

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ASKELADDEN, L.L.C.

Petitioner

v.

OHVA, INC

Patent Owner

IPR2023-00921
U.S. Patent 9,679,286

SUPPLEMENTAL DECLARATION OF BRUCE MCNAIR

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I, Bruce McNair, do hereby declare as follows:

I. INTRODUCTION

1. I have been retained by counsel for Askeladden, L.L.C. (“Askeladden”) as an independent expert witness for the above-captioned *Inter Partes* Review (“IPR”) of U.S. Patent No. 9,679,286 (“the ’286 Patent”). I am being compensated at my usual and customary rate for the time I spend in connection with this IPR. My compensation is not affected by the outcome of this IPR.

2. I have been asked to provide my supplemental opinions regarding whether claims 1-4 (the “Challenged Claims”) of the ’286 Patent are invalid as they would have been obvious to a person having ordinary skill in the art (“POSITA”) as of the earliest claimed priority date. It remains my opinion that the Challenged Claims would have been obvious to a POSITA for the reasons presented in my original Declaration and the reasons below.

3. In preparing this Declaration, I have reviewed:

- EX1001, the ’286 Patent;
- EX1002, the file history of the ’286 Patent;
- EX1003, my original Declaration;
- EX1005, U.S. Patent No. 9,330,385 to Cho et al. (“Cho”);
- EX1012, the file history of U.S. Application No. 11/533,030 (“’030 Application”);

- EX1014, Comparison of the as-filed specification of the '674 Application (filed 2015) with the as-filed specification of the '842 Application (filed 2014);
- EX1015, Comparison of the as-filed specification of the '674 Application (filed 2015) with the as-filed specification of the '030 Application (filed 2006);
- EX1040, U.S. Patent Publication No. 2012/0014531 to Yamkovoy ("Yamkovoy");
- EX1041, U.S. Patent No. 4,926,458 to Reger et al. ("Reger");
- EX1042, U.S. Patent No. 4,178,548 to Thompson ("Thompson");
- EX1044, U.S. Patent Publication No. 2002/0033680 to Fehd et al. ("Fehd");
- EX1045, U.S. Patent No. 6,039,291 to Dobson, IV ("Dobson");
- EX1046, IEEE 100: The Authoritative Dictionary of IEEE Standard Terms, Seventh Edition (December 2000) ("IEEE 100");
- EX1047, International Standard, ISO 7498-2, First Edition, February 25, 1989 ("ISO 7498-2");

- Decision Granting Petitioner’s Request on Rehearing and Granting Institution of Inter Partes Review (“Inst. Dec.,” Paper 15) in IPR2023-00921;
- Patent Owner’s Response (“POR,” Paper 18) in IPR2023-00921; and
- any other document cited below.

4. I submit this Supplemental Declaration to address various arguments that counsel for Patent Owner made in the Patent Owner’s Response (“POR”). I have been informed by Askeladden’s counsel that Patent Owner did not submit a declaration by an expert in the field of the ’286 Patent.

5. In forming the opinions expressed in this Declaration, I relied upon my education and experience in the relevant field of art, and have considered the viewpoint of a person of ordinary skill in the art (“POSITA”), as of the March 3, 2015, filing date of the ’286 Patent. As I explained in my original Declaration (EX1003, Section VIII), the subject matter recited in the Challenged Claims is not supported in any earlier priority application of the ’286 Patent. The subject matter of the Challenged Claims is supported only in the ’674 Application from which the ’286 Patent issued. Therefore, I considered the viewpoint of a POSITA as of March 3, 2015, the filing date of the ’286 Patent. Accordingly, consistent with my original

Declaration, the “priority date of the ’286 Patent,” as discussed in my analysis below, is March 3, 2015.

6. In forming the opinions expressed in this Declaration, I have also considered:

- a) the documents listed above,
- b) any additional documents and references cited in the analysis below,
- c) the relevant legal standards, including the standard for obviousness, and
- d) my knowledge and experience based upon my work in this area as described below.

II. LEGAL PRINCIPLES

7. I am not an attorney. For the purposes of my Original Declaration and this Supplemental Declaration, I have been informed about certain aspects of the law that are relevant to my opinions. My understanding of the law was provided to me by Askeladden’s counsel.

8. It is my understanding that for a patent to claim priority to the filing date of an earlier application, each application in the chain leading back to the earlier application must comply with the written description requirement of 35 U.S.C. § 112. To satisfy the written description requirement, the specification of the earlier

application must contain a written description of the invention claimed and the manner and process of making and using it, in such full, clear, concise, and exact terms to enable an ordinarily skilled artisan to practice the invention claimed in the later-filed application claiming priority to the earlier application. Moreover, the earlier application must describe the later claimed invention in sufficient detail that a POSITA can clearly conclude that the inventor invented the claimed invention as of the filing date sought. I have been informed that a disclosure satisfies the written description requirement if it reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the date in question. It is my understanding that one shows that one is in possession of the claimed invention by describing the invention, with all its claimed limitations, and that this requirement is not satisfied by a description which makes the claimed invention obvious.

9. I understand that prior art to the '286 Patent includes patents and printed publications in the relevant art that predate the priority date of the '286 Patent. As noted above, I have applied the date of March 3, 2015 as the priority date.

10. I understand that a claim is unpatentable if it would have been obvious. Obviousness of a claim requires that the claim would have been obvious from the perspective of a POSITA at the time the alleged invention was made. I understand that a claim could have been obvious from a single prior art reference or from a combination of two or more prior art references.

11. I understand that an obviousness analysis requires an understanding of the scope and content of the prior art, any differences between the alleged invention and the prior art, and the level of ordinary skill in evaluating the pertinent art.

12. I further understand that a claim would have been obvious if it unites old elements with no change to their respective functions, or alters prior art by mere substitution of one element for another known in the field and that combination yields predictable results. Also, I understand that obviousness does not require physical combination/bodily incorporation, but rather consideration of what the combined teachings would have suggested to POSITAs at the time of the alleged invention. I understand that the combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.

13. I understand that the claims are to be construed according to the same claim construction standard that district courts use wherein claim terms are given their ordinary and customary meaning from the perspective of a POSITA at the time of the invention. I understand that claim terms are generally to be construed according to their ordinary and customary meaning from the perspective of a POSITA at the time of the invention in the context of the patent's disclosure, unless the inventor provided an express definition for a claim term (i.e., the inventor acts as his or her own lexicographer), or the applicant disavowed or disclaimed the full

scope of a claim term either in the specification or during prosecution. I understand that when the inventor acts as a lexicographer, the definition must be definition for a term, that definition must be set forth in the specification with reasonable clarity, deliberateness, and precision. I also understand that to constitute disavowal or disclaimer, the applicant must clearly and unambiguously express surrender of subject matter during prosecution. I understand that it is important not import limitations from a disclosed embodiment—even if it is the only embodiment disclosed in the specification—into a claim if the claim does not require those limitations, absent a clear indication that the applicant intended the claims to be so limited.

14. I understand that a patent may have two types of claims: an independent claim, and a dependent claim. I understand that a dependent claim must further define the subject matter of the claim from which it depends. I further understand that under the principle of claim differentiation, an independent claim should not be construed as requiring a limitation added by a dependent claim of that independent claim. In addition, I understand that under the principle of claim differentiation, limitations stated in a dependent claim are not to be read into the independent claim from which that dependent claim depends. Also, I understand that claim differentiation applies only when the claims recite different features because the use of different terms in the claims is intended to connote different meanings.

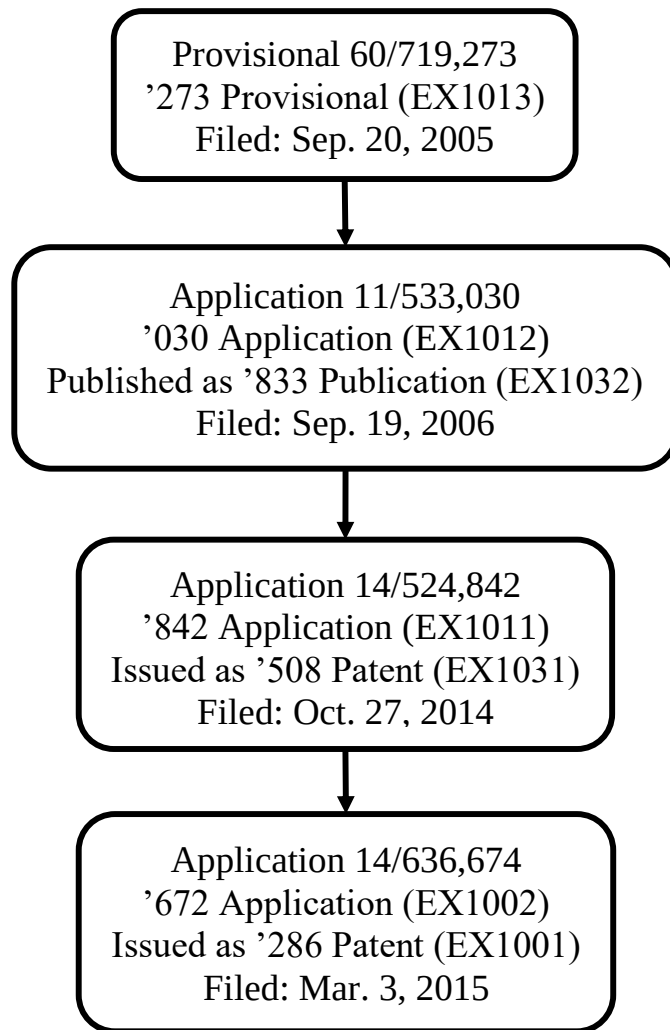
15. The analysis in this Supplemental Declaration is in accordance with the above-stated legal principles.

III. PRIORITY DATE OF THE '286 PATENT

16. The '286 Patent issued from U.S. Patent Application No. 14/636,674 (“the '674 Application”), which was filed March 3, 2015. As explained in my original Declaration (EX1003, Section VIII), the '286 Patent claims priority to U.S. Patent No. 9,003,508 (EX1031),¹ which claims priority to U.S. Patent Application No. 11/533,030 (EX1012), which in turn claims priority to U.S. Provisional Application No. 60/719,273 (EX1013).

17. The chart below shows the alleged priority documents and their relationship to the '286 Patent:

¹ I understand that U.S. Patent No. 9,003,508 (EX1031) was filed as Application No. 14/524,842 (EX1011).



18. For each subsequent application following the '030 Application, the applicant replaced the “Brief Summary of the Invention” section of the specification of the prior application with a new “Brief Summary of the Invention” section. See EX1016 (comparing the specification filed for the '508 Patent in 2014 with the specification filed in the '030 Application in 2006); EX1014 (comparing the specification filed for the '286 Patent in 2015 with the specification filed for the '508

Patent in 2014); EX1015 (comparing the specification filed for the '286 Patent in 2015 with the specification filed for the '030 Application in 2006).

19. I understand that Patent Owner has not disputed the fact that the applicant replaced the “Brief Summary of the Invention” section of the specification when it filed the '508 Application and again when it filed the '674 Application resulting in the '286 Patent. EX1014, 2-4 (comparison of '674 Application and '842 Application); EX1015, 2-4 (comparison of '674 Application and '030 Application); EX1016, 2-4 (comparison of '842 Application and '030 Application); EX1003, ¶¶71, 48-51). That is, the “Brief Summary of the Invention” section of the '286 Patent ('674 Application) is entirely different from the “Brief Summary of the Invention” sections of the '030 Application and '842 Application. I explain in detail the differences between the '030 Application, the '842 Application, and the '672 Application in my original Declaration. EX1003, ¶¶49-51.

20. As explained in my original Declaration, written description support for the following limitations [1.3.1]-[1.3.2] and [3.3]-[3.4] of claims 1 and 3 is contained only in the “Brief Summary of the Invention” section of the '286 Patent. EX1003, ¶¶70-77. As explained in my original Declaration, the following limitations [1.3.1]-[1.3.2] and [3.3]-[3.4] are not supported by the '030 Application or the '842 Application. EX1003, ¶¶78-90.

21. Claim 1 recites a “smart telephone” that executes “coded instructions...on a processor in the smart telephone” to

- “convert the analog variable voltage audio signal received at the microphone port to the transaction data as digital data” (limitation [1.3.1]); and
- “establish direct data exchange between the smart telephone and a second Internet-connected server and facilitate transactions by a financial institution, or purchases from an online-merchant, using the transaction data” (limitation [1.3.2]).

Limitations [3.3]-[3.4] of claim 3 recite substantially identical features.

22. I understand that Patent Owner has argued that limitations [1.3.1]-[1.3.2] and [3.3]-[3.4] have written description support in the '030 Application.² POR, 16-21. I disagree. I respond to Patent Owner's arguments in the POR below.

- A. **The '030 Application does not support a “smart telephone” executing coded instructions to “convert the analog variable voltage audio signal received at the microphone port to the transaction data as digital data” (limitations [1.3.1] and [3.3]).**

23. The '030 Application never describes that a smart telephone **receives** **or converts** the claimed *analog variable voltage audio signal...to the transaction data* **as digital data**. EX1003, ¶¶76-77. At best, the '030 Application describes a

² I understand that Patent Owner has not argued that the challenged claims are supported in the '273 Provisional.

smart telephone as **transmitting** an *analog variable voltage audio* signal to a PC, as described with respect to Figure 7, below, but a smart phone is never described as *convert[ing] the analog variable voltage audio signal...to the transaction data as digital data*. This concept is described only in the “Brief Summary of the Invention” section of the ’286 Patent, which is not contained in the ’030 Application.

24. I agree with Patent Owner’s characterization that the claimed *analog variable voltage audio signal* corresponds to the “sound signal or sound pass” (also referred to as a “sound token”) described in the ’030 Application. POR, 17-18; EX1012, 331. However, the ’030 Application does not describe the “sound signal or sound pass” or “sound token” as being *convert[ed]...to the transaction data as digital data* by a smart telephone. EX1003, ¶83.

25. The ’030 Application describes providing a “sound signal or sound pass” 205 to a PC 203, as illustrated in Figure 2. EX1012, 331, 327, 353; EX1001, 6:50-53, 4:43-45. The sound pass 205 “includes [a] user ID number and session key.” EX1012, 335; EX1001, 9:42-44. The user enters a password 204 on the PC 203, and the PC 203 processes the sound pass 205 and user-entered information “to authenticate the user.” EX1012, 336; EX1001, 9:50-63.

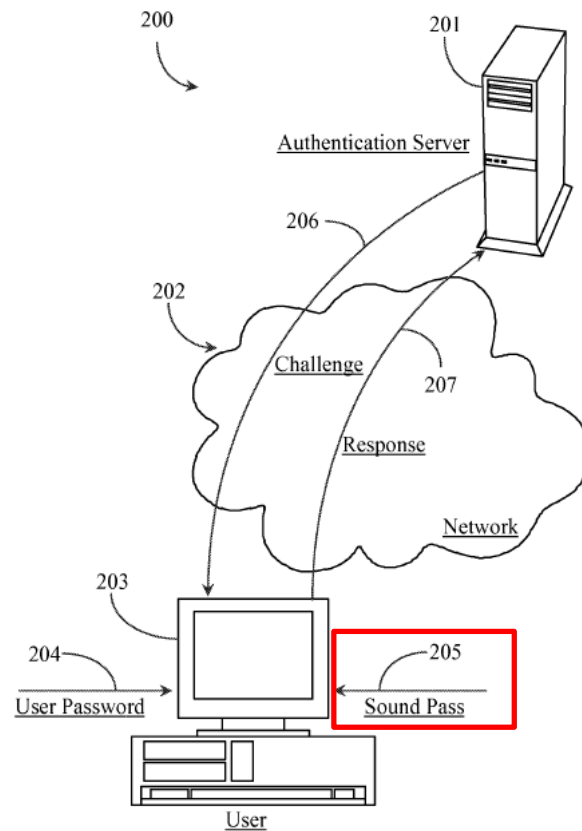


Fig. 2

EX1012, 353 ('030 Application, Fig. 2) (annotated)

26. As shown in Figures 2 and 3, below, the '030 Application explains that the PC 203 (not a smart telephone) processes the received sound pass 205 and communicates with the server 201 to authenticate the user and perform the transaction. EX1012, 330-331 (describing the server 201 and PC 203 sending and receiving hash codes and session keys for authentication); EX1001, 6:32-49. As I explained in my original Declaration, the specification of the '030 Application makes clear that the “smart telephone” embodiments are simply a way of producing audio for a PC to receive and perform transactions with, rather than devices to

perform the transactions. EX1003, ¶¶82-87 (citing EX1035; EX1036; EX1037; EX1038).

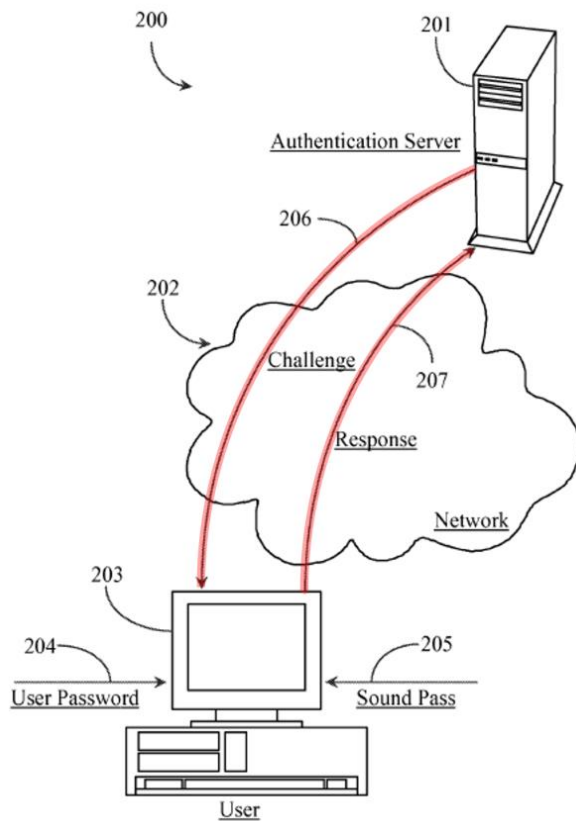


Fig. 2

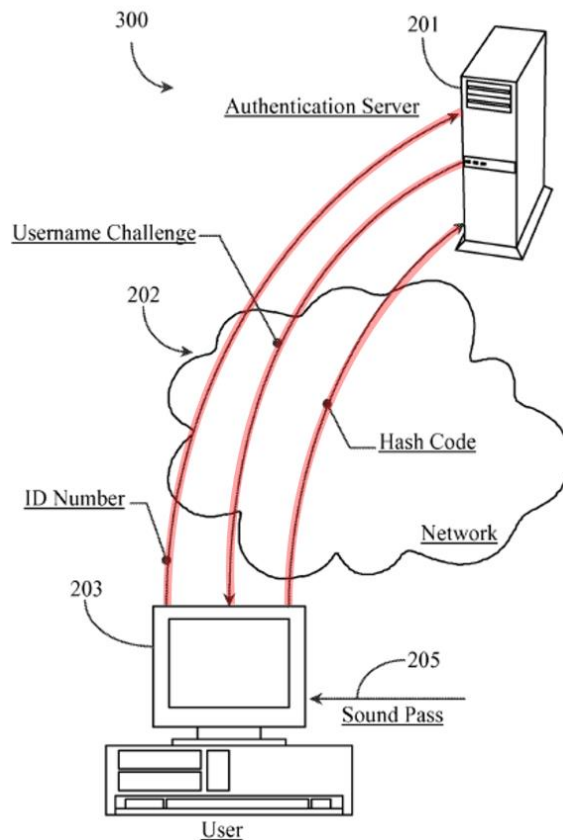


Fig. 3

EX1012, 353-354 ('030 Application, Figs. 2-3) (annotated)

27. Thus, the '030 Application provides that the sound pass 205 is provided to the PC 203, which then processes the transaction with the server 201 based on the received sound pass 205. EX1012, 330-331; EX1001, 6:32-49. At no point does the '030 Application suggest that the PC 203 may be replaced with a smart telephone.

28. The '030 Application explains that the sound pass 205 may be provided to the PC 203 by one of three sources: (1) a “key jack” (Figs. 4-5), (2) a smart card and a smart card reader (Fig. 6), or (3) a smart phone (Fig. 7). EX1003, ¶¶78-83.

29. The first source—a “key jack”—is illustrated in Figures 4 and 5, below. EX1012, 331-332; EX1001, 7:11-20 (Figure 4 illustrates “basic electronics 400 of a key jack sound pass generator...[in the form of] a key jack... that plugs into the microphone input or other line input on a PC [and] generates the sound pass signal.”); EX1012, 333; EX1001, 7:59-8:6 (circuitry of key jack signal generator is “housed within a convenient and mobile key jack device [501 in Fig. 5] that can be worn around a user’s neck or may be placed on a key ring for convenience.”). The '030 Application explains that the key jack device 501 “fit[s] into a microphone input on a PC,” and the user “depress[es] button 505... to generate and modulate the sound pass signal.” EX1012, 333; EX1001, 7:65-67, 8:9-12.

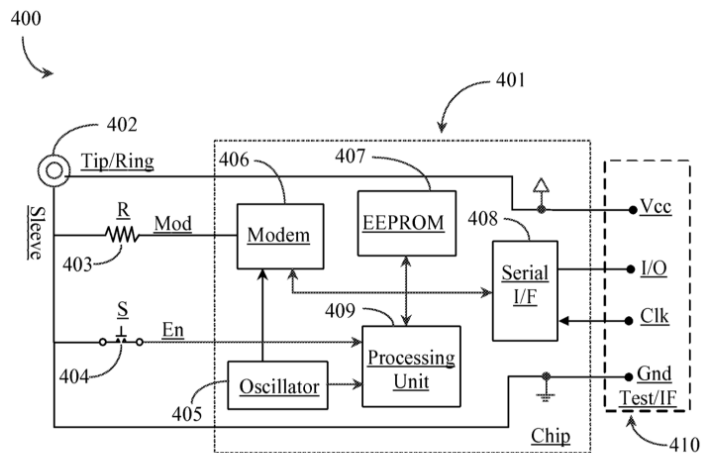


Fig. 4

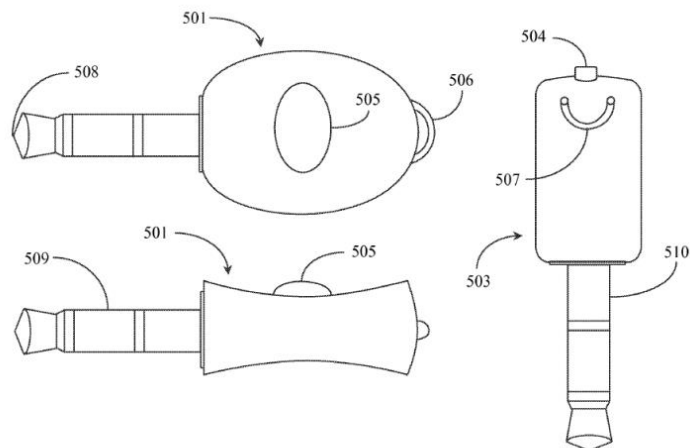


Fig. 5

EX1012, 356-357 ('030 Application, Figs. 4-5)

30. The second source—a smart card and a smart card reader—is illustrated in Figure 6, below. Like the key jack, the “card reader 602...is plugged into the microphone input of the host computing appliance” via the illustrated “Tip/Ring.” EX1012, 334; EX1001, 8:30-35. The “smart card 601” includes “the sound pass chip embedded therein” and “plugs into card reader 602. EX1012, 333-334; EX1001, 8:26-35.

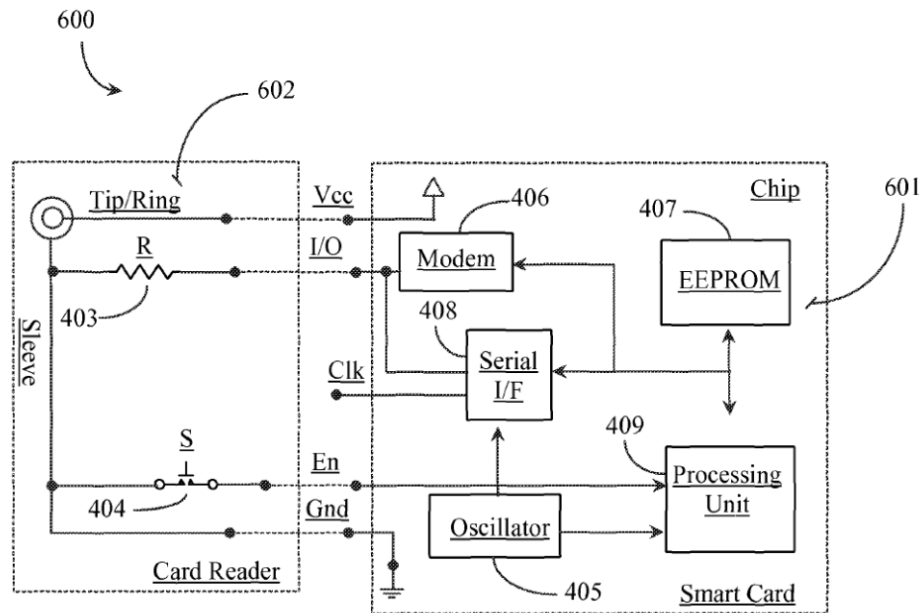


Fig.6

EX1012, 357 ('030 Application, Fig. 6)

31. The third source is a smart phone, illustrated in Figure 7, below. In this source, the sound pass 205 is “a modulated audio signal [] generated by a sound-generating applet installed on and executable from mobile device 701.” EX1012, 336; EX1001, 9:45-47. The smart phone speakers can “play the modulated sound pass into a microphone plugged into PC 203...acoustically.” EX1012, 336; EX1001, 9:51-57. “In another embodiment,” a cable may be plugged into the “microphone input” to transmit the signal. EX1012, 336; EX1001, 9:58-61.

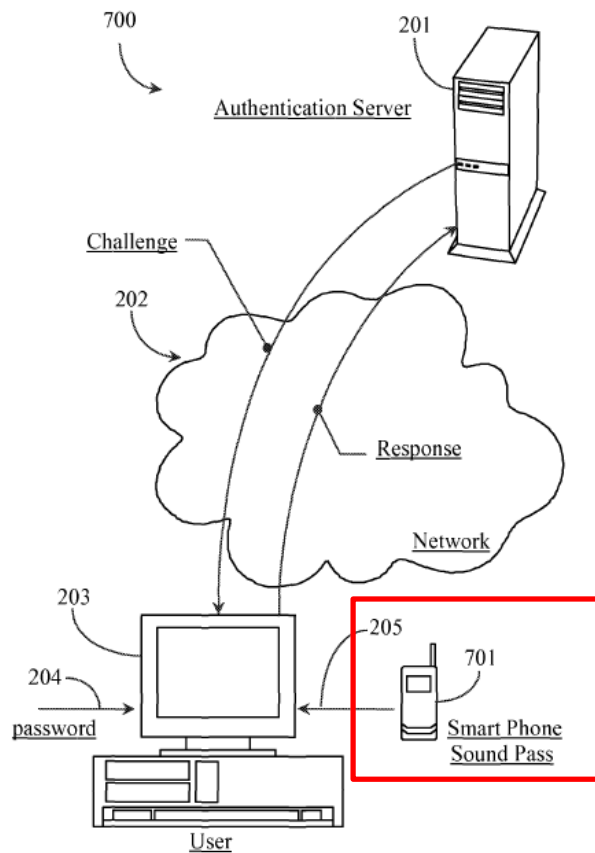


Fig.7

EX1012, 357 ('030 Application, Fig. 7) (annotated)

32. In all three sources, the sound pass 205 is provided **to the PC 203**. The challenged claims differ significantly from the '030 Application. In limitations [1.1.2]-[1.1.3] and [3.1.2]-[3.2], the transaction data is received as an analog variable voltage audio signal at a microphone port of the smart telephone. But in Figures 4-7 of the '030 Application above, the sources (key jack, smart card, smart phone) output an analog variable voltage audio signal (sound pass 205) to a microphone port of the PC 203, not a smart telephone. The smart telephone 701 in Figure 7 only *provides*

the sound pass to the PC 203. The smart telephone 701 never *receives* the sound pass, as I discussed in my original Declaration. EX1003, ¶83.

33. Moreover, none of the sources in Figures 4-7 of the '030 Application above ever *convert[s] the analog variable voltage audio signal* (sound pass 205) *...to the transaction data as digital data*, as recited in limitations [1.3.1] and [3.3]. The concept of converting the sound pass to the transaction data as digital data is disclosed only in the “Brief Summary of the Invention” section of the '286 Patent, not the '030 Application. EX1003, ¶70 (citing EX1001, 2:8-20, 2:43-55). The concepts of “converting” analog data to digital data appears nowhere in the '030 Application, and “digital” only appears in the context of a “personal digital assistant” (PDA). EX1012, 331; EX1001, 7:4-7; EX1003, ¶76.

34. A detailed review of the *substance* of the '030 Application shows that these concepts were not contemplated by the inventors as of the filing date of the '030 Application.

35. Patent Owner misreads the '030 Application in an attempt to find support for limitations [1.3.1] and [3.3]. First, Patent Owner argues that the description in the '030 Application of the smart telephone including a “sound-generating applet,” provides support for a smart telephone executing “coded instructions.” POR, 16 (citing EX1001, 9:45-47 (EX1012, 336)). Patent Owner’s argument is incorrect. The issue is not whether the '030 Application shows a smart

telephone executing **any coded instructions at all**. Instead, the issue is whether the '030 Application provides written description support for a smart telephone *convert[ing] the analog variable voltage audio signal...to the transaction data as digital data*, as recited in limitations [1.3.1] and [3.3]. The '030 Application does not. The “sound-generating applet” on the smart telephone is only used to *generate* the sound pass, not receive or convert it as claimed. EX1012, 336; EX1001, 9:45-47.

36. Second, Patent Owner argues that “token values...expressed as a modulated sound pass signal” may be transmitted to a microphone port. POR, 17 (citing EX1001, 13:39 (EX1012, 342-343)). This feature, however, does not provide written description support for a smart telephone *convert[ing] the analog variable voltage audio signal ...to the transaction data as digital data*, as recited in limitations [1.3.1] and [3.3]. Patent Owner also argues, without citing to any evidence, that “a POSITA would readily recognize that ‘writ[ing] the token file’” provides support for the conversion operation in limitations [1.3.1] and [3.3]. POR, 18 (citing EX1001, 14:43-45) (EX1012, 344). This argument is incorrect. The cited disclosure relates to an operation on **the client PC, not the smart telephone**. EX1001, Fig. 14 (step 1404: “applet executes on client [PC].”), EX1012, 344 (applet writes token file “to the root drive on the client PC”); EX1001, 14:43-45. Therefore, contrary to Patent Owner’s argument, a POSITA would **not** readily recognize that

“writ[ing] the token file” provides support for the conversion operation in limitations [1.3.1] and [3.3], because this operation is performed by **the client PC, not the smart telephone.**

37. Furthermore, Patent Owner misreads the description of encryption at Figure 14 of the '030 Application. In the Figure 14 embodiment, the token file referred to is **not an analog audio signal**. Figure 14 describes an embodiment where “a soft token” is used, rather than an analog signal. The “soft token” is “a software file.” EX1001, 13:33-36; EX1012, 342. While this soft token may be “a sound file or generated sound,” EX1001, 13:46-50; EX1012, 343, it is digital from the time it is created “at act 1404,” EX1001, 14:5-6; EX1012, 343. As a result, there is no conversion from an analog signal to a digital signal to encrypt the file. Patent Owner’s argument that a “POSITA would readily recognize that the ‘token’ or ‘sound pass signal’ [is] an ‘analog variable voltage audio signal’” does not apply to the Figure 14 embodiment. POR, 17-18. Patent Owner’s list of ways in which the sound file is provided acoustically to the PC 203 is inapplicable for the same reasons. POR, 18-19. Again, as described above, Figure 14 describes the operations performed in the client PC, not the smart telephone.

38. Third, Patent Owner argues that the specification’s use of the word “mobile” in various places support the claims. POR, 16-17 (quoting EX1001, 7:52-55; EX1012, 332) (key jack is as a “**mobile** device key jack 400” that may be used at “**any mobile** device capable of bi-directional network connection.”) (Patent

Owner's emphases). Describing the key jack as mobile and connecting to other mobile devices does not show support for the new material claimed by the '286 Patent. Even if "mobile device capable of bi-directional network connection" were to refer to a smart telephone, this disclosure does not provide support for a smart telephone *convert[ing] the analog variable voltage audio signal...to the transaction data as digital data*, as recited in limitations [1.3.1] and [3.3].

39. Patent Owner then argues that because the "processing unit 409" in Figure 4 "may be a small microprocessor," a smart telephone must include a processor. POR, 17 (citing EX1001, 7:34-35; EX1012, 332). This argument misses the point. The embodiment of Figure 4 is not directed to a smart telephone. Further, even if Figure 4 was directed to a smart telephone (it is not), the issue is not whether the smart telephone 701 in Figure 7 may include a processor. Having a processor does not mean that the smart telephone 701 in Figure 7 *convert[s] the analog variable voltage audio signal...to the transaction data as digital data*, as recited in limitations [1.3.1] and [3.3]. On the contrary, as discussed above, the smart telephone 701 only *provides* the sound pass to the PC 203.

40. Finally, Patent Owner implies that the disclosure of both "an analog variable voltage signal" as well as "transmi[ssion] on a wireless network" means the analog signal "MUST be digitized." POR, 3-4 (citing EX1001, 11:13-20; EX1012, 338), 17-19. No conversion operation is described at all in the '030 Application.

EX1003, ¶76. To the extent Patent Owner is asserting that the '030 application inherently discloses analog-to-digital conversion simply because an analog signal is received and processed by the PC 203, the mere disclosure of an analog signal and digital processing or digital components of a computer system does not mean that analog-to-digital conversion *inherently* occurs in a smart telephone, as is required by limitations [1.3.1] and [3.3].

41. Accordingly, the '030 Application does not provide written description support for limitations [1.3.1] and [3.3].

B. The '030 Application does not support the smart telephone “establish[ing] direct data exchange between the smart telephone and a second Internet-connected server and facilitate[ing] transactions by a financial institution, or purchases from an online-merchant, using the transaction data” ([1.3.2] and [3.4]).

42. In limitations [1.3.2] and [3.4], “direct data exchange” is established “between the smart telephone and a second Internet-connected server” to “facilitate transactions.” These limitations are also not supported by the '030 Application. As shown in Figures 2, 3, and 7 above, direct data exchange between the smart telephone and the authentication server is not described in the '030 Application. EX1003, ¶75.

43. Patent Owner again misreads the specification in arguing that limitations [1.3.2] and [3.4] are supported by the '030 Application. Patent Owner refers to the embodiments of Figures 7 and 14. POR, 19-20. But these embodiments

do not ever show a *direct data exchange* between the smart telephone 701. On the contrary, the smart telephone 701 in Figure 7 communicates with the PC 203, which in turn communicates with the authentication server 201, and Figure 14 shows operations of the client PC (PC 203), as described above. Arguing that “[t]he direct data exchange is clearly to facilitate transactions by a financial institution” does not show that the smart telephone establishes this data exchange. POR, 20. Support for limitations [1.3.2] and [3.3] can only be found in the “Brief Summary of the Invention” section of the ’286 Patent. EX1003, ¶¶75-76.

44. Patent Owner also argues that a smart phone could be used to perform all the functions of the PC 203 based on some more generic terms for the PC 203, such as “client” and “computing appliance.” POR, 19-21. This is incorrect. While smart phones today have significantly increased computing capabilities, a POSITA in 2005, when the ’030 Application was filed, would have recognized that smart phones at that time did not have anywhere near the processing capabilities of the PC 203. In that sense, the terms “client” and “computing appliance” would certainly not suggest to a POSITA in 2005 that a smart phone could simply take the place of the PC 203, a concept that the ’286 Patent added nearly a decade later. See EX1003, ¶¶85-88 (explaining processing capabilities of mobile devices in 2005); EX1037 (announcement in 2008 of “iPhone 2.0” software that could execute applications like

“email, contact and calendars” and allow “third party developers...to build native applications for the iPhone.”).

45. Accordingly, the '030 Application does not provide written description support for limitations [1.3.2] and [3.4].

IV. THE BOARD’S CONSTRUCTION OF “TRANSACTION DATA” IS CORRECT.

46. I understand that the Patent Trial and Appeal Board (Board) preliminarily determined in the Institution Decision that the term “transaction data” in the Challenged Claims should be construed as “encompassing any data involved in a transaction, including account data.” Inst. Dec., 8. I agree with this construction. The Board correctly determined that “the claimed transaction data must come from the output interface of a transaction card.” *Id.*

47. The term “transaction data” in the Challenged Claims should not be distinguished from “account information” (or “account data”) in the embodiment of Figure 11, because the Challenged Claims are not limited to the Figure 11 embodiment.

48. Independent claim 1 of the '286 patent recites the term “transaction data” several times without defining or further limiting the scope of the term. See limitations [1.1.1], [1.1.3], [1.3.1], and [1.3.2] below (claim 3 recites substantially similar limitations).

[1.1.1] a card reader having an input interface configured to accept transaction data from an output interface of a transaction card,

[1.1.3] the card reader providing the transaction data accepted from the output interface of the transaction card to the output pin, and hence to the microphone port, as an analog variable voltage audio signal; and

[1.3.1] wherein the coded instructions, when executed on a processor in the smart telephone, convert the analog variable voltage audio signal received at the microphone port to the transaction data as digital data,

[1.3.2] establish direct data exchange between the smart telephone and a second Internet-connected server and facilitate transactions by a financial institution, or purchases from an online-merchant, using the transaction data.

49. At most, limitations [1.1.1] and [1.1.3] require “transaction data” to be accepted from an output interface of a transaction card to the output pin. There is no description in limitation [1.1.1] or [1.1.3] that even remotely implies that the “transaction data” is distinguished from account information. Limitations [1.3.1] and [1.3.2] require that the “transaction data” is converted to digital data and then used for purchases. Again, there is no description in limitation [1.3.1] or [1.3.2] that even remotely implies that the “transaction data” is distinguished from account information. Independent claims 1 and 3 do not have any feature relating to the

“account information” that is distinguished from the “transaction data” in the embodiment of Figure 11 of the ’286 Patent.

50. I understand that Patent Owner has argued that there is a distinction between “transaction data” and “account information” (or “account data”) based on the Figure 11 embodiment. There is no such distinction in the Challenged Claims.

51. With reference to Figure 11, below, the ’286 Patent explains that “client account [data] 1102” is utilized in a “user authentication using a card verification value (CVV) code according to yet another embodiment of the invention.” EX1001, 12:13-15, 12:28-31. As shown in Figure 11, “[t]he client account [data] 1102 includes the ID number (N), the secrete seed (S), the last session key used by the client (Co), and the client PIN code (Pc).” EX1001, 12:28-31.

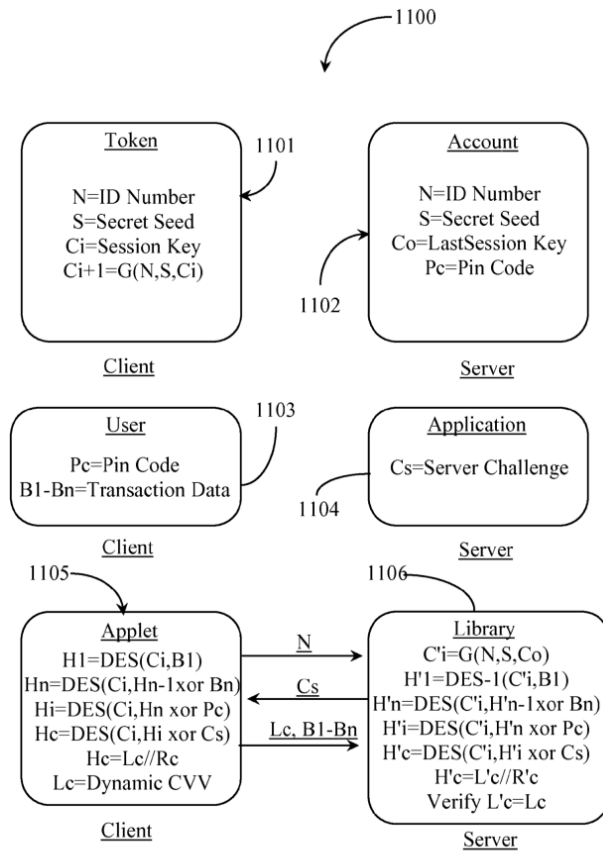


Fig. 11

EX1001, Fig. 11

52. None of these features are recited in the Challenged Claims. Claims 1 and 3 do not require any aspect of “user authentication.” Instead, limitations [1.1.1] and [1.1.3] require “transaction data” to be accepted from an output interface of a transaction card to the output pin, and limitations [1.3.1] and [1.3.2] require the “transaction data” to be converted to digital data and then used for purchases. In my opinion, because claims 1 and 3 do not recite any aspect of “user authentication” or “user authentication using a card verification value (CVV) code,” claims 1 and 3 are not limited to the embodiment of Figure 11.

53. Furthermore, Figure 11 is directed to a specific example of a “secure smart card[]...having the sound pass token chip embedded thereon,” which is not recited in claims 1 and 3. On the contrary, claims 1 and 3 recite the “variation” of the Figure 11 embodiment in which the apparatus includes a “card reader having an input interface configured to accept transaction data from an output interface of a transaction card,” and “and an output pin, as a part of the card reader, configured to directly connect the card reader to a microphone port of a smart telephone.” Limitations [1.1.1]-[1.1.2]; *see also* limitations [3.1.1]-[3.1.2]. The '286 Patent explains that the Figure 11 embodiment is a “variation” of the configuration actually recited in claims 1 and 3:

[i]n this example [of Fig. 11], banks or other financial institutions deploy secure smart cards in the form of bank cards having the sound pass token chip embedded thereon. The cards are **adapted as a variation of the smart card used with a card reader plugged into a microphone jack on the user PC as described further above.**

EX1001, 12:15-21 (emphasis added).

54. The Board correctly determined that:

the claimed “transaction data” that is “accepted . . . from an output interface of a transaction card” and “accepted . . . from a transaction card at an input interface of the card reader,” as recited in independent claims 1 and 3, comprises data stored on and read from a card, such as

an ID number, password, authentication information, or session information, that can be used to facilitate a transaction.

Inst. Dec., 8.

55. Patent Owner also argues that “transaction data” is distinguished from “account data” because, in some embodiments, account data is first provided to authenticate the user and establish a session, and “transaction data is submitted *after*.” POR, 26-27. But like Patent Owner’s arguments regarding Figure 11, this distinction of providing two types of data at two different times (first account data, then transaction data) is not recited in the claims. As the Board observed, the claims merely require “‘transaction data’ to be accepted from an output interface of a transaction card to the output pin.” Inst. Dec., 5-6. In addition, as explained at section V.A. below, Cho’s use of the term “account information” aligns with the ’286 Patent’s description of “transaction data.”

56. Patent Owner also argues that the Board’s construction of transaction data was incorrectly “(1) equating ‘token information’...with ‘account information,’ and then (2) maintaining that ‘transaction data’ includes ‘token information,’” citing again to Figure 11 of the ’286 Patent. POR, 24. Like all of Patent Owner’s other claim construction arguments, this alleged distinction between account information and token information is not recited by the claims. The claims do not recite either “account information” or “token information.”

57. Patent Owner criticized the Board's construction under the mistaken theory that "the '286 Patent makes clear that 'transaction data' is not 'account data,' i.e., is not a[n] 'ID number, password, authentication information, or session information,' because....the specification expressly makes clear that 'transaction data' is data that is submitted after a new session key is generated using 'account data.'" POR, 7, 25-27. While Patent Owner argued that the term "transaction data" should be "[p]roperly construed," POR, 21, and "must be construed in light of the specification," POR, 27, Patent Owner did not provide its own proposed construction.

58. Patent Owner's criticism of the Board's construction is wrong for two reasons. **First**, Patent Owner is relying on its erroneous argument that "transaction data" is distinguished from the "account data" of the Figure 11 embodiment, even though the challenged claims are not limited to the Figure 11 embodiment, as I described above. Inst. Dec., 8. Claims 1 and 3 require the transaction data to be "accepted from an output interface of a transaction card to the output pin," "convert[ed to] digital data," and then used for "purchases from an online merchant." See, e.g., limitations [1.1.1], [1.1.3], [1.3.1], and [1.3.2]. Claims 1 and 3 do not have any feature relating to "account information" that is distinguished from the "transaction data" in the embodiment of Figure 11. Specifically, claims 1 and 3 do not require any aspect of "user authentication," which is what the Figure 11

embodiment is directed to. EX1001, 12:13-59; Inst. Dec., 8 (“Claims 1–4 of the ’286 Patent do not recite coded instructions implementing an authentication process.”). The Board should not limit “transaction data” to the data B1-Bn of Figure 11, which is directed to user authentication, a feature not recited in claims 1 and 3.

59. **Second**, Patent Owner is incorrectly importing limitations that are not required by the claims. Specifically, Patent Owner incorrectly asserts that the claimed “transaction data” is “submitted after a new session key (which includes the ‘ID Number,’ i.e., a form of ‘account data’) is generated.” POR, 26. None of these limitations are required by the claims. Patent Owner also argues that “transaction data” is “to be construed differently” from “account data” because the specification uses the terms differently. POR, 23, 26. Patent Owner is incorrect. Patent Owner argues that a PIN code is “an example of account data,” but a PIN code is not recited in the claims. I understand that claim differentiation applies only when *the claims* recite different features. The claims do not recite the user authentication technique of Figure 11.

60. In addition, the description of transaction data is not limited to the Figure 11 embodiment. Although Patent Owner argues that “the term transaction data is only used in the embodiment of Figure 11,” a complete reading of the ’286 Patent supports the Board’s construction. For example, the ’286 Patent refers to “a *transaction card bearing data*” that is accepted by “a card reader.” EX1001, 1:65-

2:2, 2:33-37. The '286 Patent also describes “a card verification code (CVV) in the *card data*, to use the CVV in the purchases or transactions.” EX1001, 2:28-32.

61. Thus, I agree with the Board’s construction of “transaction data” as “encompassing any data involved in a transaction, including account data.” Inst. Dec., 8.

V. CHO TEACHES THE DISPUTED CLAIM LIMITATIONS

62. I understand that Patent Owner has argued that Cho does not teach limitations [1.1.3], [1.3.1], and [3.3] of claims 1 and 3. POR, 21-30. Patent Owner is incorrect, as I explain below. I also understand that Patent Owner did not present arguments against any of the other references cited in my original Declaration, or arguments for dependent claims 2 and 4. As shown in my original Declaration, claim 1 is obvious over Cho in view of Aaron and Carpenter (EX1003, ¶¶101-155), and claim 3 is obvious over Cho in view of Aaron (EX1003, ¶¶170-199).

63. I understand Patent Owner argues that Cho does not disclose two claim features. First, Patent Owner argues that Cho (EX1005) does not disclose “transaction data” as recited in limitations [1.1.3], [1.3.1], and [3.3]. POR, 6-7, 21-28. Patent Owner’s arguments are based entirely on its erroneous claim construction position that the claimed “transaction data” must be distinguished from “account data.” If the Board rejects Patent Owner’s erroneous claim construction position (it should), then I believe Patent Owner’s arguments for limitations [1.1.3], [1.3.1], and

[3.3] are moot. Second, Patent Owner argues that Cho does not disclose the “analog variable voltage audio signal” as recited in limitations [1.1.3], [1.3.1], and [3.3]. POR, 28-30. As shown in my original Declaration and below, this argument lacks merit.

A. Cho’s “account information” from a transaction card teaches the claimed “transaction data.”

64. As shown in my original Declaration, Cho’s “account information” teaches the claimed “transaction data.” EX1003, ¶¶119-120 (limitation [1.1.1]), 176-178 (limitation [3.1.1]). Patent Owner’s argument that Cho’s “account information” does not disclose “transaction data” depends entirely on Patent Owner’s erroneous argument that “transaction data” should be construed to exclude “account data” related to user authentication, according to the unclaimed Figure 11 embodiment of the ’286 Patent. POR, 22-28. This argument is incorrect for the reasons presented in Section IV above.

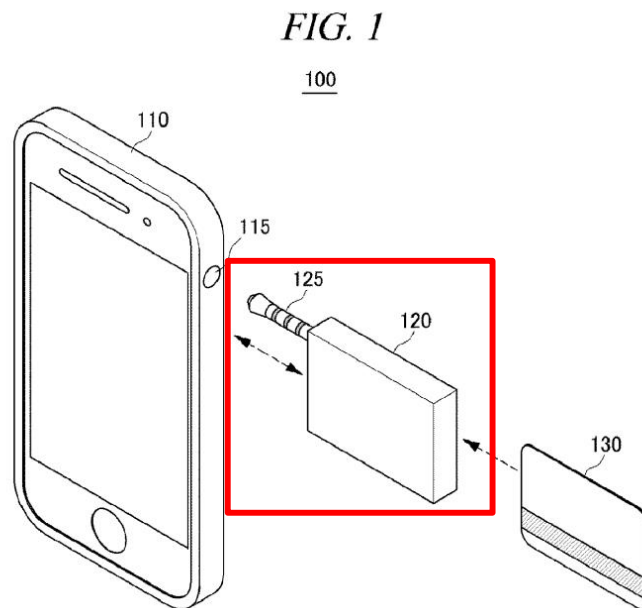
65. Even if the Board accepts Patent Owner’s argument that “transaction data” does not include “account information” (it should not), Cho still teaches the claimed “transaction data” under Patent Owner’s interpretation. According to Patent Owner, the term “account data” in the ’286 Patent refers to an “ID number, password, authentication information, or session information.” POR, 7, 27. In other words, account data is for **user authentication**, while transaction data is used to

“perform a series of banking transactions” after a user is authenticated. POR, 26. Even if the challenged claims made this distinction (they do not), Cho’s description of “account information” is transaction data, not account data for user authentication.

66. Patent Owner’s proposed distinction between transaction data and account information is based on a misunderstanding of authentication in the context of the ’286 Patent. Transaction authentication is not the same as user authentication (e.g., the process of logging into a computer account). As I explained in my original declaration, the User ID in combination with the password authenticates the user, but the user ID alone is only used to identify which user is being authenticated, and is not the authenticator. Authentication depends on identification, but they are separate security services, as was known and documented in ISO 7498-2:1998 “Information Processing Systems - Open Systems Interconnection - Basic Reference Model - Part 2: Security Architecture.” EX1003, ¶28 (fn. 1); EX1047, 4-5, 9.

67. Cho’s “account information” is not used for user authentication—it refers to a credit card number and expiration date used for precisely the same purpose as transaction data under Patent Owner’s interpretation: “perform[ing] a series of banking transactions.” POR, 26; see EX1005, 3:24-27 (“By way of example, but not limitation, the account information may include at least one of an account number, a card expiration date, etc.”), 5:55-58. As shown in Figure 1, below, Cho’s card reader (“card payment apparatus 120”) transmits an analog signal from the audio

jack 125 (“output pin”) of the card reader to the audio jack socket 115 of the client device 110 (“smart telephone”), where the transmitted analog signal includes account information (“transaction data”) read from the card 130. EX1005, 3:22-31 (“account information may be read from a card 130 by card payment apparatus 120.”), 4:60-67; EX1003, ¶¶128-132); EX1003, ¶118 (describing card payment apparatus transmitting analog signals including “account information...read from a card 130 by card payment apparatus 120.”) (citing EX1005, 3:22-24).



EX1001, Fig. 1 (annotated)

68. Cho’s description of account information is entirely consistent with the ’286 Patent’s description of transaction data. The ’286 Patent describes “a transaction card bearing data” that is provided “to a card reader.” EX1001, 1:65-2:7,

2:33-37. Cho's account information is provided in precisely the same way. Cho's system 100 is "a card payment system." EX1005, 3:3-5, 4:42-44. Cho's account information, including a card number and expiration date, are "read from a card 130 by card payment apparatus 120." EX1005, 3:22-24. Cho's system "execute[s] a card payment based at least in part on the account information." EX1005, 3:52-56. That Cho's account information of the card in Figure 1 is used "to execute a card payment" shows that this account information is the claimed "transaction data." EX1005, 3:52-56.

69. Patent Owner argued that Cho's account information from the transaction card is not transaction data because Figure 11 of the '286 Patent includes the word "Account" along with a list of data for user authentication (i.e., an "ID Number," a "Secret Seed," and a "Pin Code.>").

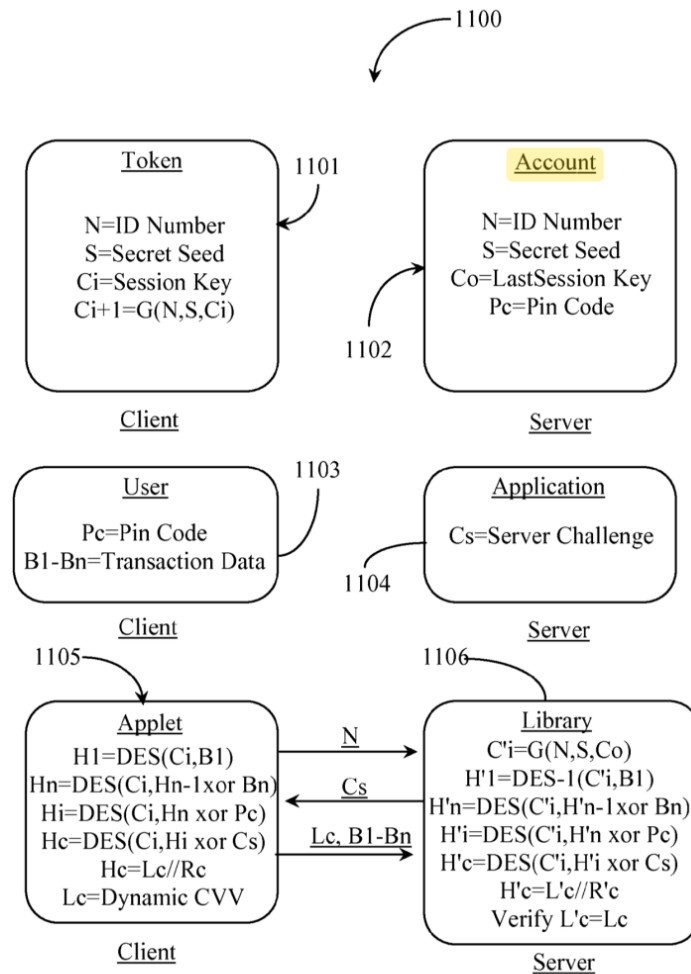


Fig. 11

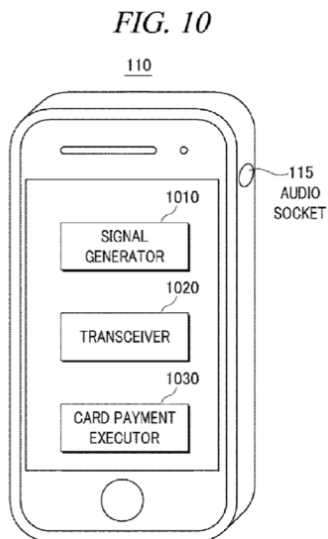
EX1001, Fig. 11 (annotated)

70. According to Patent Owner, because the term “Account” in Figure 11 of the '286 Patent is included in the same box as information related to user authentication, Cho's account information must refer to user authentication as well, and, therefore, cannot be transaction data. POR, 21-22, 25-26. Patent Owner is wrong. How the '286 Patent illustrates an account in Figure 11 is not relevant to how Cho uses the term “account information.” Cho’s “account information” refers to data

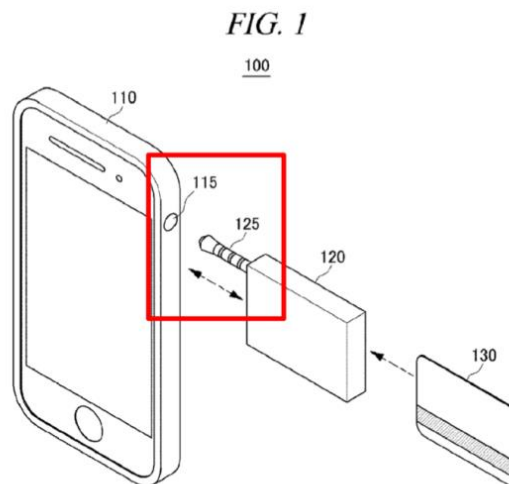
on a card used for card payments. *See* EX1005, Fig. 1, 3:3-5 (“FIG. 1 shows an example system configuration 100 in which one or more embodiments of a card payment system may be implemented.”), 3:22-24 (“The first digital signal may include account information which may be read from a card 130 by card payment apparatus 120.”), 3:52-56 (“[C]lient device 110 may be configured to execute a card payment based at least in part on the account information through a card payment server (not illustrated in FIG. 1) which is communicatively coupled to client device 110 via a wireless network.”), 4:42-44 (“FIG. 2 shows an example configuration of a card payment apparatus 120 by which at least portions of a card payment system may be implemented.”). That information includes standard credit card information such as a card number and expiration date. EX1005, 3:24-27 (“By way of example, but not limitation, the account information may include at least one of an account number, a card expiration date, etc.”), 5:55-58 (“By way of example, but not limitation, the account information may include at least one of an account number, a card expiration date, etc.”). This account information as described by Cho refers to the same concept as the claimed “transaction data,” which is used in a transaction (limitations [1.3.2] and [3.4]).

71. Further, as shown in my original Declaration, Cho teaches the “transaction data” as recited in limitations [1.3.1]-[1.3.2] and [3.3]-[3.4]. EX1003, ¶¶142-151, 184-191. Limitations [1.3.1]-[1.3.2] and [3.3]-[3.4] require the

“transaction data” to be converted to digital data and then used for purchases. As shown in my original Declaration, Cho’s transceiver 1020 in the client device 110 (“smart telephone”) (see Fig. 10 below) receives the analog signal containing the account information from card payment apparatus 120 “via a microphone contact of audio jack 125,” and the card payment executor 1030 of the client device 110 converts this “analog signal into the first digital signal that includes the account information by using any well-known analog-digital converting scheme.” EX1003, ¶¶134, 146 (citing EX1005, 11:27-29, 11:35-38).



EX1005, Fig. 10; EX1003, ¶134.



EX1005, Fig. 1 (Annotated); EX1003, ¶145.

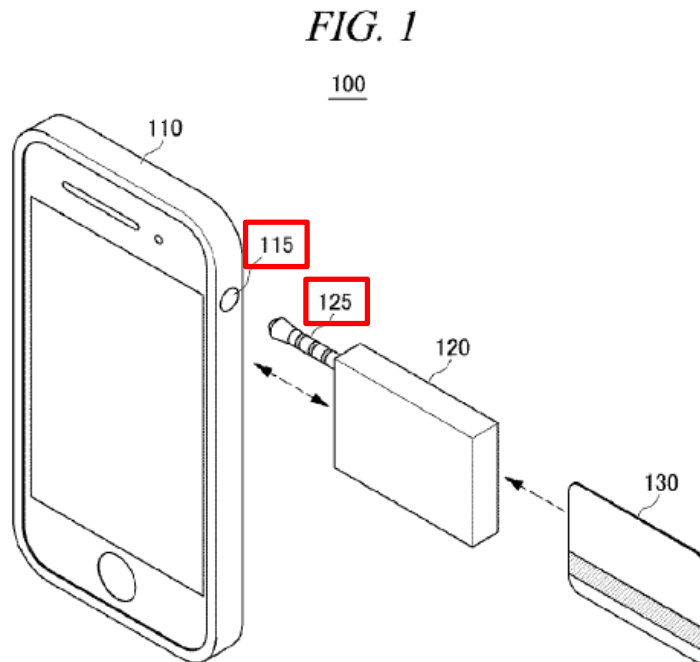
EX1003, ¶¶134, 146

72. Therefore, Cho teaches the “transaction data” and operations as recited in limitations [1.1.3], [1.3.1], and [3.3].

B. Cho teaches “an Analog Variable Voltage Audio Signal.”

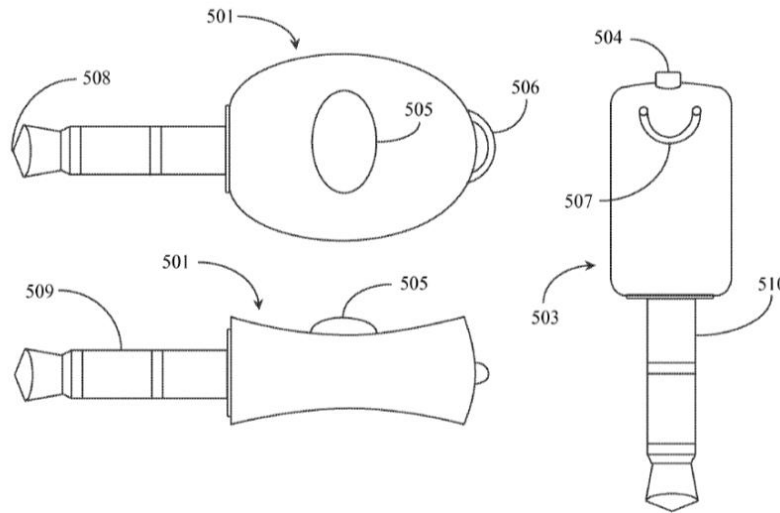
73. Patent Owner argues that there is a difference between the “analog variable voltage signal,” as recited in limitations [1.1.3], [1.3.1], and [3.3], and Cho’s “alternating current (AC) voltage of an acoustic signal.” POR, 28-30. There is no such distinction, and I note that Patent Owner has provided *no* evidence in support of its argument.

74. Cho’s “analog signal” is transmitted via the audio jack 125 of the card payment apparatus 120 to the audio socket 115 of the client device 110, as illustrated below. EX1003, ¶129 (citing EX1005, 3:20-22) (“Client device 110 may be configured to receive, from card payment apparatus 120 via audio jack 125, a first analog signal to which a first digital signal is converted.”); EX1003, ¶¶123-124 (describing audio jack 125 as transmitting analog signal to audio jack socket 115 on client device 110) (citing EX1005, 4:58-65, Figs. 1-2, 9-10).



EX1005, Fig. 1 (annotated)

75. As shown in Fig. 5, below, the '286 Patent's "key jack" transmits the analog signal via an identical audio jack. The audio jack is inserted into a corresponding "audio in" line on a PC such as the microphone port." EX1001, 6:61-64. When the transaction card reader or smart telephone are used to supply the analog signal, it also transmitted via the same type of audio jack and corresponding microphone port. EX1001, Fig. 6 ("Tip/Ring" and "Sleeve"), 9:58-61 ("hardwire cable that connects...to the microphone input").



EX1001, Fig. 5

76. Accordingly, both Cho and the '286 Patent describe transferring the analog signal in the same way using the same standardized connections. There is no distinction between an “analog variable voltage signal” and an “alternating current (AC) voltage of an acoustic signal.” An acoustic signal is an analog signal. For example, Thompson (EX1042), which is directed to transmitting voice information (acoustic signal) over an alternating current (AC) signal, explains that the “ac input” is “representative of said transmit audio signal.” EX1042, 6:31-33.

77. In addition, “an AC voltage signal” may be a “variable frequency and/or voltage,” because an AC voltage signal undergoes continuous oscillation. EX1044, [0018], claim 17 (describing “an AC voltage signal having a variable rms voltage”); EX1045, 2:67-3:3 (describing “a variable AC voltage signal”). According to the Authoritative Dictionary of IEEE Standard Terms, an “alternating current” is

defined as “an electric current that reverses direction at regularly recurring intervals of time.” EX1046, 28. A POSITA would recognize that an alternating current voltage is the voltage associated with an alternating current in a circuit. As is well understood and defined by the fundamental principles of Ohm’s Law ($V=IR$, where V is voltage, I is current, and R is resistance or impedance), the voltage (V) in a circuit is directly proportional to the current (I) multiplied by the impedance (R) of the circuit. Because impedance is a constant value, the voltage (V) and current (I) both reflect the waveform of a signal in the same way.

78. Patent Owner also argues that “AC voltage...represents only specific, static characteristics of the acoustic signal” and, if it is converted to a DC voltage, it “does not directly correspond to the original audio waveform.” POR, 29. This statement is incorrect. An AC or DC format has no impact on to what extent a signal conforms to an original acoustic waveform and, in fact, the “alternating current (AC) component” of an audio signal is “the portion of analog signals that actually represents sounds.” EX1040, [0046]. But even assuming that Patent Owner’s argument that an AC voltage does not “correspond to the original audio waveform” is correct (it is not), the claims do not recite an AC or DC signal either way. Nevertheless, Cho’s AC voltage of an acoustic signal represents an analog variable voltage signal that is representative of the waveform just as the ’286 Patent describes. See EX1041, 19:44-49 (“AC signal[s]” are “representative of the audio

signal.”); EX1042, 6:31-33 (the “ac input” is “representative of said transmit audio signal.”). Even after conversion to a DC voltage signal, a signal is still an analog signal “representative of the rectified transit audio signal,” 3:53-61.

79. Patent Owner’s arguments that “[t]he DC voltage disclosed by Cho merely provides information about specific characteristics of an acoustic signal, such as its average amplitude or power, but does not capture the complete waveform information” is similarly unsupported and incorrect. POR, 7. A DC voltage does not calculate statistical values such as an “average amplitude or power.” POR, 7-8, 29-30.

80. Accordingly, Cho discloses or at least renders obvious limitations [1.1.3], [1.3.1], and [3.3].

VI. AVAILABILITY FOR CROSS-EXAMINATION

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

VII. CONCLUSION

82. I hereby declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct, and that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true. I understand that willful false statements are punishable by fine or imprisonment or both. *See* 18 U.S.C. § 1001.

Date: September 11, 2024

Respectfully submitted,



Bruce McNair