

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

SQUARE, INC.  
Petitioner,

v.

4361423 CANADA INC.,  
Patent Owner.

---

IPR2019-01627  
Patent 8,281,998 B2

---

Before JAMESON LEE, ROBERT J. WEINSCHENK, and  
KEVIN C. TROCK, *Administrative Patent Judges*.

LEE, *Administrative Patent Judge*.

JUDGMENT  
Final Written Decision  
Determining All Challenged Claims Unpatentable  
*35 U.S.C. § 318(a)*

## I. INTRODUCTION

### A. *Background and Summary*

Square Inc. (“Petitioner”) filed a Petition for *inter partes* review of claims 1–3, 6, 10, 12, 14–17, and 19 (“challenged claims”) of U.S. Patent No. 8,281,998 B2 (Ex. 1001, “the ’998 patent”). Paper 2 (“Pet.”). Patent Owner filed a Preliminary Response. Paper 7. We instituted review on March 31, 2020. Paper 13 (“Decision on Institution”). 4361423 Canada Inc. (“Patent Owner”) filed a Patent Owner Response. Paper 21 (“PO Response”).<sup>1</sup> Petitioner filed a Reply. Paper 26. Patent Owner filed a Sur-Reply. Paper 27. Oral hearing was consolidated with the oral hearings in IPR2019-01625 and IPR2019-01629, and was held on January 27, 2021. A copy of the hearing transcript has been entered into the record as Paper 35 (“Tr.”).

Petitioner has proved by a preponderance of the evidence that claims 1–3, 6, 10, 12, 14–17, and 19 of the ’998 patent are unpatentable.

### B. *Real Parties-in-Interest*

Each party identifies itself as the only real party in interest. Pet. 4; Paper 5, 2.

### C. *Related Matters*

The parties indicate the ’998 patent is the subject of: *4361423 Canada Inc. v. Square, Inc.*, No. 4:19-cv-04311 (N.D. Cal.). Pet. 4; Paper 5, 2.

---

<sup>1</sup> The Patent Owner Response filed as Paper 21 does not include page numbers. Patent Owner filed a Corrected Patent Owner Response including page numbers. Paper 34. Hereinafter, citations to the Patent Owner Response are to the Corrected Patent Owner Response filed as Paper 34.

Petitioner indicates that the '998 patent is the subject of another petition for *inter partes* review in IPR2019-01628. Pet. 5.<sup>2</sup>

*D. The '998 patent*

The '998 patent relates to an apparatus and system “for commercial transactions using a transaction card via a communication device in audio communication with a remote processor assembly.” Ex. 1001, 2:17–20. It is also related to a method “for commercial transactions using a transaction card via a communication device.” *Id.* at 2:21–23. Specifically, the '998 patent describes a transaction apparatus, such as a portable point of sale (“POS”) device, linked to a communication device, such as a mobile phone. *Id.* at 5:52–53, 5:66–6:2; 7:19–24. Figure 2 illustrates an embodiment of an assembly according to the '998 patent and is reproduced below.

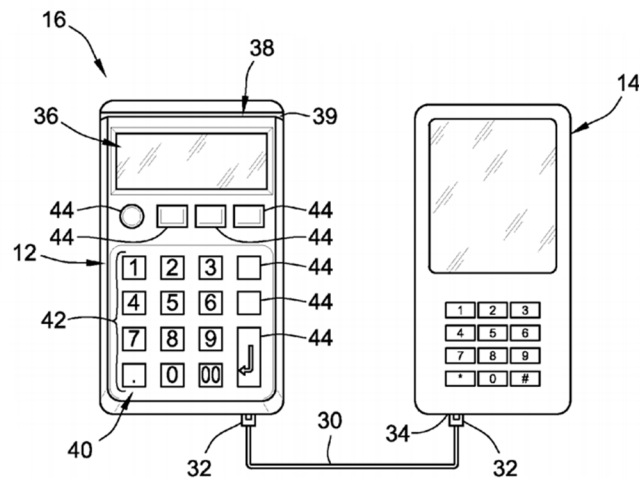


**FIG. 2**

---

<sup>2</sup> The Petition in IPR2019-01628 challenges the same claims as the challenged claims in this proceeding. We declined to institute review in IPR2019-01628. IPR2019-01628, Paper 14.

Figure 2 shows a front view of a transaction/communication assembly according to an embodiment of the '998 patent. *Id.* at 5:22–24.

Assembly 16 includes POS device 12 linked to a communication device in the form of mobile phone 14 via cable 30. *Id.* at 7:19–24. POS device 12 includes input device 38 such as card reader slot 39 for swiping or inserting transaction card 24 and capturing information from the transaction card. *Id.* at 7:31–34. The '998 patent explains that a user swipes card 24 through slot 39, and that analog information on magnetic strip 46 on card 24 is captured by an analog signal reader such as magnetic strip reader 52, and transferred to MCU 50 (microcontroller unit). *Id.* at 7:42–45, 7:56–59.

MCU 50 converts the information into an analog audio signal and transmits it via an analog communication link such as cable 30 to the communication device such as mobile phone 14. *Id.* at 7:65–8:4. Optionally, MCU 50 may encrypt the data. *Id.* at 7:61–63. The communication device then transmits the information to transaction server 18 for processing. *Id.* at 8:5–6. The transaction server decrypts the received signal, converts it to a digital signal, and sends it to remote processor 20 for validation. *Id.* at 8:6–8. Remote processor 20 can reject or accept the requested transaction and send a message to transaction server 18 to indicate that determination. *Id.* at 8:10–13. Transaction server 18, after receiving the message from remote processor 20, converts the received information to an audio signal and sends it back to mobile phone 14. *Id.* at 8:15–18.

Claims 1, 10, 12, 14, 17, and 19 of the challenged claims are independent. Independent claims 1 and 12 are illustrative. Claim 1 is drawn to an apparatus for effecting commercial transactions between an input device and a remote transaction server using a transaction card. *Id.* at 11:48–12:3. Claim 12 is drawn to a portable card reader device for reading a

card having magnetically recorded information stored on a magnetic strip incorporated into the card. *Id.* at 13:24–40. Claims 1 and 12 are reproduced below.

1[P]. An apparatus for effecting commercial transactions between an input device and a remote transaction server using a transaction card, said apparatus comprising:

- [A] an input device for capturing information from the transaction card;
- [B] a controller for converting the captured card information into an encrypted audio signal having an analog audio format suitable for transmission to an analog hands-free jack of a mobile communication device; and
- [C] a communication link for coupling said input device to an analog hands-free jack of a mobile communication device for the transmission of said encrypted analog-audio-format signals therebetween;
- [D] wherein when said input device captures the card information, said controller converts the card information into said encrypted analog-audio-format signal and transmits said converted signal via said communication link to said mobile communication device; and
- [E] wherein said mobile communication device automatically transmits the captured card information to the remote transaction server and receives transaction validation information from said remote transaction server.

*Id.* at 11:48–12:3 (clause headings in brackets added).

12. A portable card reader device for reading a card having magnetically recorded information stored on a magnetic strip incorporated into the card, the device comprising:

- a read head for sensing magnetically recorded information stored on a magnetic strip incorporated into a card and for producing an encrypted analog

signal indicative of the magnetically recorded information stored on the magnetic strip, said read head including circuitry for converting said encrypted analog signal to an audio format suitable for transmission to a hands-free jack of a mobile communication device; and

an output jack adapted to be inserted into an jack associated with said mobile communication device for providing the encrypted analog signal indicative of the magnetically recorded information stored on the magnetic strip to said mobile communication device for transmission to a transaction server for further processing.

*Id.* at 13:24–40.

*E. Evidence Relied on by Petitioner*

Petitioner relies on the following references:

| <b>Evidence</b>                                                                              | <b>Exhibit No.</b> |
|----------------------------------------------------------------------------------------------|--------------------|
| U.S. Patent Application Publication No. 2002/0091633 A1, published July 11, 2002 (“Proctor”) | 1004               |
| U.S. Patent Application Publication No. 2005/0236480 A1, published Oct. 27, 2005 (“Vrotsos”) | 1006               |
| U.S. Patent No. 5,838,773, issued Nov. 17, 1998 (“Eisner”)                                   | 1008               |
| U.S. Patent No. 7,673,799 B2, issued Mar. 9, 2010 (“Hart”)                                   | 1018               |

Petitioner additionally relies on the declarations of Bruce McNair (Ex. 1003 (“Declaration”); Ex. 1042 (“Reply Declaration”)).

*F. Asserted Grounds of Unpatentability*

Petitioner asserts the following grounds of unpatentability:

| <b>Claim(s) Challenged</b>     | <b>35 U.S.C. §<sup>3</sup></b> | <b>References/Basis</b> |
|--------------------------------|--------------------------------|-------------------------|
| 1–3, 6                         | 103                            | Proctor, Vrotsos        |
| 10, 12, 14–17, 19              | 103                            | Proctor, Hart           |
| 1–3, 6, 10, 12, 14, 16, 17, 19 | 103                            | Eisner, Proctor         |
| 15                             | 103                            | Eisner, Proctor, Hart   |

II. ANALYSIS

*A. Principles of Law*

To prevail in its challenge to Patent Owner’s claims, Petitioner must demonstrate by a preponderance of the evidence that the claims are unpatentable.<sup>4</sup> 35 U.S.C. § 316(e) (2018); 37 C.F.R. § 42.1(d) (2019). That burden never shifts to the patentee. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406

---

<sup>3</sup> The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29, 125 Stat. 284, 287–88 (2011), revised 35 U.S.C. § 103 effective March 16, 2013. Because the challenged patent has an effective filing date prior to March 16, 2013 (Ex. 1001, codes (22), (63)), we refer to the pre-AIA versions of § 103.

<sup>4</sup> The burden of showing something by a preponderance of the evidence requires the trier of fact to believe that the existence of a fact is more probable than its nonexistence before the trier of fact may find in favor of the party who carries the burden. *Concrete Pipe & Prods. of Cal., Inc. v. Constr. Laborers Pension Tr. for S. Cal.*, 508 U.S. 602, 622 (1993).

(2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective evidence of nonobviousness.<sup>5</sup> *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

*B. Level of Ordinary Skill in the Art*

In determining the level of ordinary skill in the art, various factors may be considered, including the type of problems encountered in the art, prior art solutions to those problems, rapidity with which innovations are made, sophistication of the technology, and educational level of active workers in the field. *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). “[E]very factor may not be present, and one or more factors may predominate.” *Id.*

Petitioner asserts that a person of ordinary skill in the art (“POSITA”), at the time the ’998 patent was filed, would have been “a person with a bachelor’s degree in electrical engineering, computer engineering, or equivalent” and would have had “at least one to two years of relevant experience in the fields of embedded systems and mobile communication device interfaces, or otherwise equivalent industry experience in the relevant field.” Pet. 14–15 (citing Ex. 1003 ¶¶ 5–12, 22–27). Patent Owner has not proposed a description of the level of ordinary skill in the art or disputed Petitioner’s description.

---

<sup>5</sup> Patent Owner has not presented any objective evidence of nonobviousness or any argument in that regard.

Petitioner’s articulation of the level of ordinary skill in the art is supported by the Declaration of Mr. McNair. Ex. 1003 ¶ 27. It also appears consistent with what is reflected by the content of the applied prior art references. *Cf. Okajima v. Bourdeau*, 261 F.3d 1350, 1354–55 (Fed. Cir. 2001) (the applied prior art may reflect an appropriate level of skill). We adopt Petitioner’s articulation of the level of ordinary skill in the art, but delete the qualifier “at least” for the level of practical experience, to keep that level from being vague and extending to a range that may correspond to the level of skill of an expert.

*C. Claim Construction*

For petitions filed on or after November 13, 2018, we use the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. *See* 37 C.F.R. § 42.100 (2019). The Petition here was filed on September 30, 2019. Paper 2. We apply the claim construction standard from *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc).

Claim terms are generally given their ordinary and customary meaning as would be understood by one with ordinary skill in the art in the context of the specification, the prosecution history, other claims, and even extrinsic evidence including expert and inventor testimony, dictionaries, and learned treatises, although extrinsic evidence is less significant than the intrinsic record. *Phillips*, 415 F.3d at 1312–17. Usually, the specification is dispositive, and it is the single best guide to the meaning of a disputed term. *Id.* at 1315.

The specification may reveal a special definition given to a claim term by the patentee, or the specification or prosecution history may reveal an intentional disclaimer or disavowal of claim scope by the inventor. *Id.* at 1316. If an inventor acts as his or her own lexicographer, the definition must be set forth in the specification with reasonable clarity, deliberateness, and precision. *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1249 (Fed. Cir. 1998). The disavowal of claim scope, if any, can be effectuated by language in the specification or the prosecution history. *Poly-America, L.P. v. API Indus., Inc.*, 839 F.3d 1131, 1136 (Fed. Cir. 2016). “In either case, the standard for disavowal is exacting, requiring clear and unequivocal evidence that the claimed invention includes or does not include a particular feature.” *Id.*

Only those claim terms that are in controversy need to be construed, and only to the extent necessary to resolve the controversy. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

In neither the Petition nor the Patent Owner Response has either party proposed an express full construction for any claim term. However, the arguments of the parties reflect a certain reading of the claim language. To the extent necessary to reach a decision, we discuss each party’s proposed reading in our analysis of the party’s arguments below.

*D. Alleged Unpatentability of Claims 1–3 and 6  
as Obvious over Proctor and Vrotsos*

*1. Overview of Proctor*

Proctor discloses a system and method for verification of credit card purchases through wireless communication. Ex. 1004 ¶ 1. Proctor provides a wireless financial transaction verification facility that has a transaction

information terminal for scanning credit cards and entering a purchase price, where the information is communicated in a first electronic format. *Id.* ¶ 5. A converter is connected to the terminal and converts that information to a second format transmissible by a digital cellular network. *Id.* A wireless communication device is connected to the converter, and operates to communicate with the network in the second format. *Id.*

Figure 1 of Proctor illustrates a block diagram of the operating environment of Proctor (*id.* ¶ 6) and is reproduced below:

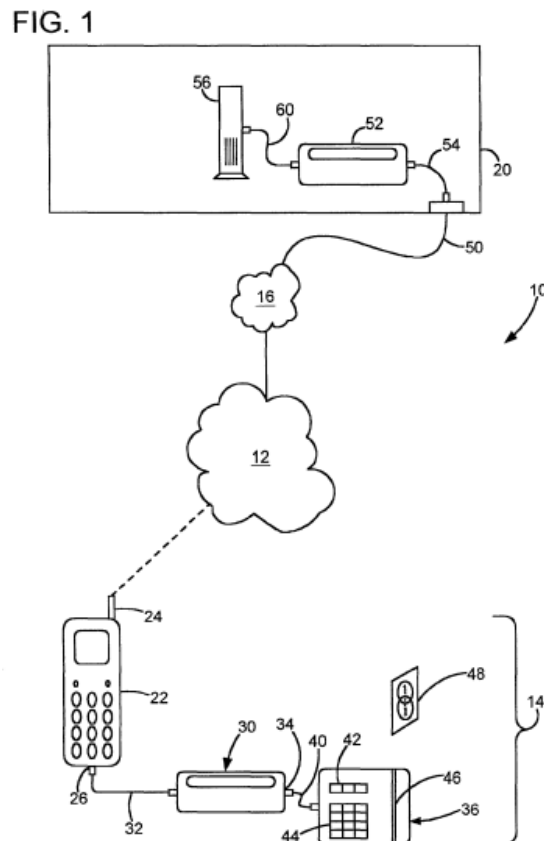


Figure 1 shows financial transaction verification system 10 including wireless or cellular network 12 with a user system connected to the network. Ex. 1004 ¶ 7. The cellular network is connected to conventional telephone system 16, and central verification facility 20, such as a bank, credit card issuer, or agency is connected to telephone system 16. *Id.*

The user system includes digital cellular telephone 22 communicating with cellular network 12. *Id.* ¶ 8. Cellular phone includes circuitry that encodes voice communication digitally for transmission, and circuitry with receiving capabilities to receive a digital data stream and to convert it into an audible representation of the original caller with whom the user is speaking. *Id.* Cellular phone 22 also includes supplementary connector 26 of the type used for communication with accessories such as hands-free headsets. *Id.*

Credit card verification terminal 36 includes magnetic credit card reader slot 46 as an input device that reads data encoded on a magnetic strip on purchaser's credit card 48. *Id.* With regard to credit card verification terminal 36, Proctor describes as follows:

The terminal 36 operates conventionally, and includes what is essentially a modem that converts the scanned or entered data to be sent from a digital form to a modulated tonal pattern transmissible via conventional telephone lines; it further operates to receive such a modulated audio signal and convert it to a digital form for display.

*Id.* ¶ 11.

Converter 30 is connected between credit card verification terminal and cellular phone 22. *Id.* ¶¶ 9–10. It converts the signal from terminal 36 into a format that is readily transmitted via digital cellular networks. *Id.*

¶ 16. Central verification facility 20 is connected to the telephone network via phone lines 50, and a converter, i.e., converter 52, that is essentially functionally identical to converter 30 is connected via line 54 to line 50.

*Id.* ¶ 12.

A merchant having system 14 dials on cellular phone 22 the number of the credit card verification system; the data message generated by terminal 36 is modulated to an audible stream of tones which are transmitted

to converter 30; converter 30 converts the tonal signal into a form that is readily transmitted via digital cellular networks; and the phone then transmits the encoded stream to a receiver node on network 12 which then transmits the stream to credit card verification facility 20 through conventional telephone network 16. *Id.* ¶¶ 15, 16.

Remote credit card verification facility 20 includes computer 56 which includes or connects to a financial database containing information about a purchaser's credit card, credit history, account balance or available credit, and other financial status, including whether or not the credit card is stolen. *Id.* ¶ 12. Computer 56 processes the message transmitted by credit card verification terminal 36 and generates a reply message which may be a simple indication of approval or denial of a transaction. *Id.* ¶ 17. The reply message or return communication follows the same path back to terminal 36 as the original communication from terminal 36. *Id.*

Finally, Proctor describes the following: “For instance, the component[s] of the merchant system 14 may be combined or integrated. All may be included in a single device, the telephone may incorporate the decoder circuitry [converter 30], and/or the terminal may incorporate the decoder circuitry [converter 30].” *Id.* ¶ 18. Thus, Proctor discloses three separate embodiments based on a different location for converter 30, i.e., within the phone, within the terminal, and between the terminal and the phone.

## 2. *Overview of Vrotsos*

Vrotsos is directed to a system and method for transmitting transaction data over a wireless communication network. Ex. 1006 ¶ 26. In an embodiment, the system is used to transmit credit card information during a point-of-sale transaction. *Id.* An “attachment” is coupled to a wireless

communication device having a transceiver for establishing a communication link with a wireless communication network. *Id.* Vrotsos states that the “attachment” may also be referred to “as a peripheral or peripheral device.” *Id.*

The “attachment” includes a processor and an input device. *Id.* When the attachment device receives data from the input device, it transmits that data over the wireless communication network using the transceiver in the wireless communication device. *Id.* Vrotsos describes that the input device may be a magnetic strip reader or a smartcard reader. *Id.* ¶ 28. In one embodiment, the attachment includes a magnetic stripe reader that can be used to collect information encoded in the magnetic strip on a credit card. *Id.* The magnetic stripe reader includes a slot through which the magnetic stripe-carrying card may be passed before a reader head to decode the data encoded thereon. *Id.*

When input information is received at the input device, it is sent to a processor in the attachment device for processing and transmission to the remote computer through the communication device. *Id.* ¶ 26. The remote computer may process the received data and generate a response to be sent back to the processor in the attachment device. *Id.*

Figure 10 is a block diagram of the system of Vrotsos:

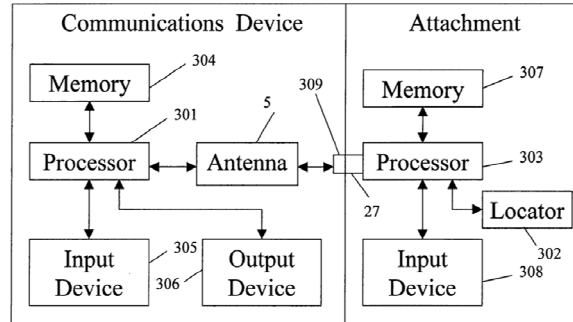


FIGURE  
10

Figure 10 illustrates the components of the wireless communication device and attachment (peripheral device) disclosed in Vrotsos. *Id.* ¶ 23. The attachment includes processor 303, memory 307, and input device 308. *Id.* ¶ 75. Processor 303 receives input information from input device 308 and processes that information to generate data for transmission to a remote computer via antenna 5 of the communication device. *Id.* Vrotsos also describes that processor 303 operates to encrypt the input information. *Id.*

### 3. Independent Claim 1

#### Recitation 1[P] — Preamble

Claim 1 recites “[a]n apparatus for effecting commercial transactions between an input device and a remote transaction server using a transaction card.” Ex. 1001, 11:48–50. Petitioner identifies Proctor’s terminal 36 as the claimed apparatus, Proctor’s magnetic card reader slot 46, which reads data from a magnetic strip of a user’s credit card, as satisfying the claimed input device, Proctor’s central verification facility 20 as the remote transaction server, and a user’s credit card as the claimed transaction card. Pet. 23–25 (citing Ex. 1004 ¶¶ 7, 10). Although Petitioner refers to magnetic card reader slot 46 as the claimed input device, we understand Petitioner to be referring to the magnetic card reader, which is without a numeric reference

in Proctor’s disclosure, rather than just a slot denoting empty space.<sup>6</sup> We expressed the same understanding in the Decision on Institution. Paper 13, 14. Patent Owner does not present any counter-argument with respect to Petitioner’s assertions for the preamble of claim 1. We are persuaded that Proctor discloses “[a]n apparatus for effecting commercial transactions between an input device and a remote transaction server using a transaction card.” It is not necessary to determine whether the preamble is limiting.

#### Limitation 1[A] — Input Device

Claim 1 further recites “an input device for capturing information from the transaction card.” Ex. 1001, 11:51–52. Petitioner explains that Proctor’s magnetic card reader slot 46 captures information from the magnetic strip on a user’s credit card. Pet. 25 (citing Ex. 1004 ¶ 10). As discussed above, we understand Petitioner to be referring to the magnetic card reader, rather than just a slot. Patent Owner does not present any counter-argument for this limitation of claim 1. We are persuaded that Proctor discloses “an input device for capturing information from the transaction card.”

#### Limitation 1[B] — Controller

Claim 1 further recites “a controller for converting the captured card information into an encrypted audio signal having an analog audio format suitable for transmission to an analog hands-free jack of a mobile communication device” (hereinafter “the controller limitation”). Ex. 1001, 11:53–56. Petitioner presents a claim chart in which Proctor’s terminal 36 is mapped to the claimed controller. Pet. 25. The claim chart indicates that a

---

<sup>6</sup> At least in one instance, Petitioner does refer to Proctor’s “magnetic stripe reader” as the claimed input device. Pet. 23.

controller is met by “conventional credit card verification circuitry including a modem,” and that Proctor’s terminal 36 is such conventional credit card verification circuitry including a modem. *Id.* Proctor describes terminal 36 as a “conventional credit card verification terminal.” Ex. 1004 ¶ 10 (cited at Pet. 25). Proctor also describes terminal 36 as operating “conventionally and includes what is essentially a modem.” *Id.* ¶ 11 (cited at Pet. 25).

Petitioner further asserts that Proctor’s terminal 36 “converts the scanned or entered data to be sent from a digital form to a modulated tonal pattern transmissible via conventional telephone lines.” Pet. 25, 27 (citing Ex. 1004 ¶¶ 10, 11). Petitioner further notes that Proctor’s Figure 1 shows credit card verification terminal 36 coupled to phone 22 at connector 26. *Id.* at 27. Petitioner explains that Proctor’s phone 22 includes supplementary connector 26 of the type used for communication with accessories such as hands-free headsets. *Id.* at 28 (citing Ex. 1004 ¶ 8). Thus, the location of connector 26 represents a hands-free jack of phone 22. Further, Petitioner cites to Mr. McNair, who testifies that modulated tonal patterns transmissible over telephone lines are analog signals. *Id.* (citing Ex. 1003 ¶ 43).

Petitioner further states:

While the embodiment of **Proctor** primarily used in this Petition and applied in the claim charts takes the option, explicitly given by **Proctor**, of incorporating converter 30’s functionality into phone 22 (*see Proctor* ¶ 18), **Proctor**’s system and method meet the claim limitations of the ‘998 patent even in the alternative embodiments where (1) the converter 30 is a physical unit between terminal 36 and phone 22 and (2) the converter 30 is incorporated in terminal 36.

*Id.* at 18 n.2.

We focus our discussion on the embodiment in which converter 30 is located within terminal 36, in which case the output of terminal 36 as controller is directly transmitted to the hands-free jack of phone 22. As such, that output clearly is in a format suitable for transmission to the analog hands-free jack of phone 22.<sup>7</sup>

Proctor is not relied on by Petitioner to meet the encryption requirement of the controller limitation. Instead, for that requirement, Petitioner asserts that encryption was:

old and well known in the card-reader art, and a POSITA would have recognized a number of ways to generate encrypted information, including Vrotsos's detailed example described in Figures 9(a)-(c), and would have had a reasonable expectation of success in doing so. *See also* Ex. 1008, 5:3–49 (prior art example converting card data to an encrypted analog signal). (Ex. 1003 ¶¶ 80, 29–31, 48–51.)

Pet. 23. The assertion is supported by the testimony of Mr. McNair. *See* Ex. 1003 ¶ 80. Regarding motivation for adding encryption to Proctor's teachings, Petitioner asserts that encryption of data "is important for keeping personal information secure during financial transactions and preventing misuse." Pet. 22. That assertion is supported by the testimony of Mr. McNair. Ex. 1003 ¶ 79. Notwithstanding Patent Owner's arguments to

---

<sup>7</sup> Even in the case of the two other embodiments, where converter 30 is between terminal 36 and phone 22, and within phone 22, notwithstanding Patent Owner's arguments discussed below, the output of terminal 36 still is in a format suitable for transmission to the hands-free jack of phone 22, because, as noted by Petitioner (Pet. 27), Proctor describes that the output of terminal 36 is "a modulated tonal pattern transmissible via conventional telephone lines." Ex. 1004 ¶ 11. Petitioner explains that because the '998 patent describes DTMF (dual-tone multi-frequency audio signal) as suitable, one with ordinary skill would have recognized that other audio tone signals also would be suitable. Pet. 27 n.4 (citing Ex. 1003 ¶¶ 48–51).

the contrary, discussed below, we are persuaded that it would have been obvious to one with ordinary skill in the art to add the encrypting function to Proctor's teachings, on the basis that encrypting card data was old and well known and that encryption of card data would have been recognized by one with ordinary skill in the art as important for keeping personal information secure during financial transactions and preventing misuse.

Petitioner also makes alternative contentions regarding the controller limitation, relying specifically on the combined teachings of Proctor and Vrotsos. Petitioner contends: "To the extent it may be argued that a 'controller' *must* be a microcontroller or microprocessor that directs the action of the terminal, **Proctor** does not *explicitly* disclose that type of controller. **Vrotsos** teaches a central controller (processor 303) that controls the components and operations of a reader attachment to a mobile communication device." Pet. 25. Petitioner also contends: "To the extent **Proctor** does not disclose encrypting information, **Vrotsos** teaches the controller encrypting data captured by the card reader." *Id.* at 28.

As discussed above, the encryption requirement is accounted for without formal reliance on Vrotsos. As discussed below, Patent Owner has not in the Patent Owner Response argued that a "controller" necessarily must include a microprocessor or microcontroller. Thus, it is not necessary to discuss these alternative contentions of Petitioner. For completeness on judicial review, however, we address both alternative contentions.

For the alternative contentions relying formally on Vrotsos, Petitioner identifies Proctor as a known device ready for improvement because Proctor's terminal 36 contains unspecified circuitry. Pet. 22. Vrotsos contains more detailed disclosure with respect to its attachment 21, also a point of sale device connected to a wireless communication device, than

Proctor contains for its terminal 36. Petitioner cites to the following text from Vrotsos:

The attachment 21 may also include a processor 303, a memory 307 and an input device 308. The processor may execute a software application (which may be stored in the attachment memory 307) allowing the processor to receive input information from the input device 308 and process the input information to generate data for transmission to a remote computer 101 via the antenna 5 of the wireless communication device 1. By executing the software application, the attachment may determine from which input device 308 it is receiving input information (if multiple input devices are provided), encrypt the input information, . . . divide the input information into data packets suitable for transmission over the communication network 102, etc.

Ex. 1006 ¶ 75 (cited at Pet. 25–26). Notwithstanding Patent Owner’s arguments to the contrary, discussed below, we are persuaded by Petitioner that in light of the more specific disclosure of Vrotsos, one with ordinary skill in the art would have known to incorporate a processor, like processor 303 of Vrotsos, within Proctor’s terminal 36 (with unspecified circuitry), to direct the actions of terminal 36. The reason is that Proctor does not specifically identify the usable structure, and Vrotsos provides such detail for a similar device or attachment.

Regarding encryption, Petitioner cites to Vrotsos’s paragraph 52 which states that “[t]he attachment 21 may encrypt the transaction data captured by the reader 23.” Pet. 28 (citing Ex. 1006 ¶ 52). Petitioner also cites to Vrotsos’s paragraph 66 which describes encrypting transaction data such as serial number of the card. *Id.* (citing Ex. 1006 ¶ 66). The Petition also cites to paragraph 71 of Vrotsos, which indicates that encryption is used to provide security for transaction data, and to paragraph 78 of Vrotsos which indicates that information received from the attachment unit’s input

device is encrypted by processor 303 to protect the information from being misused by the merchant who might store and access sensitive information of a purchaser making a transaction. *Id.* at 22 (citing Ex. 1006 ¶¶ 71, 78). Notwithstanding Patent Owner’s arguments to the contrary, discussed below, we are persuaded by Petitioner that in light of Vrotsos’s teachings about encryption, it would have been obvious to one with ordinary skill in the art to have (1) Proctor’s conventional credit card verification circuitry, or (2) a processor such as Vrotsos’s processor 303, disposed within Proctor’s terminal 36 as discussed above, encrypt captured card information prior to transmission of the data to an analog hands-free jack of a mobile communication device.

Patent Owner in its Response begins with two statements. Patent Owner states that the Specification describes “[e]xamples of the claimed controller include a secure microprocessor and a secure microcontroller.” PO Resp. 13. Thus, according to Patent Owner and the Specification of the ’998 patent, a microprocessor and a microcontroller are mere “examples” of the claimed controller. Patent Owner does not assert in the Patent Owner Response that a “controller” necessarily must include a microprocessor or microcontroller. To the extent Patent Owner makes that argument at oral hearing, it is not entitled to consideration.

Patent Owner also states: “[a] person of skill in the art (POSITA) reading the ’998 patent and file history would understand that the claimed controller provides ‘control’ of the operation flow of the processes within the device . . . .” *Id.* Insufficient explanation has been provided by Patent Owner to distinguish what is described in the Specification versus what is claimed. In the absence of that sufficient explanation, the claimed controller

need only perform the corresponding functions recited in the claims as performed by the controller.<sup>8</sup>

Thereafter, Patent Owner makes several arguments which, for reasons discussed below, do not sufficiently undermine Petitioner's assertions. First, Patent Owner asserts that nothing is actually mentioned in Proctor for Proctor's terminal 36, not a "controller," not "circuitry including a modem," not "circuitry." *Id.* at 14. Patent Owner asserts:

no controller, "circuitry including a modem," or "circuitry" is actually mentioned or disclosed at all with regard to Proctor's device. The Petition admits that when it acknowledges that "Proctor is silent as to the internal hardware circuitry of its terminal 36." Paper 2, p. 22. Proctor does not even say that terminal 36 has a modem – only that it includes "what is essentially a modem." Ex. 1004 at [¶] 0011 (emphasis added). There is not as much as an indication as to whether "what is essentially a modem" is hardware or software; Proctor's only mention of any circuitry at all pertains to circuitry in the phone. Ex. 1004, ¶0008.

*Id.* (emphasis omitted). The argument is misplaced. A patent specification is properly read from the perspective of one with ordinary skill in the art and, as such, it need not expressly describe conventional circuitry that would have been known to one with ordinary skill in the art. Patent Owner does not assert that credit card verification circuitry in point of sale terminals was not well known. Further, the '998 patent in its Background of the Invention section indicates that it is, by describing as follows:

Electronic fund transfer over mobile phones is growing popular. *Many systems include combining a point of sale (POS)*

---

<sup>8</sup> Patent Owner does not adequately identify what it means by "processes within the device." Further, given that Petitioner identifies the entirety of Proctor's terminal 36 as the controller, Patent Owner does not adequately explain why terminal 36 does not control its own internal operational flow.

*device with a wireless communication device such as a cell phone.*

*These POS devices include a processor as well as an input device to receive and process information from a transaction card such as a debit card, a credit card, a cash card, a stored value card, an ATM card or combinations thereof and the like. The input device may include a bar code reader, a magnetic stripe reader, an integrated circuit reader, a smartcard reader, a fingerprint scanner, an optical scanner, a signature pad, an alphanumeric keypad (including a PIN pad), a proximity detector, an audio recording device, a camera or combinations thereof and the like. The processor of the POS device receives information from the transaction card and sends it to a remote computer via a communication network. This information can be transmitted by the processor via the wireless communication device.*

Ex. 1001, 1:27–44 (emphases added).

We disagree with Patent Owner that Proctor describes nothing to one with ordinary skill in the art about what is within terminal 36. We have determined the level of ordinary skill to be that of “a person with a bachelor’s degree in electrical engineering, computer engineering, or equivalent” and who would have had “one to two years of relevant experience in the fields of embedded systems and mobile communication device interfaces, or otherwise equivalent industry experience in the relevant field.” Although Proctor does not describe a specific structural implementation for terminal 36, it describes terminal 36 as a “conventional credit card verification terminal,” and as operating “conventionally.”

Ex. 1004 ¶¶ 10–11. Petitioner relies on conventional circuitry for such a point of sale device, which need not have been described in detail in Proctor to one with ordinary skill in the art. Further, conventional circuitry in a point of sale device that reads a transaction card, as described in the above-quoted text of the ’998 patent, includes a processor.

Patent Owner argues:

Even if Proctor did actually disclose “verification circuitry including a modem,” “verification circuitry including a modem” would be very different from the claimed “controller.” A modem does not need to understand, interpret, process, or encrypt data. Ex. 2004, ¶ 26. A modem exists to modulate and demodulate a signal. *Id.* The ’998 patent’s controller, in contrast, exists to control the flow of operations in the invention, including the receiving of information from the card reader (which could be in various formats and include several data fields), and then further process that information as it is decoded and encoded into an encrypted analog-audio signal suitable for transmission to an analog hands-free jack. *Id.*, ¶ 26–30.

PO Resp. 14–15. The argument is misplaced, because Proctor does not describe that its terminal 36 is, in its entirety, essentially a modem. Rather, it states that terminal 36 “includes what is essentially a modem.” Ex. 1004 ¶ 11. That means aside from what is essentially a modem, there may be other components. Moreover, as discussed above, conventional circuitry in a point of sale device that reads a transaction card, as described in the above-quoted text of the ’998 patent, includes a processor.

Patent Owner further argues:

A POSITA would not have looked to “verification circuitry including a modem” to perform the encryption or the considerable processing and signal-conversion demands placed on the controller in the ’998 patent. *Id.*, ¶ 23–31. A POSITA would have understood that these demands would require a controller such as a microcontroller or microprocessor or some equivalent processing power as taught in the ’998 specification. *Id.*, ¶ 25–27, 29–30. For example, among everything else involved in these functions, the controller would need to validate the data from the payment card’s magnetic stripe (which would include such information as account information). *Id.*, ¶ 29–30. After validation, the controller must still convert the information into an encrypted analog-audio signal suitable for transmission to an analog hands-free jack of a mobile phone. One of skill in

the art would not have looked to “verification circuitry including a modem” to perform these functions, nor would that circuitry be able to accomplish the required tasks. [*Id.*] ¶¶23–30.

PO Resp. 15.

The argument is insufficient to overcome Petitioner’s assertions and reasoning. Patent Owner’s argument is incomplete and inadequate in that Patent Owner does not identify and discuss what is conventional credit card verification circuitry in a point of sale terminal. Neither does Mr. Zatkovich, Patent Owner’s declarant, in the cited portions of his testimony. Nor do Patent Owner and its declarant discuss the indication in the Background Section of the ’998 patent that a conventional point of sale device includes a processor, as discussed above. Without recognizing what conventional circuitry is in a point of sale terminal, Patent Owner does not persuade us what functions such circuitry is or is not capable of performing.

Furthermore, Patent Owner’s argument is ineffective in the case of Petitioner’s alternative contention based on a formal combination of the teachings of Proctor and Vrotsos, because Vrotsos specifically describes use of processor 303 for encrypting card data.

Similarly, Patent Owner argues that “it would not be practical or cost-effective to perform any part of the data validation and conversion with ‘conventional credit card verification circuitry including a modem’ before converting that [data] into an encrypted analog-audio format.” PO Resp. 16. The argument is incomplete and inadequate without Patent Owner addressing what is conventional credit card verification circuitry in a point of sale device and the indication in the Background Section of the ’998 patent that a conventional point of sale device includes a processor. It is also incomplete and inadequate because Patent Owner provides no reasoning on

why “it would not be practical or cost-effective to perform any part of the data validation and conversion with ‘conventional credit card verification circuitry including a modem’ before converting that [data] into an encrypted analog-audio format.”

With regard to the “suitable for transmission to an analog hands-free jack” requirement, Patent Owner argues:

A POSITA would understand that “suitable for transmission to an analog hands-free jack” would mean that the signal would need to be in analog-audio format and within the limited bandwidth accepted by the hands-free jack during operation regardless of the speed with which a magnetic stripe card is swiped through the card reader. Ex. 2004, ¶ 30.

PO Resp. 17. We have reviewed cited paragraph 30 of the declaration of Mr. Zatkovich and do not find that Mr. Zatkovich to be testifying that “suitable for transmission to an analog hands-free jack” means the signal would need to be in analog-audio format and within the limited bandwidth accepted by the hands-free jack. Mr. Zatkovich simply was noting what was said during prosecution history of a related patent, which we discuss below. Ex. 2004 ¶ 30. Thus, we have not been directed to adequate supporting testimony of Mr. Zatkovich.

In particular, the cited testimony of Mr. Zatkovich does not indicate that any part of analog audio signals for a conventional telephone line, such as that outputted by Proctor’s terminal 36, would not be directly receivable at the hands-free jack of Proctor’s phone 22, much less to an extent that the card information carried by that signal would be unrecognizable. Indeed, Proctor itself indicates that that is not so, by disclosing an embodiment in which converter 30 is alternatively located within phone 22 (Ex. 1004 ¶ 18),

in which case the output of terminal 36 would be sent directly to the hands-free jack of phone 22.

Patent Owner continues to state:

This point was explained during prosecution of the related '875 patent application:

It is this converted signal that is transmitted from the input device to the hands-free jack of a mobile communication device. Neither Petrov nor Antonio discloses any such circuitry or converting step. This is a significant difference because the hands-free jack of a cell phone can accept only signals that fall within a limited bandwidth, and the frequency of the output of the card reader can vary widely depending on the speed at which the card is “swiped” through the reader. This can result in a failure to meet the “success rate” requirement for many card payment systems. With Applicant’s conversion for the signal prior to transmitting the read data to the hands-free jack, the success rate is significantly increased.

Ex. 1002 (file history from '875 patent), 00292.

PO Resp. 17–18.

For several reasons, the above-quoted assertion is inadequate to undermine Petitioner’s contentions and evidence. First, Patent Owner has not submitted a copy of the file history of the allegedly related '875 patent. Cited Exhibit 1002 is a copy of the file history of the challenged '998 patent. That alone defeats Patent Owner’s argument.

Second, Patent Owner makes no comparison between the disclosures of Petrov and Antonio with the disclosure of Proctor. We do not know whether either Petrov or Antonio even outputs an analog audio signal for transmission to a wireless communication device. The analog audio tone patterns outputted by Proctor’s terminal 36, suitable for a telephone line, already may be within the acceptable bandwidth of a hands-free jack of a

cellular phone, unlike the output signals from Petrov and Antonio. Patent Owner has not identified or explained what portions of the output analog audio signals from Proctor's terminal 36, if any, would be cut off and not received by the hands-free jack of phone 22, if they are not further converted in some way. The cited prosecution history does not mention the scope of the limited bandwidth.

Third, Patent Owner does not indicate whether there were other key differences between Petrov and Antonio and the rejected claims of the allegedly related '875 patent, which were argued by the applicant of the '875 patent. Patent Owner also does not indicate the Examiner's response to the referenced remarks of the applicant for patent, e.g., whether the remarks resulted in allowance of the claims without further argument or amendment.

The above-quoted text from the prosecution history of the allegedly related '875 patent is too vague and lacks critical context to aid Patent Owner in any meaningful way. For instance, Patent Owner does not contend that the analog audio signal outputted by Proctor's terminal 36 is not of "limited bandwidth." Also, the argument of Patent Owner is inapposite for that Proctor embodiment in which converter 30 is located inside terminal 36, because Patent Owner does not dispute that the output of converter 30 is suitable for transmission to a hands-free jack of a mobile phone. Further, to the extent Patent Owner takes the position that there has to be a perfect match between the standards governing signals transmitted on conventional telephone lines and signals received on a hands-free jack of a cellular phone, we disagree. "Suitable" does not require perfection. Patent Owner has not shown us any evidence to support that position.

During oral hearing, counsel for Patent Owner argued that in Proctor, the conversion to an analog signal suitable for transmission to a hands-free

jack of phone 22, if done at all in Proctor, is done by converter 30 and not by anything within terminal 36. Tr. 57. Proctor's disclosure does not support that assertion. In particular, paragraph 4 of Proctor explains that traditional credit card terminals are incompatible with digital cellular networks, not wired transmission to the hands-free jack of a cellular phone. Ex. 1004 ¶ 4. Paragraph 5 of Proctor specifically explains that converter 30 is used to convert the card information "to a second format transmissible by digital cellular networks," not so that the data can be transmitted to the hands-free jack of a cellular phone. Nothing in Proctor has been identified by Patent Owner to indicate that without converter 30, the output of terminal 36 cannot be transmitted to and properly received by phone 22 at its hands-free jack. Thus, the argument is unpersuasive.

Patent Owner further argues: "Vrotsos specifically discloses and teaches the conversion of information into digital data signals and data packets (not analog signals) in a format suitable for transmission to a digital communication port and/or antenna (not an analog hands-free jack)." PO Resp. 19. Similarly, Patent Owner asserts:

Vrotsos does not disclose a controller that converts card information into an encrypted audio signal having an analog audio format suitable for transmission to the hands-free jack of a mobile communication device. Everything about Vrotsos points in the opposite direction and teaches to output and transmit a digital signal to a digital connection with the cell phone. Ex. 2004, ¶53–56. None of these connections involves an analog hands-free jack, and the data is not transmitted in an analog audio format or compatible with an analog hands-free jack. *Id.* ¶ 55.

*Id.* at 20. Patent Owner asserts that "a POSITA would not be motivated to integrate Vrotsos's digital controller into Proctor." *Id.* at 21. These arguments are misplaced, because one may not attack prior art references

individually when the asserted ground of unpatentability is based on a combination of references. *In re Merck*, 800 F.2d 1091, 1097 (Fed. Cir. 1986); *In re Keller*, 642 F.2d 413, 426 (CCPA 1981). Petitioner does not rely on Vrotsos to teach generating from transaction card information an analog audio signal suitable for transmission to the hands-free jack of a wireless communication device. That already is taught by Proctor. Petitioner relies on Vrotsos only for its teaching of using a processor to manage the receiving, processing, and transmitting of card information, and to encrypt the information read from the transaction card. Whether the ultimate output from terminal 36 is digital or analog audio does not diminish the use of a processor for encryption and operational control.

Patent Owner asserts that in Vrotsos there is not “any teaching of how that controller would somehow be able to communicate with an analog hands-free jack or with Proctor’s mysterious ‘converter 30.’” PO Resp. 21. The argument is misplaced, because Vrotsos would not have altered Proctor’s disclosure in that regard. When incorporated into Proctor’s terminal 36, Vrotsos’s processor 303 would produce encrypted card data that is digital, thus leaving unchanged whatever Proctor would do with digital data read from a transaction card, only that such data is now encrypted. No complication would have been added in that regard by the inclusion of Vrotsos’s processor 303. Whatever was the case with Proctor in that regard still is the case after inclusion of Vrotsos’s processor.

Patent Owner further asserts as follows:

[I]t is telling that Petitioner Square – the leader in the card reader market – could not find a single reference disclosing a controller for converting the card information to an analog-audio format suitable for transmission to an analog hands-free jack of a mobile

communication device for the purpose of asserting it in combination with Proctor.

*Id.* The contention is misplaced because, as discussed above, Proctor itself discloses a controller which converts the card information to an analog-audio format suitable for transmission to an analog hands-free jack of a mobile communication device. The combination including Vrotsos is but an alternative contention.

#### Limitation 1[C] — Communication Link

Claim 1 further recites “a communication link for coupling said input device to an analog hands-free jack of a mobile communication device for the transmission of said encrypted analog-audio format signals therebetween.” Ex. 1001, 11:57–60. Petitioner identifies Proctor’s cable 40 and/or 32 as the communication link coupling the input device in terminal 36 to an analog hands-free jack of phone 22 for transmission of the encrypted analog-audio-format signals therebetween.<sup>9</sup> Pet. 28 (citing Ex. 1004, Fig. 1). It is implicit that for the embodiment in which converter 30 is located between terminal 36 and phone 22, converter 30 is a part of the communication link, and that for the embodiments in which converter 30 is located within phone 22 or within terminal 36, cables 32 and 40 would be the communication link between terminal 36 and phone 22.

Notwithstanding Patent Owner’s arguments to the contrary, discussed

---

<sup>9</sup> Petitioner explains that because Proctor describes that the components of merchant system 14 may be combined or integrated (Ex. 1004 ¶ 18), it relies primarily on an embodiment of Proctor where phone 22 incorporates the functionality of converter 30. Pet. 17–18. According to Petitioner, the communication link between the input device and the hands-free jack of the phone exists regardless of whether the converter functions are integrated with terminal 36 or phone 22, or implemented in a stand-alone converter between terminal 36 and phone 22. *Id.* at 18 n.2.

below, we are persuaded that Proctor, and also Proctor and Vrotsos in the collective, adequately accounts for the limitation of “a communication link for coupling said input device to an analog hands-free jack of a mobile communication device for the transmission of said encrypted analog-audio format signals therebetween.”

Patent Owner responds to Petitioner’s assertions about the communication link, but the response counters only the Proctor embodiment in which converter 30 is located within phone 22. PO Resp. 22–25. The counter-argument does not address Petitioner’s asserted communication link in the Proctor embodiment in which converter 30 is between phone 22 and terminal 36, and also the Proctor embodiment in which converter is located within terminal 36. For all three embodiments, we are persuaded by the arguments and evidence presented by Petitioner for the claimed communication link.

With respect to the embodiment in which converter 30 is between phone 22 and terminal 36, the communication link is precisely as shown in Proctor Figure 1, i.e., cable 40, converter 30, and cable 22. With respect to the embodiment in which converter 30 is located within terminal 36, the communication link is cable 32, which in that case would extend the entire distance between phone 22 and terminal 36. It is implicit that in this embodiment, the output jack on terminal 36 would be changed to the type used at the output of converter 30, to accommodate locating converter 30 within terminal 36.

With respect to the embodiment in which converter 30 is located within phone 22, Patent Owner argues:

[I]f the converter is placed inside the phone, the card reader terminal 36 would have to connect to a port on the phone 22.

With the converter 30 removed as the link between the card reader and the phone, neither the Proctor disclosure nor Petitioner's argument discloses what type of communication link would be established from the card reader to the phone—an important detail considering that the reader needs to transmit the modem signal directly to the phone and the '998 patent requires a specific connection to the phone's analog hands-free jack.

PO Resp. 22. But a plain reading of Proctor's Figure 1 reveals that if converter 30 is located within phone 22 as Proctor provides in an alternative embodiment, cable 40 would simply extend from terminal 36 all the way to the same hands-free jack of phone 22. Proctor does not state that in this embodiment, a different jack on phone 22 should or would be used. No such assumption should be made. Thus, it is not true that neither Petitioner nor Proctor reveals what communication link would be established.

Patent Owner identifies what it contends are problems with such a communication link. *Id.* at 23–25. In essence, Patent Owner contends that the jack used at the output of terminal 36 is incompatible with the jack used at the input to phone 22. Patent Owner asserts:

[T]erminal 36 represents a traditional card reader that produces modem signals that are “transmissible via conventional telephone lines.” Ex. 1004, ¶0011. As with any traditional card reader connected to a conventional telephone line, the asserted cable 40 connection would be an RJ-11 jack that is incompatible with Proctor's and generally incompatible with a mobile phone's hands-free jack as claimed in the '998 patent. Ex. 2004, ¶67–69.

Furthermore, Proctor's phone audio connector 26 would not accept an RJ-11 connector. Ex. 2004, ¶70. Even if it somehow could, the conductor pins from an RJ-11 would not work with a 3.5 mm hands-free audio jack. *Id.* Aside from the obvious shape and size differentiations, one of skill in the art would understand that the pins of the RJ-11 plug are intended to connect not to a mobile phone, but to a telephone line that would include functions for speech and ringing (pins 2, 3, and 5) and power (pin 6). Ex. 2004, ¶69–71. By contrast, the 3.5 mm audio

jack present on mobile phones at the time of the invention would simply provide for audio out (left/right), audio in (microphone), and ground. *Id.*

*Id.* at 23–24 (footnote omitted). Patent Owner’s argument is misplaced. It presents a solution for one with ordinary skill in the art at the same time it states an issue to be addressed.

We agree that one with ordinary skill in the art would have recognized, as Patent Owner contends, that an RJ-11 jack designed for conventional telephone line does not match a hands-free jack on a cell phone. Patent Owner, however, does not contend that Proctor’s disclosure is unenabling with respect to the embodiment in which converter 30 is located within phone 22, or that one with ordinary skill in the art would not have known *not* to use an RJ-11 jack on the output end of terminal 36 for the embodiment that includes a direct coupling between phone 22 and terminal 36 but to use matching connectors instead. Indeed, a person of ordinary skill is a person of ordinary creativity, and not an automaton. *KSR Int’l Co.*, 550 U.S. at 421; *see also In re Sovish*, 769 F.2d 738, 743 (Fed. Cir. 1985) (skill is presumed, not absence thereof). Proctor’s Figure 1 already shows, for the embodiment in which converter 30 is located between terminal 36 and phone 22, the use of matching connectors at the output of converter 30 and the input of phone 22. Patent Owner provides no reason why one with ordinary skill in the art would insist on using an incompatible RJ-11 jack, designed for coupling to a conventional telephone line, when terminal 36 is to be coupled not to a conventional telephone line but to the hands-free jack of phone 22 as taught in one embodiment of Proctor.

Patent Owner further argues that in related proceeding IPR2019-01630 involving the same petitioner, Petitioner had argued that the technical differences between an RJ-11 type jack and a hands-free jack of a cellular phone (“TRS/TRRS audio jack”) render them not suitable as direct replacements for each other. PO Resp. 24 (citing IPR2019-01630, Pet. 21–22). The argument gives no aid to Patent Owner, because the issue here is not whether a cable can directly connect at its two ends a RJ-11 jack and a hands-free TRS/TRRS type jack. Patent Owner additionally argues the following:

Petitioner argued [in the IPR2019-01630 proceeding] that “the Tang Provisional fails to disclose how the hardware in a conventional card reader device would be modified in order to transmit data through the hands-free jack, and what signal processing needs to happen at the card reader device to transfer the card reader device to a mobile phone.” *Id.*, p. 22. Put another way, Petitioner has already asserted that one of skill in the art would not substitute an RJ-11 connection for a hands-free jack connection without the particular prior art reference explaining how the connection and signals would need be modified so the substitution would work.

*Id.* at 25. Patent Owner has misread the statement quoted from the petition in IPR2019-01630, and improperly mixed the very different concept of written description support with issue of obviousness. A copy of the petition in IPR2019-01630 is entered as Exhibit 3004. Petitioner was arguing that Tang Provisional Application 61/151,459, also listed on the cover of the ’998 patent as an ancestral application in the priority chain, did not show possession by the inventor of a “hands-free jack” and failed to provide adequate written description support for a “hands-free jack.” Ex. 3004, 23. Petitioner was not arguing that one with ordinary skill in the art would not have known how to adapt wiring initially designed to work with a RJ-11

type jack so that it will work with a TRS/TRRS type hands-free jack. *Id.* Indeed, Petitioner concluded with the following: “Thus, if a hands-free jack were to be used for signaling intended for an RJ jack, a POSITA would have had, at a minimum, to reconfigure the connection with additional circuitry in order to function properly.” *Id.* at 22. That is completely consistent with the scenario here with respect to the Proctor embodiment in which converter 30 is located within phone 22.

Patent Owner further argues that in the embodiment of Proctor in which converter 30 is located within phone 22, a specialized communication device is required rather than a standard mobile phone. PO Resp. 56–57. But the claim does not require the mobile communication device to be a standard mobile phone. Patent Owner asserts that the requirement of a non-standard mobile phone “severely diminishes the incentive for a POSITA to use Proctor as part of any combination pertaining to the ’998 patent.” *Id.* at 57. The contention is without context and overbroad, and discredits all motivations to combine without knowing what teachings are proposed to be combined and for what reason. We are unpersuaded by that the assertion. For instance, whether phone 22 is a standard cellular phone or a cellular phone with converter 30 within it would have not much, if anything, to do with what circuitry is used in terminal 36 to generate analog audio tones.

Limitation 1[D] — first wherein clause

Claim 1 further recites “wherein when said input device captures the card information, said controller converts the card information into said encrypted analog-audio-format signal and transmits said signal via said communication link to said mobile communication device.” Ex. 1001, 11:61–65. Petitioner relies on its previous discussion of the limitations relating to the input device, the controller, and the communication link, to

meet the recitation here. Pet. 30. In summary, Proctor's card reader slot 46 captures card information; terminal 36 (with or without the processor incorporated from Vrotsos) is the controller which converts the card information into encrypted analog-audio-format signal and transmits the converted signal via a communication link to phone 22; and the communication link is cable 32 extended the whole distance between phone 22 and terminal 36, cable 40 extended the whole distance between phone 22 and terminal 36, or cable 32, converter 30, and cable 40 as shown in Figure 1, depending on which of the three Proctor embodiments is relied upon.

Patent Owner has not put forth arguments other than those we already have addressed and discussed above. We are persuaded that Proctor, and also Proctor and Vrotsos in the collective, adequately accounts for the limitation of "wherein when said input device captures the card information, said controller converts the card information into said encrypted analog-audio-format signal and transmits said signal via said communication link to said mobile communication device."

Limitation 1[E] — - second wherein clause

Claim 1 further recites "wherein said mobile communication device automatically transmits the captured card information to the remote transaction server and receives transaction validation information from said remote transaction server." Ex. 1001, 11:66–12:3. Petitioner explains that Proctor discloses that its mobile communication device, i.e., the phone, transmits and receives information without intervening user input, and therefore the "automatic" transmit and receive requirements of claim 1 is met. Pet. 30 n.5. Notwithstanding Patent Owner's assertions to the contrary, discussed below, we are persuaded by Petitioner's explanation. Petitioner identifies the reply message that Proctor's phone 22 receives from

the remote transaction server (central verification facility 20), which indicates either approval or denial of a requested transaction, as the claimed transaction validation information. *Id.* at 30–31 (citing Ex. 1004 ¶¶ 16–17). The assertion is adequately supported by the cited evidence and also not challenged in the Patent Owner Response.

According to Patent Owner, “Proctor would require that the merchant *manually dial the mobile phone* to connect to the verification system.” PO Resp. 26. Patent Owner asserts:

Proctor does not disclose any means for the mobile phone to automatically connect to the remote verification facility without manual dialing. One of skill in the art would understand as much. For one thing, at the time of the Proctor application it would not be practical to maintain an open phone connection to a remote server for a long and indeterminate period of time. Ex. 2004, ¶¶ 83–85. There are many reasons why this would be impractical, ranging from phone battery life to the significant “peer minute” mobile phone charges that were common at the time as the billing method for mobile phone calls. *Id.*

*Id.* at 26. The record does not support Patent Owner’s contention that Proctor does *not* disclose that its mobile phone automatically connects to the remote verification facility without manual dialing. In the context of this claim, it is necessary only that after the card information is read there be an automatic connection to the remote verification facility, not that there can never be manual dialing on the phone, even prior to presentation of the transaction card. We do not understand Patent Owner to be arguing that there can never be manual dialing on the wireless communication device, even prior to setting up the system for opening up business.

Petitioner persuasively states: “Proctor discloses manual dialing occurs before a transaction during system setup, and not, as a mid-process step.” Reply 14 (citing Ex. 1004 ¶¶ 15–16) (emphasis omitted). In pertinent

part, Proctor states: “The system operates as follows: A merchant having a system 14 wishes to accept a customer’s credit card 48. If the merchant system’s components are not set up, the merchant connects the components as shown. The phone 22 is activated, and the verification system number is dialed by the merchant.” Ex. 1004 ¶ 15. It is implicit from this description that the manual dialing is required only at the time of initially setting up the system, prior to reading any information from the transaction card, but not thereafter.

Accordingly, we are persuaded that Proctor, and also Proctor and Vrotsos in the collective as discussed above, discloses “wherein said mobile communication device automatically transmits the captured card information to the remote transaction server and receives transaction validation information from said remote transaction server.”

For the foregoing reasons, Petitioner has proved by a preponderance of the evidence that claim 1 would have been obvious over Proctor and Vrotsos.

*4. Dependent Claims 2, 3, and 6*

Dependent claims 2, 3, and 6 each depend directly from claim 1. Ex. 1001, 12:4–14; 12:28–32. Petitioner specifically accounts for the limitations of these claims on pages 32–34 of the Petition. Pet. 32–34. The assertions are supported by the cited evidence. Patent Owner does not present arguments separate from those it has asserted for claim 1. We have considered and rejected those arguments, as discussed above, in the context of claim 1. We determine that Petitioner has proved by a preponderance of the evidence that each of claims 2, 3, and 6 would have been obvious over Proctor and Vrotsos.

*E. Alleged Obviousness of Claims 1–3, 6, 10, 12, 14, 16, 17, and 19 over Eisner and Proctor*

*1. Overview of Eisner*

Eisner's disclosure relates to a secure electronic financial transaction system which can provide financial transaction card authorization through a secure data transmission to a merchant at the time a user wishes to purchase an item from his or her home, office or other location remote from the merchant. Ex. 1008, 1:10–16. Figure 1 is an illustration of Eisner's system and is reproduced below:

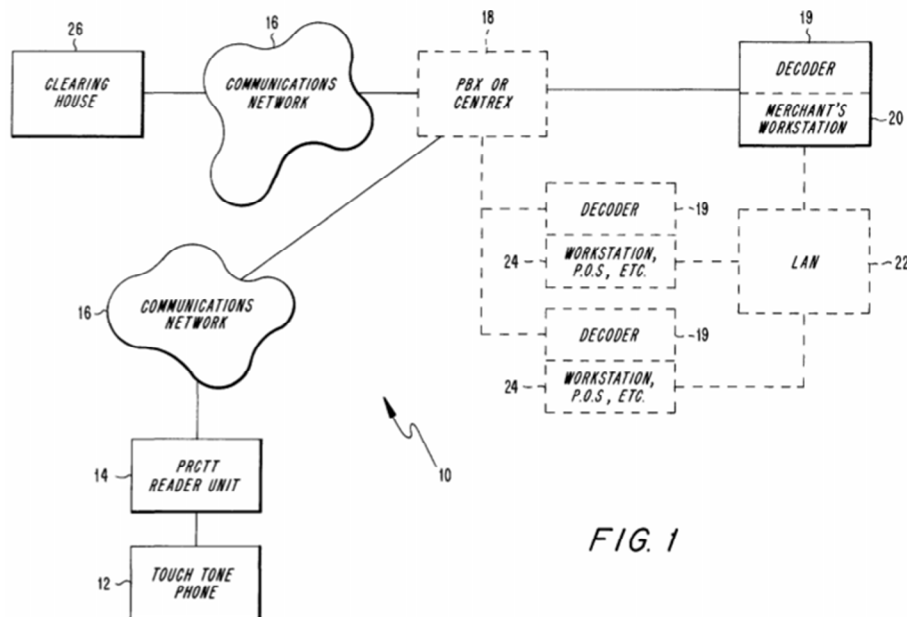


FIG. 1

Figure 1 illustrates an embodiment of Eisner's system. *Id.* at 3:1–3. Electronic financial system 10 includes touch tone phone 12, personal reader capture transfer technology unit (PRCTT) 14, communications network 16, private branch exchange (PBX) or Central service unit 18, decoder 19, merchants workstation 20, local area network (LAN) 22, live agent workstations, terminals, or point-of-sale (POS) units 24, and clearing house 26 for the approval or denial of credit authorization. *Id.* at 3:22–30. Eisner describes that phone 12 and PRCTT 14 may be located at a customer's

residence, business or other location remote from a merchant, as long as access to a phone line is provided. *Id.* at 3:31–33. Communications network 16, which may be a public switched telephone network (“PSTN”), connects a customer to a merchant’s location. *Id.* at 3:34–36. Decoder 19, which may be contained within or separate from workstation 20, acts on the information sent from phone 12 and PRCTT 14. *Id.* at 3:42–45.

Local area network (LAN) may be implemented at a merchant’s site to save information pertaining to the merchant’s customers and products and allow sales representatives, or live agents, at workstations 24 to access this information from a common data storage system. *Id.* at 3:65–4:4. Clearing house 26 receives financial transaction card information from the merchant and approves or denies authorization based on the customer’s line of credit, the funds available in the customer’s account, or whether the card has been invalidated. *Id.* at 4:5–9.

Figure 2 illustrates PRCTT 14 and is reproduced below:

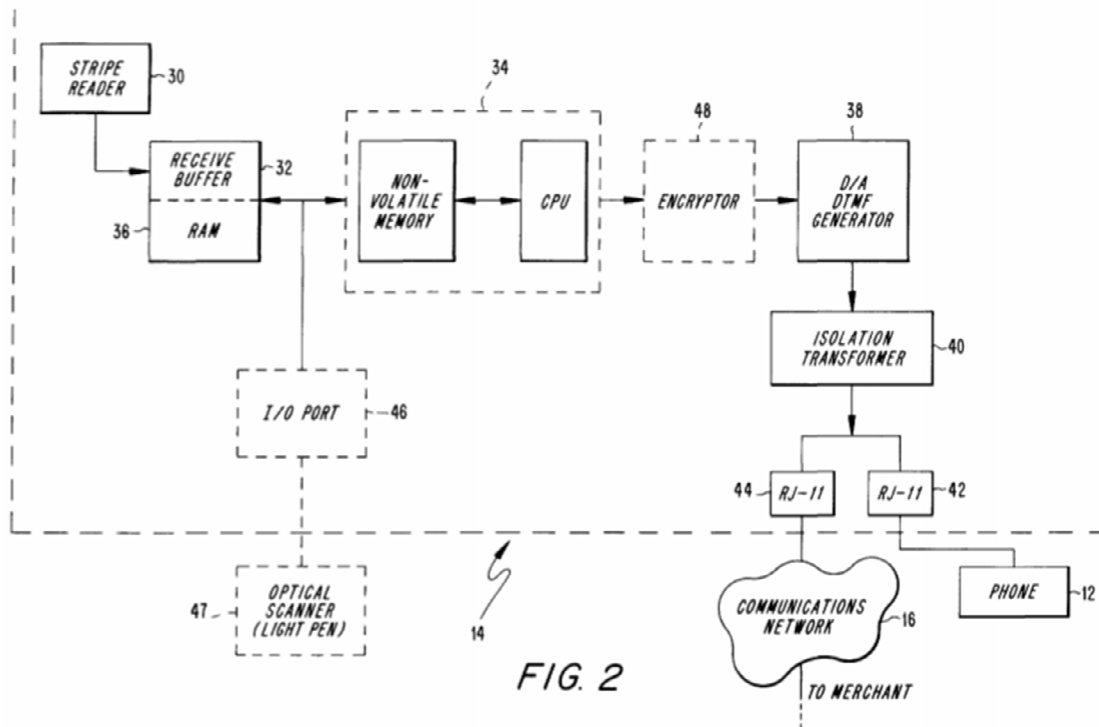


Figure 2 is a block diagram of the internal components of PRCTT 14. *Id.* at 4:19–21. PRCTT 4 includes magnetic strip reader 30, receive buffer 32, computer 34, RAM 36, digital to analog DTMF tone generator 38, transformer 40, telephone input jack 42, telephone output jack 44, I/O port 46, optional encryptor 48, and optional scanner 47. *Id.* at 4:19–25. Magnetic stripe reader 30 includes heads positioned next to a bi-directional hand-swipe card slot to read cards, and the word “card” refers to standardized financial transaction cards such as credit cards, debit cards, bank cards, and the like. *Id.* at 4:28–33. When a card is passed through the card slot in the magnetic stripe reader 30, a read head senses the magnetically encoded information contained on the card and outputs that information to receive buffer 32. *Id.* at 4:32–36. Receive buffer 32 temporarily stores the data and provides data output to computer 34. *Id.* at 4:41–43.

Computer 34 in PRCTT 14 encodes the card data it receives and outputs the encoded card data to tone generator 38 which converts the data to analog tones conforming to the dual tone multiple-frequency (DTMF) standard and outputs the tonal data to transformer 40. *Id.* at 5:15–21, 5:26–27. Phone 12 is connected to PRCTT 4 at telephone-in jack 42 which is also tapped into transformer 40. *Id.* at 5:28–30. The card data and phone output are combined and outputted to communication network 16 through telephone-out jack 44. *Id.* at 5:30–34.

Eisner describes the operational flow of a transaction as follows:

When a valid card is swiped, the card data and serial number are sent to the merchant where the combined data is decoded and sent to a clearing house for authorization as previously discussed. The PRCTT’s serial number is checked at the clearing house and/or the merchant’s location to determine

that an authorized card has been swiped in an appropriate PRCTT unit. As indicated, the clearing house may require a PIN for approval which may be entered using a touch-tone phone or other DTMF generator. The tones generated by the touch-tone phone will likewise be decoded at the merchant's location and be sent to the clearing house. Once all the information necessary for authorization has been provided to the clearing house, approval or denial of the transaction by the clearing house is returned to the vendor's equipment. If the vendor receives approval, the transaction is now complete. If the purchase is denied the customer may be instructed to swipe another card, contact the card-issuing institution or may be given other options to make the purchase.

*Id.* at 7:18–35.

2. *Independent Claim 1*

Recitation 1[P] — Preamble

Claim 1 recites “[a]n apparatus for effecting commercial transactions between an input device and a remote transaction server using a transaction card.” Ex. 1001, 11:48–50. Petitioner identifies Eisner's PRCTT 14 as such an apparatus, Eisner's magnetic stripe reader 30 as such an input device, Eisner's magnetic stripe credit card as such a transaction card, and Eisner's decoder 19 at merchant workstations 20 or 24 as such a remote transaction server. Pet. 63 (citing Ex. 1008, Figs. 1, 2, 3:22–31, 4:19–25, 4:27–40). Patent Owner does not present any counter-argument with respect to Petitioner's assertions for this recitation of claim 1. We are persuaded that Eisner discloses “[a]n apparatus for effecting commercial transactions between an input device and a remote transaction server using a transaction card.”

Limitation 1[A] — Input Device

Claim 1 further recites “an input device for capturing information from the transaction card.” Ex. 1001, 11:51–52. Petitioner identifies

Eisner's magnetic stripe reader 30 as such an input device. Pet. 65. Patent Owner does not present any counter-argument for this limitation of claim 1. We are persuaded that Proctor discloses "an input device for capturing information from the transaction card."

Limitation 1[B] — Controller

Claim 1 further recites "a controller for converting the captured card information into an encrypted audio signal having an analog audio format suitable for transmission to an analog hands-free jack of a mobile communication device." Ex. 1001, 11:53–56. Petitioner identifies Eisner's computer 34, tone generator 38, and encryptor 48 together as such a microcontroller. Pet. 65. Petitioner notes that Eisner states: "an encryptor 48 may be used for additional security of the data transmission." *Id.* at 65 (citing Ex. 1008, 5:46–47). Petitioner quotes the following from Eisner:

The information on a customer's card once swiped, is stored in RAM 36. . . . [T]he card data stored in RAM 36, as well as the serial number of PRCTT 14, is encoded by the CPU in a single chip computer 34. If the optional data is not programmed in EEPROM, card validation at PRCTT 14 is not possible. **[¶]Once the card data and the serial number of PRCTT 14 are encoded, all the data is represented by twelve possible digital codes. Single chip computer 34 outputs the newly encoded data to tone generator 38, which converts the data to analog tones corresponding to the twelve tones generated by a touchtone phone or other device conforming to the dual tone multi-frequency (DTMF) standard. The preferred embodiment utilizes a Mitel #MT8888C/C-1 transceiver with an Intel micro controller interface for tone generation. . . . [T]he card data, PRCTT 14 serial number and phone 12 output, are combined, or "piggy backed" on the same output. The combined data is outputted at line out jack 44 which is connected to communication network 16. Both phone in jack 42 and line out jack 44 may be standard RJ-11 jacks or any other suitable interface.**

Ex. 1008, 5:3–36 (quoted at Pet. 65–66) (emphasis by Petitioner).

Petitioner recognizes that the output of such a controller in Eisner is sent not to a hands-free jack of a mobile communication device but to telephone-out jack 44 which is coupled to communications network 16 which is a public switched telephone network. Pet. 66. But Petitioner explains that in light of Proctor's disclosure, it would have been obvious to one with ordinary skill in the art to modify Eisner's disclosed structure so that the controller output is sent, instead, to the hands-free jack of a cellular phone for communication via the cellular phone. *Id.* at 60–63.

Petitioner notes that, similar to Eisner, Proctor discloses that magnetic stripe information on a credit card is read by terminal 36 which converts the data to a modulated tonal pattern transmissible via conventional telephone lines, i.e., analog modulated audio signal. Pet. 60 (citing Ex. 1004 ¶ 11). Petitioner explains that Proctor discloses an implementation on mobile networks by describing use of cell phone 22 which receives the analog audio signal at connector 26, a hands-free jack, and subsequent encoding of that signal for wireless transmission on a cellular network to verification facility 20. *Id.* at 61 (citing Ex. 1004 ¶¶ 16–18; Ex. 1003 ¶¶ 98–101). Petitioner further explains that, to improve Eisner's device by adding wireless functionality and compatibility with cellular networks, one with ordinary skill in the art would have been motivated to modify Eisner's card reader device to connect to a wireless communications network through a cellular phone via its hands-free jack, as taught by Proctor. *Id.* at 62.

Petitioner notes that Proctor describes that there are remote or temporary transaction locations that are without access to telephone lines. Pet. 62 (citing Ex. 1004 ¶ 3). Petitioner further notes that even Eisner describes that PRCTT 14 may use other type of connections (not

communications network 16) when it is being operated at a remote location. *Id.* (citing Ex. 1008, 5:37–40). Petitioner asserts that such disclosures of Eisner and Proctor would have provided motivation for one with ordinary skill in the art to modify Eisner’s device to implement a connection from terminal 36 to a cell phone through the cell phone’s hands-free jack, as disclosed in Proctor, to provide card-based financial transactions in a wireless network setting. *Id.* at 62–63.

Regarding the presence of converter 30 in between terminal 36 and cell phone 22 as shown in Proctor’s Figure 1, Petitioner refers to paragraph 18 of Proctor which describes that converter 30 may be incorporated into phone 22. Pet. 67. Thus, for the ground of unpatentability based on Eisner and Proctor, Petitioner relies on the Proctor embodiment in which converter 30 is located within cell phone 22. Alternatively, Petitioner asserts that even based on Proctor’s embodiment in which converter 30 is between terminal 36 and cell phone 22, the limitation of a controller output “suitable for transmission to an analog hands-free jack of a mobile communication device” still would have been met. *Id.* at 62 n.8.

Petitioner further explains:

[I]t would have been well within the ability of a POSITA to transmit **Eisner’s** DTMF signals over a hands-free jack, as taught by **Proctor**, as hands-free jacks were well known standard/universal connections found across communication devices, and a POSITA would have had a reasonable expectation of success in configuring **Eisner’s** system to transmit signals over a hands-free jack instead of an RJ-11 telephone jack, which were both well-known connections for analog audio signals. (Ex. 1003 ¶¶102, 38–51.)

Pet. 63.

Notwithstanding Patent Owner's contrary argument, discussed below, we are persuaded that in light of Proctor's disclosure, it would have been obvious to one with ordinary skill in the art to modify Eisner's disclosed structure so that the controller output is sent, instead, to the hands-free jack of a cellular phone for communication via the cellular phone. In particular, we find the reasoning articulated by Petitioner for combining the teachings of Eisner and Proctor in the manner proposed by Petitioner to have rational underpinning and firm support in the cited evidence. *See In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006).

Patent Owner asserts that Proctor does not disclose providing coupling to an analog hands-free jack. PO Resp. 41–43. This argument actually includes a number of arguments that are essentially the same. *Id.* We discuss each one below, separately.

Patent Owner argues that “Petitioner never bothers to establish how Proctor's modulated tonal signal would constitute a format suitable for transmission to a hands-free jack of a mobile phone.” *Id.* at 43. The argument is misplaced for two reasons.

First, Proctor's modulated tonal signal is suitable for transmission to a hands-free jack of a mobile phone if it is sent to the hands-free jack of the mobile phone, as in the case of the Proctor embodiment in which converter 30 is located within phone 22. Patent Owner asserts that in that Proctor embodiment, “the connection would not be to a hands-free jack at all but instead to some port leading to the converter placed inside a specialized communication device.” *Id.* We already rejected that contention above in the discussion of the same Patent Owner argument made in the context of the alleged unpatentability of claim 1 as obvious over Proctor and Vrotsos. There is no reason to assume that the analog tonal signal outputted by

terminal 36 would enter cell phone 22 in a manner other than through the described hands-free jack. Patent Owner's argument is speculative and unsupported by the record. Second, Petitioner established, in the context of alleged unpatentability of claim 1 over Proctor and Vrotsos, as discussed above, that the analog tonal pattern outputted by Proctor's terminal 36 is suitable for transmission to a hands-free jack of a mobile phone. Petitioner does not have to reiterate that entire discussion.

Patent Owner argues that "Eisner's output would not be compatible with Proctor's phone 22," noting that "Proctor's phone connector 26 would not accept an RJ-11 connector." *Id.* We addressed and rejected essentially the same argument above in the context of alleged unpatentability of claim 1 over Proctor and Vrotsos. It is implicit in Petitioner's position that if Eisner's controller output is to be provided directly to the hands-free jack of a cellular phone, then an RJ-11 jack for sending signals to and from conventional phone lines would not be used and, instead, a matching jack compatible with the cell phone's hands-free jack would be used. Petitioner specifically addressed the matter by stating:

[I]t would have been well within the ability of a POSITA to transmit **Eisner's** DTMF signals over a hands-free jack, as taught by **Proctor**, as hands-free jacks were well known standard/universal connections found across communication devices, and a POSITA would have had a reasonable expectation of success in configuring **Eisner's** system to transmit signals over a hands-free jack instead of an RJ-11 telephone jack, which were both well-known connections for analog audio signals. (Ex. 1003 ¶¶102, 38–51.)

Pet. 63. The assertion is supported by the cited testimony of Mr. McNair.

Ex. 1003 ¶ 102. In contrast, Patent Owner does not allege and Patent Owner's declarant, Dr. Zatkovich, does not testify that one with ordinary skill in the art

would not have known how to adapt an analog audio connection provided through an RJ-11 type jack for a conventional phone line to an analog audio connection provided through a TRS/TRRS type jack used by a cellular phone, in the event the signal is to be supplied to a cellular phone rather than to a conventional telephone line or a conventional public switched telephone network. Indeed, the jack on the output side of Proctor's converter 30 would be such a jack.

With respect to Petitioner's alternative argument based on the Proctor embodiment in which converter 30 is located between terminal 36 and cellular phone 22, Patent Owner notes that in the direction from terminal 36 to phone 22, converter 30 receives analog audio signals generated by a modem and generates dual tone multiple frequency (DTMF) analog audio signals for input to the phone, and that in the direction from phone 22 to terminal 36, converter 30 receives DTMF analog audio signals from the phone and converts them to modem signals to be received by the modem within terminal 36. PO Resp. 44–45. Patent Owner then reasons that because the output from the Eisner's PRCTT 14 already is DTMF analog audio signals, its being supplied to Proctor's converter 30 will generate modem signals and not DTMF signals. *Id.* at 45. Patent Owner argues: “[E]ven if Eisner's DTMF signals were somehow sent into the part of the Proctor converter intended to communicate with the mobile phone using audio signals, Proctor's converter would only convert them to modem signals which are not transmissible on the cellular network.” *Id.*

The argument is unpersuasive. Given that converter 30 is bidirectional and the functionality is not the same in the two directions of data flow, Patent Owner does not adequately explain why one with ordinary skill in the art would, when a signal is sent through the converter in a first direction, apply the functionality invoked in the second and opposite direction to the first direction. One with ordinary skill possesses a basic level of skill, which in this case would seem to

include not sending data on a route intended for data flow in the opposite direction with a different conversion functionality. Patent Owner does not identify any other insurmountable problem for one with ordinary skill in the art based on the fact that the output of Eisner's PRCTT 14 already is DTMF. It would seem one with ordinary skill would have recognized that that part of the conversion, i.e., from modem to DTMF, need not be performed. It should be noted that "[a] person of ordinary skill is also a person of ordinary creativity, not an automaton." *KSR Int'l Co.*, 550 U.S. at 421.

Patent Owner further argues:

But disclosing the "encryptor" still does not disclose the creation of an encrypted analog-audio signal at all. Ex. 2004, ¶114. Moreover, Eisner discloses no method for creating an encrypted analog-audio signal at the card reader terminal, before the signal is sent on to reader to the mobile communication device. *Id.* ¶114–117. Eisner's statements regarding data security and data encryption refer to data that is transmitted over a long-range communication network (e.g., WAN) to a merchant or remote server. *Id.*, ¶116.

PO Resp. 46 (emphasis omitted). Patent Owner explains:

In other words, Eisner is concerned with security and data encryption on the network. Ex. 2004, ¶117. Eisner does not disclose, or even recognize the need, to encrypt data between two local devices physically connected to one another. *Id.* See also Ex. 1008. at Fig. 1, 2, 3, 5:40–42, 7:37–41, claims 1, 8, 20.

With Eisner's focus on network security rather than local encryption, a POSITA would not look to Eisner to produce an encrypted audio signal between a card reader and a mobile communication device. Ex. 2004, ¶118.

*Id.* at 47. The argument is unpersuasive and misplaced. Eisner does not have to disclose a specific method of encryption, as no specific algorithm of encryption is claimed. Also, disclosing the use of an encryptor within

PRCTT 14 indisputably teaches the generation by the PRCTT of encrypted analog audio signal, given that the output of PRCTT is analog audio signals for a conventional telephone connection. Further, Eisner's concern for data security on a network does not change the fact that PRCTT 14 outputs an encrypted analog audio signal. That concern is similarly alleviated when the output of PRCTT 14 is provided to a cellular phone as proposed by Petitioner, because the data transmitted on the wireless network would be encrypted. The additional security provided in the local path from PRCTT 14 to a cellular phone, within Petitioner's proposed combination, does not undermine Petitioner's position.

Patent Owner further argues that Eisner does not disclose encryption of card information "for transmission to a mobile communication device." PO Resp. 45. The argument is misplaced, because Petitioner relies on Proctor, not Eisner, for extending Eisner's teachings to mobile communication device and wireless communication network. Pet. 62, 73. One may not attack prior art references individually when the asserted ground of unpatentability is based on a combination of references. *In re Merck*, 800 F.2d at 1097; *In re Keller*, 642 F.2d at 426.

For reasons discussed above, we are persuaded that the combined teachings of Eisner and Proctor teach "a controller for converting the captured card information into an encrypted audio signal having an analog audio format suitable for transmission to an analog hands-free jack of a mobile communication device."

#### Limitation 1[C] — Communication Link

Claim 1 further recites "a communication link for coupling said input device to an analog hands-free jack of a mobile communication device for the transmission of said encrypted analog-audio-format signals

therebetween.” Ex. 1001, 11:5–60. Petitioner identifies output jack of Proctor’s terminal 36, including cable 40 and/or 32, as a communication link connecting to connector 26 (hands-free jack) of cellular phone 22. Pet. 67. Implicit in Petitioner’s identification is the position that when modifying Eisner to use a cellular phone as disclosed by Proctor, Proctor’s communication link coupling to the cellular phone would also be used. Petitioner also refers to converter 30 which is in between cables 32 and 40. *Id.* It is implicit that in Proctor’s embodiment in which converter is between terminal 36 and cellular phone 22, converter 30 is a part of the identified communication link.

Notwithstanding Patent Owner’s contrary argument, discussed below, we are persuaded that the combined teachings of Eisner and Proctor, as proposed by Petitioner, teach “a communication link for coupling said input device to an analog hands-free jack of a mobile communication device for the transmission of said encrypted analog-audio-format signals therebetween.”

Patent Owner argues:

What Petitioner never explains is what type of communication link would be established from Eisner’s card reader to Proctor. Converter 30 is the only way disclosed by Proctor for receiving information from a card reader and converting it into a signal that can be transmitted by a mobile phone. Petitioner does not explain what type of communication link would be established from Eisner’s card reader to the Proctor phone, since the incorporation of Proctor’s converter into the phone would require that he reader somehow transmit the modem/landline signal to the converter inside the phone. Ex. 2004, ¶ 147–148. This connection is certainly not being made to an audio hands-free jack, since the signal has not yet been converted into any kind of analog audio signal suitable for a hands-free jack. *Id.* ¶ 148.

PO Resp. 48–49. The argument is unpersuasive. Petitioner has provided adequate explanation. Petitioner has not proposed to use incompatible or non-matching jacks. As already discussed above, it is implicit in Petitioner’s position that in the Proctor embodiment in which terminal 36 is directly connected to the hands-free jack of phone 22, a matching TRS/TRSS type jack, rather than an RJ-11 jack, would be used at the output of terminal 36.

As noted above, Petitioner explained that

hands-free jacks were well known standard/universal connections found across communication devices, and a POSITA would have had a reasonable expectation of success in configuring **Eisner’s** system to transmit signals over a hands-free jack instead of an RJ-11 telephone jack, which were both well-known connections for analog audio signals. (Ex. 1003 ¶¶102, 38–51.)

Pet. 63. Patent Owner does not allege that one with ordinary skill in the art would not have known how to adapt an analog audio connection provided through an RJ-11 type jack for a conventional phone line to an analog audio connection provided through a TRS/TRRS type jack used by a cellular phone, if the signal is for sending to a cellular phone. The jack at the output of converter 30 as shown in Proctor’s Figure 1 would be such a jack.

Patent Owner’s statement that converter 30 is the only way disclosed by Proctor for receiving information from a card reader and converting it into a signal that can be transmitted by a mobile phone is misplaced. PO Resp. 48. The claim refers to “suitable for transmission to an analog hands-free jack of a wireless communication device,” *not* “suitable for transmission by a wireless communication device to a digital network.” Patent Owner conflates transmission by the cellular phone to a digital network with transmission to the hands-free jack of the cellular phone.

Patent Owner further argues:

Petitioner does not explain the connectiveness between [an] RJ-11 output from Eisner's card reader to whatever input device the phone has to have to receive modem or landline signals from Eisner and route them to the converter of Proctor—a dubious omission, to say the least, in light of Petitioner's other arguments discussed above about the incompatibility of RJ-11 jacks and mobile phones. Petitioner also provides no evidence that the signals transmitted by the reader could be interpreted by the mobile phone and directed to the circuitry identified as the converter without customization of the mobile phone's input interface or without other changes that would make this new device a specialized device, rather than a standard mobile phone. *Id.*, ¶147–149.

PO Resp. at 49. But as discussed above, Petitioner has provided adequate explanation. Petitioner has not proposed to use incompatible or non-matching jacks. It is implicit in Petitioner's position that in the Proctor embodiment in which terminal 36 is directly connected to the hands-free jack of phone 22, a matching TRS/TRSS type jack, rather than an RJ-11 jack, would be used at the output of terminal 36.

The argument that Proctor's phone would have to be a specialized device rather than a standard cellular phone, in the embodiment in which converter 30 is located within the phone, is misplaced. The claim simply requires a wireless communication device and not a “standard mobile phone.” A non-standard cellular phone nonetheless still is a wireless communication device.

For the foregoing reasons, we are persuaded that the combined teachings of Eisner and Proctor teaches “a communication link for coupling said input device to an analog hands-free jack of a mobile communication device for the transmission of said encrypted analog-audio-format signals therebetween.”

Limitation 1[D] — first wherein clause

Claim 1 further recites “wherein when said input device captures the card information, said controller converts the card information into said encrypted analog-audio-format signal and transmits said converted signal via said communication link to said mobile communication device.” Ex. 1001, 11:61–65. Petitioner explains that this is how Eisner’s device operates, after the proposed modification, in light of Proctor, to use a cellular phone rather than a physical telephone line, referring back to its analysis of preceding limitations of claim 1. Pet. 67–68. Patent Owner does not present any counter-argument for this limitation of claim 1, additional to what we have already discussed above. We are persuaded that the combined teachings of Eisner and Proctor, as proposed by Petitioner, teach “wherein when said input device captures the card information, said controller converts the card information into said encrypted analog-audio-format signal and transmits said converted signal via said communication link to said mobile communication device.”

Limitation 1[E] — second wherein clause

Claim 1 further recites “wherein said mobile communication device automatically transmits the captured card information to the remote transaction server and receives transaction validation information from said remote transaction server.” Ex. 1001, 11:66–12:3. Petitioner explains that transmitting without user input meets “automatically transmits.” Pet. 30–31 n.5, 70 n.11. Petitioner then cites to various portions of both Eisner and Proctor which indicate that captured card information is transmitted to a remote transaction server without reference to any user input. *Id.* at 68–70. For example, Eisner states: “When a valid card is swiped, the card data and serial number are sent to the merchant where the combined data is decoded

and sent to a clearinghouse for authorization as previously discussed.”

Ex. 1008, 7:18–21. For instance, Proctor states:

The message generated in the terminal 36 is modulated to an audible stream of tones, which are transmitted to the converter 30. The converter converts this signal into a data stream in encoded format that is readily transmitted via digital cellular networks, as described in the incorporated reference. The phone then transmits this encoded stream to a receiver node on the network 12, which transmits the stream via the conventional telephone network to the facility 20.

Ex. 1004 ¶ 16.

With regard to the wireless communication device receiving transaction validation information from the remote transaction server, Petitioner cites to the following description of Eisner:

Once all the information necessary for authorization has been provided to the clearing house, approval or denial of the transaction by the clearing house is returned to the vendor’s equipment. If the vendor receives approval, the transaction is now complete. If the purchase is denied the customer may be instructed to swipe another card, contact the card-issuing institution or may be given other options to make the purchase.

Ex. 1008, 7:28–35 (cited at Pet. 69).

Notwithstanding Patent Owner’s argument to the contrary, discussed below, we are persuaded that the combined teachings of Eisner and Proctor teach this second wherein clause: “wherein said mobile communication device automatically transmits the captured card information to the remote transaction server and receives transaction validation information from said remote transaction server.”

Patent Owner asserts that because Eisner does not disclose a wireless communication device, Petitioner must rely on Proctor’s cellular phone to meet the “automatically transmits” requirement which applies to a wireless

communication device. PO Resp. 50–51. That is true, because it is Petitioner’s contention that both Eisner and Proctor teach automatic transmission, not that it would have been obvious to have Proctor’s phone 22 transmit automatically based on Eisner’s disclosure of automatic transmission with a conventional public switched telephone system. *See* Pet. 68–70.

Patent Owner further asserts: “Proctor indicates that its mobile phone would require manual dialing in order to connect to the verification system.” PO Resp. 50 (citing Ex. 1004 ¶ 15). We already have rejected the same argument of Patent Owner above in the context of Petitioner’s alleged obviousness of claim 1 over Proctor and Vrotsos. In the context of this claim, it is necessary only that after the card information is read there be an automatic connection to the remote verification facility, not that there can never be manual dialing on the phone, even prior to presentation of the transaction card.

Petitioner persuasively states: “Proctor discloses manual dialing occurs before a transaction during system setup, and not [] as a mid-process step.” Reply 14 (citing Ex. 1004 ¶¶ 15–16) (emphasis omitted). In pertinent part, Proctor states: “The system operates as follows: A merchant having a system 14 wishes to accept a customer’s credit card 48. If the merchant system’s components are not set up, the merchant connects the components as shown. The phone 22 is activated, and the verification system number is dialed by the merchant.” Ex. 1004 ¶ 15. It is implicit from this description that the manual dialing is required only at the time of initially setting up the system, prior to reading any information from the transaction card, but not thereafter.

We are persuaded that the combined teachings of Eisner and Proctor teach “wherein said mobile communication device automatically transmits the captured card information to the remote transaction server and receives transaction validation information from said remote transaction server.”

For reasons discussed above, Petitioner has proved by a preponderance of the evidence that claim 1 would have been obvious over Eisner and Proctor.

3. *Dependent Claims 2, 3, and 6*

Claims 2, 3, and 6 each depend directly from independent claim 1. Petitioner accounts for the additional limitations of claims 2, 3, and 6, relative to claim 1. Pet. 70–72. The assertions are supported by the cited evidence. Patent Owner does not present any counter-argument for claims 2, 3, and 6, other than those which it has asserted for claim 1 from which each of claims 2, 3, and 6 depends. PO Resp. 41–53. Those arguments have been discussed and rejected above.

We are persuaded by Petitioner’s assertions. Petitioner has proved by a preponderance of the evidence that each of claims 2, 3, and 6 would have been obvious over Eisner and Proctor.

4. *Independent Claim 10*

Claim 10 recites “[a] card reader device for reading a card having data stored on a magnetic stripe incorporated into the card.” Ex. 1001, 13:5–7. Petitioner identifies Eisner’s PRCTT 14 as such a card reader device, relying on its analysis for the preamble of claim 1. Pet. 72. Patent Owner does not present any counter-argument for the preamble of claim 10. We are persuaded that Eisner’s PRCTT 14 constitutes such a card reader device, and we need not decide whether this preamble language is limiting.

Claim 10 further recites

a read head for passing a magnetic stripe of a card by to read data stored on a magnetic stripe and for producing an encrypted audio signal indicative of data stored on a magnetic stripe, said read head including circuitry for converting said signal to an encrypted analog audio format suitable for transmission to a hands-free jack of a mobile communication device.

Ex. 1001, 13:8–14. Petitioner identifies Eisner’s PRCTT 14, which includes magnetic stripe reader 30 and encryptor 48, as such a read head, where Eisner’s disclosed connecting structure is modified in light of Proctor, to use a cellular phone to transmit to a remote transaction server rather than fixed telephone lines as discussed above in the context of claim 1. Pet. 72–73. In that combination, the cellular phone would receive the output of PRCTT 14 at the phone’s hands-free jack. *Id.*

Notwithstanding Patent Owner’s arguments to the contrary, we are persuaded that Eisner and Proctor, collectively as proposed by Petitioner, teach the above-quoted limitation of the read head. Patent Owner argues that Eisner does not disclose encryption of card information to generate an encrypted analog audio signal, and does not disclose encryption of card information for transmission to a mobile communication device. PO Resp. 45–47. These arguments already have been discussed and rejected above in the context of claim 1, and the reasoning need not be reiterated here.

Claim 10 further recites “an output jack adapted to be inserted into a hands-free jack of said mobile communication device for providing said converted signal indicative of data stored on said magnetic stripe to said mobile communication device.” Ex. 1001, 13:16–19. Petitioner regards the output jack of Proctor’s terminal 36, coupled to connector 26 (hands-free jack) of cellular phone 22, as such an output jack. Pet. 73. Implicit in

Petitioner's contention is that the limitation can be met by an output jack which is connected by cable to the hands-free jack of a cellular phone. We agree. Patent Owner does not argue that there must not be wiring between the output jack and the hands-free jack.

Notwithstanding Patent Owner's arguments to the contrary, we are persuaded that Eisner and Proctor, collectively as proposed by Petitioner, teach the above-quoted limitation of the output jack.

Patent Owner argues that Proctor does not provide coupling to an analog hands-free jack. PO Resp. 41–45. This is the same argument discussed and rejected above in the context of claim 1. There is, however, a material difference between claim 1 and claim 10. Unlike claim 1, claim 10 requires an output jack that is “adapted to be inserted into a hands-free jack of a mobile communication device.” Ex. 1001, 13:16–17. Therefore, our rejection of this argument above in the context of claim 1 still applies, except for Petitioner's reliance on the Proctor embodiment in which converter 30 is located between terminal 36 and cellular phone 22. For that embodiment, Patent Owner's argument has merit, because the terminal would not have an output jack adapted to be inserted into a hands-free jack. For the Proctor embodiment in which converter 30 is located within phone 22, Patent Owner's argument is unpersuasive for reasons discussed above.

For the foregoing reasons, Petitioner has proved by a preponderance of the evidence that claim 10 would have been obvious over Eisner and Proctor.

5. *Independent Claim 12*

Claim 12 is similar to claim 10. However, it recites that the card reader is “portable,” and it recites that information is provided to the mobile communication device “for transmission to a transaction server for further

processing.” Ex. 1001, 13:24–40. Also, it does not require the jack to be a “hands-free” jack. *Id.* For limitations essentially the same as those in claim 10, Petitioner’s presentation of claim 12 is the same as its presentation for claim 10, and Patent Owner does not set forth arguments for claim 12 that are additional to those it presents for claim 10, which arguments are discussed above in the context of claim 10. Pet. 73–75; PO Resp. 41–47. Thus, for those limitations, the analysis above for claim 10 equally applies to claim 12.

With regard to the recitation “for transmission to a transaction server for further processing,” Petitioner adequately explains how Eisner accounts for that limitation in its discussion of claim 1. Pet. 68–69, 75. Patent Owner does not present any counter argument in that regard. We are persuaded that the recitation “for transmission to a transaction server for further processing” is met by Petitioner’s proposed combination of Eisner and Proctor.

With regard to the requirement that the card reader is portable, Petitioner asserts that Eisner’s PRCTT 14, which Petitioner asserts is the claimed card reader, is portable because it can be carried or moved. Pet. 73–74 (citing Ex. 1008, 3:22–31, 4:19–25, 4:27–40, Figs. 1–2). Notwithstanding Patent Owner’s arguments to the contrary, discussed below, we are persuaded that Eisner’s PRCTT 14 is portable.

Patent Owner’s declarant, Mr. Zatkovich, testifies:

In my opinion, a portable device must minimally be able to provide for a means of power. In addition, in order to be portable, a device cannot rely on fixed connections (i.e. non-portable) for communication, such as a wired network connection, or a land line phone. The lack of a provision for power, or the necessity of the device to remain attached to a fixed communication connection indicate that the designer did not intend that device to be portable. A POSITA would not consider

such devices to be “portable” as claimed. In addition, not having a means of power requiring a fixed connection essentially removes the benefits of creating a portable device in the first place. The primary benefit of a portable device is so that it can be moved to, and operated from, most locations without requiring a fixed-wired infrastructure such as power outlets or communication lines.

Ex. 2004 ¶ 94 (cited at PO Resp. 35). The testimony is misdirected.

Mr. Zatkovich misdirects his focus on “intent” rather than on actual characteristics and capability. We do not credit his testimony. The term “portable” is not as narrow as Patent Owner contends, for several reasons.

The Specification of the ’998 patent states: “[A]n example of a transaction and communication assembly 16 is shown including a portable transaction apparatus 12 in the form of a point of sale (POS) device linked to a communication device in the form of mobile phone 20 via a communication link in the form of cable 30.” Ex. 1001, 7:19–24. That description suggests that so long as the POS device is connected to a mobile phone, it is considered portable. Mr. Zatkovich also has testified that a device “can connect directly to a laptop and retrieve power from the laptop” and still be considered “portable.” Ex. 1041, 31:2–9. Specifically, Mr. Zatkovich testifies: “[S]ome portable devices or peripherals can have their own power supply or are designed to connect to another device to get power. For example, a printer, some printers can connect directly to a laptop and retrieve power from the laptop, for example, via USB.” *Id.*

Even if Patent Owner’s unduly narrow construction is applied, the combined teachings of Eisner and Proctor still teach a portable card reader. Eisner expressly describes that power to the PRCTT unit may be from a battery pack. Ex. 1008, 5:48–49. When coupled to a mobile phone as Petitioner proposes in light of the teachings of Proctor, Eisner’s PRCTT 14

is not tied to any specific location for connecting to a network. Further, Eisner describes PRCTT 14 as a “personal” reader capture transfer technology unit, suggesting that the unit is capable of being moved about with the person like a mobile phone. Ex. 1008, 3:24–25.<sup>10</sup>

Petitioner has proved by a preponderance of the evidence that claim 12 would have been obvious over Eisner and Proctor.

6. *Independent Claim 14*

Claim 14 is a method claim and corresponds essentially to operation of the card reader claimed in claim 10. Ex. 1001, 13:46–65. Petitioner’s presentation of claim 14 is the same as its presentation for claim 10. Pet. 76–78. Patent Owner does not set forth arguments for claim 14 that are additional to those it presents for claim 10, which are discussed above in the context of claim 10. The analysis provided above for claim 10 equally applies to claim 14. Petitioner has proved by a preponderance of the evidence that claim 14 would have been obvious over Eisner and Proctor.

7. *Independent Claim 16*

Claim 16 is essentially the same as claim 14, except for two differences. Ex. 1001, 13:46–65; 14:1–28. For limitations essentially the same as those in claim 14, Petitioner’s presentation of claim 16 is the same as its presentation for claim 14, and Patent Owner does not set forth arguments for claim 16 that are additional to those it presents for claim 14, which are discussed above in the context of claim 14. Pet. 78–81; PO Resp. 41–47. Thus, for those limitations, the analysis above for claim 14 equally

---

<sup>10</sup> Petitioner argues in its Reply that the portable recitation of claim 12 exists only in the claim’s preamble and this is non-limiting. Reply 18 n.8. The argument is untimely because it should have been raised in the Petition but was not. It is not entitled to consideration and we do not consider it now.

applies to claim 16.

One additional limitation recited in claim 16 is that the provided card reader is portable. Ex. 1001, 14:4–5. For that additional limitation, Petitioner relies on its discussion of the portable limitation in claim 12 and Patent Owner does not present counter arguments additional to those it provided in the context of claim 12. Pet. 78–79; PO Resp. 51–52. The above discussion about the portable limitation in claim 12 equally applies to claim 16. Petitioner has shown that the combination of Eisner and Proctor as proposed by Petitioner teaches a portable card reader.

A second additional limitation recited in claim 16 is that the providing of the converted signal indicative of the magnetically recorded information stored on a magnetic stripe to the mobile communication device is “*for further processing by circuitry contained in said mobile communication device.*” Ex. 1001, 14:24–26. Petitioner explains that the Eisner and Proctor combination it proposes satisfies this limitation because in the Proctor embodiment in which converter 30 is located within the mobile phone, converter 30 performs further processing to provide signals readily transmitted via digital cellular networks. Pet. 81 (citing Ex. 1004 ¶¶ 16, 18). The assertion is supported by the cited portions of Proctor. Paragraph 18 of Proctor indicates that converter 30 can be located within the telephone. Ex. 1004 ¶ 18. Paragraph 16 of Proctor states:

The message generated in the terminal 36 is modulated to an audible stream of tones, which are transmitted to the converter 30. The converter converts this signal into a data stream in encoded format that is readily transmitted via digital cellular networks, as described in the incorporated reference. The phone then transmits this encoded stream to a receiver node on the network 12, which transmits the stream via the conventional telephone network to the facility 20.

*Id.* ¶ 16. Petitioner additionally asserts: “Furthermore, a POSITA would have understood that to communicate any information to a communications network, the mobile communication device must have inherently included some circuitry for processing such information for transmission, such as radio transceiver circuitry. (Ex. 1003 ¶¶52–54.)” Pet. 81. The assertion is supported by the cited testimony of Mr. McNair. Ex. 1003 ¶¶ 52–54.

Notwithstanding Patent Owner’s argument to the contrary, discussed below, we are persuaded that Eisner and Proctor, as combined by Petitioner, teach that the providing of the converted signal indicative of the magnetically recorded information stored on a magnetic stripe to the mobile communication device is “for further processing by circuitry contained in said mobile communication device.”

Patent Owner argues:

Proctor does not provide for further processing of the card information by a mobile phone. Petitioner’s argument is based in the mobile phone’s broadcasting of the signal to a cellular network, but this is a much different thing than the type of processing of card information disclosed in the ’998 patent. Ex. 2004, ¶166. “Further processing” is not merely relaying an encrypted signal for transmission on a cellular network, but requires at least the recovery of the information from the audio signal into digital information. *Id.*, ¶167. Proctor does not disclose a mobile phone that performs this processing of credit card information as the Proctor phone merely takes the information it receives from its converter and relays the information to a cellular network. *Id.*, ¶171. There are no citations within either Proctor or Eisner regarding operations on a mobile communication device that are specific to the processing of the card information. *Id.*, ¶172.

PO Resp. 52–53. The argument is unpersuasive. In patent law, “the **name** of the **game** is the **claim**.” *In re Hiniker Co.*, 150 F.3d 1362, 1369 (Fed. Cir. 1998). Claim 16 does not restrict what type of further processing must take

place within the mobile communication device. Rather, the mobile communication device simply has to perform some further processing on the card information it receives from the card reader device. Patent Owner's reading of the claim is overly restrictive.

We also disagree that the mobile communication merely "relays" the information it receives. Petitioner explains how converter 30 within the mobile communication device converts the received signal into a data stream in encoded format that is readily transmitted via digital cellular networks. Pet. 81. That is a form of processing beyond mere "relaying."

Furthermore, even based on Patent Owner's narrow reading of "further processing," Proctor's phone 22 still performs an action satisfying the limitation. As explained by Petitioner, converter 30 within phone 22 converts the received analog information to digital data for transmission on a digital network. Pet. 81 (citing Ex. 1004 ¶¶ 16, 18). Thus, Proctor's phone 22 converts audio signal into digital information as Patent Owner asserts is required to meet "further processing."

Petitioner has proved by a preponderance of the evidence that claim 16 would have been obvious over Eisner and Proctor.

8. *Independent Claim 17*

Claim 17 is essentially the same as claim 10, but slightly broader in one respect. While claim 10 requires initial production of an encrypted audio signal and subsequent conversion of that signal to an analog format suitable for transmission to a hands-free jack of a mobile communication device, claim 17 simply requires the end result, i.e., providing an encrypted analog audio signal in a format suitable for transmission to a hands-free jack of a mobile communication device. Petitioner's presentation of claim 17 is the same as its presentation for claim 10. Pet. 81–83. Patent Owner does

not set forth arguments for claim 17 that are additional to those it presents for claim 10, which are discussed above in the context of claim 10. PO Resp. 41–47. The analysis provided above for claim 10 equally applies to claim 17. Petitioner has proved by a preponderance of the evidence that claim 17 would have been obvious over Eisner and Proctor.

9. *Independent Claim 19*

Claim 19 is essentially the same as claim 10, but further requires the mobile communication device to include “a processor coupled to said hands-free jack for transmitting to remote servers signals corresponding to signals received by said hands-free jack.” Ex. 1001, 15:1–19. For limitations essentially the same as those in claim 10, Petitioner’s presentation of claim 19 is the same as its presentation for claim 10, and Patent Owner does not set forth arguments for claim 19 that are additional to those it presents for claim 10, which are discussed above in the context of claim 10. Pet. 83–85;<sup>11</sup> PO Resp. 45–47. Thus, for those limitations, the analysis above for claim 10 equally applies to claim 19.

To account for the “processor” in the mobile communication device, Petitioner identifies in Proctor’s phone “circuitry for cellular network communications.” Pet. 83. Petitioner further notes that Proctor’s phone includes circuitry that encodes vocal communications digitally, in a highly compressed format that allows a conversation to be transmitted with limited bandwidth, and possesses receiving capabilities that receive a digital stream and convert it into an audible facsimile of the original words spoken by a caller with whom the user is speaking. *Id.* at 55 (citing Ex. 1004 ¶ 8).

---

<sup>11</sup> Petitioner identifies Proctor’s phone 22 as the mobile communication device and connector 26 as the hands-free jack on the mobile communication device. Pet. 83.

Petitioner further notes that “the telephone [in Proctor] may incorporate the decoder circuitry.” *Id.* (citing Ex. 1004 ¶ 18).

Petitioner does not cite to any testimony of Mr. McNair to support its assertion that “circuitry for cellular network communications” is a processor. Proctor itself does not refer to such circuitry as a processor or even including a processor. On the other hand, Patent Owner has not disputed that Proctor’s “circuitry for cellular network communications” at least includes a processor. Given the complexity of the transmitting and receiving functions performed by the “circuitry for cellular network communication,” as explained by Petitioner, to which Patent Owner has not submitted any counter-argument, we are persuaded that Proctor’s “circuitry for cellular network communication” includes a processor, which is enough to meet the claim requirement of a processor for transmitting to remote servers signals corresponding to signals received by said hands-free jack.

Accordingly, Petitioner has proved by a preponderance of the evidence that claim 19 would have been obvious over Eisner and Proctor.

*F. Alleged Obviousness of Claim 15  
over Eisner, Proctor, and Hart*

Claim 15 depends directly from claim 14 and further recites the step of “providing a housing for containing the read head.” Ex. 1001, 13:66–67. We already addressed above how the combined teachings of Eisner and Proctor satisfy the limitations of claim 14. For the step of “providing a housing for containing the read head,” Petitioner relies on the disclosure of Hart. Specifically, Hart discloses that “components of the magnetic stripe reader are contained within a housing.” Ex. 1018, 6:52–53 (cited at Pet. 85–86). Hart also discloses that the housing is constructed in a way that is tamper resistant. *Id.* at 6:53–55 (cited at Pet. 86). Petitioner explains:

A POSITA would have recognized that, in addition to **Hart's** specific motivation to use a housing to prevent tampering, the benefits of providing housings for electronic components were universally well-known. For example, housing have been used to keep components in place, to protect them from the elements, and to provide a shape or form for easy handling. Providing a housing for components is a basic design necessity that a POSITA would have had a reasonable expectation of success implementing for **Eisner's** read head, as taught by **Hart**. (Ex. 1003 ¶¶ 105–109).

Pet. 86–87. Petitioner's assertions are supported by the cited testimony of Mr. McNair. Ex. 1003 ¶¶ 105–109.

Patent Owner does not present counter arguments with regard to Petitioner's showings for claim 15, other than those which it has asserted for claim 14 from which claim 15 depends. PO Resp. 53. Those arguments have been discussed and rejected above.

We are persuaded by Petitioner's assertions. Petitioner has proved by a preponderance of the evidence that claim 15 would have been obvious over Eisner, Proctor, and Hart.

### III. CONSTITUTIONAL CHALLENGE

Patent Owner argues that the appointment of Administrative Patent Judges still violates the United States Constitution, Article II, § 2, cl. 2 (Appointments Clause), despite the “attempted cure” by the Federal Circuit in *Arthrex, Inc. v. Smith & Nephew, Inc.*, 941 F.3d 1320 (Fed. Cir. 2019) *cert. granted sub nom. United States v. Arthrex, Inc.*, 2020 WL 6037206 (Oct. 13, 2020). PO Resp. 60.

Patent Owner argues that “subjecting a patent filed before September 16, 2012 (date of relevant provisions of AIA), as is the case here, to IPR is an impermissibly retroactive, unconstitutional taking” and “violates the Due Process Clause of the Fifth Amendment.” *Id.*

We decline to consider Patent Owner’s constitutional challenges. The Federal Circuit has addressed the issue of APJ appointment status in *Arthrex, Inc.*, 941 F.3d at 1325, 1337–38 (“This as-applied severance . . . cures the constitutional violation.”); *see also Arthrex, Inc. v. Smith & Nephew, Inc.*, 953 F.3d 760, 764 (Fed. Cir. 2020) (Moore, J., concurring in denial of rehearing) (“Because the APJs were constitutionally appointed as of the implementation of the severance, *inter partes* review decisions going forward were no longer rendered by unconstitutional panels.”). The Federal Circuit has also addressed the 5th Amendment due process and takings issues in *Celgene Corp. v. Peter*, 931 F.3d 1342, 1362–63 (Fed. Cir. 2019).

#### IV. CONCLUSION<sup>12</sup>

Petitioner has proved by a preponderance of the evidence that claims 1–3, 6, 10, 12, 14–17, and 19 of the ’998 patent are unpatentable on the grounds of unpatentability as summarized in the following table:

---

<sup>12</sup> Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner’s attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

| <b>Claims</b>                        | <b>35<br/>U.S.C.<br/>§</b> | <b>Reference(s)/<br/>Basis</b> | <b>Claim Shown<br/>Unpatentable</b> | <b>Claim Not<br/>Shown<br/>Unpatentable</b> |
|--------------------------------------|----------------------------|--------------------------------|-------------------------------------|---------------------------------------------|
| 1–3, 6                               | 103                        | Proctor, Vrotsos               | 1–3, 6                              |                                             |
| 1–3, 6, 10,<br>12, 14, 16,<br>17, 19 | 103                        | Eisner, Proctor                | 1–3, 6, 10, 12,<br>14, 16, 17, 19   |                                             |
| 10, 12, 14–<br>17, 19                | 103                        | Proctor, Hart <sup>13</sup>    |                                     |                                             |
| 15                                   | 103                        | Eisner, Proctor,<br>Hart       | 15                                  |                                             |
| <b>Overall<br/>Outcome</b>           |                            |                                | 1–3, 6, 10, 12,<br>14–17, 19        |                                             |

## V. ORDER

Accordingly, it is:

ORDERED that claims 1–3, 6, 10, 12, 14–17, and 19 of the '998 patent have been proved unpatentable; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

---

<sup>13</sup> We do not reach the alleged unpatentability of claims 10, 12, 14–17, and 19 as obvious under U.S.C. § 103 over Proctor and Hart, because each of these claims is already held unpatentable on a different ground.

IPR2019-01627  
Patent 8,281,998 B2

For PETITIONER:

Scott A. McKeown  
Gabrielle E. Higgins  
Victor Cheung  
ROPES & GRAY LLP  
scott.mckeown@ropesgray.com  
gabrielle.higgins@ropesgray.com  
victor.cheung@ropesgray.com

David M. Tennant  
WHITE & CASE LLP  
dtennant@whitecase.com

For PATENT OWNER:

Jason S. Jackson  
Niall A. MacLeod  
KUTAK ROCK LLP  
jason.jackson@kutakrock.com  
niall.macleod@kutakrock.com