitioner, a final written decision ("FWD") in this proceeding is anticipated in July of 2024. *Id.* at 88. Nevertheless, Petitioner argues that "[t]he Board should not deny institution due to the close proximity of the FWD and the predicted trial date in E.D. Tex." *Id.* at 88–89. In its Preliminary Reply, Petitioner noted that the median time to trial decreased to 19 months. Prelim. Reply 4, 5 (citing Ex. 1109, 35).

Patent Owner contends that as the docket control order sets jury selection for February 5, 2024, the district court trial date precedes the anticipated final written decision deadline by six months. Prelim. Resp. 46 (citing Ex. 2001). Patent Owner additionally argues that, if the Board relies on median time-to-trial, then we should use the more recent time-to-trial data for the district, which would indicate an even earlier trial date than that scheduled in the docket control order, or the specific judge's median time-to-trial, which is similar. *Id.* at 47 (citing Ex. 2004, 35; Ex. 2002, 1); *see* Prelim. Sur-reply 4 at n.2.

Because the trial in the district court litigation, under any of the parties' proposed approaches, appears likely to begin several months before our deadline to reach a decision, this factor weighs in favor of discretionary denial.

3. Factor 3 - Investment in the parallel proceeding by the court and the parties

If, at the time of the institution decision, the district court has issued substantive orders related to the challenged patent, such as a claim construction order, this fact weighs in favor of denial. *See Fintiv*, 9–10. On the other hand, if the district court has not issued such orders, this fact weighs against discretionary denial. *Id.* at 10.

Petitioner argues that the bulk of investment in the district court litigation has yet to occur, and that no part of claim construction or document production had occurred at the time of the filing of the Petition. Pet. 89. Petitioner further argues that its diligence in filing the Petition four months after the service of preliminary infringement contentions "heavily favors institution." Prelim. Reply 6.

Patent Owner argues that by the time of our decision, the claim construction process will be complete and the document production process substantially complete. Prelim. Resp. 47–48 (citing Ex. 2001, 3–4).

The docket control order shows that the claim construction hearing was scheduled to take place on August 1, 2023. Ex. 2001, 3. *Fintiv* directs us to consider whether "the petitioner filed the petition expeditiously." *Fintiv*, 11. Although we are mindful of the investment of the parties to date, we find that, at this time, that no substantive orders related to the challenged patent have been issued by the district court. Additionally, on the record before us the filing of the Petition was expeditious. We determine this factor weighs slightly against exercising discretion to deny institution.

4. Factor 4 - Overlap between issues raised in the petition and in the parallel proceeding

"[I]f the petition includes the same or substantially the same claims, grounds, arguments, and evidence as presented in the parallel proceeding, this fact has favored denial." *Fintiv*, 12. "Conversely, if the petition includes materially different grounds, arguments, and/or evidence than those presented in the district court, this fact has tended to weigh against exercising discretion to deny institution under *NHK*." *Id.* at 12–13. A stipulation as in *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 at 18–19 (PTAB Dec. 1, 2020) (precedential as to § II.A), if one is entered, would be highly relevant. "Consistent with *Sotera Wireless, Inc.*, the PTAB will not discretionarily deny institution in view of parallel district court litigation where a petitioner presents a stipulation not to pursue in a parallel proceeding the same grounds or any grounds that could have reasonably been raised before the PTAB." *Fintiv* Memo 3 (footnote omitted).

Petitioner offers, in the Petition, a stipulation that, if IPR is instituted, "it will not pursue in the Related Litigation any invalidity grounds against the Challenged Claims of the '286 patent that are the same as those raised in this Petition." Pet. 89–90. It later offers an additional stipulation that "if this PGR is instituted, Petitioner will not pursue an invalidity defense in the E.D. Texas litigation with respect to the claims of the '286 Patent in the instituted PGR based on (i) any of the same grounds in the instituted PGR or (ii) any prior art reference that forms the basis of any ground in the instituted PGR." Prelim. Reply 5; Ex. 1110. Petitioner argues that this stipulation "leaves only meaningfully different prior art for use in E.D. Tex." Prelim. Reply 6. Petitioner additionally notes that Patent Owner dropped

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claims 1–19 from the related litigation and that this is the only forum where the validity of those claims is to be assessed. *Id.* at 5 (citing Ex. 1112).

Patent Owner argues that, in the new stipulation, Petitioner only restricts itself from pursuing "in district court the same grounds or the specific references in those grounds," but "leaves Petitioner free to pursue the very same arguments in district court under the guise of technically different references or combinations." Prelim. Resp. 49 (emphases omitted). Patent Owner argues that, because Petitioner has not offered a *Sotera* stipulation and the same or substantially the same prior art or arguments may be considered, factor 4 favors denial. *Id.* at 50–51. Patent Owner additionally argues that Petitioner's stipulation is further ineffective as it does not affect grounds brought under 35 U.S.C. §§ 101 and 112 in PGR2023-00013. *Id.* at 50. And Patent Owner contends that the reduction in the number of claims in the district court litigation counsels against institution or has no impact because "the Board will be considering claims that are not at issue in district court" and because, in the Petition, the analysis with respect to the claims at issue in the district court is related to that with respect to the claims no longer at issue in the district court. Prelim. Sur-reply 5.

While not a *Sotera* stipulation, Petitioner's stipulation appears to be similar to that in *Sand Revolution*. *Sand Revolution*, 11–12 (finding that a stipulation not to pursue the same grounds in the parallel litigation "mitigates to some degree the concerns of duplicative efforts"). We recognize that *Sand Revolution*-type stipulations are narrower in scope than *Sotera*-type stipulations. However, Petitioner's stipulation still reduces potential overlap with the district court litigation. In *Sand Revolution*, such a stipulation weighed marginally in favor of not exercising discretion. *Sand*

Revolution, 12. The fact that the Petition challenges claims that are no longer at issue in the district court litigation reduces the overlap of issues, notwithstanding any similarity in arguments.

We determine this factor weighs against exercising discretion to deny institution.

5. *Factor 5 - Whether the petitioner and the defendant in the parallel proceeding are the same party*

If the petitioner is unrelated to the defendant in the parallel proceeding, that might weigh against discretionary denial. *See Fintiv*, 13–14.

Patent Owner notes that the related district court litigation involves the same parties. Prelim. Resp. 51.

As with *Fintiv* factor 2, therefore, this factor weighs marginally in favor of exercising our discretion to deny the Petition.

B. Conclusion

We have considered the circumstances and facts before us in view of the first five *Fintiv* factors. Because our analysis is fact-driven, no single factor is determinative of our conclusion. Considering these five *Fintiv* factors together, we determine that they do not favor a discretionary denial. As we do not find that the first five *Fintiv* factors favor discretionary denial, we therefore do not make a determination regarding compelling merits under *Fintiv* factor 6, and our consideration ends with this conclusion. *CommScope*, 4–5.

IV. PATENTABILITY ANALYSIS

In a post-grant review, the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable. *See* 35 U.S.C. § 322(a)(3) (requiring post-grant review petitions to identify "with

particularity . . . the evidence that supports the grounds for the challenge to each claim"); *cf. Harmonic Inc.*, 815 F.3d at 1363 (Fed. Cir. 2016) ("[I]t was [Petitioner's] burden to explain to the Board how [the combination of prior art] rendered the challenged claims unpatentable."). This burden never shifts to Patent Owner. *Cf. Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)) (discussing the burden of proof in *inter partes* review).

A. Claim Construction

We construe claim terms according to the standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–17 (Fed. Cir. 2005) (en banc), i.e., as construed in a civil action under 35 U.S.C. § 282(b). *See* 37 C.F.R. § 42.100(b). Under *Phillips*, claim terms are afforded "their ordinary and customary meaning." *Phillips*, 415 F.3d at 1312. "[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention." *Phillips*, 415 F.3d at 1313. "Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Phillips*, 415 F.3d at 1313. An inventor may rebut that presumption by providing a definition of the term in the specification "with reasonable clarity, deliberateness, and precision." *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). In the absence of such a definition, limitations are not to be read from the specification into the claims. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

We address the meaning of several claim terms below and determine that no additional claim construction is needed for purposes of this Decision.

Our claim constructions are not final, and we invite the parties to address claim construction in their post-institution submissions to the extent allowable by our rules.

1. Alleged printed matter in claims 1, 5, 15, 19, and 20

Petitioner contends that claims 1, 5, 15, 19, and 20 include limitations directed to printed matter because they have "no functional or structural relationship to the claimed substrate on which the information is disposed or printed," and that these limitations, therefore, are entitled to no patentable weight. Pet. 8–9.

On this record, we agree with Petitioner that claim elements 1.1, 1.8, 5.0, 15.1, 19.0, 19.1, and 20.1[16] recite printed matter entitled to no patentable weight.

"[P]rinted matter encompasses any information claimed for its communicative content, and the doctrine prohibits patenting such printed matter unless it is 'functionally related' to its 'substrate,' which encompasses the structural elements of the claimed invention." *C R Bard Inc. v. AngioDynamics, Inc.*, 979 F.3d 1372, 1381 (Fed. Cir. 2020); *see also Praxair Distribution, Inc. v. Mallinckrodt Hosp. Prod. IP Ltd.*, 890 F.3d 1024, 1031 (Fed. Cir. 2018) ("Claim limitations directed to printed matter are not entitled to patentable weight unless the printed matter is functionally related to the substrate on which the printed matter is applied."); *In re Distefano*, 808 F.3d 845, 848 (Fed. Cir. 2015) ("[I]f a limitation claims (a) printed matter that (b) is not functionally or structurally related to the

[16] We use the claim limitation identifiers as used by Petitioner in the Petition's claim listing. *See* Pet. v–ix.

physical substrate holding the printed matter, it does not lend any patentable weight to the patentability analysis.").

In our view, claim elements 1.1, 1.8, 5.0, 15.1, 19.1, and 20.1 recite printed matter entitled to no patentable weight because they require that a particular type of information—"fixed payment numbers" or "card payment information" or "payment number information"—be absent from the face of the payment card device. If they were affirmatively recited, "fixed payment numbers" or "payment number information" would no doubt qualify as information claimed for its communicative content that is not functionally related to the substrate, as no reference to or functional use of such fixed payment numbers, card payment information, or payment number information is found in claims 1, 5, 15, 19, and 20. The negative limitation, that no fixed payment numbers, card payment information, or payment number information is on the device, is just as much recitation of printed matter as the affirmative recitation would be. In both cases, information is being claimed for its communicative content. These claim elements simply recite that a particular type of information—fixed payment numbers, card payment information, or payment number information—is not included in the communication.

Patent Owner argues that these claim elements are "functionally related to the claimed devices within the claimed system" because "the claimed 'no fixed payment numbers' and similar enhance the security of the claimed systems by removing the possibility that 'a malicious third party [would] record [such information] in order to later make fraudulent transactions on the account.'" Prelim. Resp. 22 (citing Ex. 1001, 9:62–10:2). We disagree. Our reviewing court instructs: "In evaluating the existence of a functional relationship, we have considered whether the

printed matter merely informs people of the claimed information, or whether it instead interacts with the other elements of the claim to create a new functionality in a claimed device or to cause a specific action in a claimed process." *Bard*, 979 F.3d at 1381. Fixed payment numbers inform people of particular information, and claim elements 1.1, 1.8, 5.0, 15.1, 19.1, and 20.1 recite that the matter printed on the payment card device should not inform people of that particular information. The absence of fixed payment numbers does not interact with the other elements of the claim to create a new functionality in a claimed device or to cause a specific action in a claimed process.

The foregoing analysis applies equally to element 19.0 of dependent claim 19, which recites an limitation that recites that the payment card device "comprises fixed payment information disposed thereon," but that such fixed payment information "comprises only" certain types of information.

2. Alleged additional non-limiting claim features in claims 1, 6, 11, 13–15, and 17

Petitioner contends that claims 1, 6, 11, 13–15, and 17 include features that "are not limiting as they do not define further limitations of the recited payment devices and systems." Pet. 9–10. The claim elements relate to certain limitations on a "card issuer authority," a "card issuing authority," or a "payment issuing authority." Ex. 1001, 20:7–15, 20:45–59, 21:13–16, 21:38–46, 22:6–12, 22:25–29. Petitioner argues, without more, that in claim 1, the "card issuer authority" is not recited as being included in the "payment system" and that therefore "language describing a function the card issuer authority 'is operable' to perform does not limit any aspect of the claimed

payment system." Pet. 10. On this record, Petitioner has not shown these limitations to be non-limiting to the scope of the claims.

B. Obviousness of claims 1, 2, 7–10, 12–16, and 18 over Smith, Kobylkin, and Gomez

Petitioner challenges claims 1, 2, 7–10, 12–16, and 18 based on Smith, Kobylkin, and Gomez. Pet. 7, 11–51. Patent Owner opposes. Prelim. Resp. 28–33, 35–43. We begin with an overview of Smith, Kobylkin, and Gomez before turning to the disputed issues.

1. Smith (Ex. 1004)

Smith discloses using a mobile device to conduct a contactless payment transaction. Ex. 1004 ¶¶ 2–6. Smith discloses processing a financial transaction by mapping a mobile cloud account to a payment account. *Id.* at code (57), ¶¶ 2, 6–8, 15, 32, Fig. 1. According to Smith, a mobile device, such as a smart phone, stores mobile cloud account data, including a mobile cloud account number ("MCA") that is associated with a real account number ("RCA"). *Id.* ¶¶ 33, 34. The MCA enables the user to conduct a financial transaction without storing the RCA on the mobile device, thereby reducing the potential for fraud. *Id.* ¶¶ 32, 34.

2. Kobylkin (Ex. 1005)

Kobylkin discloses an "instant disposable payment card" having a quick response ("QR") code, which can be scanned by the user to facilitate activation and/or funding of the payment card and/or creation of an account or activation of a pre-created account at a payment system provider. Ex. 1005, code (57). According to Kobylkin, the user "can then use the instant payment card to pay for purchases." *Id.*

3. Gomez (Ex. 1017)

Gomez discloses a secure payment card that generates an authentication cryptogram, which is unique for each attempted use of the payment card to make a transaction and which expires within a short period of time thereafter. Ex. 1017, codes (54), (57), 1:58–63, 5:13–18, 5:48–57, Figs. 2, 9, 10.

4. Independent Claim 1

Petitioner challenges claim 1 based on a combination of Smith, Kobylkin, and Gomez. Pet. 21–41.

a) Claim Element 1.7b

Claim 1 is directed to a payment system that, *inter alia*, comprises a computing device comprising a processor, and claim element 1.7b specifies that the processor is operable to store a device account number. Ex. 1001, 10:50–64.

Petitioner contends that Smith discloses or suggests claim element 1.7b. Pet. 27–28 (citing Ex. 1004 ¶ 34; Ex. 1003 ¶ 149). Petitioner asserts that "Smith describes that the 'MCA may be mapped to the RCA such that the user may conduct a financial transaction using the MCA for funding of the financial transaction, and the funds may be supplied by the payment account corresponding to the RCA' [and 'a]s a result the user may be able to conduct a payment transaction using the mobile device 102 without storing the RCA, thereby reducing the potential for fraud.'" *Id.* at 28.

Patent Owner disputes Petitioner's contention that Smith's mobile cloud account data is "device account number." Prelim. Resp. 29–30. According to Patent Owner, Smith's MCA does not correspond to a device,

and Smith discloses mobile devices separately from mobile cloud accounts. *Id.* at 30 (citing Ex. 1004 ¶¶ 15, 32, 34, 77, 83, 93). "In sum," Patent Owner argues, "the MCA corresponds to the mobile cloud account, not a device." *Id.*

For purposes of institution, we find that Petitioner makes a sufficient showing for claim element 1.7b. Pet. 27–28. At this stage, Patent Owner does not dispute Petitioner's contention that, according to Smith, mobile cloud account data is wirelessly provisioned to a mobile device. Prelim. Resp. 29–30; *see also* Prelim. Sur-reply at 1 (In Smith, "the mobile cloud account data is generated and provided to a mobile device."). Patent Owner argues that Smith's "mobile cloud account data" is not associated with the mobile device that receives it. Prelim. Resp. 30. Patent Owner's argument overlooks Smith's teaching of "a mapping database . . . wherein each mapping record includes at least a master key identifier, a mobile cloud account number (MCA), and a real card account number (RCA)." Ex. 1004 ¶ 8. As Patent Owner discusses in its review of Smith, the master key identifier "may be [a value that is] unique to the mobile device" and is used "to identify an MCA and map the MCA to the RCA." Prelim. Resp. 8–9 (quoting Ex. 1004 ¶ 43, citing *id* ¶¶ 43, 44, 49–51, 54, 56–59, 79–87, Figs. 4A, 4B, 9).

In our preliminary view, this teaching shows an association between at least one component of Smith's mobile cloud account data—the mobile account number (MCA)—and a master key identifier that is unique to the mobile device.

b) Combination of Smith, Kobylkin, and Gomez

Petitioner contends that a person of ordinary skill in the art ("POSITA") would have been motivated to configure Smith's mobile device

to be used in activating and/or funding Kobylkin's disposable payment card so that the user could "make ready use of disposable payment cards." Pet. 15 (citing Ex. 1003 ¶ 120). Petitioner further contends a POSITA would have wanted:

> to permit a user to perform Kobylkin's activation and funding operations on the *same* mobile device as the user uses for other tasks such as conducting mobile payment transactions as taught in Smith—especially since use of the same device for both purposes would have increased convenience and freed the user from needing to access separate devices for performing online payment transactions based on Smith's techniques and for funding or activating a disposable card based on Kobylkin's [techniques].

Id. at 16 (citing Ex. 1003 ¶ 121).

Patent Owner argues that Petitioner does not "explain how or why a POSITA would . . . activate or fund Kobylkin's instant disposable payment card in the context of Smith, which is directed to a mobile device for conducting contactless payment transactions at a physical payment terminal." Prelim. Resp. 38 (citing Ex. 1004 ¶ 35, Fig. 1; Ex. 1005 ¶ 31).

For purposes of institution, we find that Petitioner provides a sufficient rationale for combining Smith and Kobylkin, as summarized above, and that Petitioner's rationale is sufficiently supported by the cited prior art and Dr. Shamos's Declaration. Pet. 15–18 (citing Ex. 1004 ¶¶ 4, 33; Ex. 1005 ¶¶ 31, 50, 52, 134; Ex. 1003 ¶¶ 120–124). Petitioner relies on Kobylkin, which discloses that disposable payment cards are "easily made" and "have no value to anyone unless and when the user funds the . . . disposable payment cards;" that funding the disposable payment cards "can be easily accomplished anywhere by the user scanning the QR code with a user smart phone;" and the disposable payment cards "provide a safe way

for the user to make payments, while limiting exposure that a credit or debit card can have." Ex. 1005 ¶ 52 (cited at Pet. 15).

Petitioner contends that "[a] POSITA would have . . . found it obvious for Smith's payment device to store a transaction sequence count, and to generate a payment cryptogram for each transaction only after receiving a valid credential . . . from the user, based on the teachings of Gomez." Pet. 18–19 (citing Ex. 1003 ¶ 126). Petitioner further contends that:

> [i]mplementing Gomez's transaction counting and cryptogram generation techniques in Smith's mobile device would further Smith's aim of "reducing the potential for fraud" by preventing the use of a stolen mobile device to initiate fraudulent transactions, and preventing the re-use of intercepted cryptograms for additional transactions, as taught by Gomez.

Pet. 19 (citing Ex. 1004 ¶¶ 34, 45; Ex. 1017, 5:39–41, 7:24–26, 8:37–41, 10:34–42, 10:66–11:2, Fig. 7; Ex. 1003 ¶ 126).

Patent Owner argues that Smith "already includes security measures to prevent fraudulent access to the functions of the mobile device" and that Gomez discloses a less secure payment card. Prelim. Resp. 39.

For purposes of institution, we find that Petitioner provides a sufficient rationale for combining Gomez with Smith and Kobylkin, as summarized above, and that Petitioner's rationale is sufficiently supported by the cited prior art and Dr. Shamos's Declaration. Pet. 18–21 (citing Ex. 1004 ¶¶ 33, 34, 45; Ex. 1017, 5:39–41, 7:24–26, 8:37–41, 10:34–42, 10:66–11:2, 13:1–4, Fig. 7; Ex. 1003 ¶¶ 126–130). Petitioner relies on Smith, which indicates that "reducing the potential for fraud" is one aim of the disclosed system. Ex. 1006 ¶ 34. Petitioner also relies on Gomez, which discloses a payment card that "generates an authentication cryptogram for each attempted transaction only after the cardholder successfully presents a

credential, such as a fingerprint or PIN number, into the payment card." Ex. 1007, 5:14–18 (cited at Pet. 13).

Patent Owner's counterargument raises factual issues as to the motivations of a POSITA, but does not preclude a determination of obviousness. *See Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1331 (Fed. Cir. 2019) ("Whether a skilled artisan would have been motivated to combine prior art references is . . . a question of fact."); *see also Intel*, 61 F.4th at 1380–81 (holding that the Board improperly rejected *KSR*'s known-technique rationale when it reasoned that Kabemoto "already addresses" the prior art problem and that it "fail[ed] to see why" a POSITA would regard Bauman's technique as an obvious improvement to Kabemoto).

On the present record, and for the purposes of institution, we conclude that Petitioner's provided explanation of the motivation for the combination of Smith, Kobylkin, and Gomez is sufficient.

c) Remaining Claim Elements

At this stage, Patent Owner does not dispute Petitioner's contention that the combination of Smith, Kobylkin, and Gomez teaches or suggests claim elements 1.0 (to the extent limiting), 1.1–1.7a, and 1.7c–1.13. We determine that Petitioner's showing for independent claim 1 is sufficient for purposes of institution.

5. Independent Claim 15

Petitioner challenges claim 15 based on a combination of Smith, Kobylkin, and Gomez, including by reference to the challenge of claim 1. Pet. 46–48.

a) Claim Element 15.7

Claim element 1.9 of claim 1 specifies that the processor of element 1.2 of claim 1 "is operable to generate at least a portion of a limited-use card payment information for use by an authenticated card user." Ex. 1001, 20:1–3. Claim element 15.7 of claim 15 specifies that the [card-users personal] computing device of limitation 15.2 "is configured to dynamically generate limited-use payment information." Petitioner's contentions with respect to limitation 15.7 refer to its contentions with respect to limitation 1.9. Pet. 47.

Petitioner contends that Smith discloses or suggests claim element 1.9 in its disclosure of a user initiating transmission of payment credentials including a payment cryptogram generated based on at least a portion of the MCA data. Pet. 35 (citing Ex. 1004 ¶¶ 67, 96, 103; Ex. 1003 ¶ 164). Petitioner quotes Smith's disclosure that the payment cryptogram may be "an authorization request cryptogram or dynamic card validation code." *Id.* (quoting Ex. 1004 ¶ 67). Petitioner additionally argues that Gomez teaches that its "authentication cryptogram" is generated if the cardholder successfully presents a credential, and that the cryptogram is thus generated only for an authenticated user. *Id.* at 35–36 (citing Ex. 1017 5:25–28; Ex. 1003 ¶ 165).

Patent Owner argues that because limitation 15.7 requires dynamic generation of limited-use payment information, and limitation 1.9 does not specify that the generation of at least a portion of limited-use card payment information is dynamic, Petitioner has not adequately shown that Smith discloses the dynamic generation of claim 15.7. Prelim. Resp. 35–36. Patent Owner focuses on the Petition's citation of Smith's payment cryptogram and does not address the disclosure that it may be a "dynamic

card validation code." *Id.* at 36–37. Patent Owner argues that Petitioner's citation of Gomez is also unavailing because "Petitioner fails to explain how [Gomez's] cryptogram is dynamically generated or corresponds to limited use payment information." *Id.* at 37–38.

For purposes of institution, we find that Petitioner makes a sufficient showing for claim element 15.7. Pet. 18–20, 35–36, 47. Petitioner has adequately shown how Gomez's cryptogram generation techniques would be used in combination with Smith's teachings. *See id.* at 18–20, 35–36.

In our preliminary view, Petitioner has adequately shown, for the purposes of institution, how limitation 15.7 is taught or suggested in its proposed combination of Smith, Kobylkin, and Gomez.

b) Remaining Claim Elements

At this stage, Patent Owner does not dispute Petitioner's contention that the combination of Smith, Kobylkin, and Gomez teaches or suggests the additional claim elements of claim 15. We determine that Petitioner's showing for independent claim 1 is sufficient for purposes of institution.

6. Dependent Claims 2, 7–10, 12–14, 16, and 18

Claims 2, 7–10, and 12–14 depend from claim 1 and claims 16 and 18 from claim 15. Petitioner challenges these claims based on Smith, Kobylkin, and Gomez. Pet. 7, 41–46, 49–51. Patent Owner does not present arguments for dependent claims 2, 7–10, 12–14, 16, and 18 separate from its arguments for independent claims 1 and 15.

C. Additional Grounds – claims 3–6, 11, 17, and 19–27

Petitioner challenges claims 3–6, 11, 17, and 19–27 based on Smith, Kobylkin, and Gomez, adding Saarisalo, Slonecker, Mestre, Sahota, Moosavi, and Mullen to the combinations for various claims. Pet. 7, 52–88.

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Patent Owner does not raise arguments with respect to these grounds separate from its arguments above.

V. CONCLUSION

We determine that Petitioner has demonstrated that it is more likely than not that at least one of the challenged claims is unpatentable. Accordingly, we institute a post-grant review of all challenged claims on all asserted grounds.

VI. ORDER

It is

ORDERED that, pursuant to 35 U.S.C. § 324(a), a post-grant review of claims 1–27 of the '286 patent is instituted; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 324(d) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial commencing on the entry date of this Order.

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Paper 14
Date: August 11, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

CARDWARE INC.,
Patent Owner.

PGR2023-00013
Patent 11,328,286 B2

Before ELIZABETH M. ROESEL, SHARON FENICK, and IFTIKHAR AHMED, *Administrative Patent Judges.*

FENICK, *Administrative Patent Judge.*

DECISION
Granting Institution of Post-Grant Review
35 U.S.C. § 324

I. INTRODUCTION

A. Background and Summary

Samsung Electronics Co., Ltd. ("Petitioner") filed a Petition (Paper 2, "Pet.") requesting post-grant review of claims 1–27 ("the challenged claims") of U.S. Patent No. 11,328,286 B2 (Ex. 1001, "the '286 patent"). CardWare Inc. ("Patent Owner") filed a Preliminary Response (Paper 9, "Prelim. Resp."). With the Board's authorization, Petitioner filed a Preliminary Reply (Paper 10) and Patent Owner filed a Preliminary Sur-reply (Paper 11). After further authorization, Petitioner filed a corrected Preliminary Reply (Paper 12, "Prelim. Reply") and Patent Owner filed a corresponding second Preliminary Sur-reply (Paper 13, "Prelim. Sur-reply").

A post-grant review may be instituted only if "the information presented in the petition filed under section 321, if such information is not rebutted, would demonstrate that it is more likely than not that at least 1 of the claims challenged in the petition is unpatentable." 35 U.S.C. § 324(a). For the reasons below, Petitioner has demonstrated that it is more likely than not that at least one of the challenged claims is unpatentable. Accordingly, we institute a post-grant review of the challenged claims of the '286 patent on all grounds raised in the Petition.

B. Real Parties in Interest

Petitioner identifies itself, Samsung Electronics Co., Ltd., as well as Samsung Electronics America, Inc. as real parties-in-interest. Pet. 50.

Patent Owner identifies itself, CardWare Inc., as a real party-in-interest. Paper 5 (Patent Owner's Mandatory Notices), 1.

C. Related Matters

The parties each identify as a related matter the district court case styled as *CardWare Inc. v. Samsung Electronics Co., Ltd. and Samsung*

Electronics America, Inc., Case No. 2:22-cv-00141 (E.D. Tex.). Pet. 50–51; Paper 5, 1.

The parties also indicate that the '286 is being challenged in another petition for post-grant review (PGR2023-00012). Pet. 51; Paper 5, 1.

D. The '286 Patent

The '286 patent is titled "Multi-Function Electronic Payment Card and Device System" and describes emulating a standard credit card with a device capable of generating a programmed magnetic field of alternating polarity when used in an electronic credit card reader. Ex. 1001, codes (54), (57), 2:22–28. The '286 patent observes that presently available credit cards, including cards with magnetic strips, cards with smart integrated circuit chips, and radio frequency identification (RFID) cards, have certain security limitations. *Id.* at 1:39–2:8. In addition, according to the '286 patent, chip cards and RFID cards "are not in wide use at present because they are incompatible with existing credit card infrastructure." *Id.* at 8–11. The '286 patent thus describes a device for "credit, debit and cash transactions, including cryptocurrency and card-to-card transactions," particularly with a limited-duration credit card number, that generates "a magnetic field of alternating polarity responsive to the body being detected as adjacent to a standard magnetic card reader." *Id.* at 2:28–51.

Figure 2B, reproduced below, illustrates "an exemplary embodiment of a smart multi-function electronic device." *Id.* at 5:62–63.

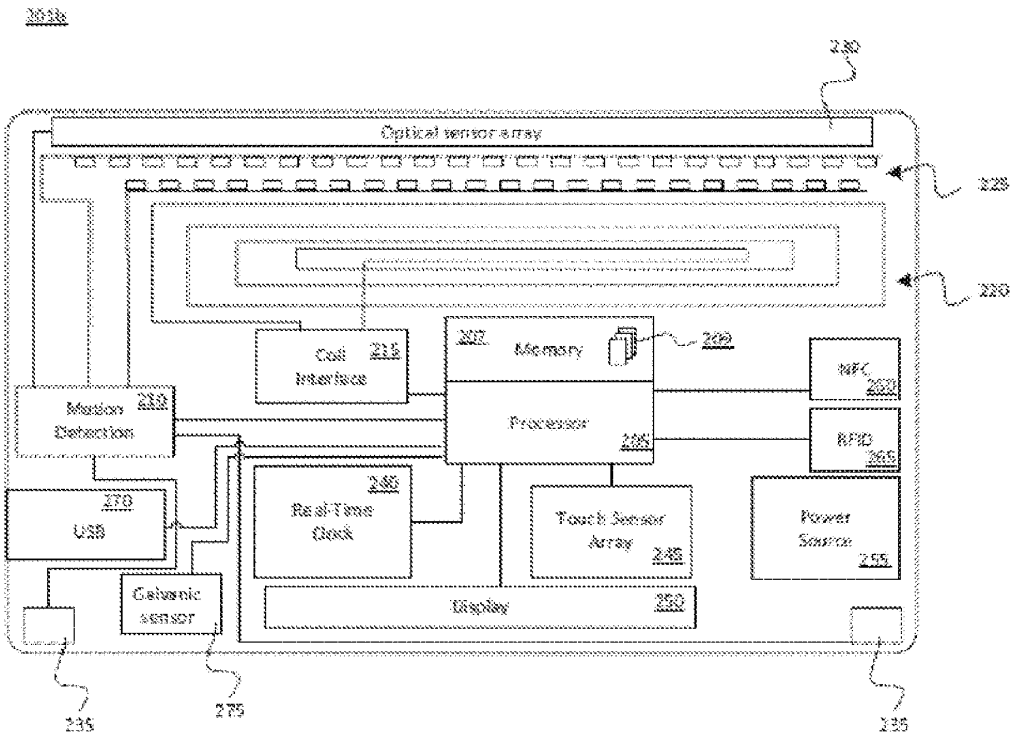


FIG. 2B

Figure 2B shows multi-function electronic device 201*b* comprising processor 205 and memory unit 207 that stores accounts 209, "which may be credit card accounts, banking accounts, merchant accounts, online accounts, cryptocurrency accounts, and combinations thereof." *Id.* at 6:51–59. Motion detector module 210 is coupled to processor unit 205 and to motion detection units, including rate detection assembly 225, optical sensor array 230, and accelerometers 235. *Id.* at 6:59–62. "Each of the motion detection units detects the motion of the credit card . . . in a distinct manner," and a detected movement signal received by motion detection module 210 and sent to processor unit 205 can be "generated by any one of the set of motion detection units, or any combination of motion detection units of the set." *Id.* at 8:2–9:3. Planar coil 220, controlled by processor unit 205 via coil

interface 215, generates a magnetic field that changes polarity to encode the user data at a rate depending "on the rate of relative movement detected by the rate detector." *Id.* at 6:64–7:1.

Device 201*b* also comprises touch-sensor array 245 and display 250, both of which are coupled to processor unit 205. *Id.* at 7:1–4. "A user input may be made via the touch sensor array 245, which may comprise a touch screen panel, a keypad, or a combination thereof." *Id.* at 7:4–6. And "display 250 is able to display an alphanumeric sequence, as well as graphical icons (such as a logo for a bank, or other images)." *Id.* at 7:7–9.

Figure 2C, reproduced below, illustrates "a process of selecting an account from a plurality of stored accounts in order to perform a transaction with the selected account." *Id.* at 7:38–40.

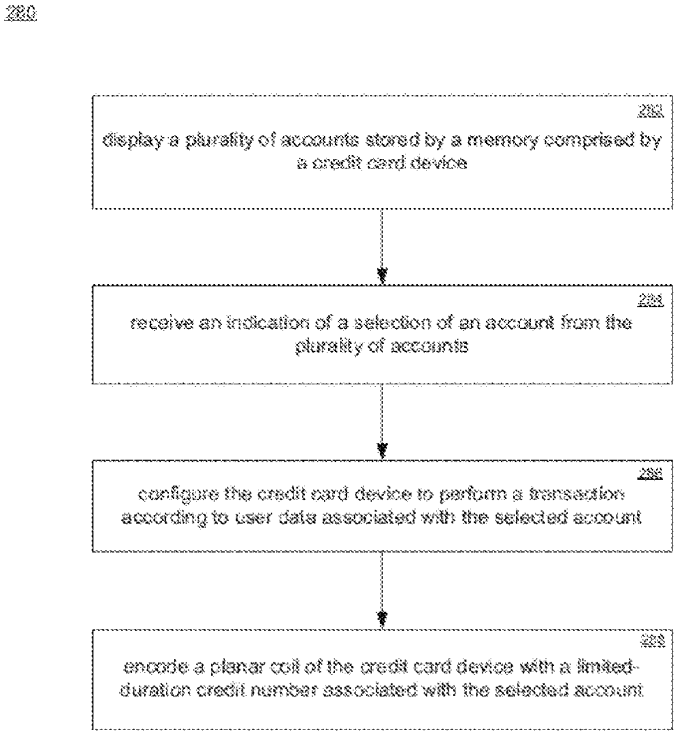


FIG. 2C

As shown in Figure 2C, process 280 begins at step 282 with the display, on display 250 of a multi-function electronic device, of accounts stored in memory unit 207. *Id.* at 7:41–45; *see also id.*, Fig. 2B. At step 284, a user selects an account by using touch sensor array 245, and the selected account may be indicated on display 250. *Id.* at 7:45–49; *see also id.*, Fig. 2B. At step 286, the multi-function electronic device is then "configured according to account information associated with the selected account, which may include an account number, an expiration date, and other user information associated with the account (e.g. a username, PIN, password, email address, etc.)." *Id.* at 7:49–54. Planar coil 220 is then, at step 288, "encoded with a limited-duration credit card number that is associated with the selected account." *Id.* at 7:54–57.

E. Illustrative Claim

Of the challenged claims, claims 1, 15, and 20 are independent. Claim 1, reproduced below with bracketed identifiers added as used by the Petitioner (*see* Pet. vi–vii), is illustrative.

1. [1.0] A payment system comprising:

[1.1] a payment card device free of any fixed payment numbers visible thereon and wherein said payment card device is operable for use in payment card reader equipment; and

[1.2] a computing device comprising:

a processor;

[1.3] a memory;

[1.4] a wireless interface;

[1.5] a touch-screen user interface operable to provide a visual user-interface for user payment interactions; and

[1.6] a user-input device coupled to the processor, and

[1.7] wherein the processor is operable to store a transaction sequence count, a device account number and secrets limited to the computing device, and

[1.8] wherein the computing device is operable to receive, store and transmit a card payment information not visible on the payment card device, and

[1.9] wherein the processor is operable to generate at least a portion of a limited-user card payment information for use by an authenticated card user, and

[1.10] wherein the computing device is operable to convey said limited-use card payment information via an interface of the computing device, and

[1.11] wherein a card issuer authority is operable to reject as invalid a transaction attempt outside of its limitations of use,

[1.12] wherein a card issuer authority is operable to validate a card payment information as authentic when received from at least one of: an authenticated users payment card; and an authenticated users computing device, and

[1.13] wherein the card issuer authority is operable to permit the authentic transactions to complete.

Ex. 1001, 19:50–20:15.

F. Asserted Grounds

Petitioner raises the following grounds of unpatentability with respect to the challenged claims:

Claims Challenged	35 U.S.C. §	Basis
1–27	101	Patent Eligibility
1–19	112	Indefiniteness
12, 13, 17	112	Enablement
20–27	112	Written Description

Pet. 7.

II. POST-GRANT REVIEW ELIGIBILITY

As a threshold issue, we must determine whether the '286 patent is eligible for post-grant review. The post-grant review provisions of the AIA apply to a patent that contains a claim with an effective filing date on or after March 16, 2013. *See* AIA, Pub. L. No. 112-29, 125 Stat. 284 (2011), §§ 3(n)(1), 6(f)(2)(A). The statute defines the "effective filing date" as:

> (A) if subparagraph (B) does not apply, the actual filing date of the patent or the application for the patent containing a claim to the invention; or
>
> (B) the filing date of the earliest application for which the patent is entitled, as to such invention, to a right of priority under section 119, 365(a), 365(b), 386(a), or 386(b) or to the benefit of an earlier filing date under section 120, 121, 365(c), or 386(c).

35 U.S.C. § 100(i)(1).

For a claim in a later-filed application to be entitled to the filing date of an earlier application, the earlier application must provide written description support for the claimed subject matter. *Anascape, Ltd. v. Nintendo of Am. Inc.*, 601 F.3d 1333, 1337 (Fed. Cir. 2010). The written description requirement "guards against the inventor's overreaching by insisting that he [or she] recount his [or her] invention in such detail that his [or her] future claims can be determined to be encompassed within his [or her] original creation." *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1561 (Fed. Cir. 1991). The test for determining compliance with the written description requirement under § 112(a) is whether the original disclosure of the earlier-filed application reasonably would have conveyed to one with ordinary skill in the art that the inventor had possession of the claimed subject matter at the time of the earlier-filed application. *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). It is well settled that "[e]ntitlement to a filing date does not extend to subject matter

which is not disclosed but would be obvious over what is expressly disclosed." *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1571–72 (Fed. Cir. 1997). "It is not sufficient for purposes of the written description requirement of § 112 that the disclosure, when combined with the knowledge in the art, would lead one to speculate as to modifications that the inventor might have envisioned, but failed to disclose." *Id.*

The '286 patent claims priority to a provisional application filed on March 15, 2013, U.S. Provisional App. No. 61/794,891 (Ex. 1012, "the '891 provisional"). Ex. 1001, code (60), 1:6–27. Petitioner argues that claims 3, 5, 6, 12, 15, and 20[1] of the '286 patent lack written description and enabling support in the '891 provisional, and that therefore the '286 patent is eligible for post-grant review. Pet. 1–6. Patent Owner argues that Petitioner has not shown that any claim is not entitled to claim priority to the '891 provisional. Prelim. Resp. 14–26. We address claim 5 in detail. Based on the present record and for the purpose of institution, we determine that there is insufficient support for claim 5 in the '891 provisional, and the '286 patent is eligible for post-grant review.

A. Level of Ordinary Skill in the Art

Petitioner contends that:

> A person of ordinary skill in the art . . . would have had (1) a bachelor's degree in computer science, computer engineering, electrical engineering, or a related field, and (2) one to two years of experience working with payment processing and/or digital authentication systems, including familiarity with short-range wireless technologies.

[1] Claim 20 is listed as unsupported in the table listing assertedly unsupported claims, but argument is only presented with respect to the other claims in the table. Pet. 2–6.

Pet. 9 (citing Ex. 1003 ¶¶ 46–61). Patent Owner does not dispute Petitioner's proposed level of ordinary skill in the art. *See* Prelim. Resp.

For purposes of this Decision, we apply Petitioner's definition of the level of ordinary skill in the art, which is consistent with the level of skill reflected in the Specification and in the asserted prior art references. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

B. Claim 5

Claim 5 depends from claim 1, adding two additional limitations, one of which recites that "the information presented on an interface of said card device, are limited to an in-store merchant card reader facility use only." Ex. 1001, 20:39–41.

Petitioner argues that "the provisional application does not describe limiting the field of use of the payment card device to in-store card reader facility use only, to the exclusion of online transactions." Pet. 4 (citing Ex. 1003 (Declaration of Dr. Michael I. Shamos) ¶ 35). Petitioner argues that the provisional application states explicitly that "the credit card of the present invention could also be used to make online purchases." *Id.* (citing Ex. 1012 ¶ 17). Patent Owner contends that the '891 provisional's disclosure is of a card that only generates usable payment information upon use at an in-store merchant, and that such a card therefore "lacks payment information, such that it cannot be used in an online store." Prelim. Resp. 17–18 (citing Ex. 1012, page 19[2] (figure)), ¶ 14; Ex. 2007 (Declaration of Dr. William C. Easttom II) ¶ 36)). Patent Owner argues, with respect to the '891 provisional's disclosure relating to online transactions, that this

[2] Exhibit 1012 contains page numbers added by Petitioner; when not referring to paragraph numbers, we use these added page numbers to refer to portions of the '891 provisional.

disclosure describes the card connecting to a personal computer "to ***uniquely*** generate" payment information for online purchases. *Id.* at 18 (quoting Ex. 1012 ¶ 17). Patent Owner argues that this means that "the information for online purchases is unique from that used for in-store transactions." *Id.*

On this record, and for the purposes of institution, we agree that Petitioner has sufficiently shown that the information presented on the interface of the card device is not described in the '891 provisional as being limited to use in an in-store merchant card reader facility. The '891 provisional describes the card "connect[ing] to a personal computer" for use in generating payment information for online purchases. Ex. 1012 ¶ 17. While Patent Owner argues that the description in the '891 provisional of "uniquely generat[ing] a credit card number" means a use "unique from that used for in-store transactions," this description echoes the general description of the use of the card to provide "a unique credit card number . . . for each transaction." *Compare* Ex. 1012 ¶ 14, *with id.* ¶ 17.

Dr. Easttom's testimony that "[g]iven that the payment card disclosed in the provisional does not have visible account information, there is no way for a user to simply use the information that might be presented on an interface of the card (such as a partial number) to perform an online transaction," does not appear to take into account the description in the provisional that the card is connected to the personal computer via RFID or near field technology to generate the credit card number, and thus that information would not need to be visually presented to a user in order to be used. Ex. 2007 ¶¶ 36–39; Ex. 1012 ¶ 17. The description of this connection is followed by a description that the number "*could* also" be displayed on a front display of the card. Ex. 1012 ¶ 17 (emphasis added). Our determination is that this describes the generated number *could* be displayed

for the user, or alternatively (if not displayed) could be used without being displayed on the front display of the card. This is confirmed in the immediately following sentence, describing an embodiment in which the payment card is "equipped with a means for communicating with the USB port on the computer in connection with making the online purchases." *Id.* "A connector for connection to standard computing devices" is described in the '891 provisional as a "USB *interface*." *Id.* at claim 8 (p. 17).

Dr. Easttom concludes that, if there is no visible account information on the payment card, "there is no way for a user to simply use the information that might be presented on an interface of the card . . . to perform an online transaction." Ex. 2007 ¶ 36. This conclusion appears to rely on an assumption that claim 5's "an interface of said card device" must be a display of the card device, such as the thin film liquid crystal display described in the '891 provisional. Ex. 2007 ¶ 36; Ex. 1012 ¶ 16 (describing display), p. 19 (figure). But, as discussed, the '891 provisional describes a card with a USB interface used in making online purchases.

On this record, and for the purposes of institution, Petitioner has shown sufficiently that the '891 provisional does not support a payment card device presenting information on an interface of said card device that is limited to in-store merchant card reader facility use, as recited in claim 5, and the '286 patent is eligible for post-grant review.

III. DISCRETION UNDER 35 U.S.C. § 324(a)

Petitioner, having filed two petitions for post grant review (in this proceeding and PGR2023-00012) of the '286 patent, submitted a Ranking of Petitions. Paper 3 ("Ranking Paper"); *see* PTAB Consolidated Trial Practice Guide, 59–60 (Nov. 2019) ("CTPG"). We address whether the parallel petitions raise fairness, timing, and efficiency concerns. CTPG 59–60.

Additionally, Patent Owner argues that we should exercise discretion to deny institution under 35 U.S.C. § 324(a) because the factors identified in *Apple, Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential) ("*Fintiv*"), weigh in favor of denying institution. Prelim. Resp. 48–50. Petitioner argues we should not discretionarily deny institution for efficiency reasons and after considering the *Fintiv* factors. Pet. 50–57.

A. Parallel Petitions Challenging the Same Patent

As noted above, Petitioner filed two petitions on the same day. This Petition challenges all claims of the '286 patent under 35 U.S.C. §§ 101 and 112, and PGR2023-00012 challenges the same claims under obviousness grounds. Pet. 7; PGR2023-00012, Paper 3 (Petition), 7.

Pursuant to the Board's Consolidated Trial Practice Guide ("Trial Practice Guide"), Petitioner provides a ranking of the two petitions in the order in which Petitioner wishes the Board to consider the merits and an explanation of the differences between the petitions. Ranking Paper; *see* CTPG 59–60. Petitioner ranks its petition in PGR2023-00012 first, and ranks the Petition here second. Petitioner asserts that because Patent Owner has asserted a large number of claims in the district court litigation, and because "the claims are long, with multiple wordy limitations, and generally include distinct limitations that are required to be addressed individually with respect to the cited prior art references," the parallel petitions are justified. Ranking Paper 1–2 (citing CTPG 59).

Patent Owner does not directly address whether we should use our discretion to deny this Petition due to the parallel filing of PGR2023-00012. Patent Owner does argue that we should deny institution of the Petition based on efficiency concerns because "the vast majority – if not all – of

Samsung's multiple challenges" do not meet the institution standard. Prelim. Resp. 50–51. However, this argument relates to the strength of the merits and not to the propriety of considering these two parallel petitions. Patent Owner additionally argues, with respect to *Fintiv* factor 4, that the stipulation offered is less effective because it does not "take into account Samsung's dual Petitions challenging the same claims." *Id.* at 55–56.

Institution of a post-grant review is discretionary. *See* 35 U.S.C. § 324(a); *cf. Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) (interpreting, in an *inter partes* context, that the similar language in 35 U.S.C. § 314(a) means "the PTO is permitted, but never compelled, to institute an IPR proceeding."). In evaluating whether to exercise that discretion here, we turn to the Trial Practice Guide, which provides guidance on whether institution of more than one concurrently filed petition challenging the same patent is appropriate. *See* CTPG 59.

The Trial Practice Guide states that "one petition should be sufficient to challenge the claims of a patent in most situations." CTPG 59. "Two or more petitions filed against the same patent at or about the same time . . . may place a substantial and unnecessary burden on the Board and the patent owner and could raise fairness, timing, and efficiency concerns." *Id.* (citing 35 U.S.C. § 316(b), which is identical to 35 U.S.C. § 326(b)). Although rare circumstances may necessitate two petitions, "the Board finds it unlikely that circumstances will arise where three or more petitions by a petitioner with respect to a particular patent will be appropriate." *Id.*

To help the Board determine whether multiple petitions are necessary, the Trial Practice Guide further instructs a petitioner filing multiple petitions challenging the same patent to explain "the differences between the petitions, why the issues addressed by the differences are material, and why

the Board should exercise its discretion to institute additional petitions if it identifies one petition that satisfies petitioner's burden under 35 U.S.C. § 314(a)." CTPG 59–60. Additionally, the Trial Practice Guide instructs the patent owner to "clearly proffer any necessary stipulations," where the patent owner asserts that "the differences identified by the petitioner are directed to an issue that is not material or not in dispute." *Id.* at 61. The patent owner may, for example, "seek to avoid additional petitions by proffering a stipulation that certain claim limitations are not disputed or that certain references qualify as prior art." *Id.*

In light of the particular facts before us, we decline to exercise our discretion to deny the Petition pursuant to 35 U.S.C. § 324(a) on the basis of the filing of two parallel petitions. In particular, we recognize that the two petitions do not include duplicate attacks on the basis of unpatentability over prior art, but rather break the issues into two distinct parts—prior-art based unpatentability challenges, in PGR2023-00012, and 35 U.S.C. §§ 101 and 112 challenges here. The usual considerations of fairness, timing, and efficiency do not weigh in favor of exercising our discretion to deny institution. In particular, the petitions were filed concurrently, which means that Petitioner did not gain a timing advantage that might otherwise occur if the petitions were filed serially. Additionally, the proceedings can be coordinated, and a similar or common schedule can be adopted. To the extent that Patent Owner argues (*see* Prelim. Resp. 55–56) that Petitioner was attempting to avoid providing a single stipulation that (upon institution) Petitioner will pursue neither section 103 grounds on certain art, as per the stipulation offered in PGR2023-00012, nor section 101 and 112 grounds as per the stipulation here (*see* Pet. 49), discretionary denial of this Petition would not provide such a stipulation. Because we institute both here and in

PGR2023-00012, the effect of the two stipulations in these two proceedings is equivalent to our best understanding of Patent Owner's desired stipulation "tak[ing] into account" the two Petitions.

Accordingly, based on the particular facts and circumstances before us, we decline to exercise our discretion to deny the instant Petition under § 324(a) on the basis of the Petitioner's filing of multiple petitions.

B. Fintiv *Analysis*

The precedential decision in *Fintiv* identifies a non-exclusive list of factors parties may consider addressing where there is a related, parallel district court action to determine whether such action provides any basis for discretionary denial. *Fintiv*, 5–16. Those factors include:

> 1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
>
> 2. proximity of the court's trial date to the Board's projected statutory deadline for a final written decision;
>
> 3. investment in the parallel proceeding by the court and the parties;
>
> 4. overlap between issues raised in the petition and in the parallel proceeding;
>
> 5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
>
> 6. other circumstances that impact the Board's exercise of discretion, including the merits.

Id. at 5–6.

In evaluating the factors, we take a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review. *Id.* at 6. The Director has issued additional guidance on the application of *Fintiv*. *See* Katherine K. Vidal, *Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court*

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Litigation (June 21, 2022)[3] ("*Fintiv* Memo"). Additionally, we are guided by the precedential decisions of the Director in *OpenSky Indus., LLC v. VLSI Tech. LLC*, IPR2021-01064, Paper 102, 49–50 (Oct. 4, 2022) (precedential) and *CommScope Techs. LLC v. Dali Wireless, Inc*, IPR2022-01242, Paper 23 (Feb. 27, 2023) (precedential) ("*CommScope*").

We are instructed to consider compelling merits under *Fintiv* factor six only after a determination that the first five *Fintiv* factors favor discretionary denial. *CommScope*, 4–5. Thus, we begin by considering the first five *Fintiv* factors.[4]

1. First Five Fintiv *Factors*

a) Factor 1 - Whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted

"A district court stay of the litigation pending resolution of the PTAB trial allays concerns about inefficiency and duplication of efforts." *Fintiv*, 6. *Fintiv* indicated that, in previous Board decisions, the existence of a district court stay pending Board resolution of an *inter partes* review has weighed strongly against discretionary denial, while a denial of such a stay request sometimes weighs in favor of discretionary denial. *Id.* at 6–8.

Patent Owner notes that a stay was requested after the filing of the Petition and not granted in the district court litigation, and asserts that this factor should be viewed as neutral. Prelim. Resp. 52; Ex. 1107.[5]

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[3] Available at https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf

[4] While *Fintiv* factor six encompasses considerations other than the compelling merits, neither party has argued such considerations exist in this case.

[5] Patent Owner cites Exhibit 2003. Exhibits 1107 and 2003 appear to be the same order, but Exhibit 1107 is signed by the magistrate judge.

The court in the district court litigation noted in its denial of the stay request that it was following "the universal practice" in the district, to deny a stay based on post-grant review requests where institution decisions have not yet been issued, and provided no additional reasoning or indication of future action with respect to any potential renewal of the stay request. Ex. 1107. Because, "[i]n the absence of specific evidence, we will not attempt to predict" whether a district court would stay "based on a variety of circumstances and facts beyond our control and to which the Board is not privy," we find this factor to be neutral. *See Sand Revolution II, LLC v. Cont'l Intermodal Group – Trucking LLC*, IPR2019-01393, Paper 24 at 7 (PTAB June 16, 2020) (informative) ("*Sand Revolution*").

b) Factor 2 - Proximity of the court's trial date to the Board's projected statutory deadline for a final written decision

The proximity factor in *Fintiv* asks us to evaluate our discretion in light of a trial date that has been set in a parallel litigation. *See Fintiv*, 3, 5 ("*NHK* applies to the situation where the district court has set a trial date to occur earlier than the Board's deadline to issue a final written decision in an instituted proceeding."; "When the patent owner raises an argument for discretionary denial under *NHK* due to an earlier trial date, the Board's decisions have balanced the following factors . . . .") (citing *NHK Spring Co. v. Intri-Plex Techs., Inc.*, IPR2018-00752, Paper 8 at 20 (PTAB Sept. 12, 2018) (precedential)("*NHK*")). As noted above in the discussion of the first factor, *Fintiv* cites concern regarding "inefficiency and duplication of efforts." *Id.* at 6. In its analysis of the proximity factor, *Fintiv* echoes that concern in its guidance that "[i]f the court's trial date is at or around the same time as the projected statutory deadline or even significantly after the projected statutory deadline, the decision whether to institute will likely

implicate other factors discussed herein, such as the resources that have been invested in the parallel proceeding." *Id.* at 9. Similarly, in *NHK*, the Board expressed concern that a trial before the deadline for a final written decision addressing the same prior art and arguments would have undermined the Board's objectives of providing an effective and efficient alternative to district court litigation. *See NHK*, 20 (citing *General Plastic Indus. Co., Ltd. v. Cannon Kabushiki Kaisha*, IPR2016-01357, Paper 19 at 16–17 (PTAB Sept. 6, 2017 (precedential))).

We are instructed that

> when analyzing the proximity of the court's trial date under factor two of *Fintiv*, when other relevant factors weigh against exercising discretion to deny institution or are neutral, the proximity to trial should not alone outweigh all of those other factors. Parties may present evidence regarding the most recent statistics on median time-to-trial for civil actions in the district court in which the parallel litigation resides for the PTAB's consideration. Where the parties rely on time-to-trial statistics, the PTAB will also consider additional supporting factors such as the number of cases before the judge in the parallel litigation and the speed and availability of other case dispositions.

Fintiv Memo, 8–9 (internal citations and footnote deleted).

Based on median time-to-trial data for the Eastern District of Texas, Petitioner asserts that "trial would be expected to occur in May, 2024" but that "delays are possible" and indicated by the median time to trial statistics. Pet. 48 (citing Ex. 1103, 35; Ex. 1104). According to Petitioner, a final written decision ("FWD") in this proceeding is anticipated in July of 2024. *Id.* Nevertheless, Petitioner argues that "[t]he Board should not deny institution due to the close proximity of the expected FWD and the predicted trial date in E.D. Tex." *Id.*

Patent Owner contends that as the docket control order sets jury selection for February 5, 2024, the district court trial date precedes the anticipated final written decision deadline by six months. Prelim. Resp. 52 (citing Ex. 2001). Patent Owner additionally argues that, if the Board relies on median time-to-trial, then we should use the more recent time-to-trial data for the district, which would indicate an even earlier trial date than that scheduled in the docket control order, or the specific judge's median time-to-trial, which is similar. *Id.* at 53–54 (citing Ex. 2004, 35; Ex. 2002, 1). Patent Owner additionally argues that the *Markman* hearing was set for August 1, 2023. *Id.* at 52 (citing Ex. 2001).

Because the trial in the district court litigation, under any of the parties' proposed approaches, appears likely to begin several months before our deadline to reach a decision, this factor weighs in favor of discretionary denial.

c) Factor 3 - Investment in the parallel proceeding by the court and the parties

If, at the time of the institution decision, the district court has issued substantive orders related to the challenged patent, such as a claim construction order, this fact weighs in favor of denial. *See Fintiv*, 9–10. On the other hand, if the district court has not issued such orders, this fact weighs against discretionary denial. *Id.* at 10.

Petitioner argues that the bulk of investment in the district court litigation has yet to occur, and that no part of claim construction or document production had occurred at the time of the filing of the Petition. Pet. 49.

Patent Owner argues that by the time of our decision, the claim construction process will be complete and the document production process substantially complete. Prelim. Resp. 54 (citing Ex. 2001, 3–4).

The docket control order shows that the claim construction hearing was scheduled to take place on August 1, 2023. Ex. 2001, 3. *Fintiv* directs us to consider whether "the petitioner filed the petition expeditiously." *Fintiv*, 11. Although we are mindful of the investment of the parties to date, we find that, at this time, that no substantive orders related to the challenged patent have been issued by the district court. Additionally, on the record before us the filing of the Petition was expeditious. We determine this factor weighs slightly against exercising discretion to deny institution.

d) Factor 4 - Overlap between issues raised in the petition and in the parallel proceeding

"[I]f the petition includes the same or substantially the same claims, grounds, arguments, and evidence as presented in the parallel proceeding, this fact has favored denial." *Fintiv*, 12. "Conversely, if the petition includes materially different grounds, arguments, and/or evidence than those presented in the district court, this fact has tended to weigh against exercising discretion to deny institution under *NHK*." *Id.* at 12–13. A stipulation as in *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 at 18–19 (PTAB Dec. 1, 2020) (precedential as to § II.A), if one is entered, would be highly relevant. "Consistent with *Sotera Wireless, Inc.*, the PTAB will not discretionarily deny institution in view of parallel district court litigation where a petitioner presents a stipulation not to pursue in a parallel proceeding the same grounds or any grounds that could have reasonably been raised before the PTAB." *Fintiv* Memo 3 (footnote omitted).

Petitioner offers, in the Petition, a stipulation that, if IPR is instituted, "it will not pursue in the Related District Court Litigation invalidity grounds under 35 U.S.C. §§ 101 or 112 against the Challenged Claims of the '286 patent." Pet. 49. Petitioner argues that this will remove all overlap between the proceedings.

Patent Owner argues "the Related Litigation will have already considered at least Section 112 pre-institution and reached a final jury verdict on validity months before the statutory deadline for a Final Written Decision." Prelim. Resp. 55. Patent Owner additionally argues that "Samsung has already asked the district court to consider many of the *same* indefiniteness arguments in district court." *Id.* (citing Ex. 2006; Ex. 2034).

Patent Owner's reference to the final jury verdict ignores the language of the stipulation – that Petitioner will not pursue section 101 or 112 invalidity grounds in the related district court litigation *if we institute*. Although we understand that a *Markman* hearing was scheduled to occur in the days before this Decision, we do not understand an order to have issued, and thus, there is no conflicting decision. Additionally, while Patent Owner argues that "many of the *same* indefiniteness arguments" are at issue in district court, the parties prehearing statement in the related litigation shows that the claim terms of the '286 patent that Petitioner asserted were indefinite are "static" in claims 20, 21, and 24–27, "its limitations of use" in claim 1, "valid range of device limitations" in claim 6, and "a biometric sensing of a recognized user proximity" in claim 12. Ex. 2034, 18, 28, 29. Only two of these indefiniteness arguments are made before us, while many additional arguments related to indefiniteness are made here that are not at issue in district court. *See* Pet. 39–45. Based on this record, we find that

Petitioner's stipulation will reduce the potential overlap that may occur with the district court litigation, and that the potential for overlap is not extensive.

Thus, we determine this factor weighs against exercising discretion to deny institution.

e) Factor 5 - Whether the petitioner and the defendant in the parallel proceeding are the same party

If the petitioner is unrelated to the defendant in the parallel proceeding, that might weigh against discretionary denial. *See Fintiv*, 13–14.

Patent Owner notes that the related district court litigation involves the same parties. Prelim. Resp. 56.

As with *Fintiv* factor 2, therefore, this factor weighs marginally in favor of exercising our discretion to deny the Petition.

2. Conclusion

We have considered the circumstances and facts before us in view of the first five *Fintiv* factors. Because our analysis is fact-driven, no single factor is determinative of our conclusion. Considering these five *Fintiv* factors together, we determine that they do not favor a discretionary denial. As we do not find that the first five *Fintiv* factors favor discretionary denial, we therefore do not make a determination regarding compelling merits under *Fintiv* factor 6, and our consideration ends with this conclusion. *CommScope*, 4–5.

IV. PATENTABILITY ANALYSIS

In a post-grant review, the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable. *See* 35 U.S.C. § 322(a)(3) (requiring post-grant review petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to

each claim"); *cf. Harmonic Inc.*, 815 F.3d at 1363 (Fed. Cir. 2016) ("[I]t was [Petitioner's] burden to explain to the Board how [the combination of prior art] rendered the challenged claims unpatentable."). This burden never shifts to Patent Owner. *Cf. Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)) (discussing the burden of proof in *inter partes* review).

A. Claim Construction

We construe claim terms according to the standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–17 (Fed. Cir. 2005) (en banc), i.e., as construed in a civil action under 35 U.S.C. § 282(b). *See* 37 C.F.R. § 42.100(b). Under *Phillips*, claim terms are afforded "their ordinary and customary meaning." *Phillips*, 415 F.3d at 1312. "[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention." *Phillips*, 415 F.3d at 1313. "Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Phillips*, 415 F.3d at 1313. An inventor may rebut that presumption by providing a definition of the term in the specification "with reasonable clarity, deliberateness, and precision." *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). In the absence of such a definition, limitations are not to be read from the specification into the claims. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

We address the meaning of several claim terms below and determine that no additional claim construction is needed for purposes of this Decision. Our claim constructions are not final, and we invite the parties to address

claim construction in their post-institution submissions to the extent allowable by our rules.

1. Alleged printed matter in claims 1, 5, 15, 19, and 20

Petitioner contends that claims 1, 5, 15, 19, and 20 include limitations directed to printed matter because they have "no functional or structural relationship to the claimed substrate on which the information is disposed or printed," and that these limitations, therefore, are entitled to no patentable weight. Pet. 8–9.

On this record, we agree with Petitioner that claim elements 1.1, 1.8, 5.0, 15.1, 19.0, 19.1, and 20.[6]1 recite printed matter entitled to no patentable weight.

"[P]rinted matter encompasses any information claimed for its communicative content, and the doctrine prohibits patenting such printed matter unless it is 'functionally related' to its 'substrate,' which encompasses the structural elements of the claimed invention." *C R Bard Inc. v. AngioDynamics, Inc.*, 979 F.3d 1372, 1381 (Fed. Cir. 2020); *see also Praxair Distribution, Inc. v. Mallinckrodt Hosp. Prod. IP Ltd.*, 890 F.3d 1024, 1031 (Fed. Cir. 2018) ("Claim limitations directed to printed matter are not entitled to patentable weight unless the printed matter is functionally related to the substrate on which the printed matter is applied."); *In re Distefano*, 808 F.3d 845, 848 (Fed. Cir. 2015) ("[I]f a limitation claims (a) printed matter that (b) is not functionally or structurally related to the physical substrate holding the printed matter, it does not lend any patentable weight to the patentability analysis.").

[6] We use the claim limitation identifiers as used by Petitioner in the Petition's claim listing. *See* Pet. vi–xiii.

In our view, claim elements 1.1, 1.8, 5.0, 15.1, 19.1, and 20.1 recite printed matter entitled to no patentable weight because they require that a particular type of information—"fixed payment numbers" or "card payment information" or "payment number information"—be absent from the face of the payment card device. If they were affirmatively recited, "fixed payment numbers" or "payment number information" would no doubt qualify as information claimed for its communicative content that is not functionally related to the substrate, as no reference to or functional use of such fixed payment numbers, card payment information, or payment number information is found in claims 1, 5, 15, 19, and 20. The negative limitation, that no fixed payment numbers, card payment information, or payment number information is on the device, is just as much recitation of printed matter as the affirmative recitation would be. In both cases, information is being claimed for its communicative content. These claim elements simply recite that a particular type of information—fixed payment numbers, card payment information, or payment number information—is not included in the communication.

Patent Owner argues that these claim elements are "functionally related to the claimed devices within the claimed system" because "the claimed 'no fixed payment numbers' and similar enhance the security of the claimed systems by removing the possibility that 'a malicious third party [would] record [such information] in order to later make fraudulent transactions on the account.'" Prelim. Resp. 22 (citing Ex. 1001, 9:62–10:2). We disagree. Our reviewing court instructs: "In evaluating the existence of a functional relationship, we have considered whether the printed matter merely informs people of the claimed information, or whether it instead interacts with the other elements of the claim to create a new

functionality in a claimed device or to cause a specific action in a claimed process." *Bard*, 979 F.3d at 1381. Fixed payment numbers inform people of particular information, and claim elements 1.1, 1.8, 5.0, 15.1, 19.1, and 20.1 recite that the matter printed on the payment card device should not inform people of that particular information. The absence of fixed payment numbers does not interact with the other elements of the claim to create a new functionality in a claimed device or to cause a specific action in a claimed process.

The foregoing analysis applies equally to element 19.0 of dependent claim 19, which recites an limitation that recites that the payment card device "comprises fixed payment information disposed thereon," but that such fixed payment information "comprises only" certain types of information.

2. Alleged additional non-limiting claim features in claims 1, 6, 11, 13–15, and 17

Petitioner contends that claims 1, 6, 11, 13–15, and 17 include features that "are not limiting as they do not define further limitations of the recited payment devices and systems." Pet. 9–10. The claim elements relate to certain limitations on a "card issuer authority," a "card issuing authority," or a "payment issuing authority." Ex. 1001, 20:7–15, 20:45–59, 21:13–16, 21:38–46, 22:6–12, 22:25–29. Petitioner argues, without more, that in claim 1, the "card issuer authority" is not recited as being included in the "payment system" and that therefore "language describing a function the card issuer authority 'is operable' to perform does not limit any aspect of the claimed payment system." Pet. 10. On this record, Petitioner has not shown these limitations to be non-limiting to the scope of the claims.

B. Ground 1: Patent-ineligibility of claims 1–27

An invention is patent-eligible if it claims a "new and useful process, machine, manufacture, or composition of matter." 35 U.S.C. § 101. However, the Supreme Court has long interpreted 35 U.S.C. § 101 to include implicit exceptions: "[l]aws of nature, natural phenomena, and abstract ideas" are not patentable. *E.g.*, *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014).

In determining whether a claim falls within an excluded category, we are guided by the Supreme Court's two-step framework, described in *Mayo* and *Alice*. *Alice*, 573 U.S. at 217–18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75–77 (2012)). In accordance with that framework, we first determine what concept the claim is "directed to." *See id.* at 219 ("On their face, the claims before us are drawn to the concept of intermediated settlement, *i.e.*, the use of a third party to mitigate settlement risk."); *see also Bilski v. Kappos*, 561 U.S. 593, 611 (2010) ("Claims 1 and 4 in petitioners' application explain the basic concept of hedging, or protecting against risk.").

Concepts determined to be abstract ideas, and thus patent ineligible, include certain methods of organizing human activity, such as fundamental economic practices (*Alice*, 573 U.S. at 219–20; *Bilski*, 561 U.S. at 611); mathematical formulas (*Parker v. Flook*, 437 U.S. 584, 594–95 (1978)); and mental processes (*Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)). Concepts determined to be patent eligible include physical and chemical processes, such as "molding rubber products" (*Diamond v. Diehr*, 450 U.S. 175, 191 (1981)); "tanning, dyeing, making water-proof cloth, vulcanizing India rubber, smelting ores" (*id.* at 182 n.7 (quoting *Corning v. Burden*, 56 U.S.

252, 267–68 (1854))); and manufacturing flour (*Benson*, 409 U.S. at 69 (citing *Cochrane v. Deener*, 94 U.S. 780, 785 (1876))).

In *Diehr*, the claim at issue recited a mathematical formula, but the Supreme Court held that "a claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula." *Diehr*, 450 U.S. at 187; *see also id.* at 191 ("We view respondents' claims as nothing more than a process for molding rubber products and not as an attempt to patent a mathematical formula."). Having said that, the Supreme Court also indicated that a claim "seeking patent protection for that formula in the abstract . . . is not accorded the protection of our patent laws, . . . and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment." *Id.* (citing *Benson* and *Flook*); *see, e.g.*, *id.* at 187 ("It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.").

If the claim is "directed to" an abstract idea, we turn to the second step of the *Alice* and *Mayo* framework, where "we must examine the elements of the claim to determine whether it contains an 'inventive concept' sufficient to 'transform' the claimed abstract idea into a patent-eligible application." *Alice*, 573 U.S. at 221 (quotation marks omitted). "A claim that recites an abstract idea must include 'additional features' to ensure 'that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].'" *Id.* (alterations in original) (quoting *Mayo*, 566 U.S. at 77). "[M]erely requir[ing] generic computer implementation[] fail[s] to transform that abstract idea into a patent-eligible invention." *Id.*

In January 2019, the U.S. Patent and Trademark Office ("USPTO") published revised guidance on the application of § 101. 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019) ("Guidance").[7] "All USPTO personnel are, as a matter of internal agency management, expected to follow the guidance." (*Id.* at 51; *see also* October 2019 Update at 1).[8]

Under the 2019 Revised Guidance, we first look to whether the claim recites:

> (1) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activity such as a fundamental economic practice, or mental processes) ("Step 2A, Prong One"); and
>
> (2) additional elements that integrate the judicial exception into a practical application (*see* Manual of Patent Examining Procedure ("MPEP") § 2106.05(a)–(c), (e)–(h) (9th ed. Rev. 10.2019 (June 2020))) ("Step 2A, Prong Two").[9]

(Guidance, 84 Fed. Reg. at 52–55).

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[7] In response to received public comments, the Office issued further guidance on October 17, 2019, clarifying the 2019 Revised Guidance. USPTO, *October 2019 Update: Subject Matter Eligibility* (the "October 2019 Update") (available at https://www.uspto.gov/sites/default/files/documents/peg_oct_2019_update.pdf).

[8] The Manual of Patent Examining Procedure incorporates the 2019 Guidance and subsequent updates in Section 2106 (9th ed. Rev. 10.2019, rev. June 2020).

[9] This evaluation is performed by (a) identifying whether there are any additional elements recited in the claim beyond the judicial exception, and (b) evaluating those additional elements individually and in combination to determine whether the claim as a whole integrates the exception into a practical application. *See* Guidance – Section III(A)(2), 84 Fed. Reg. at 54–55.

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, do we then look, under Step 2B, to whether the claim:

> (3) adds a specific limitation beyond the judicial exception that is not "well-understood, routine, conventional" in the field (*see* MPEP § 2106.05(d)); or
>
> (4) simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception.

(Guidance, 84 Fed. Reg. at 52–56). The U.S. Court of Appeals for the Federal Circuit has explained that "the 'directed to' inquiry applies a stage-one filter to claims, considered in light of the [S]pecification, based on whether 'their character as a whole is directed to excluded subject matter.'" *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335 (Fed. Cir. 2016) (quoting *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1346 (Fed. Cir. 2015)). It asks whether the focus of the claims is on a specific improvement in relevant technology or on a process that itself qualifies as an "abstract idea" for which computers are invoked merely as a tool. *See Enfish*, 822 F.3d at 1335–36.

In so doing, as indicated above, we apply a "directed to" two prong test: 1) evaluate whether the claim recites a judicial exception, and 2) if the claim recites a judicial exception, evaluate whether the claim "appl[ies], rel[ies] on, or use[s] the judicial exception in a manner that imposes a meaningful limit on the judicial exception, such that the claim is more than a drafting effort designed to monopolize the judicial exception." (Guidance, 84 Fed. Reg. at 53; *see also* MPEP §§ 2106.04–2106.05).

1. Prong One – Evaluation of Whether the Claim Recites a Judicial Exception

Petitioner argues that claim 1 is directed to generic and conventional computer components, and to the use of those components in generating, receiving, storing, transmitting, and analyzing payment information. Pet. 16–18. Petitioner argues that this is similar to the claims enabling a transaction between a user and a merchant that the Federal Circuit found ineligible in *Universal Secure Registry v. Apple, Inc.*, 10 F.4th 1342, 1349 (Fed. Cir. 2021) ("*USR*"). Petitioner asserts that the '286 patent describes the generation of a limited-duration credit card number "according to" certain information associated with the transaction, but "discloses no formulas or instructions on how to generate the limited-duration credit card number" according to the recited information. *Id.* at 18. Generally, Petitioner argues that the claims are directed to fundamental economic practices and commercial or legal interactions. *Id.* at 28–29.

Patent Owner argues that the claim is directed to a payment system incorporating security improvements utilizing a specific technique that departs from earlier approaches to solve a specific computer problem. Prelim. Resp. 18–22, 24–25 (citing *Ancora Techs., Inc. v. HTC Am.*, Inc., 908 F.3d 1343 (Fed. Cir. 2018); *Finjan, Inc. v. Blue Coat Systems*, 879 F.3d 1299, 1305 (Fed. Cir. 2018); *SRI Int'l Inc. v. Cisco Systems, Inc.*, 930 F.3d 1295 (Fed. Cir. 2019)). Patent Owner argues that the *USR* case is inapposite because Petitioner "oversimplifies the claimed invention of the '286 patent and ignores the improvement to payment security" and "[t]he claims [of the '286 patent] are not simply directed to a 'mapping' of one piece of information to another." *Id.* at 22–24. Patent Owner argues that Petitioner's

arguments are contradicted by its arguments in its application for a patent relating to improved network security. *Id.* at 27–29.

On the present record, we determine that Petitioner has sufficiently shown that the claim 1 is directed to the secure verification of a user's information in order to enable a transaction with a payment server. *See USR*, 10 F.4th at 1353; *Innovation Scis., LLC v. Amazon.com, Inc.*, 778 F. App'x 859, 863 (Fed. Cir. 2019) (finding "securely processing a credit card transaction with a payment server" to be an abstract idea). As the Petitioner argues, "Representative Claim 1 concerns payment transactions using substitute payment information that is available for a 'limited use' in place of, e.g., a credit card number, and conveying and validating that substitute information prior to completing a transaction." Pet. 16. The decisions in *Ancora Techs.*, *Finjan*, and *SRI Int'l* do not change our preliminary view of the sufficiency of Petitioner's contentions. In *Ancora Techs.*, the court found that the claim "specifically identifie[d] how [the] functionality improvement is effectuated in an assertedly unexpected way" and had "the specificity required to transform a claim from one claiming only a result to one claiming a way of achieving it," by specifying the use of a particular portion of the computer's firmware. *Ancora Techs.*, 908 F.3d at 1348–49. *Finjan* and *SRI Int'l* similarly find that each includes a non-abstract improvement to computer technology. *Finjan*, 879 F. 3d at 1305 ("[T]he method of claim 1 employs a new kind of file that enables a computer security system to do things it could not do before'"); *SRI Int'l*, 930 F.3d at 1303–04 ("[T]he representative claim improves the technical functioning of the computer and computer networks by reciting a specific technique for improving computer network security."). While Patent Owner argues that the claims include "a payment card free of fixed payment information that

can generate a dynamic number at the time of the transaction" and "an electronic device that can generate a limited-use payment number," on this record and for the purposes of institution, we find that Petitioner has sufficiently shown that the claims are directed to an abstract idea in the realm of fundamental economic practices and commercial or legal interactions.

2. Prong Two – Integration into a Practical Application

Turning to the second prong of the "directed to" test, Petitioner argues that the claim 1 (along with the balance the of the challenged claims) does not recite an improvement to technology that integrates the technology into a practical application. Pet. 29–30. Patent Owner asserts that claim 1 imposes a meaningful limit on the judicial exception, because of the use of a "payment number-free card and an electronic device that generates a limited-use number." Prelim. Resp. 31–32. Patent Owner asserts that this is "a *new* way of performing a transaction . . . that works within the existing payment infrastructure." *Id.* at 32.

On the present record and for the purposes of institution, we determine that Petitioner has sufficiently shown that none of the recitations of claim 1 integrates the judicial exception as to "impose[] a meaningful limit on the judicial exception, such that the claim is more than a drafting effort designed to monopolize the judicial exception." Guidance at 53. That claims do not preempt all forms of the abstraction does not make them any less abstract. *See OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1362–63 (Fed. Cir. 2015) ("And that the claims do not preempt all price optimization or may be limited to price optimization in the e-commerce setting do not make them any less abstract."). The recitation of "a payment card device," "computing device," "processor," "memory," "wireless

interface," "touch screen user interface," "user-input device," "interface," and "payment card reader equipment" in claim 1 do not improve the functioning of a computer or another technological field and instead are simply used as tools to implement the abstract idea identified above. *See Credit Acceptance Corp. v. Westlake Servs.*, 859 F.3d 1044, 1055 (Fed. Cir. 2017) (using a computer as a tool to process an application for financing a purchase); *Affinity Labs of Tex., LLC v. DirecTV, LLC*, 838 F.3d 1253, 1262 (Fed. Cir. 2016) ("[T]he claims are directed not to an improvement in cellular telephones but simply to the use of cellular telephones as tools in the aid of a process focused on an abstract idea.").

3. Step 2B – "significantly more"

Having preliminarily concluded that the claim 1 recites judicial exceptions and are not integrated into a practical application, we turning to the second step of the *Alice* analysis and determine whether the claim 1 includes an "inventive concept," i.e., whether there is an element or combination of elements sufficient to ensure that the claim in practice amounts to significantly more than the abstract idea itself. *See Alice*, 573 U.S. at 217–18 (quoting *Mayo Collaborative Servs.*, 566 U.S. at 72–73).

Petitioner argues that no additional limitations beyond the judicial exception are present in claim 1. Pet. 31–33. Specifically addressing "limited-use card payment information," Petitioner argues this could be any information used in place of a payment number, which it argues is conventional. *Id.* at 22–23, 31–33 (citing Ex. 1004 ¶¶ 67, 96, 103; Ex. 1006 ¶¶ 7, 21, 29; Ex. 1017, 196, 202–205; Ex. 1019, 62–63, 70, 113; Ex. 1020, 90, 98, 112, 122; Ex. 1030, 5; Ex. 1003 ¶¶ 63–66, 76–81, 104–109).

Patent Owner, argues, however, that the limited-use card payment information was not conventional. *Id.* at 34–35. Patent Owner argues that

Petitioner's references are disparate and do not establish that the technology was conventional. *Id.*

For the purposes of institution and on the present record, Petitioner has sufficiently shown with its references and testimony of Dr. Shamos that limited-use card payment information was conventional. Additionally, on the present record we determine that Petitioner has sufficiently shown that claim 1 amounts to nothing significantly more than instructions to apply the abstract idea using generic components, and, considered as an ordered combination, nothing is added that is not already present when the steps are considered separately. *See Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 715 (Fed. Cir. 2014) (sequence of receiving, selecting, offering for exchange, display, allowing access, and receiving payment recited an abstraction); *Inventor ~~Holdings~~, LLC v. Bed Bath & Beyond, Inc.*, 876 F.3d 1372, 1378 (Fed. Cir. 2017) (holding that sequence of data retrieval, analysis, modification, generation, display, and transmission was abstract); *Two-Way Media Ltd. v. Comcast Cable Commc'ns, LLC*, 874 F.3d 1329, 1339 (Fed. Cir. 2017) (holding sequence of processing, routing, controlling, and monitoring was abstract).

4. Conclusion

For the reasons described above, on this record we have determined that Petitioner has demonstrated that it is more likely than not that at least one of the challenged claims is unpatentable as ineligible.

Our institution is on all claims and all grounds. *Cf. SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018); *PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (indicating that a decision whether to institute an *inter partes* review "require[s] a simple yes-or-no institution

choice respecting a petition, embracing all challenges included in the petition").

C. Ground 2: Indefiniteness of claims 1–19

Under 35 U.S.C. § 112(b), a patent specification "shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor . . . regards as the invention." This is commonly referred to as the definiteness requirement.

The Board applies in post-grant reviews the same indefiniteness standard as used in federal courts and the U.S. International Trade Commission under *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898 (2014), and its progeny. USPTO Memorandum, Approach To Indefiniteness Under 35 U.S.C. § 112 In AIA Post-Grant Proceedings (Jan. 6, 2021).[10] Under *Nautilus*, "a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus*, 572 U.S. at 901. "[A] patent must be precise enough to afford clear notice of what is claimed, thereby apprising the public of what is still open to them," but the present standard recognizes that "absolute precision is unattainable." *Id.* at 909–10 (internal quotation marks and brackets omitted). The definiteness requirement seeks to "ensure that the claims delineate the scope of the invention using language that adequately notifies the public of the patentee's right to exclude." *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005). To do so does not require "absolute clarity" or precision in claim language; this

[10] Available at https://www.uspto.gov/sites/default/files/documents/IndefinitenessMemo.pdf

court has ruled that claims are not invalid for indefiniteness unless they are "'not amenable to construction' or 'insolubly ambiguous.'" *Id.*

Petitioner argues that claims 1–19 are indefinite, providing specific arguments with respect to claim limitations present in claims 1, 4–9, 12, 13, 15, 17, and 19. Pet. 39–45. Patent Owner provides contrary arguments relating to these claims. Prelim. Resp. 36–44.

We address claims 1 and 6, but again note that our institution is on all asserted grounds in the Petition.

1. Claim 1

Petitioner argues that claim 1 is indefinite because element 1.11, which recites that "a card issuer authority is operable to reject as invalid a transaction attempt outside of its limitations of use," and it is not clear whether "its" refers to the "card issuer authority," the "transaction attempt," the "limited-use card payment information" or some other component or entity. Pet. 39. Additionally, as elements 1.11 and 1.12 of claim 1 each recite "a card issuer authority" (emphasis added), Petitioner argues that "the card issuer authority" in element 1.13 "lacks clear antecedent basis." *Id.* at 40.

Patent Owner argues that "read in context" the term "its" in the phrase, "its limitation of use," in claim element 1.11 is clear and refers to "limited-use card payment information." Prelim. Resp. 36. Patent Owner argues that no other theory makes sense in the context of the invention—"[n]either the claim nor the specification refer to a limitation of use on the card issuer authority or a transaction attempt." *Id.* Patent Owner acknowledges that the claim twice recites "a card issuer authority"—in the first instance, one that rejects a transaction (claim element 1.11) and in the second instance, one that validates a transaction (claim element 1.12). *Id.* at

38. Patent Owner contends, however, that claim element 1.13 refers only to the second instance, one that validates the transaction (claim element 1.12). *Id.*

While we do not make a determination regarding whether Petitioner has shown it is more likely than not that Claim 1 is indefinite based on the word "its" in claim element 1.11, we note that, on the present record, limitations of use are described with respect to a "limited-duration credit card number" (Ex. 1001, 11:11–16) and that the specification further describes that "if an expired limited-duration credit card is attempted to be used for a transaction, . . . an automatic notification is able to be made to a credit authority . . . to prevent transactions on the account" (*id.* at 11:16–21). As we institute on all claims and all grounds, we invite the parties to address, to the extent provided for by our rules, whether this claim, in light of the specification and prosecution history, inform one of ordinary skill in the art with reasonable certainty about its scope. *Nautilus*, 572 U.S. at 901.

With respect to "the card issuer authority" of element 1.13, we again do not make a preliminary determination whether it is more likely than not that this recitation makes the claim indefinite. To the extent provided for by our rules regarding the proper scope of briefing, the parties are welcome to address this or other relevant issues.

2. Claim 6

Among other arguments, Petitioner argues that the term "valid range of device limitations" in the limitation that "a card issuer authority is operable to reject as invalid a device transaction used outside of a valid range of *device* limitations" (emphasis added) is indefinite because it is unclear whether the "payment card device," computing device," or "user-input device" is being referred to as the *device*. Pet. 42. Patent Owner

responds that "the *only* device in the claim that conveys payment information" is the "computing device." Prelim. Resp. 40. However, element 1.12 of claim 1 describes the card issuer authority validating a card payment information as authentic when "received from at least one of: an authenticated users payment card; and an authenticated users computing device." Ex. 1001, 20:10–13.

With respect to this term, on the present record and for the purposes of institution, we determine that Petitioner has shown that it is more likely than not that claim 6, which depends from claim 1, is indefinite.

D. Ground 3: Lack of enablement of claims 12, 13, and 17

Petitioner argues that claims 12 and 13 are invalid as lacking enablement, because these claims, according to Petitioner, require "the computing device to both reject and accept the same user authorization." Pet. 46. Petitioner argues that claim 17 is not enabled because it "requires the user to approve and deny the same payment transaction." *Id.* Patent Owner puts forth an interpretation of these claims where they do not require simultaneous actions, but instead recite that the computing device is "operable to both reject and accept a user authorization" and the touch-screen display is "'operable to' accept both a user approval and a denial." Prelim. Resp. 41–44.

To be enabling, "the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation.'" *MagSil Corp. v. Hitachi Global Strorage Techs., Inc.*, 687 F.3d 1377, 1380–81 (Fed. Cir. 2012).

We note that Petitioner argues that claims 12, 13, and 17 are indefinite and therefore "not amenable to construction" and Patent Owner contests this. Pet. 43–44; Prelim. Resp. 41–43. With respect to enablement, the parties'

differences necessarily relate to the proper claim construction of the claims. *See AK Steel Corp. v. Sollac & Ugine*, 344 F.3d 1234, 1241 (Fed. Cir. 2003) ("Because a patent specification must enable the full scope of a claimed invention, an enablement inquiry typically begins with a construction of the claims."). As we institute on all claims and all grounds, the parties may address claim construction in their post-institution submissions to the extent allowable by our rules.

E. Ground 4: Lack of written description support for claims 20–27

To satisfy the written description requirement under 35 U.S.C. § 112(a), the specification must "reasonably convey[] to those skilled in the art that the inventor had possession" of the claimed invention as of the filing date based on an "objective inquiry into the four corners of the specification." *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351–52 (Fed. Cir. 2010) (en banc). An adequate description does not require any particular form of disclosure or that the specification recite the claimed invention *in haec verba*, but must do more than render the claimed invention obvious. *Id.* at 1352.

The written description inquiry is a question of fact, is context specific, and must be determined on a case-by-case basis. *Id.* at 1351. Factors used to evaluate the sufficiency of a disclosure include: 1) "the existing knowledge in the particular field"; 2) "the extent and content of the prior art"; 3) "the maturity of the science or technology"; and 4) "the predictability of the aspect at issue" (the "*Ariad* factors"). *Id.*

Petitioner argues that claims 20–27 lack written description support, because claim 20's recitation that the computing device "is operable to . . . display . . . issuer-provided payment information, associated with, but not depicted on, the payment card device" is not supported by written

description in the specification or original claims as filed. Pet. 47–48 (citing Ex. 1003 ¶¶ 172–174).

Patent Owner makes three arguments regarding support for the disputed recitation. Prelim. Resp. 45–50. First, Patent Owner argues that Figures 8A, 9, and 11 support this recitation. Prelim. Resp. 45–47. Patent Owner notes that Figures 8A and 9 each show a computing device that includes a static number associated with the payment card device. *Id.* (citing Ex. 1001, Figs. 8A, 9). Patent Owner additionally argues that the specification discloses a payment card device free of fixed payment numbers. *Id.* at 46 (citing Ex. 1001, Fig. 11, 11:43–46, 12:56–13:1). Patent Owner contends that the display on the computing devices of Figures 8A and 9 supports the disputed limitation "when used in combination with the disclosed payment number-free card." *Id.* at 46–47.

Patent Owner additionally cites claim 11 of U.S. Patent No. 10,628,820 ("the '820 patent," Ex. 2033), which was incorporated by reference into the '286 patent's specification. *Id.* at 47–48 (citing Ex. 1001, 1:6–8). Patent Owner argues that claim 11 of this patent supports the disputed limitation because it describes the conveyance of generated payment information via a display of a personal computing device, in a system where a separate thin payment device "compris[es] no fixed payment numbers visible thereon." *Id.* (citing Ex. 2033, 22:10–35).

Lastly, Patent Owner argues that the '891 provisional application also supports the disputed limitation. *Id.* at 48–50. Patent Owner contends that the provisional provides for a credit card device that generates payment information at the instant the card is being used, and that has no fixed number depicted on the device. *Id.* at 48–49 (citing Ex. 1012 ¶ 14). Patent Owner further notes that the provisional describes the use of the credit card

to make online purchases by connecting to a personal computer. *Id.* at 49 (citing Ex. 1012 ¶ 17). Patent Owner contends that "in March 2013, at the time the provisional was filed, a person of ordinary skill would have understood that paying for goods online using the traditional 'credit card infrastructure' would involve typing in a payment number, such that it gets displayed on the personal computer." *Id.* Thus, Patent Owner concludes, the '891 provisional supports a uniquely generated number being produced by the credit card but displayed on the personal computer. *Id.* at 49–50.

On the present record, and for the purposes of institution, we determine that it is more likely than not that claim 20 (and its dependent claims) lack written description support in the '286 patent specification and claims as filed, the '820 patent, and the '891 provisional.

With respect to the asserted support provided by Figures 8A and 9 (for the computing device) and Figure 11 (for the payment card device), the specification indicates that each of these is an independent "multi-function electronic device," and, on the present record, we see no indication that the multi-function electronic device of Figure 11 is usable in the same system with the multi-function electronic devices of Figures 8A and 9. *See* Ex. 1001, 11:25–51; *see also id.* at 3:50–52, 3:56–59, 3:64–67.

With respect to the asserted support in the '820 patent's claims, Patent Owner argues that the computing device generates and displays the limited use number, which is "based on the card device payment account information," and which in turn is "associated with the issuer-provided payment information." Prelim. Resp. 47–48 (citing claim 11 of the '820 patent, Ex. 2033:10–35). But the disputed limitation recites that "issuer-provided" payment information is received and displayed, which, on the present record, does not appear to be supported in claim 11 of the '820

patent. Ex. 2033, 22:10–35. Additionally, while claim 11 does recite that "no fixed payment numbers" are visible on the "thin payment device," there is no disclosure regarding the lack of a visible display of the complete payment information or limited-use payment information on that thin payment device. *Id.*

Lastly, as discussed above, Section II.B, the '891 provisional describes the online use of the card through a connection to the personal computer via RFID or near field technology to generate the credit card number. Ex. 1012 ¶ 17. Where, as disclosed, the payment card is "equipped with a means for communicating with the USB port on the computer in connection with making the online purchases," contrary to Patent Owner's argument, a user would not have necessarily had to type in a payment number that would be displayed on the computer. *Id.*

On this record, and for the purposes of institution, we determine that Petitioner has shown it is more likely than not that claim 20 (and its dependent claims) do not have adequate written description support.

V. CONCLUSION

We determine that Petitioner has demonstrated that it is more likely than not that at least one of the challenged claims is unpatentable. Accordingly, we institute a post-grant review of all challenged claims on all asserted grounds.

VI. ORDER

It is

ORDERED that, pursuant to 35 U.S.C. § 324(a), a post-grant review of claims 1–27 of the '286 patent is instituted; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 324(d) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial commencing on the entry date of this Order.

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Paper No. 19
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

CARDWARE INC.,
Patent Owner.

IPR2023-00196 (Patent 10,810,579 B2)
IPR2023-00211 (Patent 10,339,520 B2)
IPR2023-00314 (Patent 10,628,820 B2)
PGR2023-00012 (Patent 11,328,286 B2)
PGR2023-00013 (Patent 11,328,286 B2)[1]

Before ELIZABETH M. ROESEL, SHARON FENICK, and IFTIKHAR AHMED, *Administrative Patent Judges*.

FENICK, *Administrative Patent Judge*.

TERMINATION
Due to Settlement After Institution of Trial and
Granting-in-Part Joint Motion to File Settlement Agreement
as Business Confidential Information
35 U.S.C. § 317; 37 U.S.C. § 327; 37 C.F.R. § 42.7

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[1] This Order addresses issues that are the same in each of the identified proceedings. We exercise our discretion to issue one Order to be filed in each proceeding. The parties are not authorized to use this style heading in subsequent papers.

I. INTRODUCTION

With the Board's authorization, Petitioner and Patent Owner (collectively, "the Parties") filed a joint motion to terminate in each of the above-captioned proceedings. Paper 21 ("Joint Motion").[2] Along with the Joint Motion, the Parties filed a copy of a settlement and license agreement (Ex. 2004, "Settlement Agreement") and a joint request that the Settlement Agreement be treated as business confidential information and be kept separate from the files of the patents involved in the above-captioned proceedings. Paper 22 ("Joint Request").

II. DISCUSSION

In the Joint Motion, the Parties represent that the Settlement Agreement resolves their disputes involving the patents at issue in the above-captioned proceedings. Joint Motion 1–2. The Parties also represent that "there are no other collateral agreements or understandings, oral or written, between the parties made in connection with, or in contemplation of, the termination of the present proceeding, and Ex. 2004 represents a true and accurate copy of the agreement." *Id.* at 1.

We instituted trial in each of the above-captioned *inter partes* review and post-grant review proceedings, but we have not yet decided the merits of the proceedings, and final written decisions have not been entered. Notwithstanding that the proceedings have moved beyond the preliminary

[2] The relevant papers and exhibits filed in the above-captioned proceedings are substantively the same. We cite to the record in IPR2023-00196, unless otherwise indicated.

stage, the Parties have shown adequately that termination of the proceedings is appropriate. Under these circumstances, we determine that good cause exists to terminate the proceedings.

In the Joint Request, the Parties request that the Settlement Agreement be treated as business confidential information and be kept separate from the files of the patents involved in the above-captioned proceedings. Joint Request 1.

We grant this much of the Joint Request. After reviewing the Settlement Agreement between Petitioner and Patent Owner, we find that the Settlement Agreement contains confidential business information regarding the terms of settlement. We determine that good cause exists to treat the Settlement Agreement as business confidential information pursuant to 37 C.F.R. § 42.74(c).

The Parties further

> request that the Board order that in the event a person or entity makes a written request, as stated in 37 C.F.R. § 42.74(c)(1)-(2), for access to the settlement agreement, that any such written request be served upon the parties on the day the written request is provided to the Board.

Id. We deny this portion of the Joint Request, which is not supported by the statute or the rule and not consistent with the Board's practice.

This Order does not constitute a final written decision pursuant to 35 U.S.C. § 318(a) or § 328(a).

III. ORDER

Accordingly, it is:

ORDERED that the Joint Motions to terminate (IPR2023-00196, Paper 21; IPR2023-00211, Paper 22; IPR2023-00314, Paper 16; PGR2023-00012, Paper 17; PGR2023-00013, Paper 17) are *granted*, and IPR2023-00196, IPR2023-00211, IPR2023-00314, PGR2023-00012, and PGR2023-00013 are *terminated*; and

FURTHER ORDERED that the Joint Requests to treat the Settlement Agreement as business confidential information (IPR2023-00196, Paper 22; IPR2023-00211, Paper 23; IPR2023-00314, Paper 17; PGR2023-00012, Paper 18; PGR2023-00013, Paper 18) are *granted-in-part*, in the manner described above, and the Settlement Agreement (IPR2023-00196, Ex. 2004; IPR2023-00211, Ex. 2004; IPR2023-00314, Ex. 2004; PGR2023-00012, Ex. 2038; PGR2023-00013, Ex. 2036) shall be kept separate from the files of U.S. Patent Nos. 10,810,579 B2, 10,339,520 B2, 10,628,820 B2, 11,328,286 B2, and 11,328,286 B2, and made available only to Federal Government agencies on written request, or to any person on a showing of good cause, pursuant to 37 C.F.R. § 42.74(c).

IPR2023-00196 (Patent 10,810,579 B2)
IPR2023-00211 (Patent 10,339,520 B2)
IPR2023-00314 (Patent 10,628,820 B2)
PGR2023-00012 (Patent 11,328,286 B2)
PGR2023-00013 (Patent 11,328,286 B2)

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Paper No. 19
Entered: November 21, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

CARDWARE INC.,
Patent Owner.

IPR2023-00196 (Patent 10,810,579 B2)
IPR2023-00211 (Patent 10,339,520 B2)
IPR2023-00314 (Patent 10,628,820 B2)
PGR2023-00012 (Patent 11,328,286 B2)
PGR2023-00013 (Patent 11,328,286 B2)[1]

Before ELIZABETH M. ROESEL, SHARON FENICK, and IFTIKHAR AHMED, *Administrative Patent Judges*.

FENICK, *Administrative Patent Judge*.

TERMINATION
Due to Settlement After Institution of Trial and
Granting-in-Part Joint Motion to File Settlement Agreement
as Business Confidential Information
35 U.S.C. § 317; 37 U.S.C. § 327; 37 C.F.R. § 42.7

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[1] This Order addresses issues that are the same in each of the identified proceedings. We exercise our discretion to issue one Order to be filed in each proceeding. The parties are not authorized to use this style heading in subsequent papers.

I. INTRODUCTION

With the Board's authorization, Petitioner and Patent Owner (collectively, "the Parties") filed a joint motion to terminate in each of the above-captioned proceedings. Paper 21 ("Joint Motion").[2] Along with the Joint Motion, the Parties filed a copy of a settlement and license agreement (Ex. 2004, "Settlement Agreement") and a joint request that the Settlement Agreement be treated as business confidential information and be kept separate from the files of the patents involved in the above-captioned proceedings. Paper 22 ("Joint Request").

II. DISCUSSION

In the Joint Motion, the Parties represent that the Settlement Agreement resolves their disputes involving the patents at issue in the above-captioned proceedings. Joint Motion 1–2. The Parties also represent that "there are no other collateral agreements or understandings, oral or written, between the parties made in connection with, or in contemplation of, the termination of the present proceeding, and Ex. 2004 represents a true and accurate copy of the agreement." *Id.* at 1.

We instituted trial in each of the above-captioned *inter partes* review and post-grant review proceedings, but we have not yet decided the merits of the proceedings, and final written decisions have not been entered. Notwithstanding that the proceedings have moved beyond the preliminary

[2] The relevant papers and exhibits filed in the above-captioned proceedings are substantively the same. We cite to the record in IPR2023-00196, unless otherwise indicated.

stage, the Parties have shown adequately that termination of the proceedings is appropriate. Under these circumstances, we determine that good cause exists to terminate the proceedings.

In the Joint Request, the Parties request that the Settlement Agreement be treated as business confidential information and be kept separate from the files of the patents involved in the above-captioned proceedings. Joint Request 1.

We grant this much of the Joint Request. After reviewing the Settlement Agreement between Petitioner and Patent Owner, we find that the Settlement Agreement contains confidential business information regarding the terms of settlement. We determine that good cause exists to treat the Settlement Agreement as business confidential information pursuant to 37 C.F.R. § 42.74(c).

The Parties further

> request that the Board order that in the event a person or entity makes a written request, as stated in 37 C.F.R. § 42.74(c)(1)-(2), for access to the settlement agreement, that any such written request be served upon the parties on the day the written request is provided to the Board.

Id. We deny this portion of the Joint Request, which is not supported by the statute or the rule and not consistent with the Board's practice.

This Order does not constitute a final written decision pursuant to 35 U.S.C. § 318(a) or § 328(a).

III. ORDER

Accordingly, it is:

ORDERED that the Joint Motions to terminate (IPR2023-00196, Paper 21; IPR2023-00211, Paper 22; IPR2023-00314, Paper 16; PGR2023-00012, Paper 17; PGR2023-00013, Paper 17) are *granted*, and IPR2023-00196, IPR2023-00211, IPR2023-00314, PGR2023-00012, and PGR2023-00013 are *terminated*; and

FURTHER ORDERED that the Joint Requests to treat the Settlement Agreement as business confidential information (IPR2023-00196, Paper 22; IPR2023-00211, Paper 23; IPR2023-00314, Paper 17; PGR2023-00012, Paper 18; PGR2023-00013, Paper 18) are *granted-in-part*, in the manner described above, and the Settlement Agreement (IPR2023-00196, Ex. 2004; IPR2023-00211, Ex. 2004; IPR2023-00314, Ex. 2004; PGR2023-00012, Ex. 2038; PGR2023-00013, Ex. 2036) shall be kept separate from the files of U.S. Patent Nos. 10,810,579 B2, 10,339,520 B2, 10,628,820 B2, 11,328,286 B2, and 11,328,286 B2, and made available only to Federal Government agencies on written request, or to any person on a showing of good cause, pursuant to 37 C.F.R. § 42.74(c).

IPR2023-00196 (Patent 10,810,579 B2)
IPR2023-00211 (Patent 10,339,520 B2)
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ACKNOWLEDGEMENT OF LOSS OF ENTITLEMENT TO ENTITY STATUS DISCOUNT

APPLICATION #	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET #	REQUEST ID
16/854,829	04/21/2020	David WYATT	WYAT-0002USC1C1C1C1	267397

The entity status change request below filed through Patent Center on 08/29/2024 has been accepted.

Certifications

APPLICANT CHANGING TO REGULAR UNDISCOUNTED FEE STATUS

Signature

I certify, in accordance with 37 CFR 1.4(d)(4), that I am one of the signatories making the entity status change.

Signature	Name	Registration #
/Anthony C. Murabito/	Anthony Murabito	35295