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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

DH INTERNATIONAL LTD.,
Patent Owner.

Case IPR2024-01321
Patent No. 7,628,333

**PETITION FOR *INTER PARTES REVIEW*
OF U.S. PATENT NO. 7,628,333**

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*All emphasis is added unless otherwise indicated.

LIST OF EXHIBITS

<u>Exhibit</u>	<u>Description</u>
1001	U.S. Patent No. 7,628,333 to Gaillard et al. (“’333 Patent”)
1002	Prosecution History of U.S. Application No. 10/552,912
1003	Declaration of Stuart Lipoff (“Lipoff”)
1004	Curriculum Vitae of Stuart Lipoff
1005	U.S. Patent No. 7,278,581 to Ong et al. (“Ong”)
1006	PCT International Publication No. WO 1990/013096 A1 to Hoff et al (“Hoff”)
1007	U.S. Patent No. 7,337,326 to Palmer et al. (“Palmer”)
1008	U.S. Patent No. 7,376,583 to Rolf et al. (“Rolf”)
1009	John McCrindle, <i>Smart Cards</i> , (Springer Verlag, 1990) (“McCrindle”)
1010	U.S. Patent No. 6,257,486 to Teicher et al. (“Teicher”)
1011	Hiro Shogase, <i>The Very Smart Card: A Plastic Pocket Bank</i> , IEEE Spectrum, October 1988 (“Shogase”)
1012	U.S. Patent No. 7,136,623 to Fare et al. (“Fare”)
1013	U.S. Patent No. 7,440,771 to Purk (“Purk”)
1014	U.S. Patent Pub. No. 2004/0117262 to Berger et al. (“Berger”)
1015	<i>DH International Ltd v. Google LLC</i> , No. 1-23-cv-01116, Order Dismissing Case (WDTX Dec. 15, 2023)

*All emphasis is added unless otherwise indicated.

I. Introduction

Petitioner requests review and cancelation of claims 1-13 of U.S. Patent No. 7,628,333 (the “’333 patent”) (Ex. 1001).

The ’333 patent claims a portable electronic device, like an electronic credit card, capable of alternative data conveyance operations responsive to an invariable activation command. Ex. 1001, 1:9-11. But credit cards having these features were known prior to the effective date of the ’333 patent. The ’333 patent acknowledges the prior existence of smart cards, which contain many of the claimed features. *Id.*, 1:44-53, 2:47-52. The only alleged improvement—performing different data conveyance operations based on whether a switching element is active (*Id.*, 1:40-45)—was also known or at least obvious in prior art devices. Claims 1-13 are unpatentable.

II. Statement of Precise Relief Requested

Petitioner requests review under 35 U.S.C. §311 of claims 1-13 of the ’333 patent and their cancellation in view of the following:

Prior Art References	
Ref. 1:	<i>Ong</i> (Ex. 1005), which issued on October 9, 2007, was filed as U.S. Patent App. No. 10/203,870 on October 15, 2002, and is

	prior art under 35 U.S.C. §102(e) under any asserted priority date ¹
Ref. 2:	<i>Hoff</i> , (Ex. 1006), which published March 20, 1990, and is prior art under 35 U.S.C. §102(b) under any asserted priority date
Ref. 3:	<i>Palmer</i> (Ex. 1007), which issued on February 26, 2008, was filed as U.S. Patent App. No. 10/400,306 on March 27, 2003, and is prior art under 35 U.S.C. §102(e) under any asserted priority date
Ref. 4:	<i>Rolf</i> (Ex. 1008), which issued on May 20, 2008, was filed as U.S. Patent App. No. 09/635,935 on August 10, 2000, and is prior art under 35 U.S.C. §102(e) under any asserted priority date

Grounds of Unpatentability	
1	Claims 1-4, 6-9, and 11-13 are obvious under 35 U.S.C. §103 over <i>Ong</i> and <i>Hoff</i> .
2	Claim 5 is obvious under 35 U.S.C. §103 over <i>Ong</i> , <i>Hoff</i> , and <i>Palmer</i> .
3	Claim 10 is obvious under 35 U.S.C. §103 over <i>Ong</i> , <i>Hoff</i> , and <i>Rolf</i> .

¹ Cites to 35 U.S.C. §§102, 103, and 112 are to the pre-America Invents Act statutes.

III. The '333 Patent

A. Technology Overview

A “smart card” is a credit card having embedded electronic circuitry including a processor and memory. *McCrindle* (Ex. 1009), 21; *Hoff*, 2:20-3:22. Such smart cards have been around since as early as the 1980s, when microprocessor technology advanced enough to allow cards sufficiently thin to meet the standard thickness of a credit card. *McCrindle*, 16. By the late 1980s “super smart cards” had been developed, which introduced integrated control devices (e.g., keypads), displays for presenting information, and internal power sources. *Id.*, 45-48; *Hoff*, 3:23-4:14; *Teicher* (Ex. 1010), 3:6-58. Smart cards included radio transceivers and antennas enabling contactless communication with an external device. *McCrindle*, 60-64; *Teicher*, 2:6-20. They also provided enhanced security features for verifying a user’s identity, such as personal identification number (PIN) verification, or biometric scanners. *McCrindle*, 95-98; *Hoff*, 4:16-5:7.

B. Summary of the '333 Patent

The '333 patent was filed on February 27, 2006, claiming priority to April 14, 2003. Ex. 1001, cover.

The '333 patent discloses a portable electronic credit card, like a smart card. Ex. 1001, Abstract, 1:9-19, 4:61-62, 7:55-8:41; Lipoff, ¶52. The device includes an electronic circuit, a user interface device, power means, and a data transceiver.

Ex. 1001, 9:61-10:26, 10:54-12:17. The device also includes a control device that includes a button, a PIN keypad, or a fingerprint scanner. *Id.*, 5:5-32. When the control device is triggered (i.e., manually activated), it issues an “invariable activation command” that causes actions to occur based on whether a “switching element” is in an active or inactive state. *Id.*, 10:17-26, 11:12-21, 12:8-17. The state of the switching element is set by an activation cue received from a remote source. *Id.*, 7:15-29, 8:32-41, 10:9-14, 11:3-12:7.

The patent acknowledges smart cards as prior art. *Id.*, 1:15-45, 4:61-62, 5:55-64. The purported claimed advantage is the inclusion of a single control device to accomplish different functions. *Id.*, 1:40-45. The patent explains that upon triggering the control device, “[t]he same invariable activation command” is issued and it “is the state of switching element ... that will be decisive as to the type of data conveyance that will occur.” *Id.*, 7:15-29. These forms of “control devices” and “switching elements” were known long before the ’333 patent. Lipoff, ¶53 (citing *Hoff*, 10:6-13, 8:12-16).

IV. Level of Ordinary Skill

A person of ordinary skill in the art (“POSITA”) at the time of the alleged invention of the ’333 patent would have had at least a bachelor’s degree in electrical engineering, or a related field, and at least two years of experience in design, development, and/or testing of network-enabled consumer devices, and familiarity

with payment cards, or the equivalent, with additional education substituting for experience and vice versa. *Id.*, ¶48-50.

V. Claim Construction

The Board construes claims under *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). 37 C.F.R. §42.100(b) (2018). Claims should only be construed to the extent necessary to resolve a controversy. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

Other than the means-plus-function limitations, the Board need not construe any term of the '333 patent to resolve the underlying controversy in view of the prior art.² *Toyota Motor Corp. v. Cellport Sys., Inc.*, IPR2015-00633, Paper 11 at 16 (P.T.A.B. Aug. 14, 2015) (citing cases).

A. “power means” (claims 1, 10, 11)

This is a means-plus-function limitation subject to construction under 35 U.S.C. §112, sixth paragraph (pre-AIA). A POSITA would have understood that the corresponding structure is an internal power source for storing and providing

² Petitioner reserves the right to raise claim construction arguments in district court. A comparison of the claims to accused products or other prior art may raise controversies absent here. Petitioner also reserves the right to respond to any construction DH International may advance, express or implied.

power or a component for providing power from an external power source because the '333 patent explains that power means “can be any type of power source suitable for providing power to the portable electronic device components that require power, or for receiving power from an external source to re-distribute it to the portable electronic device components that require power.” Ex. 1001, 6:26-34; Lipoff, ¶56. The corresponding function is “providing power to said portable electronic device [].” Ex. 1001, 2:3-4; Lipoff, ¶56.

B. “switching element” (claim 11) and “data conveyance switching element” (claims 1 and 10)

To the extent “switching element” and “data conveyance switching element”³ are subject to construction under 35 U.S.C. §112, sixth paragraph, a POSITA would have understood that the corresponding structure for this claim term is a physical structure, a virtual program, or both because the '333 patent explains that a switching element “can be any type of device allowing data to be conveyed according to alternate data conveyance operations,” such as “a series of instructions programmed

³ Neither the written description nor the claims provide a basis for drawing a distinction between a “switching element” and a “data conveyance switching element.”

onto [a] microchip” or a “decisional logical circuit” and “can be a physical structure, a virtual program, or both.” Ex. 1001, 6:4-17; Lipoff, ¶57-58.

The recited function is switching between inactive and activated states based on the receipt of an activation cue. Ex. 1001, 10:9-14, 11:3-9, 11:28-12:7.

C. “control device” (claims 1, 10, 11)

To the extent “control device” is subject to construction under 35 U.S.C. §112, sixth paragraph, the recited function is “being selectively triggered to issue an[] invariable activation command.” Ex. 1001, 7:47, 9:65-67, 10:62-65, 12:8-10. The ’333 patent explains that the control device “can be any suitable device allowing the portable electronic device holder to selectively trigger a data conveyance operation,” such as “a single manually activated button,” “a biometric parameter detector” (such as a “fingerprint scanner”), or “a keypad.” *Id.*, 5:5-32. A POSITA would have understood the corresponding structure for this claim term is *either a biometric parameter detector or one or more buttons*. Lipoff, ¶59.

D. “data exchange device” (claim 10) and “external data exchange device” (claims 1, 11)

To the extent “data exchange device” is subject to construction under 35 U.S.C. §112, sixth paragraph, a POSITA would have understood that the

corresponding structure⁴ is a data transceiver coupled to a circuit because the '333 patent explains the data exchange device “can be any sort of data exchange device comprising an electronic circuit ... and a data transceiver,” such as a “portable electronic device,” “a computer,” or “an automatic teller machine.” Ex. 1001, 5:47-54. The corresponding function is *exchanging data*. Lipoff, ¶¶60-61.

VI. Claims 1-13 Are Unpatentable Over the Prior Art

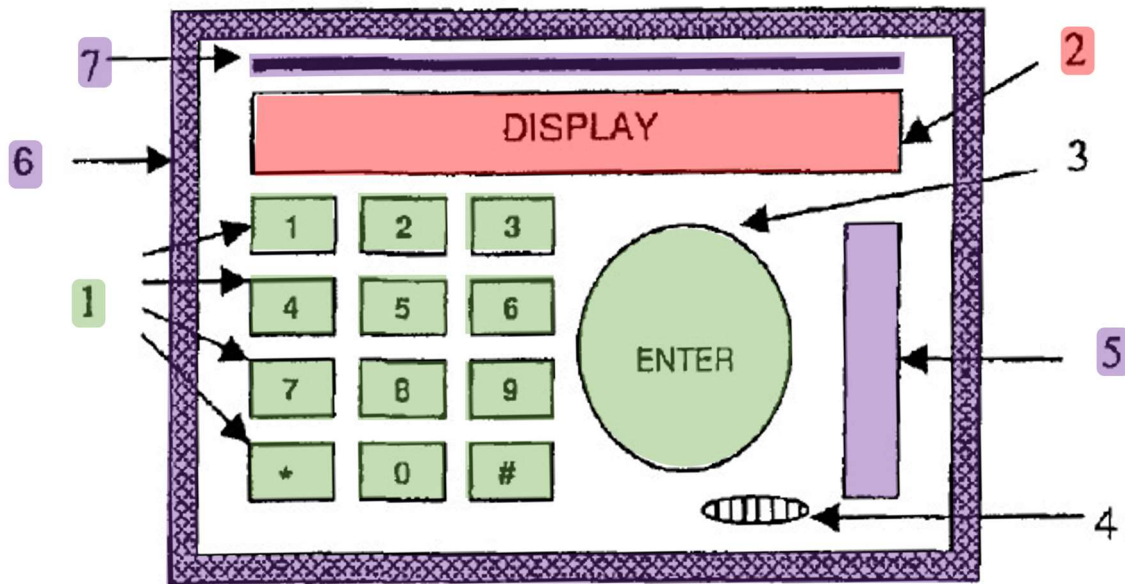
A. Ground 1: The Combination of *Ong* and *Hoff* Renders Obvious Claims 1-4, 6-9, and 11-13

1. Overview of the Ground 1 Combination

a. *Ong*

Ong discloses an electronic credit card (ECC) providing a secure transaction through a transaction station, like an ATM. *Ong*, Abstract, 1:12-14, 1:26-46; Lipoff, ¶¶62. The card includes **communication means (infrared transceiver 5, magnetic induction telecommunication device 6, and radio frequency telecommunication device 7)**, for facilitating a funds transfer through the transaction station, and a **display 2** for providing visual information. *Ong*, 3:22-40, Abstract. It includes a **user verification means** to verify a user, such as entry of a PIN number (using keypad 1 and button 3):

⁴ The '333 Patent does not distinguish a “data exchange device” from an “external data exchange device.”

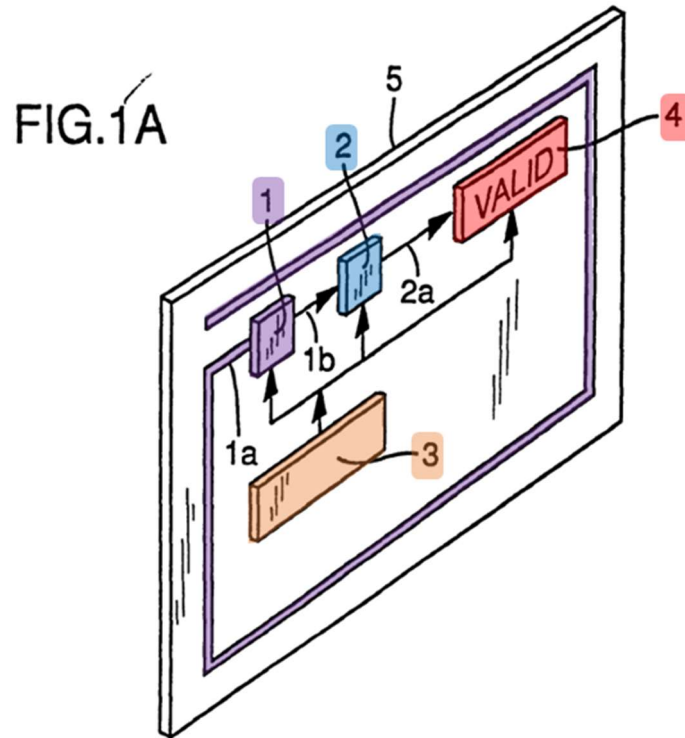


Id., Fig. 10 (annotated), 3:22-34, 3:51-59, Abstract. In *Ong*, once the user is verified, an authorisation code is generated and provided, along with the user's account details, to the communication means, which then communicates the information to a transaction station. *Id.*, 3:50-59. The card also includes a "disablement means" for disabling use of the card remotely by a card issuer or other authority. *Id.*, 1:65-2:3.

b. Hoff

Hoff updates or deactivates an electronic credit card using remote signals sent over a communication channel. *Hoff*, Abstract. Its card includes a **point-to-point radio receiver** having an **associated loop antenna 1a**, for receiving signals from an FM subcarrier. *Id.*, 8:1-11, 10:14-21, 11:18-24. This point-to-point receiver is connected to **logical circuitry 2**, which receives and decodes signals to activate a

display 4. *Id.*, 8:12-9:1. The card also includes a **battery 3** for powering these elements:



Id., Fig. 1A (annotated), 4:6-14, 8:12-17. *Hoff*'s logical circuitry triggers the display to show "VALID" or "VOID" depending on whether a signal indicating the card is valid or invalid. *Id.*, 8:12-9:1; Lipoff, ¶63.

c. The Combination of *Ong* and *Hoff*

Ong discloses an electronic card that at least suggests every feature of independent claims 1 and 11. Lipoff, ¶67. Because the circuitry was known to a POSITA, *Ong* does not include details of its electronic circuit ([1.a]), its data conveyance switching element and activation cue ([1.e]), and power means ([1.f]), disclosed expressly in *Hoff*. *Id.* Moreover, *Hoff* provides a suitable option for

implementing card authorization, activation, and deactivation ([1.d.i], [1.g.i]. and [1.g.ii]), which would have improved upon the methods already of *Ong. Id.*

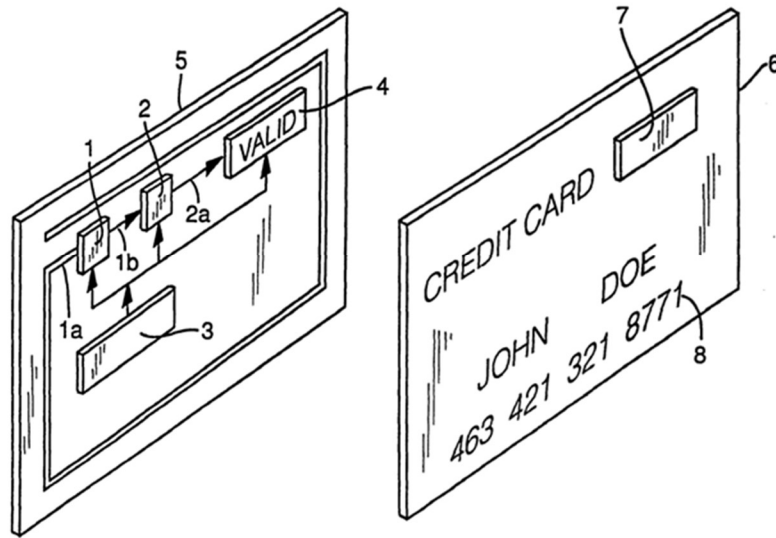
2. Motivation to Combine

Ong and *Hoff* are analogous to the '333 patent because they are in the same field of endeavor: electronic credit cards. *Id.*, ¶68; *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004).

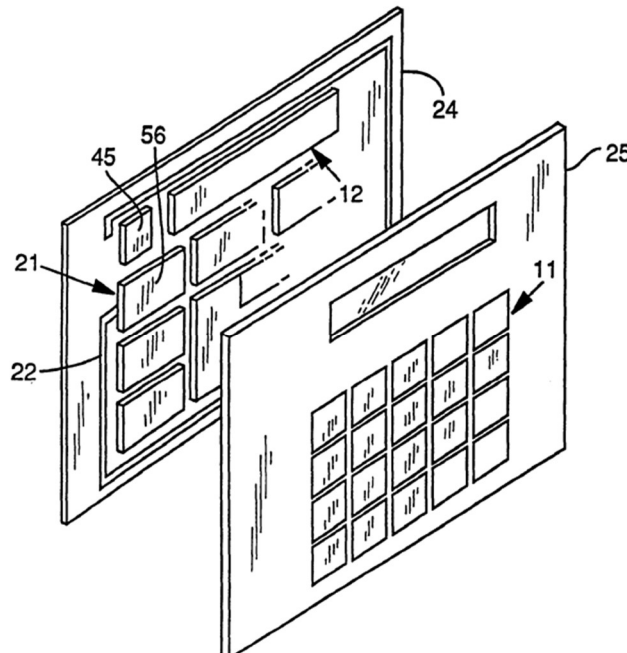
The combination of *Ong* and *Hoff* reflects the combination of familiar elements according to known methods to yield predictable results. Lipoff, ¶69. Both *Ong* and *Hoff* describe electronic transaction cards having many common features. *Ong*, Abstract, 1:12-14; *Hoff*, 1:3-5. The cards in both references have the form factor of a credit card, include interfaces for communicating with a remote entity, and include a display and a power means. *Ong*, 3:22-34, 2:34-40, 3:22-34, 4:35-44; *Hoff*, 5:15-17, 8:1-9:5, 4:6-14. Both include a mechanism for remotely enabling or disabling the card. *Ong*, 1:65-2:3; *Hoff*, 8:18-9:1.

Ong describes improvements over a traditional “smart card” including a display and additional user interface functionality. *Ong*, 1:18-46. *Ong* describes what *Hoff* refers to as “very smart cards.” *Hoff*, p.3:5-4:5. *Hoff* describes additional improvements by including “point-to-point communication circuitry ... mak[ing] it possible to update or deactivate a credit card from a remote location.” *Id.*, 5:15-6:18.

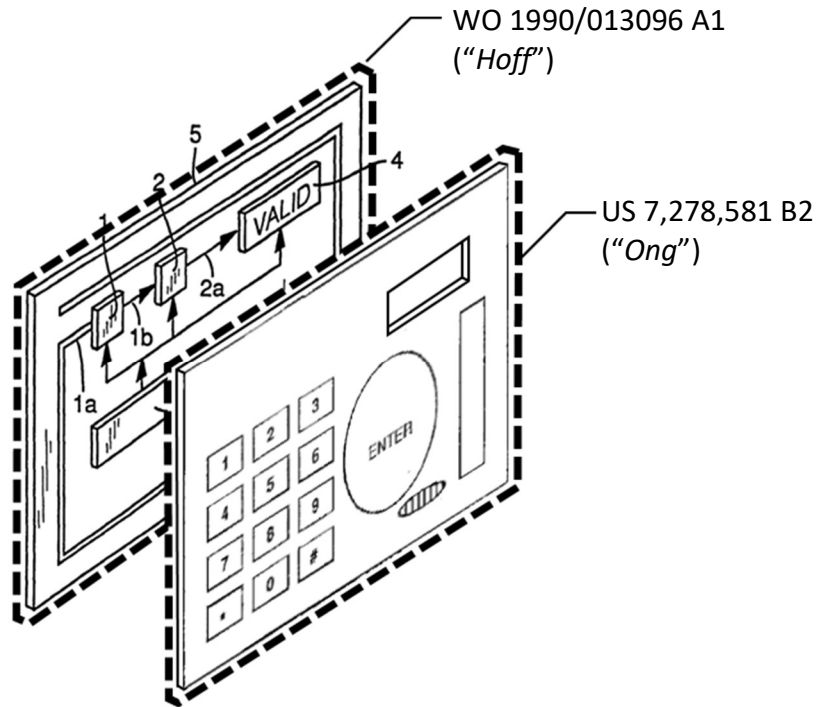
The circuitry in *Hoff* is incorporated into a smart card by mounting its electronic components to a substrate:



Id., Figs. 1A and 1B, 7:9-23. *Hoff* envisions its functionality being incorporated into other forms of smart cards, such as those including a keyboard and display (like *Ong*):



Id., Fig. 2B, 10:6-21. A POSITA would have understood implementing *Ong*'s ECC using *Hoff*'s logical circuitry as a combination of known elements to yield predictable results:



Lipoff, ¶ 70 (showing combination of *Ong*, Fig. 1 and *Hoff*, Fig. 1A).

A POSITA would have been motivated to combine *Ong* and *Hoff* by substituting or supplementing the components in *Ong*, for the advantages *Hoff* advertises: to provide an improved card utilizing point-to-point radio communication. *Hoff*, 5:15-17; *Lipoff*, ¶71; *Optivus Tech., Inc. v. Ion Beam Applications S.A.*, 469 F.3d 978, 990-91 (Fed. Cir. 2006) (finding motivation to combine exists as a matter of law where one reference specifically addresses the subject matter of another reference). It would be undesirable for *Ong*'s card to be

permanently disabled. Lipoff, ¶71. A POSITA have recognized that resetting the card's active open-to-buy status remotely, taught by *Hoff*, would improve the convenience and functionality of *Ong*. *Id.* *Hoff*'s logical circuitry "can include a timer which switches the display to VOID if an appropriate signal is not received ... within a preset interval," preventing a thief from thwarting deactivation by simply shielding the card. *Hoff*, 5:19-6:18, 6:12-18, 8:22-9:1. *Hoff*'s logical circuitry would "improve [*Ong*'s] similar device[] in the same way." *Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1380-81 (Fed. Cir. 2023) (quoting *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007)); Lipoff, ¶72. At very least, a POSITA would have understood *Hoff*'s circuitry for implementing card authorization, activation, and deactivation as a suitable option when implementing *Ong*. Lipoff, ¶72; *PACT*, 21 F.4th at 800; *Par Pharm., Inc. v. TWi Pharms., Inc.*, 773 F.3d 1186, 1197-98 (Fed. Cir. 2014).

3. Independent Claim 1

a. [1.pre]: "A portable electronic device"

The '333 patent admits that "portable electronic ... devices are used for many different applications ... such as keycards, identification devices, or credit or debit devices such as the so-called smart cards" and were known in the art. Ex. 1001, 1:15-31; Lipoff, ¶74.

Ong discloses a card characterized as “an electronic device that enables transmission/reception of data and/or digital information to/from a host computer via a Terminal Station (TS).” *Ong*, Abstract; Lipoff, ¶75. *Ong*’s ECC is one of the “credit or debit devices such as the so-called smart cards” that the ’333 patent teaches is a “portable electronic device.” Ex. 1001, 1:15-31; 7:55-8:9; Lipoff, ¶75.

b. [1.a]: “an electronic circuit capable of storing data therein, capable of processing data, and capable of data input and output”

Ong discloses “an electronic circuit” because its electronic credit card includes various electrically coupled electronic components (electronic circuit), including “a user verification means; a means for generating a unique code ...; a storage means ...; ... a communication means ... [and] a processor means.” *Ong*, 3:22-34; Lipoff, ¶76-77.

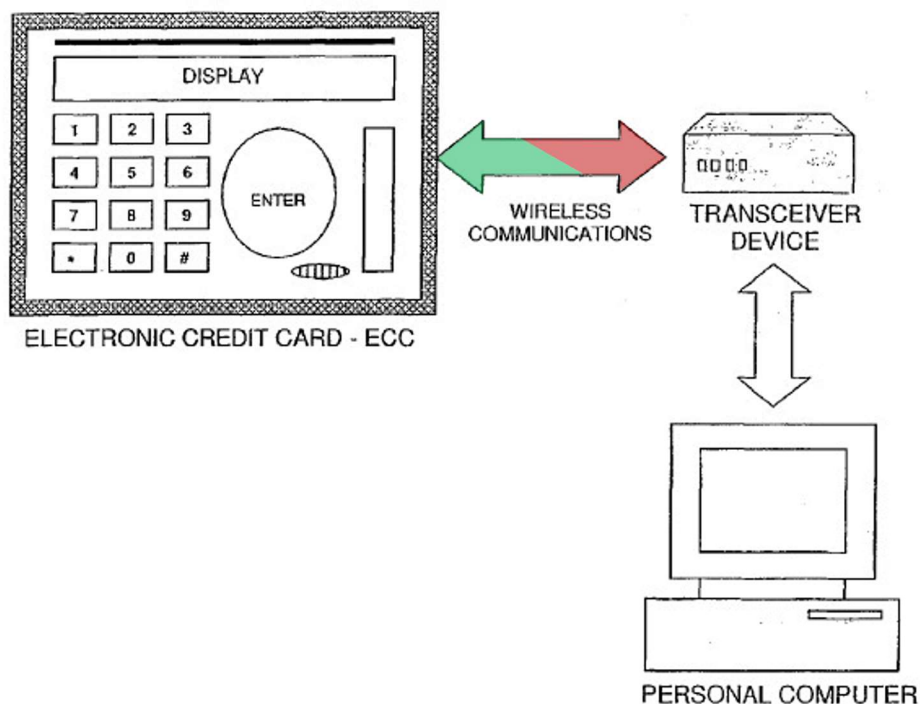
Ong’s electronic circuit is “capable of storing data” because its storage means is used “for storing the user’s account details” (*Ong*, 3:22-34), for storing “firmware” that controls its processor (*id.*, 3:41-50), and for “stor[ing] transaction details” (*id.*, 2:47-49, 6:19-22). Lipoff, ¶78.

Ong’s electronic circuit is “capable of processing data” because its processor means is used for receiving input from a keypad and button and controlling output of a display, audio transducer, and communication means (i.e., processing data).

Ong, 2:47-49, 3:35-50, 6:19-22 (“calculat[ing] funds available” by the processor); Lipoff, ¶79.

Ong’s electronic circuit is “capable of data input and output” because its processor means is used “for receiving **input** from [a] keypad 1 and [a] button 3. The processor means is also arranged to control **output** of [a] display 2 and **output** of the audio transducer 4.” *Ong*, 3:35-40. Moreover, the processor means is “further arranged to control communication via the communication means 5, 6, 7.” *Id.* These communication means—referred to as “infra red [sic] transmitter receiver 5, radio frequency antenna 7 and induction means 6”—are capable of wireless communication (i.e., data **input** and **output**):

Figure 2: A drawing of ECC communications link to PC and Mainframe Computer. Drawing is not to scale.



Id., 4:35-39, Fig. 2 (annotated); *id.*, 4:59-67 (downloads); 5:20-22 (network communication); Lipoff, ¶80.

To the extent it is disputed that *Ong* discloses or suggests an “electronic circuit,” *Hoff* expressly discloses an “electronic circuit” that includes components similar to those in *Ong*, demonstrating that *Ong*’s components are part of an “electronic circuit.” *Hoff* discloses “[a] credit card ... includ[ing] integrated circuitry which can process data combined with integrated circuitry which provides point-to-point radio communication.” *Hoff*, 5:21-25. *Hoff* further explains “[t]his circuitry includes I/O contacts 41, serial I/O 42, a central processing computer 43, an I/O device 44 with an associated magnetic transducer 47 and a keyboard 11. The system also includes a program memory 48, a data memory 49, a clock 50, an LCD driver 45 and an LCD display 12. The various units are interconnected by a data and control bus 52.” *Id.*, 14:18-25; Lipoff, ¶81.

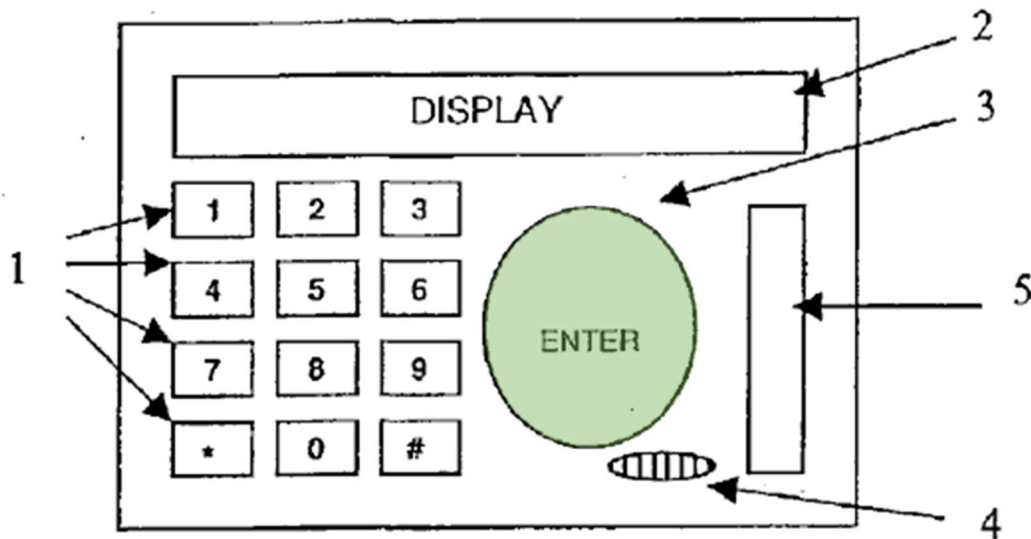
A POSITA would have been motivated to incorporate this electronic circuitry of *Hoff* into *Ong*, because *Hoff* describes specific integrated circuits suitable for implementing the functionality for storing data, processing data, and communicating via radio on *Ong*’s ECC. §VI.A.2. *Hoff* therefore provided a “known technique [(specific integrated circuits)] to address a known problem [(providing electronic circuitry on an electronic credit card)] using prior art elements according to their established functions, demonstrating a motivation to combine.” *PACT*, 61 F.4th at

1380. At the very least, a POSITA would have understood *Hoff*'s electronic circuitry to have been a suitable option when implementing *Ong*'s ECC. Lipoff, ¶82; *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 784, 800 (Fed. Cir. 2021); *Par*, 773 F.3d at 1197-98.

- c. **[1.b]: “a control device operatively linked to said electronic circuit, with an invariable activation command being issued when said control device is selectively triggered”**

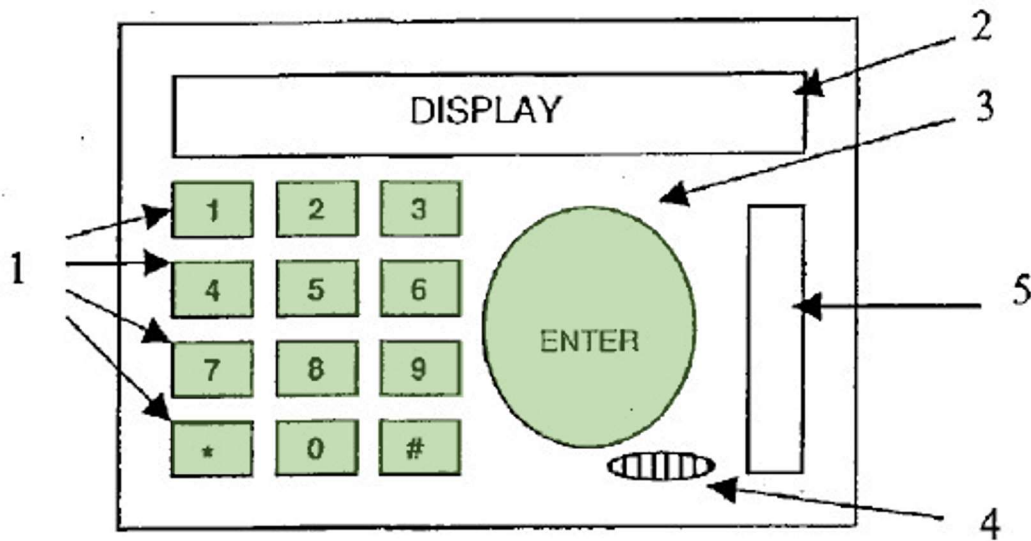
The '333 patent indicates that its control device is “any suitable device allowing the portable electronic device holder to selectively trigger a data conveyance operation.” Ex. 1001, 5:5-32. The '333 patent discloses three forms of control devices, and so does *Ong*. Lipoff, ¶83-84

First, the control device is a “manually activated button provided on the portable electronic device main body.” Ex. 1001, 5:5-32. *Ong*'s control device is a manually activated button provided on the portable electronic device main body, namely the “**enter/confirmation button**,” which the user presses after entering a PIN number to confirm identity:



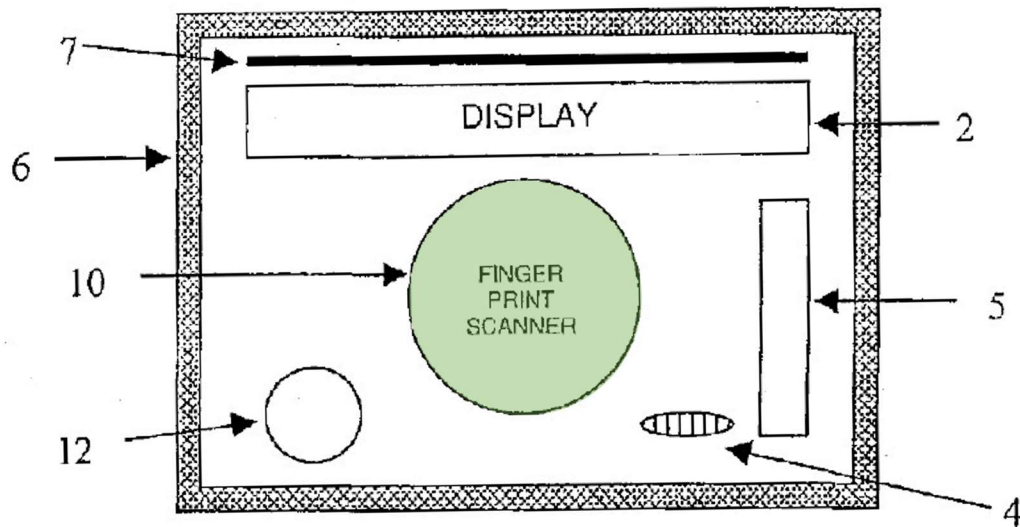
Ong, Fig. 3 (annotated), 3:22-34, 3:35-40, 3:51-59, Abstract; Lipoff, ¶85.

Second, the '333 patent's control device is a "validation means in the form of a keypad allowing the portable electronic device holder to type in a personal identification number (PIN) which will be compared by central unit 40 to a PIN pre-saved in memory unit 42, with a PIN match validating the portable electronic device user and triggering the data conveyance operation." Ex. 1001, 5:5-32. *Ong* discloses **"a keypad for entry of a personal identification number (PIN)"**:



Ong, Fig. 3 (annotated), 3:22-34, 3:51-59, Abstract; Lipoff, ¶86. After a “user enter[s] a PIN number into the keypad 1,” the “user verification means” validates that the PIN is correct. *Ong*, 3:51-59.

Third, the '333 patent's control device is a “biometric parameter detector,” such as “a fingerprint scanner capable of obtaining a fingerprint image.” Ex. 1001, 5:5-32. *Ong* discloses the same fingerprint scanner control device, “**fingerprint scanner 10** forming part of the user verification means”:



Id., Fig. 11 (annotated), 2:23-33, 4:35-44 (also describing retina scanner); Lipoff, ¶87.

These hardware components (button 3, keypad 1, and scanner 10) along with corresponding firmware form *Ong*'s "user verification means" (i.e., the "control device"). *Id.*, 3.3:41-49 ("The keypad in combination with firmware control of the processor forms the user verification means."), 4:35-39 (The "fingerprint scanner 10 form[s] part of the user verification means."). All of *Ong*'s control devices issue an invariable activation command when selectively triggered. Lipoff, ¶88. In the '333 patent, "the activation command ... is an invariable activation command" in that the user "will not be able to select to issue different activation commands by means of control device 12." Ex. 1001, 7:15-29. While the "control device 12 may include more than one button, biometric parameter detector, etc." and the "invariable

activation command will trigger alternate data conveyance operations” depending on the “reception or non-reception of an activation cue, ... the initial activation command will not depend on the reception or non-reception of an activation cue. *Id.*, 7:30-54.

Ong discloses the same. Once the user’s identity has been validated by the user verification means, a unique authorization code is generated. *Ong*, 3:51-59. This authorization code is an “invariable activation command” because it is automatically and inevitably generated once the user is verified. *Ong* does not indicate the user verification is dependent on the disablement means (§VI.A.3.g ([1.e])). *Id.* It would have been obvious for the disablement means to prevent the “authorization code” (invariable activation command) from being “provided ... to the communication means” as this would prevent it from being “communicate[d] ... to a transaction station to facilitate an [EFT] transaction.” Lipoff, ¶89. The authorization code is the same regardless of whether the card is in an activated or inactive state (i.e., regardless of whether an “activation cue was received”). *Id.*; §VI.A.3.f ([1.d.ii]).

All three of *Ong*’s user verification means are operatively linked to the electronic circuit because they necessarily communicate with the processing means to verify the user. *Ong*, 3:35-40 (processor means “receiv[es] input from the keypad 1 and the button”), 3.3:41-49 (“keypad in combination with firmware control

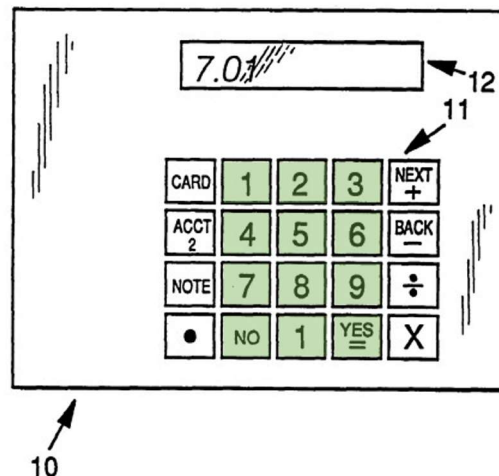
of the processor forms the user verification means”); 4:35-39 (“fingerprint scanner 10 form[s] part of the user verification means”).

To the extent *Ong*’s disclosure of operatively linking its control device to an electronic circuit is disputed, as explained for [1.a], *Hoff* discloses an electronic circuit. A POSITA would have been motivated to link *Ong*’s control device to an electronic circuit because *Hoff* discloses this exact configuration, easily implemented in *Ong*. Lipoff, ¶90.

Hoff discloses a control device operatively linked to said electronic circuit.

Hoff’s credit card includes a **keyboard 11**:

FIG.2A



Hoff, Fig. 2A (annotated), 4:6-14, 10:6-13, 14:14-25; Lipoff, ¶91.

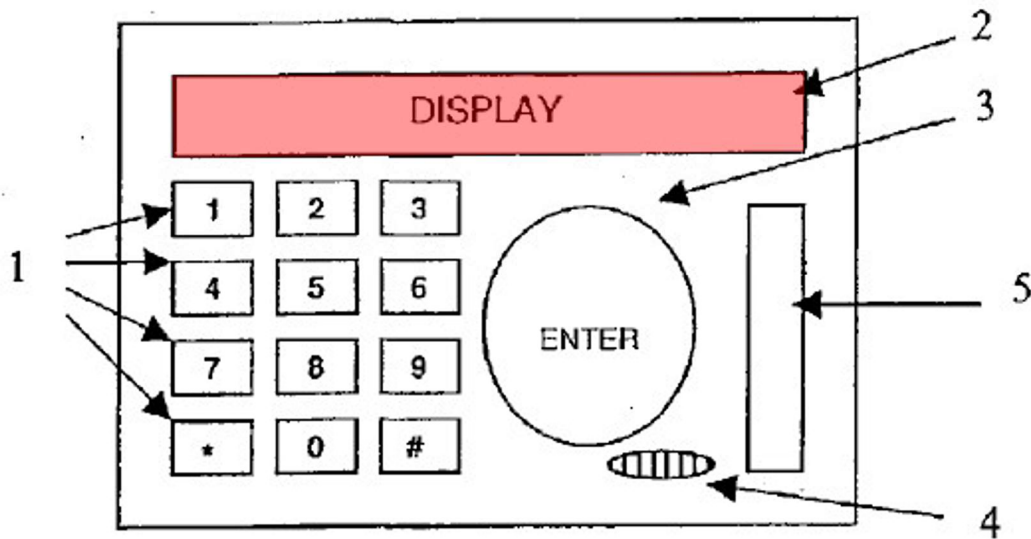
Hoff’s keyboard is expressly operatively linked to the electronic circuit. *Id.*, Fig. 4, 14:14-25 (the “circuitry includes ... keyboard 11”). This keyboard issues an invariable activation command because it issues a command independent of any

activation cue (or a desired result from the user). Lipoff, ¶92. As with the exemplary control devices described in the '333 patent, *Hoff*'s keyboard is used to verify a user. *Hoff*, 10:6-13, 4:16-5:7. The “Spectrum article”—explicitly referenced for details regarding *Hoff*'s keyboard—confirms these operations. *Shogase* (Ex. 1011), 36 (“user [enters] a [PIN] on the keyboard”), 37 (“display confirms the keystrokes”), 38 (card “will not work unless the correct PIN is verified”).

Because *Hoff* expressly discloses linking a control device to an electronic circuit, a POSITA would have understood that linking *Ong*'s control device to an electronic circuit (as suggested by *Ong* as explained for [1.a]) is no more than the combination of familiar elements according to known methods to yield predictable results. Lipoff, ¶93 At the very least, linking *Ong*'s control device to an electronic circuit, as disclosed by *Hoff*, is a suitable option. *Id.*; *Qualcomm*, 21 F.4th at 800; *Par*, 773 F.3d at 1197-98.

d. [1.c]: “a user interface device operatively linked to said electronic circuit”

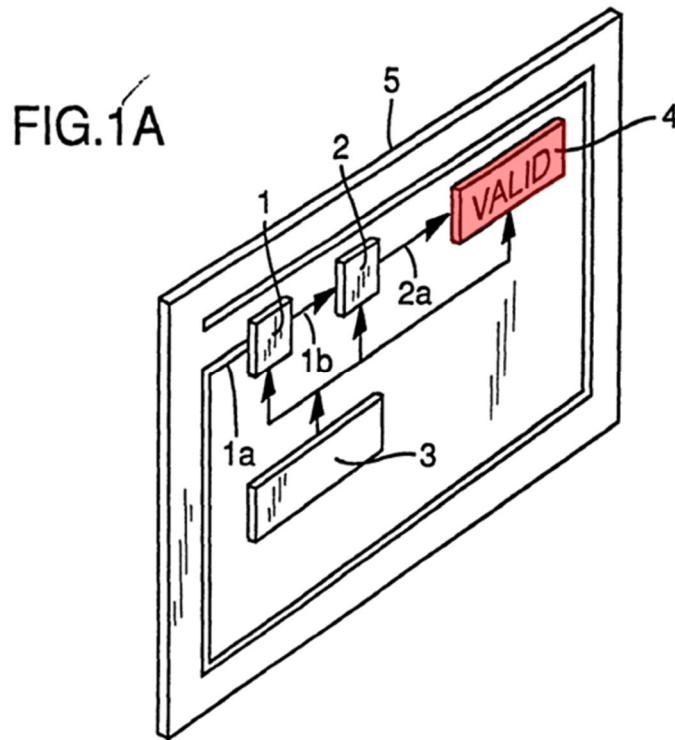
The '333 patent specification indicates that the user interface device includes a “display screen.” Ex. 1001, 2:15-16; 4:19-23. *Ong* discloses a user interface device of the same form—a display screen—noting that “[t]he electronic credit card” “also includes a **display 2**.” *Ong*, 3:22-34.



Ong, Fig. 11(annotated), 3:22-34; Lipoff, ¶95.

A POSITA would have understood *Ong*'s display screen (user interface) is operatively linked to the electronic circuit because *Ong*'s electronic circuit includes a processor means "arranged to control output of the display 2," which at least suggests an operative link. §VI.A.3.b ([1.a]); *Ong*, 3:35-41; Lipoff, ¶96.

To the extent *Ong*'s disclosure of linking its display to an electronic circuit is disputed, as explained for [1.a], *Hoff* discloses such an electronic circuit. A POSITA would have been motivated to link *Ong*'s display to an electronic circuit because *Hoff* discloses this exact configuration, which could be easily implemented in *Ong*. *Hoff*'s credit card includes a **display 4**:

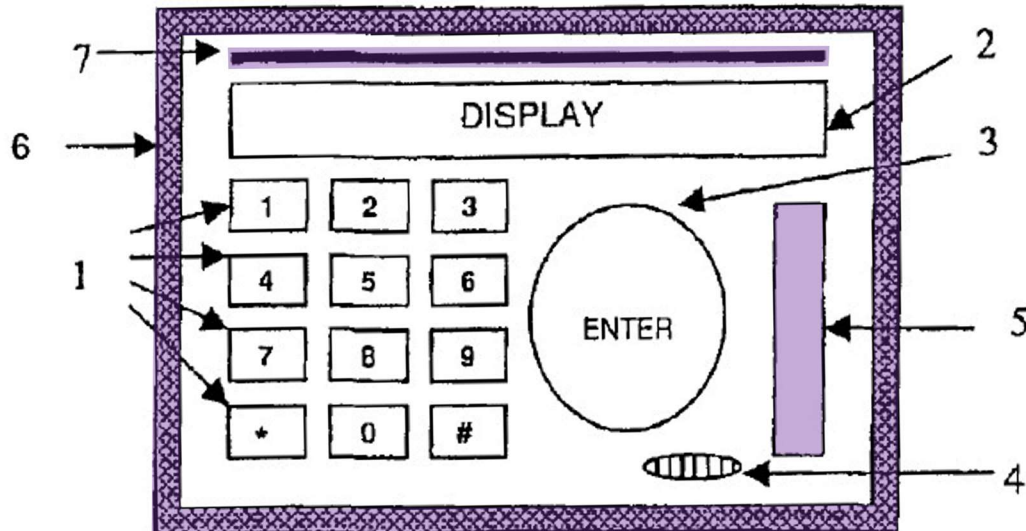


Hoff, Fig. 1A (annotated), 3:23-4:5, 8:12-9:5, 10:6-13; Lipoff, ¶97. *Hoff*'s display is expressly operatively linked to the electronic circuit. *Hoff*, Fig. 1A, 8:12-17.

Because *Hoff* expressly discloses linking a display to an electronic circuit, a POSITA would have understood that linking *Ong*'s display to an electronic circuit (as suggested by *Ong* as explained for [1.a]) is no more than the combination of familiar elements according to known methods to yield predictable results. Lipoff, ¶98. A POSITA would have been motivated to look to *Hoff* as an example of how the display is linked to an electronic circuit as the display would otherwise not serve its intended purpose. *Id.* At the very least, linking *Ong*'s display in the manner disclosed by *Hoff* is a suitable option. *Id.*; *Qualcomm*, 21 F.4th at 800; *Par*, 773 F.3d at 1197-98.

- e. [1.d.i]: “a data transceiver operatively linked to said electronic circuit, said data transceiver being for exchanging data between said electronic circuit and an external data exchange device”

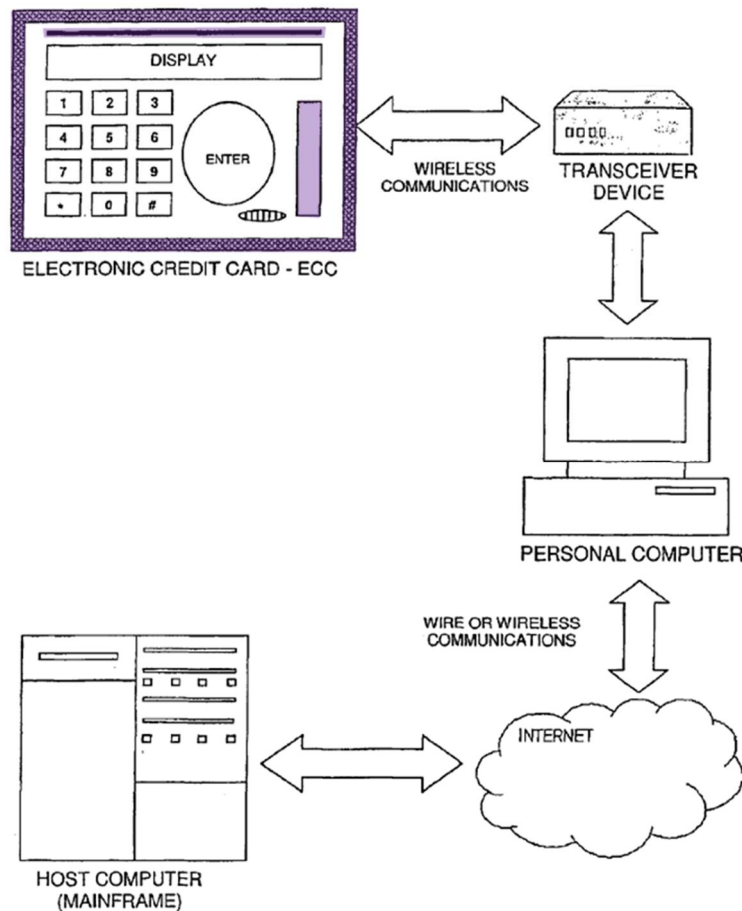
Ong discloses a “communication means” (data transceiver), which includes an “infra red [sic] communication device 5, a magnetic induction telecommunication 6, [and] radio frequency telecommunication device in the form of an antenna 7”:



Ong, Fig. 10 (annotated), 2:34-40, 3:22-34, 4:30-39 (“transmitter receiver 5”); Lipoff, ¶100.

Ong’s communication means (data transceiver) is operatively linked to the electronic circuit because *Ong*’s electronic circuit includes a processor means “arranged to control communication via the communication means 5, 6, 7,” which at least suggests an operative link. §VI.A.3.b ([1.a]); *Ong*, 3:35-41; Lipoff, ¶101.

Ong's communication means (data transceiver) is used for exchanging data with an external data exchange device. Lipoff, ¶102. *Ong* describes “communication between the electronic credit card ... [and] a transceiver device which talks with a personal computer” acting as a transaction station, which “may then communicate ... to a host computer”:

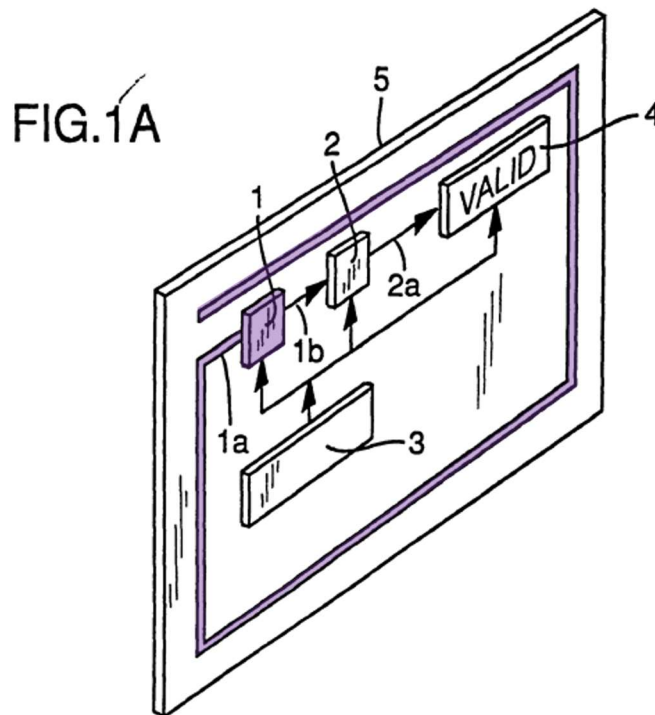


Ong, Fig. 2 (annotated), 3:63-4:3; *id.*, Fig. 3 (showing ECC communicating with an ATM connected to a host computer (mainframe)). A POSITA would have recognized that the transceiver device or ATM (or alternatively the personal computer or host computer) is an external data exchange device because it is external

to the ECC (portable electronic device) and exchanges data with the ECC. *Id.*, Fig. 2, 3:63-4:3; Lipoff, ¶102. The '333 patent expressly includes these types of data exchange devices. Ex. 1001, 5:51-54. Although *Ong* also discloses an external “transceiver device,” the claimed “data transceiver” corresponds to *Ong*’s “communication means” internal to its device and coupled to the electronic circuit.

To the extent *Ong*’s disclosure of linking its data transceiver to an electronic circuit is disputed, as explained for [1.a], *Hoff* discloses an electronic circuit. A POSITA would have been motivated to link *Ong*’s data transceiver to an electronic circuit because *Hoff* discloses this exact configuration, which could be easily implemented in *Ong*. Lipoff, ¶103

Hoff discloses “a **point to point radio receiver** which has an **associated loop antenna 1a**. The radio receiver 1 and the antenna 1a are built to receive messages or signals transmitted from commercial radio stations as an FM subcarrier”:



Hoff, Fig. 1A (annotated), 8:1-11; *id.*, Fig. 4, 11:11-24, 12:1-3, 12:13-20, 15:1-18. This receiver, also referred to as point-to-point communication device 31 (*Id.*, 8:9-10), is used for transmitting data. *Id.*, 13:10-21, 17:4-6. *Hoff* expressly discloses that the “point to point radio receiver 1 is connected to logical circuitry 2.” *Id.*, 8:12-17.

Because *Hoff* expressly discloses linking a data transceiver to an electronic circuit, a POSITA would have understood that linking *Ong*’s data transceiver to an electronic circuit (as suggested by *Ong* as explained for [1.a]) is no more than the combination of familiar elements according to known methods to yield predictable results. A POSITA would have been motivated to look to *Hoff* as an example of how the data transceiver is linked to an electronic circuit as the data transceiver would

otherwise not serve its intended purpose. Lipoff, ¶104-05. At the very least, linking *Ong*'s data transceiver in the manner disclosed by *Hoff*, is a suitable option. *Id.*; *Qualcomm*, 21 F.4th at 800; *Par*, 773 F.3d at 1197-98.

f. [1.d.ii]: “said data transceiver being ... for receiving a selectively emitted activation cue from a source external to said portable electronic device”

Ong indicates that “[p]referably the electronic credit card includes a disablement means for disabling use of the electronic credit card.” *Ong*, 1:65-2:3. This disablement means is preferably “activatable remotely by an issuer of the electronic credit card or other authority.” *Ong*, 1:65-2:3. It would have been obvious to a POSITA to similarly allow the card to be reenabled by remotely deactivating the disablement means. Lipoff, ¶107. One reason offered for disabling the card is “if a predetermined number of attempts to verify the identity of the user fail.” *Ong*, 1:65-2:3. A POSITA would have recognized that permanently disabling a card based on failed user verification would be undesirable. Lipoff, ¶107. *Ong* confirms that “[a]n authorizing distributor or other authorised body could *re-initialise* the electronic credit card” once disabled. *Ong*, 4:46-58.

Ong therefore at least suggests reenabling (activating) the card's functionality, and a POSITA would have recognized that it would be both convenient and efficient to reenable the card remotely using *Ong*'s communication means (data transceiver). Lipoff, ¶108. Additionally, a POSITA would have recognized that, to disable (or

reenable) the card remotely, the card would necessarily receive information (i.e., an “activation cue”) from the issuer of the credit card (i.e., a “source external to said portable electronic device”) triggering the disablement (or reenablement) means. *Id.*; *Ong*, 5:65-67 (“the disabler operates when *activated* remotely by an issuer of the electronic credit card”). The activation cue is received via the data transceiver because *Ong* explicitly states the “card can be disabled at a transaction station” (*Ong*, 4:59-67) and the card communicates with this transaction station via the communication means (*id.*, 1:58-61, 3:51-59). §VI.A.3.e ([1.d.i]).

Hoff also expressly discloses [1.d.ii]. *Hoff* describes “an improved credit card which utilizes point to point radio communication to provide an indication of whether a card is valid.” *Hoff*, 5:15-17; Lipoff, ¶109. Like *Ong*, *Hoff* describes a mechanism “to update or deactivate a credit card from a remote location by sending signals over the communication channel” such that the “card can be deactivated or updated even while the card is in the user’s pocket or wallet.” *Hoff*, 6:7-12; *id.*, 15:1-18 (“The point-to-point communication device 31 is designed to receive and transmit to the circuitry 32, a sequence of numbers. This sequence of numbers either resets the card’s ‘open to buy’ limit or it deactivates the card.”). To facilitate activation or deactivation of the card an “output 1b of point to point radio receiver 1 is connected to logical circuitry 2 ... that receives and decodes signals from radio receiver 1 and which activates a display 4.” *Id.*, 8:12-16.

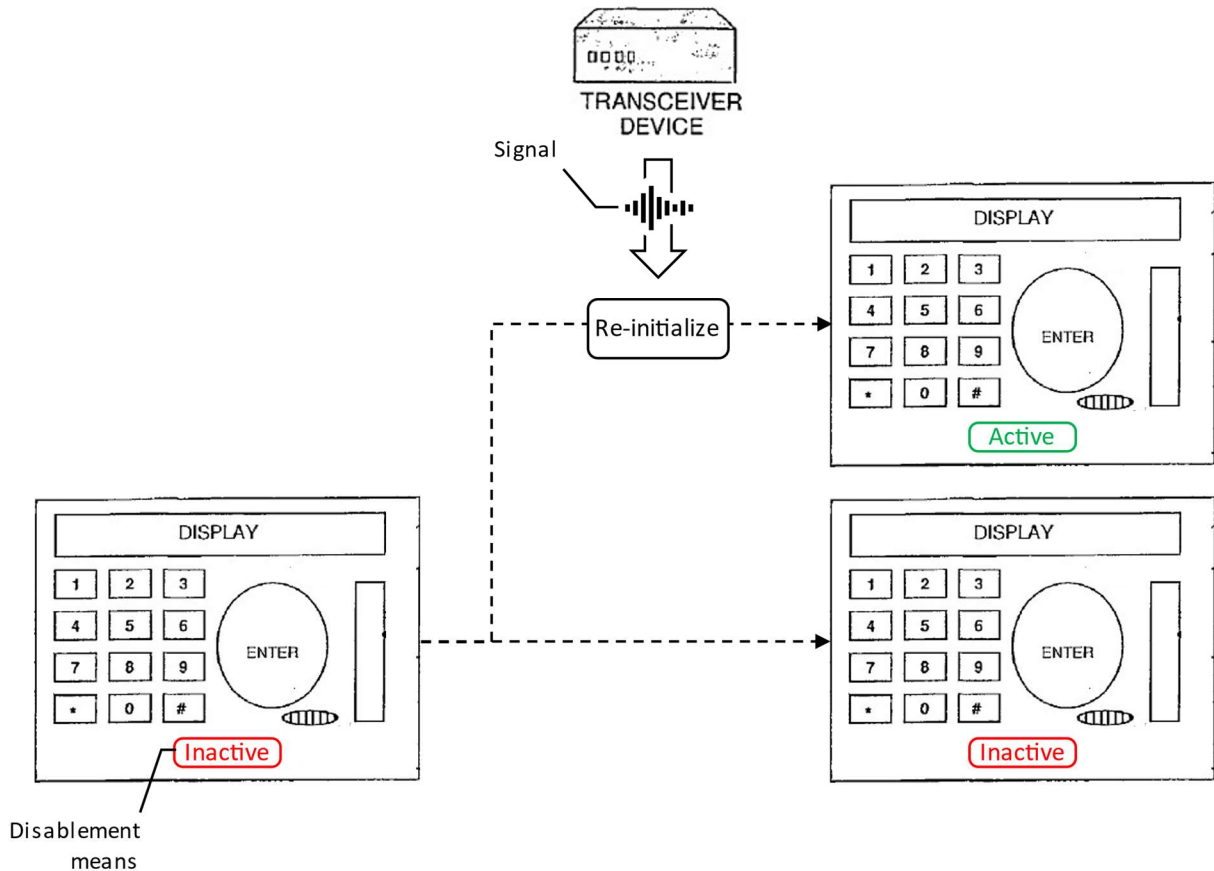
To the extent *Ong* does not expressly disclose activating the card remotely, a POSITA would have been motivated to substitute and/or improve *Ong*'s disablement means with *Hoff*'s logical circuitry and activation/deactivation functionality. It would be undesirable for *Ong*'s card to be permanently disabled. Lipoff, ¶110. A POSITA would have recognized the ability to reset the card's active open-to-buy status remotely as taught in *Hoff* would improve the convenience and functionality of *Ong*'s card. *Id.* *Hoff*'s logical circuitry "include[s] a timer which switches the display to VOID if an appropriate signal is not received ... within a preset interval," preventing a thief from thwarting deactivation by simply shielding the card. *Hoff*, 5:19-6:18, 8:22-9:1, 6:12-18. A POSITA would have been motivated to implement *Hoff*'s logical circuitry in *Ong*'s card to achieve similar security enhancements. Lipoff, ¶110; §VI.A.2.

- g. **[1.e]: "a data conveyance switching element operatively linked to said electronic circuit, said switching element being in an activated state upon an activation cue having been received by said data transceiver, and being in an inactive state when no activation cue was received by said data transceiver"**

Ong's "disablement means [(data conveyance switching element)] is activatable remotely by an issuer of the electronic credit card or other authority" and "disabl[es] use of the electronic credit card." *Ong*, 1:65-2:3; §VI.A.3.f ([1.d.ii]). When in a disabled state, "[a]n authorising distributor or other authorised body could

re-initialise the electronic credit card.” *Ong*, 4:46-58. A POSITA would have recognized that *Ong*’s disablement means is in one of two states: a first state in which the disablement means has *not* been triggered (activated state) or a second state in which the disablement means has been triggered (inactive state). Lipoff, ¶112. And because “the disablement means is activatable *remotely*,” a POSITA would recognize this disablement means is activated by a remotely transmitted signal (activation cue). *Id.*

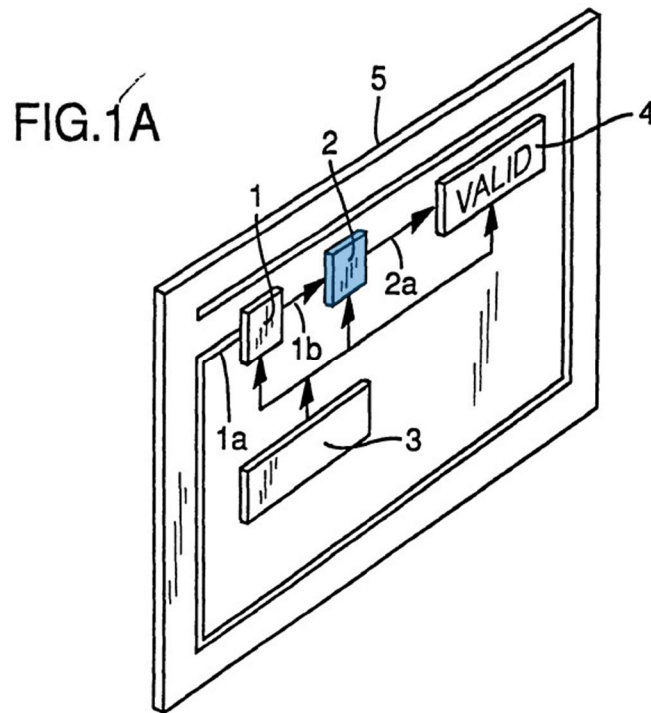
Therefore, when *Ong*’s disablement means (data conveyance switching element) has been triggered and therefore is in the inactive state, a subsequent signal to “re-initialise the electronic credit card” (activation cue) would cause the disablement means to enter an activated state (such that the credit card can be used). When *Ong*’s disablement means (data conveyance switching element) is in the inactive state and no signal to “re-initialise the electronic credit card” is received, it would remain in the inactive state (preventing the credit card from being used).



Lipoff, ¶113 (illustrating *Ong*'s reinitialization). The signal to “re-initialize” the card is an activation cue. *Id.*; §VI.A.3.f ([1.d.ii]).

To the extent *Ong* does not expressly disclose an “activation cue having been received by said data transceiver,” *Hoff* discloses [1.e]. Lipoff, ¶114. As the '333 patent explains, the data conveyance switching element “can comprise a decisional **logical circuit**” and “can be a physical structure, a virtual program, or both.” Ex. 1001, 6:4-17; 4:19-23. The card disclosed in *Hoff* “can be deactivated or updated even while the card is in the user’s pocket or wallet.” §VI.A.3.f ([1.d.ii]); *Hoff*, 6:7-12; *id.*, 15:1-18 (“The point-to-point communication device 31 is designed to

receive and transmit to the circuitry 32, a sequence of numbers. This sequence of numbers either resets the card's 'open to buy' limit or it deactivates the card.”). To facilitate activation or deactivation, an “output 1b of point to point radio receiver 1 is connected to **logical circuitry 2** ... , [which] can be a conventional gate array that receives and decodes signals from radio receiver 1”:



Hoff, Fig. 1A (annotated), 8:12-16. Consistent with the '333 patent's description, *Hoff*'s “circuitry for processing data can be relatively simple electronic circuitry that merely activates an indication of whether or not the card is valid or it can be computer type circuitry such as the circuitry in what are generally termed Very Smart Credit Cards.” *Id.*, 5:25-6:5.

Hoff also discloses an “open to buy” status that can be “update[d] ... from a remote location by sending signals [(an activation cue)] over the communication channel.” *Id.*, 5:19-6:18. The signal includes an “‘open to buy’ value ... coded into a sequence of digits similar to the sequence of digits that [previously had to] be manually keyed.” *Id.* To prevent inhibiting deactivation by shielding the card, “[t]he **logic in block 2** can include a timer which switches the display to VOID if an appropriate signal [(i.e., the “activation cue”)] is not received via point to point receiver 1 within a preset interval.” *Id.*, 8:22-9:1; *id.*, 5:19-6:18, 14:3-13 (“[T]he computer can periodically interrogate the clock and put an appropriate note on the display if the ‘open to buy’ status has not been updated within a specified period.”). Therefore, once the timer expires, the logical circuit (data conveyance switching element) is switched to the void or inactive state. If the “new radio communication ... [to] re-authorize[] the card” (activation cue) is received, the logical circuit would enter the valid or activated state. *Id.*, 5:19-6:18; *id.*, 15:1-18. Otherwise, the logical circuit remains in the inactive state. Lipoff, ¶115.

A POSITA therefore would have recognized that *Hoff*’s circuitry has two states: a first state in which the “open to buy” status is set (activated state) and a second state in which the “open to buy” status is not set and the card is disabled (inactive state). *Id.*, ¶116; *Hoff*, 15:1-18 (the “sequence of numbers either resets the card’s ‘open to buy’ limit or it deactivates the card.”).

To the extent *Ong* does not expressly disclose activating the card remotely, a POSITA would have been motivated to substitute and/or improve *Ong*'s disablement means with *Hoff*'s logical circuitry and means for activating/deactivating the device to achieve advanced functionality such as remotely updating the “open to buy” limits or to “prevent a thief from inhibiting deactivation of the card by shielding it from radio communications”—improvements to *Ong* that would have been readily recognized by a POSITA. Lipoff, ¶117; *Hoff*, 6:1-18; §VI.A.2.

h. [1.f]: “power means for providing power to said portable electronic device”

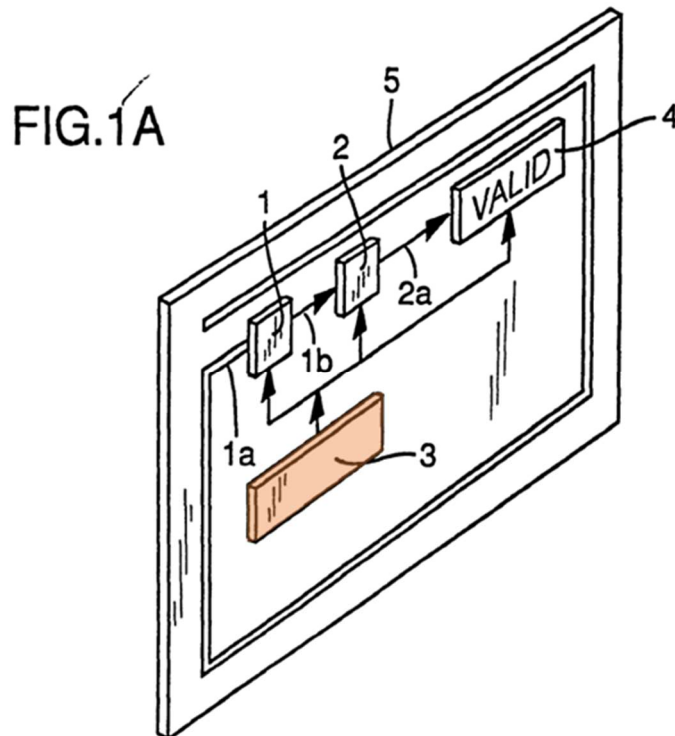
Ong suggests a “power means for providing power” to the electronic card⁵ because *Ong* explains that in some cases, the card “download[s] information to a computer system via one of its telecommunication modes” to “ensure data integrity [during] power source replacement or re-charging.” *Ong*, 4:46-58. *Ong*'s ECC

⁵ While a power source is not shown in *Ong*'s figures, *Ong*'s figures, which illustrate the outside of the smart card, omit several components internal to the card, such as the storage means or processor means, which are understood to be included in the card. *Ong*, 3:22-34 (the storage means is “not shown.”), 3:35-41 (describing a “processor means” that is not shown).

(portable electronic device) thus includes a power source that may be replaced or recharged. Lipoff, ¶118-19.

Ong's electronic card also includes “an infra red [sic] transmitter receiver 5” (*Ong*, 4:35-44), which A POSITA would have recognized requires an internal power source to generate infrared transmissions. Lipoff, ¶120.

Hoff expressly discloses a “power means for providing power” to the card because *Hoff*'s card “include[s] embedded therein a **battery**”:



Hoff, Fig. 1A (annotated), 4:6-14; 8:12-17.

To the extent there is any doubt that *Ong* does not already include power means, a POSITA would have been motivated to incorporate *Hoff*'s battery to provide the card with its own internal power source. §VI.A.2. A POSITA would

have been motivated to look to *Hoff* as an example of how to include a battery in *Ong*'s ECC because at least the infrared device would otherwise be inoperable. Lipoff, ¶121. At the very least, *Hoff*'s battery would have been understood as a suitable option for powering *Ong*'s device. *Id.*; *Qualcomm*, 21 F.4th at 800; *Par*, 773 F.3d at 1197-98.

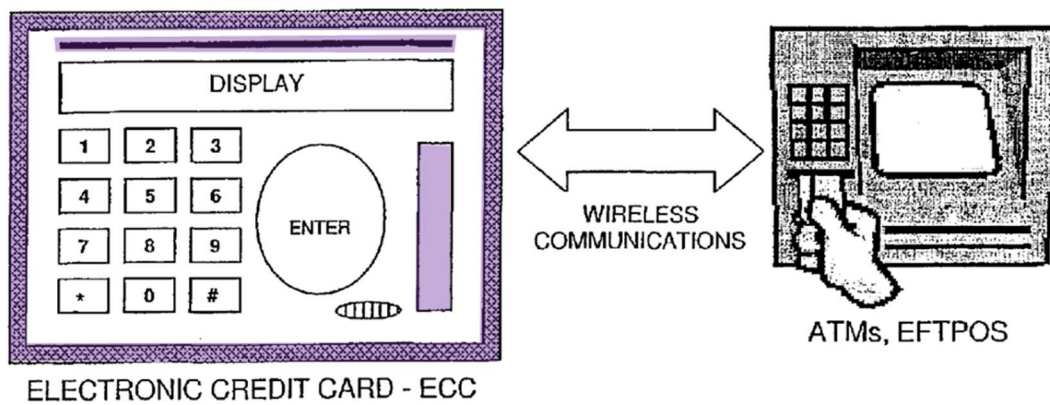
- i. **[1.g.i]: “wherein upon said control device being selectively triggered to issue and [sic] invariable activation command: if said switching element is in said activated state, a data exchange will be initiated through the instrumentality of said data transceiver for exchanging data between said electronic circuit and an external data exchange device”**

As explained for [1.b], *Ong* discloses a “user verification means includ[ing] a keypad for entry of a personal identification number (PIN)” (control device being selectively triggered to issue an invariable activation command). *Ong*, 3:23-34.

Ong's user verification means (control device) verifies a user's identity and then if the card is in an activated state (as explained for [1.e]) transmits data wirelessly to an external transaction processor like an ATM. *Id.*, 3:23-34, 3:51-59, 8:2. The user verification means includes a “keypad for entry of a personal identification number (PIN).” *Id.*, 3:23-34.

Ong's electronic credit card validates the user's identity using either a keypad for entry of a PIN number or a fingerprint scanner (together with firmware forming the “user validation means,” i.e., the claimed “control device”). *Id.*, 3:22-34,

3:51-59, 2:23-33, 4:35-39, 6:37-40. Once verified, a “means for generating unique authorisation code then generates the authorisation code [(invariable activation command)] which is provided along with the user’s account details, to the **communication means** which communicates these to a transaction station [(external data exchange device)] to facilitate an electronic funds transfer transaction [(initiated data exchange with an external data exchange device)]”:



Id., Fig. 3 (annotated), 3:51-59.

Ong explicitly states the data exchange with the transaction station to facilitate an electronic funds transfer is conducted by *Ong*’s communication means (data transceiver). *Id.*, 3:41-59 (“[T]he authorization code ... is provided ... to the communication means which communicates these to a transaction station to facilitate an electronic funds transfer transaction.”).

Therefore, upon the user verification means (control device) “being selectively triggered” by PIN entry or fingerprint scan to issue the “authorisation

code” (invariable activation command), a data exchange is initiated through the communication means (data transceiver) for exchanging data between the card components (electronic circuit) and a transaction station (external data exchange device). *Id.*; Lipoff, ¶123-27. A POSITA would have recognized that only in an activated state would this transaction be carried out because financial transactions are disabled entirely when the card is in an inactive state. Lipoff, ¶127; §VI.A.3.f ([1.d.ii]).

As explained for [1.d.ii] and [1.e], *Hoff* includes a point-to-point radio receiver (data transceiver) and circuitry to store a VALID or “open to buy” status (activated state) that is updated remotely. §§VI.A.3.f ([1.d.ii]), VI.A.3.g ([1.e]). *Hoff*’s transceiver and activation/deactivation circuitry, when combined with *Ong*’s card, would allow a transaction to occur only if the circuitry indicated an activated state. Lipoff, ¶128. Under this combination, when the authorisation code (invariable activation command) is issued upon verification of the user, the data exchange would not be initiated between the card components (electronic circuit) and a transaction station (external data exchange device) if *Hoff*’s circuitry does not indicate the card has a VALID or “open to buy” status. *Id.* Such combination would have been obvious as explained for [1.d.ii] and [1.e]. *Id.*; §VI.A.2.

- j. [1.g.ii]: “wherein upon said control device being selectively triggered to issue and [sic] invariable activation command: ... if said switching element is in said inactive state, data will be conveyed from said electronic circuit to said user interface device for communicating information to the portable electronic device holder”

As explained for [1.b], *Ong* discloses a “user verification means includ[ing] a keypad for entry of a personal identification number (PIN)” (control device being selectively triggered to issue an invariable activation command). *Ong*, 3:23-34.

Ong’s user verification means (control device) verifies a user’s identity, via entry of the PIN, and generates an “authorisation code” (invariable activation command). §VI.A.3.c ([1.c]). If the card is in an inactive state, the card does not complete the financial transaction, as explained for [1.e] (selective triggering). A POSITA would have understood and found it obvious that it would be beneficial to alert the user via *Ong*’s “Display Unit (2)” for “provid[ing] visual information” that the transaction could not be processed and the card is in an inactive state. *Id.*, Abstract; Lipoff, ¶131. It was understood at the time of the invention that electronic credit cards could convey visual information in this manner. Lipoff, ¶131 (citing *Teicher*, 3:24-25, 9:11-15).

Although *Ong* suggests its user interface device conveys data to the user about the transaction not being processed and the card being in an inactive state, *Hoff* explicitly discloses conveying data about the transaction not being processed (e.g.,

the card is in an inactive state) to the user interface. At least the combination of *Ong* and *Hoff*, therefore, teaches this limitation.

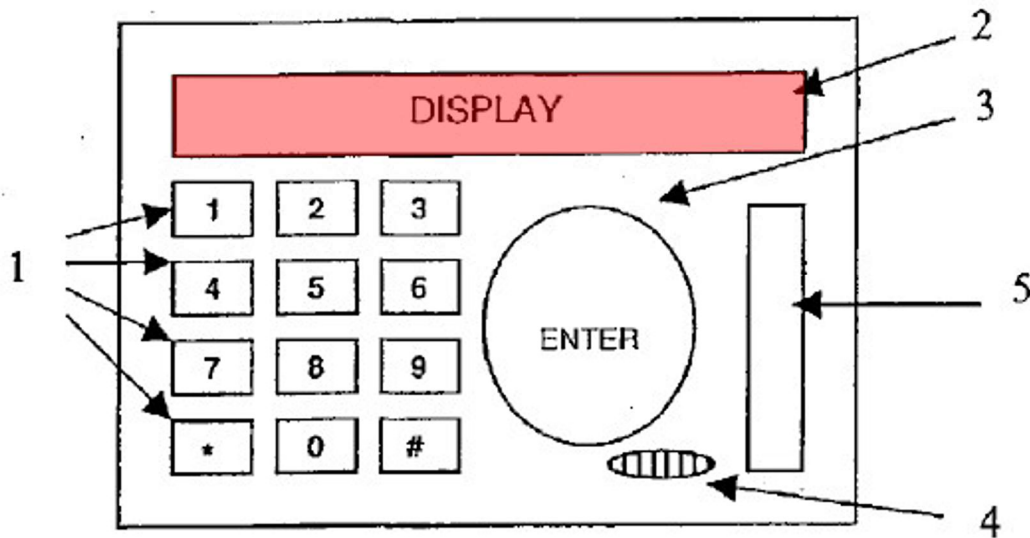
As explained for [1.e], *Hoff*'s "display 4 can either display the words VALID or VOID" depending on whether the card is in an activated or inactive state. *Id.*, 8:18-9:1; *id.*, 14:3-13 (the card "put[s] an appropriate note on the display if the 'open to buy' status has not been updated"). Like *Ong*, *Hoff* further discloses a keyboard for entry of a PIN, which utilizes display 4. *Hoff*, 10:6-13, 4:16-5:7; *Shogase*, 36, 37, 38. While entering a PIN, the display would be used for displaying operations associated with the PIN entry. *Shogase*, 37. A POSITA would have understood that upon entry of the PIN (i.e., upon said control device being selectively triggered), when the user is verified, if the "open to buy" status has not been updated (switching element is in an inactive state), data would be conveyed to the display to indicate this status and a reason the transaction was not completed. Lipoff, ¶132. The display would "display the word[] ... VOID" as described in *Hoff*. *Hoff*, 8:18-9. Alternatively or additionally, the display shows an error message indicating the transaction was not completed. Lipoff, ¶132 (citing *Berger*, ¶¶[0033]-[0034]). And this would require data to be conveyed to the display, as confirmed by the intervening use of the display for PIN entry. *Id.* *Hoff* discloses switching the display to present various types of information. *Hoff*, 9:2-5 (switching the display to

“VOID”), 13:22-14:2 (displaying “paging messages”), 14:10-13 (displaying an “appropriate note”).

When combined with *Ong*’s user verification means, it would have been obvious to a POSITA to display “VOID” or an “appropriate note” on the display in response to a user verification (selective triggering) to convey an appropriate message to the user, allowing a user to understand that status of their transaction. Lipoff, ¶133; §VI.A.2. No financial transaction would be completed when *Ong*’s user verification means generates the “authorisation code” and the card is in the inactive state and it would have been obvious to display this data to the user on the UI to convey that information upon entry of the PIN. Lipoff, ¶133. At very least, when combined with *Hoff*, it would have been obvious for *Ong*’s display to present the “VOID” indicator or other “appropriate note” disclosed in *Hoff* as an indication no transaction was completed upon *Ong*’s PIN entry (selective triggering). *Id.*

4. **Claim 2: “wherein said user interface device is a display screen”**

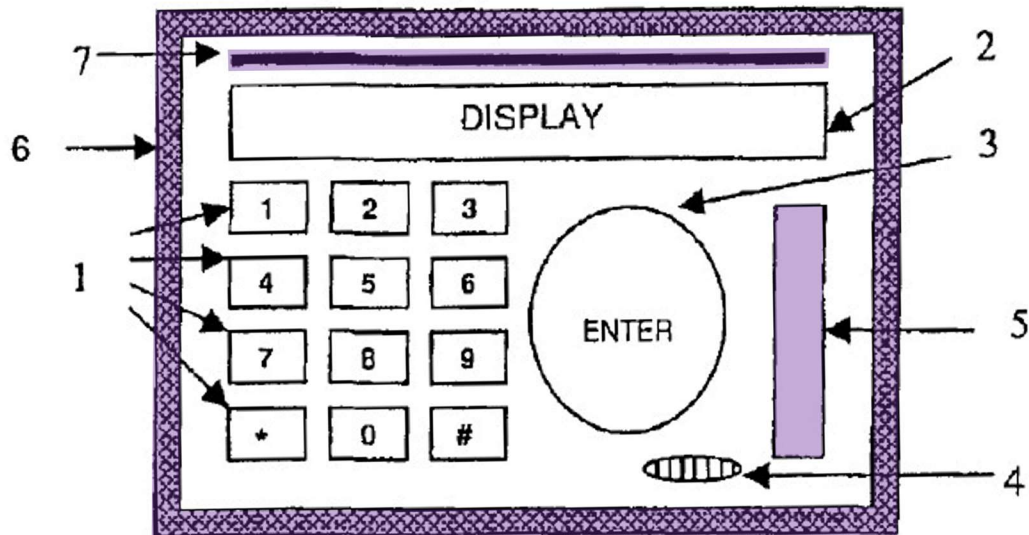
Ong discloses an “electronic credit card ... includ[ing] a **display 2**”:



Ong, Fig. 11(annotated), 3:22-34; Lipoff, ¶134. This display “includ[es] an LCD (liquid crystal display) screen or other display screens.” *Ong*, Abstract.

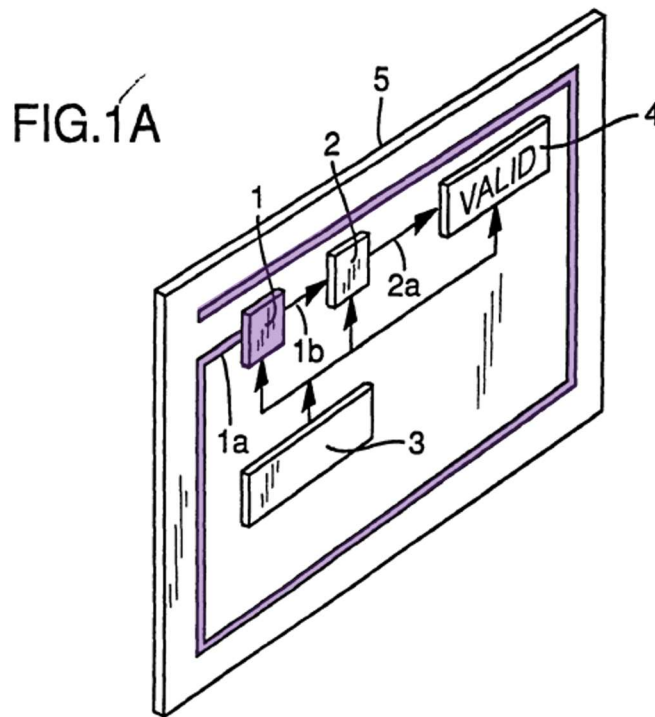
5. **Claim 3: “wherein said data transceiver comprises a data transmitter, a data receiver distinct from said data transmitter, and a cue receiver distinct from said data receiver”**

Ong discloses an ECC including various **communication means** (i.e., a “data transceiver”):



Ong, Fig. 10 (annotated), 2:34-40, 3:22-34, 4:30-39, 4:59-67. A POSITA would have recognized that at least “infrared transmitter receiver 5” and “radio frequency antenna 7” (*Id.*, 4:30-34) are a data receiver and transmitter, respectively. Lipoff, ¶135 (citing *Teicher*, 2:6-20).

Moreover, *Hoff* discloses “a **point to point radio receiver** which has an associated loop antenna 1a”:



Hoff, Fig. 1A (annotated), 8:1-11, 11:11-24, 12:1-3, 12:13-20, 15:1-18; Lipoff, ¶136.

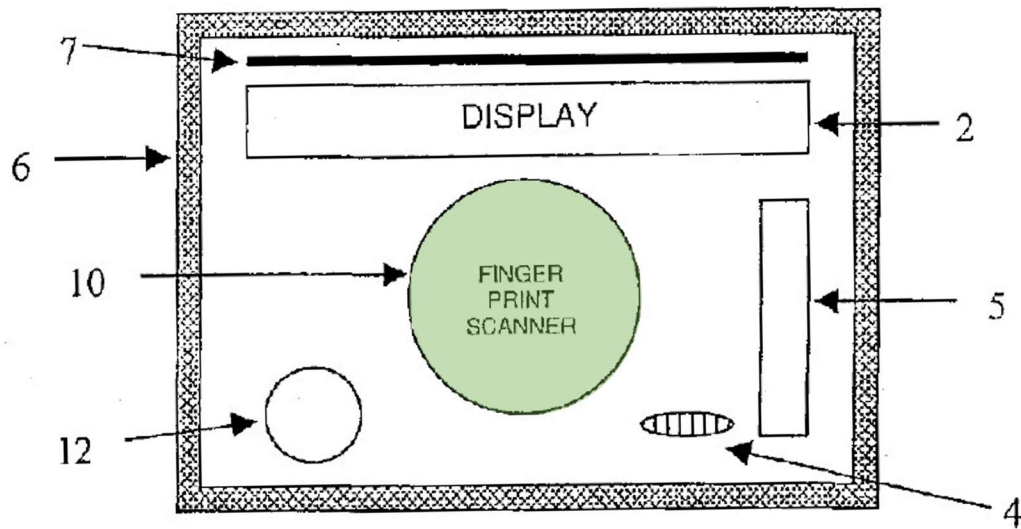
It would have been obvious to incorporate the radio receiver of *Hoff* into *Ong*'s ECC to provide a dedicated receiver (cue receiver) for updating a status of the card. Lipoff, ¶137. While *Ong* already includes a radio frequency antenna, a POSITA would recognize that the dedicated receiver would allow for receiving an activation cue without interfering with other functions of the card. *Id.* Radio frequency antenna 7 (or other communication means) may be used to communicate through *Ong*'s terminal station, whereas the point-to-point radio receiver would provide *Hoff*'s additional security functions. *Id.* Adding *Hoff*'s radio receiver to *Ong* would have simply been an addition of a known, off-the-shelf component

performing its routine function (receiving and transmitting data). *Hoff*, 11:12-15. Because *Ong* already discloses communication means including at least a data receiver and transmitter (*Ong*, 2:34-40, 3:22-34, 4:30-39; 4:59-67), supplementing *Ong*'s communication means with *Hoff*'s receiver to be dedicated to updating a status of the card would have at least been a suitable option for implementing *Ong*'s communication means. *Lipoff*, ¶137; *Qualcomm*, 21 F.4th at 800; *Par*, 773 F.3d at 1197-98.

6. Claim 4: “wherein said control device is a biometric parameter detector”

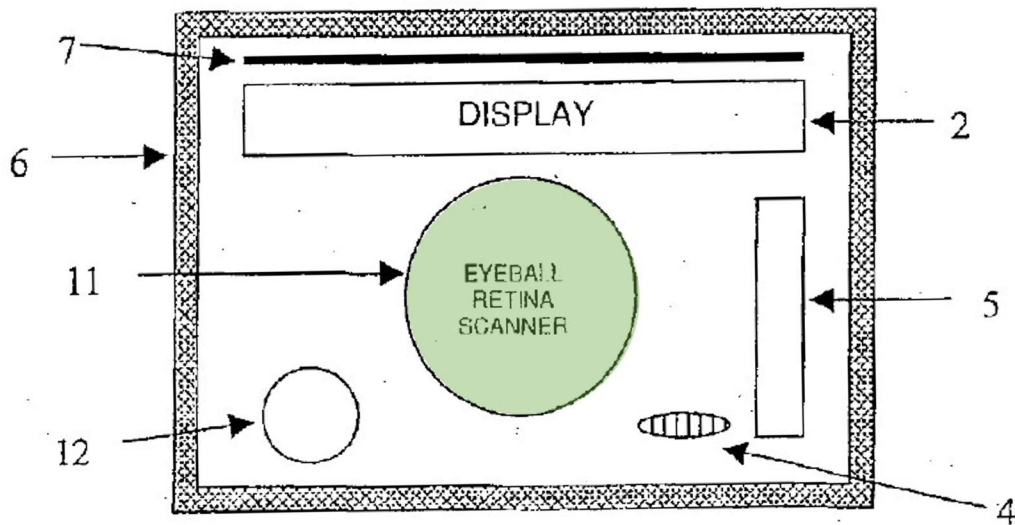
The '333 patent explains that a “biometric parameter detector” includes “a fingerprint scanner capable of obtaining a fingerprint scan.” Ex. 1001, 5:12-17; *Lipoff*, ¶138-40.

First, as explained for ([1.b]), *Ong*'s “user identification means [control device] includes a **fingerprint reader for reading a fingerprint of the user** and a fingerprint verifying means for verifying the identity of the user from the user's fingerprint”:



Ong, Fig. 11 (annotated), 2:23-33, 4:35-39.

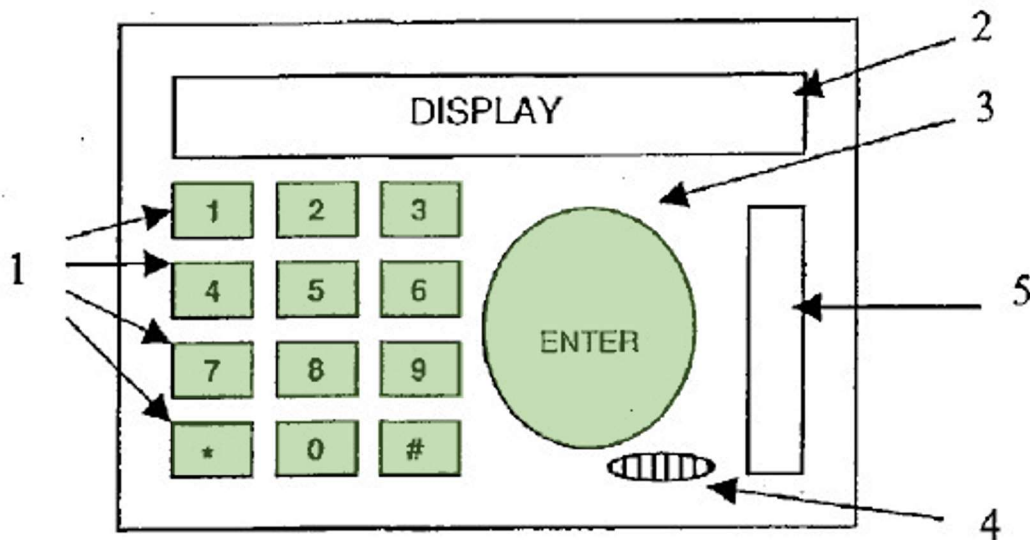
Second, *Ong*'s "user identification means [control device] includes **a retina scanner for scanning a retina pattern**":



Ong, Fig. 12 (annotated), 2:23-33, 4:41-44.

7. **Claim 6: “wherein said control device is a manually activated button, and whereby said control device is triggered when the button is pressed”**

Ong discloses a “user verification means includ[ing] a keypad for entry of a personal identification number (PIN)” and an “enter/confirmation button” (manually activated button):



Ong, Fig. 3 (annotated), 3:22-34, 3:35-40, 3:51-59, Abstract. To perform a transaction, a “user enter[s] a PIN number into the keypad 1 whereby the user verification means verifies that the PIN number is correct and the identity of the user is verified.” *Id.*, 3:51-59. A POSITA would have recognized that the user would press the “ENTER” button to submit the PIN for verification or to confirm a transaction (manually activated button). Lipoff, ¶141.

8. Claim 7: “wherein said electronic circuit comprises said switching element”

As explained for [1.a], *Ong* discloses an electronic credit card including various electronic components, including “a user verification means; a means for generating a unique code (not shown); a storage means ... (not shown); ... a communication means ... [and] a processor means.” §VI.A.3.b ([1.a]); *Ong*, 3:22-34.

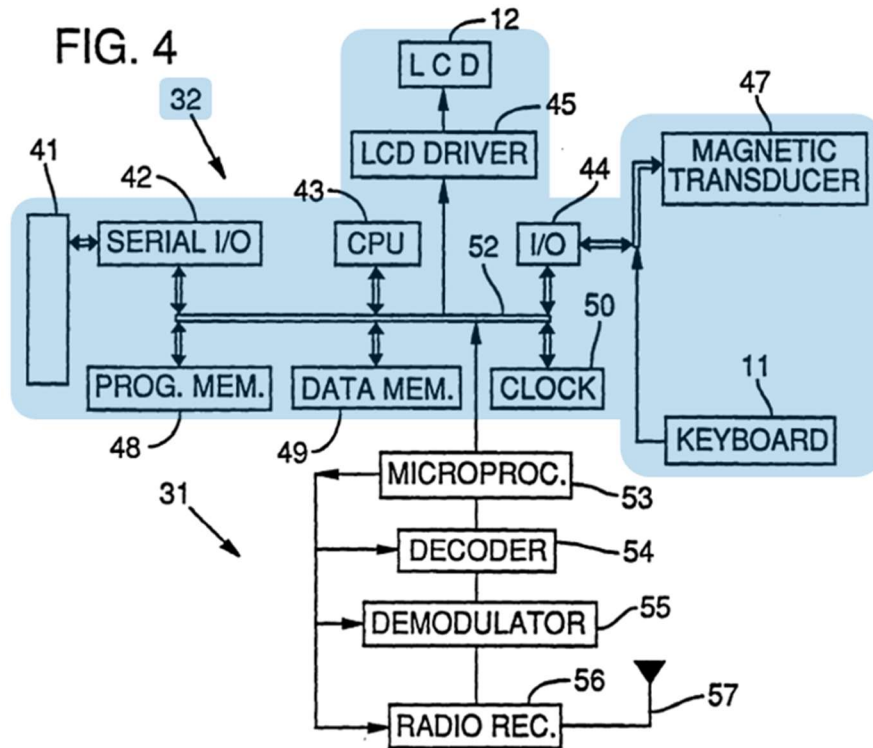
As explained for [1.d.ii], *Ong* discloses a disablement means (i.e., a “data conveyance switching element”) for “disabling use of the electronic credit card,” which is “activatable remotely by an issuer of the electronic credit card or other authority.” §VI.A.3.f ([1.d.ii]); *Ong*, 1:65-2:3.

A POSITA would have understood that *Ong*’s disablement means would be operatively connected with the various electronic components in *Ong* to allow remote activation and disabling of the card because *Ong*’s processor means would control this function and is a part of *Ong*’s electronic circuit. Lipoff, ¶142-44.

To the extent it is disputed that *Ong* renders obvious an electronic circuit including a switching device, as explained for [1.a] and [1.e], *Hoff* discloses logical circuitry including a switching element either as “relatively simple electronic circuitry that merely activates an indication of whether or not the card is valid” or “computer type circuitry.” *Hoff*, 5:25-6:5. *Hoff*’s circuitry is divided into two parts:

radio receiver circuitry 31 and computer circuitry 32. *Id.*, 11:11-17, 14:14-25, Fig. 3.

Hoff's **circuitry 32**, which includes a “central processing computer 43” and “program memory 48” would include the logical circuitry (switching element):



Id., Fig. 4, 14:14-25; Lipoff, ¶145.

As explained for [1.a] and [1.e], a POSITA would have understood that *Ong*'s ECC, including the switching element, would be implemented as logical circuitry as expressly disclosed by *Hoff*. Lipoff, ¶146; §VI.A.2.

9. Claim 8: “wherein said electronic circuit comprises a microchip, and wherein said switching element is a series of instructions programmed onto said microchip”

As explained for [1.a], *Ong* discloses an electronic credit card including various electronic components (electronic circuit). §VI.A.3.b ([1.a]); *Ong*, 3:22-34. *Ong* further discloses a disablement means (switching element) “activatable remotely by an issuer of the electronic credit card or other authority” to “authoriz[e] use of the electronic credit card.” §VI.A.3.f ([1.d.ii]); *Ong*, 1:65-2:3.

A POSITA would have recognized that *Ong*’s circuitry, such as a storage means and processing means, would be included on a microchip because it was well known that the “smart cards” contemplated in *Ong* include microprocessor chips. Lipoff, ¶149 (citing *Purk*, 1:6-22). A POSITA would further have understood that the disablement means (“switching element”) is implemented as stored code (a series of instructions programmed onto said microchip) executed by a processor. *Id.*; *Ong*, 3:41-49 (indicating the “user verification means” and “means for generating the unique authorization code” are formed by the processor under control of firmware).

Hoff confirms that a POSITA would have understood *Ong* to at least suggest a microchip including the switching element. As explained for [1.a], *Hoff*’s logical circuitry that either “either resets the card’s ‘open to buy’ limit or it deactivates the card” (*Hoff*, 15:1-18) (switching element) includes “computer type circuitry such as the circuitry in what are generally termed Very Smart Credit Cards.” *Id.*, 5:25-6:5.

This logical circuitry includes a “central processing computer 43” and “program memory 48.” *Id.*, 14:18-21. A POSITA would have recognized that a “program memory” would include a series of instructions to be executed by the CPU and that these components would be included on a microchip. Lipoff, ¶150 (citing *McCrindle*, 13-14, 22-23, 71, 205). A POSITA would have further recognized that when implemented in *Ong*’s electronic card, these instructions would be implemented by a processor under control of firmware (i.e., instructions programmed onto said microchip). *Id.*; *Ong*, 3:41-49 (noting that *Ong*’s processor is “under the control of firmware”).

Because *Hoff* expressly discloses a microchip executing instructions, a POSITA would have understood *Ong*’s switching element to be implemented in the same way as no more than the combination of familiar elements according to known methods to yield predictable results. At the very least, implementing *Ong*’s switching element, as a microchip performing instructions, as disclosed by *Hoff*, would have been a suitable option. Lipoff, ¶151; *Qualcomm*, 21 F.4th at 800; *Par*, 773 F.3d at 1197-98.

10. Claim 9: “wherein said switching element comprises a logical circuit”

As explained for [1.e], *Ong* alone or in combination with *Hoff* teaches a switching element. §VI.A.3.g ([1.e]).

Hoff's switching element includes logical circuitry to update or deactivate a credit card. *Hoff*, 8:12-16. *Hoff*'s card includes “**logical circuitry 2** ... that receives and decodes signals from radio receiver 1 and which activates a display 4.” *Id.*, 8:12-16.

As explained for [1.e], it would have been obvious to implement *Hoff*'s switching element (comprising logical circuitry) in *Ong*'s system because it allows activation and deactivation using “relatively simple electronic circuitry” such as a gate array. *Id.*, 5:19, 6:18, 8:12-17; Lipoff, ¶154; §VI.A.2. At the very least, implementing *Ong*'s switching element as logical circuitry, as disclosed by *Hoff*, or implementing *Hoff*'s logical circuitry switching element in *Ong*'s ECC, would have been understood to be suitable options. Lipoff, ¶154 *Qualcomm*, 21 F.4th at 800; *Par*, 773 F.3d at 1197-98.

11. Independent Claim 11

a. [11.pre]: “A method for data exchange with a portable electronic device”

As explained for [1.pre], *Ong* discloses an “Electronic Credit Card” (portable electronic device) “that enables transmission/reception of data and/or digital information to/from a host computer via a Terminal Station (TS).” *Ong*, Abstract; Lipoff, ¶155.

- b. **[11.pre.ii]: “an electronic circuit capable of storing data therein, capable of processing data, and capable of data input and output”**

As explained for [1.a], *Ong* discloses or at least suggests [11.pre.ii], and *Ong-Hoff* renders obvious [11.pre.ii]. Lipoff, ¶156; §VI.A.3.b ([1.a]).

- c. **[11.pre.iii]: “a control device operatively linked to said circuit”**

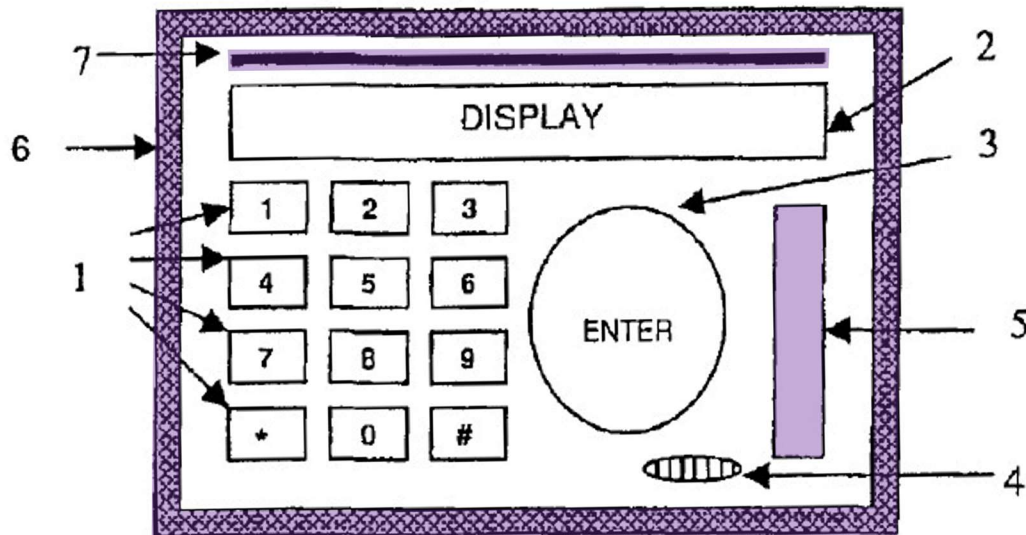
As explained for [1.b], *Ong* discloses or at least suggests [11.pre.iii]. Lipoff, ¶157; §VI.A.3.c ([1.b]).

- d. **[11.pre.iv]: “a user interface device operatively linked to said circuit”**

As explained for [1.c], *Ong* discloses or at least suggests [11.pre.iv], and *Ong-Hoff* renders obvious [11.pre.iv]. Lipoff, ¶158; §VI.A.3.c ([1.c]).

- e. **[11.pre.v]: “communication ports operatively linked to said circuit”**

As explained for [1.d.i], *Ong* discloses a “**communication means**,” which includes an “infra red [sic] communication device 5, a magnetic induction telecommunication 6, [and] radio frequency telecommunication device in the form of an antenna 7”:

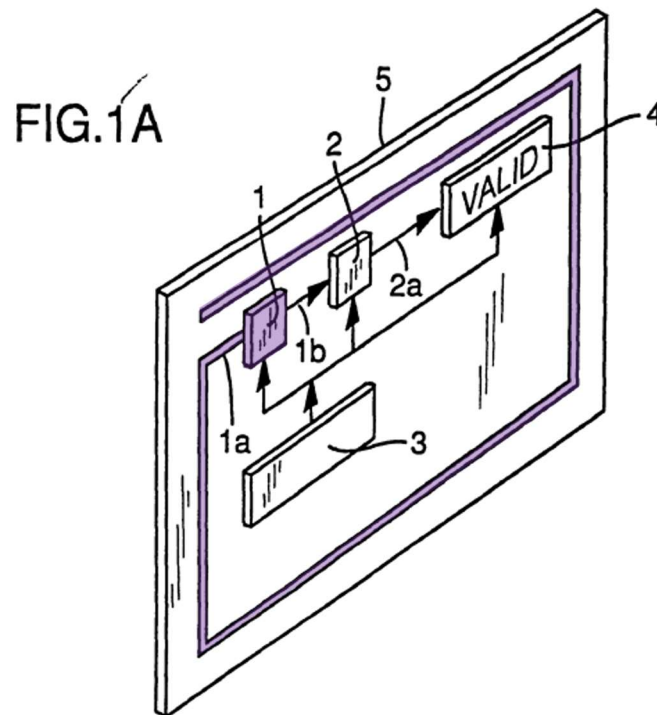


Ong, Fig. 10 (annotated), 2:34-40, 3:22-34, 4:30-39 (“transmitter receiver 5”); §VI.A.3.c ([1.d.i]).

A POSITA would have understood that *Ong*’s communication means are communication ports. Lipoff, ¶159-60. At least *Ong*’s infrared “transmitter receiver” has avenues for transmitting and receiving data from external devices. *Id.*, ¶160; *Ong*, 4:59-67 (the “[e]lectronic credit card may download information ... via one of its telecommunication modes”); *Fare*, 2:14-24 (describing a “wireless communication port for communicating with a self-service transaction terminal”), 7:34-44 (observing that both “Bluetooth wireless technology” (radio frequency telecommunication) and “infrared technology” (infrared communication) may be used). Moreover, each of the infrared device 5, magnetic induction device 6, and radio frequency telecommunication device 7 constitute separate communication ports. *Ong*, Fig. 10 (showing each of communication means 5, 6, and 7).

Ong further indicates this communication means is operatively linked to the electronic circuit and is used for exchanging data with an external data exchange device. Lipoff, ¶160; §VI.A.3.c ([1.d.i]). To the extent *Ong*'s disclosure of linking its data transceiver to an electronic circuit is disputed, as explained for [1.a], *Hoff* discloses an electronic circuit. A POSITA would have been motivated to link *Ong*'s data transceiver to an electronic circuit because *Hoff* discloses this exact configuration, which could be easily implemented in *Ong*. Lipoff, ¶160.

To the extent it is disputed that *Ong* discloses communication ports, *Ong-Hoff* discloses [11.pre.v]. *Id.*, ¶161. As also explained for [1.d.i], *Hoff* discloses “a **point to point radio receiver**” and an “**associated loop antenna 1a**,” which are “built to receive messages or signals transmitted from commercial radio stations as an FM subcarrier”:



Hoff, Fig. 1A (annotated), 8:1-11; *id.*, Fig. 4, 11:11-24, 12:1-3, 12:13-20, 15:1-18. *Hoff*'s radio receiver and antenna comprise a communication port because they are used to receive and/or transmit data. *Id.*, 8:1-11, 13:10-21, 17:4-6; Ex. 1001, 9:26-33.

A POSITA would have been motivated to add *Hoff*'s point-to-point communication device to supplement *Ong*'s communication ports to provide a dedicated receiver for updating a status of the card without interfering with other transmission functions as explained for claim 3. Lipoff, ¶162; §VI.A.2.

f. **[11.pre.vi]: “a switching element operatively linked to said electronic circuit and being in a default inactive state”**

The '333 patent uses the terms “data conveyance switching element” and “switching element” interchangeably. Lipoff, ¶163; Ex. 1001, 6:4-17. Limitation [11.pre.vi] is substantially similar to [1.e], except that it requires the switching element to be in a default inactive state. As explained for [1.e], *Ong* alone or in combination with *Hoff* discloses a “data conveyance switching element” (switching element). §VI.A.3.g ([1.e]). *Ong* and *Hoff* also each at least suggest the “switching element ... being in a default inactive state.”

For *Ong*, a POSITA would have found it obvious to include the disablement means of *Ong* in a default inactive state. Lipoff, ¶164. *Ong* indicates that an “authorised body could *re*-initialise the electronic credit card through a controlled management system,” indicating the card must first be initialized and is originally in a default uninitialized state. *Ong*, 4:46-58 (emphasis added). *Ong* indicates this controlled management system is the same system “used to issue the electronic credit card.” *Id.* A POSITA would have recognized the benefit of issuing *Ong*’s card in a default inactive state. Lipoff, ¶164.

For *Hoff*, *Hoff* explains “[t]he **logic in block 2** can include a timer which switches the display to VOID if an appropriate signal is not received via point to point receiver 1 within a preset interval.” *Hoff*, 8:22-9:1. In other words, as a default,

Hoff's logical circuitry resets to the VOID state unless the appropriate signal is received. A POSITA would have understood the card is "in a default inactive state." Lipoff, ¶165.

A POSITA would have been motivated to substitute and/or improve *Ong*'s disablement means with *Hoff*'s logical circuitry and means for activating/deactivating the device to "prevent a thief from inhibiting deactivation of the card by shielding it from radio communications." *Id.*, ¶166; *Hoff*, 6:1-18; §VI.A.2.

g. [11.pre.vii]: "power means for providing power to said portable electronic device"

As explained for [1.f], *Ong* at least suggests [11.pre.vii], and *Ong-Hoff* renders obvious [11.pre.vii]. Lipoff, ¶167; §VI.A.3.h ([1.f]).

h. [11.a]: "awaiting for an activation cue to be received at a predetermined one of said communication ports"

As explained for [1.e], *Ong* alone or in combination with *Hoff* teaches a circumstance when "an activation cue ha[s] been received by said data transceiver" and a circumstance "when no activation cue was received by said data transceiver." §VI.A.3.g ([1.e]).

Because *Ong* and *Hoff* address both circumstances when an activation cue is received and not received, a POSITA would have recognized that, prior to the

activation cue having been received, the device is “awaiting for an activation cue.” Lipoff, ¶168.

A POSITA would further have understood that the activation cue would be received on a predetermined channel associated with the source of the information because the device would be programmed to monitor a specific channel associated with a source of the activation cue. *Id.* Because *Hoff* describes deactivating the card “if an appropriate signal is not received *via point to point receiver 1* within a preset interval,” the card necessarily monitors a predetermined channel. *Hoff*, 8:22-25. As explained for [11.pre.vi], a POSITA would have been motivated to substitute and/or improve *Ong*’s disablement means with *Hoff*’s logical circuitry, which would include the processing of the activation cue. Lipoff, ¶169; §§VI.A.11.f ([11.pre.vi]), VI.A.2.

- i. **[11.b]: “if an activation cue is received at one of said communication ports, changing the state of said switching element from its default inactive state to an activated state”**

Ong discloses or at least suggests [11.b], and *Ong-Hoff* renders obvious [11.b]. Lipoff, ¶170.

As explained for [11.a], *Ong* and *Hoff* each disclose that an activation cue is received at one of said communication ports.

For *Ong*, as explained for [1.e] (switching element with both an inactive and activated state) and [11.pre.vi] (default inactive state), *Ong* discloses that when the disablement means has been set such that the card is in an inactive state, a subsequent signal is received to “re-initialise the electronic credit card” (*Ong*, 4:46 58) (switch from an inactive state to an activated state). §VI.A.3.g ([1.e]). As explained for [11.pre.vi], *Ong* indicates that an “authorised body could *re*-initialise the electronic credit card through a controlled management system,” indicating the card must first be initialized, meaning it is originally in a default uninitialized state. *Ong*, 4:46-58 (emphasis added). *Ong*’s card would be in the default inactive state until a signal is received to initialize or “re-initialise the electronic credit card,” in which it would change to an activated state. Lipoff, ¶171.

For *Hoff*, as explained for [1.e] (switching element with both an inactive and activated state) and [11.pre.vi] (default inactive state), *Hoff* explains “[t]he logic in block 2 can include a timer which switches the display to VOID if an appropriate signal [(i.e., the “activation cue”)] is not received via point to point receiver 1 within a preset interval.” *Id.*, 8:22-9:1. The display would otherwise display the word VALID. *Id.* In other words, as a default, *Hoff*’s logical circuitry resets to the VOID (default) state unless the appropriate signal is received. As further explained for [1.e] and [11.pre.vi], *Hoff* also discloses an “open to buy” status that can be updated automatically, enabling use of the card. When *Hoff*’s logical circuitry is in the

inactive state, an “open to buy” signal (activation cue) would cause it to enter an activated state. *Hoff*, 2:20-3:4, 12:21-26. In either of *Hoff*’s examples, the signal (i.e., the “activation cue”) “chang[es] the state of said switching element from its default inactive state to an activated state,” as recited in [1.e]. Lipoff, ¶172. As explained for [11.pre.vi], a POSITA would have been motivated to substitute and/or improve *Ong*’s disablement means with *Hoff*’s logical circuitry, including the processing of the activation cue. *Id.*; §§VI.A.11.f ([11.pre.vi]), VI.A.2.

j. [11.c]: “selectively triggering said control device to issue an invariable activation command”

As explained for [1.b], *Ong* discloses or at least suggests [11.c], and *Ong-Hoff* renders obvious [11.c]. Lipoff, ¶173; §VI.A.3.c ([1.b]).

k. [11.d]: “if said switching element is in its activated state, initiating a data exchange with an external data exchange device through at least one of said communication ports”

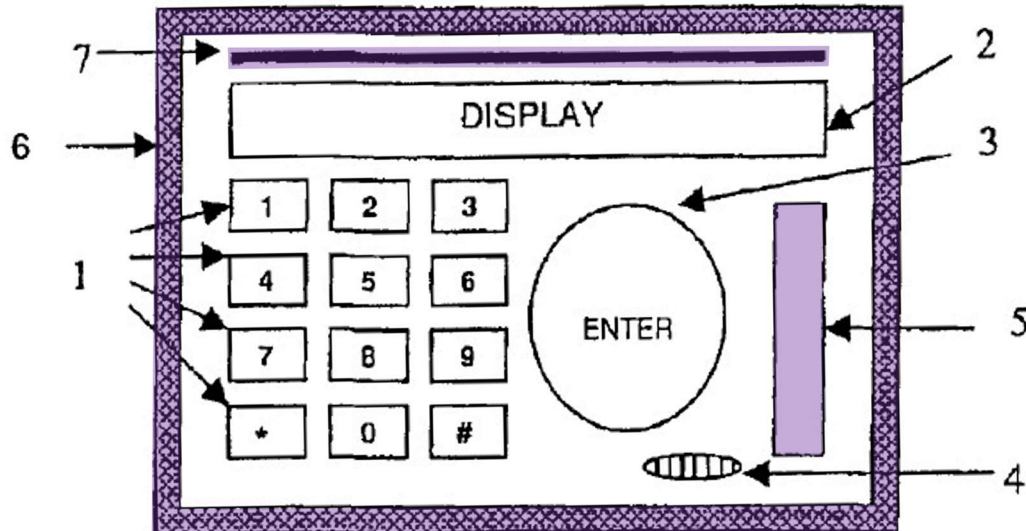
As explained for [1.g.i], *Ong* discloses or at least suggests [11.d], and *Ong-Hoff* renders obvious [11.d]. Lipoff, ¶174; §VI.A.3.e ([1.d.i]).

l. [11.e]: “if said switching element is in its inactive state, conveying data from said electronic circuit to said user interface device for communicating information to the portable electronic device holder”

As explained for [1.g.ii], *Ong* discloses or at least suggests [11.e], and *Ong-Hoff* renders obvious [11.e]. Lipoff, ¶175; §VI.A.3.f ([1.d.ii]).

12. Claim 12: “wherein said activation cue is received at one of said communication ports distinct from another one of said communication ports used for data exchange with the external data exchange device”

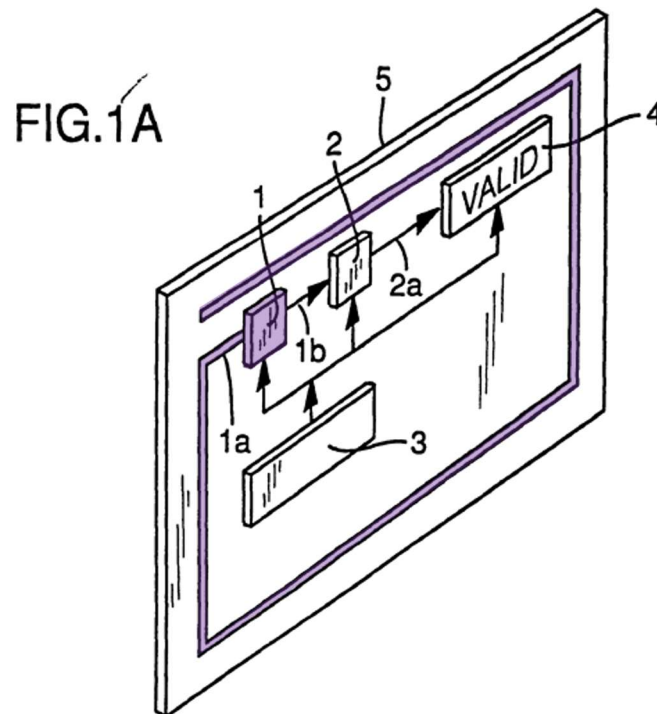
As explained for [11.pre.v], *Ong* discloses multiple communication ports. *Ong* discloses various communication means (ports) like an “infra red [sic] communication device 5, a magnetic induction telecommunication device 6, [and] radio frequency telecommunication device ... 7”:



Ong, Fig. 10 (annotated), 2:34-40, 3:22-34, 4:30-39; 4:59-67. Because *Ong* discloses at least three different communication means (ports), a POSITA would have understood that *Ong* at least suggests using different communication means (ports) for different types of data transmissions and receptions. Lipoff, ¶176. Therefore, it would have been obvious to a POSITA to use different communication

means for different functions, such as receiving data, transmitting data, and receiving an activation cue. *Id.*

Hoff also discloses “a **point to point radio receiver** which has an associated loop antenna 1a”:



Hoff, Fig. 1A (annotated), 8:1-11; *id.*, Fig. 4, 11:11-24, 12:1-3, 12:13-20, 15:1-18. *Hoff* explicitly states its radio transceiver and antenna (communication port) is used to update the open-to-by status of the card. *Id.*, 6:7-12, 15:1-18. It would have been obvious to incorporate the radio receiver of *Hoff* into the ECC of *Ong* to provide a dedicated receiver for updating a status of the card without interfering with other functions for the same reasons explained for claim 3 with respect to the cue receiver. *Lipoff*, ¶177.

13. **Claim 13: “wherein the additional following step occurs after selectively triggering said control device if said switching element is in said activated state: conveying data from said electronic circuit to said user interface device for communicating information to the portable electronic device holder”**

Ong alone or in view of *Hoff* renders obvious claim 13. Lipoff, ¶178-82.

Claim 13 is similar to [1.g.i] (activated state) and [1.g.ii] (conveying data to the user interface), except that it requires conveying data to the user interface (either alternatively or in addition to completing a financial transaction) when the switching element is in the *activated state*.

As explained for [1.g.i], *Ong* alone or in combination with *Hoff* teaches that if the switching element is in the activated state, a data exchange will be initiated with an external data exchange device. As explained for [1.g.ii], *Ong* alone or in combination with *Hoff* teaches that if the switching element is in the inactive state, data is conveyed to the user interface device. A POSITA would have understood that *Ong* alone or in view of *Hoff* also teaches conveying data to the user interface device *when the switching element is in an activated state* to convey that the financial transaction can and/or has been completed successfully.

In *Ong*, upon the user being verified (selectively triggering the control device), a “unique authorisation code” is generated and “provided ... to the communication means ... to facilitate an electronic funds transfer transaction.” *Ong*,

3:51-59. *Ong* discloses a display for providing visual information. A POSITA would have understood that this visual information would include a message confirming the transaction was performed, a remaining balance, or the like. Lipoff, ¶180. It was understood at the time of the invention for transaction cards to present this form of visual information. *Id.* (citing *Teicher*, 3:24-25, 9:11-15).

Hoff's "display 4 can either display the words VALID or VOID" whether the card is in an activated or inactive state. *Id.*, 8:18-9:1, 14:3-13 (the card "put[s] an appropriate note on the display if the 'open to buy' status has not been updated"). *Hoff* further discloses a keyboard for entry of a PIN, which utilizes display 4. *Hoff*, 10:6-13, 4:16-5:7; *Shogase*, 36, 37, 38. A POSITA would have understood that upon entry of the PIN, when the user is verified, if the card is in an "open to buy" (activated) state, data would be conveyed to the update the display to indicate this status. Lipoff, ¶181.

As combined, a POSITA would have understood that *Ong*'s display would display "VALID" in response to a successful transaction (when the switching element is in the activated state) or an alternative message confirming the transaction was performed, a remaining balance, or the like (as explained for [1.g.ii]) for transactions that could not be performed. *Id.*, ¶182. A POSITA would have been motivated to substitute and/or improve *Ong*'s disablement means with *Hoff*'s logical circuitry such that the cards "open to buy" limits can be updated remotely. *Hoff*,

6:1-18; §VI.A.2. And doing so would include conveying data to the display if the card is in an activated state. Lipoff, ¶182.

B. Ground 2: *Ong*, *Hoff*, and *Palmer* Render Obvious Claim 5

Claim 5 recites “said biometric parameter detector is a fingerprint scanner capable of obtaining a fingerprint scan” and “said control device is triggered when the fingerprint scan matches a fingerprint image pre-saved in said electronic circuit.” Ex. 1001, 10:35-40. As explained for claim 4, *Ong* discloses a user identification means including a fingerprint reader and a “fingerprint verifying means for verifying the identity of the user from the user’s fingerprint.” §VI.A.6. A POSITA would have recognized that verifying the identity of the user from the user’s fingerprint at least suggests comparing the fingerprint of the user with a stored or pre-saved fingerprint image. Lipoff, ¶183. Additionally, *Ong* in view of *Hoff* and *Palmer* renders it obvious.

1. Overview of the Combination

a. *Palmer*

Palmer is analogous to the ’333 patent because they are in the same field of endeavor: electronic credit cards. *Id.*, ¶64; *Bigio*, 381 F.3d at 1325.

Palmer’s device, an electronic credit card, performs contactless transactions securely through biometric identity validation. *Palmer*, Abstract, 1:18-39, 1:32-45, 2:18-31, 4:12-63, 11:45-12:28, Fig. 4. It includes a biometric sensor “designed to

sense some physical attribute of a person” such as a fingerprint, a voice print, or a retinal print (*id.*, 2:62-3:8) and includes a Random Access Memory (RAM) for “temporarily storing a current fingerprint analog detected by the fingerprint sensor” and a non-volatile memory used to “store and retrieve one or more fingerprint template analogs that are used for comparison against the current fingerprint analog” (*id.*, 4:24-34). It also includes “program and temporary memory” enabling the device to “perform a comparison between the current fingerprint analog and a template fingerprint analog.” *Id.*, 4:35-49; Lipoff, ¶64.

b. The Combination of *Ong*, *Hoff*, and *Palmer*

Implementing *Ong*’s electronic credit card using the logical circuitry disclosed in *Hoff* would have been obvious. Lipoff, ¶184; §VI.A.1.c. *Ong* further discloses an electronic credit card with “fingerprint scanner 10 forming part of the user verification means” (*Ong*, Fig. 11, 2:23-33, 4:35-39), suggesting claim 5. *Id.*, 6:37-40 (“wherein the user verifier comprises a fingerprint reader for reading a finger print and a fingerprint verifying means for verifying the identity of the user”). *Ong*, however, does not expressly describe matching a fingerprint scan to a pre-saved fingerprint image. *Palmer* does.

2. Motivation to Combine

As explained for Ground 1, a POSITA would have been motivated to combine *Ong* and *Hoff*. §VI.A.2; Lipoff, ¶185.

A POSITA would have also been motivated to combine *Palmer* with *Ong* and *Hoff*. Lipoff, ¶186. Like *Ong*, *Palmer* discloses an electronic credit card allowing secure wireless financial transactions. *Ong*, Abstract, 1:12-14, 1:26-46, 5:27-30, 7:58-61; *Palmer*, Abstract, 1:32-45, 2:18-31, 4:12-23. Both include biometric sensors, including fingerprint or retina scanners. *Ong*, 2:26-33; *Palmer*, 4:12-23. Like *Ong*, *Palmer* discloses improvements over existing smart cards. *Palmer*, 1:15-39; 4:12-23. The combination of *Ong* and *Palmer* reflects the combination of familiar elements according to known methods to yield predictable results. Lipoff, ¶186.

A POSITA would have been motivated to combine *Ong*, *Hoff*, and *Palmer* by substituting or supplementing *Ong*'s programming and/or component to enhance the security of the electronic transaction. Lipoff, ¶187. *Palmer* explicitly describes capturing and storing a trusted copy or “template” of an analog representing the user's biometric attribute. *Palmer*, 2:62-3:8. Then, “[a]nalog later sensed by the biometric sensor 102 may then be compared against the template analog.” *Id.* *Palmer* allows for “effecting secure physical and commercial transactions in a contactless manner using biometric identity validation.” *Id.*, 1:32-39.

3. **Claim 5: “wherein said biometric parameter detector is a fingerprint scanner capable of obtaining a fingerprint scan, and whereby said control device is triggered when the**

fingerprint scan matches a fingerprint image pre-saved in said electronic circuit”

Ong discloses a “**fingerprint scanner 10** forming part of the user verification means.” *Ong*, 4:35-39. Once the user’s identity has been validated by the user verification means (control device) is triggered, a unique authorization code is generated. *Id.*, 3:51-59. A POSITA would have understood verifying the user from the user’s fingerprint at least suggests comparing the fingerprint of the user with a stored or pre-saved fingerprint image. Lipoff, ¶188, §VI.B.3.

Palmer describes “an apparatus and method for effecting secure transactions in a contactless manner using biometric identity validation.” *Palmer*, Abstract. *Palmer* describes an authentication process in which a “detected fingerprint ... may be compared to a template in the memory of the device 100.” *Id.*, 3:56-4:11; *id.*, 3:9-25 (describing determining “a match between the template analog and the analog captured by the biometric sensor 102.”), 4:64-5:9 (“The points are captured and used by the ASIC 406 to determine whether the detected fingerprint analog matches a fingerprint template analog that is stored in memory.”), 11:10-23 (“[T]he user actuates the biometric sensor 102 ... to effect a comparative match with his/her previously registered fingerprint securely stored in the memory of the card”).

A POSITA would have been motivated to store a known template of the user's fingerprint in *Ong*'s memory, taught by *Palmer*, to provide robust biometric identification techniques. Lipoff, ¶189-90; §VI.B.2.

C. Ground 3: *Ong*, *Hoff*, and *Rolf* Render Obvious Claim 10

1. Overview of the Combination

a. *Rolf*

Rolf is analogous to the '333 patent because they are in the same field of endeavor: electronic credit cards. *Id.*, ¶65; *Bigio*, 381 F.3d at 1325.

Rolf's system performs financial transactions via a wireless communications link. *Rolf*, 1:16-26. It includes a “wireless communication device,” which “communicates with [a] point of sale terminal either directly ... or through a central processing facility ... for processing of a financial sales transaction.” *Id.*, 3:13-25. By including multiple transceivers, this central processing facility is “adapted to receive a wide variety of communication links simultaneously, and will have a number of ‘lines’ or ‘channels’ upon which to communicate.” *Id.*, 17:24-57; Lipoff, ¶65.

b. The Combination of *Ong*, *Hoff*, and *Rolf*

Ong alone or in combination with *Hoff* at least suggests every feature of independent claim 10. Lipoff, ¶196-207. *Rolf* provides additional detail on “a first data transceiver and a cue emitter.” *Id.*, ¶197.

2. Motivation to Combine

As explained for Ground 1, a POSITA would have been motivated to combine *Ong* and *Hoff*. §VI.A.2; Lipoff, ¶193.

A POSITA would have also been motivated to combine *Rolf* with *Ong* and *Hoff*. *Id.* *Rolf*, like *Ong* and *Hoff*, provides a system for performing financial transactions over wireless communications links. *Rolf*, 1:16-26. *Rolf* envisions completing transactions over a communications network through a handheld electronic device. *Id.* Like *Ong*, *Rolf* discloses communicating with a host computer (i.e., the “central processing facility”) through an intermediate terminal. *Id.*, 3:13-25. *Ong* confirms its network would be compatible with similar handheld electronic devices. *Ong*, 5:16-19 (“The electronic credit card may be incorporated into ... a mobile phone.”); Lipoff, ¶193. The combination of *Ong*, *Hoff*, and *Rolf* reflects the combination of familiar elements according to known methods to yield predictable results. *Id.*, ¶193.

A POSITA would have been motivated to combine *Ong-Hoff* and *Rolf* by including multiple communication links in *Ong*’s host computer, to increase the bandwidth. *Id.*, ¶194. *Rolf* explains that, preferably, “a large number of ... users will use, and in fact simultaneously use, the system.” *Rolf*, 17:24-57. *Rolf*’s central processing facility is “adapted to receive a wide variety of communication links simultaneously” by including multiple transmitters and receivers. *Id.* A POSITA

would have been motivated to incorporate *Rolf*'s multiple communication links into *Ong-Hoff* to allow for a greater volume of transactions. Lipoff, ¶ 194.

3. Independent Claim 10

a. [10.pre]: “A data exchange system”

Ong discloses an “Electronic Credit Card” “that enables transmission/reception of data and/or digital information to/from a host computer via a Terminal Station (TS).” *Ong*, Abstract, Figs. 2, 3; Lipoff, ¶195. *Ong*'s ECC also communicates a “unique authorisation code” and “the user's account details” “to a transaction station to facilitate an electronic funds transfer.” *Ong*, 3:50-59. A POSITA would have understood *Ong*'s host computer and its terminal and transaction stations to be data exchange devices, and the system as a whole to be a “data exchange system.” Lipoff, ¶195; *Ong*, 7:15-39 (reciting an “electronic fund transfer system”).

a. [10.a]: “a data exchange device comprising a first electronic circuit, a first data transceiver and a cue emitter”

As explained for [1.g.i], *Ong* discloses a data exchange device. *Ong*'s ECC “enables transmission/reception of data and/or digital information to/from a host computer via a Terminal Station (TS)” (data exchange devices). *Ong*, Abstract.

A POSITA would have understood the host computer and the terminal station are data exchange devices because they exchange data with the card. Lipoff, ¶196.

Because *Ong*'s host computer and terminal station are configured to transmit to and receive data from the card, a POSITA would have understood them to include communication means, like *Ong*'s card contains different communication means (as explained for [1.d.1]). A POSITA also would have recognized that *Ong*'s host computer and terminal station comprise an electronic circuit because they are configured to communicate with each other and the card to conduct a transaction. *Id.*; *Ong*, 3:51-62.

To the extent *Ong* does not expressly disclose that its data exchange device includes a first electronic circuit, a first data transceiver, and a cue emitter, *Rolf* does. *Rolf*'s system “perform[s] financial transactions, such as sales transactions at a point of sale terminal, via a wireless communications link.” *Rolf*, 1:15-26. It includes “a wireless communications device 12, a terminal, such as a transaction or point of sale terminal 14, and a central processing facility 16.” *Id.*, 8:46-61. The “central processing facility”—equivalent to *Ong*'s host computer (data exchange device)—“is adapted to receive a wide variety of communication links simultaneously, and will have a number of ‘lines’ or ‘channels’ upon which to communicate.” *Id.*, 17:24-57. The central processing facility includes a **first transceiver 90** (first data transceiver) and at least one **additional transmitter receiver 90** (cue emitter):

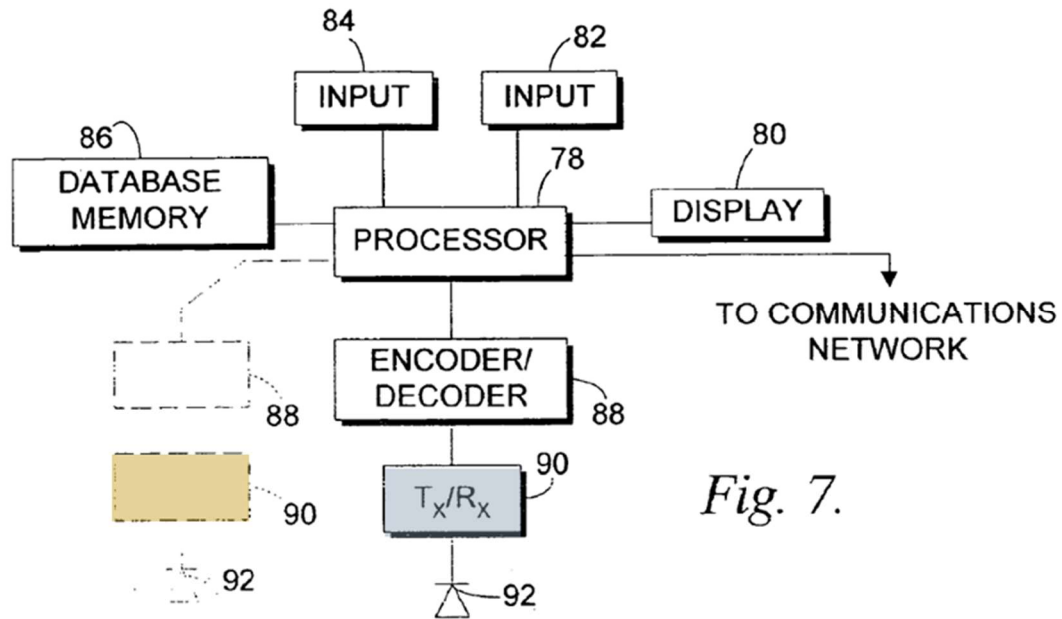


Fig. 7.

Id., Fig. 7 (annotated). *Rolf*'s first transceiver 90 is a “first data transceiver” because it is capable of transmitting and receiving data. *Id.*, 15:6-56, 17:24-57. *Rolf*'s additional transceiver 90 is a “cue emitter” because it is capable of transmitting data, including an activation cue. Lipoff, ¶197. *Rolf*'s central processing facility (external data exchange device) further discloses “an electronic circuit” because it includes various electronic components (including transceiver 90) “[c]onnected to processor 78.” *Rolf*, 15:6-56, 17:24-57; Lipoff, ¶197.

A POSITA would have understood *Ong*'s terminal station and/or host computer (external data exchange device) to have similar components because it is performing similar functions to the central processing facility in *Rolf*. A POSITA would have been motivated to incorporate *Rolf*'s central processing facility as a

suitable alternative for *Ong*'s terminal station because it accomplishes the desired goal of communicating data with the card. Lipoff, ¶198.

b. [10.b]: “a portable electronic device, comprising:

As explained for [1.pre], *Ong* discloses [10.b], and *Ong-Hoff* renders obvious [10.b]. Lipoff, ¶199; §VI.A.3.a ([1.pre]).

c. [10.c]: “a second electronic circuit capable of storing data therein, capable of processing data, and capable of data input and output”

As explained for [1.a], *Ong* discloses or at least suggests [10.c], and *Ong-Hoff* renders obvious [10.c]. Lipoff, ¶200; §VI.A.3.b ([1.a]).

d. [10.d]: “a control device operatively linked to said second electronic circuit, with an invariable activation command being issued when said control device is selectively triggered”

As explained for [1.b], *Ong* discloses or at least suggests [10.d] , and *Ong-Hoff* renders obvious [10.d]. Lipoff, ¶201; §VI.A.3.c ([1.b]).

e. [10.e]: “a user interface device operatively linked to said second electronic circuit”

As explained for [1.c], *Ong* discloses or at least suggests [10.e], and *Ong-Hoff* renders obvious [10.e]. Lipoff, ¶202; §VI.A.3.d ([1.c]).

f. [10.f]: “a second data transceiver operatively linked to said second electronic circuit”

As explained for [1.d.i] and [1.d.ii], *Ong* discloses or at least suggests [10.f], and *Ong-Hoff* renders obvious [10.f]. Lipoff, ¶203; §§VI.A.3.e ([1.d.i]), VI.A.3.f ([1.d.ii]).

g. [10.g]: “a data conveyance switching element operatively linked to said second electronic circuit, and switching element being in an activated state upon an activation cue having been received by said second data transceiver, and being in an inactive state when no activation cue was received by said second data transceiver”

As explained for [1.e], *Ong* discloses or at least suggests [10.g], and *Ong-Hoff* renders obvious [10.g]. Lipoff, ¶204; §VI.A.3.g ([1.e]).

h. [10.h]: “power means for providing power to said portable electronic device”

As explained for [1.f], *Ong* at least suggests [10.h], and *Ong-Hoff* renders obvious [10.h]. Lipoff, ¶205; §VI.A.3.h ([1.f]).

i. [10.i.i]: “wherein upon said control device being selectively triggered to issue said invariable activation command: if said switching element is in its activated state, a data exchange will occur between said first data transceiver and said second data transceiver, thereby exchanging data between said data exchange device and said portable electronic device”

As explained for [1.g.i], *Ong* discloses or at least suggests [10.i.i], and *Ong-Hoff* renders obvious [10.i.i]. Lipoff, ¶206; §VI.A.3.i ([1.g.i]).

- j. [10.i.ii]: “wherein upon said control device being selectively triggered to issue said invariable activation command: ... if said switching element is in its inactive state, data is forwarded to said user interface device for communicating information to the portable electronic device holder”

As explained for [1.g.ii], *Ong* discloses or at least suggests [10.i.ii], and *Ong-Hoff* renders obvious [10.i.ii]. Lipoff, ¶207; §VI.A.3.j ([1.g.ii]).

II. The Board Should Institute Review

A. 35 U.S.C. §325(d) Denial Is Improper

The factors in *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 at 17-18 (P.T.A.B. Dec. 15, 2017), favor institution. *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 at 8-11 (P.T.A.B. Feb. 13, 2020) (precedential).

Advanced Bionics, step 1, and *Becton, Dickinson* factors (a), (b), and (d) favor institution because none of the references in this Petition were before the Office during prosecution. Ex. 1002; ’333 patent. The references are also not cumulative of the prosecution prior art because cited art teaches and renders obvious all challenged claims.

B. 35 U.S.C. §314(a) Does Not Warrant Discretionary Denial

Apple Inc. v. Fintiv, Inc., IPR2020-00019, Paper 11 at 5-6 (P.T.A.B. Mar. 20, 2020) (precedential), and the Office’s interim guidelines dated

June 21, 2022 (“Guidance Memo”), do not warrant discretionarily denying institution because there is no active litigation against Petitioner.

The previous district court litigation against Petitioner was voluntarily dismissed without prejudice on December 15, 2023, mere months after Patent Owner filed its complaint on September 15, 2023. Ex. 1015. The *Fintiv* factors favor institution because there is no case to stay or trial date (factors 1 and 2), minimal investment by the parties (factor 3), no overlapping issues (factor 4), and factor 5 is at worst neutral.

III. Mandatory Notices

A. Real Party-in-Interest

The Petitioner and real party-in-interest is Google LLC.⁶

B. Related Matters

DH International has asserted the ’333 patent in the following litigations:

- *DH International Ltd. v. Google LLC*, No. 1:23-cv-01116 (W.D. Tex., Sept. 15, 2023) (voluntarily dismissed Dec. 15, 2023); and

⁶ Google LLC is a subsidiary of XXVI Holdings Inc., which is a subsidiary of Alphabet Inc. XXVI Holdings Inc. and Alphabet Inc. are not real parties-in-interest to this proceeding.

- *DH International Ltd. v. Apple Inc.*, No. 1:23-cv-01114 (W.D. Tex., Sept. 15, 2023).⁷

U.S. Patent No. 9,022,294 (the “’294 patent”) is a continuation-in-part of and claims priority to the ’333 patent. Petitioner has contemporaneously filed an IPR petition directed to the ’294 patent.

⁷G Holdings Ltd. previously asserted the ’333 patent in *G Holdings Ltd., v. Samsung Electronics Co., Ltd.*, No. 2:20-cv-342-JRG (E.D. Tex., Oct. 29, 2020) (voluntarily dismissed Aug. 19, 2021).

B. Lead and Back-Up Counsel, and Service Information

Lead Counsel	Back-up Counsel
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Petitioner consents to electronic service at the following email address:

google-dhinternational-iprs@finnegan.com.

IV. Grounds for Standing

Petitioners certify the '333 patent is available for *inter partes* review and that
Petitioners are not barred or estopped.

V. Conclusion

Petitioner requests institution of *inter partes* review and cancellation of the
challenged claims.

Respectfully submitted,

Dated: September 11, 2024

By: /Erika H. Arner/
Erika H. Arner (Reg. No. 57,540)

CLAIM APPENDIX

- [1.pre] 1. A portable electronic device, comprising:
- [1.a] an electronic circuit capable of storing data therein, capable of processing data, and capable of data input and output,
- [1.b] a control device operatively linked to said electronic circuit, with an invariable activation command being issued when said control device is selectively triggered;
- [1.c] a user interface device operatively linked to said electronic circuit;
- [1.d.i] a data transceiver operatively linked to said electronic circuit, said data transceiver being for exchanging data between said electronic circuit and an external data exchange device,
- [1.d.ii] and for receiving a selectively emitted activation cue from a source external to said portable electronic device;
- [1.e] a data conveyance switching element operatively linked to said electronic circuit, said switching element being in an activated state upon an activation cue having been received by said data transceiver, and being in an inactive

state when no activation cue was received by said data transceiver; and

[1.f] power means for providing power to said portable electronic device;

[1.g.i] wherein upon said control device being selectively triggered to issue and invariable activation command:

if said switching element is in said activated state, a data exchange will be initiated through the instrumentality of said data transceiver for exchanging data between said electronic circuit and an external data exchange device;

[1.g.ii] if said switching element is in said inactive state, data will be conveyed from said electronic circuit to said user interface device for communicating information to the portable electronic device holder.

[2] 2. A portable electronic device as defined in claim 1, wherein said user interface device is a display screen.

[3] 3. A portable electronic device as defined in claim 1, wherein said data transceiver comprises a data transmitter, a data receiver distinct

from said data transmitter, and a cue receiver distinct from said data receiver.

[4] 4. A portable electronic device as defined in claim 1, wherein said control device is a biometric parameter detector.

[5a] 5. A portable electronic device as defined in claim 4, wherein said biometric parameter detector is a fingerprint scanner capable of obtaining a fingerprint scan, and

[5b] whereby said control device is triggered when the fingerprint scan matches a fingerprint image pre-saved in said electronic circuit.

[6] 6. A portable electronic device as defined in claim 1, wherein said control device is a manually activated button, and whereby said control device is triggered when the button is pressed.

[7] 7. A portable electronic device as defined in claim 1, wherein said electronic circuit comprises said switching element.

[8] 8. A portable electronic device as defined in claim 7, wherein said electronic circuit comprises a microchip, and wherein said switching element is a series of instructions programmed onto said microchip.

- [9] 9. A portable electronic device as defined in claim 1, wherein said switching element comprises a logical circuit.
- [10.pre] 10. A data exchange system comprising:
- [10.a] a data exchange device comprising a first electronic circuit, a first data transceiver and a cue emitter; and
- [10.b] a portable electronic device, comprising:
- [10.c] a second electronic circuit capable of storing data therein, capable of processing data, and capable of data input and output;
- [10.d] a control device operatively linked to said second electronic circuit, with an invariable activation command being issued when said control device is selectively triggered;
- [10.e] a user interface device operatively linked to said second electronic circuit;
- [10.f] a second data transceiver operatively linked to said second electronic circuit;
- [10.g] a data conveyance switching element operatively linked to said second electronic circuit, and

switching element being in an activated state upon an activation cue having been received by said second data transceiver, and being in an inactive state when no activation cue was received by said second data transceiver; and

[10.h] power means for providing power to said portable electronic device;

[10.i.i] wherein upon said control device being selectively triggered to issue said invariable activation command:

if said switching element is in its activated state, a data exchange will occur between said first data transceiver and said second data transceiver, thereby exchanging data between said data exchange device and said portable electronic device;

[10.i.ii] if said switching element is in its inactive state, data is forwarded to said user interface device for communicating information to the portable electronic device holder.

- [11.pre.i]** 11. A method for data exchange with a portable electronic device of the type comprising;
- [11.pre.ii]** an electronic circuit capable of storing data therein, capable of processing data, and capable of data input and output,
- [11.pre.iii]** a control device operatively linked to said circuit,
- [11.pre.iv]** a user interface device operatively linked to said circuit,
- [11.pre.v]** communication ports operatively linked to said circuit,
- [11.pre.vi]** a switching element operatively linked to said electronic circuit and being in a default inactive state, and
- [11.pre.vii]** power means for providing power to said portable electronic device, said method comprising the steps of:
- [11.a]** awaiting for an activation cue to be received at a predetermined one of said communication ports;
- [11.b]** if an activation cue is received at one of said communication ports, changing the state of said switching element from its default inactive state to an activated state; and
- [11.c]** selectively triggering said control device to issue an invariable activation command, whereby said method will further comprise one of the two following steps:

[11.d] if said switching element is in its activated state, initiating a data exchange with an external data exchange device through at least one of said communication ports; and

[11.e] if said switching element is in its inactive state, conveying data from said electronic circuit to said user interface device for communicating information to the portable electronic device holder.

[12] 12. A method as defined in claim 11, wherein said activation cue is received at one of said communication ports distinct from another one of said communication ports used for data exchange with the external data exchange device.

[13] 13. A method as defined in claim 11, wherein the additional following step occurs after selectively triggering said control device if said switching element is in said activated state:

conveying data from said electronic circuit to said user interface device for communicating information to the portable electronic device holder.

CERTIFICATE OF COMPLIANCE

The undersigned hereby certifies that the foregoing **Petition for *Inter Partes* Review** contains 13,874 words, excluding those portions identified in 37 C.F.R. § 42.24(a), as measured by the word-processing system used to prepare this paper.

Dated: September 11, 2024

/Erika H. Arner/

Erika H. Arner (Reg. No. 57,540)

Lead Counsel

CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing Petition for *Inter Partes* Review of U.S. Patent No. 7,628,333, the associated Power of Attorney, and Exhibits 1001 through 1015 were served on September 11, 2024 by FedEx Priority Overnight® on the correspondence address of record indicated in the Patent Office's Patent Center system for U.S. Patent No. 7,628,333.

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