

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

DECLARATION OF STUART J. LIPOFF

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	SUMMARY OF OPINIONS	2
III.	QUALIFICATIONS AND BACKGROUND	2
IV.	MATERIALS CONSIDERED	7
V.	LEGAL STANDARDS	8
A.	Level of Ordinary Skill in the Art	9
B.	Claim Construction	10
C.	Anticipation	11
D.	Obviousness	11
VI.	LEVEL OF ORDINARY SKILL IN THE ART	16
VII.	TECHNOLOGY BACKGROUND AND THE STATE OF THE PRIOR ART	17
VIII.	OVERVIEW OF THE '333 patent	18
A.	The Claims and Specification	18
B.	Prosecution History	20
IX.	CLAIM CONSTRUCTION	20
A.	“power means”	21
B.	“switching element” and “data conveyance switching element”	21
C.	“control device”	22
D.	“data exchange device” and “external data exchange device”	23
X.	OVERVIEW OF THE PRIOR ART	23
A.	Ong	23

B.	Hoff.....	25
C.	Palmer.....	26
D.	Rolf.....	27
XI.	CLAIMS 1-13 ARE UNPATENTABLE	28
A.	Ground 1: The Combination of <i>Ong</i> and <i>Hoff</i> Renders Obvious Claims 1-4, 6-9, and 11-13	28
1.	Rationale for Combining <i>Ong</i> and <i>Hoff</i>	28
2.	Independent Claim 1	32
a.	[1.pre]: “A portable electronic device”	32
b.	[1.a]: “an electronic circuit capable of storing data therein, capable of processing data, and capable of data input and output”	33
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”	36
d.	[1.c]: “a user interface device operatively linked to said electronic circuit”	43
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”	46
f.	[1.d.ii]: “said data transceiver being ... for receiving a selectively emitted activation cue from a source external to said portable electronic device”	50
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”	53
h.	[1.f]: “power means for providing power to said portable electronic device”	58
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”	60
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”	63
3.	Claim 2: “wherein said user interface device is a display screen”	66
4.	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”	66
5.	Claim 4: “wherein said control device is a biometric parameter detector”	69
6.	Claim 6: “wherein said control device is a manually activated button, and whereby said control device is triggered when the button is pressed”	71

7.	Claim 7: “wherein said electronic circuit comprises said switching element”	72
8.	Claim 8: “wherein said electronic circuit comprises a microchip, and wherein said switching element is a series of instructions programmed onto said microchip”	74
9.	Claim 9: “wherein said switching element comprises a logical circuit”	76
10.	Independent Claim 11	76
a.	[11.pre]: “A method for data exchange with a portable electronic device”	76
b.	[11.pre.ii]: “an electronic circuit capable of storing data therein, capable of processing data, and capable of data input and output”	77
c.	[11.pre.iii]: “a control device operatively linked to said circuit”	77
d.	[11.pre.iv]: “a user interface device operatively linked to said circuit”	77
e.	[11.pre.v]: “communication ports operatively linked to said circuit”	77
f.	[11.pre.vi]: “a switching element operatively linked to said electronic circuit and being in a default inactive state”	81
g.	[11.pre.vii]: “power means for providing power to said portable electronic device”	82
h.	[11.a]: “awaiting for an activation cue to be received at a predetermined one of said communication ports”	82
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”	83
j.	[11.c]: “selectively triggering said control device to issue an invariable activation command”	85
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”	85
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”	86
11.	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”	86
12.	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”	88
B.	Ground 2: The Combination of <i>Ong</i> , <i>Hoff</i> , and <i>Palmer</i> Renders Obvious Claim 5	90
1.	Rationale for Combining <i>Ong</i> , <i>Hoff</i> , and <i>Palmer</i>	92
2.	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”	93

C.	Ground 3: The Combination of <i>Ong</i> , <i>Hoff</i> , and <i>Rolf</i> Renders Obvious Claim 10.....	95
1.	Rationale for Combining <i>Ong</i> , <i>Hoff</i> , and <i>Rolf</i>	95
3.	Independent Claim 10	96
a.	[10.pre]: “A data exchange system”	96
b.	[10.a]: “a data exchange device comprising a first electronic circuit, a first data transceiver and a cue emitter”	97
c.	[10.b]: “a portable electronic device, comprising:”	100
d.	[10.c]: “a second electronic circuit capable of storing data therein, capable of processing data, and capable of data input and output”	100
e.	[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”	100
f.	[10.e]: “a user interface device operatively linked to said second electronic circuit”	100
g.	[10.f]: “a second data transceiver operatively linked to said second electronic circuit”	101
h.	[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”	101
i.	[10.h]: “power means for providing power to said portable electronic device”	101

j.	[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”	101
k.	[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”	102
XII.	CONCLUSION.....	102

I. INTRODUCTION

1. I have been retained by Google LLC (“Google”), as an independent expert for the above-identified *inter partes* review proceeding involving U.S. Patent No. 7,628,333 (“the ’333 patent”).

2. I am over 21 years of age and, if I am called upon to do so, I would be competent to testify as to the matters set forth herein.

3. Although I am being compensated for my time in connection with this proceeding at my standard hourly consulting rate and reimbursed for reasonable out-of-pocket expenses, no part of my compensation depends on the outcome of this proceeding, and I have no other interest in this proceeding.

4. I have been asked to provide my opinion whether the claims of the ’333 patent would have been obvious to a person of ordinary skill in the art at the time of the earliest claimed priority date of the ’333 patent. My opinions are set forth below.

5. Throughout this declaration, I refer to specific pages, figures, and/or line numbers of various exhibits. These citations are illustrative and are not intended to suggest that they are the only support for the propositions for which they are cited.

II. SUMMARY OF OPINIONS

6. This declaration analyzes claims 1-13 of the '333 patent. Below, I set forth the opinions I have formed, the conclusions I have reached, and the bases for my opinions and conclusions. I believe the statements contained in this declaration to be true and correct to the best of my knowledge.

7. Based on my experience and my knowledge of the art at the time of the applicable priority date, it is my opinion that claims 1-13 of the '333 patent would have been obvious based on the asserted grounds discussed below.

III. QUALIFICATIONS AND BACKGROUND

8. I believe that I am well qualified to serve as a technical expert in this matter based upon my qualifications, discussed in detail below.

9. I am currently the president of IP Action Partners Inc., which is a consulting practice serving the telecommunications, information technology, media, electronics, and e-business industries.

10. I earned a Bachelor of Science degree in Electrical Engineering in 1968 and a second Bachelor of Science degree in Engineering Physics in 1969, both from Lehigh University. I also earned a Master of Science degree in Electrical Engineering from Northeastern University in 1974 and a Master of Business Administration degree from Suffolk University in 1983.

11. I hold a Federal Communications Commission (“FCC”) General Radiotelephone License. I also hold a Certificate in Data Processing (“CDP”) from the Association for Computing Machinery (“ACM”)-supported Institute for the Certification of Computing Professionals (“ICCP”).

12. I am a registered professional engineer in the Commonwealth of Massachusetts and also in the State of Nevada.

13. I am a fellow of the Institute of Electrical and Electronics Engineers (IEEE) Consumer Electronics, Communications, Computer, Circuits, and Vehicular Technology Groups. I have been a member of the IEEE Consumer Electronics Society National Board of Governors (formerly known as Administrative Committee) from 1981, and was the Boston Chapter Chairman of the IEEE Vehicular Technology Society from 1974 to 1976. I previously served as 1996-1997 President of the IEEE Consumer Electronics Society, and have served as Chairman of the Society’s Technical Activities and Standards Committee. I have served as Vice President of Publications for the Society and VP of Standards and Industrial Activities. I am currently The Historian for The IEEE Consumer Technology Society (former Consumer Electronics Society). I have also served as an as the chair and committee member for the IEEE Ibuka Award in the field of consumer technology.

14. I have also prepared and presented many papers at IEEE and other professional meetings. For example, in Fall 2000, I served as general program chair for the IEEE Vehicular Technology Conference on advanced wireless communications technology. I have also organized sessions at The International Conference on Consumer Electronics and was the 1984 program chairman. I also conducted an eight-week IEEE sponsored short course on Fiber Optics System Design. I was awarded IEEE's Centennial Medal in 1984 and I was awarded the IEEE's Millennium Medal in 2000. A listing of my publications is included as part of my curriculum vitae, attached as Exhibit A to this declaration.

15. As Vice President and Standards Group Chairman of the Association of Computer Users ("ACU"), I served as the ACU representative to the ANSI X3 Standards Group. I also served as Chairman of the task group on user rule compliance for the FCC's Citizens Advisory Committee on Citizen's Band ("CB") radio ("PURAC").

16. I have been elected to membership in the Society of Cable Television Engineers ("SCTE"), Cable TV Pioneers, the ACM, and The Society of Motion Picture and Television Engineers ("SMPTE"). I also served as a member of the USA advisory board to the National Science Museum of Israel, presented a short course on international product development strategies as a faculty member of

Technion Institute of Management in Israel, and served as a member of the board of directors of The Massachusetts Future Problem Solving Program.

17. I am a named inventor on seven United States patents and am the author of several publications related to data communications, including publications by Electronics Design, Microwaves, Electronic Design News (EDN), The Proceedings of the Frequency Control Symposium, Optical Spectra, and IEEE.

18. For 25 years, I worked for Arthur D. Little, Inc. (“ADL”), where I became Vice President and Director of Communications, Information Technology, and Electronics (“CIE”). At ADL, I was responsible for the firm’s global CIE practice in laboratory-based contract engineering, product development, and technology-based consulting. While employed at ADL, my projects included multiple applications of technology to support next generation financial and ecommerce applications. These projects include electronic wallet applications incorporated into cellphones as well as standalone devices. I was involved in the application and study of smart card technology in financial transactions and cybersecurity.

19. Prior to my time at ADL, I served as a Section Manager for Bell & Howell Communications Company for four years. Prior to working at Bell & Howell, I served as a Project Engineer for Motorola’s Communications Division

for three years. At both Bell & Howell and Motorola, I had project design responsibility for wireless communication and paging products.

20. During my career, I have been heavily engaged in the study, analysis, evaluation, design, and implementation of products and services making use of emerging technology in the overlap between telecommunications, information technology, media, and consumer electronics.

21. I am very familiar with payment cards and systems due to various related project work. I performed several projects directed to security properties of card media for an association of credit card issuers. These projects involved the consideration and evaluation of technologies including RFID, magnetic watermark, Smart Cards, optical storage cards, and holographic storage cards. Under contract to several trade associations representing the grocery industry, I developed recommendations to permit compatible electronic data interchange between suppliers and retail stores at the store level, including the use of Smart Card and digital signature technology. For Mastercard I investigated the impact of implementing new card media technologies in their credit card authorization network, including the consideration of Smart Cards, optical storage cards, card calculators, and other developing technologies.

22. My complete qualifications and professional experience are described in my curriculum vitae, a copy of which can be found in Exhibit A to this declaration.

IV. MATERIALS CONSIDERED

23. In forming my opinions, I read and considered the '333 patent and its prosecution history, the exhibits listed in the Exhibit List filed with the petition for *inter partes* review of the '333 patent, as well as any other materials referenced herein. In preparing this declaration, I have reviewed at least the following documents:

<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
1005	U.S. Patent No. 7,278,581 to Ong et al. (" <i>Ong</i> ")
1006	PCT International Publication No. WO 1990/013096 A1 to Hoff et al (" <i>Hoff</i> ")
1007	U.S. Patent No. 7,337,326 to Palmer et al. (" <i>Palmer</i> ")
1008	U.S. Patent No. 7,376,583 to Rolf et al. (" <i>Rolf</i> ")
1009	John McCrindle, <i>Smart Cards</i> , (Springer Verlag, 1990) (" <i>McCrindle</i> ")
1010	U.S. Patent No. 6,257,486 to Teicher et al. (" <i>Teicher</i> ")
1011	Hiro Shogase, <i>The Very Smart Card: A Plastic Pocket Bank</i> , IEEE Spectrum, October 1988 (" <i>Shogase</i> ")

<u>Exhibit</u>	<u>Description</u>
1012	U.S. Patent No. 7,136,623 to Fare et al. (" <i>Fare</i> ")
1013	U.S. Patent No. 7,440,771 to Purk (" <i>Purk</i> ")
1014	U.S. Patent Pub. No. 2004/0117262 to Berger et al. (" <i>Berger</i> ")

24. I reserve the right to supplement and amend any of my opinions in this declaration based on documents, testimony, and other information that becomes available to me after the date of this declaration.

V. LEGAL STANDARDS

25. I am not a lawyer. My understanding of the legal standards to apply in reaching the conclusions in this declaration is based on discussions with counsel for Petitioner, my experience applying similar standards in other patent-related matters, and my reading of the documents submitted in this proceeding. In preparing this declaration, I have tried to faithfully apply these legal standards to the challenged claims.

26. I have been informed that there are two ways in which prior art may render a patent claim unpatentable. First, I have been informed that the prior art can "anticipate" a claim. Second, I have been informed that the prior art can render a claim "obvious" to a person of ordinary skill in the art. I understand that a claim is patentable if it was not anticipated and would not have been obvious by the prior art at the effective filing date of the patent.

27. I have been informed that a dependent claim is a patent claim that refers back to another patent claim. I have been informed that a dependent claim includes all of the limitations of the claim to which it refers.

28. I have been asked to provide my opinions as to whether the cited prior art teaches or renders obvious claims 1-13 of the '333 patent from the perspective of a person of ordinary skill in the art at the '333 patent's earliest claimed priority date, as described in more detail below.

29. I have been informed that in *inter partes* review proceedings, such as this one, the party challenging the patent bears the burden of proving unpatentability by a preponderance of the evidence. I understand that a preponderance of the evidence means "more likely than not."

30. For purposes of this declaration, I have been asked to provide my opinions on issues regarding unpatentability. I have been informed of the following legal standards, which I have applied in forming my opinions.

A. Level of Ordinary Skill in the Art

31. I have been informed a person of ordinary skill in the art is determined by considering several factors, including the (i) type of problems encountered in the art; (ii) prior art solutions to those problems; (iii) rapidity with which innovations are made; (iv) sophistication of the technology; and (v) educational level of active workers in the field.

32. I have been instructed to assume a person of ordinary skill in the art is not a specific real individual, but rather a hypothetical individual having the qualities reflected by the factors discussed above.

B. Claim Construction

33. I understand that the United States Patent and Trademark Office interprets claim terms in an *inter partes* review proceeding under the same claim construction standard that is used in a United States federal court. I understand that under this standard, the meaning of claim terms is considered from the viewpoint of one of ordinary skill in the art at the time of the invention.

34. I have been informed that claim terms are generally given their ordinary and customary meaning as understood by one of ordinary skill in the art in light of the specification and the prosecution history pertaining to the patent. I understand, however, that claim terms are generally not limited by the embodiments described in the specification.

35. I understand that in addition to the claims, specification, and prosecution history, other evidence may be considered to ascertain the meaning of claim terms, including textbooks, encyclopedias, articles, and dictionaries. I have been informed that this other evidence is often less significant and less reliable than the claims, specification, and prosecution history.

C. Anticipation

36. I have been informed that under 35 U.S.C. § 102, a patent claim is “anticipated” and thus unpatentable if the claimed subject matter was patented or described in a printed publication before the effective filing date of the claimed invention. I have been informed that this is referred to as unpatentability by anticipation. I have been informed that a patent claim is anticipated under § 102 if a single prior art reference discloses all limitations of the claimed invention.

D. Obviousness

37. I have been informed that obviousness under 35 U.S.C. § 103, a patent claim is unpatentable if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious to a person having ordinary skill in the art to which said subject matter pertains at the time the invention was made. I have been informed that this is referred to as unpatentability by obviousness.

38. I have been informed that a proper obviousness analysis includes the following:

- a. determining the scope and content of the prior art;
- b. ascertaining the differences between the prior art and the claims at issue;
- c. resolving the level of ordinary skill in the pertinent art; and

d. considering evidence of secondary indicia of non-obviousness (if available).

39. I have been informed that the relevant time for considering whether a claim would have been obvious to a person of ordinary skill in the art is the time of invention. For my obviousness analysis, I have generally assumed that the date of invention for the challenged claims is April 14, 2003.

40. I have been informed that a reference may be modified or combined with other references or with a person of ordinary skill in the art's own knowledge if the person would have found the modification or combination obvious. I have also been informed that a person of ordinary skill in the art is presumed to know all the relevant prior art, and the obviousness analysis may take into account the inferences and creative steps that a person of ordinary skill in the art would employ.

41. I have been informed that whether a prior art reference renders a patent claim obvious is determined from the perspective of a person of ordinary skill in the art. I have also been informed that, while there is no requirement that the prior art contain an express suggestion to combine known elements to achieve the claimed invention, and while a suggestion to combine known elements to achieve the claimed invention may come from the prior art as a whole or individually and may consider the inferences and creative steps a person of

ordinary skill in the art would employ, as filtered through the knowledge of one skilled in the art, obviousness grounds cannot be sustained by mere conclusory statements and must include some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.

42. In determining whether a prior art reference could have been combined with another prior art reference or other information known to a person having ordinary skill in the art, I have been informed that the following principles may be considered:

- a. a combination of familiar elements according to known methods is likely to be obvious if it yields predictable results;
- b. the substitution of one known element for another is likely to be obvious if it yields predictable results;
- c. the use of a known technique to improve similar items or methods in the same way is likely to be obvious if it yields predictable results;
- d. the application of a known technique to a prior art reference that is ready for improvement to yield predictable results;
- e. any need or problem known in the field and addressed by the reference can provide a reason for combining the elements in the manner claimed;

- f. a person of ordinary skill often will be able to fit the teachings of multiple references together like a puzzle; and
- g. the proper analysis of obviousness requires a determination of whether a person of ordinary skill in the art would have a “reasonable expectation of success”—but not “absolute predictability” of success—in achieving the claimed invention by combining prior art references.

43. I have been informed that, when a work is available in one field, design alternatives and other market forces can prompt variations of it, either in the same field or in another. I have been informed that if a person of ordinary skill in the art could have implemented a predictable variation and would have seen the benefit of doing so, that variation is likely to have been obvious. I have been informed that, in many fields, there may be little discussion of obvious combinations, and in these fields market demand—not scientific literature—may drive design trends. I have been informed that, when there was a design need or market pressure and there are a finite number of predictable solutions, a person of ordinary skill in the art would have had a good reason to pursue those known options.

44. I have been informed that the law permits the application of “common sense” in examining whether a claimed invention would have been obvious to a

person skilled in the art. For example, I have been informed that combining familiar elements according to known methods and in a predictable way may suggest obviousness when such a combination would yield nothing more than predictable results. I understand, however, that a claim is not obvious merely because every claim element is disclosed in the prior art and that a party asserting obviousness must still provide a specific motivation to combine or modify the references as recited in the claims and explain why one skilled in the art would have reasonably expected to succeed in doing so.

45. I have been informed that there is no rigid rule that a reference or combination of references must contain a “teaching, suggestion, or motivation” to combine references. But I also understand that the “teaching, suggestion, or motivation” test can be a useful guide in establishing a rationale for combining elements of the prior art. I have been informed that this test poses the question as to whether there is an express or implied teaching, suggestion, or motivation to combine prior art elements in a way that realizes the claimed invention, and that the “teaching, suggestion, or motivation” test seeks to counter impermissible hindsight analysis.

46. I am not aware of any evidence of secondary considerations that would support a determination of non-obviousness of the claimed subject matter in the '333 patent.

47. I have been informed that, in an obviousness analysis, prior art must be analogous prior art to the patent being considered. I have been informed that a prior art reference is considered to be analogous, or in the same field of art, if the reference is either (1) in the same field of endeavor as the challenged patent, regardless of the problems the challenged patent and the prior art address, or (2) reasonably pertinent to the particular problem being solved by the challenged patent.

VI. LEVEL OF ORDINARY SKILL IN THE ART

48. In rendering the opinions set forth in this declaration, I have been asked to consider the '333 patent's claims and the prior art through the eyes of a person of ordinary skill in the art (which I may also refer to as "one skilled in the art," "skilled artisan," "POSITA," "POSA" or similar variation). I have considered factors such as the educational level and years of experience of those working in the pertinent art, the types of problems encountered in the art, the teachings of the prior art, patents and publications of other persons or companies, and the sophistication of the technology.

49. Taking the factors described in the Legal Standards – Level of Ordinary Skill in the Art section into consideration, it is my opinion that 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,

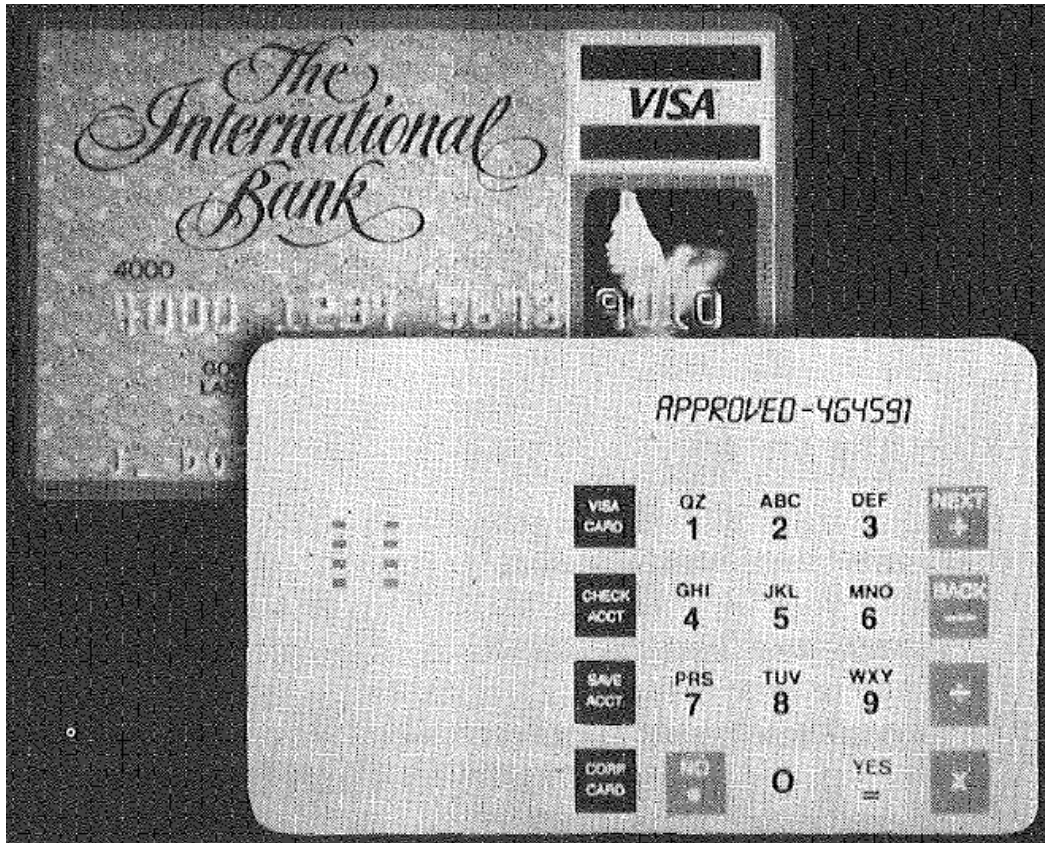
or a related field, and at least two years of experience in design, development, and/or testing of network-enabled consumer devices, and familiarity with payment cards, or the equivalent. Additional education could substitute for professional experience and vice versa.

50. Based on my educational background and experience, I was at least a person of ordinary skill in the art at the earliest possible priority date of the '333 patent. My opinions would not change if a later priority date is assumed.

VII. TECHNOLOGY BACKGROUND AND THE STATE OF THE PRIOR ART

51. 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 thin enough 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. To facilitate financial transaction, smart cards included radio transceivers and antennas enabling contactless communication with an external device. *McCrindle*, 60-64; *Teicher*, 2:6-20. These smart cards 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. For example, Visa developed a “super smart card,” shown below, that included an LCD and required entry of a PIN for completing a transaction:



McCrindle, 46-48.

VIII. OVERVIEW OF THE '333 patent

A. The Claims and Specification

52. The '333 patent discloses a portable electronic device, which may include a credit card, such as the smart cards I described above. '333 patent, Abstract, 1:9-19, 4:61-62, 7:55-8:41. Like these smart cards, the claimed device

includes an electronic circuit, a user interface device, power means, and a data transceiver. *Id.*, 9:61-10:26, 10:54-12:17. The device also includes a control device which the '333 patent advises may include a button, a PIN keypad, or a fingerprint scanner. *Id.*, 5:5-32. When the control device is triggered (i.e., manually activated by the user), an “invariable activation command” is issued, which causes different actions to occur based on whether a “switching element,” also included in the device, is in an activated state or an inactive state. *Id.*, 10:17-26, 11:12-21, 12:8-17. The state of the switching element is set based on an activation cue being received from a remote source. *Id.*, 10:9-14, 11:3-12:7; *see also id.*, 7:15-29, 8:32-41.

53. The '333 patent acknowledges the existence of smart cards as prior art. *Id.*, 1:15-45, 4:61-62; 5:55-64. It is my understanding that the purported advantage of the portable electronic device of the '333 patent is the inclusion of a single control device to accomplish different functions of the card. *Id.*, 1:40-45. For example, 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. But as I explain below, these forms of “control devices” and “switching elements” were known and used together long before the effective date of the '333 patent. *Hoff*, 10:6-13 (keyboard, i.e., a “control device”), 8:12-16 (logical circuitry, i.e., a “switching element”).

B. Prosecution History

54. The '333 patent was filed on February 27, 2006, as U.S. Application 10/552,912. '333 patent, cover. The '333 patent claims a right of priority based on PCT International Application No. PCT/IB2003/001523, filed April 14, 2003. *Id.*, cover.

I have reviewed the prosecution history of the '333 patent and I understand the patent was allowed after a single rejection by the Office. Ex. 1002, 35. Claim 12 was initially rejected as being anticipated by U.S. Patent No. 5,999,713 ("*Reiner*") and the remaining claims were deemed allowable. *Id.*, 36-39. The Examiner then issued a Notice of Allowance with an Examiner's amendment to the claims, canceling original claim 12 and amending other claims to align the claims with a related international filing. *Id.*, 18-28.

IX. CLAIM CONSTRUCTION

55. For purposes of this IPR proceeding, I apply the plain and ordinary meaning of claim terms in the '333 patent, consistent with the disclosure and prosecution history. I have been informed that these terms may be considered means-plus-function limitations subject to construction under 35 U.S.C. § 112, sixth paragraph (pre-AIA). My opinions regarding these terms are provided below:

A. “power means”

56. This limitation appears in independent claims 1, 10, and 11. ’333 patent, 10:15-16, 11:10-11, 11:29-12:2. In my opinion, a POSITA would have understood that the corresponding structure for this limitation is *an internal power source for storing and providing power or a component for providing power from an external power source*. For example, 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.” ’333 patent, 6:26-34. In my opinion, a POSITA would understand that the corresponding function is “providing power to said portable electronic device.” *See, id.*, 10:15-16, 11:10-11, 11:29-12:2.

B. “switching element” and “data conveyance switching element”

57. “Data conveyance switching element” is recited in independent claims 1 and 10. “Switching element” is recited in independent claims 1, 10, and 11, and in and in dependent claims 7, 8, and 9. I have reviewed the written description and the claims and it is my opinion that neither provide a basis for drawing a distinction between a “switching element” and a “data conveyance switching element.”

58. It is my opinion that a POSITA would have understood that, to the extent one is disclosed, the corresponding structure for these claim terms is *a physical structure, a virtual program, or both*. For example, 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 onto [a] microchip” or a “decisional logical circuit,” and “can be a physical structure, a virtual program, or both.” *Id.*, 6:4-17. The corresponding function for these terms to be switching between inactive and activated states based on the receipt of an activation cue. *Id.*, 10:9-14, 11:3-9, 11:28-12:7.

C. “control device”

59. The term “control device” appears in independent claims 1, 10, and 11, and in dependent claim 13. In my opinion, a POSITA would have understood the corresponding structure for this term is *either a biometric parameter detector or one or more buttons*. For example, 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. The corresponding function for

this term is “being selectively triggered to issue an[] invariable activation command.” ’333 patent, 7:47, 9:65-67, 10:62-65, 12:8-10.

D. “data exchange device” and “external data exchange device”

60. Independent claims 1 and 11 recite an “external data exchange device” and independent claim 10 recites a “data exchange device.” I have reviewed the written description and the claims and it is my opinion that neither provide a basis for drawing a distinction between a “data exchange device” and an “external data exchange device.”

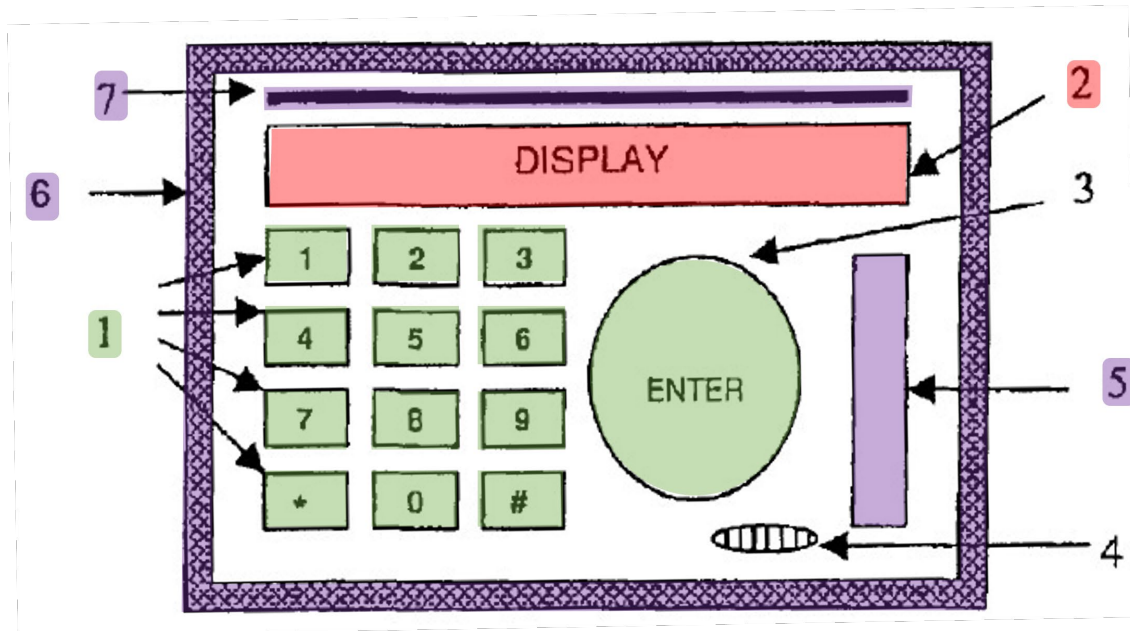
61. In my opinion, a POSITA would have understood the corresponding structure for this limitation is a *data transceiver coupled to a circuit*. For example, the ’333 patent explains the data exchange device “can be any sort of data exchange device comprising an electronic circuit ... and a data transceiver,” such as a “portable electronic device,” “a computer,” or “an automatic teller machine.” *Id.* , 5:47-54. The recited function for these terms is “exchanging data.” *Id.*, 10:19-22, 11:14-18, 12:11-13.

X. OVERVIEW OF THE PRIOR ART

A. Ong

62. U.S. Patent No. 7,278,581 to Ong et al. (“Ong”) discloses an electronic credit card providing a secure transaction of funds through a transaction station, such as an ATM. *Ong*, Abstract, 1:12-14, 1:26-46. The electronic credit

card includes **communication means** (such as **infrared transceiver 5**, **magnetic induction telecommunication device 6**, and **radio frequency telecommunication device 7**), for facilitating a transfer of funds through the transaction station and a **display 2** for providing visual information. *Id.*, 3:22-40, Abstract. As I illustrate below with color-coded highlighting, the card also features a **user verification means** for verifying an identity of a user, such as entry of a PIN number (using keypad 1 and button 3):

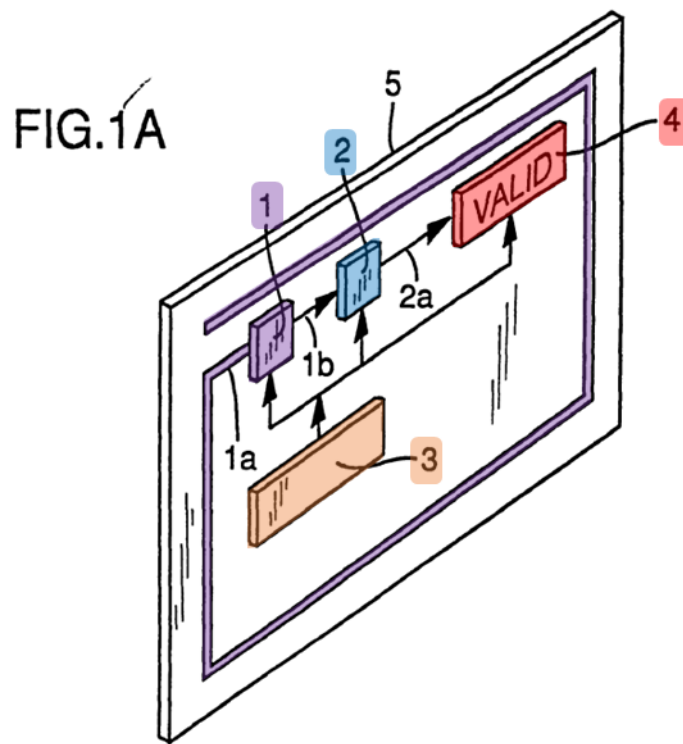


Id., Fig. 10 (annotated), 3:22-34, 3:51-59, Abstract. *Ong* provides that, once the user's identity is verified, an authorisation code is generated, which is provided along with the user's account details, to the communication means, which then communicates the authorisation code and account details to a transaction station such as an ATM. *Id.*, 3:50-59. The card also includes a "disablement means" for

disabling use of the electronic credit card remotely by a card issuer or other authority. *Id.*, 1:65-2:3.

B. Hoff

63. PCT International Publication No. WO 1990/013096 A1 to Hoff et al (“*Hoff*”) discloses enabling update or deactivation of an electronic credit card from remote location signals sent over a communication channel. *Hoff*, Abstract. The card includes a **point-to-point radio receiver** having an **associated loop antenna 1a**, which are built to receive messages or signals transmitted 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 may receive and decode signals to activate a **display 4**. *Id.*, 8:12-17, 8:12–9:1. As I illustrate below with color-coded highlighting, the card also includes a **battery 3** for powering these elements:



Id., Fig. 1A (annotated), 4:6-14, 8:12-17. The logical circuitry may trigger the display of the words “VALID” or “VOID” depending on whether a signal indicating the card is valid is received via the point-to-point receiver. *Id.*, 8:12–9:1.

C. Palmer

64. U.S. Patent No. 7,337,326 to Palmer et al. (“*Palmer*”) discloses a device for performing contactless transactions securely through biometric identity validation. *Palmer*, Abstract, 1:32-45, 2:18-31. The device may be an electronic credit card. *Id.*, 1:18-39, 4:12-63, 11:45-12:28, Fig. 4. The device 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. The device further 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. The device 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.

D. Rolf

65. U.S. Patent No. 7,376,583 to Rolf et al. (“*Rolf*”)discloses a system for performing financial transactions, such as sales transactions at a point of sale terminal, via a wireless communications link. *Rolf*, 1:16-26. The system 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. The system provides communication links allowing transactions to occur using a handheld electronic device, such as cellular telephones or pagers. *Id.*, 1:16-26. By including multiple transceivers, this central processing facility is “adapted to receive a wide variety of communication links simultaneously, and thus will have a number of ‘lines’ or ‘channels’ upon which to communicate.” *Id.*, 17:24-57.

XI. CLAIMS 1-13 ARE UNPATENTABLE

66. As I outline below, the '027 claims recite a combination of well-known prior art elements that perform their known functions to produce predictable results.

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

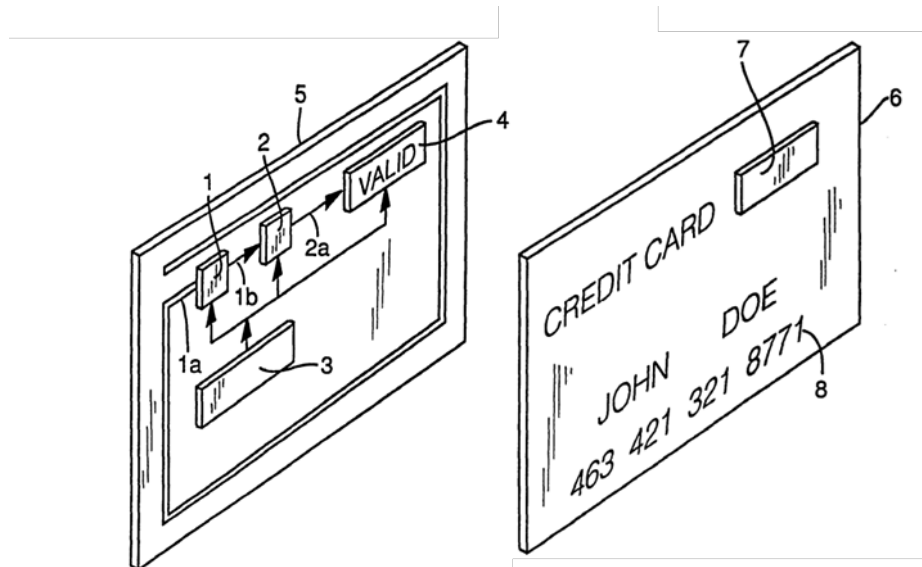
67. In my opinion, *Ong* discloses an electronic credit card that at least suggests every feature of independent claims 1 and 11. *Ong* lacks detailed description of various components, such as its electronic circuit ([1.a]), its data conveyance switching element and activation cue ([1.e]), and power means ([1.f]). However, as I explain below, these components are disclosed expressly in *Hoff*. Moreover, *Hoff* provides a suitable option for implementing electronic credit card authorization, activation, and deactivation (as relevant to [1.d.i], [1.g.i], and [1.g.ii]), which would have improved upon the methods already disclosed in *Ong*. Accordingly, in my view, these limitations would at least have been obvious over *Ong* in view of *Hoff*, particularly given *Ong*'s explicit teachings.

1. Rationale for Combining *Ong* and *Hoff*

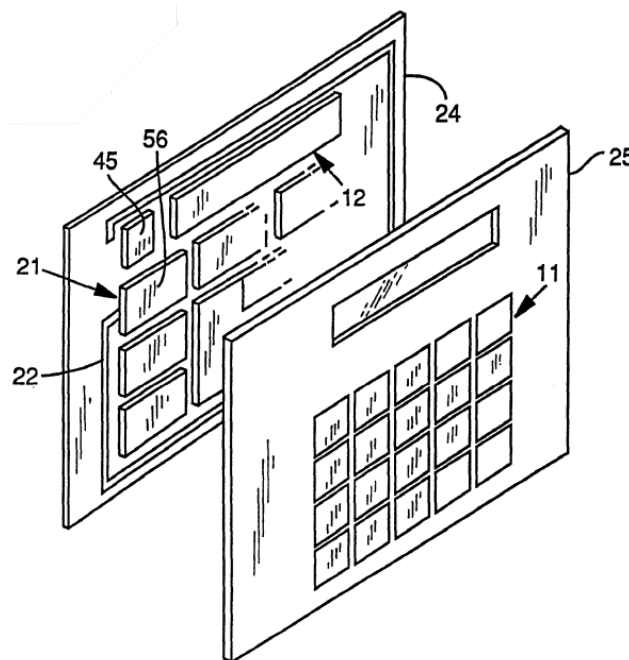
68. In my opinion, a POSITA would have been motivated to combine *Ong* and *Hoff* and would have had a reasonable expectation of success in doing so. *Ong* and *Hoff* are analogous to the '333 patent because they are in the same field of endeavor: electronic credit cards. *Ong*, Abstract, 1:12-14; *Hoff*, 1:3-5

69. The combination of *Ong* and *Hoff* reflects the combination of familiar elements according to known methods to yield predictable results. Indeed, both *Ong* and *Hoff* describe electronic transaction cards having many common features. *Ong*, Abstract, 1:12-14; *Hoff*, 1:3-5. For example, the cards in both references have the form factor of a credit card, include interfaces for communicating with a remote entity, include a display for presenting information to a user, and include power means for powering the card. *Ong*, 3:22-34, 2:34-40, 3:22-34, 4:35-44; *Hoff*, 5:15-17, 8:1-, 9:5, 4:6-14. And both of the disclosed cards include a mechanism for remotely enabling or disabling the card. *Ong*, 1:65-2:3; *Hoff*, 8:18–9:1. Accordingly, in my view, a POSITA would have considered *Ong* and *Hoff* combinable at least based on these similarities.

70. *Ong* describes various improvements over a traditional “smart card” including a display and additional user interface functionality. *Ong*, 1:18-46. Due to these improvements, I understand *Ong* to describe what *Hoff* refers to as “very smart cards.” *Hoff*, p.3:5–4:5. *Hoff* describes additional improvements over the “very smart cards” through the inclusion of “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. As *Hoff* illustrates below, the circuitry in *Hoff* is incorporated into a smart card by mounting its electronic components to a substrate and affixing a cover to the substrate:

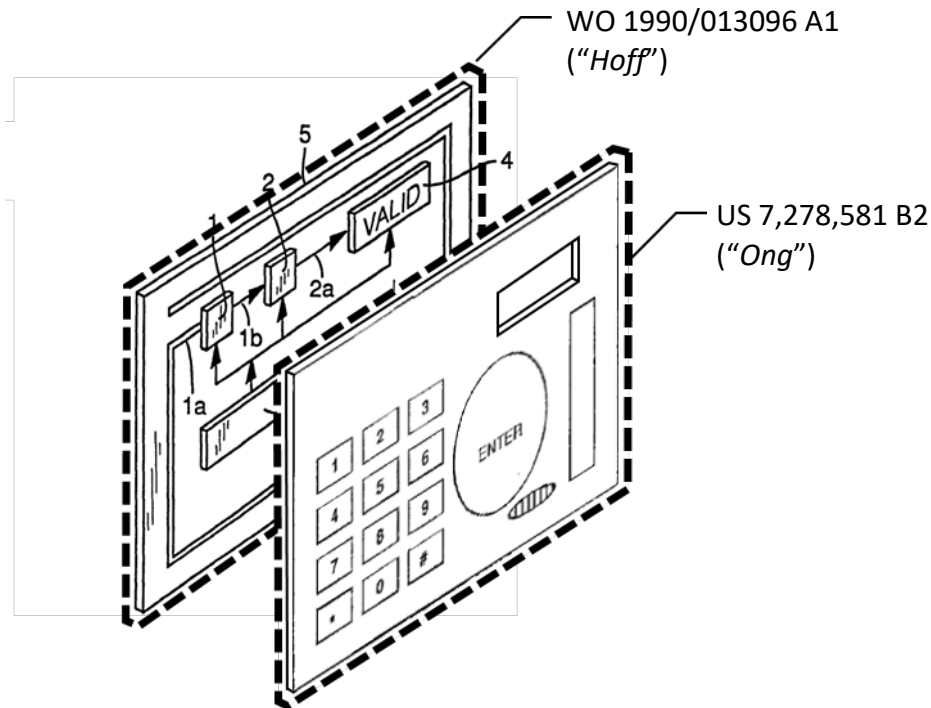


Id., Figs. 1A and 1B, 7:9-23. *Hoff* envisions its functionality being incorporated into other forms of smart cards, such as those including a keyboard and display:



Id., Fig. 2B, 10:6-21. Because *Ong* is the very form of smart card *Hoff* endeavors to enhance (*see id.*, 5:8-17), a POSITA would have understood implementing

Ong's electronic credit card using logical circuitry disclosed in *Hoff* to be no more than a combination of known elements to yield predictable results. In the illustration below, I show that the combination of *Ong* and *Hoff* would be straightforward to implement:



See *Ong*, Fig. 1; *Hoff*, Fig. 1A. The illustration above shows the logical circuitry of *Hoff* incorporated into *Ong*'s card, similar to Figs. 1A and 1B of *Hoff*.

71. In my opinion, a POSITA would have been motivated to combine *Ong* and *Hoff*, for example by substituting or supplementing the components in *Ong*, for the very advantages *Hoff* advertises: to provide an improved credit card utilizing point-to-point radio communication. *Hoff*, 5:15-17. It would be undesirable for *Ong*'s card to be permanently disabled without the ability to

reenable it remotely. Otherwise, a card would be rendered permanently unusable, or would seemingly need to be physically brought in to a bank or other location to have it reenabled. A POSITA would thus have recognized the ability to reset the card's active open-to-buy status remotely as taught in *Hoff* would thus improve the convenience and functionality of *Ong*'s card.

72. As I describe in further detail below, *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." *Hoff*, 8:22–9:1, *see id.*, 5:19–6:18. These features prevent a thief from thwarting deactivation by simply shielding the card. *Id.*, 5:19–6:18, 6:12–18. A POSITA would have recognized that *Hoff*'s logical circuitry would improve the card described in *Ong* in the same way. For example, it would be similarly beneficial to prevent a thief from shielding *Ong*'s card to prevent its disablement means from being activated remotely. At the very least, a POSITA would have understood *Hoff*'s circuitry for implementing electronic credit card authorization, activation, and deactivation a suitable option when implementing *Ong*'s electronic credit card, especially where *Ong* does not provide as many details for some of the features it includes.

2. Independent Claim 1

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

73. To the extent limiting, *Ong* discloses [1.pre].

74. 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 thus were known in the art. '333 patent, 1:15-31. I agree.

75. *Ong* discloses an “Electronic Credit Card (ECC)” 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. In my opinion, a POSITA would have recognized this electronic credit card 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.” *Id.*; '333 patent, 1:15-31. The '333 patent also indicates a portable electronic device may be “a payment card with pre-stored electronic money thereon,” which is the very type of electronic credit card that *Ong* describes. '333 patent, 7:55-8:9.

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

76. It is my opinion that *Ong* discloses or at least suggests [1.a], and *Ong* in view of *Hoff* renders obvious [1.a].

77. *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

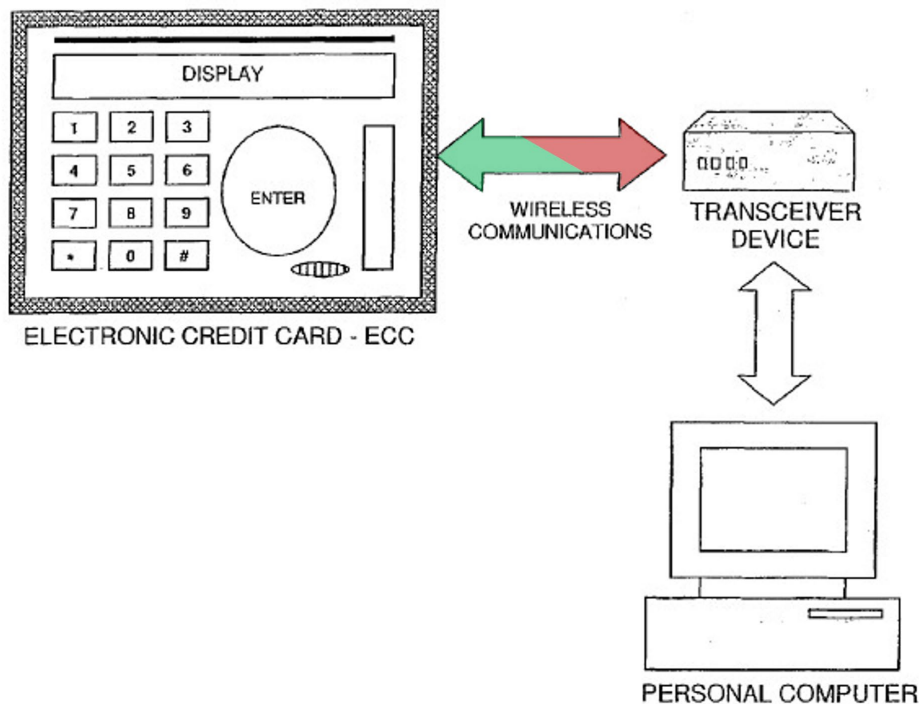
storage means ...; ... a communication means ... [and] a processor means.” *Ong*, 3:22-34.

78. I understand *Ong*’s electronic circuit to be “capable of storing data” because its storage means is used “for storing the user’s account details” (*id.*, 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).

79. I also understand *Ong*’s electronic circuit to be “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). *Id.*, 3:35-50; *see also id.*, 2:47-49, 6:19-22 (“calculat[ing] funds available” by the processor).

80. *Ong*’s electronic circuit is also “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.” *Id.*, 3:35-40. Moreover, the processor means is “further arranged to control communication via the communication means 5, 6, 7.” *Id.* These communication means—which *Ong* refers to as “infra red transmitter receiver 5, radio frequency antenna 7 and induction means 6”—are capable of wireless communication (i.e., data **input** and **output**), as I show in the highlighted figure below:

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); *see also id.*, 4:59-67 (downloads); 5:20-22 (communication over a telephone network).

81. Further, *Hoff* expressly discloses an “electronic circuit” that includes components similar to those in *Ong*, thus 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.

82. A POSITA would have been motivated to incorporate this electronic circuitry of *Hoff* into *Ong*. *Hoff* describes specific integrated circuits suitable for implementing the functionality for storing data, processing data, and communicating via radio on *Ong*’s electronic credit card. § XI.A.II.A.1 (Motivation to Combine). In other words, *Hoff* provides a known technique (specific integrated circuits) to address a known problem. And, in doing so, *Hoff* uses various known elements according to their established functions. At the very least, a POSITA would have understood *Hoff*’s electronic circuitry to have been a suitable option when implementing *Ong*’s electronic credit card, especially where *Ong* does not describe some elements in as much detail as *Hoff*.

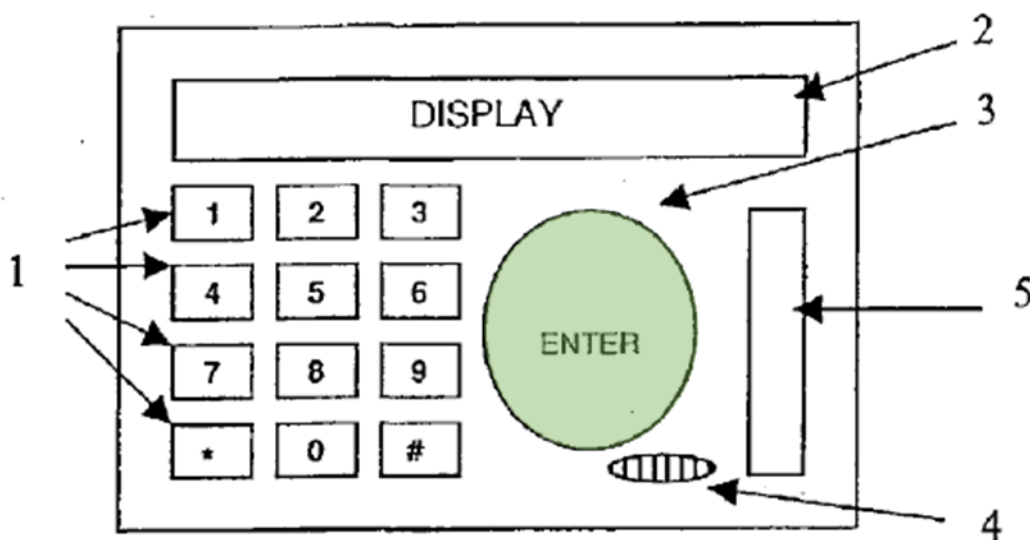
c. [1.b]: “a control device operatively linked to said electronic circuit, with an invariable activation command being issued when said control device is selectively triggered”

83. In my opinion, *Ong* discloses or at least suggests [1.b], and *Ong* in view of *Hoff* renders obvious [1.b].

84. The ’333 patent indicates that its control device may “be any suitable device allowing the portable electronic device holder to selectively trigger a data

conveyance operation.” ’333 patent, 5:5-32. The ’333 patent discloses three forms of control devices. In my opinion, all of these control devices are also disclosed by *Ong*.

85. **First**, the control device may be a “manually activated button provided on the portable electronic device main body.” ’333 patent, 5:5-32. *Ong* discloses a control device as 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 the user’s identity:

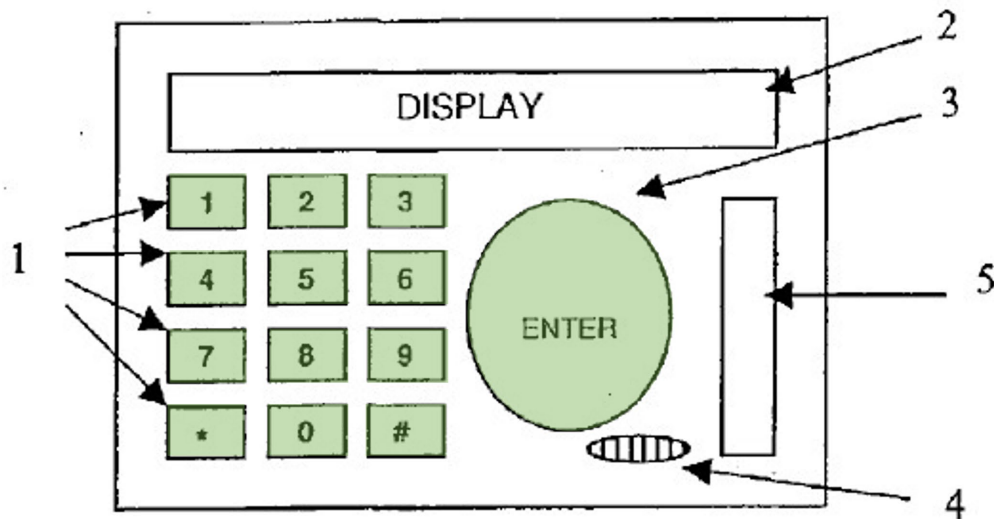


Ong, Fig. 3 (annotated), 3:22-34, 3:35-40, 3:51-59, Abstract.

86. **Second**, the ’333 patent discloses a control device as 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

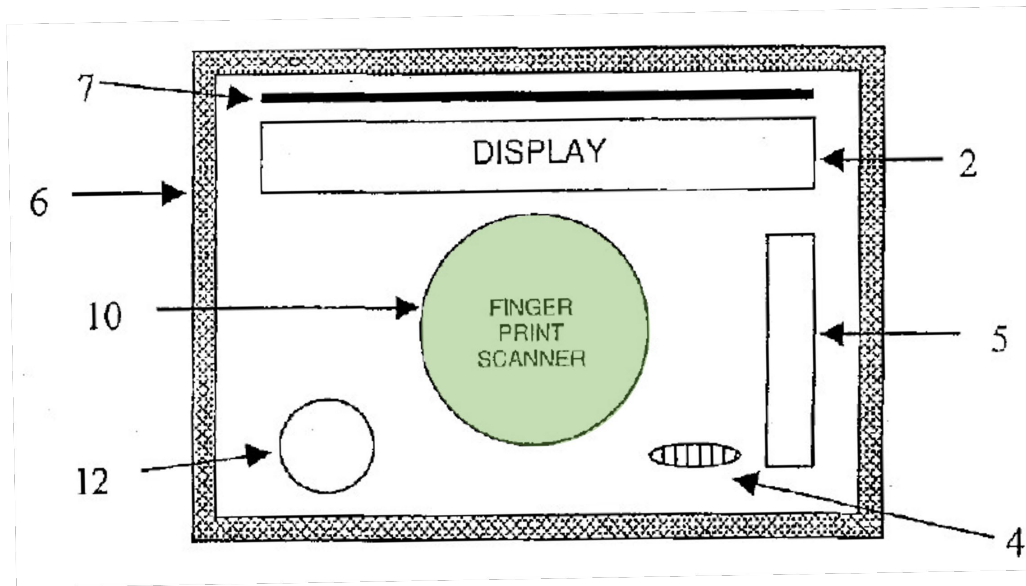
unit 40 to a PIN pre-saved in memory unit 42, with a PIN match validating the portable electronic device user and triggering the data conveyance operation.”

’333 patent, 5:5-32. *Ong* discloses the same keypad as the ’333 patent, namely “**a keypad for entry of a personal identification number (PIN)**”:



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

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



Ong, Fig. 11 (annotated), 2:23-33, 4:35-39; *see also id.*, 4:40-44 (describing a retina scanner).

88. These hardware components (button 3, keypad 1, and fingerprint 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"). As a POSITA would have understood, all three of *Ong*'s control devices issue an invariable activation command when selectively triggered. As described in the '333 patent, "the activation command ... is an invariable activation command" in that "the portable electronic device holder will not be able to select to issue different activation commands by means of control device 12." '333 patent,

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.

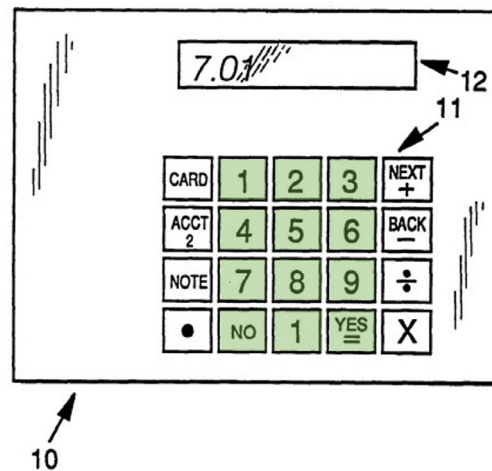
89. In my opinion, *Ong* discloses this same invariable action command. Once the user’s identity has been validated by the user verification means, a unique authorization code is generated. *Ong*, 3:51-59. This authorization code is an “invariable activation command” because it is automatically and inevitably generated once the user is verified. For example, *Ong* does not indicate the user verification is dependent on the disablement means. *Id.* While *Ong* may not describe this explicitly, it would have been obvious to a POSITA 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.” *Id.*, 3:54-59. For example, the card may verify the user but it would be undesirable for the transaction to occur if the card is disabled. Accordingly, I understand that the authorization code would be the same regardless of whether the card is in an activated or inactive state (i.e., regardless of whether an “activation cue was received”). See § I.A.2.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 (the processor means “receiv[es] input from the keypad 1 and the button”), 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”).

90. While it is my opinion that *Ong* discloses operatively linking its control device to an electronic circuit, as I 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, which could be easily implemented in *Ong*.

91. *Hoff* discloses a control device operatively linked to said electronic circuit. For example, *Hoff* discloses a credit card, which may include a **keyboard 11**:

FIG.2A



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

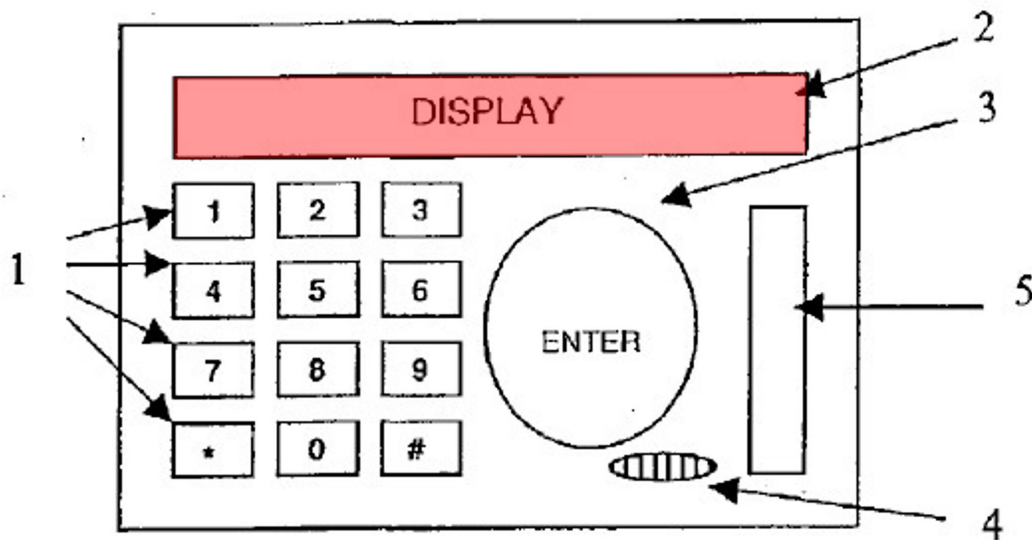
92. *Hoff*'s keyboard is expressly operatively linked to the electronic circuit. *Id.*, Fig. 4, 14:14-25 (the "circuitry includes ... keyboard 11"). This keyboard issues an invariable activation command within the meaning of the '333 patent because it issues a command independent of any activation cue (or a desired result from the user). As with the exemplary control devices described in the '333 patent, *Hoff*'s keyboard is used to verify a user. *Id.*, 10:6-13, 4:16-5:7. While *Hoff* itself does not describe certain functionality of the keyboard, it does so through referencing a "Spectrum article" by Hiro Shogase. This article confirms these operations are present in *Hoff*'s device. For example, *Shogase* explains "the user [enters] a personal identification number (PIN) on the keyboard" (*Shogase*, 36) and the card "simply will not work unless the correct PIN is verified by an access control software module" (*id.*, 38).

93. 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. At the very least, linking *Ong*'s control device to an electronic circuit, as disclosed by *Hoff*, is a suitable option, especially where *Ong* does not describe some features in as much detail.

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

94. In my opinion, *Ong* discloses or at least suggests [1.c], and *Ong* in view of *Hoff* renders obvious [1.c].

95. The '333 patent specification indicates that the user interface device includes a “display screen.” '333 patent, 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**”:

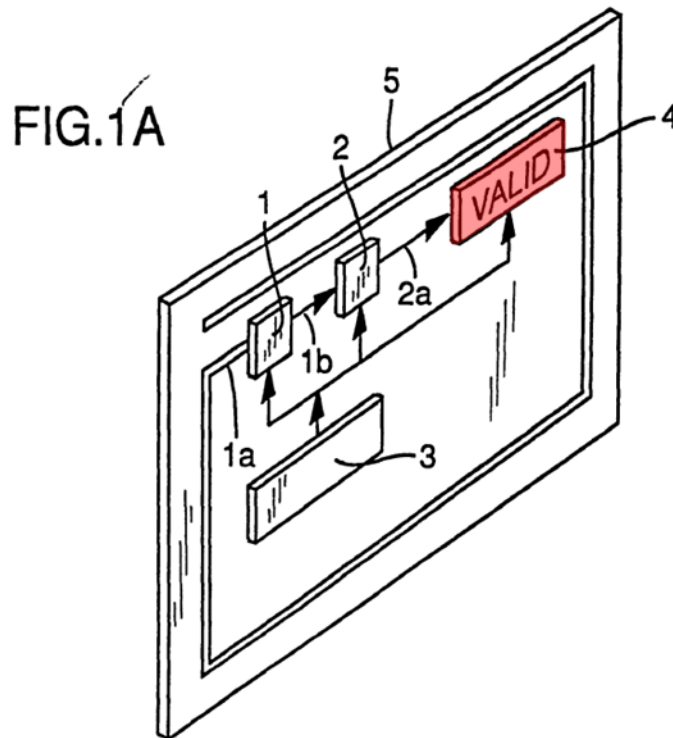


Ong, Fig. 11(annotated), 3:22-34.

96. In my opinion, a POSITA would have understood *Ong*'s display screen (user interface) is operatively linked to the electronic circuit. For example, *Ong*'s electronic circuit includes a processor means "arranged to control output of the display 2." § XI.A.2.b ([1.a]); *Ong*, 3:35-41. This at least suggests an operative link between the display and the electronic circuit. And such an operative link would be necessary in order for the card to properly display information to a user. *Ong*, 3:22-34.

97. While it is my opinion that *Ong* alone discloses of linking its display to an electronic circuit, as I 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. This same

configuration could be easily implemented in *Ong*. For example, *Hoff* discloses a credit card, which may include a **display 4**:



Hoff, Fig. 1A (annotated), 8:12–9:5, *see also id.*, 3:23–4:5, 10:6–13. *Hoff*'s display is expressly operatively linked to the electronic circuit. *Id.*, Fig. 1A, 8:12–17 (logical circuitry 2 activates a display 4).

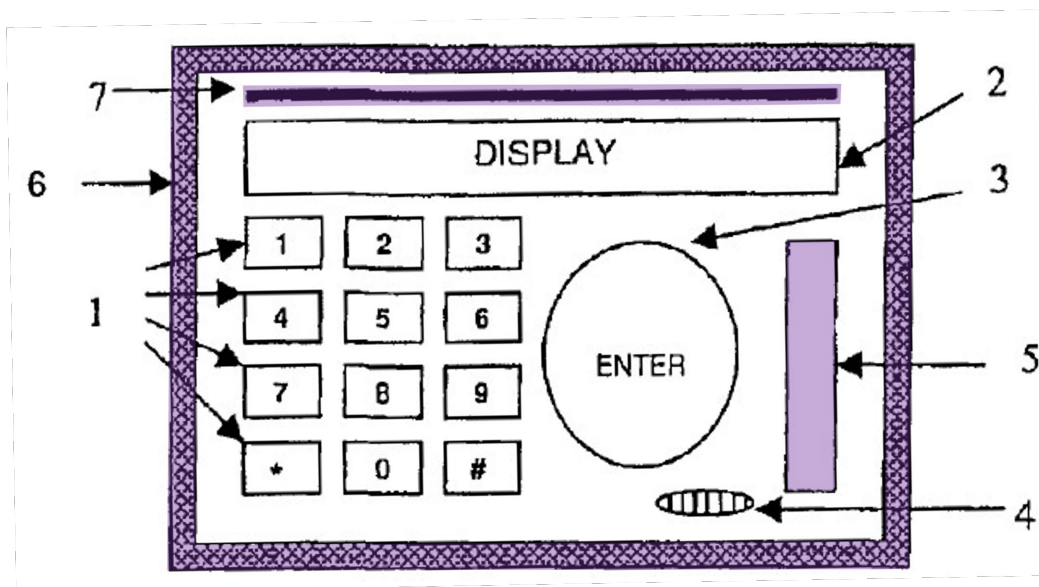
98. Because *Hoff* expressly discloses linking a display to an electronic circuit, a POSITA would have understood that linking *Ong*'s display to an electronic circuit (as suggested by *Ong* as I explained for [1.a]) is no more than the combination of familiar elements according to known methods to yield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

otherwise not serve its intended purpose. At the very least, linking *Ong*'s display in the manner disclosed by *Hoff* is a suitable option, especially where *Ong* does not describe some elements in as much detail.

- 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”

99. In my opinion *Ong* discloses or at least suggests [1.d.i], and *Ong* in view of *Hoff* renders obvious [1.d.i].

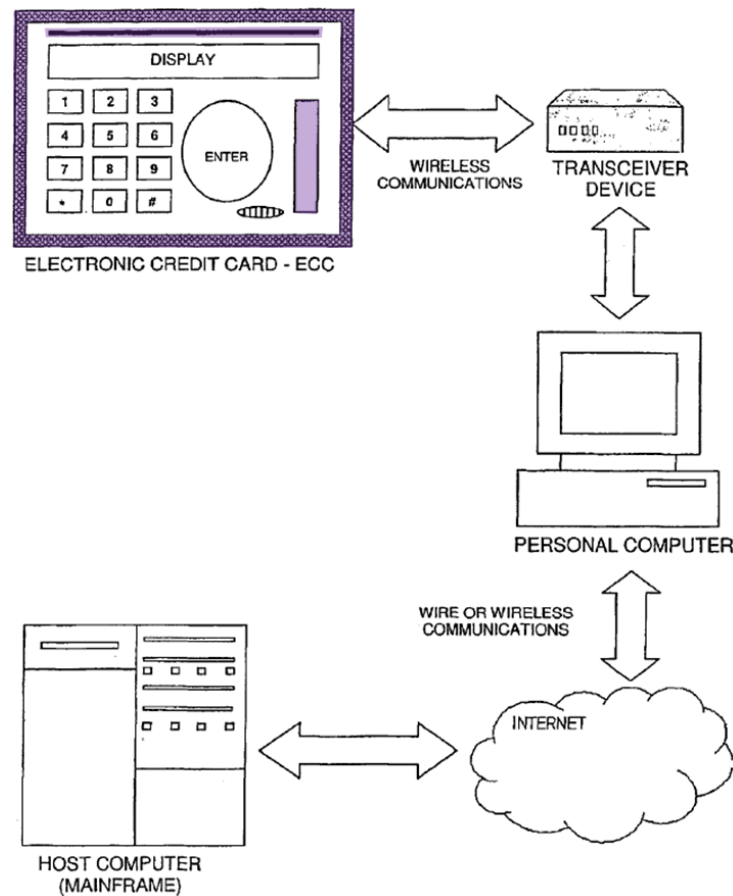
100. *Ong* discloses a “communication means” (data transceiver), which includes an “infra red [sic] communication device 5, a magnetic induction telecommunication 6, [and] radio frequency telecommunication device in the form of an antenna 7”:



Ong, Fig. 10 (annotated), 2:34-40, 3:22-34, 4:30-39 (“infra red [sic] transmitter receiver 5”).

101. *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.” *Id.*, 3:35-41. This at least suggests an operative link between the communication means and the electronic circuit. And such an operative link would be necessary in order for the card’s communication functions to be implemented.

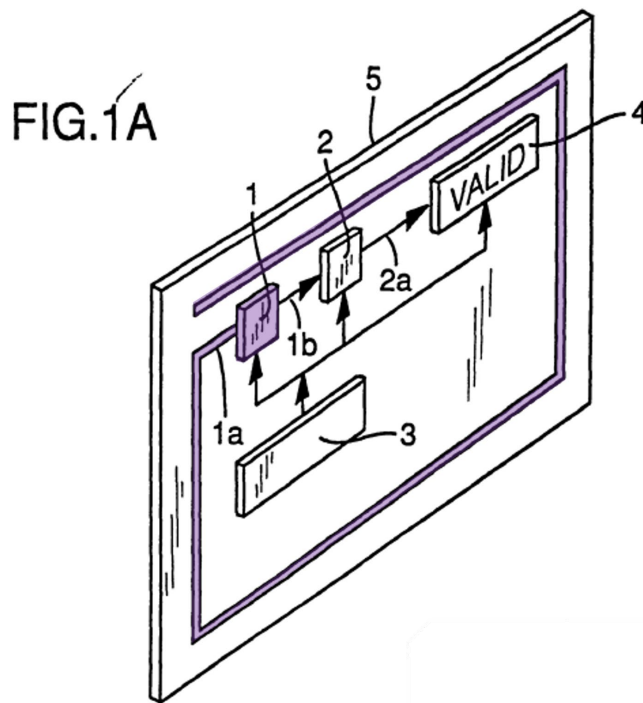
102. *Ong*’s communication means (data transceiver) is used for exchanging data with an external data exchange device. For example, *Ong* describes “communication between the electronic credit card ... [and] a transceiver device which talks with a personal computer” acting as a transaction station, which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



Id., Fig. 2 (annotated), 3:63-4:3; *see also id.*, Fig. 3 (showing electronic credit card communicating with an ATM, which is 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 electronic credit card (portable electronic device). *Id.*, Fig. 2, 3:63-4:3. And a POSITA would have further recognized the transceiver device or ATM exchanges data with the electronic credit card in order to effect a transaction.

103. While it is my opinion that *Ong* discloses linking its data transceiver to an electronic circuit, as I explained for [1.a], *Hoff* discloses an electronic circuit. In my opinion, a POSITA would have been motivated to link *Ong*'s data transceiver to an electronic circuit. Indeed, *Hoff* discloses this exact configuration and implementing it in *Ong* would have been straightforward.

104. *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; see also *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), may also be 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.

105. 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, which, as I explained for [1.a], is suggested by Ong. This would have been no more than the combination of familiar elements according to known methods to yield predictable results. Further, a POSITA would have been motivated to look to Hoff as an example of how the data transceiver may be linked to an electronic circuit. Otherwise, the data transceiver would not serve its intended purpose of communicating data. At the very least, linking Ong’s data transceiver in the manner disclosed by Hoff, is a suitable option, especially where Ong does not describe some elements in as much detail.

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

106. It is my opinion that Ong suggests [1.d.ii], and Ong in view of Hoff renders obvious [1.d.ii].

107. 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.” *Id.*, 1:65-2:3. In my opinion, a POSITA would have recognized the card could similarly be reenabled, for example by remotely deactivating the disablement means. *Id.*, 4:46-58. Indeed, a POSITA would have recognized that permanently disabling would be undesirable in many cases as this would render the card useless. There may be many reasons to disable a card that would not require a permanent disablement. For example, one reason offered in *Ong* is “if a predetermined number of attempts verify the identity of the user fail.” *Id.*, 1:65-2:3. This is one instance in which it would be desirable to reenable the card. *Ong* confirms that “[a]n authorizing distributor or other authorised body could *re-initialise* the electronic credit card” once disabled. *Id.*, 4:46-58.

108. Accordingly, *Ong* 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). In addition, A POSITA would have recognized that, to disable (or reenable) the electronic credit 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.*, 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” (*id.*, 4:59-67) and the card communicates with this transaction station via the communication means (*id.*, 1:58-61, 3:51-59). *See* § XI.A.2.e ([1.d.i]).

109. *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. 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.” *Id.*, 6:7-12; *see 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.

110. While it is my opinion that *Ong* at least suggests 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. As I explained above, it would be undesirable for *Ong*’s card to be

permanently disabled. A POSITA would thus recognize the ability to reset the card's active open-to-buy status remotely as taught in *Hoff* would thus improve the convenience and functionality of *Ong*'s card. And as I describe further below, *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" (*Hoff*, 8:22–9:1, *see id.*, 5:19–6:18), preventing a thief from thwarting deactivation by simply shielding the card. *Id.*, 5:19–6:18, 6:12–18. As I explained above, a POSITA would have been motivated to implement *Hoff*'s logical circuitry in *Ong*'s card to achieve similar security enhancements. § XI.A.1 (Motivation to Combine).

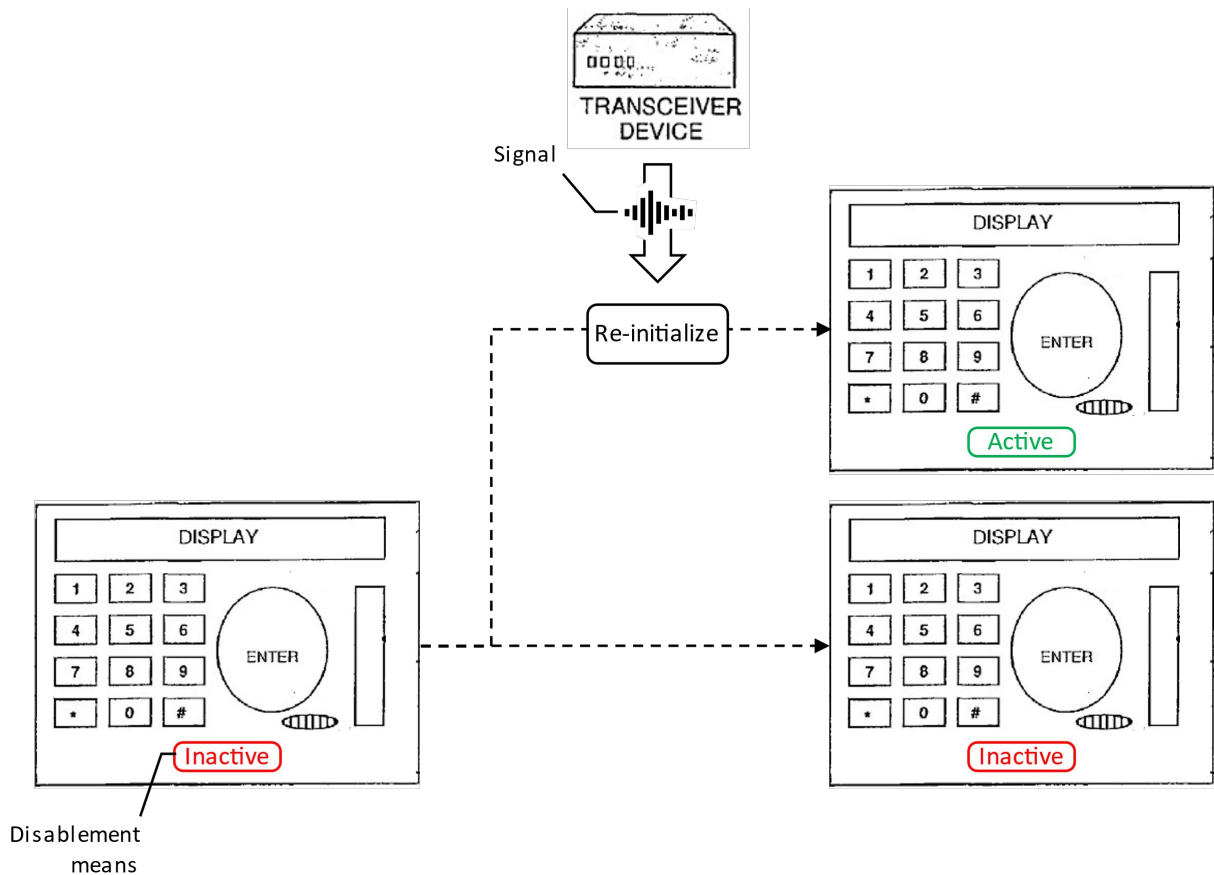
- g. [1.e]: “a data conveyance switching element operatively linked to said electronic circuit, said switching element being in an activated state upon an activation cue having been received by said data transceiver, and being in an inactive state when no activation cue was received by said data transceiver”**

111. In my opinion, *Ong* at least suggests [1.e], and *Ong* in view of *Hoff* renders obvious [1.e].

112. As I explained for [1.d.ii], *Ong* explains its “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. When in a disabled state, “[a]n authorising distributor or other authorised body could re-initialise the electronic credit card.” *Id.*, 4:46–58. A

POSITA would thus 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). And a POSITA would recognize this disablement means is activated by a remotely transmitted signal (activation cue) because *Ong* explicitly states "the disablement means is activatable ***remotely***." *Id.*, 1:65-2:3.

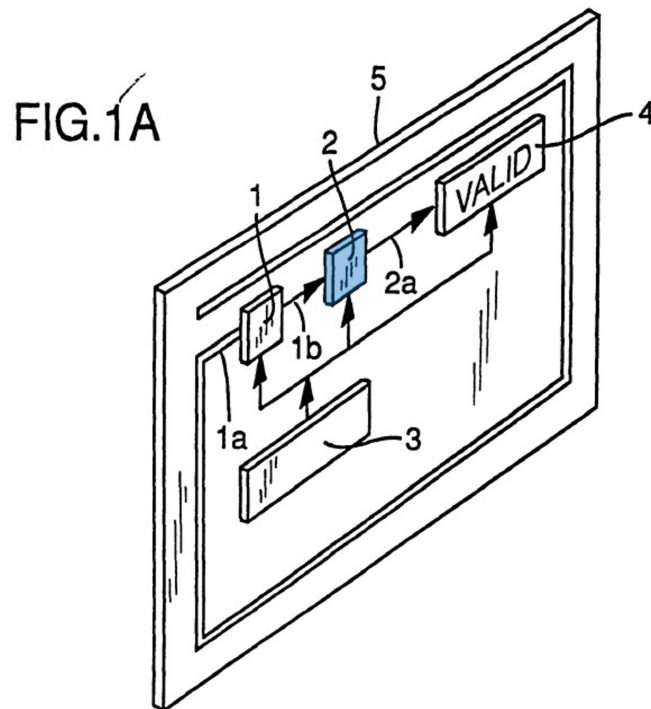
113. Therefore, when *Ong*'s disablement means (data conveyance switching element) has been triggered and therefore is in the inactive state, a subsequent signal to "re-initialise the electronic credit card" (activation cue) would cause the disablement means to enter an activated state (such that the 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). *Id.* In the illustration below, I show the re-initialization described in *Ong*:



In my opinion, the signal to “re-initialize” the card is an activation cue, as I described above.

114. *Hoff* also discloses [1.e]. 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.” '333 patent, 6:4-17, 4:19-23. As I explained above for [1.d.ii], the card disclosed in *Hoff* “can be deactivated or updated even while the card is in the user’s pocket or wallet.” *Hoff*, 6:7-12; *see 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":



Id., 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.

115. *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 may include 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.*, 5:19–6:18. 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, *see 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; *see id.*, 15:1-18. It follows that if the communication is not received, the logical circuit remains in the inactive state.

116. 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). *Hoff*, 15:1-18 (the “sequence of numbers either resets the card’s ‘open to buy’ limit or it deactivates the card.”).

117. While *Ong* at least suggests activating the card remotely, in my opinion, 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. As explained above, this would 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. *Id.*, 6:1-18; § XI.A.1 (Motivation to Combine).

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

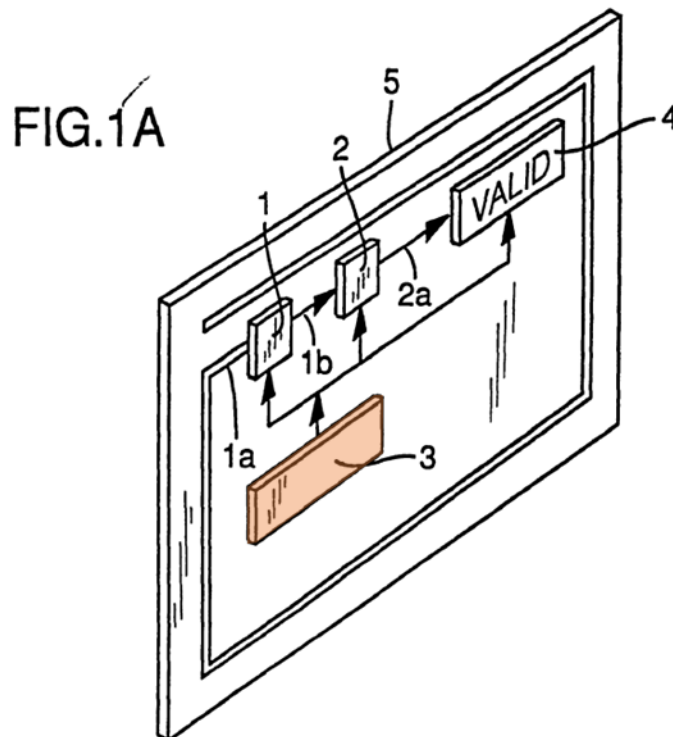
118. In my opinion, *Ong* at least suggests [1.f], and *Ong* in view of *Hoff* renders obvious [1.f].

119. *Ong* suggests a “power means for providing power” to the electronic credit card¹ because *Ong* explains that in some cases, the card may “download

¹ 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. *See, e.g., Ong*, 3:22-34 (the storage means is “not shown.”), 3:35-41 (describing a “processor means” that is not shown).

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 electronic credit card (portable electronic device) thus includes a power source that may be replaced or recharged.

120. *Ong*’s electronic credit card also includes “an infra red [sic] transmitter receiver 5.” *Id.*, 4:35-44. A POSITA would have recognized this requires an internal power source to generate infrared transmissions. *Hoff* expressly discloses a “power means for providing power” to the electronic credit card because *Hoff*’s card “include[s] embedded therein a **battery**.”:



Hoff, Fig. 1A (annotated), 4:6-14; *see also* 8:12-17 (“Elements 1, 2, and 4 are powered by a **conventional watch battery 3**.”).

121. 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. The device would otherwise be inoperable because infrared would require an internal power source and the device would otherwise be inoperable. A POSITA would have been motivated to look to *Hoff* as an example of how to include a battery in *Ong*'s electronic credit card. At the very least, *Hoff*'s battery would have been understood as a suitable option for powering *Ong*'s device, especially where *Ong* suggests the use of a battery.

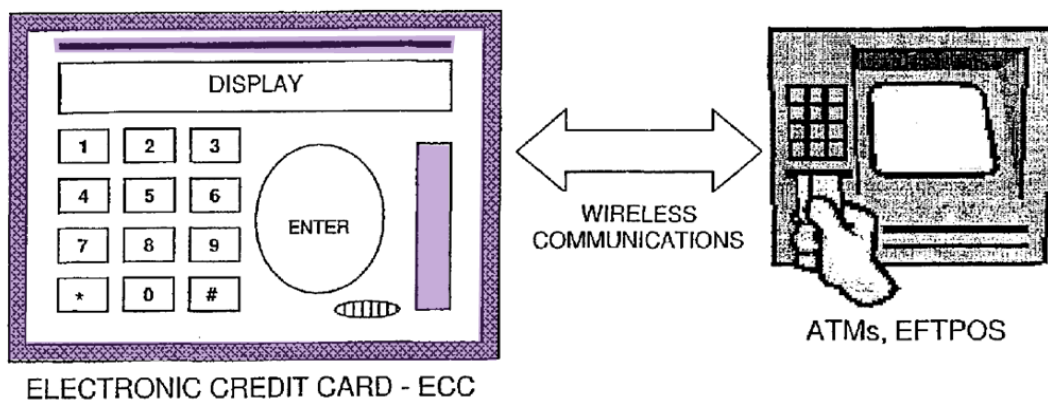
- i. **[1.g.i]: “wherein upon said control device being selectively triggered to issue and [sic] invariable activation command: if said switching element is in said activated state, a data exchange will be initiated through the instrumentality of said data transceiver for exchanging data between said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

122. In my opinion, *Ong* at least suggests [1.g.i], and *Ong* in view of *Hoff* renders obvious [1.g.i].

123. 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.

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

125. *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"). *Ong*, 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)]:



Ong, Fig. 3 (partially reproduced, annotated), 3:51-59.

126. *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.*, 3:51-59 (“[T]he authorization code ... is provided ... to the communication means which communicates these to a transaction station to facilitate an electronic funds transfer transaction.”).

127. 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 electronic credit card components (electronic circuit) and a transaction station (external data exchange device). *Id.*, 3:41-59. 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 electronic credit card is in an inactive state. *See id.*, 1:65-2:3.

128. As I 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) which may be updated remotely. A POSITA would have understood that *Hoff*'s transceiver and activation/deactivation circuitry, when combined with *Ong*'s card, would thus allow a transaction to occur only if the

circuitry indicated an activated state. 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 electronic credit 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]. *See also* § XI.A.1 (Motivation to Combine)

- 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”**

129. In my opinion, *Ong* alone or in view of *Hoff* renders obvious [1.g.ii].

130. As I 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.

131. When *Ong*’s user verification means (control device) verifies a user’s identity and generates an “authorisation code” (invariable activation command) when the card is in an inactive state, the card does not complete the financial transaction (as explained for [1.e]). 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. Indeed, it was well understood at the time of the invention that electronic credit cards could convey visual information in this manner. *See, e.g., Teicher*, 3:24-25, 9:11-15. For example, *Ong* discloses an "enter key" used to various confirm information, which a POSITA would understood would be visible on the display. *Ong*, 3:21-34.

132. To the extent *Ong* does not expressly disclose that its user interface device conveys data to the user about the transaction not being processed and the card being in an inactive state, *Hoff* discloses conveying this data. As I explained above 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. *Hoff*, 8:18-9:1; *see also id.*, 14:3-13 (the card may "put 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. *Id.*, 10:6-13, 4:16-5:7; *Shogase* (Ex. 1011), 36, 37 ("The display confirms the keystrokes without revealing the actual PIN"), 38. This means that while entering a PIN, the display would be used for displaying operations associated with the PIN entry. *Id.* 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

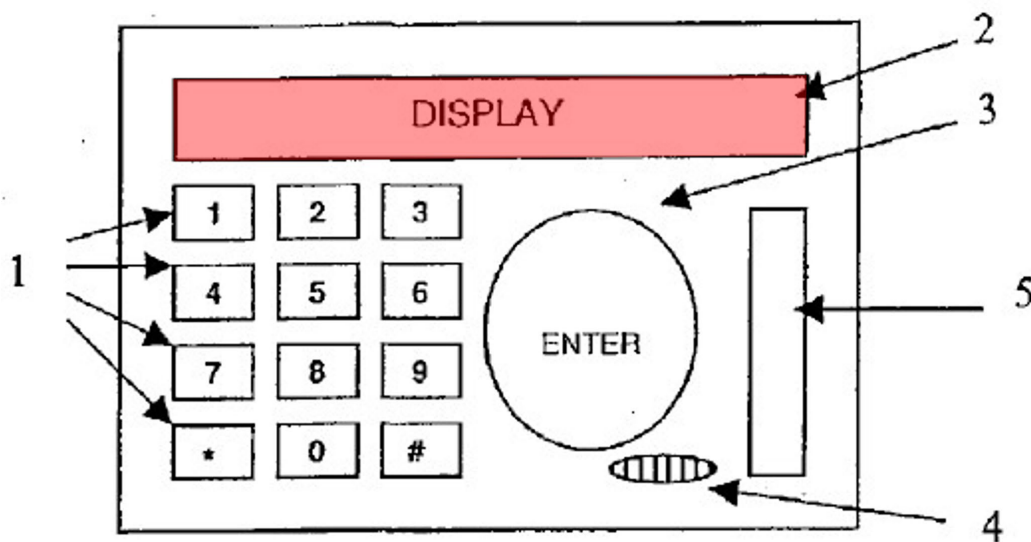
been updated (switching element is in an inactive state), data would be conveyed to the display to indicate the status of the card and to explain to a user why the transaction was not completed. For example, the display would “display the word[] ... VOID” as described in *Hoff* (*Hoff*, 8:18–9), or would display some form of error message indicating the transaction was not completed. *See, e.g., Berger*, ¶¶ [0033]–[0034] (describing displaying “denied” or other error messages on a mobile/smart card transaction device). Indeed, *Hoff* discloses switching the display to present various types of information. *See Hoff*, 9:2–5 (switching the display to “VOID”), 13:22–14:2 (displaying “paging messages”), 14:10–13 (displaying an “appropriate note”).

133. In my opinion, when combined with the user verification means of *Ong*, it would have also been obvious to a POSITA to display “VOID” or an “appropriate note” on the display in response to a user verification to convey an appropriate message to the user, thus allowing a user to understand that status of their transaction. *See* § XI.A.1 (Motivation to Combine). 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. 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).

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

134. In my opinion, *Ong* discloses claim 2. For example, *Ong* discloses an “electronic credit card ... includ[ing] a **display 2**”:

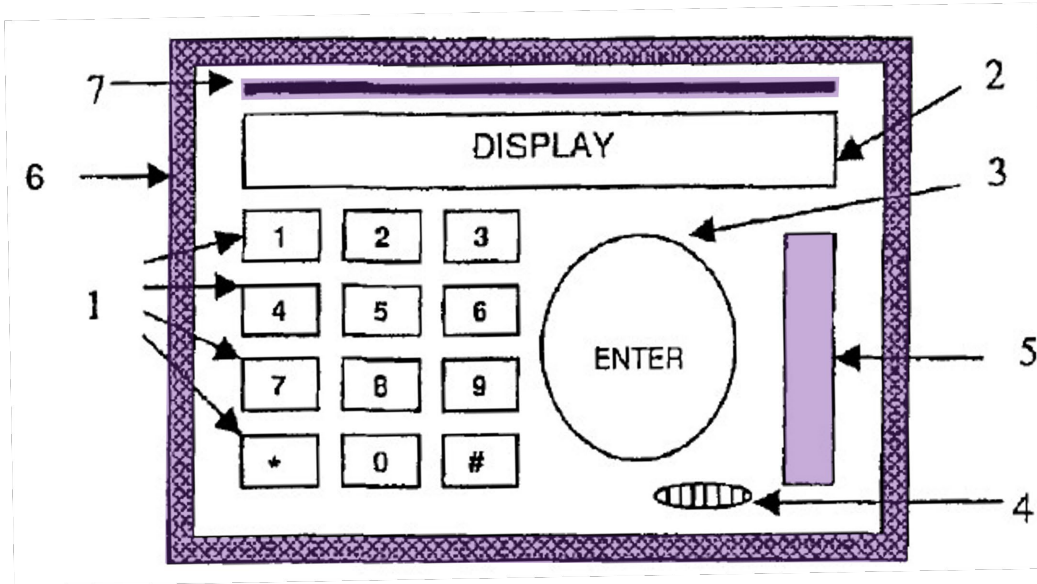


Ong, Fig. 11(annotated), 3:22-34. This display “includ[es] an LCD (liquid crystal display) screen or other display screens.” *Id.*, Abstract.

4. 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”

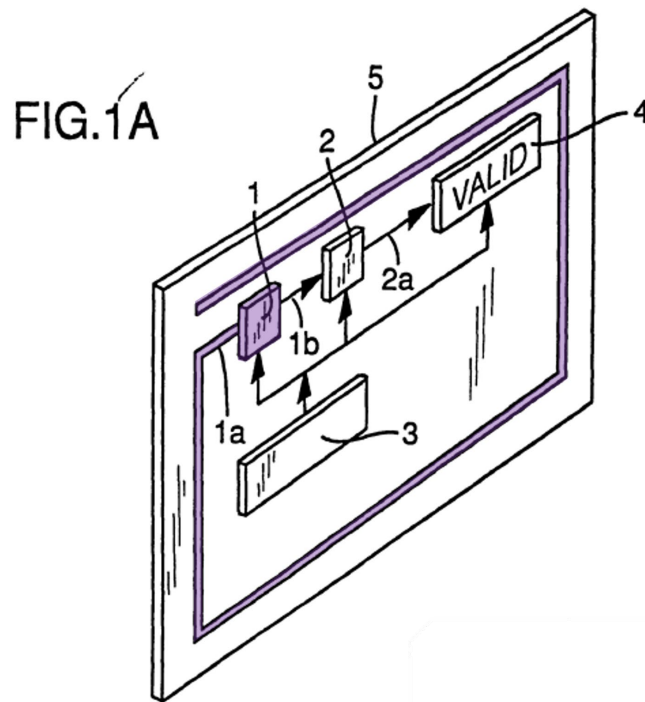
135. In my opinion, *Ong* discloses or at least suggests claim 3, and *Ong* in view of *Hoff* renders obvious claim 3. For example, as I explained above, *Ong*

discloses an electronic credit card 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. *See, e.g., Teicher*, 2:6-20 (describing general functions of radio frequency transceiver and antenna). Indeed, *Ong* explicitly refers to the radio frequency antenna 7 as a “telecommunications device” indicating the device is capable of two-way communications. *Ong*, 3:30-31; *see also id.*, Fig. 2 (showing two-way arrow for wireless communications).

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



Hoff, Fig. 1A (annotated), 8:1-11; *see also id.*, Fig. 4, 11:11-24, 12:1-3, 12:13-20, 15:1-18.

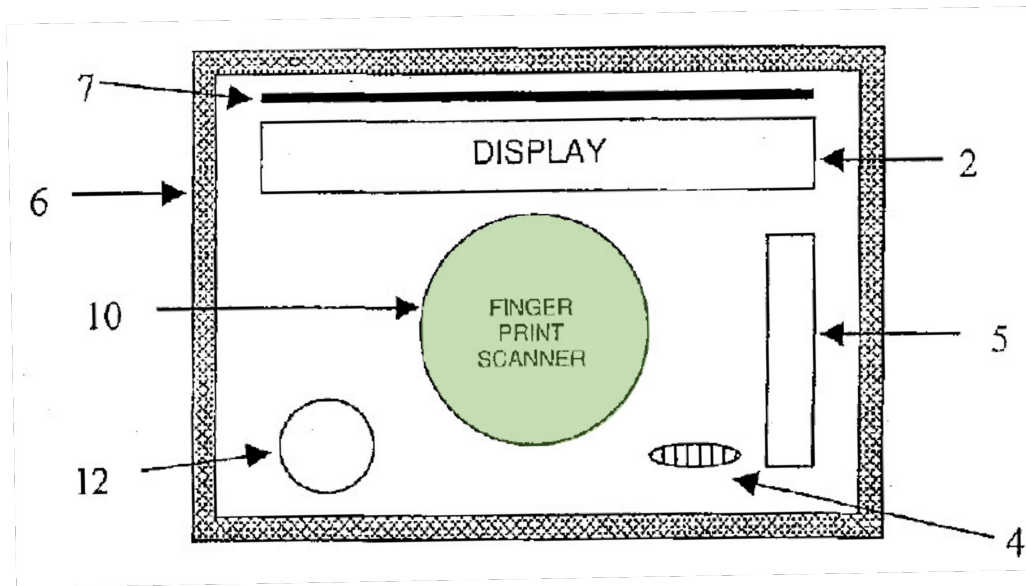
137. In my opinion, a POSITA would have found it obvious to incorporate the radio receiver of *Hoff* into the electronic credit card of *Ong* to provide a dedicated receiver (cue receiver) for updating a status of the card. While *Ong* already includes a radio frequency antenna, the dedicated receiver would allow for receiving an activation cue without interfering with other functions of the electronic credit card. For example, 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, especially where *Ong* references such features but does not describe them in as much detail.

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

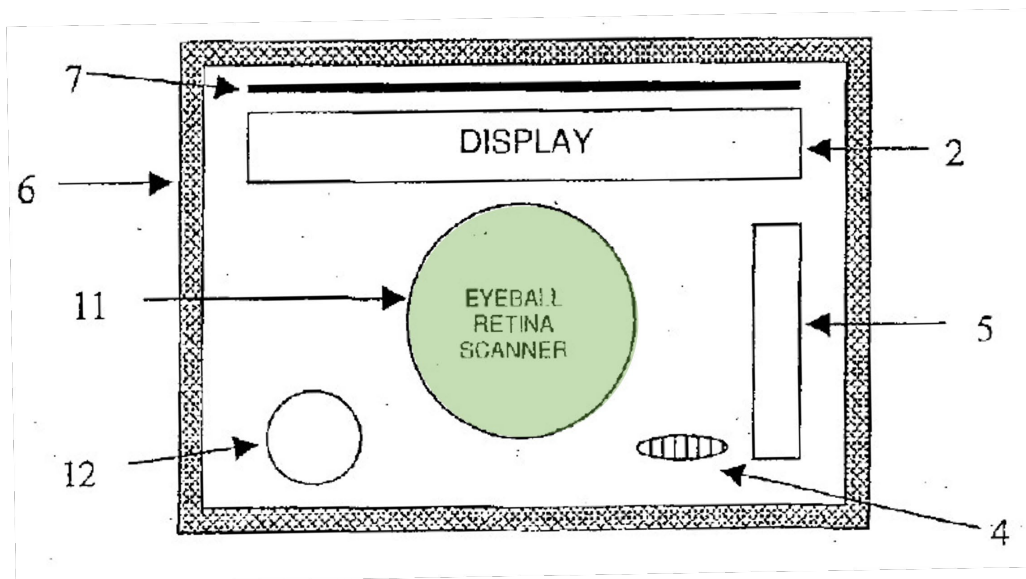
138. In my opinion, *Ong* discloses or at least suggests claim 4. The '333 patent explains that a “biometric parameter detector” may include “a fingerprint scanner capable of obtaining a fingerprint scan.” '333 patent, 5:12-17.

139. **First**, as I explained above 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.

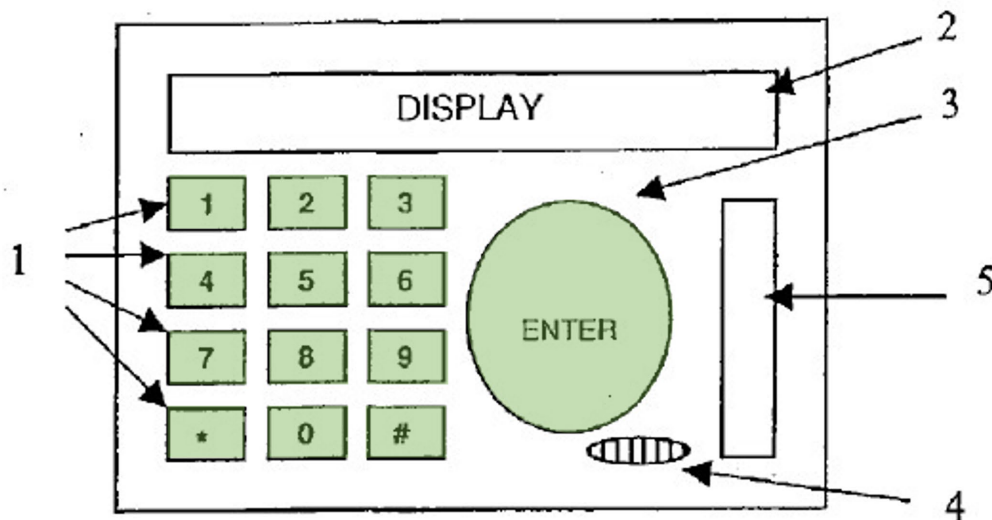
140. **Second**, *Ong*'s "user identification means [control device] includes **a retina scanner for scanning a retina pattern**":



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

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

141. In my opinion, *Ong* discloses or at least suggests claim 4. For example, *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 thus 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). *Id.*, 3:31-34 (describing the “enter” button as a “confirmation” button).

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

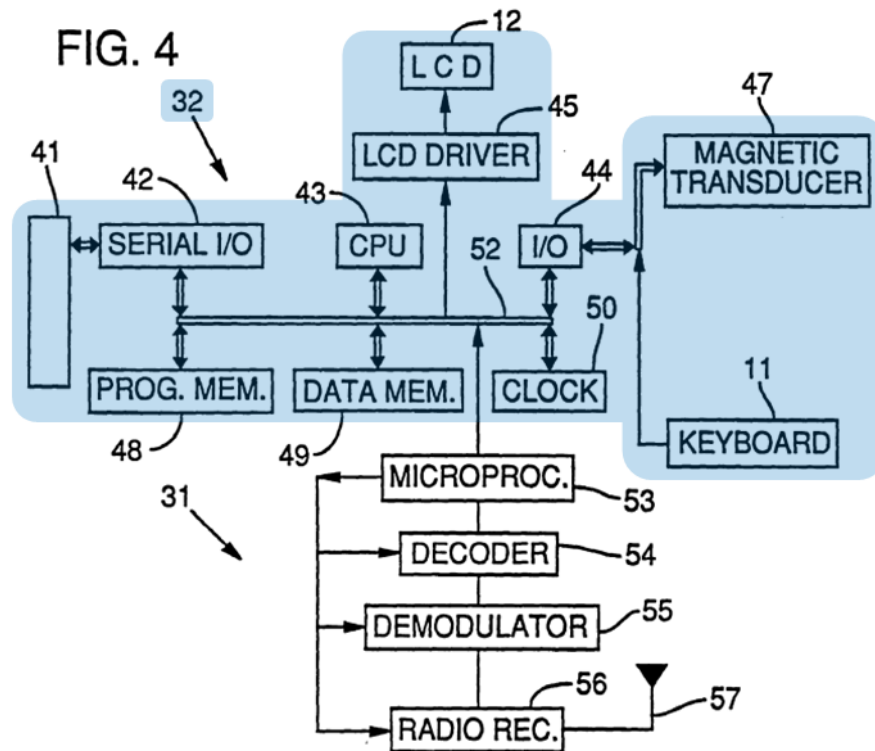
142. In my opinion, *Ong* at least suggests claim 7, and *Ong* in view of *Hoff* renders obvious claim 7. As I explained for [1.a], *Ong* discloses an electronic credit card including various electronic components, including “a user verification means; a means for generating a unique code (not shown); a storage means ... (not shown); ... a communication means ... [and] a processor means.” *Ong*, 3:22-34.

143. And as I 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.” *Id.*, 1:65-2:3.

144. 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.

145. Moreover, as I 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 thus include the logical circuitry (switching element):



Id., Fig. 4, 14:14-25.

146. As I explained for [1.a] and [1.e], a POSITA would have understood that *Ong*'s electronic credit card, including the switching element, would be implemented as logical circuitry as expressly disclosed by *Hoff*. See also § XI.A.1 (Motivation to Combine).

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

147. In my opinion, *Ong* at least suggests claim 8, and *Ong* in view of *Hoff* renders obvious claim 8.

148. As I explained for [1.a], *Ong* discloses an electronic credit card including various electronic components (electronic circuit). *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,” as explained for [1.d.ii]. *Id.*, 1:65-2:3.

149. In my opinion, a POSITA would have recognized that *Ong*’s circuitry, such as a storage means and processing means would be included on a microchip. It was well known that the “smart cards” contemplated in *Ong* include microprocessor chips. *See, e.g., McCrindle*, 13-14, 22-23; *Purk*, 1:6-22. Indeed, a POSITA would understand that a microchip would necessarily be used as the processor for these smart cards in order to fit within the thin form factor of a credit card. 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. *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).

150. *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. *McCrindle*, 13-14, 22-23, 71, 205. A POSITA would further recognize 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). *Ong*, 3:41-49 (noting that *Ong*'s processor is "under the control of firmware").

151. 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.

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

152. In my opinion, *Ong* in view of *Hoff* renders obvious claim 9.

153. As I explained for [1e], *Ong* alone or in combination with *Hoff* teaches a switching element.

154. *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 I 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; *see also* § XI.A.1 (Motivation to Combine). 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 electronic credit card, would have been understood to be suitable options.

10. Independent Claim 11

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

155. In my opinion, *Ong* discloses or at least suggests [11.pre]. For example, as explained for [1.pre], *Ong* discloses an “Electronic Credit Card

(ECC)” (portable electronic device) 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.

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

156. As I explained for [1.a], *Ong* discloses or at least suggests [11.pre.ii], and *Ong* in view of *Hoff* renders obvious [11.pre.ii]. § XI.A.2.b ([1.a]).

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

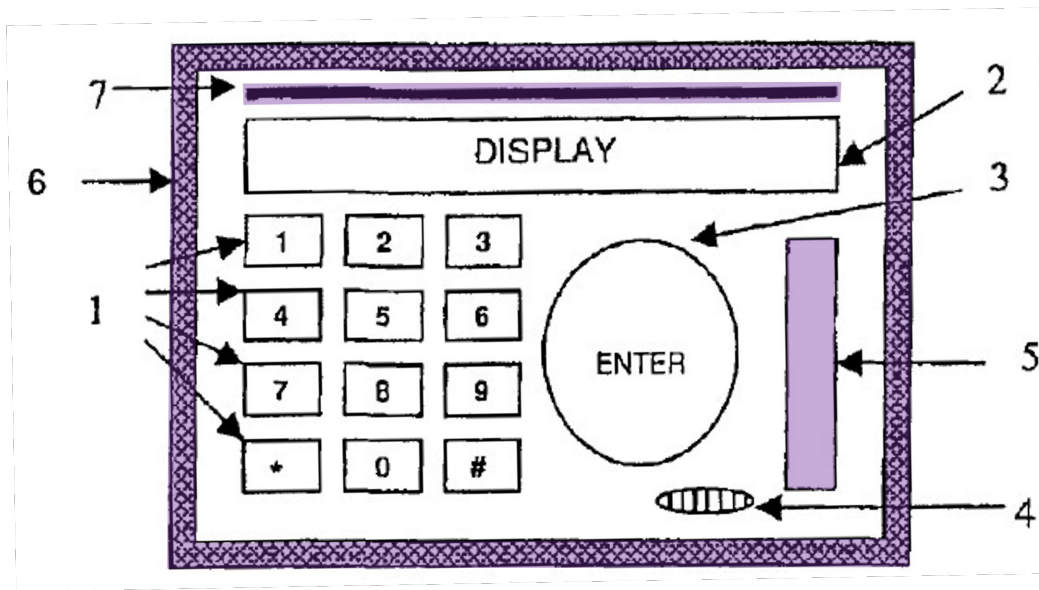
157. As I explained for [1.b], *Ong* discloses or at least suggests [11.pre.iii]. § XI.A.2.c ([1.b]).

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

158. As I explained for [1.c], *Ong* discloses or at least suggests [11.pre.iv], and *Ong* in view of *Hoff* renders obvious [11.pre.iv]. § XI.A.2.d ([1.c]).

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

159. In my opinion, *Ong* discloses or at least suggests [11.pre.v], and *Ong* in view of *Hoff* renders obvious [11.pre.v]. For example, 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”:

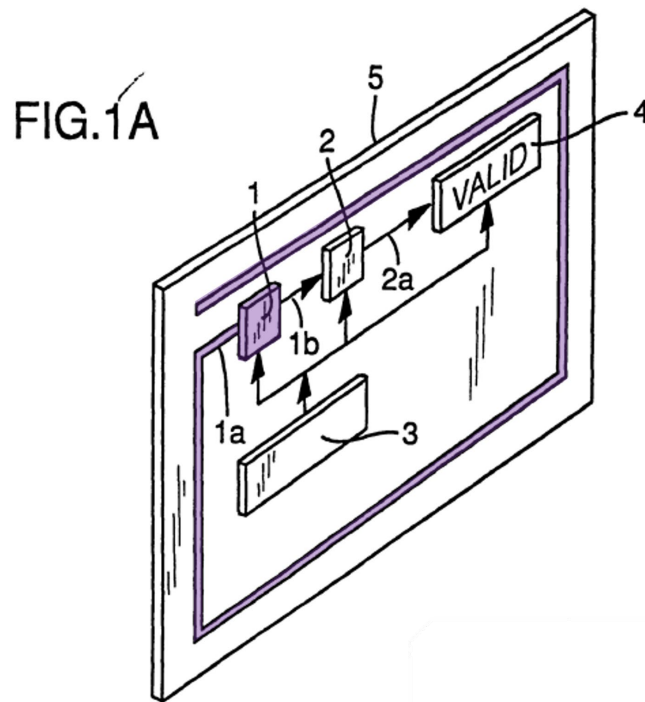


Ong, Fig. 10 (annotated), 2:34-40, 3:22-34, 4:30-39 (“infra red [sic] transmitter receiver 5”).

160. A POSITA would have understood that *Ong*’s communication means are communication ports. For example, at least *Ong*’s infrared “transmitter receiver” has avenues for transmitting and receiving data from external devices. *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” (infra red 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. *See, e.g., Ong*, Fig. 10 (showing each of communication means 5, 6, and 7). As I explained for [1.d.i], *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. 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*.

161. To the extent there is any doubt whether *Ong* discloses communication ports, *Ong* in view of *Hoff* discloses [11.pre.v]. As I 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; *see also 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; *see* '333 patent, 9:26-33.

162. 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. *See* § XI.A.1 (Motivation to Combine).

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

163. In my opinion, *Ong* at least suggests [11.pre.vi] and *Ong* in view of *Hoff* also renders obvious [11.pre.vi]. The '333 patent uses the terms “data conveyance switching element” and “switching element” interchangeably, because throughout the document, there is nothing that would suggest otherwise. '333 patent, 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 I explained for [1.e], *Ong* alone or in combination with *Hoff* discloses a “data conveyance switching element” (switching element). *Ong* and *Hoff* also each at least suggest the “switching element ... being in a default inactive state.”

164. For *Ong*, a POSITA would have found it obvious to include the disablement means of *Ong* in a default inactive state. *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 thus is originally in a default uninitialized state. *Ong*, 4:46-58 (emphasis added). Indeed, *Ong* indicates this controlled management system is the same system “used to issue the electronic credit card.” *Id.* A POSITA would thus have recognized the benefit of issuing *Ong*'s card in a default inactive state.

165. 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. A POSITA would have understood the card is “in a default inactive state” because, as a default, *Hoff*’s logical circuitry resets to the VOID state unless the appropriate signal is received. *Id.*

166. 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.*, 6:1-18; § XI.A.1 (Motivation to Combine).

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

167. As I explained for [1.f], *Ong* at least suggests [11.pre.vii], and *Ong* in view of *Hoff* renders obvious [11.pre.vii].

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

168. In my opinion, *Ong* discloses or at least suggests [11.a], and *Ong* in view of *Hoff* renders obvious [11.a]. As I 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.” 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.”

169. 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. For example, 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 I 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. See §XI.A.1 (Motivation to Combine).

- 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”**

170. In my opinion, *Ong* discloses or at least suggests [11.b], and *Ong* in view of *Hoff* renders obvious [11.b]. As I explained for [11.a], *Ong* and *Hoff* each disclose that an activation cue is received at one of said communication ports.

171. **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 may be received to “re-initialise the electronic credit card” (*Ong*, 4:46 58) (switch from an inactive state to an activated state). See § XI.A.2.g ([1.e]). Moreover, as I explained above 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 electronic credit card thus 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.

172. **For *Hoff***, as I 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.” *Hoff*, 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, thus enabling use of the card. *Id.*, 12:21-26. 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. *Id.*, 2:20-3:4, 12:21-26. Thus, 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]. As I 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. §XI.A.1 (Motivation to Combine).

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

173. As I explained for [1.b], *Ong* discloses or at least suggests [11.c], and *Ong* in view of *Hoff* renders obvious [11.c]. § XI.A.2.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"

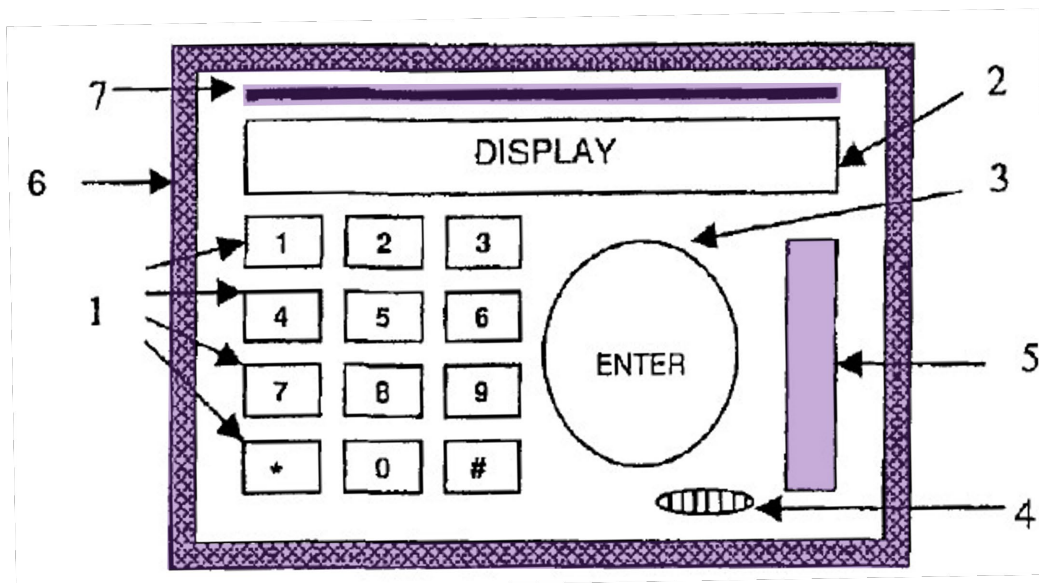
174. As I explained for [1.g.i], *Ong* discloses or at least suggests [11.d], and *Ong* in view of *Hoff* renders obvious [11.d]. § XI.A.2.3 ([1.d.i]).

- 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”

175. As explained for [1.g.ii], *Ong* discloses or at least suggests [11.e], and *Ong* in view of *Hoff* renders obvious [11.e]. § XI.A.2.f ([1.d.ii]).

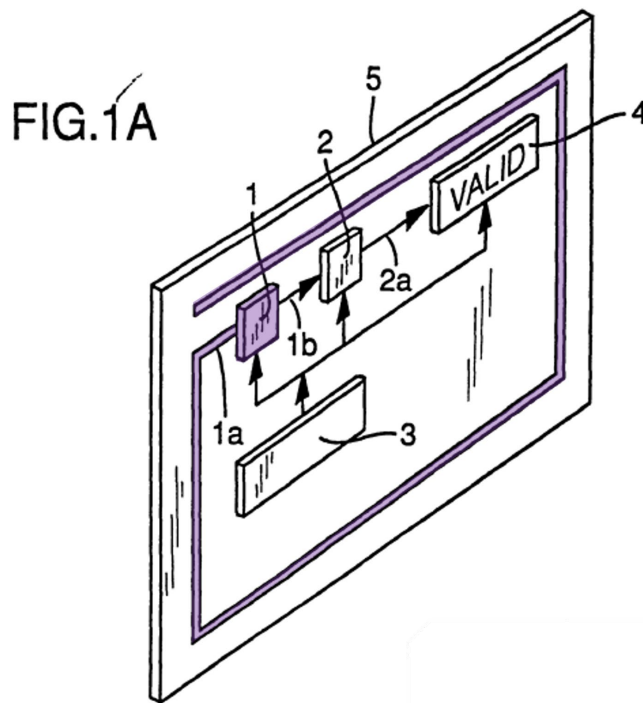
11. Claim 12: “wherein said activation cue is received at one of said communication ports distinct from another one of said communication ports used for data exchange with the external data exchange device”

176. In my opinion, *Ong* discloses or at least suggests claim 12, and *Ong* in view of *Hoff* renders obvious claim 12. As I 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. Accordingly, *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 because otherwise the various ports would be redundant. 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.

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



Hoff, Fig. 1A (annotated), 8:1-11; *see also 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 electronic credit card of *Ong* to provide a dedicated receiver for updating a status of the card without interfering with other functions of the electronic credit card for the same reasons explained for claim 3 with respect to the cue receiver.

12. 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”

178. In my opinion, *Ong* alone or in view of *Hoff* renders obvious claim 13. 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*.

179. As I 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. And as I 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.

180. 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*, 3:54-59. *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. Indeed, it was well understood at the time of the invention for transaction cards to present this form of visual information. *See, e.g., Teicher*, 3:24-25, 9:11-15. For example, *Ong* describes displaying the latest financial information such as the balance. *Ong*, Abstract. A POSITA would understand that after a transaction to add or subtract funds, the balance would be updated. *Id.*

181. *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; *see also id.*, 14:3-13 (the card may “put 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. *Id.*, 10:6-13, 4:16–5:7; *Shogase* (Ex. 1011), 36, 37 (“The display confirms the keystrokes without revealing the actual PIN”), 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.

182. Accordingly, when *Ong* and *Hoff* are 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. 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; § XI.A.1 (Motivation to Combine). And doing so would include conveying data to the display if the card is and activated state, as I explained above.

B. Ground 2: The Combination of *Ong*, *Hoff*, and *Palmer* Renders Obvious Claim 5

183. Claim 5 depends from claim 4, and specifies “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.” ’333 patent, 10:35-40. As I 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." § XI.A.5. 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 because there would be no other way to verify an identity of the user. But to the extent there is any doubt about whether *Ong* discloses this feature, it is taught by *Ong* and *Hoff* in view of *Palmer*.

184. As I explained above, implementing *Ong*'s electronic credit card using the logical circuitry disclosed in *Hoff* would have been a combination of known elements to yield predictable results. See § XI.A.1. *Ong* further discloses an electronic credit card with "fingerprint scanner 10 forming part of the user verification means" (*Ong*, Fig. 11 (annotated), 2:23-33, 4:35-39) and therefore *Ong* and *Hoff* at least suggests 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, lacks detailed description of matching a fingerprint scan to a pre-saved fingerprint image, which is expressly disclosed in *Palmer*. Accordingly, claim 5 would at least have been obvious over *Ong* in view of *Palmer*, particularly given *Ong*'s explicit teaching to use a fingerprint reader to verify the identity of the user.

1. Rationale for Combining *Ong*, *Hoff*, and *Palmer*

185. As explained for Ground 1, a POSITA would have been motivated to combine *Ong* and *Hoff*. § XI.A.1 (Motivation to Combine).

186. In my opinion, a POSITA would have also been motivated to combine *Palmer* with *Ong* and *Hoff*. *Ong* discloses an electronic credit card allowing secure wireless financial transactions. *Ong*, Abstract, 1:12-14, 1:26-46. *Palmer* shares this same goal. *Palmer*, Abstract, 1:32-45, 2:18-31. Both *Ong* and *Palmer* disclose devices having the form factor of a credit card. *Ong*, 1:12-14, 5:27-30, 7:58-61; *Palmer*, 4:12-23. And both include biometric sensors in the form of either fingerprint or retina scanners. *Ong*, 2:26-33; *Palmer*, 4:12-23. And like *Ong*, *Palmer* discloses various improvements over existing smart cards. *Palmer*, 1:15-39; 4:12-23. Combining *Ong* and *Palmer* is therefore nothing more than the combination of familiar elements according to known methods to yield predictable results. *Palmer* is also analogous to the '333 patent because they are in the same field of endeavor: electronic credit cards.

187. A POSITA would have been motivated to combine *Ong* and *Palmer*, for example by substituting or supplementing the programming and/or component in *Ong*, to further enhance the security of the electronic transaction card. For example, *Palmer* more 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.* Accordingly, *Palmer* allows for “effecting secure physical and commercial transactions in a contactless manner using biometric identity validation.” *Id.*, 1:32-39. A POSITA would have been motivated to include the additional details from *Palmer* to further improve the security of *Ong*’s electronic transaction card.

2. 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”

188. In my opinion, *Ong* discloses or at least suggests claim 5, and *Ong* in view of *Palmer* renders obvious claim 5. As I explained above, *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. In my opinion, a POSITA would have recognized that verifying the identity of the user from the user’s fingerprint as disclosed in *Ong* at least suggests comparing the fingerprint of the user with a stored or pre-saved fingerprint image.

189. To the extent there is any doubt whether *Ong* discloses comparing the fingerprint of the user with a stored or pre-saved fingerprint image, *Palmer* does. *Palmer* describes “an apparatus and method for effecting secure transactions in a

contactless manner using biometric identity validation.” *Palmer*, Abstract. Like *Ong* and *Hoff*, the apparatus in *Palmer* may have “a form factor similar to that of a credit card.” *Id.*, 4:12-23. For performing a transaction, *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; *see also, 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”).

190. A POSITA would have been motivated to store a known template of the user’s fingerprint in the memory of *Ong*’s electronic credit card, as taught by *Palmer*, to provide more robust biometric identification techniques. § XI.B.1 (Ground 2, Motivation to Combine).

C. Ground 3: The Combination of *Ong*, *Hoff*, and *Rolf* Renders Obvious Claim 10

191. Claim 10 is similar to claim 1 except that it is a system claim, rather than a portable electronic device claim, and adds electric circuitry and components of a data exchange device (also referenced in claim 1, but without detail).

192. As I explained for claim 1, *Ong* and *Hoff* teach all elements of the system and portable electronic device, except the detailed electric circuitry and components of the data exchange device. *Rolf* discloses those. Accordingly, these limitations would at least have been obvious over *Ong* in view of *Rolf*, particularly given *Ong*'s explicit suggestion.

1. Rationale for Combining *Ong*, *Hoff*, and *Rolf*

193. As I explained for Ground 1, a POSITA would have been motivated to combine *Ong* and *Hoff*. § XI.A.1 (Motivation to Combine). A POSITA would have also been motivated to combine *Rolf* with *Ong* and *Hoff*. For example, *Rolf*, like *Ong* and *Hoff*, provides a system for performing financial transactions via a wireless communications link. *Rolf*, 1:16-26. The system in *Rolf* envisions completing transactions through a handheld electronic device, such as a cell phone. *Id.* *Ong*, alone but also as combined with *Hoff*, discloses incorporating its electronic credit card into a mobile phone and thus discloses a compatible network. *Ong*, 5:5-19 (“The electronic credit card may be incorporated into ... a mobile phone.”). And like *Ong*, *Rolf* discloses communicating with a host computer (i.e.,

the “central processing facility”) through an intermediate terminal. *Rolf*, 3:13-25. The combination of *Ong*, *Hoff*, and *Rolf* would have therefore been no more than the combination of familiar elements according to known methods to yield predictable results. *Rolf* is also analogous to the ’333 patent because they are in the same field of endeavor: electronic credit cards.

194. In my opinion, a POSITA would have been motivated to combine *Ong*, *Hoff*, and *Rolf*, for example by including multiple communication links with *Ong*’s host computer, to increase the bandwidth of *Ong*’s system. For example, *Rolf* explains that, preferably, “a large number of ... users will use, and in fact simultaneously use, the system.” *Rolf*, 17:24-57. Accordingly, *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 the multiple communication links described in *Rolf* into the *Ong-Hoff* transaction system to allow for a greater volume of transactions.

3. Independent Claim 10

a. [10.pre]: “A data exchange system”

195. In my opinion, *Ong* discloses or at least suggests [10.pre]. *Ong* discloses an “Electronic Credit Card (ECC)” characterized as “an electronic device that enables transmission/reception of data and/or digital information to/from a

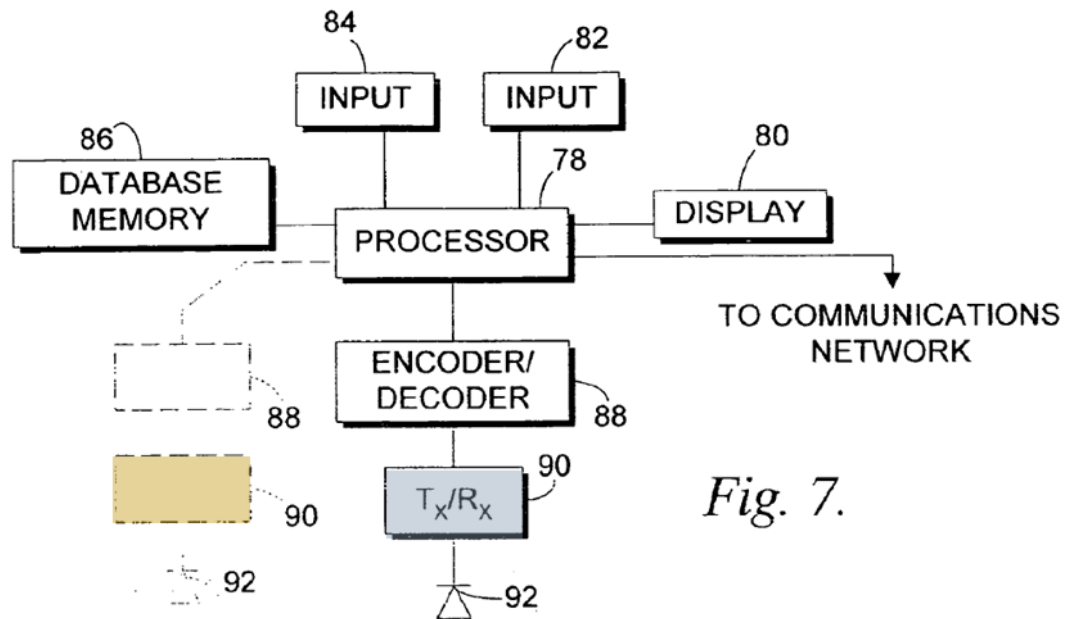
host computer via a Terminal Station (TS).” *Ong*, Abstract, Figs. 2, 3. *Ong*’s electronic credit card also communicates a “unique authorisation code” and “the user’s account details” “to a transaction station to facilitate an electronic funds transfer.” *Id.*, 3:50-59. Based on this, a POSITA would 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.” *Id.*, 7:15-39 (reciting an “electronic fund transfer system”).

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

196. In my opinion, *Ong* in view of *Hoff* and *Rolf* renders obvious [10.a]. As explained for [1.g.i] (which recites “a data exchange ... between said electronic circuit and an external data exchange device”), *Ong* discloses a data exchange device. *Ong* discloses an “Electronic Credit Card (ECC)” 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)” (data exchange devices). *Ong*, Abstract. A POSITA would have recognized that the host computer and the terminal station are data exchange devices because they exchange data either directly or indirectly with the electronic credit card. Because *Ong*’s host computer and terminal station (data exchange devices) are configured to transmit to and receive data from the electronic credit card, a POSITA would have

recognized that they would have included various communication means for communicating with the card, like *Ong*'s electronic credit card contains different communication means as I explained for [1.d.1]). A POSITA also would have recognized that *Ong*'s host computer and terminal station (data exchange devices) comprise an electronic circuit, as they must be configured to communicate with each other and the electronic credit card to conduct an electronic funds transfer transaction. *Id.*, 3:51-62.

197. To the extent there is any doubt whether *Ong* discloses that its data exchange device includes a first electronic circuit, a first data transceiver, and a cue emitter, *Rolf* does. *Rolf* discloses a system for “performing financial transactions, such as sales transactions at a point of sale terminal, via a wireless communications link.” *Rolf*, 1:15-26. *Rolf*'s system 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 thus will have a number of ‘lines’ or ‘channels’ upon which to communicate.” *Id.*, 17:24-57. As shown below, the central processing facility includes a **first transceiver 90** (first data transceiver) and at least one **additional transmitter receiver 90** (cue emitter):



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. *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." *Id.*, 15:6-56, 17:24-57.

198. 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 thus 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 electronic credit card.

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

199. As I explained for [1.pre], *Ong* discloses [10.b], and *Ong* in view of *Hoff* renders obvious [10.b]. § XI.A.2.a ([1.pre]).

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

200. As I explained for [1.a], *Ong* discloses or at least suggests [10.c], and *Ong* in view of *Hoff* renders obvious [10.c]. § XI.A.2.b ([1.a]).

e. [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”

201. As I explained for [1.b], *Ong* discloses or at least suggests [10.d], and *Ong* in view of *Hoff* renders obvious [10.d]. § XI.A.2.c ([1.b]).

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

202. As I explained for [1.c], *Ong* discloses or at least suggests [10.e], and *Ong* in view of *Hoff* renders obvious [10.e]. § XI.A.2.d ([1.c]).

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

203. As I explained for [1.d.i] and [1.d.ii], *Ong* discloses or at least suggests [10.f], and *Ong* in view of *Hoff* renders obvious [10.f]. §§ XI.A.2.e ([1.d.i]), XI.A.2.f ([1.d.ii]).

h. [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”

204. As I explained for [1.e], *Ong* discloses or at least suggests [10.g], and *Ong* in view of *Hoff* renders obvious [10.g]. § XI.A.2.g ([1.e]).

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

205. As I explained for [1.f], *Ong* at least suggests [10.h], and *Ong* in view of *Hoff* renders obvious [10.h]. § XI.A.2.h ([1.f]).

j. [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”

206. As I explained for [1.g.i], *Ong* discloses or at least suggests [10.i.i], and *Ong* in view of *Hoff* renders obvious [10.i.i]. § XI.A.2.i ([1.g.i]).

- k. **[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”**

207. As I explained for [1.g.ii], *Ong* discloses or at least suggests [10.i.ii], and *Ong* in view of *Hoff* renders obvious [10.i.ii]. § XI.A.2.j ([1.g.ii]).

XII. CONCLUSION

208. For the reasons set forth above, in my opinion, a person of ordinary skill in the art would have found claims 1-13 of the '333 patent obvious.

209. In signing this declaration, I understand that the declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I acknowledge that I may be subject to cross-examination in this case and that cross-examination will take place within the United States. If cross-examination is required of me, I will appear for cross-examination within the United States during the time allotted for cross-examination.

210. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: September 11, 2024

By: 
Stuart J. Lipoff